User Group Forestry - Poor Policy for Poor People ?

Nepal´s Forest Legislation from a Political Ecology Perspective

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Dedicated to

Gitta Danuwar,
Teke & Gohe Kami,
Nima Lama & the villagers from the Melamchi and Indrawati Khola region

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List of abbreviations and acronyms

ADB	Asian Development Bank
APROSC	Agricultural Projects Service Centre
CBS	Central Bureau of Statistics
CFDP	Community Forestry Development Project
DF	Department of Forests, Ministry of Forest and Soil Conservation
FAO	Food and Agriculture Organisation (United Nations)
FINNIDA	Finnish International Development Agency
FRIC	Forestry Research and Information Centre
HMG/N	His Majesty's Government of Nepal
ICIMOD	International Centre for Integrated Mountain Development
IOF	Institute of Forestry
LMO	Land Measurement Office (Napi Karyalaya)
LRMP	Land Resource Mapping Project
MFSC	Ministry of Forest and Soil Conservation
ML&J	Ministry of Law and Justice
MLJ&PA	Ministry of Law, Justice and Parliamentary Affairs
MOA	Ministry of Agriculture
MPFSP	Master Plan for the Forestry Sector Project
NA(C)FP	Nepal-Australia (Community) Forestry Project
NMS	Nepal Miscellaneous Series
NPC	National Planning Commission
ODA	Overseas Development Administration (UK)
PAC	Pakhribas Agricultural Centre (UK)
PF	Panchayat Forest
PPF	Panchayat Protected Forest
SFDP	Small Farmers Development Project
SLC	School leaving Certificate
USAID	United States Agency for International Development

I Introduction

1. Forest Policies in Nepal - a "Political Ecology" Perspective

> "Two words come to mind when considering the forest resources of Nepal: "dependence" and "degradation". Dependence because 90% of the people of Nepal are engaged in agricultural pursuits that largely depend on forests to provide a wide variety of inputs. "Degradation" because overexploitation, particularly in the Middle Mountains and lowland Terai has resulted in the destruction or serious degradation of large areas of forests over the past 100 years" (A.L. Joshi's preface to Talbott & Khadka 1994: 2)

Whereas dependence has only recently been addressed as a critical issue, land and forest degradation and deforestation have been regarded as severe problems in Nepal ever since foreign experts arrived in the country. While Collier[1] in 1928 voiced concerns about the need to regulate timber extractions in the Terai and the "insufficiency of forests in the Kathmandu Valley" he at the same time could not imagine any need to restrict forest utilisation outside these two regions (ibid.: 253). This perception had dramatically changed by 1967 when Willan[2] stated that due to deforestation soil had become Nepal's greatest export, but one for which no payment was ever received (ibid.: 16), a most popular quotation taken up by Eckholm in his "Losing Ground" (1975: 764/65; 76a: 78).

Yet Willan's report is a good example of the way foreign experts, mainly foresters, formerly tended to assume a rather simplistic mode of explanation by blaming the local peasantry, stating that "hill farmers understand and practice primitive, destructive, and most hazardous methods of cultivation which necessarily lead to destruction" (ibid. 1967: 18). This perspective has gradually changed along with the emergence of "political ecology", a conceptual approach which links environmental issues to social and political processes (see II 1). When applied to "Third World" countries, political ecology has questioned the above quoted over-simplistic, "colonial" (Blaikie 1985: 4) and often polemical mode of explanation and has opened up the view from a different angle, tracing degradation within the broader context of dependency and economic underdevelopment.

> "Thus, environmental degradation is seen as a **result** of under-development (of poverty, inequality, exploitation), a **symptom** of underdevelopment, and a **cause** of underdevelopment (contributing to a failure to produce, invest, and improve productivity)" (Blaikie 1985: 9).

Thus, the critical links between degradation and poverty were recognised, as epitomised in the World Bank's "World Development Report" of 1992, stating "The environmental crisis is, in short, a poverty problem". At the same time, it has become obvious that alleviation of poverty has to play a crucial role, if degradation is to be

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[1] The British forester Collier worked as a forest advisor in India and was the first expert to come to Nepal (see II 2.1).

[2] Willan was the first forester in Nepal under FAO observation (see II 2.1).

by handing over all accessible forests to user groups (see below) rather than to political bodies in order to promote management and utilisation. Recently these recommendations have been legislatively backed by the new Forest Act (HMG/MLJ&PA 1993a) which repealed both Forest Act and Forest Protection (Special Arrangement) Act.

Besides the recognition of the need for public participation both Master Plan and the Forest Act also took up broader aims of development policies, as the commitment to secure basic needs, as laid down in the Basic Needs Fulfillment Programme of 1985 (HMG/NPC 1987). There, basic needs were quantified in terms of five main indicators, i.e. food, clothes, housing, education, and health (see III 4) but also qualified in terms of "security", by addressing the need for guaranteeing "smooth supplies of essential commodities as rice, pulses, sugar, firewood, salt, kerosene, &c" (ibid: 36). The latter, especially the need for firewood, is increasingly recognised and repeatedly stated as an issue of securement of basic needs (Seventh Five-Year Plan: HMG &al 1985: 36; Eighth Five Year Plan: HMG &al. 1992: 41; Dhakal 1993: 2), and also as the first issue of the policy objectives of the Forestry Master Plan:

- satisfaction of basic needs (for fuelwood, timber, fodder);
- sustainable utilisation of forest resources;
- participation in decision-making and sharing of benefits; and
- socio-economic growth (HMG/ADB/FINNIDA 1988c: 8/9).

These objectives are to be achieved by organising the population into forest user groups, defined as

> "the concerned users of a forest desirous of developing and conserving it and using the forest products for collective benefit. [They] may form a user group and apply for registration to the District Forest Office" (ibid.: Chapter 9/41-42).

After this formal registration the members of the user groups are granted legal access to utilise forests. On the other hand, non-members are effectively excluded from access to these forests, a restriction implemented by the members of user groups far more strictly than before under ("blind eye") HMG protection. Therefore membership within such a group has become an extremely crucial issue as it not only determines legal access to forests but in case of exclusion from membership implies losing actual (according to donor-influenced HMG-terminology "extra- legal") access at the same time.

Yet this commitment to secure basic needs by forming user groups is severely challenged by the fact that there is no unlimited scope for forming these groups as both the availability of forests and their sustainable utilisation are extremely limiting factors. In areas with high forest covers and low population densities, as is the case in the High Mountain region (case study Kiul VDC, IV 3.2), this factor may be less critical whereas in densely populated and/or scarcely forested areas, such as Middle

1a. members of a user group have a legally secured access to forest products;

1b. non-members are legally excluded from access to forests handed over to user groups; if they continue to utilise these forests their action is illegal and could be subject to (financial and legal) prosecution.

Both members and non-members of user groups

2. may use other public forests but then the pressure on those will necessarily increase, a situation that can hardly be called sustainable; as these areas are possibly more distant this situation also increases the work load, especially for women;

3. may use their own resources, if available, but it may soon lead to an over-exploitation, especially for resource-scarce households;

4. may use other people's private resources, especially from large land owners, for either cash or work, but this could lead to further dependence and socio-economic disparities;

5/6. may have to supply their needs for firewood (5.) or firewood substitutes (6.) from market sources but then their expenditure will rise considerably, and possibly divert monetary stock needed elsewhere;

7. may limit their consumption, but in the case of fodder this could lead to under-feeding livestock and in the case of firewood this could lead to less or less-processed meals;

8. may have to migrate if there is no possibility to meet their needs for forest products at all.

The supply of forest products can be made available from public and private sources ("assets", for terminology see I.2), i.e. forest/shrub and own land respectively. Besides, forest products can also be supplied through markets, in form of either firewood or firewood substitutes. Yet it is an important feature to recognise that in highly-stratified societies with unequal access to productive resources scenarios of action (see Figure 1) are likely to be different for different sections of society. Whereas some sections can easily supply their needs from either private land or from markets, others may not be in a position to do so. Thus public "common property" resources (not in a legal but in a matter-of-fact sense) are likely to play a different role for different sections of society. Whereas for the former group it may not make any difference whether they are excluded from access to communal resources or not, for the latter, who are not in a position to secure their needs by relying on their own resources and who heavily depend on access to communal resources, it will make a significant difference if they are cut off from these resources. The present study will provide village-level evidence to what extent such scenarios occur in practice (see case studies IV 3.1.4 and 3.2.4).

Applying this conceptual approach to the processes that take place when (forest) user groups are formed thus appears to be a more realistic and appropriate approach than assuming a consensus. Thus, consequently, the outcome of this process, i.e. the composition of a user group, has to be seen as a result of negotiations of different parties with, realistically seen, different capacities. Yet, if membership is determined by (negotiating) capacity then it is not coercive, or even unrealistic, that it is also governed by actual need.

On the other hand the stated objective of both Master Plan and Forest Act is to contribute to the securement of basic needs for forest products (see II 2.4 and 2.5). Although this implies that members of user groups should preferably be recruited from those sections of society who are not in a position to meet their basic needs by relying on their own resources, legal provisions for the formation process do not explicitly guarantee those people to become members. At the same time those groups are most likely to be groups with low capacities in terms of negotiating to secure that their preferences are fulfilled. Yet if those sections are excluded from becoming members in a forest user group, i.e. if they are the "left-outs" of the new forest policy, and access to (communal) forests is questioned, then there is no legal framework for them to secure their basic needs for forest products from public/ communal resources and thus their securement of basic needs for forest products will be severely threatened.

Analyses of the new forest policy and its implementation are, similar to project evaluations in general, usually carried out by concentrating on one or several existing (forest) user groups. Yet such a narrow focus is not capable of analysing whether or not the initial target group of "the poor" has been included in the user group, and it is also not capable of assessing the impact the formation of the user group has on non-members. This limitation is, unfortunately, prevalent in almost all studies on user groups, which usually concentrate on, or are even limited to, intra-group evaluations. But such an approach is certainly inappropriate to evaluate the impacts of the new policy, and is therefore rejected for the present study. Instead, a meaningful analysis of the impact of the new policy necessarily has to include all actual forest users, from possibly different social strata, whether members or excluded from membership, and an in-depth evaluation of their economic situation. Such an approach will be followed in this study, by presenting case studies from seven ethnic/caste groups in the Melamchi Khola region of the Central Nepalese Middle and High Mountain regions.

In the present study the first constraint, the limitation to the micro-level scale, is overcome by introducing the case studies within the context of a regional analysis (thus the domain of geographers) on the meso-scale. For this purpose a 3-tier zoom perspective is chosen, starting at the district-level, where statistical data on natural resources (IV 1.1), demography (IV 1.2) and agriculture (IV 1.3.) are analysed and reliability of census data is critically assessed (see IV 1.3.1). Within Sindhupalchok district (for site selection see I 3.1) Western Sindhupalchok (see Figure 23) has been chosen for a detail study of one economic region (second tier; see IV 2.), ecologically covering the Middle Mountains in its southern part and the High Mountains in the north. As ecological conditions, and thus the physical availability of resources, are assumed to be an important factor for access to resources, one case study has been conducted in the Middle Mountains (Melamchi VDC[4], 3.1), where population densities are high and both agricultural land and forests are under an extremely high pressure, and the second one in the High Mountains (Kiul VDC, 3.2) where population densities and pressure on natural resources are much lower.

For the economic region Western Sindhupalchok data were collected for the major economic features. As in predominantly rural and agrarian societies the most important productive asset is agricultural land, a more detailed distinction into types of land as well as potential and actual production is applied. In Nepal there traditionally is the distinction between (irrigated) khet-land at mainly lower altitudes and (unirrigated) bari-land at all altitudes. Yet recent developments in agriculture have led to a further distinction between double-copped khet-land (wheat and paddy) and khet-land where a third harvest (wheat, early paddy and paddy) has become possible due to the introduction of short-breading varieties, improved irrigation facilities, and chemical fertilisers. This is an economically decisive distinction (see IV. 2.2.2) which is often neglected in analyses. Moreover, ownership patterns and arrangements for tenancy are analysed. Economic returns from agricultural production are compared to taxation rates on the different types of land (ibid.).

A second important component of rural economy are commodity and labour markets (IV 2.3), as well as capital markets and terms of trade need to be analysed. Products marketed are mainly agricultural and livestock products, such as grains (paddy, millet, maize and wheat) and milk. Mechanisms for marketing are complex, especially for the grain market, and need a detail investigation as not only grain surplus households but also grain deficit ones market some of their production and, at the same time, are also net buyers of food. Grain-marketing supplies both the local and the national market. Whereas the former traditionally existed, and sometimes still does so today, as barter economy it has gradually been transformed by the national market, where there is a long-standing tradition of marketing grain to the (increasingly) grain deficit Kathmandu Valley. Despite its historical depth this marketing has recently changed

[4] VDC: Village Development Committee, the smallest administrative unit, formerly panchayat with a population of about 2 - 5,000 persons and an area of about 10-50 sqkm

highly subsidised loans bearing interest rates of about 5% per year, yet difficult to gain access to.

This regional economic analysis on the meso-level (second tier) is then complemented by a micro-level analysis on the household level (third tier), which needs to incorporate all aspects relevant to household economy. To what extent do particular households participate in this overall spectrum of economic possibilities ? What is the relative position of the household in respect to others, how "marginal" (see III 2.2) is the household ? How secure or "vulnerable" (see III 2.3) are households in respect to being able to maintain their position ? And finally what are the determinants for this economic position, and what corrolations are there between economic conditions and membership in forest user groups ?

A comprehensive framework for such types of analyses is given by Swift (1989) in his article on "Why Rural People are Vulnerable to Famine". There he distinguishes primary factors (drought, animal/plant diseases, civil war &c) from proximate/ intermediary factors which "offer a way of classifying and understanding how vulnerability is created and maintained, and possibly how it can be reduced" (ibid.: 8). The latter factors he disaggregates into production, consumption, exchange and asset processes (see Figure 2b). His framework refines the so-called "entitlement"-approach of the Indian economist Sen (see III 2.1) who from 1976 onwards proclaimed that consumption deficits are not necessarily merely a result of production deficits but that declines in terms of trade may decisively contribute to hunger (see Figure 2a). Thus he pointed out the importance of analysing exchange regulations (or in Sen's terms "exchange entitlements") of both labour and commodities in relation to staple food.

Swift shows the need to modify Sen's model and introduces the concept of assets (Figure 2b) which he defines as "a wide range of tangible and intangible stores of value or claims to assistance (which can be mobilised in a crisis) [..] and which are created when production leads to a surplus beyond immediate consumption requirements [..]" (ibid.: 11). He then further disaggregates assets into investments (as productive and collective assets and human investment), stores (monetary, food, gold &c), and claims (on local, national and international communities) but also admits the arbitrarity of these distinctions (ibid.). Yet his framework is a highly elaborated and well-balanced tool of analysis for case studies and can be applied to much wider fields than to vulnerability issues.

products and high-cost food (spices, meat, beaten rice consumed during festivals). Knowing these three factors (production, exchange and consumption) it can be determined to what extent households can meet their consumption needs from their production/ exchange and whether there occur surplus or deficits.

In cases of surplus accumulation investment strategies are investigated, as investments into agricultural and livestock production (low- and high-cost types of chemical fertilisers; animal feed), increased consumption (high-cost food), or creation of productive assets (buying of livestock, rent-out houses, and/or land). These strategies usually vary according to the households' capacities to accumulate surplus and are more complex the higher these surplus are. Whereas low-surplus households mainly invest into agricultural and livestock production, high surplus households also buy high-cost types of chemical fertilisers and possibly also invest into productive assets as land. Whereas traditionally agricultural land was bought locally today capital transfer to Kathmandu is of increasing importance where land is usually bought in the outskirts of the city. Traditionally, and still today, of great importance is the investment in form of money-lending. There, extremely high returns can be achieved especially when loans are given to people with low bargaining powers and when interest rates are asked for in grain. Other ways of investing surplus is the creation of stores, as the acquisition of gold &c or investments into human resources in form of (high-quality) consumption, education or health

In cases of deficit, household coping strategies and mobilisation of new production/ exchange possibilities are analysed. Additional labour opportunities might be sought either locally or by migration, "surplus" labour power might be mobilised, for instance by incorporating children into the production process, i.e. child labour. Consumption deficits can on a short-term basis also be coped with by mobilising additional monetary sources on the basis of debts. Yet this usually has negative implications on household command over (food) production, as this later on requires the payment of interest rates, whether in cash or in kind. In extreme cases the disposing of productive assets (such as livestock or even land) might be a result of a structural, long-term deficient disposition.

Based on this analytical framework households are grouped into four categories:

(1) those who are in a position to accumulate high surplus for investment

(2) those who accumulate surplus but usually directly re-invest into production

(3) those who can live from subsistence with debts equalling surplus

(4) those who are not in a position to meet their daily needs and need to rely on debts even for consumption purposes.

Access to land was found to be the most important asset in rural economies, based on and therefore closely linked to the political economy of the traditional land grant system and taxation (see III 3.1.2 and 3.2.1), which itself is closely based on the caste system. Thus households from several castes or ethnic groups with similar access to resources have been aggregated and subsumed in case studies (see IV 3.1.4 and 3.2.4). The aggregation of the socio-economic data and the resulting position the different groups have in this four-tier classification is then correlated to the fact whether these castes or ethnic groups today have access to forests by being registered as a forest user group, based on the new legal framework of handing over forests to user groups who then are legally permitted to utilise the forest.

If the stated aim of the new forest policy, i.e. to secure basic needs for forest products, is meant to be translated into practice then those castes or ethnic groups who are not in a position to meet their daily needs and need to rely on debts even for consumption purposes (4) should preferably become members in forest user groups in order to secure at least their basic needs for forest products. On the other hand, if it proves to be a pattern that it is not the case that those groups are included in forest user groups then the new forest policy has failed its stated aim. Thus this study takes up Chamber's call for "an awareness of who gains and who loses", as a" precondition for realistic interventions to benefit the poor" (ibid. 1983: 185).

Within Sindhupalchok the selection for the Western part arose as this is the area with the least forest cover (see IV 1.2; Figure 15) with both availability and access/ entitlement (for terminology see III 2.1) to forest products being presumably a critical issue. It is at the same time the agriculturally most productive region with high population densities and a resulting high pressure on both agricultural and forest land, combined with a highly uneven distribution of resources. *A posteriori* the site turned out to be an extremely dynamic development area with its latest function as a possible source for the water supply of Greater Kathmandu (IBRD/UNDP 1992).

The initial idea of comparing several different areas across the district with either a different resource basis (as Hobley 1990) or level of accessibility (as Malla 1992, following Allen 1985) was given up as it proved a difficult task to develop an understanding for and establish rapport within one area, let alone splitting up the time for field work into two or more areas. Instead, two VDCs in two different ecological regions have been chosen, but located within the same economic region (having Melamchi bazar as their main market). In the Middle Mountain region the densely populated Melamchi VDC has been selected, where "forests" only exist in remnant patches and thus pressure on these resources is high and in the High Mountain region Kiul VDC in the upper Melamchi Khola, where forests still account for about 50% of the total area, and where population densities are much lower, thus leading to a much lower pressure on resources, especially at higher altitudes (for location of the two VDCs see Figure 23, p. 127).

3.2 Secondary Information on Sindhupalchok District

Maps of the area exist in form of various topographical maps (Schneider Langtang-Helambu, 1 : 100,000; Indian Survey One-Inch-One Mile, Nepal 72 E9, 1 : 63,360), and the generalistic land utilisation map by the Land Resource Mapping Project (LRMP 1986; 1 : 50,000). Maps on a VDC-scale are available at the Topographical Survey Section but turned out to be quite difficult to obtain and besides not being very precise they do not include further sub-divisions as ward boundaries. Additional information on infrastructure is provided by the Central Service Map (1 : 250,000) available for most districts by HMG/Ministry of Works and Transport, Department of Road & Construction, Suspension Bridge Division.

Aerial photographs taken in 1978/79 (1 : 50,000) and 1989 (1 : 15,000) are also available at the Topographical Survey Branch and have been enlarged to 1 : 20,000 and 1 : 5,000 respectively and have provided extremely helpful and detailed information on land utilisation but difficult to compare due to differences in scale. The latest set of aerial photographs taken by FINNIDA in 1992 have unfortunately not yet been accessible due to administrative restrictions. LANDSAT remote sensing images are available for several years at ICIMOD and UNDP, but were not taken for analysis as access to forests, rather than their physical availability, was the focus of the study.

3.3 Collection of Primary Data

The focus of the present study is the implementation of the recent forest policy, introducing the formation and registration of user groups in order to provide legal access to forests for the local population. Yet in contradistinction to other studies on this topic it is not aimed at evaluating registered user groups (trapped in Chamber's "user and adopter bias", ibid. 1983: 19) but instead the focus is to analyse who becomes a members in user groups and the impact this formation has on groups and individuals who have not been included as members, especially those who are socially and economically disadvantaged. Thus in both VDCs only one case study was conducted on members of a user group whereas the number of case studies on non-members was purposely kept higher in order to analyse whether socially disadvantaged groups have been preferably included or not. As ethnicity was found to be an important variable determining access to land, the main productive asset in rural economies (see I 2., above), and thus a major determinant factor for economic positions, most case studies are based on ethnically/ caste homogenous groups.

In Melamchi VDC the case study on members of a user group was conducted among Sapkota-Chhetris of Tar, who along with Chalise-Brahmins and some others have registered Phate Ban forest (see map 1). Two socially disadvantaged groups who live in close proximity to this forest are a group of occupationals, Sarki (cobblers) and a group of Danuwar, an ethnic minority. In addition to these two groups one influential group of Brahmins was analysed, as they are an important component of the local economy. As a last case study the restaurant and tea shop keepers of the bazar are analysed, the only ethnically heterogeneous group, which exhibits an extraordinarily high demand for firewood, bringing about the situation that firewood is sold as a "cash crop". From Kiul VDC only two case study are presented, one of Bhandari-Brahmins who along with Chhetris and Tamang are registered members of the forest user group of "Jyamire Ambutar" Ban (see photo 1), and one case study of Kami (blacksmiths) and Sunar (goldsmiths) from the close-by settlement Chitre.

Besides these seven case studies presented, five others were intended and partly conducted. The two that failed early were on Tamang, the ethnic group traditionally living in this area, where studies were undertaken in Melamchi-Dadua and Katunche. But willingness to give information was extremely low and incongruencies of data were so high that it seemed to lack the basis for calling them "findings". The same applied to case studies undertaken in Dhodeni and Bhirkharka, Kiul VDC. The latter, conducted by an assistant during my absence in order to find out to what extent my presence was a possible source of mistrust, proved that information was given reluctantly irrespective of my absence. Unwillingness to give information was also high among Yolmo-Sherpa in Chitre and Shermatang (Kiul VDC), where a (secrete) meeting was held in order to decide how to answer my questions.

Tumbahangphe (Limbhu), when he carried out the studies within Tamang communities. Besides, acquiring an increasing fluency in Nepali opened up communication to the villagers and certainly was a most important and invaluable contribution to field work.

While conducting interviews one constraint was the need to quantify information which at least initially seemed rather diametrically opposed to the Nepalese mentality of keeping things rather vague. Information on locations tend to take the form of "further up/down" (mati/tala), information concerning time is often given as "sometime in the past (asti/astine) or future" (bholiparsi), and when it comes to questions of production the standard answer is often given in form of the litodical "not a lot" (dheri aundaina). It takes a long time to establish rapport but also to develop a sense for formulating appropriate questions. This was also pointed out by Chambers (1983: 56) analysing the findings of Campbell, Shrestha and Stone (1979) on knowledge about family planning in Nepal, concluding that the ignorance of rural people is often created by the ignorance of outsiders. Asking people for sizes of land holdings in hectare would simply not mean anything to them, and even asking for the local measure of ropani (507 sqm) especially women often do not know. Yet there are always ways to find out (asking how many seedlings it takes, how many days it takes one pair of oxen to plough and finding these opens up an enormously exact and detailed body of knowledge of both the own household and the village as a whole. Finding these questions has been a continuous process in which my assistants have played an enormously important role.

The need to write or tape the data was another critical issue. Campbell & Bhattarai (1984:8) point out that in predominantly oral cultures the status of noting down data has until recently been reserved for legal documents and that there is a need to deal carefully with this (ironically most of their photos show their staff with papers and pencils). This is certainly especially true for questionnaire surveys, most critically attacked by Chambers (1983) who strongly opposes to this "urban-based industry of rural social surveys" producing "a partial, cloudy and deteriorated view of the rural world [and] facts, unchallenged, to two places of decimals" (ibid.: 51-55). A similar concern has already been raised by Chen & Murrey (1976) who see these surveys as a "careful collection, tabulation, and analysis of wild guesses, half-truths, and outright lies, meticulously recorded by gullible outsiders during interviews with suspicious, intimidated, but outwardly compliant villagers" (quoted in Campbell &Stone 1985: 27). In order to avoid such a situation, household surveys were done by conducting semi-structured interviews and information was noted down into local schoolbooks (kapi) familiar to all.

Information was also collected in order to gain an overall picture of the regional economy. For this purpose shop keepers (25), mill owners (4), Bank staff (3), and teachers (8) have been interviewed in Melamchi Bazar and in the upper Melamchi

3.4 Accuracy and Processing of Data

The great amount of quantitative data gives rise to the question of reliability and validity. Having in mind Panse's Law about land holdings (1958 quoted in Chambers 1983: 57) that the average size of land holding in a village increases with the length of residence of the investigator I tried to stay in the villages as often and as long as possible. I would now add to Panse that the willingness to give information on land holding is inversely correlated to its size. This is especially true for Brahmins and Yolmo-(Sherpa). As a means of cross-checking some researchers take refuge to interviewing husbands and wives simultaneously and separate from each other which I reject as it might create an enormous suspicion to both of them and could give rise to tension within the household later on. Interviewing brothers who often live next to each other seems to be a far better solution and can even provide further details. Inaccuracy can not be ruled out completely but has hopefully been minimised due to increasing rapport and continual visits.

Statistical analysis was done by using dbase. In the text this complex information is mainly given in (Harvard) graphics for better readability whereas print-outs of the detailed figures are given in the appendix. Information on land use on a VDC-level was available as a data set from ICIMOD/MENRIS but their demographic data had to be corrected and new calculations on population densities had to be made for 1981. GIS (ArcInfo) was used for producing thematic maps of Sindhupalchok (see Figures 15-17 and 20), with the help of P.K. Kotta from ICIMOD/MENRIS.

Shifting the focus to this "very particular species" (Enzensberger 1973: 1), i.e. mankind, was to give rise to splitting up the discipline into various sub-categories - which to some extent is contrary to its semantics. Yet this has opened the floor that concerns for nature and environment prevalent during the 1960s and 70s were merged with ideas of political economy and gave rise to various debates generally subsumed under the term "political ecology". In the course of these debates ecology has thus increasingly become a hybrid discipline in which categories and methods of natural and social sciences need to be applied along with each other (ibid.), but also which brings together "differing epistemologies [..] which have to be negotiated in the practice of political ecology", an argument raised by Blaikie in his recent publication on political ecology (1995: 2).

1.1 Political Ecology - Early Approaches

Debates on ecology, as held during the 1960s and 70s, were characterised by a duality of scale. On the one hand, local level "ecological movements" mushroomed in most industrialised countries. On the other hand, global models were en vogue sketching apocalyptic scenarios about the doomy future of "spaceship earth", inevitably to come due to population increases and environmental degradation. At both, global and local-level, the terms "environment" and "ecology" were often used interchangeably and had the common feature of being used mainly connotating crisis or even collapse. Thus the emergence of specific neologisms, such as "eco-crisis", was not surprising for this period.

At the local level small groups of "concerned and responsible citizens" united by the aim to fight against specific issues were commonplace in most western countries. Their agitation was characterised by immediate targets, issues as nuclear power plants, highways, or oil pipelines which were to be constructed in their near surroundings. These groups mainly comprised of members of the middle-class fighting against a deterioration of their immediate environment.

On a global level, scenarios for a coming apocalypse became popular. According to the US-American "doomsters", the (near) future was to witness the dying out of the human species, whereas more moderate versions, as forwarded by the Swedish ecologist Ehrensvärd (1971), only saw social structures based on industrialisation come to an end (quoted in Enzensberger 1973: 5). One of the most notorious scenarios was provided by the Massachusetts Institute of Technology to the "Club of Rome" entitled "Limits to Growths" (Meadows & al. 1972), where the authors sketch two possible alternatives for the future of the world, either „a rather sudden and uncontrollable decline in both population and industrial capacity [..] within the next one hundred years [..] if the present growth trends in world population, industrialisation, pollution, food production, and resource depletion continue unchanged" or „to establish a condition of ecological and economic stability that is sustainable far into

Yet during this period it was predominantly - if not exclusively - members of the middle class who engaged in this field. This leads Enzensberger to conclude that the social neutrality to which the ecological debate lays claim, is a fiction (ibid.: 378). He underlines this by the fact that environmental deterioration had been a common feature during the British industrial revolution, but at that time mainly affected the working class whereas today the middle class is also involved.

> "What fulfils their prophets with terror is not so much the ecological decline which has been present since time immemorial, as its universalisation" (ibid.).

As stated above, the debates on environment and ecology were closely interrelated. During the 1970s many publications linked political economic and environmental issues, but the term "political ecology" was generally only adopted hesitantly. In 1971 a Paris-conference was called "Approaches to a political economy of environment". A paper presented by Sachs (ibid. 1972) demonstrates the interlinkages: both ecology and environment are seen as "all-inclusive, the most precious part of the concept" (ibid.: 132).

Analysing the contemporary ideological trends prevalent in the environmental debate Sachs distinguishes six main streams: 1) the "diversionists" (see above); 2) people from big business who see possible new markets opening due to anti-pollution or similar programmes measured in trillions of dollars and human survival; 3) neo-Malthusians who readily take up environmental degradation as a threat similar to and a consequence of the world's over-population which needs to be controlled, even by putting people in underdeveloped countries to starve to death (as suggested by Paddock 1967) - a debate, where environmental concerns serve as "new packings" for old ideas; 4) institutionalists who criticise the inadequacy of individualistic approaches and call for agencies and legislation (ibid.: 127-29).

The last two groups are the two most controversial: 5) the radicals who claim the debate on environment to be a game of the rich which the workers and poor cannot afford, i.e. a non-issue for latter; and 6) the radicals who claim environmental issues to be of main importance to the poor as they are most severely hit. Sachs, agreeing himself with the latter point of view, goes on to argue about the main task of political economy:

> "political economy should try to identify the winners and losers of the environmental game in different historical contexts and under different socio-political systems. The actors are easily to identify [..] but the game is a very complex one and the interests involved are not always transparent" (ibid.: 135).

a shortcoming that renders the misleading title "ownership" out of place. Besides, laws of inheritance may form one of many issues of political ecology whereas its isolation does not explain its relation to ecology or politics, let alone to "political ecology". Wolf neither defines nor conceptualises the term but simply leaves it vague, a major limitation prevalent in most publications of the 1970s, although the term was increasingly used towards the end of the decade.

In 1979 Cockburn & Ridgeway edited a volume on "Political Ecology", subtitled "An Activists' Reader on Energy, Land, Food, Technology, Health, and the Economics and Politics of Social Change". Yet their collection of essays is a medley of issues with little or more connection to the topic they are supposed to refer to. The authors introduce the collection by a quotation from the German writer B. Brecht who, when asked about his ideas on the future of drama replied that he wanted to have relations of production discussed, firstly. The authors agree with this, as they call it, "stalwart emphasis on the basics" (ibid.:3), replicated by many of the left "who see in all essays on the theme of ecology a dangerous diversion from the fundamental conflict between labour and capital" (ibid.).

Though implicitly demanding a political economic perspective of (political) ecology the authors do little to state their ideas more precisely. Although criticising the hapharzardous use of the term ecology which has "thus become more a signpost than a definition" (ibid.), they do not progress to give a new definition. Choosing the title "political ecology" to them is "an effort to distinguish its possible radical vitality both now and in the future" (ibid.). A second attempt at defining political ecology is also of little precision: "In the last year or so "political ecology" has become a useful way of describing the intentions of radical movements in the United States [..] and other advanced industrial countries" (ibid.).

The authors' clear confession about the need of a political economic perspective of ecology is reconfirmed in their conclusive chapter entitled "Horizons of Political Ecology" where they state:

> "the reorganisation of the nature of the work-force is a central problem of our times. A political ecology that does not regard as central the fact of structural unemployment must be rightly perceived as marginal or frivolous: a political ecology that does not integrate such central economic issues into its analysis and programs has failed before it begins - a victim of the same tunnel vision that has been the crippling limitation of middle-class reform movements of the last decades" (ibid.: 395).

By linking up the debate on ecology to "Third World" countries the debate has reached a new dimension. Prior to this shift in focus the terms ecology and environment had been used almost synonymously. Yet, despite its proclaimed neutrality, the debate was mainly held by members of the middle class and in this respect it is of primary importance which role environment plays for them. Being predominantly employees in the service sector of the economy the majority of the people engaged in this debate did not rely on the natural environment as either productive factor or base for manufacturing processes. They presented the environment, and what is more important, could afford to present it, as a space with no immediate significance for their livelihoods, a space of primarily more or less recreational value and without any direct dependency.

But changing focus to developing countries, environment can no longer be seen in this ethical aesthetical context but has shifted to a much more "down-to-earth" utilitarian sense by being a "principal natural asset" (Leach & Mearns 1992: 7) utilised by the majority of the population in order to secure their subsistence needs. This is especially true for a country like Nepal, where 93% of the labour force is engaged in agriculture (UNDP 1994: 164). By being a "resource-in-use" ("landesque capital" Blaikie & Brookfield 1987: 9), environment has moved into the focus of more immediate economic and social concerns (ibid.: 242), or even "an environmental foundation of the people's livelihood" (Bryant 1993: 21; see below). At the same time causes of environmental degradation and over-utilisation are likely to be more complex and thus need a much more careful investigation. Being a part of, or possibly the major part of, basic economic activities, the need to change utilisation patterns in order to stop or reverse degradation, i.e. the "stitch in time", may be more complex and difficult, if not impossible, to be successfully done.

In this context Blaikie & Brookfield criticise the short-sightedness of simply considering the respective local populations as those responsible and thus to be blamed for environmental degradation. The role of macro-economic conditions, such as the "web of surplus extraction" (ibid.: 241) and the role of state interventions, possibly favouring some groups to the disadvantage of others, thus gains new importance. These considerations were taken up into Blaikie & Brookfield's definition of political ecology:

> "The phrase "political ecology" combines the concerns of ecology and a broadly defined political economy. Together this encompasses the constantly shifting dialectic between society and land-based resources, and also within classes and groups within society itself. We also derive from political economy a concern with the role of the state. The state commonly tends to lend its power to dominant groups and classes, and thus may reinforce the tendency for accumulation by these dominant groups and marginalization of the losers [..]" (Blaikie/Brookfield 1987: 17)

knowledge systems and environmental associations and organisation with their origins, developments, and trajectories are of interest (ibid.).

Three further possible approaches to refine the concept of political ecology concentrate on the ecological side. One focuses on constructing and deconstructing sustainable development and the need to identify possibly contrasting ideologies. A second aspect is the need for an analysis of environmental history in order to provide a much-needed historical depth for the study of long-term environmental changes. And lastly, Peet & Watts raise the question, whether and to what extent "political ecology is harnessed to somewhat outdated notions of environmental science" (ibid.: 241/42), rooted in stability, resilience, and systems theory, not incorporating a shift from system models to the "ecology of chaos - chaotic fluctuations, disequilibria, and instability" (ibid.).

1.4 Political Ecology - An Emerging Research Agenda ?

A similar contribution to possible fields of research in political ecology has already been given by Bryant (1992) in his essay "Political Ecology. An emerging research agenda in Third World studies" There, he affirms its potential and re-vitalised the approach by undertaking what he calls an "analytical clarification". To him "Third World political ecology represents an attempt to develop an integrated understanding of how environmental and political forces interact to mediate social and environmental changes" (ibid.: 12), a form of integrated understanding long overdue in a world where environmental problems assume growing political significance (ibid.). The shift of focus from environmental degradation to a broader and more neutral terminology of "environmental change" is characteristic for the 1990s (see Peet/Watts 1993) and is also present in two slightly modified definitions given later on in the article.

> "[..] political ecology may be defined as the attempt to understand the political sources, conditions and ramification of environmental change" (ibid.: 13);
>
> "Third World political ecology is understood as inclusive, premised on the view that it must be sensitive to the interplay of diverse socio-political forces, and the relationship of these forces to environmental change" (ibid.: 14).

In his framework for understanding Bryant disaggregates "the complexities of political and environmental interaction" (ibid.:14) into three critical areas of inquiry: 1) contextual sources of environmental change, 2) location-specific conflict over access, and 3) political ramifications of environmental change. As "contextual sources" Bryant mentions state policies, interstate relations, and global capitalism, issues that are indeed most crucial areas for research, and especially state policies are an important

2. Forest Policies and Legislation in Nepal - a History of Origin

Political ecology has made a significant contribution to the conceptualisation of environmental issues in terms of social and political contexts. Whereas early approaches focused on social aspects of land degradation recent approaches have pointed out the need of incorporating politics in order to fully account for the term "political ecology" (Bryant 1992; Peet & Watts 1993). Thus Bryant calls for an analysis of state policies as a contribution to the research agenda for political ecology, incorporating their origin, content, implementation and impact (see II 1, above). Analysing forest policies and legislation of Nepal takes up this "research avenue". A history of origin and content of these forest policies and laws will be given in this chapter, whereas the implementation and impact of the recent forest law will be discussed in the case studies (IV 3).

Accounts of the history of forest legislation are popular (Bajracharya 1983; Mahat &al. 1986; ARD/USAID 1990; Joshi 1991b; Gilmour & Fisher 1991; Bajracharya & Amatya 1993, Gautam 1993; Loughhead 1994; Talbott & Khadka 1994) and adding one to this list seems an enterprise similar to the reinvention of the wheel. Yet most accounts only give brief summaries and interesting details have often been neglected. Besides, most foreign scholars rely on official translations of the laws which are ahistorical in terms of presenting the original law along with its amendments in one text, rendering it impossible to precisely distinguish the date of the respective chapter, a concern raised by Loughhead (1994). Analyses of forest policies and legislation usually start in the mid/end 1950s when all forests were nationalised and usually give only a rough overview for the period prior to this Act (Bajracharya 1983; Jackson 1990; Joshi 1991a). Yet recent studies have also included aspects of old forest laws (Bajracharya & Amatya 1993; Gautam 1993).

The history of forest policies and legislation is grouped into four phases by Joshi (1991b), i.e.

(1) prior to 1928 when forests were converted into agricultural land and timber was not important;
(2) 1929-1960 when timber was exported and the forests were nationalised;
(3) 1961-1977 when export of timber continued and protection-oriented laws were enacted; and
(4) 1978 onwards community forestry policy which empowered users to manage resources to meet their needs (ibid.: 104).

In this chapter this is slightly modified, whereas the first two phases are subsumed and analysed in less detail, the last, i.e. present phase, is further subdivided into its three main phases National Forest Plan and Community Forest Rules (2.3), Master Plan (2.4), and The Forest Act (2.5), due to the relevance for the present legislation.

Collier roughly classifies the Nepalese forests into three main altitudinal zones, the tropical zone in the Terai, the temperate zone at altitudes of 4,000 to 10,000 feet (1,300-3,300 m) and the alpine zone above 10,000 feet. While he estimates the tropical zone to be commercially a zone of real importance he estimates the temperate zone to be of commercially and economically comparatively little importance and the alpine zone to be of little importance (ibid.: 252). From this point of view it is not surprising that Collier agrees upon contemporary government policy with its four main issues (ibid.: 252/53):

i) to replace forests by cultivation wherever conditions for cultivation and human habitation are favourable;
ii) prohibit the removal of forests where the climate is too unhealthy, and where crops can only be grown with the risk of loss of life or vigour of the cultivators;
iii) to insist on large extensive clearings, so that the depredations of wild animals are reduced and the climate improved;
iv) to realise in full the value of the forests cut and replaced by crops.

If implemented correctly these policies, as estimated by Collier, were "to effect an increase in area of crops which was to render the country more self-sufficient from its own food supplies and to lessen or completely stop the contemporary drain of the country's manhood to India" (ibid.). As a concluding remark he states that this policy of land clearance should be pursued for many years before there "need be the slightest grounds for fearing that sufficient forests will not remain" (ibid.: 253). According to his estimation cultivation would never occupy more than one-third of the total area in the temperate zone because "the remainder being too steep and rocky to admit the growth of crops" (ibid.). But he also mentions that within the Kathmandu Valley "a condition has been reached in which it would be wise to call a halt to the increase of cultivation [..] for there are now signs of an insufficiency of forests and the fuel which they supply" (ibid.). Yet his overall conclusion is optimistic, "But elsewhere the day on which the restriction on cultivation need become a question for consideration is still far off" (ibid).

Having witnessed decades of growing concern about deforestation and environmental degradation in Nepal, Collier's perception today seems rather short-sighted and not to be grounded on scientific knowledge. Yet retrospective glances often tend to ignore historical contexts. Today's total population of almost 20 million people compares with only about 6.2 million in 1954 (Robbe 1954:1) and there were likely less than four million in the late 1920s. Population densities in 1954 were about 34 persons/sqkm in the hills and 277 persons/sqkm in the Kathmandu Valley[1]. The idea that the dimensions of pressure on resources then prevalent in the Kathmandu Valley (i.e. more than eight-fold) would at some stage exist elsewhere in the hills was far beyond imagination at that time.

[1] calculated from Robbe (1954:1); he states densities of 98 persons per square mile for the hills and 800 persons in the Kathmandu Valley; the conversion factor is 2.89 sqkm per square mile.

In his report's first chapter about "General factors affecting the achievements of the mission's aim" (pp. 7-11) there is a subchapter on types of forests where he writes about the condition of forests in different localities:

> "The Terai forests are practically all ruined and can no longer contribute to the country's economy. The Bharbar forests are the most important economically and are the country's main productive forest resource. The Mahabharat forests are dwindling and throughout these the problem of soil conservation demands urgent solution. The Himalayan forests are rich in timber but unworkable at present" (ibid.: 11).

He then concludes that two important problems require immediate attention, namely in the Mahabharat, the problem of reforestation as part of the more general problem of soil conservation and reconditioning and land use; and secondly in the Bharbar and the Churia, the problem of developing existing stands by proper management and logging practices, and the establishment of wood-use industries (ibid.).

Whereas the first chapters of Robbe's report are limited to a mere description of conditions the third chapter "Current problems of soil conservation, restoration and land use" goes one step further. There Robbe disaggregates factors influencing erosion into 1) fire, 2) grazing, 3) use of leaves as animal feed, 4) deforestation, and 5) shifting cultivation. In the introduction to this chapter he voices concerns about the "vital importance" the solution of these problems has for Nepal and that "the stability and the very life of the country will be threatened" if the present situation is not soon improved (ibid.: 13). On the other hand his attempted analysis readily takes refuge in the "scapegoat-farmer-myth". The final causes of erosion and degradation are traced back to human influences, and above all to misutilisation of resources by the local peasantry who lack scientific knowledge about how to properly manage forests.

> "Throughout the Mahabharat, man has deprived the soil of its protective cover in the satisfaction of his basic food needs and created precarious and increasingly difficult living conditions for himself. Lacking knowledge and assistance he has not been able to increase cropland yields so as to maintain the minimum ground cover necessary for soil protection" (ibid.: 13/14); "The people utilise the forest as they please, that is to say, they misuse it. Deforestation is the rule, particularly in heavily populated areas where more cropland, grazing land, lumber and fuelwood are needed" (ibid.: 22).

Robbe's visual angle is clearly the one of a technical supervisor whose task it was to reforest deforested areas and who perceived the main obstacle to fulfil his task to be the local population who keep intruding into "his" forests. For fulfilling his task he drew

2.2 Early Forest Laws: Nationalisation Act (1957), Forest Act (1961) and Forest Protection (Special Arrangement) Act (1967)

As stated above there was no separate forest administration in Nepal until the 1940s when Smythies, a British forest advisor, introduced a structure similar to the one existing in contemporary (British) India. Neither had there been a separate forest legislation in Nepal. Besides being dealt with in the comprehensive Legal Code (Muluki Ain) forest legislation was generally a matter of local rather than of national affairs. This was criticised by all foreign forest advisors, especially by Robbe (1954: 12).

The first step towards introducing a separate forest legislation was the Private Forest Nationalisation Act passed in 1957 (HMG/ML&J 1957) which stated that henceforth "ownership of all forests in the whole kingdom of Nepal shall accrue to HMG" (ibid.: § 3.1; translated in Regmi NMS 16/78: 1). Prior to this Act forest areas were increasingly handed over to individuals under birta landgrants (see III 3.2.2). The new Act proclaimed that "all laws, regulations and orders, and documents providing for the sole rights of any individual in such forests shall be inoperative" (ibid.: § 3.2). Private forests were defined as "all forests in land wholly or partly tax exempt (§ 2.1), excluding stray trees on cultivated land and orchards within residential compounds (§ 2.1a) and trees planted and maintained by the respective person, if not exceeding 25 ropani (1.25 ha) (§ 2.1b).

The Act has to be seen within its political context, when after the fall of the feudal Rana-regime (1950) a short-term democratic government was in office, rigorously aiming at putting an end to any type of feudal land tenure. This rigour is best documented by denying any claims for compensation for the confiscated forests (§ 5), a condition which was not applied when finally all birta holdings were abolished in 1959 (see III 3.1.2).

Whatever the intention of this Act was, it has remained one of the most controversial acts regarding forestry ever passed. Early studies have attributed the following massive deforestation to the fact that people were alienated from their forests, stating that the act has been perceived as and mistaken for a government annexation of all forests:

> "Regrettably, the Act was misunderstood by the people to mean that the State was taking away their right of free access and use. As a result, foresters and rangers have been considered as "policemen" and considerable antagonism towards the Forest Department still exists" (FAO/World Bank 1978: 5).

Act listed eight types of offences (ibid.: § 27/1), as well as the respective criminal law (§ 27/2) (see Table 1). Grave offences as deforestation or arson were liable to both fines and imprisonment of up to 6 months and one year, respectively.

Table 1 Offences Relating to State Forests (Forest Act 1961)

§	prohibited actions	fines
1a	fresh deforestation for ploughing or cultivation, or some other purpose	<500 Rs and/or max. 6 months
1b	setting fire, or leaving or carrying fire in the forest in such a manner that fire may spread	25 Rs or acc. to damage if deliberate: 1 year
1c	grazing cattle, or making them enter, or letting them loose	0.50 - 5 Rs
1d	carelessly causing any kind of damage when cutting, felling, dragging, or exporting trees	<10 Rs or acc. to damage
1e	cutting or clipping trees or plants, or cutting their branches, or stripping their bark or causing any kind of damage to them	acc. to damage if >100 Rs and/or 6 months
1f	taking out stones, manufacturing charcoal or lime or other products from them or collecting them	(see above)
1g	taking away forest products from state forests	(see above)
1h[6]	cutting of trees to which one has no right	(see above)

source: HMG/ML&J (1961, Chapter 4 § 27); translated in Regmi NMS (13/89: 12/13)

In order to exactly define offences against this Act, forest demarcation became essential. Prior to the Act demarcation had been virtually non-existent in areas outside the Kathmandu Valley or the Terai. Thus it is understandable that arrangements for demarcation of forest boundaries were an extensive part of the Act, accounting for about one third of the Act's volume. Jurisdiction was strictly protected, imposing the heaviest criminal law on offences related to destroying forest markers and signs, with fines upto 1,000 Rs or/and imprisonment up to two years.

Yet while strictly denying rights to forests to individuals the Act at the same time established space for forests to be handed over to communities. This is provided for in a paragraph entitled "Powers to separate state forests" (Chapter 3 § 25) where it is stated that HMG may separate for public use state forests or parts thereof in any prescribed area (ibid.; translated in Regmi: 11). Besides, the chapter "Delivering power of the state" (Chapter 5 § 29)[7] states that "any government forest or any part

[6] This offence was not given in the original law but added in the first amendment (1967; Nepal Rajpatra Vol. 27 # 25; Bhadra 22, 2034 B.S.)

2.3 National Forest Plan (1976) and Panchayat Forest Rules (1978)

The ideas of the Forest Act and the Forest Protection Special Arrangement Act were still prevalent in the 5th Development Plan (1975-80), where protection was declared to be the main aim, as stated in the introduction:

> "Along with the economic development the forest production also has been increased and the importance of the forests for keeping ecological balance; thus it has been necessary to fix the minimum areas of forests and also to permanently protect forests. Besides, the need has been felt to plant new forests for the protection" (HMG/NPC 1975: 255; translated by R.K. Magar).

Yet by the time the 6th Development Plan was published (HMG/NPC 1981), this policy line had been changed completely and instead public needs were taken into consideration and community participation was sought for. In this plan, three objectives of the forest subsector were stated (ibid.: 7D 65/66):

> (1) to meet indigenous needs: meeting the forest product requirements of the public at large has been designated a matter of supreme importance;
>
> (2) Conservation of natural resources: to undertake ways and means of stalling natural disasters such as soil erosion, flood and landslides, to protect fertility of soil [..];
>
> (3) derivation of economic benefits out of forest products: the third most important objective will be to derive economic benefits from timbers, which will be used to meet internal needs and will also be exported with as much processing as possible; medicinal plants will be exported in semi processed form wherever possible [..].

In order to meet these objectives, the plan states a 12-issue policy guideline with the first issue "to preserve, promote and develop forest and forest resources and enlist community involvement in this endeavour to the maximum extent possible" (ibid.).

These two extremely different statements from the 5th and 6th Development Plan are good documents in order to indicate the changes from protection-orientation to a policy of utilisation with community involvement, that took place during this five-year interim period (1975-1980) and mark the wake of community forestry. The first step was the National Forestry Plan published in 1976, incorporating a forestry development programme with four main aspects (FAO/World Bank 1978: 7)

1) forestry development for local use in the hills;
2) forestry development for local use in the Terai;
3) fuelwood production for Kathmandu and the Terai urban centres;
4) industrial plantations in the Terai for timber

Although these Rules are an important legislative modification they do not necessarily imply a shift from administrative-centred to people-centred forestry, as is often proclaimed. Control was handed over, or handed back, from an ineffective higher political-administrative level to a logistically more practicable local level authority, the Panchayat. Yet there was scope for further modification. The first and second amendment (1980 and 1988 respectively) took over the concept of a consumers' committee from the decentralisation policy (second amendment 1988), and introduced it into forest legislation.

> "After receiving a certificate, the concerned Village Panchayat shall form a consumer's committee [uphabukta samiti] according to the current law relating to decentralisation, and entrust it with the responsibility of operating the Panchayat forest". (HMG/ML&J 1988: § 19A/1, translated in Regmi 1988: 5)

2.4 The Master Plan for the Forestry Sector (MPFS)

The Laws and Rules described above only had a limited impact, if at all, in the aim to stop or reverse forest degradation. Despite of the extensive forest legislation conditions of forests were continually deteriorating in most parts of the country, as stated in the Master Plan (HMG/ ADB/FINNIDA 1988):

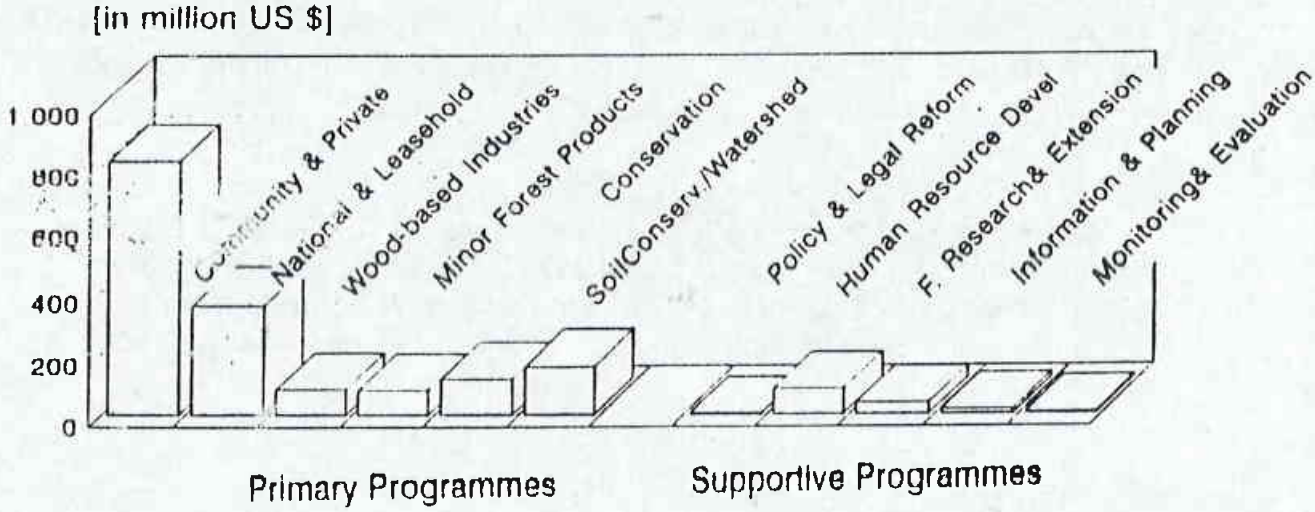
> "Nepal's forests are declining in both quantity and quality. Over the last two decades, more than half a million hectares have been lost. The remaining accessible forests have been degraded, so that they now consist mostly of mature and overmature stands, with poor prospects for regeneration" (ibid. 1988a: 1).

Thus it was recognised that there was an urgent need for a comprehensive guideline and new legislation for the forestry sector. In a donors' meeting in 1984 the idea of a master plan was brought up (ibid.: iii) and put into operation by establishing the Master Plan for the Forestry Sector Project (MPFSP), co-funded by HMG, the Asian Development Bank (ADB) and FINNIDA with a total volume of 1,742 million $ for a 21-year implementation phase (1989/90 - 2010/11). The project's 14-volume document (ibid. 1988) assesses the existing forest legislation, with its main aim of protection critically:

> "The forest resources of Nepal will be managed and utilized so as to give priority to the products that can best contribute to the basic needs of the people. The priority products are fuelwood for cooking, timber for housing, fodder for domestic animals, and medicinal herbs for health [..]. The principles of the decentralization policy will be applied in the forestry sector by community forestry, which will have priority among other forest management strategies. Priority will be given to poorer communities, or to the poorer people in a community" (ibid.: 10).

For an effective implementation of the new forest policy the Master Plan proposes a total of six primary and six supportive programmes (see Figure 4). The budget for the various programmes clearly reflects the priority given to the Community and Private Forestry component, where a total of 811.2 million US $[8] (46.6%) was allocated to (ibid. 1988d: 21). A programme second of importance was the National and Leasehold Forestry (352.4 million $; 20.3 %), whereas the remaining four programmes only had volumes of 80-116 million $. Among the supportive programmes the "Human Resources Development" received the highest financial provisions, amounting to 82.7 million $, whereas the other supportive programmes were budgeted with only 2 - 36.6 million $ (ibid.). A comparatively low budget of 5.5 million $ was allocated to the "Monitoring & Evaluation Programme", accounting for only 0.3 % of the total volume calculated for the implementation of the Master Plan.

Figure 4 Budget allocation to various programmes of the Forestry Master Plan (1989-2010)



source: HMG/MFSC/ADB/FINNIDA (1988;1989;1991)
graphic: Graner II/1994

[8] This was converted into 20,604.4 million Rs (HMG/ABD/FINNIDA 1988a: 267), i.e. at a conversion rate of 25.4 Rs per US $.

Yet this equation ignores an important phenomenon: while availability of products has mainly a physical dimension, access to a product has both a physical and social dimension and thus is governed by social behaviour, implying that

- access is not necessarily governed by need but by a variety of social and economic factors;
- if demand for products is higher than (sustainable) supply there may arise situations of conflict over access (see I 1, above), where different groups are likely to have different "capacities" in achieving their desired outcome .

While it is the stated aim of the recent forest policy and legislation to give access to forest products primarily to the poor this group might at the same time be the one with greatest difficulties in gaining access, due to low "capacities" (see I 1) and low "entitlements" (see Sen, III 2.1), Thus the assumption that especially lower income groups will benefit from the new approach, as stated in the impact assessment on the quality of life, may be a noble intention but extremely difficult to achieve.

2.5 The Forest Act 1993 - A User Group Approach

A main concern stated in the Master Plan is the legislative contradiction of public involvement in forest utilisation legalised by the Panchayat Forest and Panchayat Protected Forest Rules on the one hand, and the Forest Act (1961) and the Forest Protection Special Arrangement Act (1967) on which these Rules were based and which strictly criminalised public utilisation on the other hand. This contradiction was eliminated by promulgating the new Forest Act in January 1993 (HMG/MLJ&PA 1993; translated in: Regmi 1993), which repealed both Forest Act (1961) and Forest Protection Act (1967) (§ 74/1; ibid.: 27). Based on the objectives laid down in the Forest Master Plan the new Act stated in its preamble the commitment that forests are needed to secure basic needs :

> "[..] it is expedient to manage national forests [..], thereby ensuring the development and conservation of forests and the proper utilisation of forest products, and extend cooperation in the conservation and development of private forests, so as to meet basic needs of the general public, attain social and economic development, and promote a healthy environment" (ibid.: 1).

The Act clearly vests ownership of forests in HMG (§ 67; ibid.: 26) but provides for six types of forest utilisation of national forests, i.e. 1) government-managed forests; 2) protected forests; 3) community forests; 4) leasehold forests; 5) religious forests; and

development imperatives. Above all, they need to address factors underlying this environmental degradation.

A component that has increasingly often been addressed as a central issue in environmental degradation is poverty (Blaikie 1985; Blaikie & Brookfield 1987; WCED 1987: 3; Leach & Mearns 1992; World Bank 1992, see II 1). This recognition was taken up in the Master Plan for the Forestry Sector, stressing that the alleviation of poverty is not an option but an imperative, and pointing out the dangers in case of neglect (HMG/ABD/FINNIDA 1988c: 8/9; see II 2.4). The new forest policy acknowledges its own potential role in alleviating poverty by securing basic needs for forest products. This is to be achieved by forming user groups who then are legitimated in utilising forests.

While being a promising approach at first sight there are a number of impending dangers:

- there are no policy guidelines (let alone legislative provisions) as to how to secure the membership in user groups of poor sections of society;
- the registration of user groups and their members is to be done by district forest office staff, technical foresters with little or no training in social sciences;
- monitoring of the implementation of the Master Plan takes place on a user group level, i.e. impact of user groups on non-members is not a matter taken into consideration; besides, the Monitoring & Evaluation Unit that is to monitor the implementation of the Master Plan is budgeted with 5.5 million $, i.e. 0.3 % of the Master Plan's total budget, a provision totally insufficient in relation to the importance of the task involved.

On the other hand "political ecology" acknowledges the importance of these issues and calls for a detailed analysis of winners and losers of policies, i.e. a "sociology of access" (see 1.4). Above all, the centrality of poverty in a political-ecology perspective calls for a more detailed analysis of the issue. For this reason, some conceptual approaches to poverty are given in the next chapter (see III 2).

The World Bank's estimations are based on definitions in terms of income, i.e. people having incomes below the level required to support a minimum daily calorie intake. According to an estimation of the National Planning Commission (NPC) this minimum was assessed at about 100 $ per person and year. Yet the World Bank publication also gives higher minimum income definitions of 150 $ per person and year, which drastically raises the number of poor to about 13 million (i.e. 71% of the total population; ibid.: 8). These discrepancies in quantifications reveal some of the arbitrarity immanent in "poverty lines".

2. Conceptual Approaches to Poverty

Quantifications on a per-caput basis, as given in the previous chapter, were typical for the 1960s and 70s when analyses of poverty were perceived of as the domain of economists, and when statistical approximations as averages and means were commonplace. Although still in use today as helpful indicators for inter-state comparisons (for instance the UNDP World Development Report or Human Development Report) their validity and expressiveness in terms of "the poor" of the respective countries has increasingly been questioned.

The insufficiency to obtain minimum requirements of food is certainly one of the oldest conceptual approaches to poverty. Sen (1981) in his analysis of various approaches quotes Rowntree (1901) as an early representative of this line. Although voicing criticism on this "much maligned biological approach" Sen also claims that it "deserves substantial reformulation but not rejection" (Sen 1981: 22). Recent modifications to this approach include the shift from "traditional intake norms" (Drèze/Sen 1990: 8) in terms of purely calorie requirements towards a more nuanced view of nutritional requirements, including proteins, vitamins and minerals (Drèze/Sen 1990; Bohle/Watts: forthcoming). Some modifications go one step further and include considerations on health, in terms of physiological ability to convert food into nutrients, or even psychological well-being as a substantial aspect of being able to take up food (Kent 1992).

Yet these approaches all concentrate on individuals. They totally exclude aspects as who these individuals are, who are not in a position to secure themselves sufficient food, however defined. Above all, they do not consider any structural analysis why those individuals are "poor". Criticising these two short-comings Sen (1981) thus calls for more elaborate conceptual approaches to poverty:

> "A concept of poverty must include two distinct - but not unrelated - exercises, namely (1) a method of identifying a group of people as poor ("identification"); and (2) a method of aggregating the characteristics of the set of poor people into an over-all image of poverty ("aggregation")" (ibid.: 11).

In his most-recognised monograph "Poverty and Famines" (1981) Sen again shows the need to shift from thinking in terms of what exists to "who can command what" (1981: 8), in a later publication called "the acquirement problem" (1990: 34ff). The issue of "command" can be analysed in terms of entitlement relations which differ in different cultures and economies and depend on the legal, political, economic, and social characteristics of the society in question and the person's position in it (1981: 46). For private ownership market economies he distinguishes different types of entitlements: trade-based, production-based, own-labour, and inheritance and transfer entitlements (1981: 2), the first two subsumed as "exchange entitlements" (ibid.: 3).

A person's ability to avoid starvation will, according to this approach, depend on two factors, firstly on his/her ownership ("endowment") and secondly on his/her "exchange entitlement mapping", i.e. the relation that specifies the set of exchange entitlements for each ownership bundle (ibid: 2/3). He exemplifies this by a case when a general decline in food supply causes a person to be exposed to hunger through a rise in food prices which has an unfavourable impact on the person's exchange entitlements. He goes on to argue that even when starvation is caused by food shortage, the immediate reason for starvation is to be seen in the decline in the person's exchange entitlement (ibid.: 4). Famine, then, "reflects widespread failure of entitlements on the part of substantial sections of the population" (1990: 36), "a large section losing out in the battle for commanding food" (ibid: 38).

In one of his later publications Sen (1990) quotes historical precursors of his ideas, as Marx but also Adam Smith, whose "Wealth of Nations" is usually unwarrantedly referred to in order to justify ideas of food availability decline[3]. Interestingly, Sen points to a totally different chapter on "Of the Wages of Labour" where Smith argues that a surplus of manpower in the lowest class, partly due to over-flowings from other classes, will lead to competition for employment and thus "reduce the wages of labour to the most miserable and scanty subsistence of the labourer" where many would either starve or be driven to seek a subsistence by begging (1776: I/viii; quoted in Sen 1990: 39). There, Smith describes a classical situation of entitlement decline due to disturbances in the labour market. A similar situation was referred to in a parliamentary debate held in 1822 on the "Potato Famine" in Ireland where "people [are] dying for want of food and the farmers are said to be suffering from superabundance". Ricardo discloses and resolves this "manifest contradiction" of "a glut of corn and a starving people" by arguing that it ist not strange that "in a country where wages were regulated mainly by the price of the potatoes the people should be suffering the greatest distress if the potato crop failed and their wages were inadequate to purchase the dearer commodity corn" (quoted in Sen 1990: 40).

6[3] The part usually refered to is "a dearth never has arisen from [..] any other cause but a real scarcity [..] by the fault of the seasons" (quoted from "Digressions Concerning the Corn Trade and Corn Laws", quoted in Sen 1990: 39).

or pertaining to goods produced and marketed at a small margin of profit" (OED 1989: Vol IX: 368 A3a). For this definition references are given for 1887 (Daily News) onwards, often in publications on economics, such as Marshall's "Principle Economics" (1890:III iii:168; 1920). An interesting definition is given for its usage in sociology:

> "Of an individual or social group: partly belonging to two different societies or cultures but not fully integrated into either" (quoted in OED: 369 A3c).

This definition reflects the early adaptation of the term in American sociology and is closely linked to the first reference given by the OED, Park's "Human Migration and the Marginal Man" (1928) where he investigated into Jewish immigrants to the United States, analysing their status as cultural hybrids, at the margin of two cultures (quoted in OED 1989: Vol IX, 368). Yet Park's study concentrated on individual and personal-psychological rather than on socio-cultural and socio-political aspects. An important aspect about Park's idea of marginality is the fact that he sees marginality based on migration, i.e. in an exogenous context.

Early applications of the term to "Third World" countries during the early 1960s revealed a shift in focus. Heintz (1960) and Behrendt (1965) took up the idea of "marginal elites", a concept developed by Smyths in their "New Nigeria Elite" (1960), an idea that has generally not been taken up (all quoted from Meinardus 1980: 11 ff). More common definitions of marginality were based on the perception that "in developing countries the majority of the population does only participate insignificantly (i.e. "marginally") in political, sociological and economic decisions and in economic growth, both in terms of emergence and distribution", as clearly stated in Dam´s book "Marginality - motivation and mobilisation of self-help groups as a task for development aid"[4] (Dams 1970: 13, my translation).

An important contribution to the conceptualisation of marginality was made by the Latin American DESAL (Centro Para Desarrollo Economico y Social de America Latina) established in Santiago di Chile in 1960 (Dams (1970) and Meinardus (1982)). According to DESAL the decisive factor for the emergence of marginality in Latin America was the fact that after the Spanish Conquista juxtaposition of Spanish and Precolumbian culture gradually gave way to a superposition of the Spanish culture ("superposición cultural"). This has finally lead to a dichotomy between the marginal and the incorporated groups ("lo marginal o lo incorporala")[5], manifesting itself importantly in various aspects of life, i.e. socio-ethnic and socio-cultural, spatial, economic, and political (quoted in Meinardus 1982: 22ff). DESAL has coined an

[4] the German title is "Marginalität - Motivierung und Mobilisierung von Selbsthilfegruppen als Aufgabe der Entwicklungspolitik"

[5] Meinardus raises the argument that this concept of dichotomy has often been criticized, as for instance by Sotelo who argues that the marginals are also integrated, but marginally (ibid.:40 ff).

> "The condition of marginality results not from the action of the marginal group itself but from the relationship that group has with other classes and interest groups in society" (Susman,O'Keefe & Wisner 1983: 277).

This was taken up by Bohle (1992) in his article on "Marginality in rural areas of Third World countries" where he raises the question who these marginals are. He links the debate on marginality to the debate on vulnerability arguing that the marginal are those groups of society who have proven to be most vulnerable in the process of changes within society, due to unequal entitlements (in a Senian sense). He defines them

> "in this sense marginal are those members of society whose entitlements have been eroded during the modern development process so that they have been pushed to the margin of society" (translated from Bohle 1992: 10)

He exemplifies three dimesions of marginality, the class, ethnic, and gender dimensions. The class dimension is exemplified by Indian tenant-farmers who were marginalised by rich land owners during the Green Revolution and whose status deteriorated to daily labourers. For the ethnic dimension a case study of a South Indian tribal group (the Kollimalayalis) is given whose economy was transformed from subsistency to market integration by Indian traders from the plains, and who lost their independence through increasing reliance on loans. For the gender dimension a study on women in Bangladesh is quoted where the daily discrimination (hard work and lower wages) is shown, especially during situations of crises.

Blaikie & Brookfield (1987) apply the concept of marginality and marginalisation to their regional political ecology and distinguish three different concepts of marginality. Firstly, in neo-classical economics there is the notion of marginal units of a factor of production according to the law of diminishing returns, with main scholars as Ricardo (1793) and von Thünen (1860s); secondly, in ecology there is the idea about a marginal environment for both plants and wildlife (also applied to plants and livestock), where killing stress is expected but expansion when stress is absent; and thirdly, in political economy marginality is seen to have an effect on people as well as on their productive activities at local and global level. For the latter the authors point out its Latin American origin (ibid.).

Amazingly, in a way, the authors have not explicitly introduced a fourth concept, one where marginality is conceptualised in terms of political ecology, in a fusion of the second and third concept. Such an approach is implicitly present in their analysis.

> "vulnerability is the degree to which different classes in society are differentially at risk, both in terms of the probability of occurence of an extreme physical event and the degree to which the community absorbs the effects of extreme physical events" (ibid.: 264)[7].

An amazingly similar definition was given by Chambers (1989) in his editorial to an IDS volume on vulnerability (see below), whereas in his earlier monograph on rural development he suggested a much broader conceptual approach. There he called for the need "to dissect evidence and not to allow the term "poverty" to cover all aspects of disadvantages, but only those - lack of wealth or assets, and lack of flows of food and cash - to which it properly refers" (ibid.1983: 109). His "dissection" then gives an interlocking five-cluster scheme of disadvantage, namely poverty, isolation, powerlessness, vulnerability, and physical weakness ("the deprivation trap" ibid.: 111/12). Yet he also states that he claims no particular merit for these five categories. Among these categories only poverty and isolation are well-defined, whereas physical weakness is of emerging analytical interest, powerlessness is often politically too sensitive, and vulnerability "has been curiously neglected" (ibid.: 114).

Elaborating on these five clusters Chambers describes vulnerability as "having few buffers against contingencies" (ibid.: 110). Buffers only exist for small needs, in form of slender reserves of cash, physical curtailments (in terms of reduced consumption), barter, and loans from friends, relatives, and traders. In case of more severe contingencies there will arise the need to sell or mortgage assets. An interesting disaggregation is given for contingencies where Chambers distinguishes five main types, i.e. social convention, disaster, physical incapability, unproductive expenses and exploitation (ibid.: 115; see Figure 5). Such a wide range differs from the usually rather abstract and narrow ideas about contingencies, such as risk, stress and shock (Watts & Bohle 1993: 117), but certainly encompasses several important and otherwise unrecognised possible factors of stress.

Most of Chambers' ideas are taken up in his editorial (1989) where he points out that vulnerability has still a vague meaning and that there is a lack of both developed theory and accepted indicators and methods of measurement for the term, inspite of its commonness in the development lexicon. There, he again defines vulnerabilty:

> "Vulnerability here refers to exposure to contingencies and stress, and the difficulty in coping with them. Vulnerability has thus two sides: an external side of risks, shocks, and stress to which an individual or household is subject; and an internal side which is defenselessness, meaning a lack of means to cope without damaging loss" (ibid: 1).

[7] Interestingly, Wisner has recently progressed to re-define disaster in terms of a more every-day meaning "disasters can be interpreted as the extreme situation which is implicit in the everyday condition of the population" (1993b: 13), depriving the debate on disaster of the notion of its episodic character.

needs to be understood as relational, in respect to the person's coping capacity, or buffers, in Chamber's terminology [8].

On the other hand all agree that it is a most important task of an analysis of vulnerability to specify where and which groups are at risk. This is called for by Watts & Bohle in their "mapping the space of vulnerability" done in three dimensions, the "entitlement space", the "empowerment space", and the "political space", the latter conceptualising vulnerability in terms of lack of rights in order to analyse vulnerabilty as "a multi-layer and multi-dimensional social space, defined by the determinate political, economic, and institutional capabilities of people in specific places at specific times" (ibid.: 118).

[8] Two examples shall demonstrate this point: In case of (heavy) rainfall, a healthy person with an umbrella is significantly less likely to catch pneumonia than an unhealthy person without an umbrella, who above all has to walk barefeet for hours. Or, an earthquake is likely to affect a well-insured person in an earthquake-proof million-dollar house less severely, if at all, than someone living in a hut next to an unstable concrete building block which will certainly both collapse, possibly one on top of the other, during the earthquake. Thus, both "risks", although empirically evident physical events, can not been taken as absolute entities, due to the fact that both may be a risk for some people but not necessarily for others, even within the same setting. This notion has been pointed out by Wisner (see above) in his idea about "being differentially at risk".

3.1.4). Criticism is above all voiced about government officials, as district officers (goswara hakim), who share the taxes collected from the farmers with the local tax collectors (mukhyia), and officers at district courts (adalat dittha), "an incarnation of injustice and partiality" (ibid.: 8) who practice the worst tyranny by keeping cases pending for several years with regular need of bribe (koseli), which is possible for rich but not for poor farmers (ibid.: 9). The third officials under attack are land record officers (hakim mall), who instead of rendering services to the farmers exploit them most asking for bribes for both land registration and revenue (ibid.: 9). This criticism is confirmed in the suggestions for improvement given as a conclusive chapter, stating that "government officials [..] should be fully warned from any action of injustice and partiality to the farmers" (ibid.: 46), a sharp criticism towards fellow government officers.

On the other hand agriculture is dealt with primarily from an agro-technical perspective in order to suggest possible improvements in terms of cropping patterns, irrigation, and manuring, due to the focus of the study. Questions of agricultural land are only addressed to the extent that "more attention should be paid towards the compactness of holdings" because "scattered and fragmented [holdings] make farming less profitable" (ibid.: 4). Considerations on access to land, whether in form of ownership or tenancy, are not given in the study, irrespective of the important role attributed to this sector.

An amazingly similar analysis of causes of poverty is given in a more recent study on the issue, undertaken by a research and consultancy group at the University of East Anglia ODG (1992) in a Mid-Term Review of ActionAid activities, concluding that the poor records of rural development and the failures of almost all projects can be attributed to the fact that the actual causes of poverty are often not addressed. The review addresses the structural reasons for poverty as follows:

i) lack of access to cultivable land;
ii) limited technical possibilities of increasing agricultural yields (particularly at higher and unirrigated locations);
iii) exploitative debt relations;
iv) discriminatory and excluding practices on the basis of caste and gender
v) lack of access to local political power which is used to channel external resources to specific groups
vi) lack of education which provides access to better paid non-agricultural income;
vii) low agricultural wages (ibid.: 3).

Although most issues are referred to in both studies it is interesting to note the differences. Whereas Gurung simply refers to "poor means of agriculture" this is disaggregated in the ODG study into an agro-technical component (ii) and access to

3.1 Historical & Legal Framework for Deprivation - Privileges versus Constraints

3.1.1 The Caste System in Nepal - A Socio-Cultural Dimension of Poverty

Although Nepal is the only Hindu kingdom in the world the caste system certainly lacks both the rigidity and the historical depth that can be attributed to the caste system in India. According to Bista (1991: 29ff) caste concepts only entered Nepal at the beginning of the Licchavi era (3/4th centuries A.D.) and had to adapt not only to Shamaism and Shaivism, but also to Buddhism. Although the rulers then styled themselves as Kshatriyas (Chhetris) and elements of caste were introduced, the caste system in its entirety has never been adopted and the actual social organisation of society continued as before, with a discrepancy between the popular religion and that of the elites (ibid.: 35). A second, presumably more effective attempt was made under Jayasthiti Malla (1380-95) who in his Manab Nyaya Shastra introduced caste principles according to the Manusmriti (Hindu code; see Figure 6a) into the Newar culture, with rules prescribing professional activities, the construction of houses, and the wearing of clothes according to caste status (Gyawali 1985: 148). Yet the majority of the population was not prepared to obey to these rules in the strict sense, and rather gave up their Chhetri-status than giving up eating buffalo meat and drinking alcohol (Lamsal 1966, quoted in Bista 1991: 39ff).

A far stricter legal approach for the introduction and/or establishment of the hierarchical order of the caste system was the Muluki Ain (Legal Code). This was promulgated in 1854 under the prime ministership of Jung Bahadur Rana, soon after the establishment of the Rana regime[10] (1846), and remained effective in its 1935-edition until 1950. While Whelpton (1993) proposes that this was not the imposition of a new orthodoxy but an attempt to codify existing practices (ibid.: 13) Bista cynically, and possibly more appropriately, writes

> "Another attempt at imposing the caste system was made [..] by Jung Bahadur, a Khas, who was very keen to have his own status raised to the highest possible level. He became the first of the Ranas and his task was to establish the legitimacy of the Ranas and secure Rana control over the land" (ibid.: 40/41).

Prior to the Unification of Nepal (1769) the country had consisted of a multitude of principalities and petty states, with different ethnic groups and languages which had to be brought under a centralised rule and legislation, or in Ramble's (1993) words "the unification of the kingdom left the conquerors with a chaotic array of peoples to organize into a nation" (ibid.: 17). The new Legal Code, the Muluki Ain of 1854, was a decisive step to establish a hierarchical order of five distinct groups of castes, three pure and two impure (jutho) ones,

[10] The Muluki Ain of 1854 was signed by a total of 219 members of the bharadari kausal (court counsil), comprising of about 30 Rana - family members, 30 Brahmins, more than 70 Chhetris, but only 8 Newar and even less members of other ethnic groups as Gurung and Magar (Höfer 1979: 42).

given absolution for when committed within other groups (see Table 2). Although it is difficult to say how these regulations affected everday life (see also Pfaff-Czarnecka 1989: 170), they are still an interesting feature of 19th century criminal law.

Table 2 Consequences of deliberate acceptance of food (& water) from status-inferior persons

offered by / accepted by	"cord wearer"	matwali (ne)	matwali (en)	impure
cord wearer	D (+ 50 Rs)	D (+ 100 Rs)	D (+ 100 Rs)	D (+ Cnf + Br)*
matwali (ne)	-	D (A + 10 Rs)	D (A + 20 Rs)	D (+ Cnf + Br)*
matwali (en)	-	-	D (A + 5 Rs)	D (+ Cnf + Br)*
impure (touchable)	-	-	-	D (D/A + 5 Rs)*
impure (untouchable)	-	-	-	D (D/A + 2 Rs)*

ne	non-enslavable	en	enslavable	Br	branding
D	degradation	A	absolution	Cnf	confiscation of property
( )	if defilement is transferred			*	food or water

source: Höfer (1979: 60/61)

The caste-related legislation of the Muluki Ain remained effective in its entirety until 1926, when the Slavery Abolition Act was promulgated, annulling enslavement as a part of the criminal law and thus the distinction between masinya (enslavable) and namasinya (non-enslavable) matwali. In the first phase of democracy during the 1950s the 1935-edition (1992 BS) of the Muluki Ain was substantially changed and discrimination based on caste was finally abolished in the 1963-edition.

Yet legal reforms are only one of possibly many steps towards changing conditions rooted so deeply in the cultural and religious self-understanding of the country. Changes in everday life have lacked far behind. Today most ethnic groups ("matwali") might have succeeded in becoming more or less integrated into Nepali society (see Figure 6b). On the other hand, most "untouchables", such as Kami, are far from achieving this. Although for "higher castes" it has become less critical to risk "temporal-personal" impurity when dealing with "lower castes" the situation with regard to "permanent-collective" impurity for untouchables has only slightly changed. This is evident from the fact that members of occupational castes are not in a position to sell milk (seen as equivalent to water) to others[11] - an important income-generating activity in rural economies open to all others.

[11] Höfer (in a discussion) strongly disagrees on this point; yet this matter has been pointed out by several "occupationals" during field research.

Figure 6c Nepal´s Legal Code (Muluki Ain of 1854)

(1) Tagadhari ("wearers of the sacred thread")

Upadhya Brahmin
Rajput (Thakuri)
Jaisi Brahmin
Chhetri
Dew Brahmin (Newar)
Indian Brahmin
ascetic sects (Sunyasi; Yoti)
"lower" Jaisi
some Newar castes

(2) Namasinya Matwali ("non-enslavable alcohol-drinkers")

Magar*, Gurung*, Sunwuar*, some Newar castes*,

(3) Masinya Matwali ("enslavable alcohol-drinkers")

Bhote(y)* (Tibetans), Cepang*, Kumal*, Hayu*, Tharu*
Gharti*(descendants from freed slaves)

(4) "Pani nac(h)alnya choi chito halnunaparnya" (impure but "touchable" castes)

Kasai (Newar butchers)
Kusle (Newar musicians)
Dhobi (Hindu Newar washermen)
Kulu (Newar tanners)
Mleech (European) Musulman(Moslem)*

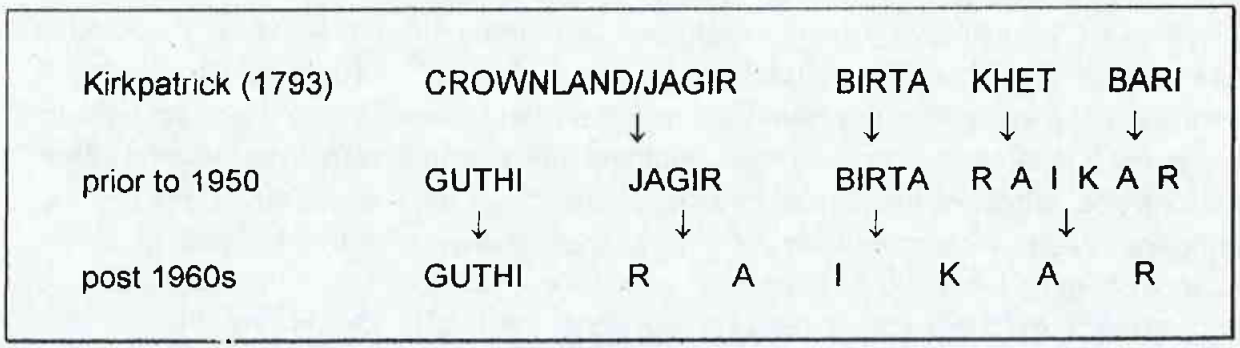
(5) "Pani nac(h)alnya choi chito halnuparnya" (impure "untouchable" castes)

Kami (blacksmith), Sarki (tanners, shoemakers)
Kadara (descendands from one Kami and one Sarki parent)
Damai (tailors and musicians)
Gaine (minstrels)
Badi (musicians)
Pore (Newar skinners and fishermen)
Cyame (Newar scavengers)

* the positions of the different groups within the caste group is not precisely determined.

source: Höfer (1979: 45)

Figure 7 Forms of land tenure in Nepal (traditional and contemporary)



sources: Kirkpatrick (1986-edition 91); Regmi (1978); HMG/ML&J (1959-64)

3.1.2.1 Jagir Holdings - Privileges for Government Employees

Jagir is a land assignment where the talsing-boti (share of produce accruing to the state) is assigned to government employees and functionaries in lieue of, or in addition to, cash emuneration (Regmi 1978: 452/53). Jagir-assignments were usually given for the time of office holding but also as a pension. In India this system is documented from the 15th century onwards whereas for Nepal the earliest documents quoted by Regmi are from the 18th century (ibid.: 453, quoting Acharya and Rajbanshi, s.d.). Then, the fast growing administrative structure subsequent to the political unification (1769) had lead to a significantly higher demand for government officials, posing a severe burden on the treasury. Besides, land grants played an important role as incentives for military personnel.

By assigning land as emoluments to jagirdars (government employees) the state was able to reduce its functions to the maintenance of records whereas the more difficult task of collection was delegated to the jagirdar who thus acted as an agent on behalf of government. This arrangement also meant that the government did not need to maintain a permanent machinery for tax collection (ibid.: 453). In addition to these tax collecting functions this system could also be used in order to extend cultivated areas. By including wastelands in the area assigned to a jagirdar he could easily be obliged to bring it under cultivation, thus gradually extending possible areas for future assignments (ibid.: 457). Apart from this local expansion jagir-assignments could also be used in regional expansion for strategic reasons, as was the case when assignments were made for the border region to India during the early 19th century[13].

[13] Regmi quotes jagir-assignments in Makwanpur (Terai) which were made when in 1804 the Anglo-Nepalese Commercial Treaty was formally annulled and war was impending.

arrangement, both taxable and tax-exempt, both lifetime and inheritable, the latter subdivided into conditional and unconditional grants (ibid.: 280 ff), which requires some elaboration.

Birta land grants were usually given for special services to servants, either civil (often phikdar birta), military (for instance in form of marwat birta) or (mainly Brahmin) priests (kush birta) (ibid.: 289/91). The latter form was already mentioned by Kirkpatrick (1793; 1986-3dition: 91), along with "soona" (suna) birta, held by Newar and other "natives" (ibid.). Originally the land grants had to be approved of by the king who put his (red) royal seal (lal mohar) onto the document, which therefore received this name. For kush birta Kirkpatrick (for 1793) gives an account of the handing-over ceremony:

> "the Rajah [king] waters with his own hands a clod brought from the land to be given away, mixing it with some Koos (a species of holy grass) and Teel (sesame), and, with certain other ceremonies occasioanlly performed by a priest, presents the whole to the Brahmin, who returns part of the clod to the earth from which it was taken, and carefully preserves the remeinder; this gift is sometimes accompanied by a written patent, and sometimes by a Tambeth-putter [dhamabattra] or title-deed, engraved on a plate of copper" (ibid.; 1986-edition: 92).

The system of granting birta land grants was increasingly abused during the Rana period when members of the extended ruling family gradually started issuing grants, favourably within their family, without royal consent (Regmi 1978: 312), called bakas birta, which by 1950 accounted for 86% of all birta land in the Terai (1,6 million ha; ibid.). After the fall of the Rana regime the birta system came increasingly under attack from all sides during the period of emerging democracy and was finally officially abolished by the Birta Abolition Act in 1959, which stated in the preamble that:

> "It is expedient to put an end to the feudal system of utilizing land without paying any revenue to the State, so as to create feelings and a situation of equality among various classes of people in the Kingdom of Nepal and thereby bring about amicable relations among them, as well as to achieve the sacred objective of strengthening and promoting the economic well-being of the Kingdom of Nepal and its people" (HMG/ML&J 1959: translated in Regmi 1978: 416).

Although progressive, if not radical, in language the Act itself was much more conservative. While birta was abolished as a type of land tenure all birta holders were permitted to convert their birta land into guthi or raikar holdings, with effectively no ceiling.

> "since the guthi system involves the performance of religious functions it represents an act of devotion to God, and the traditional system shall be continued" (ibid.: 28).

Nevertheless, a recent amendment allows for the conversion of some types of guthi-land into raikar holdings, in case that registered tenants want to buy the respective plot of land (see case study 3.1.4.3).

3.1.3 Access to Agricultural Land Today

Land grants have for a long time been a most important feature of the political economy of the country. Yet it has to be kept in mind that receiving land grants for various services was possible only for a small minority. On the other hand for the vast majority of the population access to land mainly existed in form of privately held raikar which was either inherited or, to some extent, newly acquired. In addition, a large proportion of the population also - or even exclusively - relied on cultivating land of other people or guthi as tenants.

3.1.3.1 Raikar and Tenancy - Progressive Security versus Insecurity Persisting

Raikar is a traditional form of land tenure and denotes land which is privately held. Yet this type of land holding has undergone significant changes, irrespective of the continuity of terminology, and thus it is imperative to distinguish its traditional and contemporary forms. Regmi (1978) relates the word raikar to the Sanskrit terms "rajya-kara" (state-tax), denoting land on which the state levies taxes (ibid.: 16), as the ultimate ownership of land was vested with the state (see 3.1.2, above). Thus "ownership" was limited to occupancy rights which could be resumed by the state.

This was critical in cases of default of tax payments when the cultivators were legitimately evicted from their "property". Above all, in those cases tax arrears were not realisable out of the value of the land property, i.e. it was not possible to sell off some land in order to pay off taxes whereas the remaining land could be continued to be utilised (ibid.). And, the legal provisions for cases in default of payment were such that the land confiscated by eviction of arrearing land holders could be transferred to any other person who offered to pay up the arrears as well as the annual taxes. Thus, the traditional form of raikar implied relations between state and cultivator that were essentially similar to those between landlord and tenant, as in both cases regularity in payment of the land tax was the prime condition for access to land (ibid.).

3.1.3.2 The Law of Inheritance - One Gender Dimension of Constraints

After the abolition of land grants ownership of land today exists almost exclusively in form of raikar. This also implies that inheritance is crucial for determining access to land. Yet rules for regulating inheritance, incorporated in the Legal Code (Muluki Ain), only provide for the division of land among the sons, only entitling daughters to a share of their fathers' property in cases when there are no sons in the family.

> "For purposes of inheritance, daughters shall have no title as long as the husband, wife, son or grandson (on the male side) of the deceased is extant. In the absence of such survivor, the daughter (of the deceased) shall have the right to inherit his property [..]."
> (ibid. chapter on Inheritance 2; translated in Regmi NMS 1988: 8)

This regulation implies that the majority of women are usually deprived of any direct access to land and that they can only mediately hold land by getting married and receiving an indirect access via their husband's share of his father's ("parents'") property. At first sight, this regulation aims at minimising fractations of land holdings and at guaranteeing future generations to receive a share of their (fore-)father's land which is sufficient for securing subsistence needs. Such rules are certainly vital in many natural settings, and especially in mountainous regions as Nepal. One of the most rigid devices in order to achieve this goal was principle heritage, as practised in many European countries, as for instance in Switzerland, but also in the Western Himalayas, as in Laddakh.

On the other hand, selective access on the basis of gender, categorically discriminating women by denying them any right to their parents' property, is a regulation which is difficult to understand, not only from a Western point of view. Above all, lines of arguments which claim that equitable inheritance for both sons and daughters is not possible in a setting as Nepal due not hold true. A family which divides its 20 ropani of land among its two sons and two daughters will leave all children with 5 ropani and if all marry partners who have similar shares of inheritance, all four of them will finally again have 10 ropani, as would have been the case if the land was only divided among the two sons. Yet, such a regulation would contribute significantly to improve the status of women, by enabling them to contribute to the household's access to land and by empowering them to become equal partners for their future husbands instead on being reduced to the role of cheap labourers for their in-laws.

grain deficit households has always been a common feature, especially during the summer months. Interest rates were/are paid in grain and existed in the two rates, either as pachisa ("twenty-five"), where for one muri (= 20 pathi) borrowed 25 (pachis) pathi have to be returned, or as the higher rate tisa[18] (thirty) where 30 pathi had to be returned at the time of harvest in November/ December. In addition to the interest the farmers usually also had to give theki-koseli (see above) and/or khetalo of 10-12 days.

Whereas the borrowing of grain was often done informally without written documents the borrowing of money was usually always based on writing a mortgage certificate (tamasuk, see photo 15), where the debtor obliged himself to return the amount borrowed within a certain period of time (usually 3-5 or 10 years). A most critical issue of the tamasuk was the specification of a piece of land, by giving all four boundaries in detail, which the debtor agreed to hand over to the creditor in case he was not able to repay his debts within the period of time stipulated. Sometimes a final extension of about six months was granted but if the money was not returned by then the final transfer of land (rajinama) took place. The creditor could then take the tamasuk to the land revenue office (then Mal Karyalaya) and register the piece of land specified in the tamasuk in his own name, a procedure documented by the Land Revenue Office's sealing on the tamasuk (see photo 15). Whereas mortgaging implied a transfer of ownership it did not necessarily imply that the new owner started cultivating the respective piece of land himself. In most cases the previous owner kept on cultivating "his" fields but had to hand over the produce to the creditor, a practice often constituting a seamless transition to "sharecropping" arrangements (see 3.2, below).

At first sight this practice of mortgaging seems a necessary precondition for money lenders in order to minimise their risk of losing money when the amount borrowed was not returned and to ensure that they receive a substitute. Yet this system put the creditors into an extremely strong position. In addition to demanding usurious interest rates many money lenders, due to oligopolistic structures of rural capital markets, were also in a position to demand land mortgages which by far exceeded the market value of the loan provided. On the other hand the debtors - often in a desperate situation - were not in a position not to accept the conditions demanded by the creditors. Above all, illiteracy has often been an additional constraint when tamasuks were signed, as the piece of land agreed upon was possibly not identical to the piece of land noted down, but had to be accepted in good belief as it was usually not possible for the debtor to scrutinise the document. Gurung sharply criticises these conditions and concludes:

[18] The latter form is not mentioned by Gurung but was practised in my study area.

3.2.1 Consumption - Food, Firewood, and Other Basic Commodities

In order to assess levels of subsistence basic requirements, such as food, firewood, and other basic commodities, as spices, oil, sugar, and clothes, need to be quantified. Whereas assessments for food requirements are easily available and fairly homogeneous, the present study also gives estimations for land requirements, considering different types of fields and productivity. On the other hand, estimations for firewood requirements differ significantly and thus a variety of sources is quoted, in order to reveal the discrepancies. The last sub-chapter refers to basic commodities which have to be acquired through markets. As consumption patterns for these items vary strongly according to the households' purchasing capacities this issue is looked at by analysing rising costs for several commodities.

Food requirements

When HMG launched its "Basic Needs Fulfillment Programme" (BNFP) in 1985 (see 4.1., below) the most detailed quantification was provided for food, estimating minimum caloric requirements at 2,250 cal/day, converted into 223 kg per person (HMG/NPC 1987: 11). This assessment varies slightly from other sources, for instance Conlin & Falk (1979: 127) estimate average minimal consumption requirements at 210 kg. In the present study food requirements are assessed at a minimum of 210 kg of grain, assuming that 94% of the total food requirements estimated in the BNFP-study is consumed in form of grain. In order to assess levels of subsistence these consumption requirements need to be converted into production requirements (see Figure 8, below). As these calculations are the basis of assessment for the case studies they are given in Nepalese measures of land (ropani = 507 sqm) and volumes (1 muri = 20 pathi = 90 litre; for conversion see Table A1, appendix). Production is assessed for two extreme cases, being solely based on (irrigated) khet fields (left-hand column), where wheat and paddy are grown, or on (unirrigated) bari fields, with millet and maize (right-hand column). Yet, Nepalese household production and consumption patterns lie somewhere in between these two extremes.

Assuming a diet based on the production from khet fields, one unit of khet will yield an average of about 60 kg of wheat[19] and about 150 kg (45 pathi) of (de-husked) rice (chamal), adding up to 210 kg. As dehusking involves a significant loss in volume (of about 50%) this amount corresponds to 90 pathi (= 4.5 muri; at 2.5 kg/pathi) of paddy (dhan). Thus annual production requirements are about 225 kg of paddy and about 60 kg of wheat per person (see Figure 8, left-hand column). Thus average household requirements, assuming sizes of 4 - 6 adults, are about 18 - 27 muri of paddy plus 4- 6 muri of wheat.

[19] The share of wheat varies slightly according to the productivity of land and is inversely correlated. Whereas the share of volume (wheat : paddy) is about one forth or one fifth for high-yielding fields it is about one third or half for low-yielding fields.

Requirements for khet holdings needed in order to produce these amounts of paddy are difficult to assess as variation of yields is pronounced. While a highly productive khet field under triple-cropping may produce 5 muri of winter and 7 muri of summer paddy (i.e. 12 muri) plus about 3-4 muri of wheat, yields on low-productive double-cropped khet fields may be as low as 2 muri of paddy and less than 1 muri of wheat. This 6-fold variation implies that about 2 ropani (0.1 ha) of high-yielding triple-cropped khet may be sufficient for the annual subsistence requirements about 5 adults whereas even 12 ropani (0.6 ha) of low-yielding khet fields may just be sufficient for 4 adults (see Figure 8, left-hand column). Agricultural production heavily depends upon the input of chemical fertilisers, and these costs have drastically risen during the last decade (see Figure 9b, below) due to the gradual withdrawal of subsidies under the Structural Adjustment Programme. Many household cope with these costs by reducing the application of chemical fertilisers significantly, even risking lower yields.

Variation is less pronounced for production on bari (unirrigated fields). There, one unit of land yields about 2.25 muri (=45 pathi) of maize and about 1 muri (= 21 pathi) of millet. Productivity varies about 3-fold, and thus about 0.75 ropani of high-yielding and 2.25 ropani of low-yielding fields are needed in order to secure subsistence needs of one person and similarly about 3 - 4.5 ropani of high-yielding and 9 - 13 ropani of low-yielding bari fields for a 4 - 6 member household.

Firewood requirements

While quantifications of caloric requirements are at the core of basic needs assessments, quantification of firewood needs is a task usually not performed. Yet fuel requirements, irrespective of the types of sources, certainly are an important component of food processing and they are especially important when "basic needs" for forest products are analysed. In spite of the urgent need to quantify fuel needs, estimations on annual consumption vary significantly (see Table 3, below). Whereas extremely low estimations of about 60 kg/ person/year were given in early studies (Robbe 1954), recent studies assume an average annual consumption of about 700 -1100 kg/person. Yet differing assessments are sometimes given even within the same source. For instance the Nepalese consultancy New Era (1980, 1981; 1983) assumes annual household requirements in Sindhupalchok district to be 72 bhari (basket), and 90 bhari in Pang VDC, Parbat district. Astonishingly the first was converted into a weight of 1,600 kg per household, assuming a 22-kg weight per bhari, while the second study assumed a 50-kg weight[20] which thus was converted into significantly higher households requirements of 4,500 kg.

[20] Although regional differences in size of bharis might play some role, these discrepancies are astonishing (if not alarming).

166; 1983b: 1062). Irrespective of regional disparities in firewood consumption these results seem to be most reliable as they were the conclusion of a 12-month fieldwork, whereas other studies are often based on ("take-&-vanish") questionnaires. Significantly higher estimations are given by Manandhar-Gurung (1986) who calculated average annual firewood consumption as 180 bhari, converted into a weight of 7,200 kg (assuming a 40-kg weight per bhari) for her case studies in the northern Kathmandu Valley. This high figure arises from a high consumption of Tamang households, where 25 of 33 households require more than 300 bhari. Only Devkota's (1986) study in Butwal (Terai) comes up with comparably high figures, assuming average consumption of firewood to be 8,000 - 10,000 kg per household (ibid.: 8). Yet her study, aimed at investigating the feasibility of introducing biogas, might be inclined to over-estimate to possible savings in firewood.

In considering the substantial variation in estimations of firewood consumption (see Table 3), it has to be kept in mind that the data base is unreliable. Calculations from my own field data have shown that fuel requirements range from 2 to 7 bhari per week, with average weights of 30 - 40 kg (non-dried weight). Consumption is highest at elevations above 1600 m, and especially above 2500 m, where a fire is kept not only in order to prepare meals but for several hours a day in order to heat. Thus even low-consumption households need a minimum of 60-80 kg per week, i.e. 3,100 - 4,100 kg/year, whereas high-consumption households require 210-280 kg/week (10,920 - 14,560 kg/year).

Needs for other basic commodities

Basic commodities which have to be acquired through the market, include salt and other spices, tea, kerosene, cooking oil, and pulses, to name only the most common. Data available from the Nepal Rastra Bank (1993ff) indicate that all items have experienced a significant rise in costs of about 100% within the last decade (see Figure 9a). Prices for sugar and clothes have risen less than average, and rice, wheat, and oil have experienced rises slightly above average. On the other hand, pulses and meat have become extremely expensive (about 280%) and spices have experienced the most drastic increase (about 370%) (for figures see Table A4, appendix). These rates are based on urban areas in the hill region and may differ slightly in rural areas, as transactions involving commodities produced locally, such as grain and meat, often take place informally among villagers at rates below the actual market value. On the other hand, many commodities are available only through official channels and are thus traded at the same rate, or even at a higher one, depending on the distance and need for transport and pottering. This is especially true for products which are subject to national or international trade, as salt, other spices, and sugar.

In addition to these items of regular consumption special expenses arise annually during the main Hindu festivals, dasai and tihar, in autumn. For most households this is the rare occasion to consume meat, usually in form of a khasi (castrated goat). Additionally, there is a high demand for spices, as for instance muscat for the meat and anise. At festivals meat is consumed along with chiura (beaten rice), rather than rice, made either from the previous year's surplus paddy, or, in the case of grain deficient households, bought, at fairly high rates. This is also the time of the year when new clothes are bought for the whole family. These practices have been referred to as "extravagance of farmers" in the Gurung study (ibid.: 9) but this criticism is out of place and it should be acknowledged that consumption in many households among the rural poor is minimised to an utmost extent ("physical curtailment" in Chamber's terminology, see Figure 5, III 2.3), whereas consumption patterns during festivals, although "extravagant" in comparison to everyday consumption patterns, are close to everyday consumption in households of the upper deciles of income.

Major expenditures are usually met by either selling agricultural products or one's labour. Due to the importance of both commodity and labour markets they are analysed in detail in the respective chapters (IV 2.3.1 and 2.3.2). Yet in anticipation of these analyses it can be said that the markets for local products and labour in rural economies have experienced low rises or even stagnation of exchange values which is in strong contrast to the high increases in prices for purchased commodities, a price scissors leading to a gradual loss of actual purchasing capacity for many households. As most households do already have a very limited purchasing capacity strategies in order to buffer this additional loss are difficult. Whereas a reduced consumption is a possible short-term buffer it is often not feasible as a medium- or even long-term strategy, as many households and many members of households already are at or at least close to critical thresholds of physiological minimum requirements.

4. Policy Approaches to Reduce Poverty - Fulfilment of Basic Needs

Whereas the need to reduce poverty is an issue usually not questioned, the policies chosen in order to achieve this aim often are. The unprecedented awareness of failures of traditional, growth-related development theories and policies during the 1970s, the recognition that growth was unevenly distributed, and the fact that "aggregate economic growth appears to have done little for the poorer half of the Third World's rapidly growing population" (Streeten & Burki 1978: 411) have caused leading international development agencies to question old policies and to introduce new concepts, as the World Bank's "Redistribution with Growth" or ILO's work on strategies with an explicit focus on employment. Although these approaches were major conceptual changes in development theory and policy, criticism was voiced early that "they have not gone far enough in

Even greater attention was given to the fulfilment of basic needs by putting them central stage in the "Basic Needs Fulfillment Programme" (BNFP) launched by HMG & the National Planning Commission (NPC) in order to celebrate the Silver Jubilee of the Panchayat system in 1985. The programme was aimed at reducing poverty by the end of the second millennium, in spite of the fact that "the objectives of providing for all Nepalese the basic needs of food, clothes, housing, health, education, and security is a difficult goal to achieve" (extract from the speech of His Majesty King Birendra on the occasion of King Mahendra Memorial and Constitution Day and Silver Jubilee of the Panchayat System on December 16, 1985; quoted in HMG/NPC 1987: i).

In the preliminary of the study past achievements during the 25-year panchayat period were critically assessed, similarly as before in the Sixth Plan (see above). Yet constraints were explicitly related to the past development paradigm of trickle-down effects.

> "It must, however, be admitted at the same time that the country has met only with limited success in increasing national income and in solving problems of poverty [..]
> Achievement of this objective [high growth rates] was assumed to take care of distribution aspects through the trickle-down mechanism [..]. But the experiences of many countries testify to the fact that achievement of high growth rates does not necessarily ensure an automatic flow of income to the poor and the needy"
> (HMG/NPC 1987: 1).

In order to operationalise and successfully implement the BNFP basic needs were quantified for five indicators, namely food, clothes, housing, health, and education (see Table 4). Interestingly, a sixth objective was added, stating that security was aimed at, by "guaranteeing a secured access to all basic commodities" (ibid.) .

Table 4 Quantifications of basic needs according to HMG's BNFP (1985) [per person]

1)	FOOD REQUIREMENTS	2250 cal/day
2)	CLOTHES	10.3 meters
3)	HOUSING	5.25 sqm
4)	EDUCATION	primary education for 87 % of population literacy rate 39.9% of the population
5)	HEALTH	raise average life expectancy to 65 years
6)	SECURITY	secured access to all basic commodities

source: HMG/NPC (1987: 10-31)

IV Case Studies from Sindhupalchok District on Access to Forests

1. The Meso-Level: A District Profile of Sindhupalchok

As an introduction to the micro-level case studies from the Melamchi/Indrawati Khola area a meso-level analysis is presented for Sindhupalchok district and Western Sindhupalchok. On the district level secondary data from different censuses (1961, 1971, 1981, 1991) are analysed for population and agricultural information (IV 1). Forest cover was found to be critically low especially in the western region of the district, based on land use data from the Land Resource Mapping Project (LRMP 1986). At the same time, population densities are high in this region, resulting in a high pressure on the remaining forests. Thus, primary data were collected in Western Sindhupalchok, comprising of a meso-level economic profile (IV 2) and micro-level household surveys in two case study areas (IV 3).

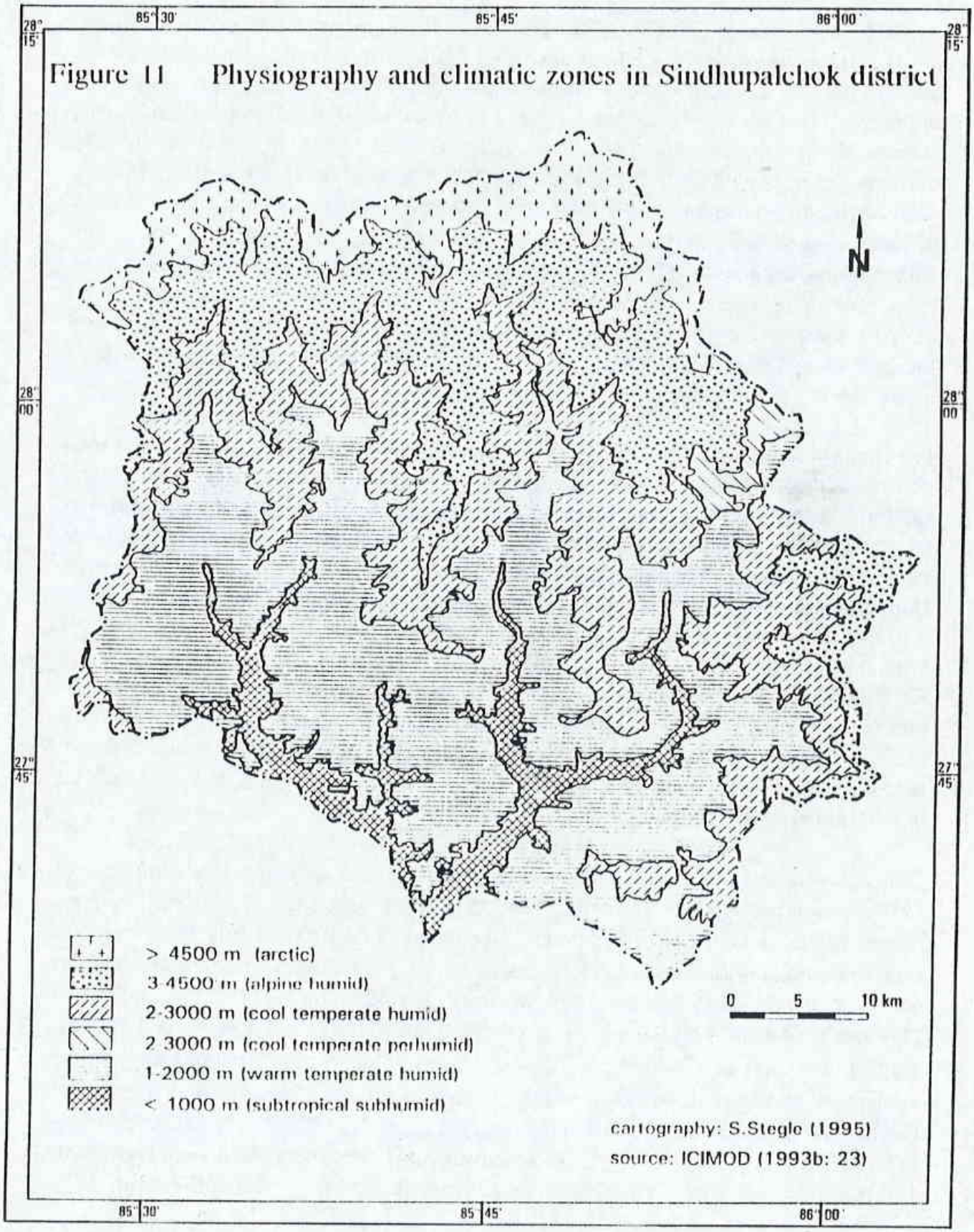
During the Rana period under the prime ministership of Bir Shamsher (1885-1901) Nepal was administratively organised into districts (Regmi 1978: 19) and Sindhupalchok together with Kabrepalanchok became district East No. 1 with a total area of 4,255 sqkm (Regmi 1978: 215). This administrative division was not changed until the constitution of the panchayat system in December 1962 when the two districts were divided and Sindhupalchok was further subdivided into 75 panchayats. Their number was reduced to 54 during the 1970s when Development Regions were established and the district was integrated into the Central Development Region. Following the decentralisation policy of 1982 the number was again increased to a total of 79 panchayats (for map see Figure A3, appendix), now called VDCs (village development committees) after the VDC Act 1991. Today, Sindhupalchok district has an area of about 2,500 sqkm and constitutes the north-eastern part of the Bagmati Zone in the Central Development Region (for map see Figure A1, appendix). The district is purely rural and does not include any municipalities. Its name is derived from famous sites of the two goddesses Sindhu Devi (Sindhukot VDC) and Palchoki Mai in Palchok VDC (Action Aid 1993: 4).

1.1 Natural Resources

1.1.1 Geology and Climate

Geologically most of Sindhupalchok is made up of gneisses in the western and northern part. In the south-east there are phyllites (southern Sunkoshi catchment area). In between there lies a transition zone of 5-10 km with formations of quarzite, slates and shales, and limestone dolomites. In the district there are only a few locations with mineral deposits, mainly mica (five sites in the south-west and central part) and copper (four sites mainly in the southern-central part). In the north-east hot springs gave the name to the VDC Tatopani ("hot water"). In the western and central district there are two sites where iron is found (Sikharpur and Syaule VDC), giving the name to the settlement of Phalame ("iron") (HMG/Dept. of Mines & Geology

Figure 11 Physiography and climatic zones in Sindhupalchok district



(157 mm), and 1992 (197 mm), compared to years with heavy rainfall when by the end of May 489 mm had fallen (1978).

Precipitation differs significantly in respect of annual totals for the four stations. Baunepati in the lower Indrawati Khola has an average of 1829 mm and has usually 1600-2100 mm whereas at Shermatang average annual precipitation is more than 4000 mm. At Baunepati minimum rainfall of less than 1500 mm occurred in three years, i.e. 1362 mm (1974), 1482 mm (1979) and 1460 mm (1980), and maximum values of above 2100 mm in 1986 (2114 mm) and 1985 (2457 mm).

High intensities of more than 50 mm/24 hours are less common than at Dubachaur station, intensities of 50-100 mm occur at an average of "only" five times a year (except in 1985 when there were nine occasions) and intensities of over 100 mm were recorded only for five years, with maximum in 1982 on three occasions. At Dubachaur the average annual precipitation is 2378 mm (1971-92). The maximum annual rainfall recorded so far was 2834 mm (1985), but precipitation was also far above average in 1978 (2701 mm) and 1988 (2747 mm). The former was mainly due to intensities of 50-100 mm within 24 hours which occur at an average of eight times a year (minimum six) but were recorded for 16 days in 1985. Rainfall intensities of more than 100 mm in 24 hours occurred from 1971-86 in 8 of 15 years, in 1979 even at two occasions.

Shermatang (at an altitude of 2625 m) in Kiul VDC (case study 3.2) at the west side of Yangri Danda ridge has by far the highest average annual precipitation of 4042 mm. Except for the "dry" year 1971 (2551 mm), annual totals are usually 3450-4500 mm, in 1978 a maximum of 4976 mm was recorded. Rainfall intensities are extremely high, amounts of 50-100 mm within 24 hours are recorded for an average of 21 (!) times a year with maximum values of 28 occasions (1977, 1978), and intensities over 100 mm occur at an average of three times a year. Annual precipitation is again lower at Tarkyghyang (2480 m), north of Shermatang in the Upper Melamchi Khola where average amounts are 3613 mm. Intensities of both 50-100 mm and over 100 mm occur less often than in Shermatang, at an average of 13 times and twice a year respectively. Yet maximum intensities of 216 mm (1974) and 182 mm (1983) were the highest ever recorded in the region.

1.1.2 Ecological Zones and Land Classification

The overall south-north ascent is modified by two major north-south river systems and their catchment areas (Figure 10), the Sunkoshi Khola with its main contributors Balepi and Bhotekoshi which drain the eastern half of the district, and the Indrawati Khola with its contributors Melamchi Khola in the west and Jhayani Khola, the former partially constituting the border to the southern neighbouring district of Kabrepalanchok. The lowest elevation is in the central south at the confluence of the two main rivers at Dolalghat (621 m) and the terrain gradually ascends over a distance of about 60 km to altitudes of 4500-6000 m in the east-west ranging Himalayas bordering the northern neighbouring district Rasuwa in the west and Tibet in the north-east, reaching a maximum altitude of 7084 m in Lang Pogang.

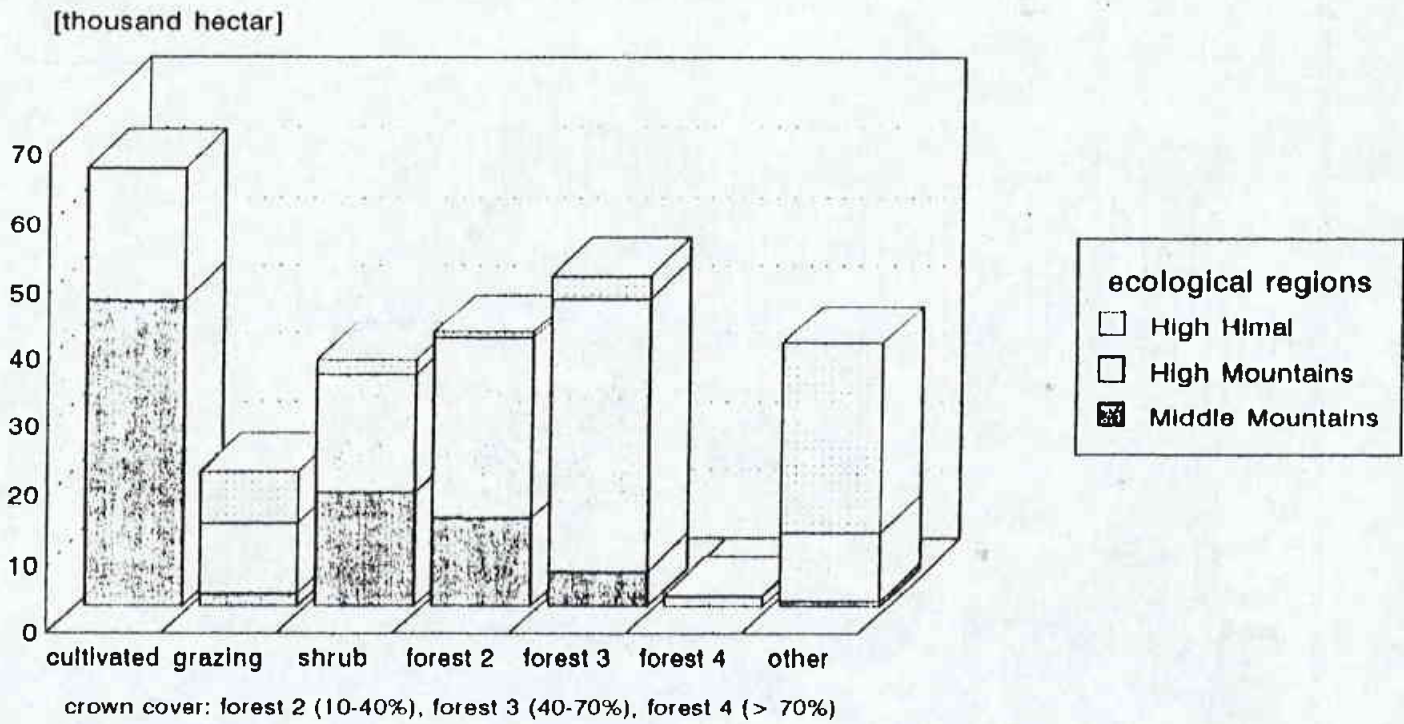
Western Sindhupalchok (see Figure 23, p.127) consists of two major parallel river systems, draining the area in a north-south direction, the Melamchi and the Indrawati Khola with their confluence at Melamchi Bazar. South of Melamchi Bazar the Indrawati valley is a part ecologically of the Middle Mountains, with a fairly modest topography. Elevations range from 700-850 m at the valley bottom whereas hill tops are at about 2000 m, with an horizontal distance of about 10 km. The northern valleys of both Melamchi and Indrawati Khola are a part of the High Mountain region with V-shaped valleys and riverbeds at elevations of 1000 m (Kiul) and 1700 m (Tharkyghyang), surrounded by mountain ranges of about 4000 m and a horizontal distance of only 8 kilometres. Both rivers have cut steep valleys of about 25 m into the former river beds of glacial deposits (tar).

To the west Melamchi Khola is bordered by mountain ranges of elevations of 3-5000 m. The mountain range between the two river systems is commonly known as Helambu (see Figure 23, p.127) and ranges from elevations between 2-2500 m in Palchok Danda in the south, 3-4000 m in Yangri Danda, and 4500-5000 m in Dhukpu Danda in the north and finally ascends to the west-eastern range of Kanyala Himal with its highest peak at Naya Kanga (5846 m). East of the Indrawati Khola the ranges of Kamikharka and Chyochyo Danda with elevations between 3-4000 m constitute the borders of the region; they gradually ascend to Panch Pokhari Lekh (4-5000 m) with its highest peak at Gangchenpo (6387m) in the Doarley Himal (names according to Schneider Helambu map, 1987).

The most extensive mapping and land classification in Nepal was undertaken by the Canadian/HMG-cofunded Land Resource Mapping Project (LRMP) from 1980-85 based on aerial photographs taken in 1978/79. The results were published in a total of 266 map sheets on a scale of 1:50,000 and analysed in several volumes (LRMP 1986) [1]. Detailed tables on land classifications are available on a district level but also

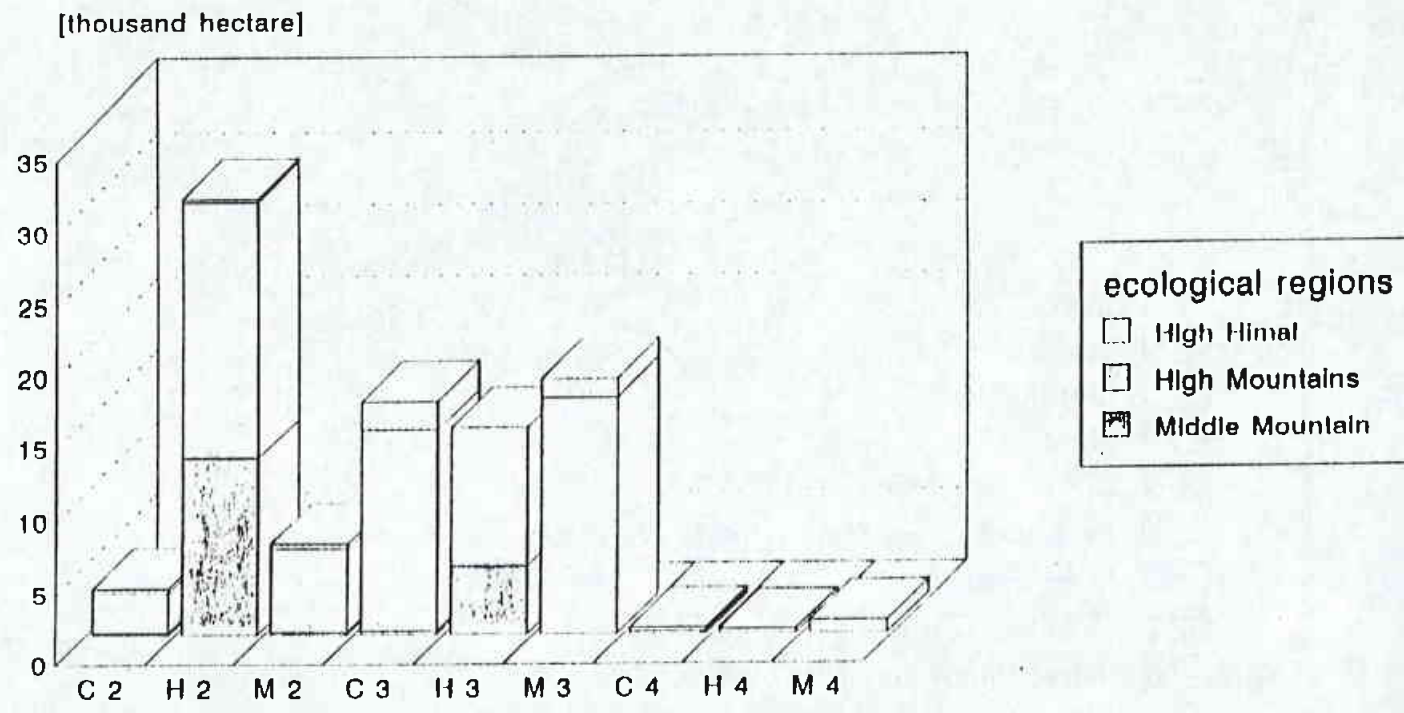
[1] These maps have been digitised by LRMP and later on by ICIMOD/MENRIS (1993) in order to create district and VDC-level maps and data sets. The latter figures differ slightly from the ones given

Figure 13a Land use in Sindhupalchok district [248.096 ha]
(LRMP for 1978)



crown cover: forest 2 (10-40%), forest 3 (40-70%), forest 4 (> 70%)

Figure 13b Forest types in Sindhupalchok (for 1978)
species and crown cover



C:conifer H:hardwood M:mixed cr.cover: 2 (10-40%),3 (40-70%), 4 (>70%)

source: LRMP (1986c): 360-63
graphic: Graner VIII/ 1993

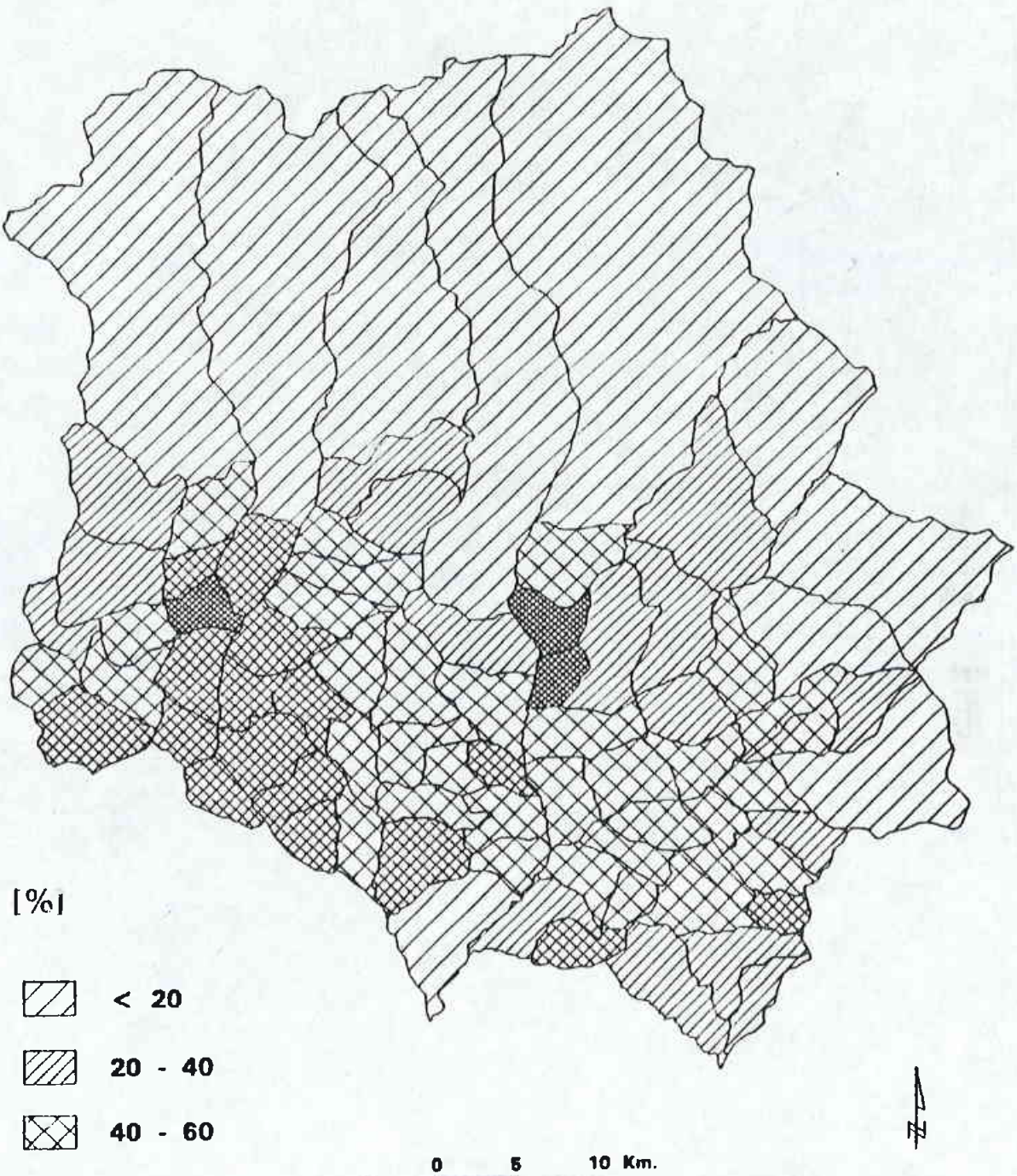
Further analysis according to ecological regions shows that the main forested areas for both class 2 and 3 are in the High Mountain region. In the Middle Mountains almost 50% of the forested area consists of shrub and forests of crown covers of more than 70% are non-existant at all, and even crown covers between 40-70% merely cover 15% (5,038 ha). A classification according to tree species (Figure 13b) shows that conifers, hardwood (with a necessary predominance of 75%) and mixed stands cover 19,919 ha (22.2%), 44,998 ha (50%) and 25,001 ha (27.8%) respectively. Conifers and mixed stands mainly have crown covers of 40-70% and are almost exclusively to be found in the High Mountain region (Figure 13b, Table A9, appendix) whereas 37.7% of all hardwood species have crown covers of 10-40% (16,969 ha of a total of 44,998 ha) and can be found in both Middle and High Mountain regions. In the Middle Mountains hardwood forests are the predominant type, covering a total of 17,585 ha (96.5%).

These significant regional differences in forest covers, in respect of both crown cover and total area, are also apparent on a VDC-level, as analysed by using GIS (see Figure 15). Forest covers (class 2-4) are found to decrease from north to south and east to west, along with an increase in agricultural area (see Figure 16), and are thus critically low in the south-western and south-central regions of the district, i.e. in the Melamchi/ Indrawati and in the Balephi river valleys. Whereas in the northern VDCs forests cover 20-60% of the total area they only cover 5-10% in many southern VDCs. In total, 11 VDCs have a forest cover of less than 10%, and in six among these forest cover is less than 5% of the respective area. In the Middle Mountains forests are mainly degraded to shrub and often cover less than 25% of the area (see case study 3.1), whereas in the High Mountains crown covers are higher (10-70%) and areas are much larger (see case study 3.2).

Ratios of forest to cultivated areas (see Figure 17) reflect a similar pattern than the regional distribution of forests. In all northern VDCs ratios are above 1 : 3.5, i.e. per hectare of cultivated land there are at least 3.5 hectares of forest. Towards the south ratios decrease significantly to 1 : 0.5 - 1.5 and 1 : 0.25 - 0.5, i.e. for one hectare of cultivated land there are only 0.25 - 1.5 hectares of forests. Extremely low ratios are prevalent in the south-western area, i.e. in the southern Indrawati Khola, where ratios are below 1 : 0.25, implying that per hectare of forest there are more than 4 hectares of cultivated land.

Calculations of inputs onto agricultural fields, as done by Wyatt-Smith (1982) propose that in order to use both forests and agricultural land sustainably there should be a proportion of 3.5 hectare of forest per hectare cultivated area. When applying this figure to Sindhupalchok district it becomes obvious that this ratio is only found in the northern areas, whereas in most VDCs the actually existing forest cover is merely 5-40 % of what it should be !

Figure 16 Percentage of agricultural land to total land area in Sindhupalchok



source: ICIMOD (1993a), based on LRMP (1986)
cartography: Kotta/ Graner 1993

1.3 Forest Development in Sindhupalchok - Implementations of Policies

The data presented in the previous chapter are based on 1978-aerial photographs. The question remains to what extent they are still valid today. Agricultural areas have certainly changed only insignificantly, due to restrictive government policies. On the other hand, this period has witnessed substantial and unprecedented campaigns in order to stop deforestation and degradation of forests, reflected in project activities and government policies and legislation leading to the emergence of "Community Forestry" and later on "User Group Forestry" (see II 2.4 ff).

During the last two decades, and especially during the 1980s, extensive plantation activities have been conducted due to the impact of the Nepal-Australia (Community) Forestry Project (NA(C)FP) and a total of 10,642 ha[1] of forest area have been newly planted (District Forest Office, Chautara: unpublished records). Whereas annual plantation rates used to be 100-250 ha for the whole of the district during the 1970s, the rate was increased to 500-650 ha (1980-82) and even to 900-1,000 ha (1983-87) during the third phase of the project, when the main focus of activities was on plantations. Since then targets have again been reduced to about 200 ha per year. As most of the plantations are conifers, mainly *Pinus roxburghii* and *Pinus betulis*, the composition of species is likely to have changed since the LRMP and today the area covered by conifers is possibly higher than the area covered by mixed stands.

Plantation activities were carried out in almost all VDCs and in many VDCs this has lead to a significant increase in forested area (for figures see Table A10, appendix) with an average of 133 ha per VDC and a slightly lower median (106 ha). In northern, High Mountain VDCs with high forest covers plantation activities have been much lower and there, new plantations of 20-30 ha constitute usually less than 1% of the VDCs' total forested areas. On the other hand, in most southern VDCs, especially in the central part of the district, plantation activities have been significant, and in some places even amount to 200-520 ha, occasionally accounting for over 50% of the previous forest area, in one extreme case (Jyamire VDC) even for 111%.

Besides HMG and (indirect) project inputs, some of the plantation activities have been carried out in local initiatives, based on the Community Forestry Rules of 1978 (see II 2.4). According to the Panchayat Forest and Panchayat Protected Forest Rules each VDC (then panchayat) could apply for an area of up to 130 ha degraded forest to be registered as Panchayat Protected Forest (PPF) and, additionally, to allocate a maximum of 500 ha non-forested area in order to be reforested as Panchayat Forest (PF). During the 11-year period of implementation (1978-89) a total of 50 VDCs (out of 79 VDCs) have joined this programme and allocated an average of 32.2 ha for new plantations, amounting to 1620.1 ha. Thus about 15% of all area

[1] According to data received at the District Forest Office 10,642 ha have been planted, whereas the VDC break-up only specifies 10,507.4 ha.

whereas during the 1980s a further 1,044 ha were registered as PPFs, at an average annual rate of 116 hectare. Yet again, the major share (722,3 ha) was registered by 9 VDCs whereas a total of 25 VDCs "shared" the remaining forested area of 438.5 ha.

The new legislation of handing over forests to user groups (see II 2.5) has been implemented from 1989 onwards. In Sindhupalchok the first user group was registered in February 1990 and by November 1994 the total number was 140 user groups, who have applied for having handed over a particular forest or piece of forest for utilisation as specified in the respective operational plan (OP), agreed upon between the members of the user group and the District Forest Office. A total of 121 operational plans state the area of the respective forests, amounting to 5661.9 ha. Most of them are either natural forests (N) or natural forests which had enrichment planting during the last decades (NP) whereas plantations (P) and plantations dominating in natural forests (PN) only play a minor role (see Table 6). Compared to the areas of forests registered by panchayats during the 11-year period of implementing the Panchayat Forest and Panchayat Protected Forest Rules this figure is far outreaching the previous policy (166 %), within a much shorter period of time.

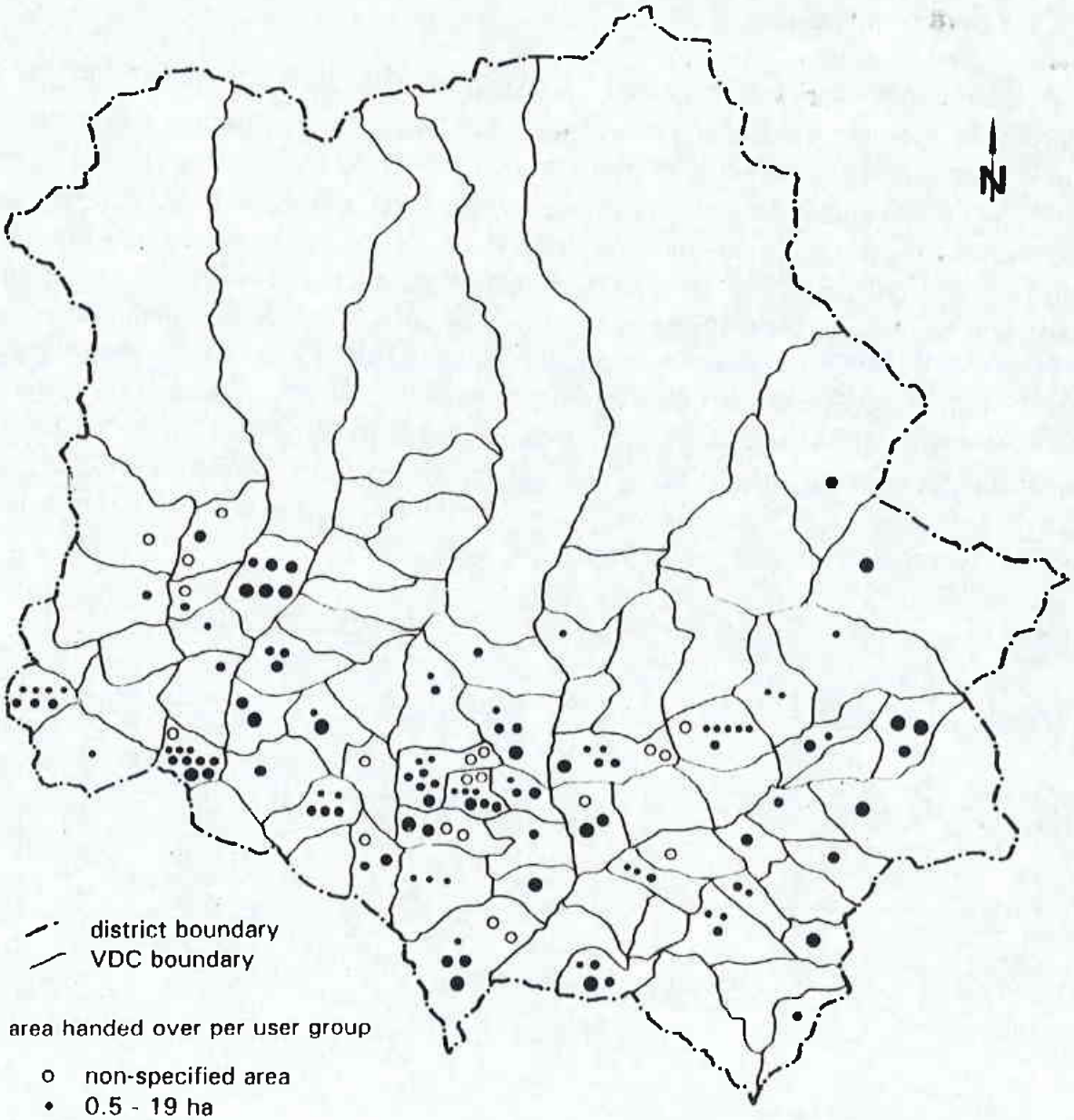
Table 6 Forests handed over to user groups (1989-94) (abbreviations see text above)

	total	N	NP	PN	P	non-specified
no of groups	140	43	59	14	7	17
area [hectare]	5661.7	1710.3	3070	529.6	178	173.8

source: Operational Plans at Ban Karyalaya (District Forest Office), Chautara

Most of the forests handed over to user groups range between 20 - 50 ha (37 groups), with an average size of 46.8 ha (for the 121 operational plans stating the area) but a much lower median of 30 ha. This low median is due to the fact that large areas of more than 90 ha have been registered by a total of 17 groups, including 4 groups who have registered areas 4-fold of the average (> 99 ha) and upto 350 ha. A VDC-level analysis shows that the average area of forests handed over per VDC is 71.7 ha. By November 1994 the number of VDCs that had no registered user groups was 35, which raises the average area for the participating VDCs to 128.7 ha. Yet again there is a high concentration of areas registered as user group forests in 4 VDCs with 300-700 hectare each, totalling 1,636 ha, i.e. 29% of all forest area registered as user group forests in the district On the other hand, concentrations are only partly identical to concentrations under the previous policy.

Figure 18 Forest user groups registered in Sindhupalchok (1990-94)



source: District Forest Office (Ban Karyalei), Chautara (XI/ 1994)
cartography: E. Graner (1995)

years) and finally 4.3% (older than 65 years). These figures do not differ significantly for different ethnic/castes groups. The median age is given as 21.6 years by ICIMOD (1993b: 7). An interesting piece of information is the gender proportion (male : female) which was recorded as almost equal (100 : 99) whereas the previous censuses gave ratios of 100 : 96 (1971) and 100 : 89 (1981). Yet according to unpublished data (ibid. 1993a; Table 7) it was 100 : 97 in 1991.

1.2.2 Ethnicity and Literacy

The ethnic composition of Sindhupalchok is characterised by a high degree of heterogenity (Figure 19a; figures in Table A14, appendix). Whereas this chapter confines itself to a general overview, details on ethnic and caste groups, such as their regional distribution, are given for the ones living in Western Sindhupalchok (IV 2.1). The Tamang living traditionally in Sindhupalchok are still the major ethnic group in the district and account for 32.9% of the total population. Chhetris (18.8%) and Brahmins (11.8%) are the second and third major groups and taken together, as done in some statistics, form a group almost equal in size to the Tamang. The fourth major group are the Newar (11.6%). All other castes or ethnic groups are minorities of less than 5% of the total population. The largest among these minor (ethnic) groups are the Sherpa (4.2%) and the Sunyasi (3.5%). Occupational castes, i.e. Kami (blacksmiths), Damai (tailors), and Sarki (cobblers) account for 6.7% of the population, with Kami as the most numerous group (3.7%).

According to the Census 1991 the rate of literacy among the population older than six years (215,327 persons) is 29.2%, opposed by a rate of illiteracy of 69.4% (for about 1.4% the status of literacy was not stated). Yet rates differ significantly both, in terms of ethnic groups and gender (see Figure 19b; for data see Table A15, appendix), and whereas "only" 55.4% of all men are illiterate the rate among women is 85.3% (HMG/NPC/CBS 1993b: 12). An analysis of the literacy status for eight major ethnic/caste groups of Sindhupalchok (see Figure 19b) shows that among men illiteracy is mostly below 50%. It is especially low among Brahmin men (33.9%), for Chhetri, Sunyasi, Magar and Newar it is between 40-46% and it is highest for Tamang as well as for Kami (> 70%). Non-formal education plays an important role for men, rates are between 10-20%, although this is based on a vague definition about the standard. For women the rate of illiteracy is above 70% for all ethnic/caste groups, even for Brahmins and Newar with a "minimum" rate of 71.4% and 74.9% respectively. Among other groups illiteracy among women is above 80%, for Tamang and Kami even above 90%!

Secondary education is not a very common feature in Nepali (rural) society and even for men the rate is only 11.2%, whereas for women it is as low as 4.2%. The highest rate for secondary education again exists for Brahmin (15%) and Chhetri

men (12.1%), for Tamang, Sherpa and Kami it is below 2.6% (2.6, 2.1 and 1.7% respectively). For women secondary education is insignificant for most groups, and is only above 1% for Newar (3.9%), Brahmin (3.1%) and Chhetri (2.6%), whereas for all others the rate is lower, with a minimum rate for Tamang (0.39%) and Kami women (0.13%). A further qualification, which often is the prerequisite for qualified jobs, is the passing of the SLC-exam (school-leaving certificate). Among Brahmin men 5% have passed SLC but the rate for Tamang, Magar, Kami and Sherpa is only less than 1%. Among women Brahmin have an extremely high rate (4.9%), exceeding by far the rates of Tamang, Magar or Kami, where merely 0.3-0.5 % of the women have passed the SLC.

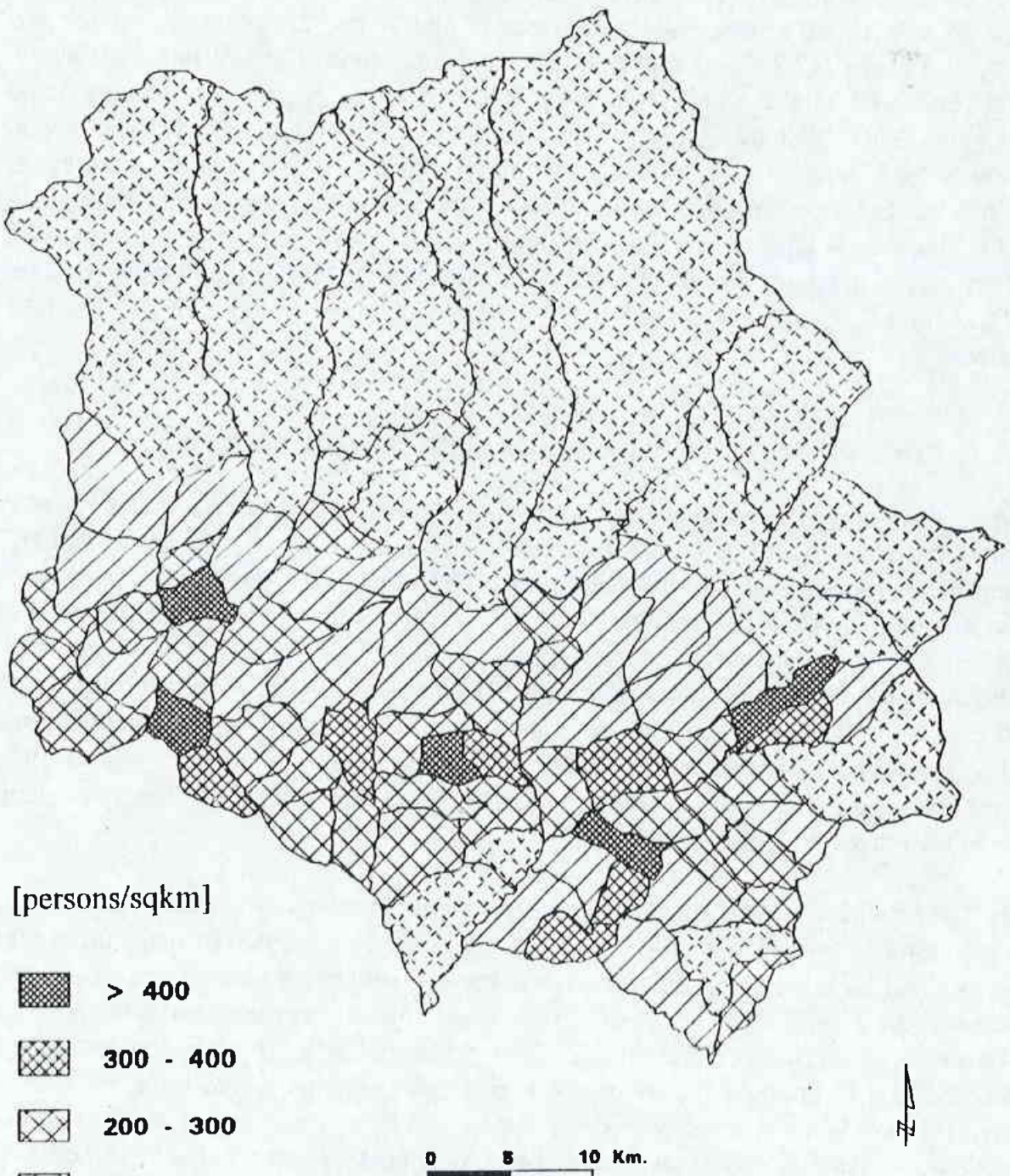
1.2.3 Regional Distribution of the Population

Average population densities in Sindhupalchok prior to the Population Censuses were estimated at 70.6 persons/sqkm for 1952/54 (quoted in ICIMOD 1993b: 7) and are above 100 persons/sqkm today (see Table 7, above). Population densities of the single VDCs (see Figure 20) differ significantly from district averages. Whereas most Middle Mountain valleys, located in the southern district, have densities of 200-400 person/sqkm, densities in the northern High Himal VDCs are less than 50 persons/sqkm, and as low as 9 persons/sqkm in Gumba VDC, bordering Tibet (for VDC names see Figure A3, appendix). Densities gradually increase towards the south, where most VDCs of the Middle Mountains have population densities of 100-300 persons/sqkm. The highest population densities of over 400 persons/sqkm are to be found in old market "towns" as the district capital Chautara, or in new markets as Barabise and Bansbari VDC, the old road head in the Indrawati Khola.

Population changes during the intercensual period (1981-91) and 1981-densities for single VDCs are difficult to calculate due to boundary changes after the decentralisation policy in 1982/83 [6]. A second constraint for the 1981-Census data is the fact that some VDCs where no boundary changes have occurred were reported with extremely high population figures in 1981 (such as Banskharka or Timbughyangyl VDCs) which are totally out of comparison to both 1971 and 1991 Census data (for figures see Table A12, appendix). This could be explained by either political interests[7] and/or by the fact that the 1981 enumerators were paid per

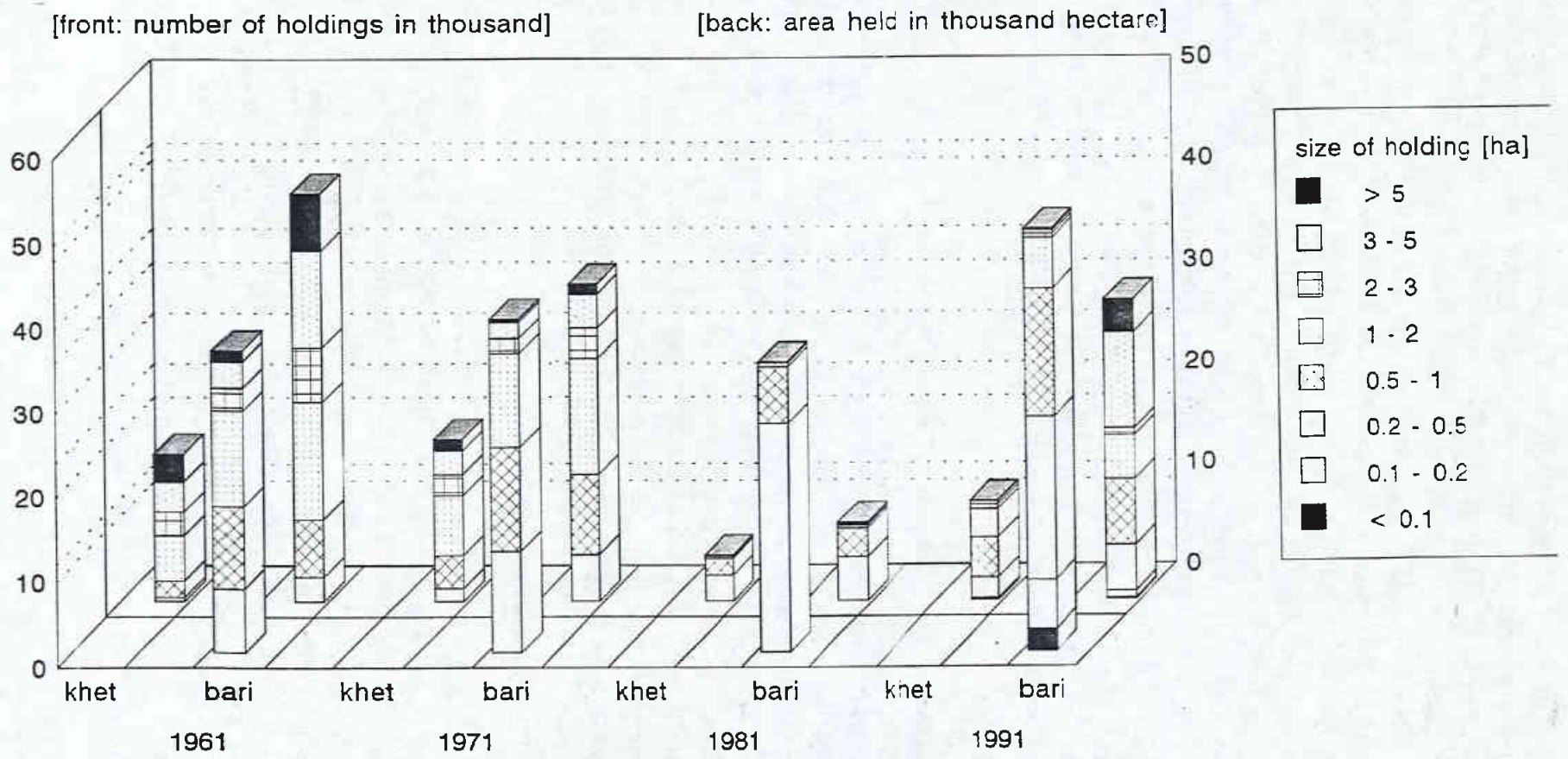
[6] A map produced by ICIMOD (1993b: 11) has partially calculated population declines with a mixture of 1981 Census figures and 1991 VDC boundaries resulting in incorrect data which differ significantly from the census they are supposed to be derived from. For instance Palchok VDC was recorded with a density of 523 persons/sqkm in the 1981-Census but with only 250 pers/sqkm in the Census of 1991. This "population decline" of over 50% is due to the fact that in 1981 the area was more than double of its 1991-size for which the population density has been calculated (for corrected data see Table A12a, appendix).

Figure 20 Population densities in VDCs in Sindhupalchok district (1991)



source: ICIMOD (1993a), based on Population Census 1991
cartography: Kotta/ Graner 1993

Figure 21 Land holdings for different sizes of holdings in Sindhupalchok 1961/1971/1981/1991



source: Agricultural Census 1961/62,71/72,81/82,91 HMG/NPC/CBS (1966;1976c;1985a;1993c)
graphic: Graner VIII/ 1993

Table 8 Ratios (khet : bari) for different sizes of land holdings

size of holding [ha]	<0.1	0.1 - 2	0.2-.5*	0.5 - 1	1 - 2	2 - 3	3 - 5	>5
ratios (1961)	n.a	n.a	1 : 5.8	1 : 3.5	1 : 2.6	1 : 2.3	(1 : 3.2)	1 : 1
% of holdings (1971)	n.a	n.a	30.1	31.2	28.3	4.6	4.8	0.9
ratios (1971)	n.a	n.a	1 : 3.6	1 : 2.4	1 : 1.6	1 : 1.5	1 : 1.4	1 : 0.9
ratios (1991)	1 : 7	1 : 4.2	1 : 2.2	1 : 1.7	1 : 1.6	1 : 1.6	(1 : 2.8)	(1 : 108)

* for 1961/71 < 0.5 ha source: HMG/NPC/CBS (1966: Table2; 1976: 1,2; 1993b: Table 1)

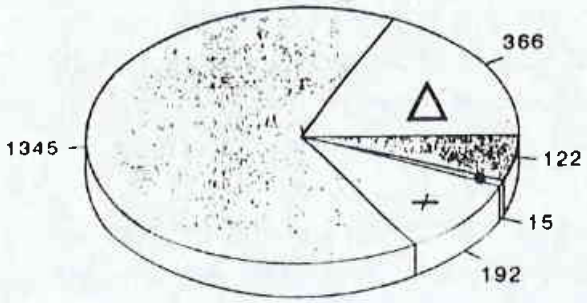
1.3.3 Tenancy - Insecurity Remaining ?

Access to private land is the most important asset in order to secure subsistency for the majority of the population. Yet a significant proportion of the rural population additionally relies on cultivating land held by others, renting-in either privately owned land (raikar; see III 3.2.1) or guthi (see III 3.1.2.2). Yet these "tenancy" arrangements, although a long-standing tradition, are usually not formally registered in order to avoid legal claims from the side of the tenants, based on the Land Act (see III 3.2.1), a fear also reflected in the Agricultural Censuses. Whereas the 1961 Census, i.e. prior to the land reform, reported a total of 5,153 ha to be cultivated by tenants, it was merely 2,425 ha according to the Census 1971 (see Figure 22). Interestingly, in 1961 more bari than khet land was cultivated by tenants whereas by 1971 this had changed (see Figure 22), as the area of bari had declined significantly to 30.1% of its 1961 area.

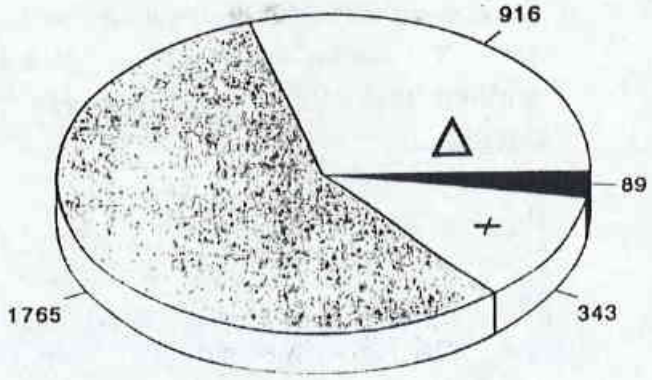
By 1991 the area had even further declined to 925 ha, a diminuation to 17.9% of the area cultivated by tenants in 1961. Most amazingly, the 1981 Census suggests that in the whole district a total of merely 55 (!) ha are cultivated by tenants (HMG/NPC/CBS 1985: 2/4), a most blatant example for underreporting of data (for this reason this Census has not been included here). Yet all data suggest a general decline in area cultivated under tenancy and are a good indicator for the willingness of giving information, on the other hand they do not correlate to field data (see case studies 3.1.4. and 3.2.4).

The Agricultural Censuses distinguish six types of arrangements (see Figure 22), the main types of arrangements for tenancy for both khet and bari land and in all years being the handing over of a fixed amount of produce (kut), where about 50% of the main harvest (paddy for khet, millet or maize for bari) has to be handed over to the landowner. In 1961, this type of arrangement accounted for 60.3% of all tenancy arrangements (65.9% for khet and 56.7% for bari land), similarly in 1971 (62.5 %) and

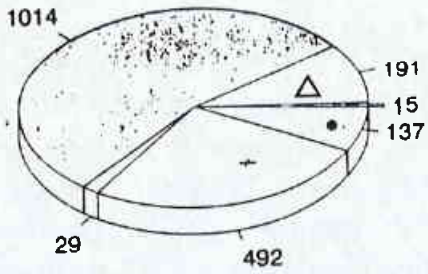
Figure 22 Agricultural areas under tenant arrangements (1961/ 71 and 1991)



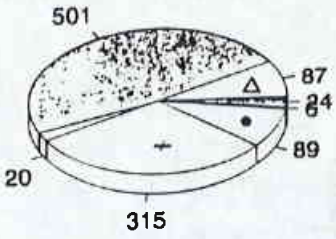
khet 1961 (2,040 ha)



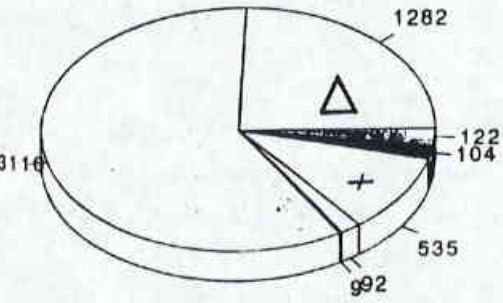
bari 1961 (3,113 ha)



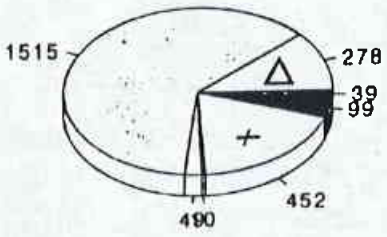
khet 1971 (1,389 ha)



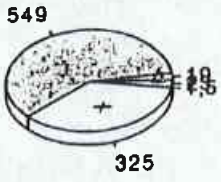
bari 1971 (962 ha)



1961 (5,153 ha)



1971 (2,425 ha)



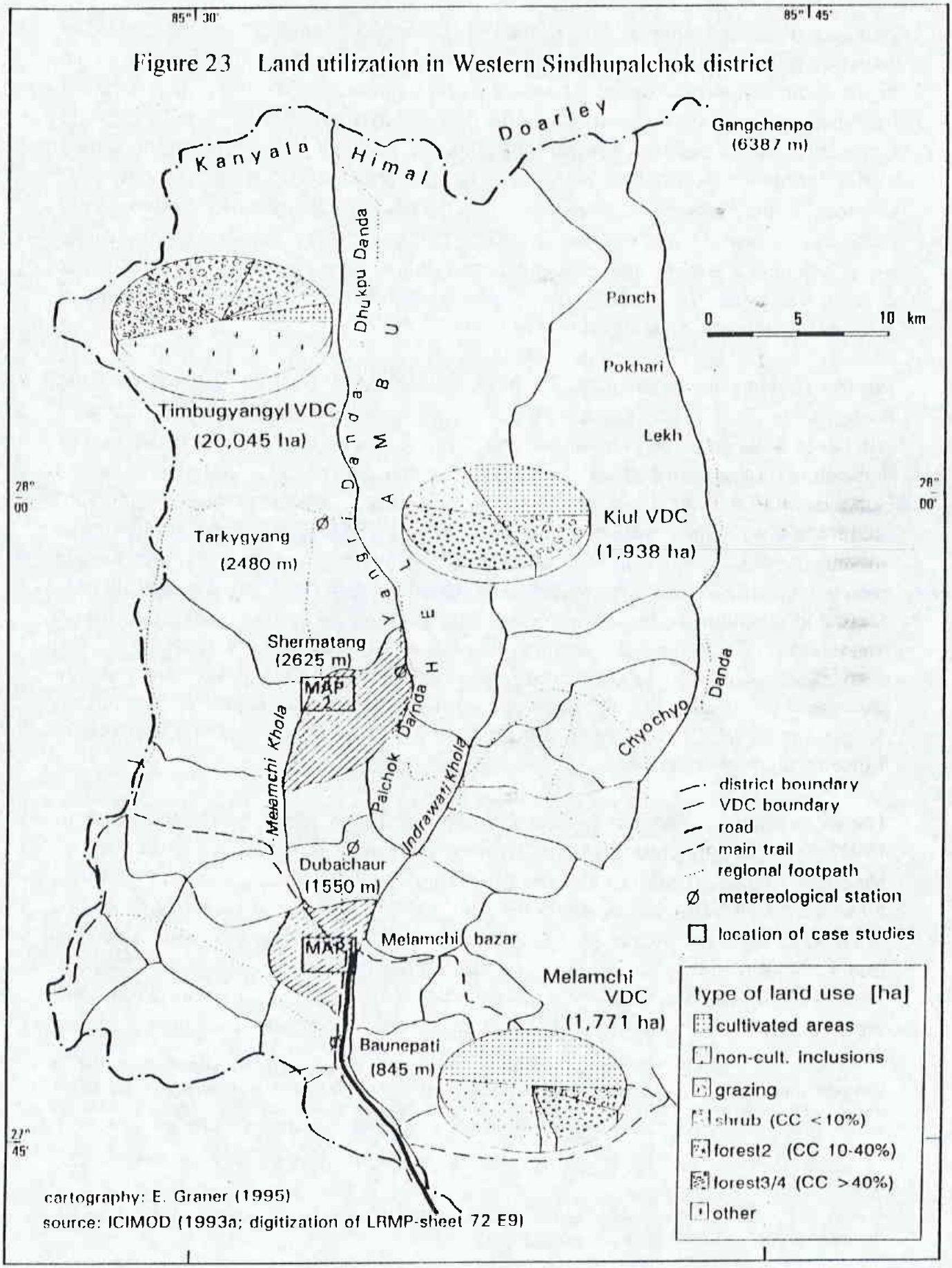
1991 (925 ha)

arrangements for tenancy

△ fixed amount of money ☐ fixed amount of grain ☐ fixed amount M&Gr ⊣ share-cropping
⊙ exchange of service ■ mortgage ⊠ other

Source: HMG/NPC/CBS (1965:24;1976: Tab.6b;1993:Tab.2)
Draft: Graner XII/ 1993

Figure 23 Land utilization in Western Sindhupalchok district



cartography: E. Graner (1995)
source: ICIMOD (1993a; digitization of LRMP-sheet 72 E9)

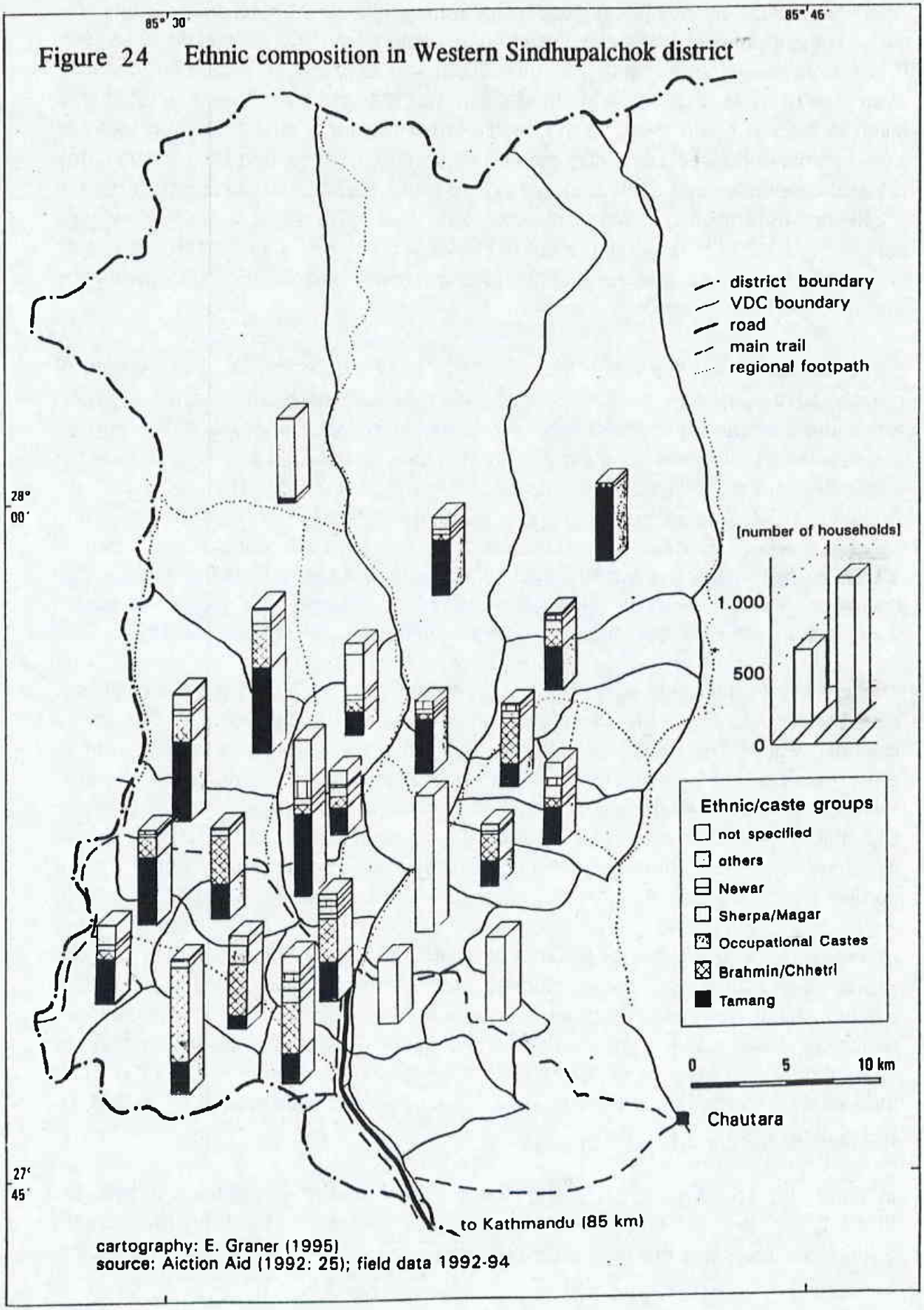
environment many of them reply that the air (hauwa) is much better up there, yet asked what the point of good air was when the land was too unproductive to feed a family it becomes obvious that they do not necessarily regard it as their own choice ! In terms of access to education, Tamang are considered to be one of the most backward ethnic groups by most other groups and indeed their literacy rate is lower than average and may well be 5 - 10% (see also chapter IV 1.2.2, above).

The Yolmo-(Sherpa) ("Helambu-Sherpa") have settled at elevations above about 1600 m on the ridge between the Melamchi and Indrawati Khola, commonly known as Helambu (see Figure 23). They migrated to this region from the Langtang area but there are no detailed family histories about the timing of this event. Bista (1967: 160) lists the Yolmo along with the Solo Kumbhu - Sherpa and does not further distinguish them whereas the lamas of the Tenyelingba-lineage (see below) view the Yolmo to be closely related to the Tamang, due to the fact that both groups perform cross-cousin marriages, a link usually rejected by the Yolmo. They also have a subdivision into thar of approximately eighteen, and most of the names are similar or even identical to the Tamang names, except for their five priest-thar. Their languages are also similar, as is the case with many Tibeto-Burman languages, yet both their style of housing and clothing are totally different. Besides, unlike the Tamang, the Yolmo have remained strictly Buddhist, and the prayer poles in front of each house are a distinctive feature of their villages. Above all, they hardly celebrate Hindu festivals and their main annual festival is losar (Tibetan New Year) in February, when new prayer flags are put up.

The percentage of Yolmo-(Sherpa) in Sindhupalchok district is 4.2%, whereas in their settlement area in Helambu they are the major ethnic group (42.7% in Kiul VDC and 78 % in Timbughyangul VDC). Due to the natural setting of their villages their economy was traditionally based on animal husbandry (see 2.2.3) and high-altitude agriculture, growing potatoes and radish. This is one common etymological explanation for the placename Helambu (Sherpa he: potato; labhu: radish), but one reputed by the lamas. They give a more sophisticated explanation that when Buddha in the incarnation of Guru Rimpoche travelled through this area on his way from Tibet he formed both hands into bowls ("two handful") and said that not more than this could grow in this area (Ch. Lama, Shermatang).

The earliest Buddhist temple in western Sindhupalchok was founded by the Serma-lineage of lamas in the early 13th century, named Gortsahling, known as Syethighyang ("white ghyang") in Nepali (Clark 1980: 35). This predominant lineage has meanwhile a total of nineteen sister foundations, most of them within the region, established mainly in the early 19th and early 20th centuries (ibid.). Later Buddhist immigrants were Tibetan lamas of the Tenyelingba-lineage who repute being related to the Yolmo-Sherpa. They settled in the northern part of the Melamchi Khola about 250 years ago and trace their history back to Nima Singh Lama who came to this area from Keraung (Tibet) during the Malla period (18th century) to build a monastery

Figure 24 Ethnic composition in Western Sindhupalchok district



cartography: E. Graner (1995)
source: Aiction Aid (1992: 25); field data 1992-94

neighbourhood to Brahmin settlements and perform occupational services for them and Chhetris. In most VDCs in western Sindhupalchok all subgroups of occupationals account for 4-10% of the population. In the eastern Melamchi and eastern Indrawati Khola there are three VDCs where percentages are higher (12-16%) and in Sindhukot VDC, close to the border to the Kathmandu Valley, there is an exceptionately high percentage of 20.4%. A case study on Kami is given for Kiul-Chitre (see IV 3.2.4.2).

The Newar traditionally inhabit the Kathmandu Valley and form another - though extremely influential - minority in the district. Unlike other ethnic groups, they have a distinct intra-group caste hierarchy. Bista (1967: 18) lists 26 different castes along with their traditional occupation and family names. Yet in Sindhupalchok it is predominantly the Shrestha subgroup who have migrated to the area at the turn of the century. This group has a high (caste) status, ranking next lower to priests and goldsmiths. They are traditionally merchants and according to Bista (ibid.: 18) "have always travelled for trade or business".

In Sindhupalchok as a whole they account for 11.6% of the total population whereas in the western part their percentage is only 2%. In many VDCs they are not represented at all but they dominate the five main bazars in the area, Baunepati (Bansbari VDC), Melamchi Pul Bazar, Talamarang Bazar, Chanaute (Mahankal VDC), and Tipani (Dhab VDC) (for location see Figure 24), where they account for 4-6% of the population and for about 90% of shop keepers. Although they were not bestowed with land grants they have been important and influential merchants from early onwards. Due to their merchandise expertise (literacy and accounting) they were often appointed as regional tax collectors, further adding to their power.

For most ethnic minorities living in western Sindhupalchok, such as Magar, Gurung, Sunwar, and Danuwar, details about their settlement history are not available. Magar and Gurung are two dominant groups from Western Nepal (Bista 1990: 18). Their settlements are scattered all across the area and only comprise of a few families. It is likely that both of them were settled in this region in order to carry out mining, as is obvious from the names of their settlements Khanigaon ("mining village") or Phalame ("iron"). A case study for one ethnic minority is given for the Danuwar of Melamchi (see IV 3.1.4.4).

Kirkpatrick also gives an early account of agricultural production in Nepal for 1793. According to him "kohrya (bari) land is not very productive as it requires considerable labour and yields no very profitable grain, as muckhye (maize), kodo murrova [millet], some species of ghya (a dry coarse rice), and toori [mustard]; they also raise some barley, wheat, cotton, kagnos, or millet, suma and phaphun [buckwheat]" (ibid.: 94). Unfortunately he does not mention yields on bari land whereas about khet he writes: "In the generality of kaiths [keth] seed is reckoned to yield from twenty to thirty fold" (ibid.), i.e. an area of one pathi of seedlings (equivalent to 1 ropani, i.e. 0.05 ha) yielded 20-30 pathi (= 1 - 1.5 muri, equivalent to 50-75 kg), i.e. only insignificantly less than in the mid 20th century (see below).

Table 9 Rates of taxation during the Rana period [per pathi of seeds][9]

type of land	khet (irrigated)				bari (unirrigated)				"roof"-tax
classification	abal	doyam	sim	chahar	B-hale	L-hale	B-kodale	L-kod.	
			- n.a. -				- n.a. -		
1833	-n.a	-	- n.a. -				- n.a. -		0.04 Rs
1948	6 pt	5 pt	4 pt	3 pt	1.04	0.64	0.56	0.32	1-3 Rs*

sources: Regmi (1978: 89 ff); * R. Shrestha, Melamchi VDC

Assuming a productivity of 30 pathi/ropani on abal-khet a taxation rate of 6 pathi is about 20% of the produce, a rate which seems to be similar for the other categories of khet-land[10]. Taxation rates for bari land are more difficult to assess due to lack of data. Assuming a productivity of 20 pathi/ropani per crop, i.e. each maize and millet, 2 ropani (i.e. 1 pathi of seeds, see footnote 8) produces 40 pathi of maize and 40 pathi of millet. The cash value of production per ropani, based on a conversion rate of 0.18 Rs/pathi for millet and 0.20 Rs/pathi for maize (see Table 10) is then about 7.6 Rs/ropani (3.6 Rs for millet and 4 Rs for maize). The taxation rate for lowland

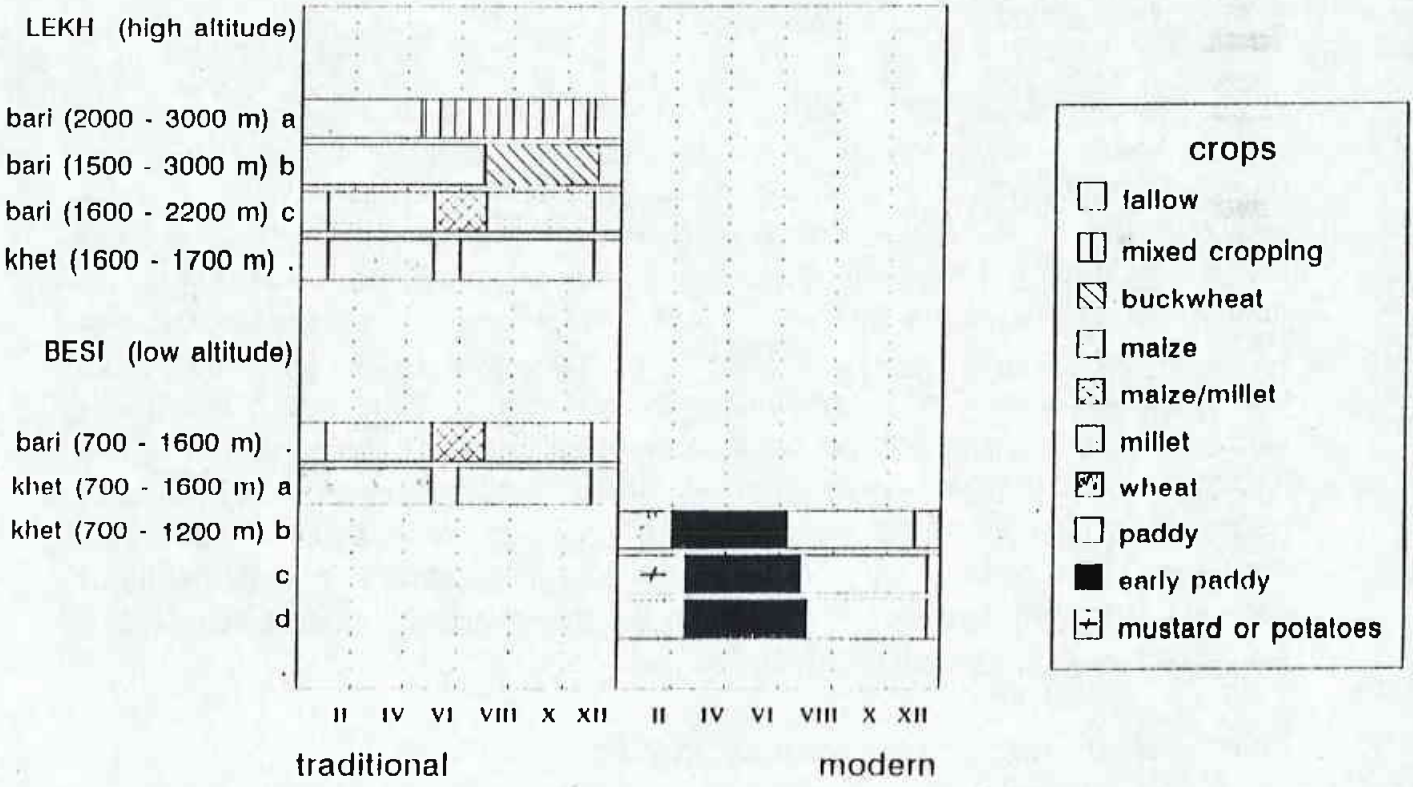
[8] For some reason, Kirkpatrick mistook this classification for a classification of the peasantry: "The peasantry of the mountainous country is divided into four classes, denominated owal, doem, seoom, and chaurem, which are Persian terms, denoting first, second, third and forth [..]" (ibid.: 1986-edition : 101).

[9] For khet land rates given by Regmi are only for the far western district Jumla, but are likely to have been similar in Sindhupalchok. For khet, the unit is given as "per muri of land" (Regmi 1978: 92). Usually one matomuri is equivalent to 0.25 ropani. Yet if production is estimated to yield 30-fold, i.e. 30 pathi (= 1.5 muri) per pathi of seedlings (i.e. per ropani, = 0.05 ha) then production per matomuri is only 7.5 pathi, resulting in a taxation-rate of 85%; thus it is likely that muri here is used as ropani. For bari the unit pathi of seedling is equivalent to about 2 ropani, as 4 mana (= 0.5 pathi) of maize seed is needed per ropani; yet these estimations vary significantly, Regmi (ibid.: 66) quotes a government assessment which estimates that 2 mana of (maize) seeds are needed per ropani.

[10] Regmi states that "according to ancient Sanskrit literature, the land tax should represent 8 to 16 % of the gross produce (Altekar (s.d.): "State and Government in Ancient India"; quoted in Regmi 1978: 264); Regmi also states that a proclamation of the Nepalese government in 1920 prescribed that newly cultivated land was given tax exemption for the first four years and then was to be assessed on the basis of one-sixth of the gross produce (ibid.).

December) the winter crop, usually wheat (gahun), was sown and harvested in April/May, followed by paddy (dhan), which was sown and transplanted in asar (June) (see Figure 25). This pattern is still prevalent today on fields at either high altitudes (for instance in the Kathmandu Valley, 1300-1500 m above sea level) or on fields with insufficient irrigation facilities. On bari-land maize (makkai) was sown in April and finger millet (kodo) was sown between in asar (June), growing in the shade of the maize stalks until the maize was harvested in srawin (August). This was traditionally done by only harvesting the corncob whereas the maize stalks remained on the field until the late autumn (see photo 11). The millet was harvested in kartik (November), by pulling off the grain ("kodo tipne"). As soon as the harvest was finished the stover and millet straw were cut and stored for animal fodder, a cropping pattern that has remained unchanged for centuries.

Figure 25 Agricultural cropping calendar



source: Gurung (1949) and field data 1992-94
graphic: Graner X/ 1995

paddy into rice involves a loss of volume of about 50% and as its refined form has a much higher market value (see Table 10) paddy was always locally processed into rice. This was traditionally done at a dhiki (photo 17), a wooden construction with a beam (of about 1.5 - 2m) used as a lever with a small pin of about 15 cm which hits a small hole in the floor of about 10-12 cm diameter where the paddy is placed. This dhiki needs two persons to operate it, one to step onto the beam, a task usually performed by either one adult or by two older children, and someone to sort the rice from the paddy and to refill paddy, usually done by a woman. A day's labour (10 hours) in an average resulted in about 15-20 pathi (52.5-68 kg) of rice. Due to this labour intensity grain surplus households have usually hired labour for this work. The rice was then portered to either Sakhu, in the northeastern Kathmandu Valley, or Dhulikel, east of Kathmandu Valley, tours of 1-2 and 2-3 days respectively, via Sindhukhola. The loads carried were usually 50-70 kg, either by members of the household or, especially for grain-surplus households, by hired labourers. It is not possible to quantify this trade but even low grain producing households stated that they have gone at least once a year. Exchange rates have remained remarkably stable, the price for rice during the 1950s was similar as during the 18th century (Table 10).

Table 10 Market prices for different types of grains (1793 - 1950) [Rs/pathi]

year (source) types of grain	1793 (1)	1934 (2)	1950 (3)
paddy	0.05 -0.20	0.13	0.20
rice	0.25	0.25	0.50
motto-rice *	0.10	n.a.	n.a.
maize	n.a.	0.125	0.20
millet	n.a.	0.10	0.18
wheat	n.a.	0.25	n.a.
daily wage	0.04	0.08	n.a.

* local variety (see 2.3.1 and photo 7)

sources: (1) Kirkpatrick (1811: 96-99); (2) Government of Nepal/Law Ministry: Revenue Records of Sindhupalchok (quoted in Regmi 1978: 236/37); (3) field data

It was only during the last two decades that this trade declined or, to be more precise, changed its form and location (see 2.3.1). The access to the road has made marketing easier but has also led to a decline in labour opportunities, both for portering and processing of paddy, as the paddy is now always marketed without being dehusked. This decline in labour opportunities has mainly effected households with unskilled labourers, yet without opening up new sources of income (see 2.3.2). At the same time there is a much higher demand for rice than for any other kind of

Exceptionally high yields were reported in 1977 with 2.3 t/ha whereas in the mid 1980s they had apparently fallen to 1.6 t/ha[15]; by 1989 yields for paddy were 2.1 t/ha. Yields are comparable to other regions in Nepal (ibid.: 88-96), but slightly lower than in the southern neighbouring Kabrepalanchok district (2.677 t/ha). The highest yields given are 3.683 t/ha for Bhaktapur district, Kathmandu Valley. Statistics on yields of other crops differ less significantly from field data. Yet all these calculations seem to be based on vague data of both production and area, and thus might lack any substantial basis.

On the other hand these official data vary significantly from yields calculated from field data. Although variation is high and the results difficult to generalise, the figures are interesting (see Table 12). Total average annual production on triple-cropped khet-fields is about 290 - 505 kg/ropani (5.9 - 10.3 tonnes/ha), comprising about 65 - 130 kg of wheat, 100 - 125 kg of cheite (early paddy), and 125 - 250 kg of summer paddy per ropani (0.05 ha). High-yielding khet fields might even produce 4 - 6 muri for each paddy harvest, i.e. a total of 530 - 730 kg/ropani (10.6 - 14.6 tonnes/ha).

Yields on double-cropped khet-fields are slightly lower but still amount to 3.5 - 7 tonnes/ha. Thus actual production calculated from field data is about double to sixfold than suggested by the official statistics. High-yielding bari-fields produce about 1.5 - 3 muri of maize (90 - 180 kg) and 2 - 4 muri of finger millet (135 - 270 kg) whereas low-yielding bari-fields produce about 1 - 1.5 muri of maize (60 - 90 kg) and 1 - 2 muri of millet (70 - 135 kg). Thus average yields on bari are about 130 - 230 kg/ropani (2.5 - 4.5 t/ha) for low-yielding and about 230 - 460 kg/ropani for high-yielding fields, i.e. 4.5 - 9 tonnes/ha.

A conversion into cash value is difficult due to heavy interannual fluctuations in the market value of grains (see 2.3.1), therefore several conversions are given, assuming a low, average and high productivity at low, average and high selling prices (see Table 12). For triple-cropped khet-land even a low annual output has a minimum cash value of about 1900 Rs per ropani (38,000 Rs/ha) but possibly more then double (90,000 Rs/ha). On doublecropped khet-fields the cash value of the annual production is about two thirds of the value produced on triple-cropped khet. As most households produce grain mainly for subsistence needs this converted cash value often remains a rhetoric dimension, especially for bari-land. Yet it is an interesting calculation in relation to either tax assessment and possible income for grain surplus households or to inputs done in form of either labour or chemical fertilisers.

[15] Inspite of all inconsistency it is a consistent pattern that after the 1981-Census yields had significantly fallen, possible due to under-reporting.

The actual classification definitely does not correspond to the legal definitions of the Land Measurement Act, defining that abal-khet is "khet land with good soil situated in valleys with a somewhat level terrain at altitudes not exceeding 3.000 ft [1.000 m], on which paddy can be cultivated and artificial irrigation facilities are available all year" (HMG/ML&J 1964: § 10 ii; translated in Regmi NMS 1982: 9), whereas doyam-khet only has irrigation facilities for five to six months or during the monsoon and sim-khet for more than two months a year, and soil containing sand and gravel and not retaining water for a long time. Yet these criteria for classification hardly seem to have been applied. It is doubtful that this occurred by accident yet at first site it is difficult to understand why this degrading classification was made and whose interests it could have been to have the land registered in a lower category. Yet many people, both peasants and officials, admit that this was purposely done (often with "some koseli" ribes involved !) in order to reduce the tax assessment which was going to be applied. Possibly the "strict" classification has only been applied in cases where the land holders refused to pay the bribes[18].

The obligation of each land owner to pay an annual land tax was reinforced in the Land Tax Act. Taxation is supposed to be progressive, both in terms of land classification and size of holding (Table 13). For size of holding there only exist two classes, of less and more than 20 ropani (1 ha). Yet in practice class 2 (> 20 ropani) is a rather theoretical category as holdings above 20 ropani are usually registered under several names (both names of family members and fictitious ones[19]) and hardly ever fall under tax assessment class 2. Besides, prior to 1992 rates were uniform for holdings of less than 20 ropani (1 ha)(see Table 13). Taxes have been raised in 1993, after not having been changed since the 1960s (see Table 13). Since the new tax assessment bari of B/C/D-quality (there is no A-quality bari in Sindhupalchok district) is taxed at the same rate as C/D-quality khet whereas for khet-land rates now differ more significantly, A-quality land is taxed threefold of C/D-quality land and almost twofold of B-quality khet (see Table 13).

Yet these rates are still extremely low in comparison to the actual productivity (see Table 12, above). Even the produce of a low-yielding triple-cropped khet-field has a minimum cash value of 1,900 Rs per ropani, and if assessed at the rate for abal in class 2 (7.68 Rs) has a taxation rate of 0.38 %, but assuming a more realistic assessment as doyam class 1 (1.43 Rs) the rate is merely 0.07 %. Similarly, a

[18] A bottleneck to me seemed the difficulties arising in the case of selling lower-graded land, yet locally the prices for land are fixed according to production, not to theoretical tax-classification, and after all a person buying highly productive land with a low tax assessment might even be willing (or forced) to pay a higher price. A critical situation may only arise in cases where this land is bought by government for the construction of roads &c with a (theoretically) fixed rate of compensation, yet there are certainly solutions to that.

[19] As one Tamang said: "when the land reform came the rich people registered their land in the names of all sons, if that was not sufficient they also registered it in the names of their daughters and if that was not sufficient they registered it in the names of their dogs". Khattel (1992) in his village profile for the M.Sc. has come across a case when a Brahmin had registered some of his land in the name of a tree (*Shorea robusta*).

2.2.3 Livestock Husbandry - Vital Interlinkages to Agriculture

Animal husbandry is a component of no minor importance for household subsistence than agriculture and the two are closely interlinked. Traditionally, animal dung and traction were most significant inputs into agriculture (see 2.2.1, above). Thus all households who could afford to had either a pair of oxen (hal) or, if less wealthy, at least one ox which they could supplement with one belonging to a close relative in order to have a pair for ploughing. Traction is still of great importance today as mechanisation is virtually non-existent in rural mountain areas. Today animal dung is still an important fertiliser for bari-fields (see photo 10) whereas it is almost completely replaced on khet, where only wheat is still naturally fertilised but chemical fertilisers are applied for paddy.

Cows are kept for milk and goats are raised for meat, as according to Hinduism it is considered to be blasphemous to drink an animal's milk and eat the same animals' meat. Besides, most non-Brahmin households hold chicken for eggs and meat and many ethnic groups, as Tamang, Danuwar, Magar, and low caste groups as Sarki and Kami also rear pigs. A fairly recent development in animal husbandry is the increasing importance of dairy cattle due to extended market facilities, in contradistinction to a time when they were mainly kept for household milk consumption as marketing was confined to small-scale local markets with a limited demand. But the extension of the national infrastructure in terms of road networks has brought the region closer to Kathmandu (5-7 hours) and has opened up new market opportunities, especially when a milk collection centre was opened in the early 1990s in Tarkhola (see 2.3.1).

This opportunity has brought about a situation in which dairy cows, especially high-yielding buffalo cows (about 5-6 litres/day), have experienced a significant rise in market value in relation to other cattle. Fricke (1993) in his study in Timling, Rasuwa (north of Sindhupalchok district) states that market prices in 1981 were 1200 Rs for buffaloes and 800 and 900 Rs for oxen and cows, respectively (see Table 14). As the road network in western Sindhupalchok then was similar prices were likely to either similar or only insignificantly higher. Yet by 1993 this situation has completely changed, one ox only had one forth of the cash value of a buffalo, cows only one third.

2.2.4 Chemical Fertilisers - High Demands on Small Pockets

According to information received from the Agricultural Input Corporation (AIC) in Kathmandu, chemical fertilisers were imported to Nepal from 1965 onwards, when a quantity of 3,169 tonnes was received as development aid. The following years witnessed a rapid growth rate in imports. In 1969/70 over 10,000 tonnes were imported annually and by 1979/80 more than 50,000 tonnes. These rates have increased continually[21] and by the early 1990s the import volume reached 200,000 tonnes. Nepal, until today, does not produce any type of chemical fertiliser and thus exclusively relies on imports. Imports based on aid programmes are still of great importance although from the early 1980s onwards loans have become of secondary, in some years even of primary, significance (for detailed figures see Table A5, appendix).

Quantities of chemical fertilisers available at the national level need to be shared among the districts. This is done according to a quota calculated from the Irrigation Master Plan (ICIMOD 1993b: 88). An ICIMOD study, analysing distribution of chemical fertilisers in Sindhupalchok district, speaks about "fluctuating trends" in fertiliser sales. It quotes sales for 1982-91 to range from 1607 (1985) to 2197 tonnes (1987), with four years of low-volume sales of 1607-1622 tonnes and two years of sales above 2000 t (1987: 2197 t; 1983: 2080 t). Although termed "erratic" (ibid.) these data can be considered to be fairly homogenous, yet they vary significantly from data received locally at AIC in Chautara, which reveal a "truly erratic" trend, of 613 and 629 tonnes in 1988 and 1989[22] .

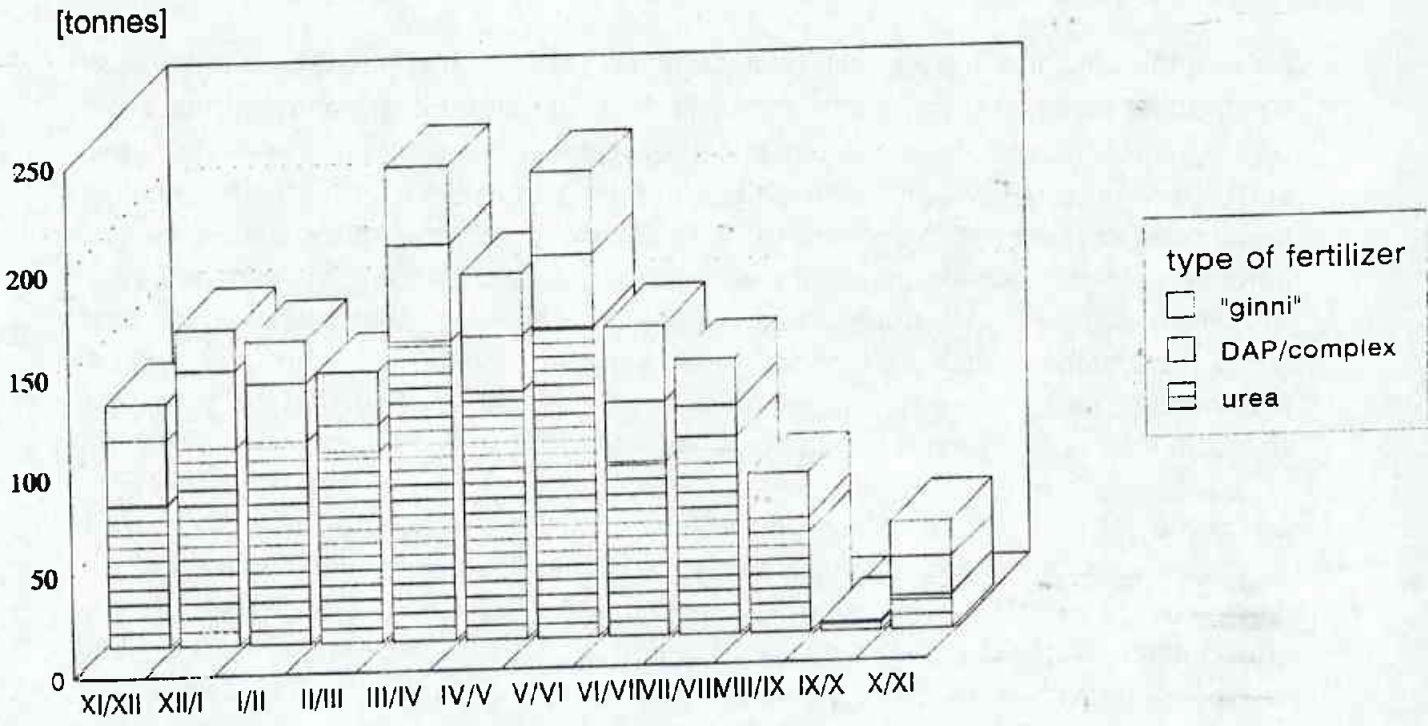
Types of fertilisers used are nitrogen-containing types as ammonium sulphate (21%N; "chinni mal": "sugar" fertiliser), *urea* (46% N) and multi-component types as complex and DAP (Diammoniumsulphate; 30%N, 60%Ph). In spite of the variability *urea* has always been the predominant type, accounting for 45-76% of all sales except for one of the two low-trade years (1988/89), when it only accounted for 34%. Selling prices for chemical fertilisers have significantly increased from the mid 1960s, when most types cost about 1000 Rs/tonne, to the early 1990s, at 6000 Rs/t (300 Rs/sack) for *urea* and ammonium sulphate and even 13,600 Rs/tonne (680 Rs/sack) for DAP (see III 3.2.2, Figure 9b).

Chemical fertilisers have been applied in the middle/upper Melamchi and Indrawati Khola from the early 1980s onwards. Whereas prior to the construction of the road its (lack of) availability was perceived as the major difficulty today it is increasingly the

[21] An ICIMOD publication (1993b: 89) speaks about an annually changing level of fertiliser imports to the country, a concern not evident from the data received at the Agricultural Input Corporation; yet the validity of data is difficult to assess, but there are no other sources available.

[22] ICIMOD (1993b: 8) quotes the sales of fertilisers in 1988 and 1989 to be 1613 tonnes in each year; yet data received locally is also broken down into different types of fertilisers and thus seems to be more reliable.

Figure 26 Trade of chemical fertilisers in Melamchi Bazar
(15. XI 1992 - 14. XI 1993)



source: grain shops in Melamchi bazar
graphic: Graner XII/ 1993

dasain-festival, when there is an enormous need for grain (and also for cash) in order to process it into chiura (beaten rice; see photo 7), eaten instead of rice during festival days. For this purpose basmati is commonly used and therefore has a trade maximum in the two months before the festival.

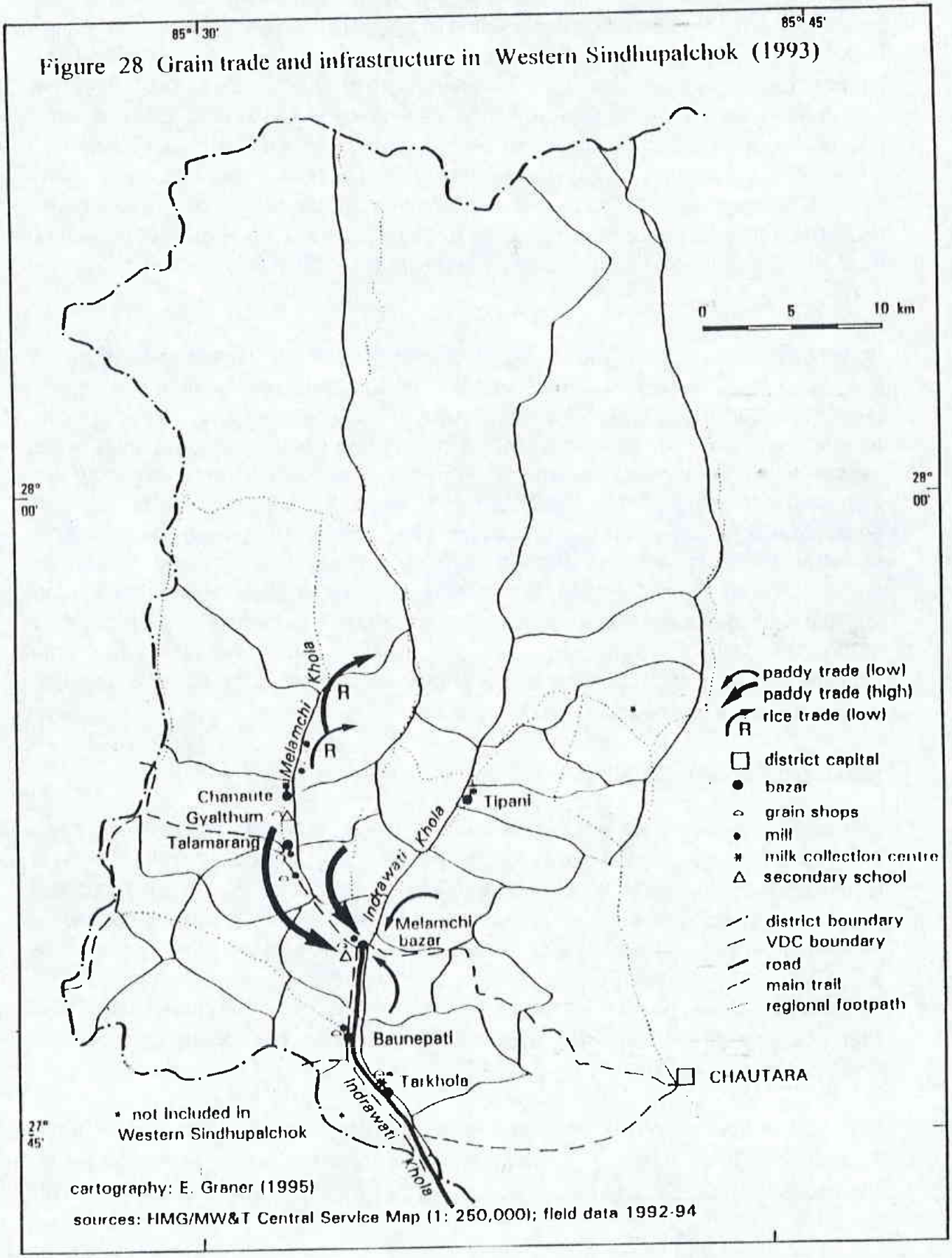
The paddy trade has two minima, one during the monsoon months asar and srawin (June - August) when most farmers are engaged in (trans)planting paddy, and, besides, paths are difficult for the portering of goods due to the rainy season. The second low season is during kartik (October/ November) over the dasain and tihar festivals. Even in the low-trade months the trade volume still reaches over 100 tonnes whereas in the main trading months the volume is 300-400 tonnes. The total volume of paddy sold/bought in Melamchi Bazar during the 1992/93-season (mid November 1992 - mid November 1993) reached more than 3,000 tonnes.

Compared to the trade volume of paddy the trading of all other types of grain, i.e. wheat, millet and maize, is only of minor significance. Maize is planted on both khet and bari-fields, but usually only the bari-harvest in asar (June) is marketed in the following months asar, bhadau, aswin (June-August) with volumes of up to 10-13 tonnes per month. During the off-season the trade declines to 3-6 tonnes per month, resulting in a yearly total of about 78 tonnes. The trade of wheat is slightly lower (72.5 tonnes), having the main season in cheit, baisak, chest (middle of March - June) with monthly volumes of 8-15 tonnes and a secondary maximum in srawin and bhadau (July - September). Among non-paddy grain millet has the highest trade volume (180 tonnes), with a maximum of 14-20 tonnes in the four months following the harvest (December - March) and a secondary maximum of 20-23 tonnes in the two months before the festival season (August - September).

In Nepal there are no guaranteed grain prices and interannual fluctuations exist for all types of grain (Figure 27b). Selling prices (1992/93) fall to their lowest level soon after the respective harvest. Traditionally, prices for all grains used to be similar (see 2.2.1), today non-paddy grains, especially millet and maize, are increasingly losing out. In 1992-94 prices are lowest for millet (4-5 Rs/kg) and only slightly higher for wheat (up to 6 Rs) and maize (up to 6.50 Rs). Prices for paddy, especially varieties as pokhreli and basmati, are at a minimum of 7-8 Rs/kg but rise to 10-12 Rs/kg before the festival season in autumn.

Thus households with high surplus production are in a position to cash-in at least some of their paddy at much better prices whereas indebted households are forced to sell their "surplus" at low-rate prices. For households with a limited access to khet (irrigated) fields and a low capacity to produce paddy the alternative (or need) is to market some of their maize of millet production but at fairly low prices. These details reveal that in order to assess household incomes based on commodity marketing it is a necessary information not only which types of grain of being marketed but also in which month, i.e. under which terms of trade the selling takes place.

Figure 28 Grain trade and infrastructure in Western Sindhupalchok (1993)



promoted by a credit scheme initiated by the Agricultural Development Bank (see 2.3.3, below). Besides a regular low-interest rate scheme two VDCs, Bansbari and Talamarang, were selected for a special low-interest income-generating programme under the SFDP (Small Farmer Development Project) of the Agricultural Bank (see 2.3.3, below). In Talamarang VDC an average of 100 litres are collected daily at a centre where the fat content is analysed. From there the milk is carried by three porters to the bus stop in Melamchi (about a 1-hours walk) where one of them takes the cans to the bus to Tarkhola. Similarly, a total of 180-250 litres are collected in Bagwa (Sikharpur VDC) and taken by five porters to Melamchi. During the winter months the milk supply declines but due to the much higher fat content supply does often not decrease as water is added.

For milk-selling households the increasing demand and thus comparatively high prices have led to a significant regular income. Selling prices of milk (1993/94) are 14 Rs/lt at Takhola and 7-9 Rs/mana (0.57 lt) at Melamchi Bazar, i.e the latter is comparable to the selling price of one kilogram of paddy. Selling one mana of milk at 300 days a year creates the same income as the selling of 300 kg (6 muri) of paddy, i.e. the approximate annual subsistence need per adult. Thus having a cow or buffalo which produces a surplus of one mana daily saves the selling of an amount of grain needed for one adult (see III 3.2.2, Figure 8). As most households sell two to fivefold this amount, they accumulate an annual income equivalent to the selling of the subsistence needs of two to five adults (see case study 3.1.4.3). On the other hand, this trade is totally closed to members of occupational castes as no person would buy milk from the hands of "untouchables" (see III 3.1.1; case study 3.1.4.2), thus categorically depriving them of a recently developed source of income.

Whereas the marketing of livestock products is a regular feature of rural economies the marketing of livestock is less common. Goats are marketed at an age of half a year to one year at prices of 5-600 Rs and 12-1600 Rs, respectively. Recent goat-rearing schemes, as for instance implemented by "Mahila Bikas" (Women Development), have introduced fast-growing, heavy-weight species, so-called bikkasi ("developed") which sell for 14-1500 Rs and 2500-3000 Rs respectively. Goats, especially male ones (cossi), have their "high season" before the autumn festival dasain, when all households who can afford it slaughter one. As many households prefer not to slaughter their own bread many exchange their cossi prior to the festival. Cows and buffaloes are often not bought within the region, as loans from the Agriculture Development Bank (see 2.3.3, below) are only provided for extra-regional transactions, in order to stop misappropriation of low-interest loans for loan recipients who merely exchange their livestock. Buffaloes are usually bought for 1-3000 Rs when they are 1-year old but cost 7-8000 Rs at an age of 2 years. By the age of giving birth to offspring (4th year onwards), female buffaloes sell for 15-18,000 Rs (see 2.2.2, Table 15, above).

This trade today is strongly restricted due to the fact that some of the traditional collection areas are located in the southern Langtang National Park area where the collection of any sort of forest products is strictly forbidden and controlled. Collection outside the National Park is still allowed, yet there is the strict rule that collectors have to apply for a permission at the District Forest Office in Chautara, stating the quantity they are planning to collect. Having finished collection, these persons have to register at the nearest range office and pay levies on the collected items. In the last years annually 15-100 kg were collected legally in Sindhupalchok (District Forest Office records). On the other hand, this trade also seems to be going on inofficially, as became obvious when a collector was caught in Melamchi Bazar in June 1993 with 3 sacks full of nagbeli.

A new demand for forest products has been initiated through the "urban sprawl" of Melamchi Bazar with its increasing number of tea shops and restaurants (about 25-28 in 1993/94) exhibiting an enormous demand for firewood, especially during peak seasons when most restaurants cook meals continually (see case study 3.1.4.5). This high demand has led to a need for quantities which are difficult to supply. Public forests in the close proximity of Melamchi are scarce and, if existing, access in order to collect firewood is not legal, a situation aggraved by the fact that the District Forest Office has a range office in the bazar and keeps a sharp eye on the close-by forests. Thus, supply takes place almost exclusively from trans-Melamchi Khola areas, which due to the (previous) administrative boundaries of forest ranges fell within a different authority, without the need for immediate responsibility to intervene, an administrative division which was changed in summer 1994.

2.3.2 The Local Labour Market - A Push towards Migration ?

Although most people in Nepal are engaged in agriculture not all households are in a position to secure their subsistence needs by relying upon agriculture. For these households labour opportunities are a necessary secondary, and sometimes even primary, source of income. Yet labour markets in rural economies are usually confined to a few opportunities, mainly in the primary and sometimes in the secondary sector. Besides agricultural labour (khetala) there exist further physically demanding jobs as the portering of goods to the upper valley regions or construction work. Traditional occupations, such as tailoring and iron working, are limited to the respective castes (Damai and Kami) whereas recent innovations, as weaving carpets, are of increasing importance to some other groups.

For a systematic analysis of labour markets in rural areas the Bromley/Gerry typology (1979), distinguishing short-term wage workers, disguised wage workers, dependent workers and self-employed workers, although developed for urban casual labour, is a

last decade (Table 15), due to the fact that the labour market is characterised by a relatively high supply in relation to demand, arising from high disparities of a few highly grain-surplus households opposed to many asset-poor, grain-deficit households who heavily rely on labour but at the same time are confined to this type of work due to lack of other employment opportunities. Often these households who are in need for cash or grain are already indebted to the households they work for, an extremely unfavourable position to bargain for wages. This situation was epitomised by an (uphadya) Brahmin who complained that agricultural workers demanded higher wages every year and asked how much he had raised wages during the last five years he replyed "not at all - why should I ?".

Table 15 Daily wages for agricultural labour in cash and kind (1980 and 1992/94)

year	khetala (M)	khetala (F)	khetala (M)	khetala (F)	portering
1980	20 Rs	10 - 12 Rs	8 mana (grain)	4-6 mana	40 - 80 Rs
1992/94	30 Rs	15 - 20 Rs	8 mana (grain)	4-6 mana	50 - 120 Rs

(M) male (F) female source: field data 1992/94

This stagnation, or low rise, at best, has definitely not kept up with the risen prices for basic commodities (see III 3.2.2, Figure 9a) which need to be bought. This has led to a gradual but substantial loss of purchasing capacity of those households who have to rely on daily wages due to a lack of access to land. The loss of purchasing capacity is most extreme for households with limited agricultural land who have to earn their inputs into agricultural production from (agricultural) labour. The costs for chemical fertilisers have far outreached rises in daily wages (see III 3.2.2, Figure 9b). In 1979/80 one sack (50 kg) of *urea* (122 Rs; see Table 5, appendix) could be purchased after 6 days of labour by a male and 10-12 days by a female, and one sack of multi-component DAP-fertiliser (introduced in 1980 at a rate of 225 Rs) required about 11 labour days for males.

Until 1988/89 one sack of *urea* (then 200 Rs) could still be bought after 8 days of labour (for males) and one sack of DAP (then 300 Rs) after about 12 days (at wages of 25 Rs/day). Yet by 1993/94 a total of 10 days of agricultural labour had to be performed by a male in order to be able to afford one sack of "low-cost" *urea* (300 Rs; see Table 5, appendix), or 15-20 days by females, whereas one sack of DAP (about 600 Rs/50 kg) needed even 20 days for males and 30-40 days for females. These calculations demonstrate the loss of purchasing capacity experienced by low-producing, grain-deficit households who rely on daily wages for earning cash needed for inputs into agricultural production. In order to "buffer" these rises in costs many households have to reduce their application of chemical fertilisers, risking lower yields

manufacturing, especially in the Kathmandu Valley, has also had implications for the rural areas. Many households have acquired a loom (than) where two or more family members weave carpets for income-generation, mainly sizes of 2*6 feet carpets with Indian wool of bright colours (see photo 22).

There is no regional market for inputs and wool and cords are usually bought in the Kathmandu Valley, where the finished carpets are later sold on to traders either in Kathmandu or its outskirts (Bouddha, Chaurpati). Usually, wool and thread are given in advance by middlemen who usually also hand out the design and later on buy the finished piece, a situation corresponding to Bromley's definition of disguised wage labour. Yet, during periods of high demand (and high incomes) many have invested their incomes in buying wool elsewhere and using the same design for weaving "their own" carpets in self-employed labour, which then could be sold without restrictions.

Carpets are usually woven by two persons within about 10-12 days and expenses are about 800 Rs for the wool and thread. Carpets are sold at about 1200-1500 Rs per piece, resulting in a profit of about 20-25 Rs per person and day. When sold to a middlemen, profits are reduced to a small margin of 100-120 Rs/sqm. On the other hand, these arrangements used to have the advantage of lacking the need of investment and having a secure buyer. Yet conditions have changed as carpet manufacturing has been severely affected by the recent drastic decline in demand which took place in the carpet industry due to import restrictions imposed by foreign countries on Nepalese carpets manufactured by child labour. This stagnation of demand has brought about the situation that carpet weavers often have to hand over their finished pieces but receive their wages only after the carpets have finally been sold.

Although profits are not very high carpet manufacturing has to be seen as a (comparatively) regular source of income, especially during agricultural off-seasons. Yet it is often children who provide most of the labour (see case study 3.1.4.4), a point of criticism that has recently led to massive protests and import restrictions from importing countries, above all Germany. Irrespective of this criticism it has to be acknowledged that the manufacturing of two pieces a months secures a monthly income of 800-1000 Rs, a huge amount of money, especially for asset-poor, grain-deficit and low-income households.

Emigration

Whereas carpet manufacturing is one possible way of income generation that can easily be done at home, lack of employment opportunities and low wages for existing ones have increasingly driven many income-searching persons to seek for labour opportunities outside the region. Men often find labour as unskilled workers or peons

2.3.3 Rural Capital Markets - Usury versus Subsidies

From the analysis of the commodity and labour markets it becomes obvious that the securement of subsistence needs is critical for many grain deficit but also for (low) grain sufficient households. Consumption needs are often higher than can be met by agricultural production and purchasing capacity based on regular sources of income, such as labour and/or marketing of surplus production. In order to finance these gaps there often arises the need for loans. Yet formal loans are dependent on collaterals, especially land holdings, and asset-poor households are usually excluded from access to these types of loans. They normally have to seek "help" from other sources, either within the village, at more or less "decent" interest rates, or, especially for larger amounts, from local sahus (rich people) under conditions much to their disadvantage (see III 3.1.4), which have existed (and still do) especially in rural areas.

2.3.3.1 Private Capital Markets - No Control for Usury ?

Needs for loans arise at various occassions, whether for consumption or "investment" purposes as buying chemical fertiliser or livestock, but also for medical treatment. Consumption needs are highest during the festival season in autumn (see III 3.2.2) or at life-cycle ceremonies as funerals or weddings, when jewellery, clothes, furniture, household equipment, and other items are bought and guests are served for two to three days. As the latter situation arises for all villagers at some point, there is an extremely high social cohesion and people try to mobilise all possible sources within the village rather than from outside, yet at least some part also has to be borrowed from outside. At annual festivals, most costs arise at the shops where spices and cloths are bought, especially at Melamchi Bazar, and loans (udharo) are often taken directly from the (Newar) shop owners, if no other sources are available. As some of these shopkeepers are also those traders who control the grain market there automatically arises the need to sell the following harvest to them in order to repay (some of) the debts, a situation similar advances given when "buying" chemical fertilisers. Loans are usually only given to customers who live close to the bazar (about 1-1.5 - hour walk) and seem to have come up only during the last two to three decades. In the upper Melamchi and Indrawati Khola region this pattern exists to a lower extent.

Larger amounts, as for instance for weddings, are often borrowed from local rich people, usually with large land holdings which produce a high marketable surplus grain production, often received due to royal land grants of some type (see III 3.1.2) bestowed to them in order to secure their living on rents received from tenants (not in a legal sense). These landlords are mainly Brahmins or Newar in the lower Melamchi/ Indrawati Khola and lamas in charge of guthi land and/or with large private holdings in the upper Melamchi Khola.

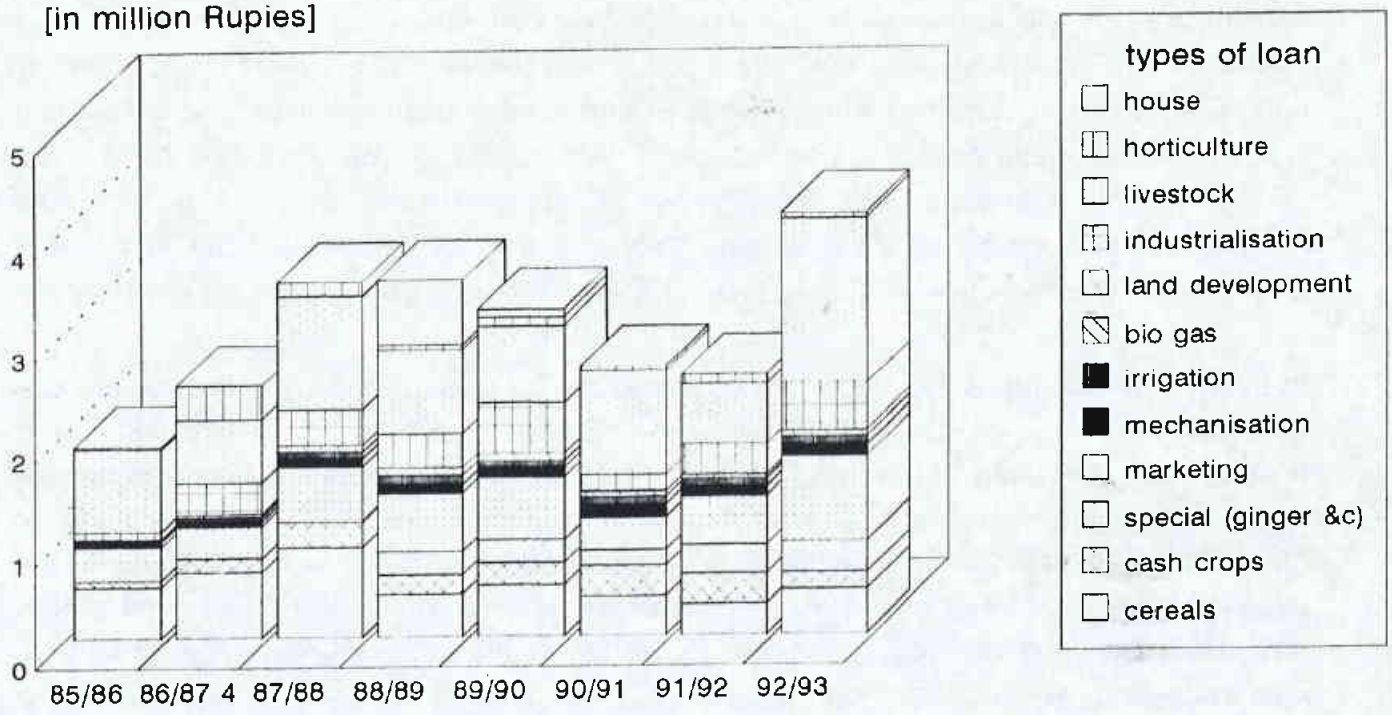
in the district (Chautara, Darapakha, Barabise, Melamchi) since opening its branch office in Melamchi in 1985 and closing its branch in Shermatang, Kiul VDC (1978-91). The Agriculture Development Bank distinguishes 12 different types of loans (see Figure 29) with annual interest rates of 16-19 per cent and durations of 6 months to ten years (for details on rates see Table A22, appendix). For the promotion of crop production there is a distinction whether the crops are cereals (1), cash crops (2), special crops, as ginger or cardamom (3), or horticulture (11). For land improvement there are loans for land development (8) and irrigation (6), the former also comprising of loans for tenants who buy land from their landlords, a need that hardly ever occurs. Mechanisation of agriculture is grouped into mechanisation of production (5), and include loans for acquisition of tractors or sprayers, for the mechanisation of crop processing ("industrialisation"; (9)), and for establishing mills (the last usually involves the largest single sums with a minimum of 100,000 Rs). Loans for livestock (10) are invested mainly in buffaloes (80%) but are also given for goats and poultry.

The bank finances up to 80% of the expected project costs, i.e. a loan for establishing a mill of expected costs of 500,000 Rs will only cover a maximum of 400,000 Rs. Maximum volumes depend on the type of loan but also on the deposits given but can not exceed 80% of the value of the collateral deposited by the customers, mainly in form of land holding certificate ("lal purja"), which will be handed back after the final repayment of the loan (i.e. if the land has a value of 50,000 Rs the maximum loan will be only 40,000 Rs). In case a customer can not repay his debts the land will be auctioned, a situation that happens only after 10 to 15 years according to information given by Bank staff, yet there have been several sellings going on in August 1992 (although the loans could not have been 10 years old !).

For some types of loans the volume is directly dependent on the sizes of land holdings. For cereal production farmers can take loans for fertilisers of a maximum of 15 kg/ropani (300 kg/ha), i.e. a farmer who possesses 20 ropani (1 ha) can receive a maximum of 3,600 Rs (6 * max 600 Rs/50 kg). This type of loan runs for 6 months and is handed out in April/May, when fertilisers need to be bought, and has to be repaid in October/November, i.e. after the selling of the harvest. Yet this also implies that asset-rich households are in a position to receive low-interest loans for inputs into agriculture while asset-poor households have the choice to either minimise buying, thus risking low yields, or taking loans at the shops where they get their supply, yet at the same time forcing them to repay their debts by selling their grain to this shop, irrespective of the rates they will get (thus possibly reducing their status of "producers" to one of "disguised wage labourers, in terms of the Bromley/Gerry classification, see IV 2.3.2, above).

In 1985-1993 the Melamchi branch office has handed out about 2.5 - 4 million Rs annually, handed out to approximately 900 customers in form of about 2,000 loans (see Figure 29, for figures see Table A23, appendix). The two major types of loans

Figure 29 Loans From Agriculture Development Bank, Melamchi 1985-93



source: Agricultural Development Bank, Melamchi
graphic: Graner IX/ 1993

3.1 Melamchi VDC - High Pressure upon a Densely Populated Middle Mountain Valley

Melamchi VDC (Figure 30) is situated at the westbank of the Indrawati Khola where it confluences with Melamchi Khola, at an altitude of 800-840 m near the river banks, gradually ascending to 1600 m in Sindhukot Danda (peak), the western boundary of Melamchi. At the Land Measurement Office, Chautara, the VDC's area is registered as 1114.5 ha, since the administrative reform of 1982, when some northern trans-Melamchi areas were included. Yet figures differ significantly, ICIMOD´s digitisation of the VDC (1993a) calculated an area of 1,771 ha. According to the ecological classification of LRMP (1986; see IV 1.2) Melamchi VDC is a part of the Nepalese Middle Mountains. More precisely, the VDC may be classified as a densely populated Middle Mountain Valley, characterised by a population density of more than 200 persons/sqkm, net cultivated areas of about 50-70% of the total area, and forests with minimum crown covers of 10% covering less than 10% of the area. These factors result in average densities of about 12-36 persons per hectare forested area (see 3.1.3.2) and thus pose an extremely high pressure upon the remaining forests.

3.1.1 Natural Resources and Demography

Percentages of land use categories are difficult to calculate due to high discrepancies in baseline data (see Table 17). ICIMOD´s digitisation of LRMP (1993a) quantifies the total area as 1,771 ha with 1,366 ha (77 %) under cultivation (see Figure 23, p.127) and a net cultivated area of about 873 ha. According to the LRMP- map (reproduced in Figure 30) all forests are classified as class 2, i.e. crown covers of 10-40%, whereas forests with crown covers above 40% (class 3 and 4) do not exist. Besides, there are four shrub areas, one

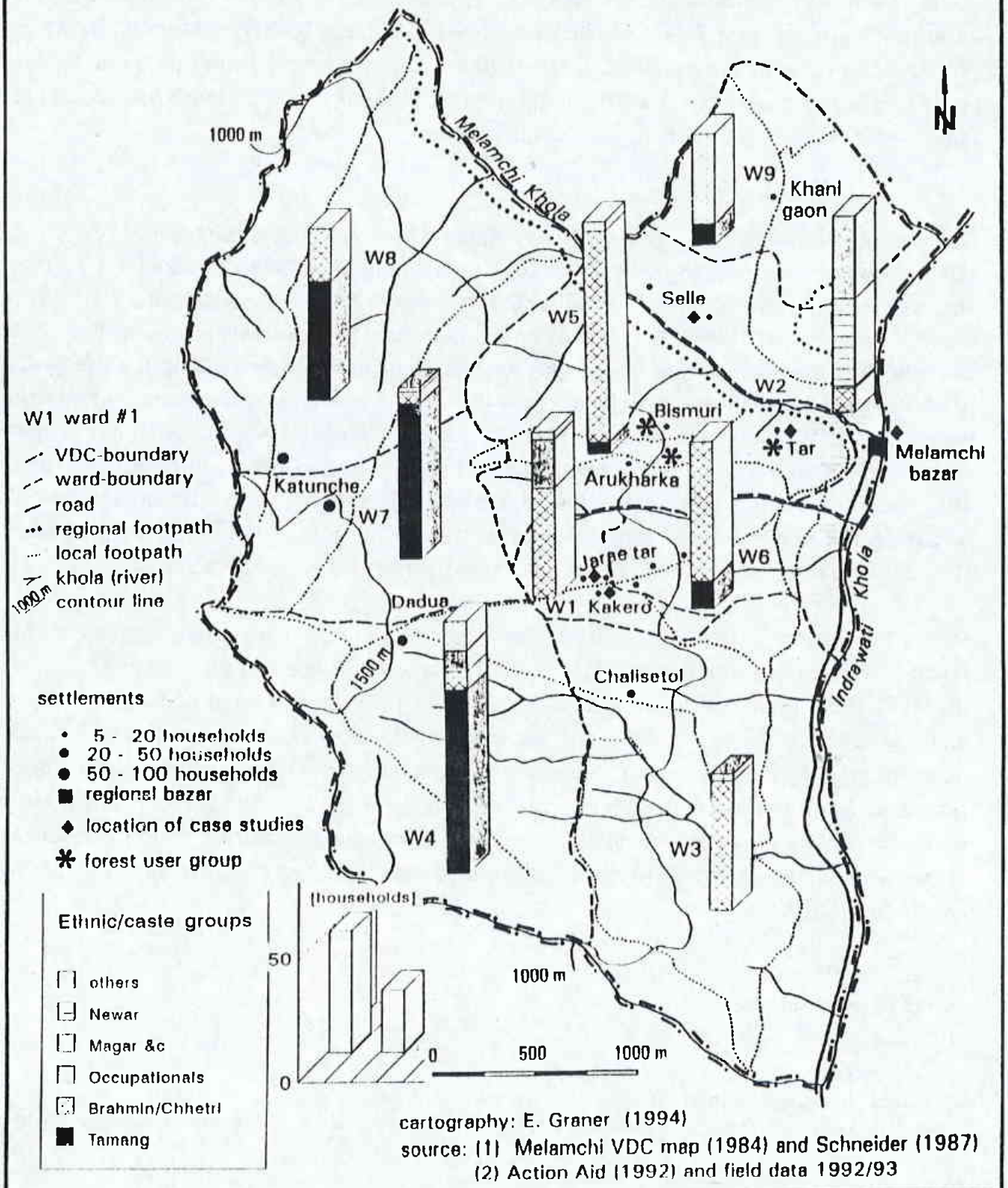
Table 17 Land use categories in Melamchi VDC [in hectare]

total area (source)	cultivated	nci*	grazing	shrub	forests
1771 + (1)	873 (49 %)	493 (28 %)	47 (3 %)	244 (14 %)	74 (4 %)
1115 (2)	755 (68 %)	229 (20 %)	25 (2 %)	106	(10 %)

* nci: non-cultivated inclusions (paths, rivers, ponds &c; termed mino in the land register)
+ in the break-up only 1731 ha are specified

source: (1) ICIMOD (1993a); (2) Land Measurement Office (Napi Karyalaya), Chautara

Figure 31 Distribution of castes and ethnic groups in Melamchi VDC (1991)



cartography: E. Graner (1994)
source: (1) Melamchi VDC map (1984) and Schneider (1987)
(2) Action Aid (1992) and field data 1992/93

Table 18 Population data of Melamchi VDC (1971 - 1991)[2]

ward #	1	2	3	4	5	6	7	8	9	VDC
total 1971 (1)	288	301	199	416	318	239	313	336	151	2561
total 1981 (1)				-	n.a.	-				3254
total 1991 (1)	279	717	324	577	629	318	371	427	194	3836
households 1991 (1)	63	127	58	106	109	60	72	73	42	710
persons/hh (1)	4.4	5.6	5.6	5.4	5.8	5.3	5.2	5.8	4.6	5.4
area [ha] (3)	40	103	153	146	174	78	97	256	67	1115
density 1991 (4)	697	698	212	395	411	408	382	167	289	344
households 1989 (2)	36	47	47	98	57	46	70	50	40	491
households 1991 (2)	68	108	56	105	97	61	71	72	45	631
total 1991 (2)	300	517	314	557	581	315	374	455	204	3617

sources: (1) HMG/NPC/CBS: unpublished data from the Population Census 1981; 1991;
(2) Action Aid (1989: Table C. 9.1; 1992:25)
(3) Land Measurement Office, Chautara (4) calculated from (1) and (3)

In the VDC there is a mixture of castes and ethnic groups. This heterogenity is reflected at a ward-level, where several settlements are subsumed, whereas single settlements are usually homogeneous, except for the bazar area. Most settlements are small hamlets of 4-20 houses, except for Tamang villages (Dadua, Katunche, ward 4 and 7/8 respectively) which comprise of 40-80 houses. In 1991 Brahmin/Chhetri and Tamang were the predominant groups, with percentages of 41.7 % (36.5 % in 1989) and 35 % (35.5 % in 1989) respectively. The number of households of the occupational castes was 34 in 1991 (4.9 %). Newar are recorded as 37 households (5.4 %) in 1991, after having been only 9 in 1989, due to separate recording of several joint families. Magar and Gurung together account for 7.1%, and ethnic minorities as Danuwar, Sunuwar and Bhujel for 5.9 % (Action Aid 1989: Table C 9.1; 1992: 25).

A ward-level distribution of castes and ethnic groups (see Figure 31) shows that areas at lower altitudes (ward # 1, 3, 5, 6) are predominantly inhabited by Brahmins. In ward 1 Uphadya (highest caste; see III 3.1.1) Pandey-Brahmins (24 households) are the most

[2] For some reason the figures given by HMG/NPC/CBS (1993) and the ones given by the VDC council differ slightly. In Table 16 official data have been quoted as they are also used for Kiul VDC. The gender proportion in the data received locally is 1930 : 1905 (male to female), not an equal ratio.

today. Later on they received a further 100 matomuri (1.25 ha) and after building a Shiva & Bhagwati mandir (temple) at Pandey-tol they were bestowed with another 60 matomuri (0.75 ha) of khet-land as guthi-land (see III 3.1.2.3). Occupational castes, about four households of Sarki (shoemakers; see case study 3.1.4.2) , one Kami (blacksmith), and one Damai (tailor) migrated in association with the Brahmins and received some land in order to secure their subsistence needs.

A similar family history about receiving a land grant for growing jamura on the chest exists for the Sapkota-Chhetris who possibly also received a birta land grant but do not hold any documents today (see case study 3.1.4.4). According to them they sold the land later on, a fact which is unlikely as royal property could not easily be transferred. The land in question was then converted into guthi land and bestowed as Bhorland Society Guthi to a temple in Varanasi, India. This guthi-land today is still cultivated by the Sapkotas who are legally registered as tenants and in return have to pay taxes at the Guthi Sasthan Office, Dhulikel.

The last "foreign" settlers who migrated to Melamchi at the beginning of this century were Shrestha-Newar from Dhulikel and Sankhu. According to family history the grandfather of the Dhulikel Shresthas became the duware (tax collector) of Dubachaur mouja (tax collection unit) under king Prithvi Bir Bikram Shah (1881-1911). The Shresthas had never received a birta-land grant but bought the land from local inhabitants, and most possibly also confiscated land in cases of tax illiquidity. Later on they opened the first shops in what today is the old bazar. The Newar soon gained a strong economic position and together with the Dulal and Pandey-Brahmins were the main office holders during the Rana regime. All of them had positions in the tax collection process and the delivery to the landtax office (then Adda Mal and later on Mal Karyalaya) in Chautara.

Settlement histories are more difficult to reconstruct for ethnic minorities as the Danuwar, Magar or Gurung as for none of these groups are documents available. According to family history the Danuwar migrated to the area in the 1870s or 1880s. One village of Magar was most likely established in order to mine iron (phalam) , as indicated by the name of their village in Sikharpur VDC, as this was their domain of mining (see Fricke 1993).

This sketch of settlement and economic history sheds some light upon impacts of national land grant and taxation policies after the unification of Nepal (1769) and especially during the Rana regime (1846-1950). Incentives for colonisation were systematically given through land grants and tax exemptions, mainly to high caste Hindus and Newar. The local peasantry was both "sanskritized" in matters of religion and "thumbscrewed" economically due to the heavy taxation levied upon them (see IV 2.2.1). Along with the imposition of the tax collection system cash the economy was gradually introduced into what used to be a

3.1.3.1 Agricultural Land - Availability and Access

In Melamchi VDC a total of 754.5 ha are registered as agricultural land at the Land Taxation Office (Malpot Karyalaya) in Chautara. Out of this there are 293.6 ha of (irrigated) khet (38.9%) and 460.9 ha of (non-irrigated) bari-land (61.9%). A ward-level analysis (see Figure 32) shows that most of the khet-land (83.8 %) is located in the five wards bordering the Melamchi and/or Indrawati Khola (# 8, 5, 2, 6, and 3). Among these there is a total of three wards (# 8, 5, 3) where khet predominates over bari-land. Yet there are also some small khet areas in wards at higher altitudes (# 4, 7, and 9) where most of the land is cultivated as bari and thus ratios (khet : bari) are low (1 : 3.6 in ward 4 and 8, and 1 : 10.7 in ward 7).

A more detailed classification for tax purposes distinguishes both khet and bari-land according to a four-tier system, of abal, doyam, sim and chahar (in decreasing order; see IV 2.2.2, above) based upon physical features as altitude and availability of water for irrigation. In Melamchi VDC there is no khet registered as A-khet (abal) and only 42.8 ha (14.6 %) as B-khet (doyam). These fields can be found near to the Indrawati and Melamchi Khola (ward # 2, 3, 6, 8; see Figure 32 and map 1, pocket at the back). On the other hand, most of the khet (201.6 ha; 68.7 %) is registered as C-khet (sim) and some, mainly at higher elevations (ward 4 and 7), as D-khet (chahar), the latter for an area of 49.1 ha (16.7 %). Bari-fields are either registered as C-bari (sim), (320.7 ha; 69.7 %) or D-bari (chahar) (126.1 ha; 27.4 %). Only 13.2 ha (2.8 %), almost exclusively in ward 2, are registered as B-bari (doyam) (for ward-level figures see table A25, appendix).

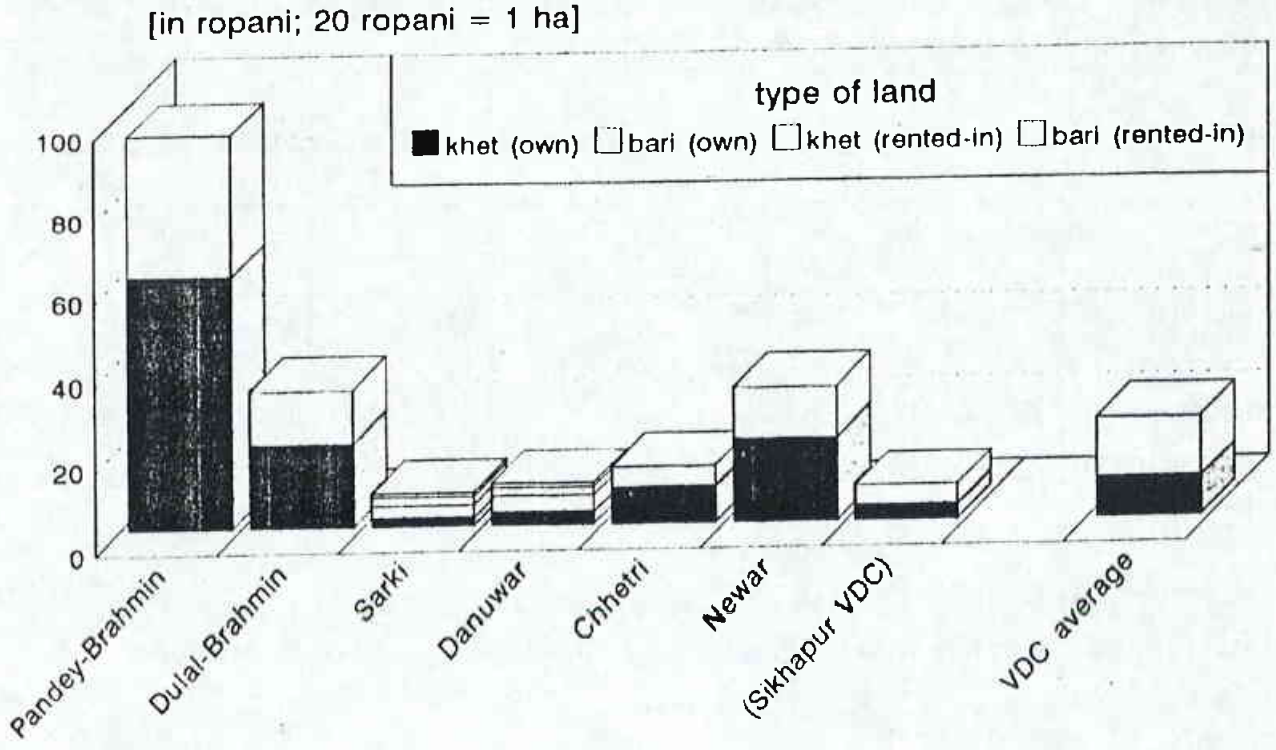
These registrations at the Land Taxation Office do NOT - and most likely never have - reflect actual utilisation patterns (see IV 2.3). Most of the fields are cultivated three times a year (wheat/mustard/potatoes in the winter, early paddy in spring and paddy in summer) and thus meet all characteristics of the definition for abal-khet (see IV 2.2.2, page 143). In spite of this fact, none of the khet is registered as abal. An even more astonishing feature is the fact that large areas of these triple-cropped khet-fields in ward # 3, 5 and 8 are registered as C-khet! A nice explanation was given by a Newar who stated that the landlords did not want their tenants to have to pay high taxes so the land was de-classified for this purpose. Yet some people are willing to admit that "koselis" (small gifts) given to Land Measurement personnel were an effective tool in order to reduce land quality of one's fields. For bari-land differences of land quality are less significant as cropping patterns are identical and only yields are different.

Average availabilities of agricultural land for a total of 631 households are 1.19 ha (23.9 ropani) per household, consisting of 0.47 ha (9.4 ropani) of khet and 0.72 ha (14.4 ropani) of bari-land (assuming a closed system, i.e. all land within the VDC is held

only by VDC inhabitants and all inhabitants of the VDC only hold land within the VDC). As shown above (IV 1.3, 2.2.3) land holdings in fact are highly unequal for different ethnic/caste groups, as access to land is mainly a relict of traditional land grant policies, they are not merely a matter of history but are prevalent even today, as the landreform has done little to change the situation.

An overview of average land holdings is given for six castes and ethnic groups, most of them presented in the following case studies (Figure 33). Land holdings are by far largest for Pandey-Brahmins of Jaraetar who hold an average of 95 ropani (4.75 ha) with almost 60 ropani (3 ha) of khet-land. Holdings are also significantly above average for Newar with average holdings of about 40 ropani (2 ha), including about 1.3 ha (26 ropani) of khet. Slightly less land is owned by the Dulal-Brahmins of Jaraetar. The Chhetris of Tar have holdings slightly below average (18 ropani; 0.9 ha) but still hold more khet than bari land. The groups who own least land are the Sarki (cobblers) of Jaraetar and the Danuwar of Bari with average holdings of less than 10 ropani (0.5 ha), and who heavily depend on renting-in khet and bari-land, from large land owners.

Figure 33 Average landholdings for different groups in Melamchi VDC 1993



source: field data 1992-94
graphic: Graner III/ 1994

As population densities (see Table 17, above) do not correlate to altitudes, average availabilities of forested area do also not correlate to altitudes, as is the case in the upper Melamchi Khola in Kiul VDC (see 3.2), where average densities are merely 3.07 persons/ha, compared to 36.15 persons per hectare in Melamchi VDC, significantly higher than densities based on LRMP/ICIMOD-data (see above). On the ward-level only ward # 3 has a similarly low density of 5.74 persons/ha, whereas in other wards it is 22-30 persons/ha (wards 5, 7, and 9) or even as high as 262 persons/ha or above (ward # 1, 2, 4, 6, and 8).

Calculations on average availabilities and densities are a necessary means to give background information on physical conditions and to approximate existing pressure upon resources. Implicitly they are based on several assumptions which are not necessarily consistent with local conditions. For instance they usually assume closed systems, i.e. all people within one unit rely on resources (such as forests) within the same unit, an assumption critical especially on a micro-level scale such as the ward-level. They further assume that all people rely on (public) forests to meet their needs for forests products, irrespective of private ownership which might possibly contribute significantly to meeting those needs.

Yet their major drawback is their blindness towards social conditions which rule and regulate access to resources, having evolved over the past and reproducing and perpetuating themselves throughout the present into the future. These rules for access are likely to be closely interlinked with availability of resources and certainly have to adopt themselves to changes. In regions where forested areas are scarce and rates of extraction higher than reproduction these rules are likely to give selective access to some groups whereas others may be excluded. As has been shown for agricultural land there exist substantial differences between average availability of and actual access to resources, mainly based on historical land grants. In respect to forests there have also existed some traditional utilisation rights but since the end of the Rana regime (1950) there have been substantial changes in the legal framework.

The nationalisation of all forests in 1957 had only a limited impact upon rural (hill) areas. In Melamchi only a few people, mainly government employees, know about the law at all, let alone details about it. There, it was not implemented until the Forest Range Office was established in 1975. Then, the forests were closed physically, i.e. surrounded with barbed wire, to stop people from entering. This was especially done at Phate Ban (ward 5), with its physical proximity (10-30-minutes walk) to the office, whereas implementation was less rigid for forests further away. Yet all people agree that even at Phate Ban access had not been stopped completely but that the forest boundaries were (willingly ?) kept "semi-permeable",

6) timber (for the construction of houses) will not be provided for the next ten years; in cases of natural disasters a maximum of 30 cbft (0.85 cbm) of timber will be provided at HMG-rates, according to the decision of the committee;
7) it is prohibited to make charcoal for the Kami;

8) in cases of funerals, weddings, and other religious ceremonies the committee will decide over the cutting of green trees;

These rules have been followed since the registration of the user group and so far no one has been fined due to violation of rules. The second rule has been modified from time to time, its latest regulation is that cutting of firewood is allowed only once a month. On a first glance advantages of being member within this user group seem to be limited to the extraction of a few products whereas most products are not available for the next two to ten years. Yet membership has two crucial implications. The first is that becoming a member secures future claims of legal access to this forest, and the second is that for all persons excluded from membership access to this forest has henceforth become illegal, a restriction implemented rigorously by all members.

Figure 34a Students at Melamchi primary schools (ward 1, 4, 7/8, 9)

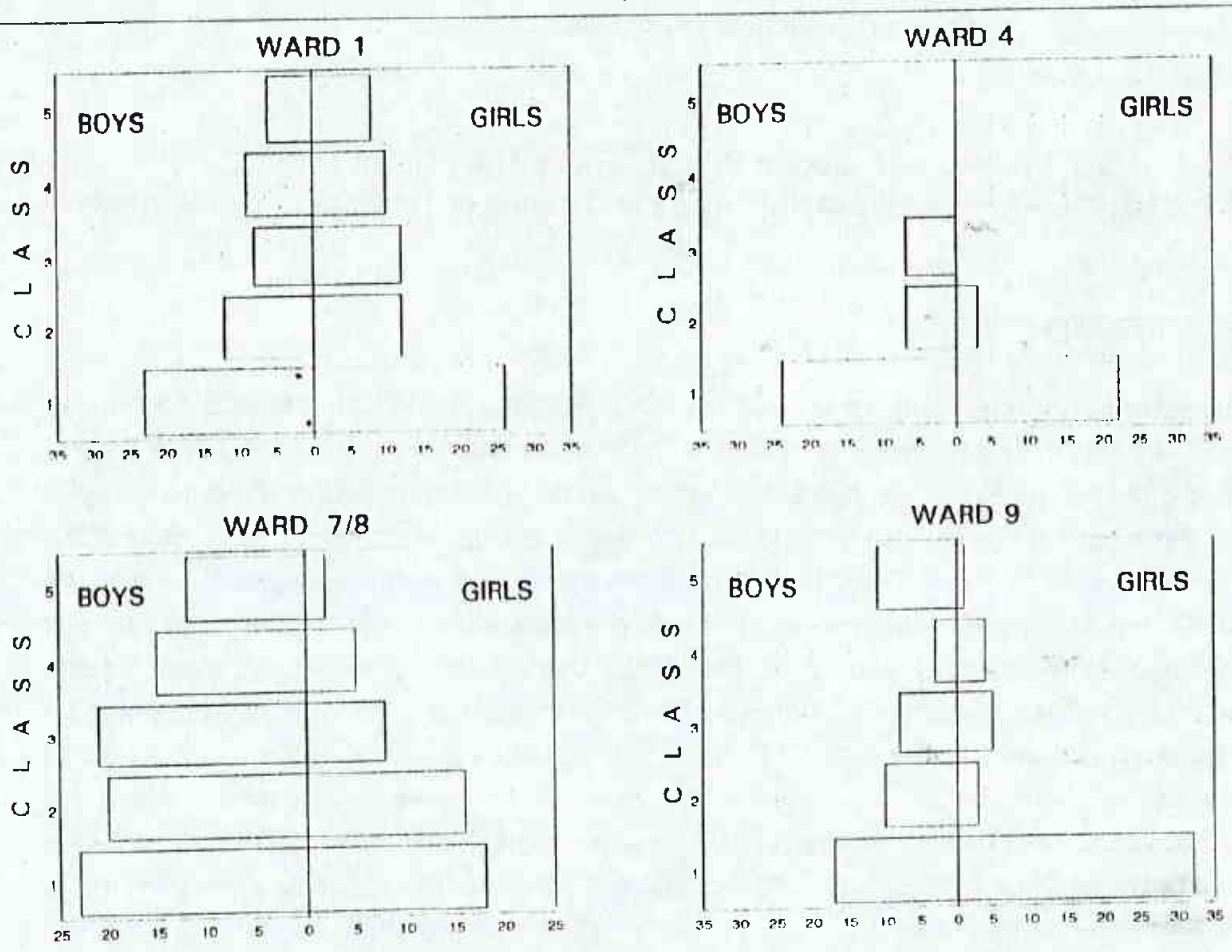
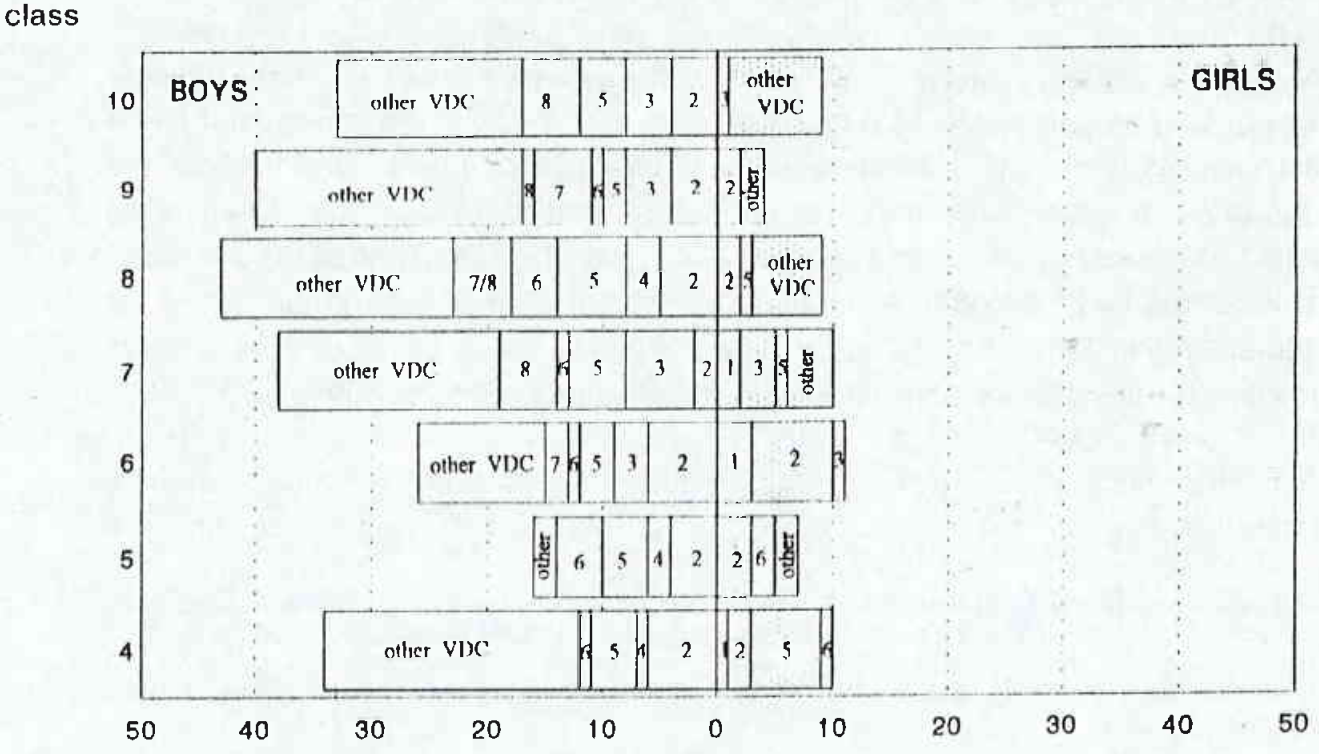


Figure 34b Students at Melamchi Secondary School

(numbers and ward of residence for 1993)



source: Melamchi Primary and Secondary Schools
graphic: Graner IV/ 1994

high concentration also within this group, whereas a few households hold more than 160 ropani the majority of the households only hold 20-40 ropani (1-2 ha) and some even less than 20 ropani (1 ha). Thus the median size of land holdings is significantly lower than the average of 80 ropani (4 ha), namely about 35 ropani (1.75 ha). For the Dulal-Brahmins average holdings are lower, namely 32.5 ha (1.6 ha) and concentration of land is not as pronounced, resulting in an only slightly lower median (30 ropani, 1.5 ha).

Table 20 Approximate land holdings for Dulal and Pandey-Brahmin households (1993)

size [ropani]	10-20	20-40	40-80	-100	-160	>160	total[1]	ave.[2]	median[3]
Dulal (54 h.holds)	15	30	7	-	2	-	1,735	32.5	30
Pandey (30 h.holds)	5	12	9	-	-	4	2,485	82.8	35

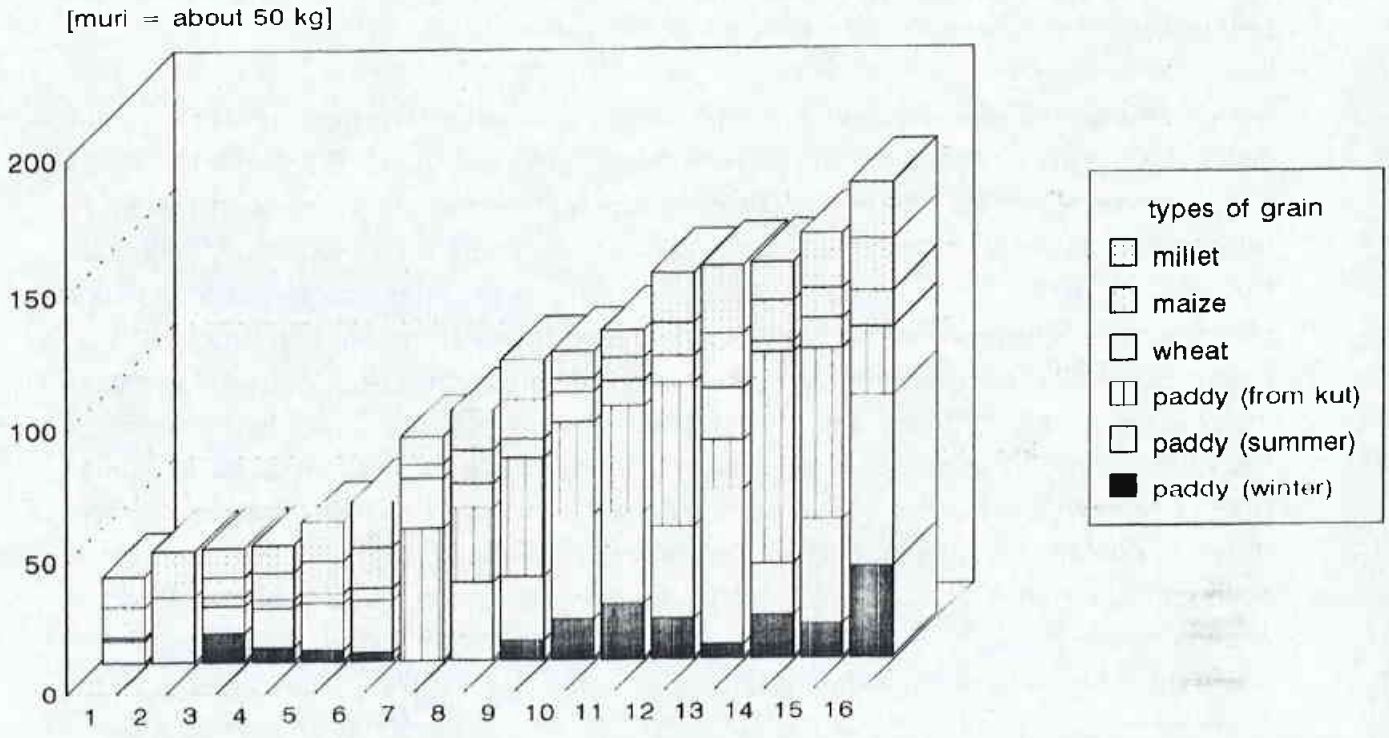
1 rough estimation of total land held by all Dulals and Pandey households
2 average holdings: estimated total area divided by number of households
3 median: area held by 50% of the group

source: field data 1992-94

The ward of residence of the Pandey (ward 1) only covers a small area of 102.6 ha, including merely 5.4 ha of khet land. Thus most of the land held by them is either in other wards of Melamchi VDC, as for instance in ward 2 and 5 (see map 1, pocket in the back) or in the neighbouring VDCs Jyamire, Dubachaur, and Talamarang. According to the Brahmins this land was either received due to the land grant or bought by their ancestors and some was added during the following generations. Some land, mainly held by the descendants of the mukhiyas (tax collectors), seems to have been received from mortgaging and even today there is an ongoing dispute over about 3-400 ropani in the neighbouring VDC Jyamire. A good example for land received by mortgaging is khet land at the northbank of Melamchi Khola near the Danuwar villages, ward 2 (see map 1). The total area of about 100 ropani (5 ha) is predominantly held by Pandeys, especially the larger fields (for details see case study 3.1.4.4). The Dulal hold land mainly in their ward of residence (ward 6) but also in ward 2 and 5 (see map 1), whereas holdings outside Melamchi VDC are less common for them.

The Brahmins partly cultivate their fields themselves, usually by hiring khetalas (agricultural labourers) but there are also permanent labour arrangements, especially with occupational castes (mainly Sarki), where yearly wages (bali) are paid in return for agricultural labour as ploughing, (trans)planting, and harvesting (see case study

Figure 35 Annual grain production of Brahmin households
sample of 16 households (ranked on total production)



source: field data 1992-94
graphic: Graner III/ 1994

Incomes and investments

Seven households stated that they market a surplus of 20-60 muri (1-3 t) at Melamchi Bazar. This paddy is mostly sold in pous/magh (mid February - mid April) but also later on when prices are higher. Even at low prices (7 Rs/kg) their marketed grain has a cash value of 7 - 21,000 Rs. This income is partly reinvested into chemical fertilisers, each household applies 5-14 sacks (50 kg each), mainly *urea* (nitrogen) but also at least 2 sacks of multi-component types (complex or DAP), a most costly exercise. Traditionally surplus income was invested either in the buying of land or in money lending, which mediately through mortgaging often also brought more land under their control. It seems that Pandey and Dulal households used to be the main money lenders with an approximate share of 75% and 10% respectively of all transactions in the area. The acquisition of new land and lending of money has given them an enormously strong position in the rural economy. Being oligopolistic suppliers of land for tenants, loans, and labour opportunities (together with a few Newar

3.1.4.2 The Sarki (cobblers) of Jaraetar - Occupationals Today

In Melamchi-Jaraetar (ward 1) there are a total of 18 Sarki (cobblers) households. According to family history they migrated from Gorkha with the Pandey-Brahmins (see 3.1.4.1, above), together with one Kami and one Damai family. Their traditional occupation is the manufacturing of leather items for their clientele, the so-called bista (the Nepalese equivalent of the Indian jajmani-system; see case study on Kami, 3.2.4.2), comprising mainly of Brahmin households. Today none of the households has any members who still work in their traditional caste specific occupation and it seems that they have stopped working two to three generations ago. Yet there are still strong ties between them and the Pandey-Brahmins which are likely to be relicts of these relations, the Sarki are responsible for tilling the agricultural land of the Brahmins. When they settled in Melamchi they received some land in order to secure their subsistence needs. Yet today these small holdings are far below subsistence needs for all households and thus they heavily rely on both renting-in additional agricultural land and labour opportunities, either for Pandey-Brahmins or for others, or occasionally in other regions or even abroad.

The Sarki of Jaraetar

The Sarki live in a small compact village named Kakero at an altitude of about 1000 m below a hamlet of Pandey-Brahmins, in stone houses with straw roofs. The total population of this hamlet is 81 persons, with an even proportion of males and females (40 : 41). Most households are nuclear families but three households are joint families where the wives and children of two brothers live in one household due to the fact that one of the brothers is working elsewhere. Among the population there are 22 children of school-going age (6-14 years), ten girls and twelve boys. But school attendance is low, none of the girls and only nine boys go to school, most of them in class 1 to 3. One single Sarki boy attends class 6, the highest class ever attended during the last decades was one single case of a boy who completed class 10 and took his SLC in 1989.

Today the Sarki hold an average of about 5 ropani (0.25 ha) of land, ranging from 3 - 8 ropani, with slightly more bari than khet land (see Figure 33, above). Most of the households own khet land in their residential ward (1) at elevations above 1000 m where yields are only about 50-75 kg per ropani (1 - 1.5 t/ha), much lower than on fields in the valley. Only four households hold khet-land at lower altitudes, where fields are suitable for triple-cropping and yields are 100-150 kg/ropani (2-3 tons/ha) per harvest. At the same time sizes of holdings for these 4 households are slightly higher but do also not exceed 8 ropani (0.4 ha). All households rent-in additional land

Hardly any households can produce grain surplus, most of them are grain-deficit and have to buy additional grain, especially as two of the households (# 7 and 9) producing a total grain volume of more than 20 muri are joint families with more than 6 adults. Even though they are not food sufficient three of the households market some of their paddy production in order to buy chemical fertilisers. Yet only half of all households can afford these expenses and those who do, buy only minor quantities of 0.5 - 3 sacks (50 kg each), exclusively "low-cost" *urea* (46% nitrogen).

Supplementary incomes

Grain deficits are partly met by an annual wage (bali) received for tilling services rendered to Brahmin households. The Sarki are responsible for ploughing khet fields before paddy is planted and transplanted in June/July and for triple-cropped khet in April, and for harvesting maize in July/August and harvesting and threshing paddy during November/December. In order to perform these tasks all Sarki households have to send one male household member (or two females) for a total of about 65-70 days, 30 days during June/July, 15 days in July/August, 20-25 days in November/December. Similar labour arrangements have already been described by Caplan (1972) for Western Nepal, termed hali-riti (ibid.: 32). She guesses that this system became popular especially after the abolition of slavery in 1924, when bounded labourers, who had previously been in charge of these tasks were no longer available. Besides, she argues that this system was also encouraged by the growing poverty of the cobblers, as they continued to lose much of their land to the Brahmins (ibid.: 33).

The annual wage (bali) which all households receive for these services is 4 muri (about 200-250 kg) of grain, either maize, millet or paddy. Converted into daily wages this annual payment corresponds to about 1.2 pathi (2.8 - 4 kg; 4*20 pathi/67 days) per working day. Wages were higher (6 muri) in the study made by Caplan but requirements were also higher (about half of the total working time; ibid.), resulting in similar daily wages. Compared to in-kind payments of wages for agricultural labour this wage is higher (see 2.3.2, Table 15) and at the same time it is a good security as these bista households can also be approached for grain or cash in times of scarcity. Yet these close ties at the same time impose a high burden upon all households who have to provide this labour, especially in cases of migration of the male household head, when his wife and either one adolescent or two younger children have to replace his labour.

Yet these arrangements still only partly buffer grain deficits for many households. All of the Sarki rely on further incomes, usually within the region, but labour opportunities

Access to forest products

Less problematic than the access to land is the access to forest products. Although population densities in their ward of residence are (theoretically) high (see Table 18, page 173) pressure on land is low as the ward is mainly populated by Brahmins who have plenty of land, partly uncultivated, and possibly a second residence in Kathmandu which necessarily reduces pressure on natural resources. The Sarki have too little land to rely on their own trees but they can use trees on communal land near a rivlet (Sarki Khola) and, in addition to that, trees growing on uncultivated land owned by Brahmins (Figure 1, case 1b and 4). So far there have not yet been difficulties in supply. When the forest user grop for Phate Ban was registered in 1992 the Sarki were not included but none of the households opposed as they do not see a difficulty for access to forest products.

with corrugated iron roofs, which in 1994 formed one north-south axis of 12 houses constructed in two phases, in the early 1980s and in the mid 1980s, several single houses to the south, and, added recently and still being expanded, a second new axis parallel to the east, north of the school. During 1992/94 a total of five Sapkota-Chhetri and Dulal-Brahmin households moved to Tar, whereas out-migration only took place temporarily, when one young family moved to the bazar area in order to open a restaurant and returned later on.

Except for one Pandey-Brahmin household (included in the case study 3.1.4.1) who moved there in 1965, Tar until recently was the site of goths (animalsheds) built on khet-land. These goths used to be seasonally inhabited by one member of the family who took care of some of the household's livestock that was kept in the goth over the winter months from kartik until magh (November - February). Households with either labour shortage or sufficient income hired-in labour for this purpose, so called gothalas, mostly recruited from local Tamang or Magar households. The oxen were used to plough the nearby khet-fields and the dung was used to fertilise the fields before wheat was sown in December and again after the wheat was harvested and before the fields were prepared for (trans-)planting paddy. During the monsoon the goths were usually empty as livestock was then kept in close proximity to the homestead. During the last two decades more and more Chhetris have moved down-hill and turned their goths into permanent settlements and later on built new houses.

All Sapkota-Chhetri households have access to land, mainly well-irrigated khet, located on a flat tar-terrace (glacial river bed). At the Land Measurement Office most of this khet is registered as guthi, belonging to Bhorlant Society Guthi and comprising of about 53 ropani (3.1 ha) and for most fields Sapkota are registered as tenants (see map 1). They initially were bestowed with equal shares, a pattern obscured today due to inheritance. Although there are some incongruencies about the family history told by various families they are all identical in respect to the fact that the land cultivated by them as guthi today has once been received as a birta-land grant. According to family history it was sold later on to the Rana[2] and, for whatever reason, it was then converted into guthi at about the turn of the century and bestowed to Vishnu Nath Guthi in Varanasi. Yet the conversion in terms of land ownership involved no immediate change for the households. They had been obliged to pay taxes beforehand and continued to pay similar or even identical taxes after the conversion.

[2] There are various stories to explain why the conversion took place. One mentions that one of the Pandey families wanted to capture their birta and thus they seeked help from the Rana who converted the land into guthi, denoting that the guthi was Tin-Sarkar raj-guthi (see III 3.1.2.3, footnote 12). Yet it is also possible that the conversion was part of a large-scale confiscation of birta-land that took place occassionally.

Recently, some households have diverted from this well-established cropping pattern on khet by planting maize, potatoes, or mustard (tori) instead of early paddy, or usually instead of wheat, thus supplementing their diet. The intensification of cropping due to utilisation of khet fields as triple-cropped land has increased the labour demand for the respective households. Yet labour is still exclusively provided by family members, and tasks with high labour demand, as (trans)planting of paddy and harvesting of wheat and paddy are done in exchange of labour within the village (parma or mela). Agricultural labourers from outside are not employed nor do any household members need to work as agricultural labourers.

Agricultural production of the majority of the households (12 of 14) is characterised by a "continual harvest", in February/March wheat is cut and threshed, in June winter paddy (cheite) is harvested and in August maize cobs are collected from the bari-fields. The main harvest season is in autumn, as soon as the dasai festival has come to an end summer paddy is cut, immediately followed by the harvesting of millet. This has extremely positive implications for household food supplies, unlike other social groups who only have a limited access to (low-yielding and double-cropped) khet land (see case study 3.1.4.4.), none of the Sapkota households experiences a "lean" season for food.

Rice (bhat) is a main staple for all households, together with dhido (mush made from maize flour) which is eaten either in addition or as a substitution at morning (about 9-11 o'clock) and evening. Whereas winter paddy (cheite) is always consumed within the household high-quality summer paddy varieties (pokhreli, kumal 4, "1062") are usually sold (see below) and local varieties ("motto") and occassionally maize are bought. Some high-quality paddy is processed into beaten rice (chiura), consumed during festivals. Surplus maize and millet is fed to livestock (see below) and usually not sold.

The main meals are eaten with saq (fried green leaves as spinach or mustard) or with dal (lentils), children often eat their rice with hot milk or home-made curds (dahi). Most households regularly drink tea for breakfast and eat some snacks for breakfast and during the afternoon, as flat bread (roti) made of finely-grained wheat flour (maida), roasted maize (similar to pop corn), or roasted soyabeans (bhatmas), which are planted on the edges of some khet-terraces during the monsoon. Cooking oil is often made from home-grown mustard (tori) at mills in either Baunepati (20-30 minutes bus ride) or Banepa (4-6 hours bus ride).

In addition to these self-produced items, tea, salt and other spices and kerosene for oil-lamps are bought in the bazar. The shopping is usually done by men who go to the

income of 2,400 - 2,800 Rs and average incomes of 4,500 - 7,000 Rs, or even 7 - 9,000 Rs in one case. Yet these high-yielding varieties also have a high demand for chemical fertilisers. The minimum applied per household is 2 sacks (100 kg) but the average is 5-7 sacks (250-350 kg), mostly nitrogen (*urea*) but also multi-component types (mainly "complex"). Yet increases in costs, especially for multi-component types, have had a negative impact upon the willingness to buy fertilisers, and today most households rather risk lower yields than are prepared to pay 600 Rs/50-kg sack necessary for multi-component types. Yet even though, average expenditures are still above 2,000 Rs, i.e. equalent to an amount of 250- 280 kg of paddy (at a selling price of 7 - 8 Rs).

Apart from inputs in form of chemical fertilisers there are hardly any other costs involved in grain production. Taxes levied by the government upon agricultural production have significantly decreased since the end of the Rana period, when they amounted to about 20% of the paddy production for khet (see IV 2.2.1), whereas today they have dwindled to a nominal fee, accounting for thousandths, not even "per cent", of the cash value of production (see IV 2.2.2). Above all, tax collection has not been carried out locally for the last decades and instead taxes today are supposed to be handed over by the land owners at the Land Taxation Office (Malpot Karyalaya), Chautara.

These changes have been similar for guthi land cultivated by the Sapkota. In contradistinction to tenants on guthi land which belongs to local Hindu or Buddhist temples, who still today have to hand over about 50% of their main produce to the respective "landlord" (see case study on Kami, 3.2.4.2) arrangements are totally different for the Sapkota. Levies of similar rates as taxes on raikar land have to be paid at Guthi Sasthan in Dhulikel and since spring 1994 at the Land Taxation Office at Chautara, i.e. in form of a procedure similar to the payment of taxes on raikar land. As all guthi land cultivated by the Sapkota is registered as sim (3rd of 4 grades, see IV 2.2.2 and 3.1.3.1) taxes are fairly low. Above all, taxes have not been paid by any of them, without severe, or indeed without any, consequences. Thus production from guthi land has exclusively accrued to the cultivators for the last years, rendering the term "tenancy" merely rhetoric, as the land is not only perceived of in terms of private ownership but also because arragements are similar. Besides, recent legislation has given them a chance to convert this guthi into private raikar holdings by enabling all cultivators who are registered as tenants at the Land Measurement and Land Taxation Offices to buy the land (see III 3.1.2.3). Rates are (much) to the favour of the potential buyers and also follow the four-tier system, ranging from 1,200 to 2,500 Rs per ropani for abal-khet, but are only 3-400 Rs (northern valley) to 1500 Rs (southern valley) for sim-khet. As all guthi land cultivated by the Sapkota is utilised as

(for details see 3.1.3.2, above). In order to allow regeneration all members of the user group agreed not to extract most products for the next five years. Yet this brings about the situation that for the interim period all members need to supply their firewood and fodder requirements from other sources. Asked what kind of sources there are they say that they either cut wood from trees on their own fields or that they will have to buy it, the latter answer being given when I raised doubts that their own trees would be sufficient for this period of time without risking depletion.

Yet this answer also reveals that they themselves estimate the demand as higher than the stock and that they are in need of other sources. Whereas buying is an easy way of legally coming to firewood, it is doubtful that they are really willing to spend money on firewood. But even if this were a solution possible to them due to their fairly high and regular incomes form surplus (milk and grain) production it still does not answer the question where this bought firewood is supposed to come from. According to information given by nearby villagers the people of Tar either still go to Phate Ban for collecting firewood or they invade other people's terretories as Soldunga Pakha, north of Melamchi Khola or shrub areas in lower Sikharpur VDC, across the Indrawati Khola.

Outlook - securement of future needs

The analysis above has shown that all households are grain sufficient and that surplus production covers the costs for inputs into production, such as chemical fertilisers, as well as monthly expenditures for those basic commodities which have to be bought. Although average land holdings are not large, production is fairly high as most land is well-irrigated khet and almost all is utilised as triple-cropped khet. In addition to this khet their tenancy on guthi is a well-secured status and, above all, has only minimal levies, in contradistinction to usual tenancy (see case studies 3.2.4.1 and 3.2.4.2).

The analysis has also shown that grain surplus production is mainly based on agricultural innovations, as the introduction of short-breading and high-yielding varieties which have made a third harvest possible. Production has increased about 1.5 to 4-fold during the last two decades and thus could counteract losses of access to land due to fragmentation of holdings by diving property among several sons. Yet the analysis has also shown that increases in productivity have reached the maximum, and are partly already declining, due to the fact that inputs into agricultural production (especially multi-component fertilisers) have become extremely expensive and have led to diminishing returns. On the other hand it has to be acknowledged that

Figure 37 Total annual grain production of Chhetri households
sample of 14 households (ranked on total production)

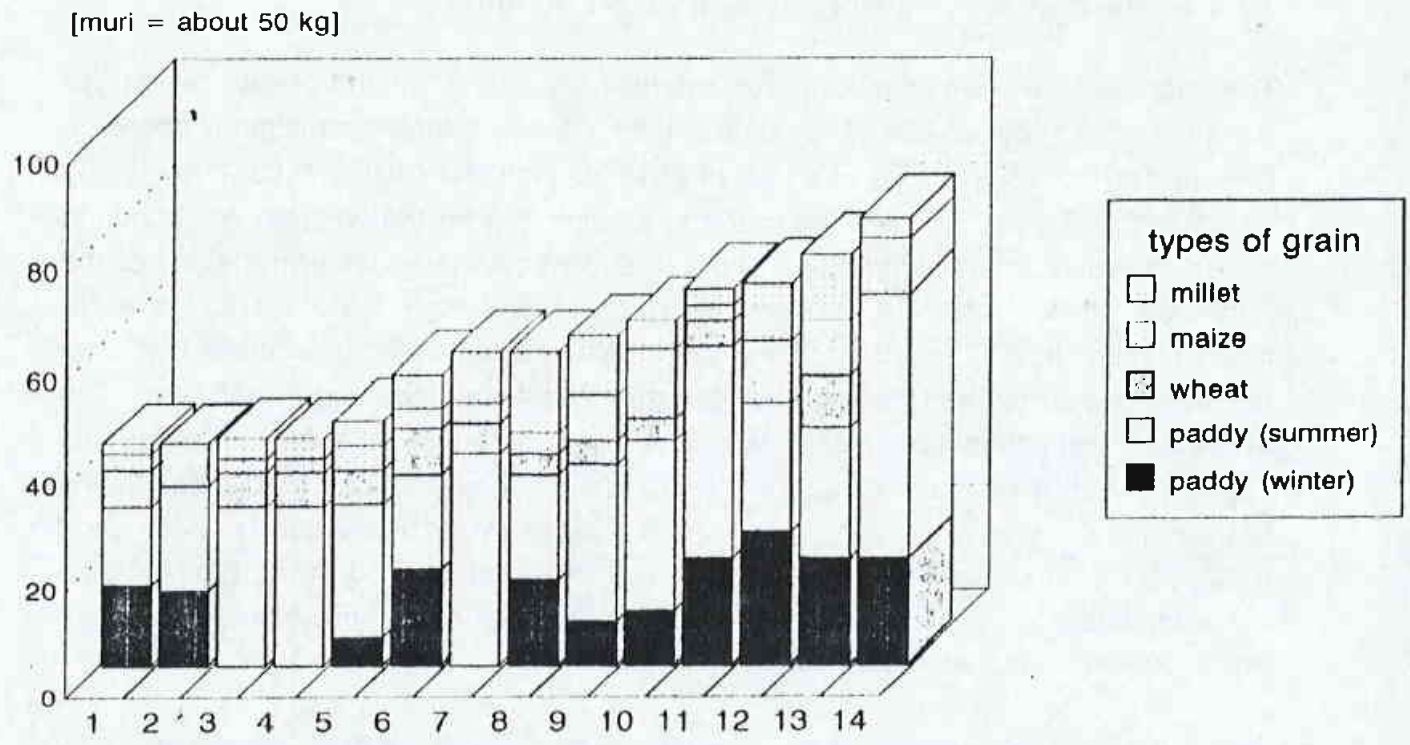
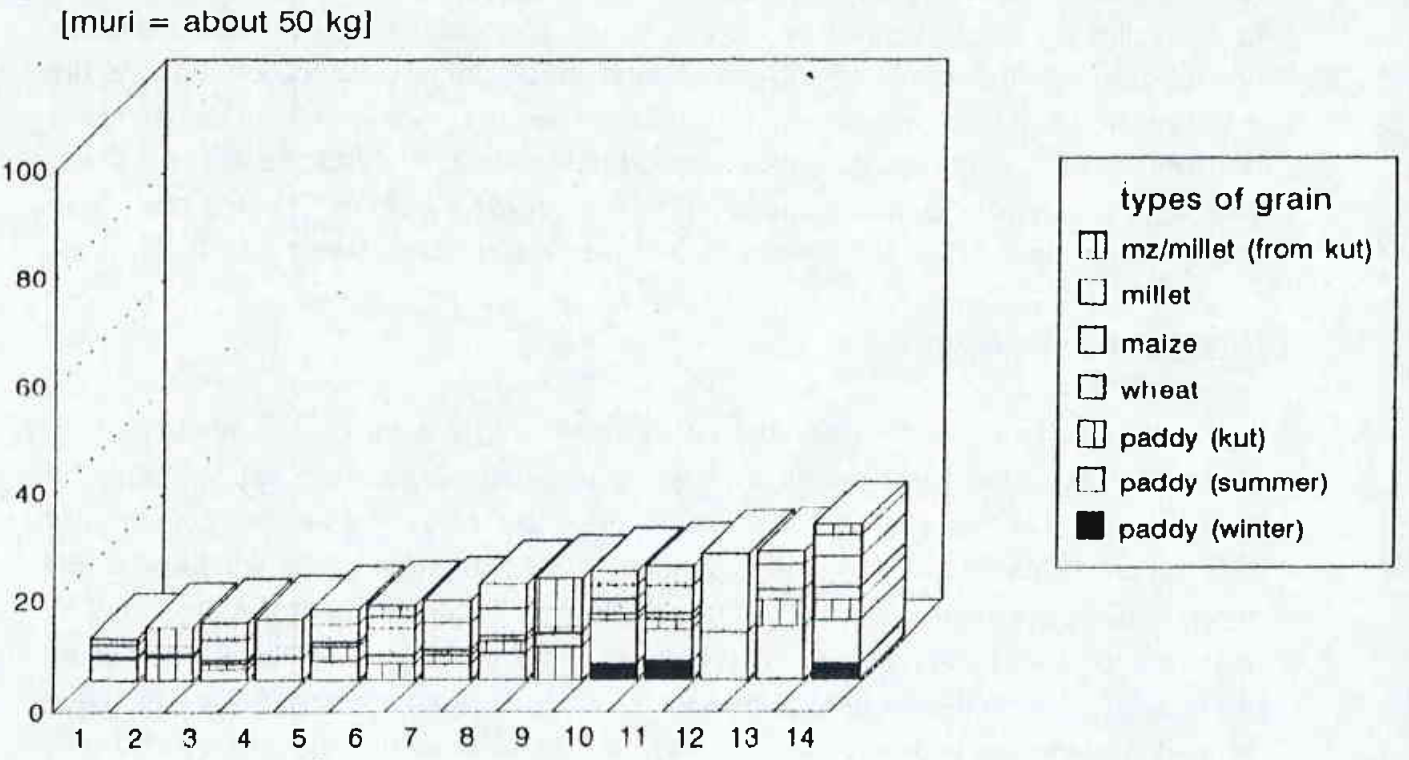


Figure 38 Total annual grain production of Danuwar households
sample of 14 households (ranked on total production)



source: field data 1992-94
graphic: Graner IX/ 1994

4*15 m, i.e. 50-60 sqm in size (map 1). The only khet land to be found on the northern bank of Melamchi Khola is a narrow stripe of about 700 meters length and 40-140 meters breadth, covering an area of about 120 ropani (6 ha). Yet only small portions of this khet-land are owned by the Danuwar themselves, whereas the greater share belongs to either Newar or Brahmins (see 3.1.4.1) (map 1). Landholdings of the Danuwar range from 1 to 8 ropani (0.05 - 0.4 ha) with an average of 5 ropani (0.25 ha).

The household survey

For information on the household-level a sample survey of 14 households (42%) was undertaken. Among these, only nine households have access to khet-land through ownership. This khet-land is mainly double-cropped land, due to lack of irrigation facilities, and only three households own khet fields suitable for triple-cropping. Among the other five households, three rent-in khet whereas two households only cultivate bari-land. Two households do not own any land and exclusively rely on cultivating fields from others. Yet most other households also supplement their production by grain received from kut/adhiya-arrangements, mainly from fields rent-in from Pandey-Brahmins from Jaraetar and/or Shresta-Newar from the bazar, for approximately 50% of the main paddy harvest. Although this renting-in has been in practice for several decades, none of the Danuwar households is officially registered as tenant at the Land Taxation Office. Receipts for kut-payments have never been issued and thus there is no proof for their tenancy and their status is not secured.

Agriculture and food consumption

Total annual grain production, from own and rent-in fields, for the 14 households sampled (Figure 38) ranges from 6 - 28 muri (about 350-1,400 kg) per household, but is less than 13 muri (650-700 kg) for 5 households. As mainly bari-fields are cultivated, the production of maize and millet is usually higher than paddy production, only in three households (Figure 38 households # 1, 10, 13) paddy accounts for more than 50% of the total grain production. Innovations such as short-breading varieties which have made a third harvest possible on well-irrigated khet-fields have only played a marginal role for most Danuwar households as they mainly own bari land and khet-fields located on a relatively dry, south-facing slope where irrigation water is scarce.

On first sight this lack of access to agricultural land can be explained by a fragmentation of holdings over the last generations which for several families has increasingly brought the size of holdings below a minimum of subsistence, especially in two cases with five sons in the parental generation. Yet inheritance of land in form of partibility is practised by all groups and thus does not explain why especially most of the Danuwar have such low holdings. A process which is of far greater importance in this respect is the fact that land has been lost by mortgaging. Money-lending until recently was linked with writing a tamasuk, i.e. a document which explicitly states that in case the money will not be returned until a fixed date a specified amount of land will have to be handed over from the debtor to the creditor as a compensation (see III 3.1.4). In this way several fields, both khet and bari, were lost to either Newar or Brahmin creditors. One of the cases known to all was in the 1920s when one family lost all their khet-land (0.9 ha) because a (possibly fagued) tamasuk was produced after their father's death and the three sons had to agree to hand over the land. Later on these three brothers went on cultivating their previously own land with the major modification that from then on they had to hand over about 50% of the main harvest to the new owner. Thus, even if agricultural innovations led to a substantial increase in productivity, they would only partially be able to "reap" the benefits.

Grain shortage also has its implications upon animal husbandry. Highly productive buffalo-cows need to be fed with khole, a mush of different types of grain flour boiled in hot water, in order to maximise their milk production. Contradistinctively to groups with grain surplus households who feed khole daily (see case study on Chhetris, 3.1.4.3), surplus grain is not available in any Danuwar household and khole is only fed in low quantities and in rare cases, for example during reconvalescence or after giving birth to off-spring. Therefore, milk production is much lower and irregular and is used only for private consumption and not for regular sale. For this reason only four households held buffalo-cows prior to 1992, which increased to eight when a low-interest group credit scheme from Mahila Bikas promoted buffalo-cows for income generation in the village (see IV 2.3.3). Although a good initiative, as these loans replace locally-sought high-interest loans and because these loans additionally include an insurance in case of mortality of livestock - cases that traditionally have been severe contingencies - it is doubtful and remains to be seen whether this is a real productive alternative for the Danuwar and whether the obstacles mentioned above can be overcome.

Grain shortage exists in all except for one two-person household. Most households buy low-cost maize and millet in quantities of 2-3 muri (126-200 kg). Three households buy 2 muri of maize and millet and additionally small quantities of rice (annually about 35 kg each) and only two "wealthier" households buy 3 muri of paddy

Bazar. A further income opportunity was portering services for the Brahmins and Newar who marketed their grain surplus to the Kathmandu Valley. Average loads were about one muri of rice (50-70 kg) which they carried either to Sakhu or Dhulikhel, a tour of two and three days, respectively. There they sold it and brought back salt and other spices. The wage for this kind of work was significantly higher (1962: 1.50 Rs for the tour). This source of income declined after the construction of the road as the grain is now transported by vehicles.

The decline of traditional labour opportunities and the lack of new ones, especially for men, has led to the need to find labour in other localities. Yet due to their low educational standard and lack of networks most men are hesitant to migrate. Illiteracy is extremely high in the parent generation where only one male is capable of reading and writing and women are all illiterate, a situation only slightly improved by adult literacy classes. Yet school attendance among all children is still extremely low, in 1994 there was a total of 40 Danuwar children (from sample households) and although more than 30 were of school-going age (6-14 years) only three boys and none of the girls attended the primary school in Melamchi-Tar, at a distance of a 20-minutes' walk. Even the opening of a close-by primary school in ward 9 (in 1994) has not had a significant influence on the school attendance of Danuwar children (see Figure 34a). Some of the boys had gone to class 1, some of them even to class 2, but the rate of dropping out is high. The boy with the highest education in the whole village studied up to class 4 some years back, but none of the Danuwar has ever attended secondary school.

One success story of the village in terms of migration is one of three brothers who in 1984 migrated to India in order to look for work. He was employed for 2.5 years in road construction where he managed to put aside a few thousand Rupies. This money he and his brothers invested in buying a total of 12 ropani (0.6 ha) triple-cropped khet-land from local landowners - today the only families who profit from agricultural developments. Returning from India he also got familiar with carpet manufacturing in Kathmandu, a cottage industry which has become increasingly important during the last decade as a supplementary income. In 1986 he obtained a wooden frame for 3*6-feet carpets (see photo 24), an innovation taken up rapidly by several other households within the village during the following years.

These carpets are usually manufactured by two persons who take about 10-12 days to finish one piece. As there is no local market, neither for supply of wool and cords nor for selling the finished carpets, this trade takes place exclusively in Kathmandu where carpets have been a booming branch for several years. As women are generally occupied most and men are not capable/willing to manufacture carpets this

conditions. Their resources are limited and their assets are not sufficient to secure subsistency. Thus even small contingencies, low agricultural yields or lack of work, need to be met by mobilizing additional, usually external sources, in form of loans, an important criteria for "vulnerability" (see III 2.3, Figure 5). As landholdings and other assets are extremely limited for most households, there is little chance to borrow money within the village. Yet being forced to seek "help" from local "elites", this reinforces their depedency, directly in terms of raising (already existing) interest rates and indirectly in terms of weakening their capacity to bargain over changes in exchange entitlements (for instance for their labour) to their advantage.

Moreover, there is little hope for future improvements, as lack of access to agricultural land renders agricultural innovations meaningless, as does the national education programme when school attendance is so low. Additionally, there is a gradual deterioration of the livelihood systems of most households, as commodities to exchange are virtually non-existent and exchange entitlements for labour are extremely unfavourable, due to the stagnation, if not decline, which the labour market has experienced for unskilled labour. This is strongly opposed by raising costs for basic commodities and even more drastically for chemical fertilisers, and leads to a loss of purchasing capacity. Besides, the above mentioned confinement to the local capital market has compelled the Danuwar to pay usurious interest rates, leading to mortgaging and loss of land, and thus a further erosion of their livelihood systems, which was hardly improved by the establishment of banks due to lack of collaterals. Thus the Danuwar clearly face a situation of "entitlement decline" (in Senian terminology, see III 2.1), and marginalization (see III 2.2).

Above all, an erosion of the livelihood systems takes place from many different sides. As was shown, endowments in terms of land are not sufficient to secure subsistency. This scarcity of own land resources has further implications. None of the households has sufficient trees near to their homesteads or on their bari-land in order to meet their daily needs for fodder and firewood. Besides, the lack of surplus grain for animal feed raises fodder requirements which have to be met from communal land. Supply for firewood can also only be secured from communal sources as trees on own land - if existing - are needed for fodder and can not be cut for firewood. Thus, for both fodder and firewood, almost all households heavily rely on "communal resources".

Yet, in Melamchi VDC there is an extreme scarcity of forests (see 3.1.3) and besides, the available forests are often in a degraded condition. In close proximity to their settlement there are no forests but areas of degraded shrub-land, commonly known as Soldungha Pakha (see Figure 30), about 40-60 minutes uphill to the northwest and Satbise, about the same distance to the northeast. A demarkated forest of 20.5 ha is

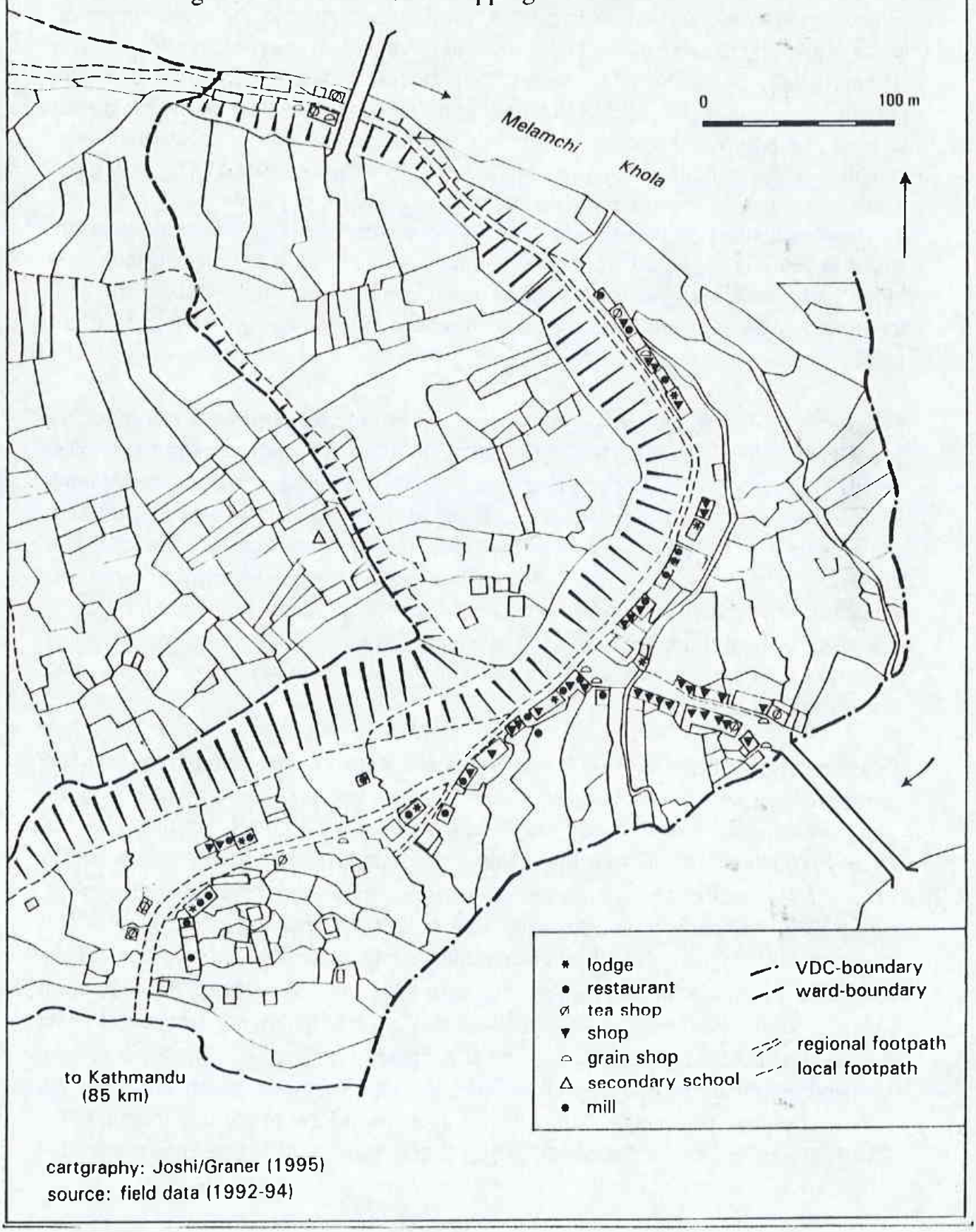
3.1.4.5 Teashop- & Restaurant Keepers of the Bazar - a Growing Market for Firewood

Melamchi Bazar has an amazing plentitude of tea shops, where tea and small snacks are served, and restaurants where Nepalese meals are offered, mainly dalbhat (lentils and rice). Besides, in 1985 the first lodge was opened, soon followed by others, frequented mainly by villagers from the upper Indrawati and Melamchi Khola travelling to/from Kathmandu and staying overnight at Melamchi. Tourism has so far not played a significant role although Melamchi Bazar is the (interim) roadhead from/to Kathmandu and the end/starting point of the Langtang-Helambu trekking route. But tourists usually do not stay in Melamchi unless the last bus to Kathmandu has already left.

The bazar has experienced an enormous growth after becoming the new roadhead of the Kathmandu-Melamchi road in 1990 (see Figure 39). Since then there is an extreme dynamic in construction of new houses and functional changes of old ones. Whereas in the 1970 and 80s shops have dominated the bazar today there is a vivid mosaic of shops, tea shops and restaurants (see Figure 40). In June 1992 there was a total of 5 lodges, 12 restaurants and 7 tea shops, by April 1993 the number of restaurants had risen to 18. During summer/autumn 1993 there have been extended building activities and the bazar has developed a new growth axis to the north, close to Melamchi Khola. By March 1994 the total number of lodges and restaurants had risen to 7 and 20, respectively, and additionally there were 8 tea shops. Yet many tea shops and restaurants close within the first year, some of them even within a few months.

Bazar life seems to be an attractive way of living to people from all walks of life. Whereas the opening of shops is perceived as involving large sums in order to stock the shop and is still mainly done by Newar the opening of tea shops or restaurants is perceived as requiring much less investment and thus seems to be a much better opportunity for starting business to members of a broad variety of castes and ethnic groups as Brahmins (Dulal, Pandey), Chhetris (Sapkota), Sherpa, Newar & others. Empty rooms are usually available and are willingly given to newcomers for opening tea shops and restaurants, even at initially low rents. The main investments that need to be done in order to open a restaurant or tea shop arise from buying plates and glasses for serving the meals and from kerosene stoves, bought locally or at Banepa or Kathmandu and/or chulos (firewood stoves, see photo 26), built outside the rent-in rooms with locally available red soil (rato mato), constructed either by local builders or self-made.

Figure 40 Functional mapping of Melamchi bazar



cartgraphy: Joshi/Graner (1995)
source: field data (1992-94)

35 restaurants consume an average of about 25 - 35 bhari of firewood per day (see Table 21), equalling a weight of about 875-1225 kg.

Table 21 Approximate monthly costs for restaurants and tea shops at Melamchi Bazar (1993)

type (# surveyed)	rent [Rs]	rice [kg]	rice [Rs]	firewood [bhari/day]	firewood [Rs/month]
lodge (4)	12 - 1600	50 - 150	750 - 2250	0.6 - 1	720 - 1200
restaurant (11)	5 - 1200	1 - 300	1500 - 4500	0.8 - 1.5	960 - 1800
tea shop (5)	3 - 800	-	-	0.3 - 0.6	360 - 720
total (20 surveyed and 15 others)				25 - 35	30 - 42,000

source: field data 1992/94

This heavy demand for firewood has brought about the situation that firewood has become a "cash crop", willingly supplied by villagers from close-by settlements. According to their information this firewood is primarily cut from trees on their own land, yet a survey among these households has shown that most of them are grain-deficit with only limited agricultural land and trees. Firewood is usually collected in shrub areas or degraded forests which are not handed over to user groups in areas east of Melamchi Khola, which have been outside jurisdiction of the Melamchi forest range office prior to 1994. Frequency of selling is different for single suppliers, whereas some of them only come to the bazar once in two to three weeks when they need cash for shopping others come regularly once or twice a week. Although it seems an easy conclusion to condemn this "degradating" behaviour and call for a much stricter control, it also has to be kept in mind that income from selling firewood is often one of a few opportunities for earning (regular) cash income, especially as 1 bhari (headload) of firewood equals the daily wages for males, whereas it is double to triple of daily wages for females.

Prices for firewood reflect its high and increasing demand, whereas costs have been 25-40 Rs in June 1992 they have risen to 40-70 Rs by November 1994. High prices are asked especially from recently-opened restaurants when there is the chance to settle new rates, whereas "traditional clients" usually buy their firewood at better terms of trade. Yet once in a while prices of old arrangements are also raised in order to adjust them to recently settled ones. In 1993 average monthly expenditures for restaurants and tea shops (see Table 21) where about similar to expenses arising

3.2 Kiul VDC - Dynamics and Stagnation in an High Mountain Upper Valley

Kiul VDC (Figure 41) is located at the west-facing slope of Sukurnako Danda and Yangri Danda (peak), the VDC's eastern boundary, at the eastbank of the upper Melamchi Khola, where altitudes are 950-1100 m near to the river banks, ascending to 2800 m at the southern Yangri Danda. For the VDC's name there are two different etymological explanations. One is the anecdote that the area used to be famous for its robbers and outsiders did not dare to enter (ki hula ki nahula - whether to enter or not ?). The second explanation is its rich water resources (Tamang: kiua: water, ul: village) (Action Aid 1993: 3). After having been a panchayat from 1962 onwards, Kiul and its southern neighbouring panchayat Palchok were united during the administrative reform of 1975. This was changed after the decentralisation policy of 1982, when the two panchayats were again divided.

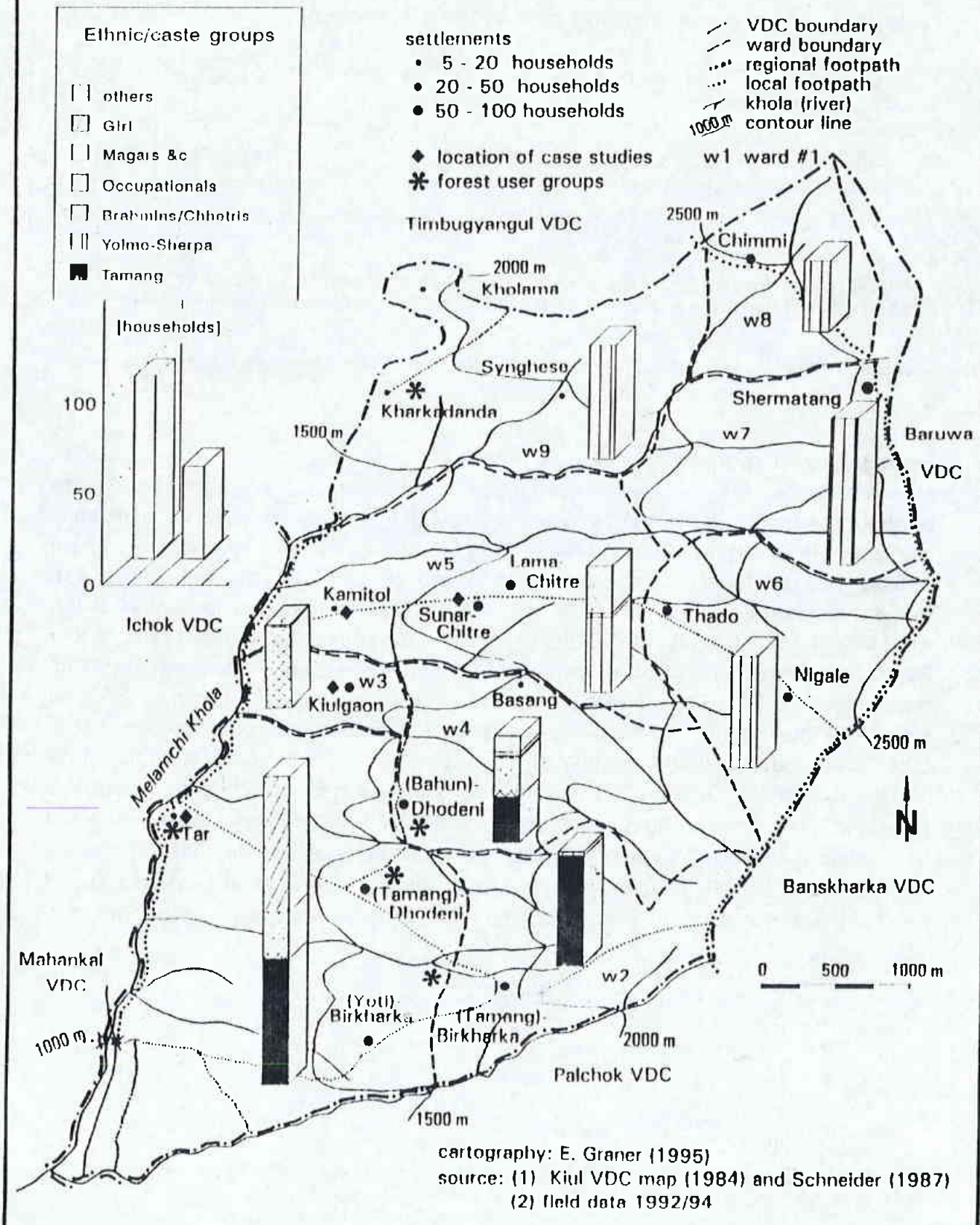
Since then, Kiul VDC, as registered at the Land Measurement Office (Napi Karyalaya), has a total area of 2,372 ha, whereas ICIMOD's (1993a) digitisation calculated only 1,938 ha[1]. According to the ecological classification of LRMP (1986) the VDC is located at the borderline of the Middle and High Mountains. More precisely, Kiul VDC may be classified as a High Mountain Valley, characterised by a low population density of about 120-150 persons/sqkm, net cultivated areas of 16-40 % of the total area, and significant areas of forests and shrub which cover more than 50% of the total area (see Figure 23; p.127). Thus average densities per hectare forested area are significantly lower than in the lower valley (see Melamchi VDC 3.1) and pose a much lower pressure upon the remaining forest resources.

3.2.1 Natural Resources and Demography

Percentages of land use categories are difficult to calculate due to some discrepancies in baseline data (see Table 22). ICIMOD's digitisation of LRMP (1986) quantifies the total area as 1,938 ha, with 888 ha (46%) under cultivation, and a net cultivated area of 579 ha (29.9%) (see Figure 23; p.127). According to the LRMP-map (reproduced in Figure 41) there are four sites of large forests in the VDC, which all are classified as predominantly hardwood with crown covers of 10-40% (class 2). One is located at a low altitude close to Melamchi Khola (Jyamire Ban, ward 1), a second one at the gorge separating Kiulgaon and Chitre (ward 4 and 5), which at an altitude of about 1800 m expands its size (Umaling Ban), a third one at Sukurnako Danda (wards 6 and 7) and one forest in ward 7/8 (Hiledanda Ban). Forests with

[1] Whereas ICIMOD's (1993a) digitisation of Melamchi VDC calculated a larger area than registered at the Land Measurement Office, their digitisation of Kiul VDC is lower than actually registered. Thus according to the Land Measurement Office Kiul VDC has more than double the size of Melamchi VDC, whereas sizes are similar according to ICIMOD.

Figure 42 Distribution of castes and ethnic groups in Kiul VDC (1991)



cartography: E. Graner (1995)
source: (1) Kiul VDC map (1984) and Schneider (1987)
(2) field data 1992/94

Table 23 Population data of Kiul VDC (1971/1991)[3]

ward #	1	2	3	4	5	6	7	8	9	VDC
total 1971 (1)	286	522	221	283	330	309	335	256	271	2813
total 1991 (1)	787	301	257	251	376	213	309	123	297	2914
households 91 (1)	164	60	43	55	66	58	81	38	63	628
pers/hh (1)	4.8	5	6	4.6	5.7	3.7	3.8	3.2	4.7	4.6
area [ha] (2)	455	171	37	187	273	255	452	202	332	2364
density 91(3)	173	176	695	134	138	83	68	61	89	123

sources: (1) HMG/CBS: unpublished data from the Population Census 1991
(2) Land Measurement Office (Napi Karyalaya) (3) calculated from (1) and (2)

The population of the VDC as a whole is ethnically heterogeneous whereas the majority of the settlements is rather homogeneous (see Figure 42). In spite of being the traditional inhabitants Tamang today only live in a total of three villages in the southern part of the VDC, Bhirkharka (ward 1) at an altitude of about 1600-1800 m, Dhodeni at an altitude of about 1400-1600 m, and in Basang in the central part of Kiul VDC, a small hamlet of 16 households on the north-exposed part of Kiulgaon-ridge, south of Thado Khola (ward 4). To the south and at low-altitude areas near to the Melamchi Khola the population is predominantly Brahmin and Chhetri, as in Kiulgaon (ward 3) and in Tar (ward 1; see case study 3.2.4.1) whereas to the north and at an altitude of about 1660 m the ethnic composition changes markedly and is almost exclusively Buddhist Yolmo-(Sherpa) the villages Singhese (ward 9), Chimmi (ward 8), Shermatang (ward 7), Thado and Nigale (ward 6) with one or even several ghyangs (Buddhist temples) each. The lowest-altitude Sherpa village is Chitre (ward 5), located above two settlements of Sunar (goldsmiths) and Kami (blacksmiths) of the occupational castes (see case study 3.2.4.2).

Administratively the Yolmo-Sherpa settlement Chitre and the Kami and Sunar settlements form one unit (ward #5), as do the two settlements uphill, Thado and Nigale (ward #6). Yet this division does not coincide with socio-cultural arrangements as Thado and Chitre have strong cultural-religious ties and share one ghyang whereas there is little to no cultural and social contact between the (Chitre-)Sherpa and the households of the occupational castes who are regarded as "jutho" (unclean) even by the Buddhist Sherpa.

[3] Population data for 1981 are not given as the VDC was then united with its southern neighbouring VDC; assuming an unchanged percentage of population in Kiul and Palchok (for 1971/1981/1991) the population was about 2529 persons (for calculation formula see Table A12b, appendix).

one family moved to the southern neighbouring ridge where they settled on the lower plain shoulder (formed during glaciation), where land was cleared amidst a forest (Jyamire Ban) located further downhill (see aerial photograph, photo 1). Today this old settlement is completely deserted as the families have moved downhill to Kiul-Tar (see case study 3.2.4.1), a similar process than in Melamchi-Tar (see case study 3.1.4.3).

Early out-migration from this region occurred more than 50 years ago, when Yolmo-Sherpa mainly from Tarkyghyang and villages located in upper Kiul panchayat went to India either for coal mining, as British soldiers, but mainly for road construction in the hill regions of India. Some of them also went to Burma or Singapur where they were engaged in gold-mining, yet this seems to have taken place at a minor scale. There possibly has been a more or less organised market, often people arranged for their jobs beforehand, as stated by many, although this fact is refuted by others. Even in the early 1940s about 20-25% of all households had at least one member who worked outside, whereas the number has risen to 60-80% today, increasing towards high-altitude regions and to the north, leading to a most extraordinary age structure. At least some of the capital accumulated abroad is later on invested within the area, the major form of investment being the buying of khet land in low-altitude regions wherever available. Yet it seems that increasingly more money is being invested in Kathmandu, either in buying land or in establishing (small) enterprises, as for instance carpet manufactories.

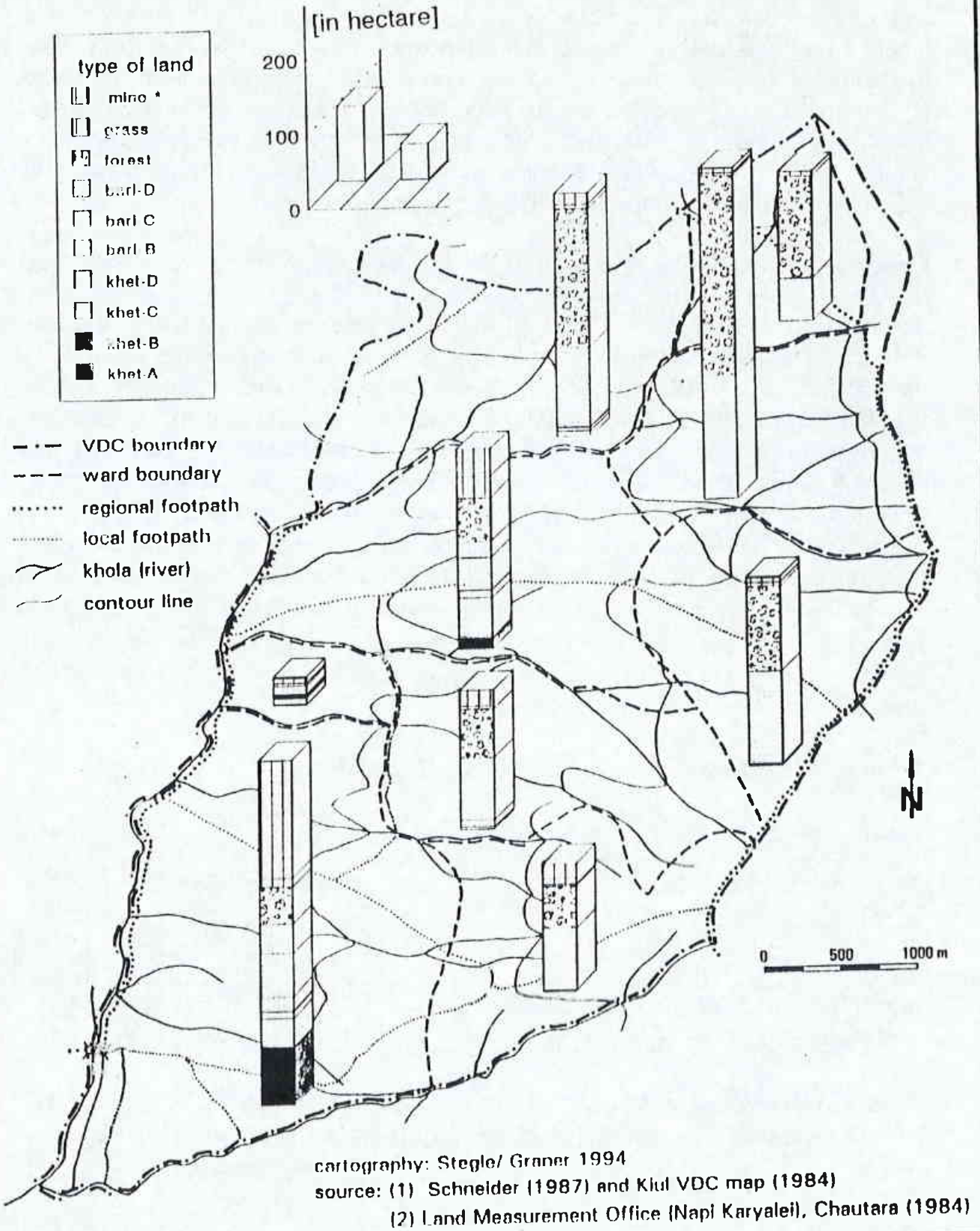
3.2.3 Access to Resources today

3.2.3.1 Agricultural Land - Availability and Access

In Kiul VDC a total of 1065.1 ha are registered as agricultural land at the Land Measurement Office (Napi Karyalaya) in Chautara. Due to the VDC's location in the upper Valley only 227.9 ha (21.6%) can be cultivated as (irrigated) khet whereas the lion's share of 837.2 ha (78.4%) is cultivated as (unirrigated) bari, resulting in an overall ratio of 1 : 3.7 (khet : bari), which is typical for upper valley regions. A ward-level analysis (see Figure 43) shows that khet-land is almost exclusively (92.4%) located in the three wards bordering Melamchi Khola (# 1, 3, and 5), in two wards (# 1, and 5) even predominating over bari-land. But small areas of khet-fields can also be found at slightly higher altitudes (# 2, 4, and 9) where bari-land is predominant and thus ratios are low (1 : 8.3 in ward 9, 1 : 26.8 in ward 4, and as low as 1 : 93.4 in ward 2), i.e. much lower than in high-altitude regions of Melamchi VDC (ward 7, where the ratio is 1: 10.7). At altitudes above 1600 m (wards # 6, 7, and 8) land is exclusively cultivated as bari.

Analysing the more detailed four-tier land classification for taxation, distinguishing abal (A), doyam (B), sim (C) and chahar (D) (see IV 2.2.2), some most amazing

Figure 43 Land classification in Kiul VDC (ward-level for 1984)



cartography: Stegle/ Graner 1994
source: (1) Schneider (1987) and Kiul VDC map (1984)
(2) Land Measurement Office (Napi Karyalei), Chautara (1984)

Jyamire Ambutar Ban - A forest managed by a user group

In contradistinction to densely forested high altitude regions of Kiul VDC lower altitude areas only have significantly smaller areas of forests (see Figure 42). There, only two large forests, Lamidanda Ban (ward 1) and Jyamire Ambutar (ward 1/3) exist, the latter located close to the Melamchi Khola (at about 1000-1200 m; see photo 1). Its total size is about 1,200 ropani (60 ha), comprising of originally two forests, the densely forested western part (Jyamire Ban) and a large shrub area in the eastern part (Ambutar Pakha). The predominant species are (khote) salla (pines; *Pinus roxburghii*), dhalne katus (*Castanopsis indica*), angeri (*Lyonia ovalifolia*), chillaune (*Schima wallichii*), mahuva (*Bassia latifolia*), utis (*Alnus nepalensis*) and mayal (kanda) (*Pyrus pashia*).

Villagers from Dhodeni, both Brahmins and Tamang, have traditionally utilised Ambutar Pakha whereas Jyamire Ban has been utilised by Bhandari-Brahmins from Kiulgaon who claim this forest to have been included in the land granted to them as birta (see III 3.1.2.2; IV 3.2.2). In the early 1970s (about 2025 B.S.) degradation was perceived as a major concern and after various debates the villagers from Kiulgaon agreed not to cut trees for some years and imposed a 15 - 50 Rs fine for cases of violation. During the early stages of Community Forestry (see II 2.4) both forests have been registered as Panchayat Protected Forest, which made utilisation possible for the villagers, and at the same time enrichment planting, mainly with pines (*Pinus roxburghii*), was carried out. When "user group forestry" was started being implemented in 1990 these two forests were joint together and among the first (operational plan # 12) which were handed over within that year.

When the user group was formed a total of 174 households from Tamang-Dhodeni (60), Brahmin-Dhodeni (51); Kiulgaon (45) and Tar (18) have been included as members. Except for the Tamang (34.5 %) all other households are Bhandaris from the Brahmin or Chhetri castes[6]. The user group is headed by a 17-member committee, composed of 4 Tamang and 13 Bhandari men, 10 of them are from Kiulgaon or Tar. The latter group also holds all four functions (chairman, vice-chairman, secretary, and treasurer). The predominance of Brahmins is also apparent when asked about the formation process. Many Tamang households state that it was a joint initiative with the Brahmins as they all perceived the need to counteract degradation. On the other hand almost all Brahmin members state that it was primarily (or even exclusively) their idea to have a better protection of "their" forest and that it was difficult to convince Tamang not to "mis-utilise" their forest and to follow their rules as they generally "never think about the future". Yet they had to be

[6] Bhandari-Chhetris are descendants from Bhandari-Brahmin fathers and a non-Brahmin mother; yet social cohesion between these two groups is very high.

their needs for firewood and fodder yet none of them has been included in this forest user group.

Asked why this is the case the answer generally given is that these groups collect their fodder and firewood in other areas; yet asked for a more specific information where exactly these groups collect their forest products answers get evasive and indicate that their exclusion from membership did not occur because these groups are expected to live in "saturation" but because benefit-sharing gets difficult the larger the group is. This is especially the case when Kami (blacksmiths) need to be included, who not only need firewood and fodder but who have an extremely high demand for charcoal in order to perform their traditional occupation (see case study 3.2.4.2). Thus the "multi-ethnic" character of this group needs to be seen in relative terms and should not been mistaken for a truly successful attempt to form a form user group where membership is possible irrespective of caste or ethnicity.

area (Ambutar Pakha) was registered as user group forest in 1990 (operational plan #12) by the Brahmins and some Tamang villagers from Dhodeni.

The Brahmins of Tar (ward 1)

Kiul-Tar (see photo 5) is a village of two- and three-storey stone houses with mainly straw roofs, only a few houses have corrugated iron roofs. It is inhabited by 18 Bhandari-Brahmin households with a total population of 86 persons, who have all moved to Tar within the last twelve years, either from Kiulgaon, about 1,5 km to the north, or from a small (nameless) hamlet located on a flat shoulder of Jyamire ridge, surrounded by a forest (see aerial photograph, photo 1). Whereas from Kiulgaon only a few households have moved to Tar and the majority of 43 Bhandaris have stayed the little (nameless) hamlet is completely deserted and today only serves as storage and occasional shelter.

Similar to Melamchi-Tar, the village has previously been the site of goths (animalsheds) built on khet-land, seasonally inhabited by someone who took care of some of the household's livestock that was kept in the goth over the winter months, either from the family or usually from local Tamang from Ichok and Mahankal VDC at the westbank of the Melamchi Khola where they are a majority. Since about twelve years, i.e. slightly later than in Melamchi VDC, more and more Bhandari households have moved downhill and turned their goths into permanent settlements and later on built new houses.

All Bhandari households have access to land through ownership and all own both khet and bari fields. Yet mortgaging has left its traces in many households and disparities in access to land are higher than among other groups. An extremely high proportion of households rent-in land on kut/adhiya arrangements from either guthi land held by close-by Buddhist ghyangs (see case study on Kami, 3.2.4.2) or from "sahus", Kathmandu-based absentee landlords from neighbouring villages of the upper Melamchi Khola, especially Tarkyghyang. Yet, in contradistinction to the Chhetris from Melamchi VDC, none of these households is registered as tenants and thus "tenancy" does not imply a secure status.

Grain production and food consumption

Among the Bhandari of Tar a sample survey of 14 households (78%) was undertaken. Average land holdings are 7.9 ropani (about 0.4 ha), ranging from 4-21 ropani (0.2 - 1.05 ha). In comparison to the Sapkota from Melamchi-Tar, where holdings range from 8 - 15 ropani, variation is higher and the low average (12.5 ropani for the Sapkota) indicate that most households own less land.

Investments are not only undertaken for consumption (tea and high-cost food) and agricultural production (chemical fertilisers) but also into productive assets. Three households have opened shops for basic commodities, and two of them have recently turned their houses into lodges, mainly for tourists who take the lower route of the Langtang-Helambu trek. In 1987 a mill was constructed, after the previous one had been destroyed by a landslide at a site close-by. In addition, a few households have bought land in the Kathmandu Valley, a strategy that reveals the high economic status of some of them as it is usually only encountered for the Brahmins of (Melamchi-) Jaraetar or for the Yolmo-(Sherpa) from high-altitude areas of Kiul VDC.

Whereas these types of investments are only done by half of the households all Bhandari households are characterised by a high investment into education. In 1985 they have managed to open a primary school in their village which has gradually been extended and in 1994 runs up to class 8. For the last two classes the children have to walk to Gyalthum (Mahankal VDC), at a distance of about 80 - 90 minutes (one-way) downstream (see Figure 28, p. 153). In spite of this long way most children, both boys and girls, are sent to school as long as there are no higher classes at Tar. Thus the status of literacy has improved significantly over the last decade when only about 60% of the men and a few women were literate whereas the future generation will have a secondary and possibly college education and a profound background for employment outside agriculture.

Access to forests

The Bhandari-Brahmins from Kiulgaon, as well as the ones who have moved to Tar, have always met their fodder and fuel requirements by utilising Jyamire Ban. Similar to the Sapkota-Chhetris from Melamchi-Tar the also claim that this forest was included in the land grant which was given to their ancestors and they explain that their concern to protect the forest arises from this traditional ownership. The nationalisation of forests has not curtailed utilisation as no government control was exercised during this period of time. Legal access was re-gained when the forest could be registered as Panchayat Protected Forest during the early 1980s and thus it was an easy step to change the status of this forest to "user group forest" when the new policy was started being implemented in the early 1990s.

When they formed the user group Tamang households from Dhodeni have also been included as members because the Bhandaris were afraid that otherwise they would not respect restrictions imposed on utilisation (see 3.2.3.2). In doing so they have shown that they recognise the need to share "their public assets" with others in order not to risk violations from this "external" side. On the other hand other groups have not been included, especially those who most heavily rely on (public) forest resources, as for instance the Kami (blacksmiths; see case study 3.2.4.2) from Kamitol and Chitre. Asked why they were not included some reply that they have no

igure 45 Total annual grain production of Bhandari-Brahmin households
sample of 14 households (ranked on total production)

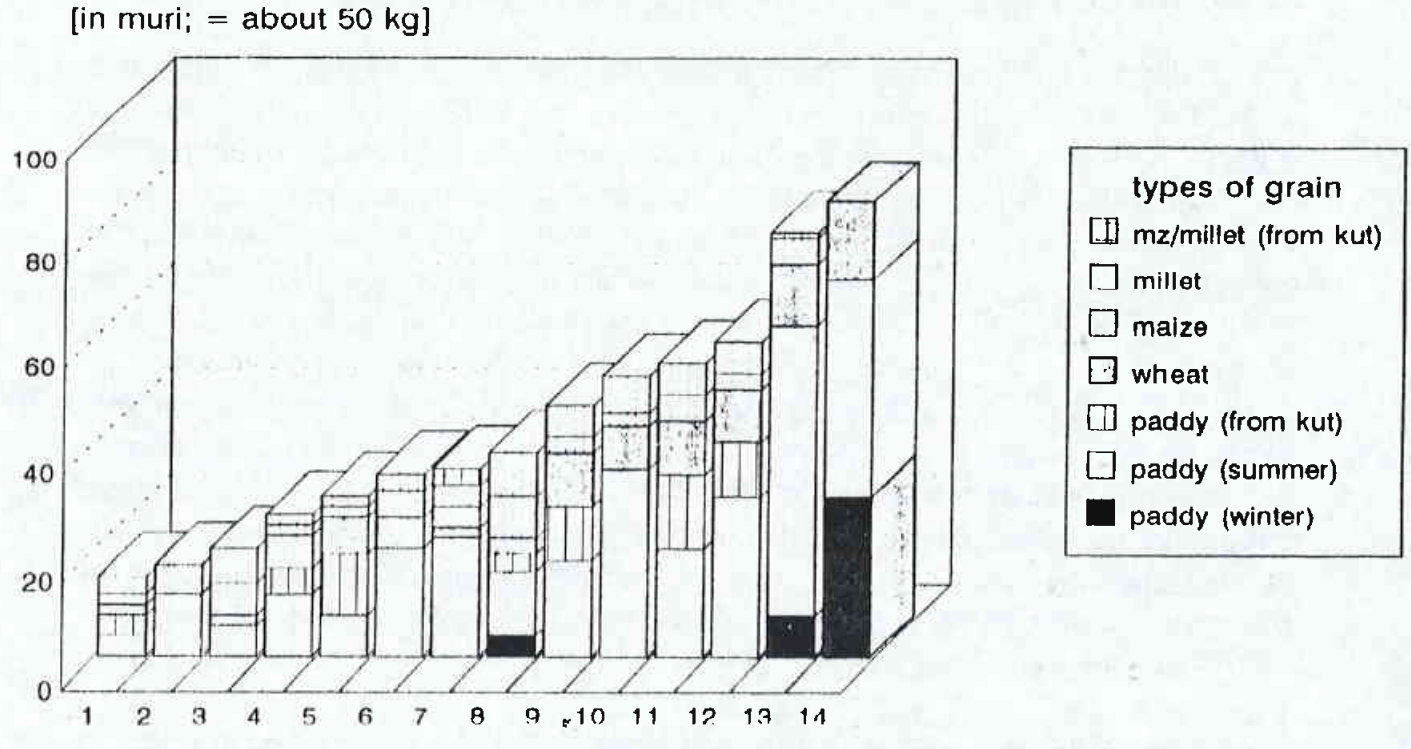
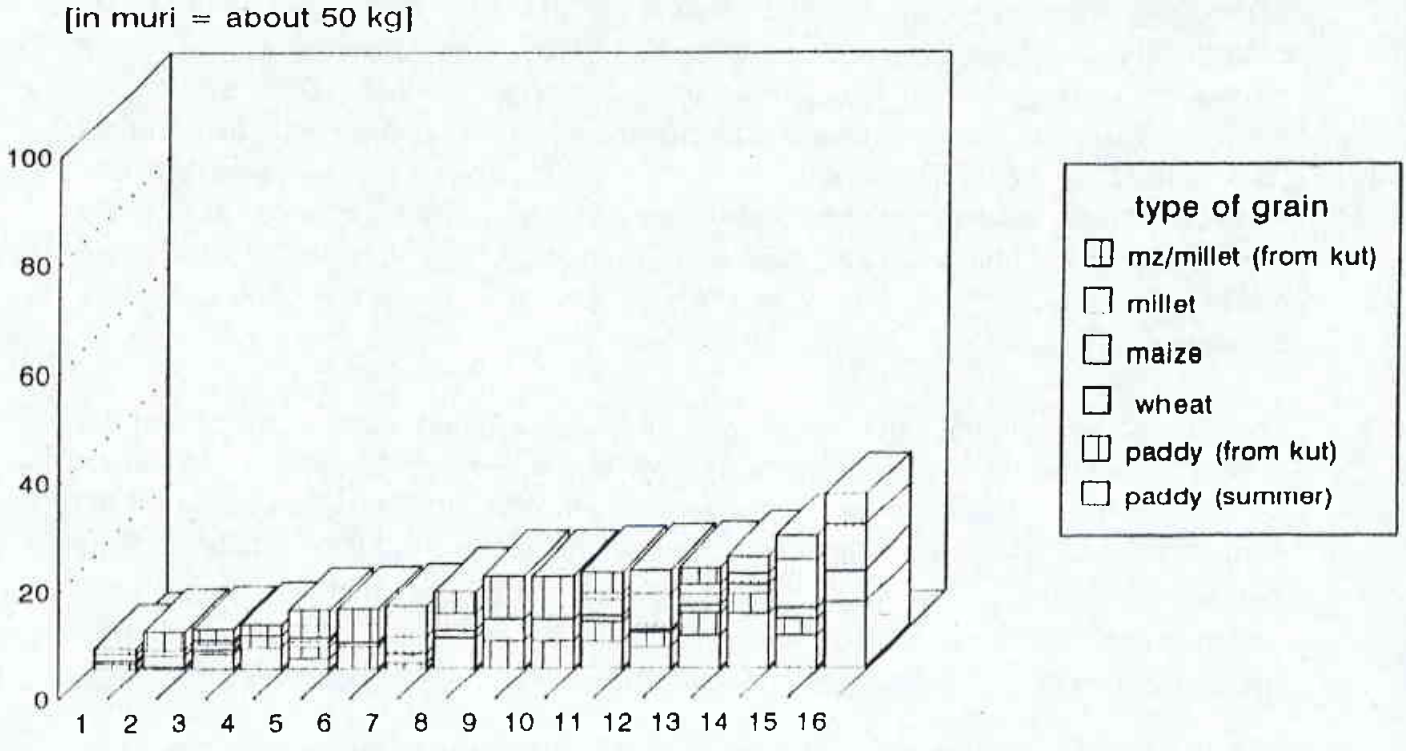


Figure 46 Total annual grain production of Kami households
sample for 16 households (ranked on total production)



source: field data 1992/94
graphic: Graner XII/ 1994

some time ago. Thus it is a prevalent feature that those households are in a much better situation who do not work as Kami, whereas most households who still work as Kami often have difficulties to secure their subsistence. Asked for the main limitation for working in their traditional occupation the immediate answer is that it has become increasingly difficult to find firewood in order to make the charcoal needed for their work due to heavy restrictions imposed on the cutting of firewood. This situation was not altered when a forest user group was formed and registered for the close-by Jyamire Ambutar forest, as none of the Kami households was included as a member. Only one or two Kami profit indirectly as they have better access to firewood for charcoal via some user group members who are within their bista.

The Kami of Chitre

In Kiul VDC there is a total of 37 Kami households, one lives near Kiulgaon (ward 3), 9 households in Kharkadanda (ward 9) and the majority of 27 households live in Chitre (ward 5) (see Figure 42; map 2). In Chitre, the Kami are concentrated in two settlements, one hamlet named Kamitol of 11 households close to Melamchi Khola at an altitude of about 1050-1100 m and a second hamlet named Kami- or Sunar-Chitre at an altitude of about 1500 m, just below the Yolmo-(Sherpa) settlement. Although the people of the upper hamlet call themselves Sunar (goldsmiths) they have always worked as Kami. Between these two clusters there are several single houses, some are also inhabited by Kami and some by Bhandari-Brahmins. Today only 12 Kami households (44 %) still work in their traditional occupation, sharing a total of 7 smithies, usually among several brothers, three in both Kamitol and Sunar-Chitre and one in one of the single houses.

Whereas the lower Kami hamlet is surrounded by khet-fields the upper hamlet is located at the altitudinal borderline of khet at about 1600-1650 m. Yet this location is merely a matter of availability of land and should not be mistaken for actual access. Indeed, none of the Kami households of the lower hamlet owns khet-land in the close proximity to their settlement. These khet-fields are almost exclusively owned by either (Bhandari)-Brahmins or Sherpa (see map 2, pocket at the back) and only a few Kami households own khet-land, located mainly at elevations of about 1300-1500 m.

Land holdings are small and far below subsistence needs for most households. A total of 3 households do not hold any land and refer to themselves as sukumbasi (landless), one is a female-headed household who returned to her parental home (maiti) with her grown-up sons after her husband had left her, yet without a right to claim some of her parents property, due to the law of inheritance (see III 3.1.3.2). The other two landless are two brothers from Kamitol who only "own" the small piece of land where their houses are built on, and even for this land they do not hold a land holding certificate ("lal purja"). According to their information the land belongs to a private person in Tarkyghyang, as does some other bari which they rent-in and pay

have large holdings in Kiul VDC (see map 2, pocket at the back). In addition, the cultivation of guthi land plays an important role. Arrangements for cultivation have existed for the parent generation before and sons usually inherited their father's share of adhiya/kut fields along with their share of private land (raikar). Yet, in contradistinction to guthi-land in Melamchi VDC all guthi in Kiul VDC is held by local ghyangs (Buddhist temples), who strictly control tenancy by demanding 50% of the main produce. Thus there is a significant difference between tenancy on ghyang-guthi and (merely nominal) guthi-tenureship in Melamchi VDC.

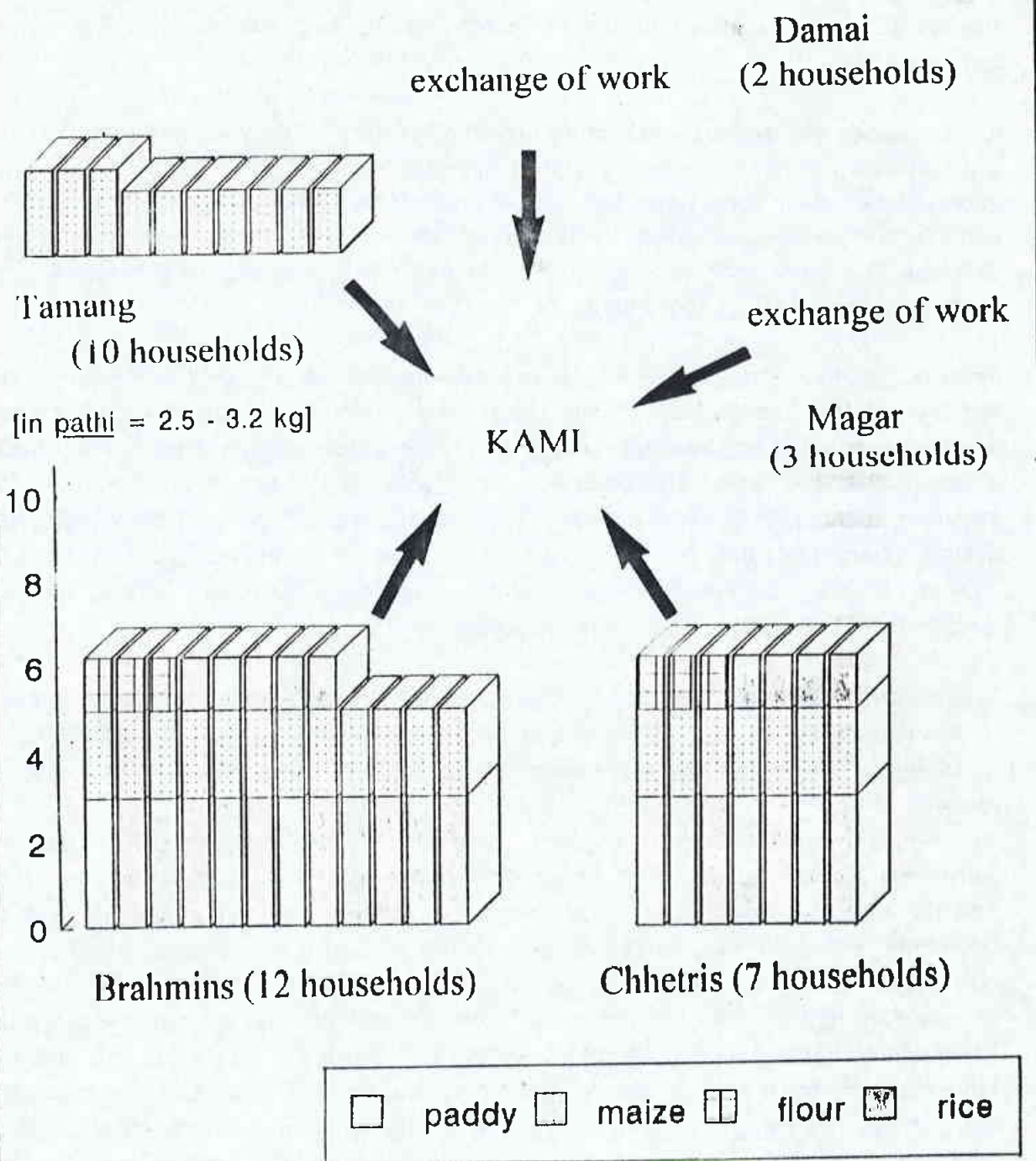
Grain production and levies

Total annual grain production for the households included in the survey ranges from 4 - 34 muri (about 200 - 1700 kg) (see Figure 46, above). Yet production is below 14 muri (about 700 kg) for 8 households, and for 6 among them it is even below 10 muri (about 500 kg). Thus production is similar to the one of the Danuwar (see case study 3.1.4.4), but there are important differences between the two groups. Whereas many of the Danuwar have a significant production from own bari fields this is only the case for four Kami households (# 7, 12, 15, and 16). The renting-in of land is of great importance for almost all households (except for # 16) and even accounts for more than 50% of the total production for 6 of 16 households among the Kami, whereas this is the case for only one Danuwar household. Above all, three households (# 6, 9, 10) exclusively rely on renting-in both khet and bari (wheat is also produced on rent-in fields), three others (# 1,2 and 7) do not own any khet land and need to produce all their paddy on rent-in fields.

Total production is much higher for all households but the cultivation of rent-in fields on kut/adhiya-arrangements is subject to extremely high levies, especially in comparison to raikar holdings with their present-day negligible taxation. In contradistinction, tenants still have to hand over 50% of the main produce to either owner or guthi-ghyang, paddy on khet fields and millet or usually maize on bari fields. In addition to these high levies on rent-in land taxation on (privately held) raikar land is also comparatively high as the land is classified as a high taxation class (doyam and sim) (see IV 2.2.2; map 2, pocket at the back), in spite of its significantly lower productivity, especially when compared to Melamchi VDC.

Above all, most households also have loans to repay, or more precisely interests. These are usually taken in kind, and rates range from 4 to 5 pathi of paddy (about 10-12,5 kg) per 100 Rs, corresponding to selling prices of about 60-75 Rs, i.e. annual interest rates of 60-75 % (see IV 2.3.3). As many households have loans of about 1,000 - 2,000 Rs, losses of grain for these most unproductive type of expenses are usually 2 - 5 muri (10 * 4 pathi or 20 * 5 pathi), whereas loans of several thousand Rupees, as is the case for three households, lead to interest rates which equal the total annual paddy production (households # 9 and 10).

Figure 47 Bista-arrangements for a kami workshop in Kiul



source: field data 1993/94
graphic: Graner V/ 1995 (following Bronger 1986)

Today the only legal source of making charcoal for most Kami is the purchasing of firewood, either from registered forest user groups or from private sources. If available from forest user groups costs are rather nominal (1-5 Rs/bhari; about 30-40 kg) whereas if purchased from private sources prices are generally significantly higher (10-15 Rs/bhari), although much lower than at Melamchi Bazar (see 3.1.4.5). As a minimum of 8 bhari is needed in order to produce 1 bhari of charcoal and each workshop needs an annual minimum of about 10-12 bhari of charcoal annual expenditure on charcoal may well be 1,000 - 1,500 Rs. Prices have risen exorbitantly during the last decade and demand significant financial inputs. Whereas market fluctuations of prices of iron are usually buffered by the bista-households, prices for wood and charcoal are not. Thus the scarcity of firewood affects Kami households and their work more than anybody else.

Table 26 Market prices for iron and charcoal (1973 - 1993)

INPUTS	1973	1983	1993
iron [Rs/dharni]	30 - 35	40 - 43	60 - 72
iron [Rs/kg]	12 - 14	16 - 17.20	24 - 28 80
charcoal [Rs/ bhari]	8 16	24 40	80 - 120

source: Kami of Kamitol and Chitre, Kiul VDC

Alternative sources of income

Most Kami households, whether still active in their traditional occupation or not, can not secure their subsistence needs from their agricultural production and Kami workshops. Thus, many of them have at least some family members who work as daily labourers, mainly in agriculture. Some men have traditionally worked as porters, especially for Lama from high altitude or northern villages where portering demands are extraordinarily high, due to the fact that most of the food has to be brought into these villages from other, higher-productive regions. Yet both men and women usually work as agricultural labourers, the same applies to children, who are generally included into the labour force at a fairly young age.

The importance of daily labour in their annual labour scheme is shown for the two Kami brothers who have been analysed before. In most months daily labour is carried out for about 10 - 12 days and thus in most months amounts to a similar labour performance than the performance of their traditional occupation. Only the month of aswin (September/October), before the dasai festival, is still dominated by their traditional iron work.

Outlook - stagnation persisting

Similar to the Sarki and Danuwar from Melamchi VDC the majority of Kami households live under marginal conditions. Access to land is low and their traditional occupation does not feed the whole family. But in contradistinction to these two groups the Kami heavily rely on public forests not only to meet their household needs for fuel and fodder but also for the performance of their traditional occupation. The fact that fuelwood for charcoal is increasingly difficult to obtain is a curtailment which poses a severe burden upon all Kami workshops. Whereas traditional arrangements between Kami and their clientele contribute significantly to secure household food security and also buffer the workshops from price inflation of iron it unfortunately does not sufficiently buffer the workshops towards dwindling forests.

The formation of the forest user group for Jyamire Ambutar has not affected the Kami households as badly as the formation of Phate Ban user group has affected most Danuwar households (see 3.1.4.4) as the utilisation of the forest has not been possible for a long period of time. On the other hand the formation of the user group has neither contributed to securing access to this decisive input for the Kamis' traditional occupation.

high economic status is less pronounced for the Brahmins of Kiul, who live at the cultural interface of Hindu and Buddhist populations where the latter dominate the informal capital markets and some Brahmin households have even been trapped in the vicious circle of loans and loss of land due to mortgaging, leading to significant disparities within this group. Besides, agricultural innovations have been less important for them as ecological conditions are of only limited suitability for utilising khet land as triple-cropped land.

This high economic status is also less pronounced for the Chhetris of Melamchi who today have their main access to agricultural land through registered tenancy on guthi-land with the recently evolved option of converting this guthi-land into (private) raikar holdings. In addition to income from selling surplus grain production their grain surplus also has a positive impact upon livestock husbandry, as the feeding of grain is an important prerequisite for dairy cattling with highly productive buffalo cows, leading to an additional regular income at localities where infrastructure allows the (daily) marketing of milk.

These three groups, the Brahmins and Chhetris of Melamchi VDC and the Brahmins of Kiul VDC, have in common the fact that all of them have sufficient land to supply their households' fuel and fodder requirements by utilising their own land (Figure 1; case 3). Sufficiency is highest for the Brahmins of Melamchi who live amidst large expanses of uncultivated bari fields where natural regeneration of fast-growing tree species is high enough to cover demand for the local resident Brahmin (and Sarki; see below) population. Sufficiency is lower for the Chhetris of Melamchi and for the Brahmins of Kiul VDC who additionally rely on collecting fodder and fuelwood in shrub and forest areas (Figure 1, case 2). Yet both of these two groups have formed forest user groups for a close-by forest and have registered with the District Forest Office (Figure 1; case 1a). In doing so they have managed to extend their access to (public) productive assets and to contribute significantly to securing their future needs for forest products.

In contradistinction to these three groups many other groups, mainly of "low caste status" or ethnic minorities, are characterised by a low economic status, and, above all, by a gradual but substantial "erosion" of productive assets due to fragmentation of holdings due to inheritance and/or due to mortgaging of land, two processes that have severely threatened subsistency. These households are characterised by small agricultural holdings and a predominance of (unirrigated) bari land with only some exceptions where a few households have managed to either buy additional land or to convert doublecropped into triple-cropped khet and thus fully profit from agricultural innovations. Yet the latter is only possible for some khet fields whereas other khet or bari fields have not experienced a similar rise in productivity, leading to a comparative loss and high disparities in productivity.

In order to secure subsistency most of these households (increasingly) rely on renting-in agricultural land under sharecropping arrangements (where levies are still about 50% of the main harvest), and on agricultural labour (where stagnating wages lead to a gradual loss of purchasing capacity). Besides, many households need to borrow money, but at the same time are confined to private capital markets with usurious interest rates and risk of mortgaging of land. Thus, investments into production and human resources are minimised whereever possible, for instance education is mainly confined to allowing boys to attend primary school, while at the same time mobilisation of labour force (including child labour) is extremely high.

This low economic status is encountered in Melamchi VDC in the case studies of the Sarki (cobblers; 3.1.4.2) and the Danuwar (3.1.4.4) and in Kiul VDC for the Kami (blacksmiths; see 3.2.4.2). Occupational castes are highly dependent on traditional arrangements with their bista (clients), usually Brahmin and sometimes also Chhetri households, which keeps them in a subordinate position but at the same time is an important "buffer" (in Chamber´s terminology; see Figure 5) in order to cope with contingencies. These bista households have traditionally been, and still are, approached in times of food and cash scarcity, an important "claim" (in Swift´s terminology"; see Figure 2b) for assistance upon local groups. On the other hand, ethnic minorities as the Danuwar are similarly dependent for renting-in land, daily labour opportunities, and loans. Yet at the same time the lack of these close ties of a patron-client relationship leaves them more isolated and buffers them less towards an erosion of their assets.

These three groups, the Sarki and Danuwar of Melamchi VDC and the Kami of Kiul VDC, have in common that none of the households is in a position to supply their households' fuel and fodder requirements by utilising their own land. They either rely on other people's land (Figure 1; case 4), as is the case with the Sarki of Jaraetar who profit from uncultivated and re-naturated bari fields of large landowning Brahmins, or they rely on public ("common property") forests and shrub areas (Figure 1; case 2). This latter case was encountered for the Danuwar who had the possibility to supply at least some of their demand, mainly during low-supply winter months, from a forest which now is registered, and above all heavily guarded, by a user group, a situation that makes it impossible for them to continue utilisation of this forest (Figure 1; case 1b). The situation for the Kami of Kiul is less drastic, although still problematic. Their high requirements for fuel and charcoal needed for performing their occupation are strongly curtailed by increasing restrictions on utilisation, as the establishment of Langtang National Park or the registration of user groups [illegible] has not threatened traditional [illegible] forest

V Conclusion: User Group Forestry - Poor Policy for Poor People ?

Deforestation and degradation of existing forests in Nepal have been of great concern not only on a local and national but also on the international level. Local farmers have for a long time been seen as the immediate agents of these processes and thus government policies were primarily addressed at protecting forests "against" local utilization by imposing a strict legislation and criminal law. Yet these policies have profed to be of limited impact and contrarily to their objective they have often contributed decisively to accelerate degradation and deforestation.

On the other hand conceptual approaches as "political ecology" have played a most crucial role in understanding environmental degradation from a different (and obviously more appropriate) angle, by questioning the (polemic) assumptions of the "farmer-scapegoat-myth" and by pointing out interlinkages of environmental degradation and underdevelopment and poverty, as Blaikie (1985) has done and taken up by WCED (1987) and the World Bank (1992), and epitomised by the latter as "the environmental crisis is, in short, a poverty problem" (see I 1.). Yet this new diagnosis, ranking the putative "disease" merely as one symptom of a much more severe and complex disease, necessarily asks for a totally different approach for treatment.

Government policies addressed at reducing environmental degradation, and especially forest policies, reflect this shift and incorporate objectives as public participation and securement of basic needs. These two objectives are explicitly stated in Nepal's most recent modification of forest legislation, the Forest Act of 1993, which aims at securing basic needs for forest products by forming user groups for joint forest management, giving "priority to poorer communities, or to the poorer people in a community" (HMG 1988d: 10; see II 2.4).

Thus community forestry is generally praised as a community-based process of empowerment of local groups. As a forest policy it is seen to achieve objectives as participation and sustainable development, terms which are of great importance in the development lexicon and which generally receive utmost priority. Evaluations of forest user groups have generally followed this line of argument by pointing out the benefits of user group management of forests for all, or at least for the majority of the members. These findings are then usually generalised by stating that user group forestry as such is a viable development strategy for securing basic needs. On the other hand the findings based on the case studies differ significantly from this line and come to a different conclusion.

A similar composition of user groups has already been apparent from Chhetri and Pandey (1992) from their 8 case studies of (non-registered) user groups from the Far Western Development Region. There, 3 of 4 groups from Baitadi district (for location see Figure A2) have a predominance of more than 93% Brahmin and Chhetri members and less than 100 member households whereas there is only one large user group where occupational castes are a relatively strong group (24.3 %) and high castes "only" account for 75%. Yet at the district level high castes only account for 20.7 (Brahmins) and 47.5 % (Chhetris), occupationals for 16.4% of the population (HMG &al. 1993c: 317 ff). Data for Accham district (see Figure A2) follow the same pattern. One large user group of 230 member households comprises of "only" 74 % Brahmins and Chhetris and of 19.1 % occupationals, whereas the three other groups of 66-128 members have a 84 - 90.9 % predominance of high castes, who merely comprise of 11.4 and 51.5 % of the district's population (HMG &al. 1993c: 297 ff.). A look into the user groups' histories reveals that members often base their claims upon traditional rights, as previous ownership of the forests.

Thus the pattern that user groups are predominantly formed and registered by high caste Brahmins and Chhetris, whereas only occassionally other groups are included or are a majority seems to be prevalent not only in Sindhupalchok district but also in other parts of the country. This over-representation seems to be the case especially when small user groups are formed whereas (comperatively) large groups generally tend to incorporate several castes and ethnic groups. Yet these findings raise the question about the target groups and the objectives of the new forest policy, supposively addressed at "poorer communities or poorer people within communities". Unfortunately, none of the case studies provides evidence for this achievement and contrarily, the case studies presented in this study indicate that the impact upon socially disadvantaged groups may be extremely negative as (at least) some of them lose actual access to "common property" forests when these forests are handed over to user groups, as the members exercise a strict control over these forests, denying any type of utilization to non-members.

Thus this often-praised policy of user group forest management has extremely negative effects upon groups which are excluded from membership. But if they are the ones who heavily depend upon these resources in order to meet their subsistence needs then the new policy can not only be seen as a successful development strategy for securement of basic needs for households included within the user group but at the same time it has the extremely negative "side-effect" of threatening access to vital resources for subsistency and of fueling a marginalization process for economically-disadvantaged groups who are excluded from membership. Thus Goldsmith's criticism about social forestry programmes may well be applied to the recent forest policy in Nepal: "Unfortunately [social forestry programmes][..] have

VI APPENDIX

Photo 2 Melamchi VDC (viewed from trans-river Jyamire VDC), November 1994

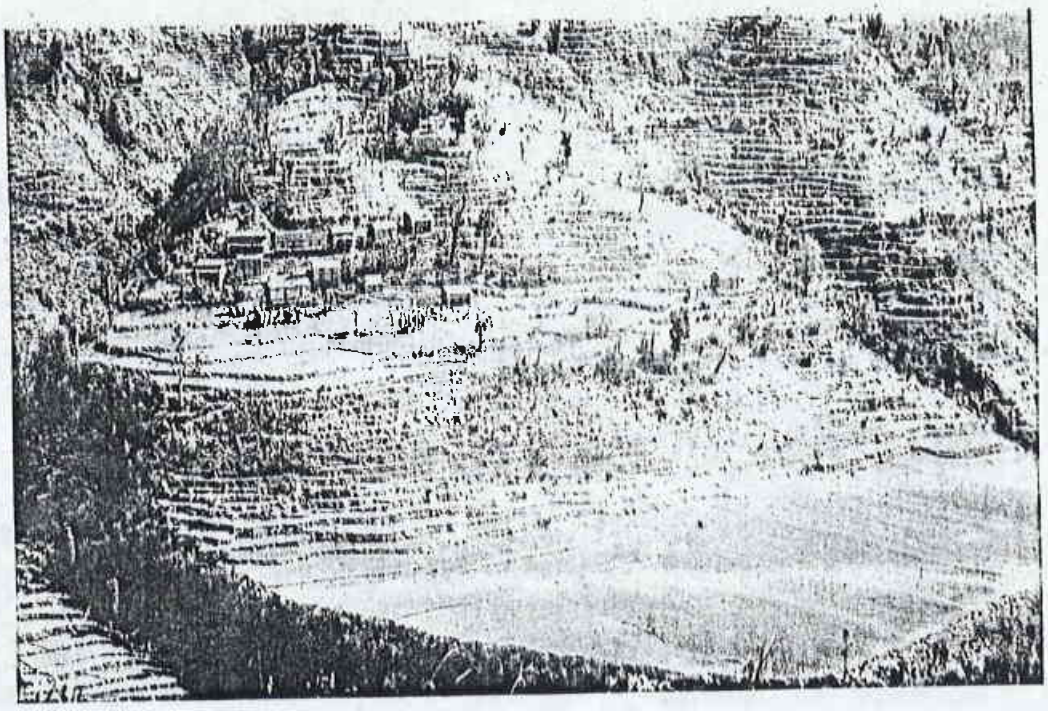


Photo 4 Selle Village (Melamchi VDC ward 2), IV/1993

Photo 5 Kiul-Tar (Kiul VDC ward 1), IV/ 1993

Photo 8 Bari-terrace in upper Kiul VDC, VI/1992

Photo 9 Harvesting of millet on a bari-field in Melamchi-Tar, XI/1992

Photo 12 Dung for fertilisation in Kiul-Chitre, III/1994

Photo 13 Newar traders of chemical fertilisers (Talamarang VDC), III/ 1994

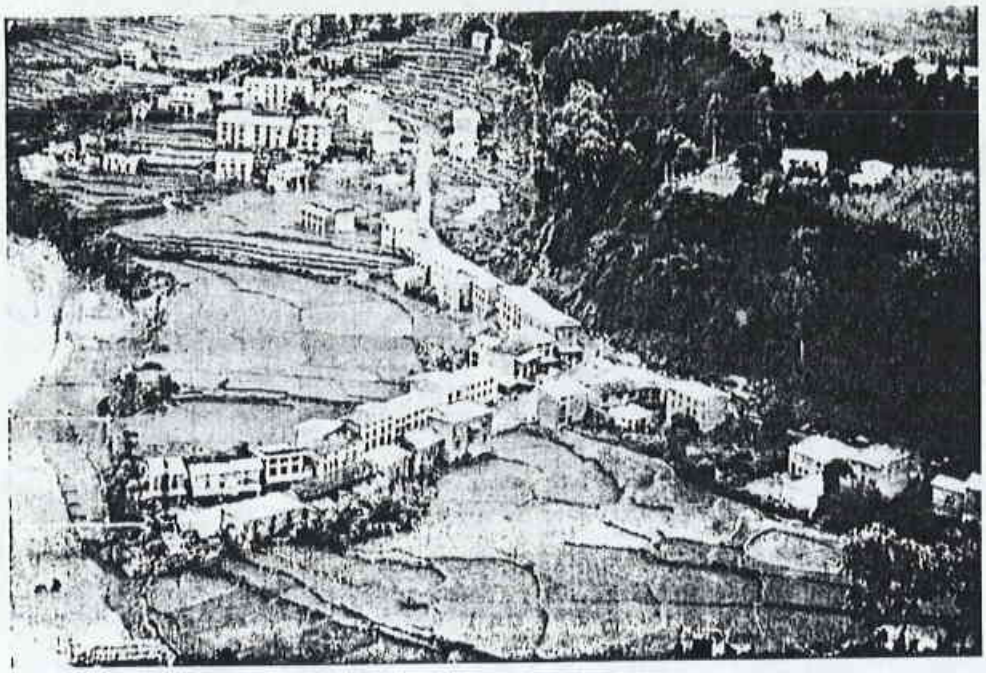


Photo 16 Melamchi Bazar (viewed from Jyamire VDC), VIII/ 1992

Photo 17 Grain trade in Melamchi Bazar, IV/ 1993

Photo 20 Tamang selling their self-made baskets in Melamchi bazar, X/ 1993

Photo 21 Chhetri and Brahmin men from Bismuri and Tar selling buffalo milk, III/ 1993

Photo 24 Chhetri boy at an odan-stove burning maize stalks as firewood, Melamchi-Tar

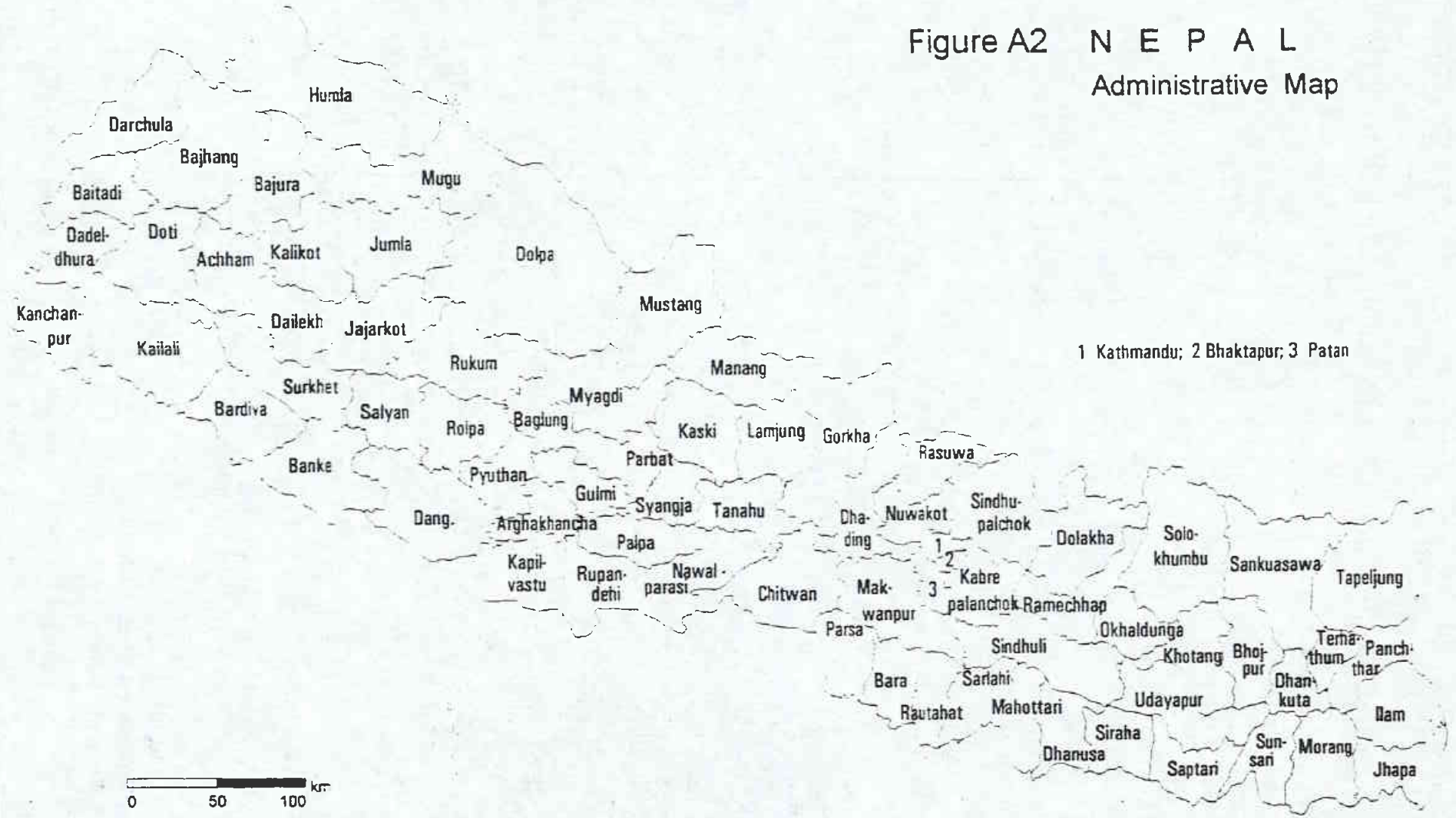
Photo 25 Sherpini at her iron stove, Kiul-Chitre III/ 1994

Photo 28 Participatory mapping of grain sufficiency, Melamchi-Tar X/ 1993

Photo 29 Meeting of Phate Ban user group, Melamchi-Tar X/ 1992

Figure A2 N E P A L

Administrative Map



cartography: Graner 1996
source: HMG/NPC/CBS: Population Census 1991

Glossary[1]

abal*	best grade of the four-tier agricultural land taxation system
adhiya	sharecropping arrangement, where about half of the main produce is handed over
alu	potatoes
ana	(Turner: anaj) food-grain
anna	area equalling 31.75 sqm (see Table A1)
aran	workshop of a Kami
asar	third month of the Nepali calendar (June/July)
aswin*	(Turner: asauj) sixth month of the Nepali calendar (September/Oktober)
bahun	Brahmin
baisak	first month of the Nepali calendar (April/May)
bali	harvest; in-kind payments to occupational castes
ban	forest (irrespective of crown cover)
bari	non-irrigated land where maize and millet are grown
besi*	low altitude regions (opposed to lekh: high altitude regions)
bhadau	fifth month of the Nepali calendar (August/September)
bhag	share, part
bhari	load carried on the back, usually using a namlo at the forehead
bhariya	porter (person who carries a load)
bhat	boiled rice; meal
bhatmas	sojabeans
bhir	cliff, steep slope
bholiparsi	"tomorrow - in two days"; phrase used to indicate some time in the future
bhote	(derogative) for Tibetans and other Tibeto-Burmese groups
bikas	(Turner: vikas) development
birta	traditional type of land grant (given mainly to high-caste Hindus)
bista	Nepalese equivalent of the Indian jajmani system
biu	seed, seedlings
chaitra (cheit)	twelfth month of the Nepali calendar (March/April)
cheite	early paddy (harvetsed in the month of cheit)
chamal	(Turner: camal) rice (dehusked paddy)
chahar*	lowest grade of the four-tier agricultural land classification system
chauri	crossbread of cow and yak
chinni mal	"sugar fertilizer", colloquial term for chemical fertilzer (amonium sulphat)
chitre	seasonal shelter for livestock
chiura	(Turner: ciura) beaten rice (see photo 7)

[1] Spelling and diacritics are given according to Turner (1932), BH (&c) is given under B;
* indicates that the expression is not given in Turner; for legal terms the spellings follow the "Adminisrative and Law Dictionary" (ed:).

khole	mush of several types of grain fed to livestock
khukuri	curved knife
kipat	(land grant for) traditional common property areas
kista	monthly interest rates
kitta	parcels of agricultural land registered at the Land Taxation office
kodale	(short-handled) mattock
kodali	(short-handled) mattock
kodo	millet (*Eleusine indica*)
koseli	present; bribe
kut	share-cropping arrangement for a fixed amount of cash or kind
lal mohar	"red seal of the king"; certificate cealed by the king, as f.i. land grants
lal purja	landholding certificate; (see photo 10)
lekh	higher altitudes as opposed to besi (lower altitudes)
losar	Tibetan New Year, celebrated by several Buddhist groups
magh	tenth month of the Nepali calendar (January-February)
maina	month
maiti	parental home of a (married) woman
makkai	maize
mal	dung, manure
Mal Karyalaya	treasure; Land Taxation Office (now called Malpot Karyalaya)
mana	volume equalling about 0.5 lt (see Table A1)
manapathi	traditional system of in-kind payment (usually for grains)
mandir	Hindu temple
mangsir	eighth month of the Nepali calendar (November/December)
mato	earth, soil, clay
matwali	(derogative) expression for "alcohol drinking" castes (see III 3.1.1)
mela	exchange of labour within a community (also called parma)
mino	infrastructure (term used in the land register)
mohi (mahi)	tenant(s)
mouja	(traditionally) unit of tax collection
mukhiya	chief, leader; tax collector during the Rana period (and longer)
Muluki Ain	Legal Code (since 1846)
muri	volume equalling about 90 lt (see Table A1)
muthi	one handful (10 muthis make one mana)
napi	cadastral survey (conducted during 1980-83 in Sindhupalchok)
Napi Karyalaya	Land Measurement Office
namlo	strap, usually made of jute or leather to attach the load at the forehead
nun	salt

Table A1 Conversion Tables (time, volumes, weights, measures & currency)

1.1 Nepalese months and their Gregorian equivalent (in order of Nepalese year)

baisak	jest	asar	srawin	bhadra	aswin	kartik	mongsir	pous	magh	phagun	chaitra
April	May	June	July	August	Sept.	October	Novem.	Decem.	Janu.	Febr.	March

1.2 Nepalese years (starting on April 15th) and their Gregorian equivalent

Gregorian (A.D.)	1992	1993	1994	
Nepalese (B.S.)	2049	2050	2051	(&c)

2. Volumes

	muri	pathi	mana	muthi	litre	pint	gallon
muri	1	20	160	1600	90.1	160	20
pathi	0.05	1	8	80	4.5	8	1
mana	0.01	0.125	1	10	0.57	1	0.125

3. Area

	dam	paisa	anna	ropani	acre	sqm
dam	1	0.25	0.06	0.004	-	1.98
paisa	4	1	0.25	0.016	0.002	7.94
anna	16	4	1	0.06	0.008	31.75
ropani	256	64	16	1	0.125	507

4. Weights:

kg	dharni	pau
	0.4	5

5. Weights for various commodities

	kg/muri	kg/pathi
paddy (unhusked)	50	2.5
rice (dehusked)	68.6	3.4
wheat	67.3	3.3
maize	62.7	3.1
millet	67.3	3.3

6. Money

	rupia	mohar	suka	anna	paisa
rupia	1	2	4	25	100
mohar	0.5	1	2	12.5	50
anna	0.04	0.08	0.16	1	4

7. Exchange rate (NRs to US $ and German Mark, 1960 - 94)

	1960	1965	1970	1975	1980	1985	1990	1994
Rs : DM	1.90	1.90	2.76	4.83	6.49	6.04	10.00	30.00
Rs : $	7.60	7.60	10.10	12.45	11.90	17.60	30.00	50.00

Source: Nepal Rastra Bank (1993)

Table A3 Family names of different ethnic & caste groups (in alphabetic order)

Brahmin (Kumain)

Bhatta	Bista	Dotel	Joshi	Kadariya	Khadiwada	Lohini
Paitola	Pandey	Paneru	Pant	Soti	Upreti	

Brahmin (Purbiya)

Acharya	Adhikari	Aryal	Baral	Baskota	Bastola	Basyal
Bhandari	Bhatta	Bhattarai	Chamlagain	Chapagain	Dahal	Devkota
Dhakal	Dhhital	Dhungel	Gartola	Ghimire	Gotame	Guragain
Homegain	Kadel	Khanal	Kuikel	Lamichhane	Lamsal	Nepal
Neupane	Ojha	Parajuli	Paudel	Pokhrel	Pyakural	Pudasain
Putrtel	Regmi	Rimal	Risal	Satyal	Sedhai	Sigdel
Silwal	Subedi	Timilsena				

Chhetri

Airi	Baniya	Basnet	Bista	Bogti	Bohra	Bura
Doeja	Karki	Kathayat	Khadayat	Khadka	Khulal	Kawar
Mahat	Raut	Rana	Rawal	Sijapati	Thakurathi	Thapa
Woli						

Newar (selection)

Amartya	Balami	Bhatta	Bajracharya	Chitrakar	Dali	Deola Giri
Jha	Josi	Kulu	Kumale	Mali	Malla	Manandhar
Maske	Pradhan	Pore	Pulu	Putwar	Raj Bhandari	
Raj Lawat	Raj Vamsi		Raj Upadhya		Ranjitkar	Sakyabhiksu
Shrestha	Tamrakar	Tepe	Tuladhar			

Tamang

Bajyu	Blon	Bomjan	Chyawa	Dong	Ghising	Goley
Gomden	Grandan	Lo	Lopchan	Moktan	Moktung	Ngarden
Ngarpa	Pakhrin	Payen	Shingden	Shyangpo	Shamden	Thing
Thokur	Titon	Waiba	Yonjan			

source: Bista (1967: 5/ 6/ 19/ 55)

Table A5 Distribution and costs of chemical fertilizers in Nepal (1965-93)

YEAR	TOTAL	A2100	A4600	A2020	DAP	ETC	DIFF	TT_IMP	AID	LOAN	PR21	PR46	PR20	PRDAP
1965/66	2069	1629	0	0	0	467	-27	3169	3169	0	726	0	913	0
1966/67	5511	4000	0	1150	0	361	1150	6670	0	0	693	0	913	0
1967/68	9959	5664	0	3042	0	1253	3042	15011	0	0	693	1313	913	0
1968/69	11611	7510	461	2668	0	5562	-1922	12232	0	0	858	1400	913	0
1969/70	15898	10133	547	4572	0	646	4572	19109	1000	0	858	1400	1064	0
1970/71	17728	9929	2125	4558	0	1116	4558	18400	8100	0	850	1342	1057	0
1971/72	25434	12295	2346	9203	0	1590	9203	24064	13064	0	1000	1535	1557	0
1972/73	32575	17005	5080	9024	0	1466	9024	64174	20174	0	1000	1535	1557	0
1973/74	36779	16857	6541	12127	0	1254	12127	37450	11950	0	1658	2193	2214	0
1974/75	36361	13440	7165	14056	0	1700	14056	60300	28500	0	1658	2193	2214	0
1975/76	31131	6507	10060	8332	0	6232	8332	5000	5000	0	1870	2440	2270	0
1976/77	37835	7755	13661	9423	0	6996	9423	37069	20069	0	1870	2440	2270	0
1977/78	45282	10410	16290	14253	0	4329	14253	46316	37316	0	1870	2440	2270	0
1978/79	45591	7376	19789	10649	0	7777	10649	47218	42218	0	1870	2440	2270	0
1979/80	0	5060	22324	14718	0	8066	14718	38501	25176	0	1870	2440	2270	0
1980/81	54000	4079	23555	23710	0	2656	23710	54184	31359	0	2400	3100	2800	0
1981/82	56444	5217	26693	19892	0	4643	19891	79296	25945	12057	2400	3100	2800	4500
1982/83	73715	3559	32200	33748	0	4208	33748	99800	31300	20100	2400	3500	3250	4500
1983/84	86916	4887	43655	33480	0	4894	33480	78230	17500	5000	2400	3500	3250	4500
1984/85	100120	1637	46475	49611	0	2397	49611	115300	25600	59700	2400	3500	3250	4500
1985/86	103795	2071	44557	53967	0	1600	55567	115122	53752	16370	2850	3990	3990	5620
1986/87	105751	3616	50069	45544	0	0	52066	0	0	0	2850	3990	3990	5339
1987/88	121225	6360	63270	29959	9340	0	42255	0	0	0	2850	3920	3990	5339
1988/89	131954	5722	60032	54545	725	0	65475	0	0	0	3050	3990	4375	5870
1989/90	158621	6555	70861	62352	65	0	81140	0	0	0	3111	4070	4502	6319
1990/91	168636	6948	81000	59130	760	0	79928	0	0	0	0	0	0	0
1991/92	185796	3631	92674	63023	18481	0	71010	0	0	0	4670	5710	6300	8360
1992/93	0	0	0	0	0	0	0	0	0	0	4200	5140	9999	11000
1993/94	0	0	0	0	0	0	0	0	0	0	6900	5600	9999	12500

total	total amount of chemical fertilizers [in tons]
A2100	amonium sulphat ("ginni mal"); 21% nitrogen
A4600	*urea*; 46% nitrogen
A2020	multi-component fertilizer
DAP	multi component fertilizer
etc	other types of chemical fertilizer (not specified)
diff	difference calculated from total amount of fertilizers and specified types
tt imp	total amount of chemical fertilizers imported
aid	total amount of chemical fertilizers received through aid
loan	total amount of chemical fertilizers imported through loans
pr(21)	costs (of amonium sulphat A2100) [Rs/tons]

source: Agriculture Input Corporation (AIC), Kathmandu

Table A8 Land use in Sindhupalchok according to ecological zones (LRMP)

	LANDUSE	MM	HM	HH	MM_C	HM_C	HH_C	SP_C	SP_TOT
1	agriculture	46807	28852	7549	56.3	34.7	9.1	33.5	83209
2	cultivated	44842	19061	0	0.0	0.0	0.0	25.8	63904
3	nci	0	0	0	0.0	0.0	0.0	0.0	22310
4	grazing	1965	9791	7549	10.2	50.7	39.1	7.8	19305
5	forest-tot	33932	87416	5195	26.8	69.1	4.1	51.0	126543
6	F-shrub	16347	17424	2025	45.7	48.7	5.7	14.4	35796
7	F-class 2-4	17585	69992	3170	19.4	77.1	3.5	36.6	90747
8	F- class 2	12547	26557	844	31.4	66.5	2.1	16.1	39948
9	F- class 3	5038	40004	3268	10.4	82.8	6.8	19.5	48310
10	F-class 4	0	1413	247	0.0	85.1	14.9	0.7	1660
11	other	784	9701	27859	2.0	25.3	72.7	15.5	38344
12	total	81523	125969	40604	32.9	50.8	16.4	100	248096

Table A9 Forest species and crown cover in Sindhupalchok (1978)

	SPECIES	MM	HM	HH	MM_C	HM_C	HH_C	SP_C	SP_TOT
1	Conifer 2	147	2863	284	0.1	2.3	0.2	2.6	3294
2	Conifer 3	266	13943	1982	0.2	11.0	1.6	12.8	16191
3	Conifer 4	0	199	235	0.0	0.2	0.2	0.3	434
4	Hardwood 2	12197	17890	211	9.6	14.1	0.2	23.9	30298
5	Hardwood 3	4772	9614	2	3.8	7.6	0.0	11.4	14388
6	Hardwood 4	0	312	0	0.0	0.2	0.0	0.2	312
7	Mixed 2	203	5804	349	0.2	4.6	0.3	5.0	6356
8	Mixed 3	0	16447	1284	0.0	13.0	1.0	14.0	17731
9	Mixed 4	0	902	12	0.0	0.7	0.0	0.7	914
10	C-total	413	17005	2501	3.4	13.4	2.0	18.8	19919
11	H-total	16969	27816	213	13.4	22.0	0.2	35.6	44998
12	M-total	203	23153	1645	0.2	18.3	1.3	19.8	25001
13	shrub	16347	17242	2025	12.9	13.6	1.6	28.1	35614
14	total	33932	87416	5195	26.8	69.1	4.1	100.0	126543

MM Middle Mountains
HM High Mountains
HH High Himal
(MM)_c percentage of land use area (in Middle Mountains)

nci non-cultivated inclusions (houses, paths, rivers, ponds &c)
C2 &c conifers, class 2 (crown cover 10-40%)
H3 &c hardwood, class 3 (crown cover 40-70%)
M4 &c mixed stands, class 4 (crown cover over 70%)

source: LRMP (1986c: 360-63)

VDC_NAME	AREA	F_TOT	SHRUB	FO2	FO3_4	FT_C	F_C	PLANT	FO93	P1_C	P2_C	UGF	UG_C
Pisker	1304	813.3	3.4	339.6	470.3	62.4	62.1	107.1	920.4	13.2	13.2	65	7.1
Pokhare	1399	416.1	239.2	176.9	0.0	29.7	12.6	134.8	550.9	32.4	76.2	72	13.1
Ramche	1393	723.6	480.8	228.4	14.4	52.0	17.4	124.7	848.3	17.2	51.4	0	0.0
Sangachok	3341	1797.1	552.9	195.0	1049.2	53.8	37.2	478.8	2275.9	26.6	38.5	342	15.0
Sanosirubar	1240	700.6	505.7	17.9	177.0	56.5	15.7	364.3	1064.9	52.0	187	160	15.0
Selang	2350	1488.4	593.4	459.5	435.5	63.3	38.1	143.5	1631.9	9.6	16.0	45	2.8
Sikharpur	1220	257.7	87.5	170.2	0.0	21.1	14.0	211.9	469.6	82.2	125	171	36.4
Simpal	1784	704.5	321.7	309.7	73.1	39.5	21.5	135.9	840.4	19.3	35.5	0	0.0
Sindhukot	1690	794.9	494.8	300.1	0.0	47.0	17.8	89.8	884.7	11.3	29.9	0	0.0
Sunkhani	788	432.4	177.2	241.0	14.2	54.9	32.4	93.3	525.7	21.6	36.6	0	0.0
Syaule	2323	1129.0	810.1	235.7	83.2	48.6	13.7	303.0	1432.0	26.8	95.0	48	3.4
Talamarang	1302	533.2	384.9	148.3	0.0	41.0	11.4	36.4	569.6	6.8	24.5	0	0.0
Tatopani	7609	5044.8	549.3	919.6	3575.9	66.3	59.1	27.2	5072.0	0.5	0.6	69	1.4
Tekanpur	834	338.2	62.2	276.0	0.0	40.6	33.1	3.7	341.9	1.1	1.3	50	14.6
Thakani	1166	886.0	318.9	567.0	0.1	76.0	48.6	58.6	944.6	6.6	10.3	0	0.0
Thampalkot	2759	1781.0	479.1	193.4	1108.5	64.5	47.2	108.5	1889.5	6.1	8.3	0	0.0
Thantali	1340	660.7	278.9	381.8	0.0	49.3	28.5	150.7	811.4	22.8	39.5	8	1.0
Thokarpa	1183	342.8	329.1	13.7	0.0	29.0	1.2	285.8	628.6	83.4	2086	240	38.2
Thulodhadin	1071	488.5	33.5	454.9	0.1	45.6	42.5	162.0	650.5	33.2	35.6	20	3.1
Thulopakhar	1821	1020.1	264.2	302.7	453.2	56.0	41.5	73.8	1093.9	7.2	9.8	0	0.0
Thulosiruba	2348	794.2	327.4	362.1	104.7	33.8	19.9	397.2	1191.4	50.0	85.1	0	0.0
Thumpakhar	943	444.5	225.9	193.8	24.8	47.2	23.2	299.9	744.4	67.5	137	40	5.4
Thumthang	3156	1990.8	982.8	117.1	890.9	63.1	31.9	0.0	1990.8	0.0	0.0	0	0.0
Timbughyang	20044	8709.5	1700.5	3412.4	3596.6	43.5	35.0	21.3	8730.8	0.2	0.3	0	0.0
Yamundadand	1268	726.9	213.2	234.3	279.4	57.3	40.5	87.5	814.4	12.0	17.0	0	0.0

area land area of the VDC
f_tot forest area of the VDC (crown cover 0-100%)
shrub shrub area of the VDC (crown cover 0-10%)
fo2 forest area of the VDC (crown cover 10-40%; LRMP class 2)
fo3_4 forest area of the VDC (crown cover >40%; LRMP class 3&4)
plant area planted during 1978-93
fo93 forested area 1978 (crown density > 10%) plus plantation area

ft_c percentage of all forest types to total VDC area
f_c percentage of forests with crown cover 10-70% to total area
p1_c percentage of planted area to total forested area
p2_c percentage of planted area to forested area with crown density over 10%
ugf forest area handed over to user groups
ug_c percentage of forest area 1993 (f_tot + plant) handed over to user groups

source: ICIMOD (1993a) data set on land use in Sindhupalchok district (1993a)
District Forest Office, Chautara: plantation records

	VDC_NAME	AREA	AG_TOT	CULT	NCI	AGRI	GRAZ	AG_C	CU_C	GR_C	NC_C
60	Sikharpur	1219.6	928.5	785.5	131.8	917.3	11.2	76.1	64.4	0.9	10.8
61	Simpal	1784.5	1083.8	594.9	359.5	954.4	129.4	60.7	33.3	7.3	20.1
62	Sindhukot	1690.3	895.7	555.4	326.1	881.5	14.2	53.0	32.9	0.8	19.3
63	Snagachok	3340.7	1417.7	851.0	566.7	1417.7	0.0	42.4	25.5	0.0	17.0
64	Sunkhani	788.3	356.1	302.4	53.7	356.1	0.0	45.2	38.4	0.0	6.8
65	Syaule	2323.2	1195.2	561.1	580.6	1141.7	53.5	51.4	24.2	2.3	25.0
66	Talamarang	1301.5	768.4	471.5	223.6	695.1	73.3	59.0	36.2	5.6	17.2
67	Tatopani	7609.3	1763.5	219.9	208.2	428.1	1335.4	23.2	2.9	17.5	2.7
68	Tekanpur	833.7	478.1	298.8	179.3	478.1	0.0	57.3	35.8	0.0	21.5
69	Thakani	1166.5	280.8	203.1	77.7	280.8	0.0	24.1	17.4	0.0	6.7
70	Thampalkot	2759.2	941.0	517.2	210.1	727.3	213.7	34.1	18.7	7.7	7.6
71	Thautali	1340.5	670.0	389.3	233.6	622.9	47.1	50.0	29.0	3.5	17.4
72	Thokarpa	1183.3	840.5	539.4	301.1	840.5	0.0	71.0	45.6	0.0	25.4
73	Thulo Dhading	1071.2	322.8	221.7	101.1	322.8	0.0	30.1	20.7	0.0	9.4
74	Thulopakhar	1821.2	802.6	630.2	144.5	774.7	27.9	44.1	34.6	1.5	7.9
75	Thulosirubari	2347.8	1549.2	946.9	602.3	1549.2	0.0	66.0	40.3	0.0	25.7
76	Thumpakhar	942.7	498.5	435.7	62.8	498.5	0.0	52.9	46.2	0.0	6.7
77	Thumthang	3156.0	1166.5	793.1	373.4	1166.5	0.0	37.0	25.1	0.0	11.8
78	Timbughyangul	20044.5	2379.1	936.8	712.4	1649.2	729.9	11.9	4.7	3.6	3.6
79	Yamunda Danda	1268.4	541.9	359.8	182.1	541.9	0.0	42.7	28.4	0.0	14.4

area	total land area of the VDC
ag_tot	total agricultural area of the VDC (cultivated areas, nci, and grazing areas)
cult	total cultivated area (excluding non-cultivated inclusions)
nci	non-cultivated inclusions (infrastructure: houses, paths, ponds &c)
agri	total agricultural area (cultivated area and non-cultivated inclusions)
graz	total grazing area of the VDC
ag_c	percentage of agricultural area to total area
cu_c	percentage of cultivated land to total area
gr_c	percentage of grazing land to total area
nc_c	percentage of non-cult. inclusions to agricultural area (excl. grazing)

Source: ICIMOD/MENRIS data set on land use in Sindhupalchok district (1993a)

	VDC_NAME	AREA	PP71	PP81	CP81	PP91	D71	D81	D91	D8191	D7191	C7191	CANN
59	Selang	2350.4	2219	2036	0	2362	94	87	100	2362	143	6.4	0.3
60	Sikharpur	1219.6	1568	4094	0	2130	129	336	175	2130	562	35.8	1.8
61	Simpal(kabhre)	1784.5	1898	4627	2284	2586	0	259	145	2586	688	36.2	1.8
62	Sindhukot	1690.3	2580	4480	2410	3162	153	265	187	752	582	22.6	1.1
63	Sangachok	3340.7	5052	4965	0	7799	151	149	233	7799	2747	54.4	2.7
64	Sunkhani	788.3	1934	2011	0	2732	245	255	347	2732	798	41.3	2.1
65	Syaule	2323.2	3285	4429	0	3968	141	191	171	3968	683	20.8	1.0
66	Talamarang	1301.5	2276	2257	2549	2857	175	173	220	308	581	25.5	1.3
67	Tatopani	7609.3	2567	2075	0	3111	34	27	41	3111	544	21.2	1.1
68	Tekanpur	833.7	1352	1256	1835	1714	162	151	206	-121	362	26.8	1.3
69	Thakani	1166.5	2481	2724	0	2928	213	234	251	2928	447	18.0	0.9
70	Thampalkot	2759.2	2419	3142	0	2500	88	114	91	2500	81	3.3	0.2
71	Thautali	1340.5	2785	2685	3423	3193	208	200	238	-230	408	14.6	0.7
72	Thokarpa	1183.3	2578	2994	3600	3975	328	253	336	3975	1397	54.2	2.7
73	Thulodhading	1071.2	2224	1937	0	2716	208	181	254	2716	492	22.1	1.1
74	Thulopakhar	1821.2	2471	2462	0	3045	136	135	167	3045	574	23.2	1.2
75	Thulosirubari	2347.8	3627	3771	0	5675	154	161	242	5675	2048	56.5	2.8
76	Thumpakhar	942.7	2746	2550	0	3886	291	270	412	3886	1140	41.5	2.1
77	Thumthang	3156.0	3202	3331	0	3975	101	106	126	3975	773	24.1	1.2
78	Timbughyangul	20044.5	2823	3398	0	2559	14	17	13	2559	-264	-9.4	-0.5
79	Yamunda Danda	1268.4	1736	1366	0	1511	137	108	119	1511	-225	-13	-0.7

Table A12a Estimated Population data for 1981 (for VDCs with boundary changes)

	VDC_NAME	A91	B91	C91	TT91	AC91	BC91	TT81	A81	B81	C81
1	Bhotenamlang/Dhab	2813	2982	0	5795	48.5	51.5	4919	2386	2533	0
2	Lagarche/Jyamire	2257	4862	0	7119	31.7	68.3	4450	1411	3039	0
3	Bhotang/Baruwa	2405	2484	0	4889	49.2	50.8	3794	1867	1927	0
4	Gunsakot/Tangbalkot	1865	2500	0	4365	42.7	57.3	4612	1969	2643	0
5	Palchok/ Kiul	1981	3101	0	5082	39.0	61.0	4222	1647	2575	0
6	Attarpur/Thuladhadin	2013	2716	0	4729	42.6	57.4	3211	1368	1843	0
7	Dhuskun/Piskar	3125	1847	0	4972	62.9	37.1	4408	2773	1635	0
8	Tautali/Tekanpur	3193	1714	0	4907	65.1	34.9	5258	3423	1835	0
9	Gati/Harbin	3193	2891	0	6084	52.5	47.5	6049	3176	2873	0
10	Baramchi/Pangtang	2751	2288	0	5039	54.6	45.4	3385	1848	1537	0
11	Chautara/Sa.sirubari	3710	3318	0	7028	52.8	47.2	6776	3578	3198	0
12	Jalbire/Phulpingkot	2017	3746	0	5763	35.0	65.0	5221	1827	3394	0
13	Bhimtar/Sipapokhare	3265	3545	0	6810	47.9	52.1	7649	3664	3985	0
14	Talamar./M.kal/Ichok	2857	3982	4884	11723	24.4	34.0	10446	2549	3552	4345
15	Kubinde/Kadabas/Irku	2802	3222	2728	8752	32.0	36.8	9058	2899	3333	2826
16	Bhotechaur/S.kot/Bansbar	5000	3162	4474	12636	39.6	25.0	9639	3817	2410	3412
17	Thokarpa/Kalika	3975	2001		5976	66.5	33.5	5413	3600	1813	
18	Nawalpur/Simpal	2642	2586		5228	50.5	49.5	4613	2329	2284	

pp71 total population in 1971 (only 78 VDCs reconstructed, for Haibung VDC data are missing)
pp81 total population for 1981
(incorrect due to boundary changes; source: ICIMOD 1993a)
cp81 corrected numbers for 1981 (see Table A12a)
i) A91 + B91 (+c91) = tt91 (population of VDC A+B (+C)) for 1991;
ii) AC91 (% of population in VDC A for 1991);
iii) A81 = tt81 * AC91 (estimated share for VDC A in 1981); b81 = tt81-A81
d(71) population density (1971) (incorrect as referred to 1991-boundaries)
d91 population density 1991
d(7191) in/decrease in population figures between (1971) and 1991
c7191 percentage of in/decrease in population figures (1971-91)
cann average percentage of annual population changes (1971-91)

source: HMG/NPC/CBS (1975a):Table 05-27; (1984):33; (1993b):unpublished data
ICIMOD/MENRIS database on land use in Sindhupalchok district (1992)

	NO	VDC_NAME	AREA	F_TOT	FO2_4	F3_4	FO91	PP71	PP91	ANN	CP78	D91	DA91	DFT78	DFF78	DFH78	DF91
59	58	Sanosirubari	1240	701	195	177	247	2286	3318	2.3	2302	268	9.8	3.28	11.8	13.01	13.4
60	76	Thumpakhar	943	444	219	25	518	2746	3886	2.1	2761	412	8.9	6.22	12.6	110.4	7.5
61	35	Kunchok	1262	354	236	68	270	3076	4144	1.7	3088	328	11.6	8.72	13.1	45.41	15.3
62	8	Batase	2086	926	289	52	302	3824	4758	1.2	3832	228	6.4	4.14	13.3	73.69	15.8
63	42	Mankha	1762	738	380	13	402	5478	6941	1.3	5487	394	10.4	7.43	14.4	422.1	17.3
64	56	Pokhare	1399	416	177	0	209	2590	3545	1.8	2603	253	5.2	6.26	14.7	*****	17.0
65	66	Talamarang	1302	533	148	0	155	2276	2857	1.3	2285	220	6.1	4.29	15.4	*****	18.4
66	46	Palchok	793	250	127	0	176	1968	1981	0.0	1968	250	5.2	7.87	15.5	*****	11.3
67	27	Irkhu	1342	551	89	0	139	2006	2728	1.8	2019	203	5.5	3.66	22.7	*****	19.6
68	6	Baramche	1312	368	105	0	137	2417	2751	0.7	2422	210	3.4	6.58	23.1	*****	20.1
69	19	Gati	2038	985	106	79	114	2514	3191	1.3	2523	157	7.1	2.56	23.8	31.94	28.0
70	33	Karthali	999	426	105	12	127	2524	3212	1.4	2534	321	9.0	5.95	24.1	211.2	25.3
71	44	Melamchi	1771	318	74	0	121	2561	3835	2.5	2578	217	4.4	8.11	34.8	*****	31.7
72	14	Chautara	825	353	71	0	119	2601	3710	2.1	2616	450	10.5	7.41	36.8	*****	31.2
73	3	Bansbari	1071	202	85	0	150	3162	4474	2.1	3177	418	10.6	15.73	37.4	*****	29.8
74	18	Duwachaur	1116	143	98	0	270	3903	5087	1.5	3914	456	8.3	27.37	39.9	*****	18.8
75	34	Kubinde	799	186	39	0	96	2317	2802	1.0	2324	351	5.2	12.49	59.6	*****	29.2
76	9	Bhirtar	1170	337	0	0	58	1653	3265	4.9	1687	279	6.6	5.01	*****	*****	56.3
77	25	Naibung	1168	429	127	0	127	0	2419	****	****	207	5.5	*****	*****	*****	19.0
78	72	Thokarpa	1183	343	14	0	300	2578	3975	2.7	2597	336	7.4	7.57	185.5	*****	13.2
79	28	Jalbire	908	128	8	0	36	1772	2017	0.7	1777	222	4.1	13.88	222.1	*****	56.0

area — total land area of the VDC [in hectare]
f_tot — forest area of the VDC for 1978 (LRMP) [in hectare]
fo2-4 — forest area of the VDC (crown cover 10-100%; LRMP class 2-4)
f3_4 — forest area of the VDC (crown cover >40%; LRMP class 3 &4)
fo91 — forest area in 1991 (crown cover >10%) (1978-area plus plantations 1978-1991)

pp71 — total population of the VDC (Population Census 1971)
pp91 — total population of the VDC (Population Census 1991)
ann — average annual population change (1971-1991)
cp78 — estimated population for 1978 (formula: pp71 + ann * 7)

d91 — population density 1991 [persons/sqkm]
da91 — population density on cultivated land [persons/ha]
dft78 — population density on forests (class 1-4) for 1978 [persons/ha]
dff78 — population density on forests (class 2-4) for 1978 [persons/ha]
dfh78 — population density on forests (class 3-4) for 1978 [persons/ha]
df91 — population density on forests for 1991 (1978-area plus plantations; see Table A10)

source: HMG/NPC/CBS (1975a): Table 05-27; (1993): unpublished data
ICIMOD/MENRIS database on land use in Sindhupalchok district (1993a)

Table A15 Literacy of different ethnic/caste groups for males/females (1991)

	ETHN_CS	M_TOT	M_ILL	M_NF	M_I	M_II	M_SC	M_NA	IL_C	NF_C	I_C	II_C	SL_C
1	Total	108155	59864	17639	18550	7505	1781	999	55.4	16.3	17.2	6.94	1.65
2	Brahmin	13088	4443	2756	2858	1963	614	194	33.9	21.1	21.8	15.00	4.69
3	Chhetri	20095	8119	4125	4424	2435	508	145	40.4	20.5	22.0	12.12	2.53
4	Sanyasi	3748	1681	773	838	335	51	43	44.9	20.6	22.4	8.94	1.36
5	Newar	12777	5912	2400	2391	1165	374	279	46.3	18.8	18.7	9.12	2.93
6	Tamang	35564	24979	4377	4467	925	83	3280	70.2	12.3	12.6	2.60	0.23
7	Magar	2548	1175	383	375	118	17	24	46.1	15.0	14.7	4.63	0.67
8	Kami	3961	2889	401	519	66	5	66	72.9	10.1	13.1	1.67	0.13
9	Sherpa	4613	2813	839	734	95	12	85	61.0	18.2	15.9	2.06	0.26

	ETHN_CS	F_TOT	F_ILL	F_NF	F_I	F_II	F_SLC	F_NA	IL_C	NF_C	I_C	II_C	SL_C
1	Total	107172	89498	5719	7532	1609	275	1914	83.5	5.3	7.0	1.50	0.26
2	Brahmin	12540	8950	1206	1719	387	614	26	71.4	9.6	13.7	3.09	4.90
3	Chhetri	20656	16105	1341	2167	538	61	391	78.0	6.5	10.5	2.60	0.30
4	Sanyasi	3881	3363	182	230	30	3	61	86.7	4.7	5.9	0.77	0.08
5	Newar	12270	9186	873	1121	477	124	422	74.9	7.1	9.1	3.89	1.01
6	Tamang	35074	32064	1095	1105	136	11	5380	91.4	3.1	3.2	0.39	0.03
7	Magar	2000	1717	97	131	20	1	26	85.8	4.8	6.5	1.00	0.05
8	Kami	3868	3523	118	118	5	2	98	91.1	3.1	3.1	0.13	0.05
9	Sherpa	4723	3964	268	309	26	5	132	83.9	5.7	6.5	0.55	0.11

ethn_cs	ethnic groups and castes
m_tot:	number of total males older than 6 years
f_tot:	total number of females older than 6 years
(m)_ill	number of illiterate (males)
(m)_nf	non-formal education (males)
(f)_I	primary education (class 1-5) (for females)
(f)_II	secondary education (class 6-10) (for females)
_SLC	school-leaving certificate
_na	no data available
(il)_c:	percentage (of illiterates)

abbreviations for Table A14

t_tot	number of total popualtion
t0_4	number of population aged younger than 5 years
t5_14	number of population aged 5 -14 years
(m)1524	number of (male) population 15-24 years
(m)2534	number of (male) population 25-34 years
(m)3544	number of (male) population 35-44 years
(f)4564	number of (female) population 45-54 years
(f)5564	number of (female) population 55-64 years
(f)_65	number of (female) population older than 65 years

source: HMG/NPC/CBS (1993): unpublished data

Table A17 Land held under size of holding in Sindhupalchok (1961/71/81/91)

LAND	LO	H_01	H_02	H_05	H_1	H_2	H_3	H_5	HA5	H_TT	C_05	C_1	C_2	C_3	C_5	CA5
hold 61	0	0	0	7456	9672	11436	2736	3109	1326	35735	20.9	27.1	32.0	7.7	8.7	3.7
land 61	0	0	0	2271	7243	16112	7708	12504	5596	51936	4.4	13.9	31.0	14.8	24.1	11
khet 61	0	0	0	406	1591	4440	2322	2958	2792	14511	2.8	11.0	30.6	16.0	20.4	19
bari 61	0	0	0	2365	5652	11672	5386	9546	2804	37425	6.3	15.1	31.2	14.4	25.5	7.5
rent kh	0	0	0	75	282	782	265	350	287	2040	3.7	13.8	38.3	13.0	17.2	14
rent br	0	0	0	189	491	1062	457	564	350	3113	6.1	15.8	34.1	14.7	18.1	11
hold 71	49	0	0	11853	12318	11165	1806	1914	360	39465	30.0	31.2	28.3	4.6	4.8	0.9
land 71	0	0	0	5803	11142	17398	5093	4671	2112	47219	12.3	23.6	36.8	10.8	9.9	4.5
khet 71	0	0	0	1256	3237	5892	2070	2367	1122	15944	7.9	20.3	37.0	13.0	14.8	7.0
bari 71	0	0	0	4547	7905	11506	3023	3304	990	31275	14.5	25.3	36.8	9.7	10.6	3.2
kh/rnt	0	0	0	100	310	585	162	173	60	1390	7.2	22.3	42.1	11.7	12.4	4.3
br/rnt	0	0	0	135	226	393	92	95	18	959	14.1	23.6	41.0	9.6	9.9	1.9
hold 81	0	0	0	26973	6706	486	29	19	38	34251	78.8	19.6	1.4	0.1	0.1	0.1
land 81	0	0	0	6768	4447	553	73	65	211	12117	55.9	36.7	4.6	0.6	0.5	1.7
khet 81	0	0	0	2512	1650	231	17	63	4	4477	56.1	36.9	5.2	0.4	1.4	0.1
bari 81	0	0	0	4256	2797	322	56	2	7	7440	57.2	37.6	4.3	0.8	0.0	0.1
parc 81	0	0	0	159845	65085	5832	291	145	184	231382	69.1	28.1	2.5	0.1	0.1	0.1
hold 91	88	2596	5723	19293	15163	5398	501	383	176	49321	39.1	30.7	10.9	1.0	0.8	0.4
land 91	0	160	835	6488	10380	7102	1152	1286	3289	30692	21.1	33.8	23.1	3.8	4.2	11
khet 91	0	20	161	2007	3906	2766	436	337	32	9666	20.8	40.4	28.6	4.5	3.5	0.3
bari 91	1	140	675	4481	6473	4336	715	949	3258	21028	21.3	30.8	20.6	3.4	4.5	15
parc 91	88	4720	17169	90799	89118	37582	4395	2006	1593	247470	36.7	36.0	15.2	1.8	0.8	0.6

h_0 holdings without own land
h_01 holdings with less than 0.1 ha (data only available for 1991)
h_02 holdings with 0.1-0.2 ha (data only available for 1991)
h_05 holdings with less than 0.5 ha (for 1961-81), 0.2-0.5 ha for 1991
h_1 holdings with 0.5 - 1 ha
h_2 holdings with 1-2 ha
h_3 holdings with 3-5 ha
h_5 holdings with 3-5 ha
ha5 holdings above 5 ha
h_tt total number of holdings
c_(1) percentage of holdings (of 0.5-1 ha)

hold(61) number of holdings for respective category of holdings (for 1961)
land(71) total amount of land held [in hectare] (for 1971)
khet(81) amount of khet-land held by the respective category of holdings (fore 1981)
bari(91) amount of bari-land held by the respective category of holdings (fore 1991)
(kh)rnt amount of (khet)land rent out
parc total number of parcels

conversion table for Census 1961/71 holding categories into 1981/91 categories:

h_05 holdings with >0.4 ha + 1/4 of holdings 0.4 - 0.8 ha
h_1 3/4 of all holdings 0.4-0.8 ha + 1/2 of 0.8 - 1.2 ha holdings
h_2 1/2 of 0.8 - 1.2 ha holdings + all holdings 1.2 - 2 ha
h_3 1/2 of all holdings 2 - 4 ha
h_5 1/2 of all holdings 2 - 4 ha + 1/4 of holdings 4 - 8 ha
ha5 3/4 of all holdings 4 - 8 ha + all 8 - 16 ha

source: HMG/NPC/CBS (1965a:Table 1-3;1976: Table 1 ; 1985:1; 1993b: Table 1-2)

Table A19 Ethnic groups and castes in Melamchi and Kiul VDCs (1989 & 1991)

	YEAR	WARD	HH	TAM	BCH	OCC	LC	NW	SH	GR	AL	TA_C	BC_C	OC_C	LC_C	NW_C	SH_C	AL_C
1	1989	M1	36	0	16	17	1	0	0	0	2	0.0	44.4	47	2.8	0.0	0.0	5.6
2	0	M2	47	2	3	0	1	9	0	0	32	4.3	6.4	0.0	2.1	19	0.0	68
3	0	M3	47	0	44	3	0	0	0	0	0	0.0	93.6	6.4	0.0	0.0	0.0	0.0
4	0	M4	98	59	17	9	13	0	0	0	0	60.2	17.3	9.2	13	0.0	0.0	0.0
5	0	M5	57	0	41	12	0	0	0	0	4	0.0	71.9	21	0.0	0.0	0.0	7.0
6	0	M6	46	0	46	0	0	0	0	0	0	0.0	100	0.0	0.0	0.0	0.0	0.0
7	0	M7	70	61	5	2	2	0	0	0	0	87.1	7.1	2.9	2.9	0.0	0.0	0.0
8	0	M8	50	43	7	0	0	0	0	0	0	86.0	14.0	0.0	0.0	0.0	0.0	0.0
9	0	M9	40	9	0	0	31	0	0	0	0	22.5	0.0	0.0	78	0.0	0.0	0.0
10	0	M tt	491	174	179	43	48	9	0	0	38	35.4	36.5	8.8	9.8	1.8	0.0	7.7
11	1991	M1	68	0	45	20	0	0	0	0	3	0.0	66.2	29	0.0	0.0	0.0	4.4
12	0	M2	108	26	10	0	1	37	0	0	34	24.1	9.3	0.0	0.9	34	0.0	31
13	0	M3	56	0	53	3	0	0	0	0	0	0.0	94.6	5.4	0.0	0.0	0.0	0.0
14	0	M4	105	76	8	9	12	0	0	0	0	72.4	7.6	8.6	11	0.0	0.0	0.0
15	0	M5	97	5	88	0	0	0	0	0	4	5.2	90.7	0.0	0.0	0.0	0.0	4.1
16	0	M6	69	12	57	0	0	0	0	0	0	17.4	82.6	0.0	0.0	0.0	0.0	0.0
17	0	M7	71	64	5	2	0	0	0	0	0	90.1	7.0	2.8	0.0	0.0	0.0	0.0
18	0	M8	72	50	22	0	0	0	0	0	0	69.4	30.6	0.0	0.0	0.0	0.0	0.0
19	0	M9	45	9	0	0	36	0	0	0	0	20.0	0.0	0.0	80	0.0	0.0	0.0
20	0	M tt	691	242	288	34	49	37	0	0	41	35.0	41.7	4.9	7.1	5.4	0.0	5.9
21	1991	K1	164	68	26	0	0	0	0	70	0	41.5	15.9	0.0	0.0	0.0	0.0	0.0
22	0	K2	60	58	0	0	0	0	0	2	0	96.7	0.0	0.0	0.0	0.0	0.0	0.0
23	0	K3	43	0	42	1	0	0	0	0	0	0.0	97.7	2.3	0.0	0.0	0.0	0.0
24	0	K4	55	23	21	0	2	0	0	0	8	41.8	38.2	0.0	3.6	0.0	0.0	15
25	0	K5	66	0	2	25	0	0	39	0	0	0.0	3.0	38	0.0	0.0	59	0.0
26	0	K6	58	0	0	0	0	0	58	0	0	0.0	0.0	0.0	0.0	0.0	100	0.0
27	0	K7	81	0	0	0	0	0	81	0	0	0.0	0.0	0.0	0.0	0.0	100	0.0
28	0	K8	38	0	0	0	0	0	38	0	0	0.0	0.0	0.0	0.0	0.0	100	0.0
29	0	K9	63	0	0	0	0	0	63	0	0	0.0	0.0	0.0	0.0	0.0	100	0.0
30	0	K tt	628	159	89	26	2	0	279	72	8	25.3	14.2	4.1	0.3	0.0	44	1.3

hh	total number of households
Tam	Tamang
Bch	Brahmin & Chhetri
Occ	occupational castes
Lc	other ethnic groups (Magar, Gurung)
Nw	Newar
Sh	Sherpa (only given seperately for Kiul VDC)
Gr	Giri (only given seperately for Kiul VDC)
al	other groups (Majhi, Danuwar, Sunuar, Bhusel)
(ta)_c	percentage (of Tamang households)
M(1)	Melamchi (ward no 1)
K(2)	Kiul (ward no 2)
(M) tt	total number of households in (Melamchi VDC)

source: Action Aid (1989: Table C9.1; 1992a: 25; 1992b: Table1); for Kiul VDC: field data

	VDC_NAME	BR_TT	BR_B	PBB	BR_C	PBC	BR_D	PBD	SBB	SBC	SBD	KHBR
1	Bansbari	508.0	45.0	582	344.0	2889	119.0	635	0.08	0.12	0.19	1.9
2	Banskarka	335.0	5.0	116	208.0	2249	122.0	652	0.04	0.09	0.19	1.3
3	Baruwa	703.7	1.7	79	159.0	2240	543.0	4493	0.02	0.07	0.12	7.6
4	Bhotang	571.0	0.0	0	118.0	1967	453.0	5652	****	0.06	0.08	9.7
5	Bhotechour	743.9	11.9	209	129.0	1177	603.0	3530	0.06	0.11	0.17	1.7
6	Bhotenamla	449.3	1.3	11	139.0	1724	309.0	2155	0.12	0.08	0.14	1.8
7	Dhab	403.5	3.5	72	77.0	883	323.0	1750	0.05	0.09	0.18	1.6
8	Duwachaur	621.0	12.0	184	451.0	3197	158.0	776	0.07	0.14	0.20	1.0
9	Gunsakot	511.0	0.0	0	25.0	894	486.0	4540	****	0.03	0.11	22
10	Ichok	935.0	15.0	380	175.0	2443	745.0	3746	0.04	0.07	0.20	3.3
11	Jyamire	897.0	12.0	113	343.0	2336	542.0	2432	0.11	0.15	0.22	2.3
12	Kyul	836.0	20.0	358	124.0	1077	692.0	3735	0.06	0.12	0.19	3.7
13	Lagarche	478.0	5.0	45	61.0	362	412.0	2430	0.11	0.17	0.17	2.5
14	Mahankal	833.0	13.0	164	145.0	1669	675.0	3307	0.08	0.09	0.20	5.3
15	Melamchi	441.2	13.2	257	321.0	2965	107.0	554	0.05	0.11	0.19	1.5
16	Nawalpur	533.0	5.0	80	425.0	2820	103.0	310	0.06	0.15	0.33	1.7
17	Palchok	332.1	0.0	0	0.1	2	332.0	2275	****	0.05	0.15	1.5
18	Sikharpur	257.6	1.6	14	223.0	1654	33.0	174	0.11	0.13	0.19	1.8
19	Sindhukot	86.0	0.0	0	27.0	324	59.0	2893	****	0.08	0.02	0.5
20	Talamarang	454.0	9.0	145	229.0	2071	216.0	1109	0.06	0.11	0.19	2.4
21	Thakani	656.0	0.0	0	68.0	235	588.0	3159	****	0.29	0.19	6.6
22	Thampalkot	0.0	0.0	0	0.0	0	0.0	0	****	****	****	***
23	Timbugyang	813.0	0.0	0	0.0	0	813.0	3460	****	****	0.23	13

agri — total cultivated area of the VDC (source: ICIMOD 1993a)
tot1 — total number of land in a VDC registered
parc — total number of parcels
pers — total number of persons holding land in the VDC
kh_tt — total area of khet land (a,b,c,d-quality)
br_tt — total area of bari land (b,c,d-quality)
guth — area registered as guthi
nat — area registered as national property
cmin — area registered as communal property
mino — ("infrastructure") roads, rivers, cliffs &c
tot2 — grand total of khet, bari, national, communal and infrastructure
diff — for some reasons tot1 and tot2 do not always match

kh_a — khet land of a-quality (abal)
kh_b — khet land of b-quality (doyam)
kh_c — khet land of c-quality (sim)
kh_d — khet land of d-quality (char)
pk(a) — number of parcels of (a-) quality khet land
sk(a) — average size of (a-quality) khet land (skb: b-quality &c)

br_b — bari land of b-quality (doyam)
br_c — bari land of c-quality (sim)
br_d — bari land of d-quality (char)
pb(b) — number of parcels of (b-) quality bari land
sb(b) — average size of (b-quality) bari land (sbc: c-quality &c)
khbr — ratio khet to bari (per ha khet there are (see table) ha bari)

source: Land Measurement Office (Napi Karyalei), Chautara

Table A22 Grain trade at Melamchi bazar (15. XI 1992 - 14. XI 1993) [in tonnes]

	MONTH	NPMONTH	POKH	BASM	KUM4	WHT	MLT	MZ
1	xi/xii	mangsir	200	8	23	1.8	13	3
2	xii/i	poush	298	16	39	2.8	16	4
3	i/ii	magh	292	17	51	2.5	20	5
4	ii/iii	phagun	236	8	62	3.0	14	6
5	iii/iv	cheit	218	8	63	7.9	17	6
6	iv/v	baisak	200	11	56	9.3	12	5
7	v/vi	chest	200	16	68	15.3	10	4
8	vi/vii	asar	92	4	27	4.5	12	10
9	vii/viii	srawin	115	9	33	8.6	14	12
10	viii/ix	bhadau	265	32	41	12.9	23	13
11	ix/x	aswin	245	27	69	3.2	21	6
12	x/xi	kartik	118	1	7	0.7	11	4

pokh	pokhreli (paddy)
basm	basmati (paddy)
kum4	kumal 4 (paddy)
wht	wheat
mlt	millet
mz	matze

source: grain shops at Melamchi bazar (1992/1993)

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MAP 1 M E L A M C H I VDC, Sindhupalchok District
Land classification & Land ownership (1984/94)

Melamchi VDC, ward 7

Melamchi Khola

Melamchi VDC, ward 9

85°30´ E

27°50´

828 m

PHATE BAN

Indrawati Khola

0 200 m

irrigated land

- khet B-quality (doyam)
- khet C-quality (sim)
- khet D-quality (chahar)

unirrigated land

- bari B-quality (doyam)
- bari C-quality (sim)
- bari D-quality (chahar)
- forest
- cliff/slope (bhir)
- shrub

type of holding

- private holding (raikar)
- guthi (religious foundations)
- registered tenants

land holder (ethnic/caste group)

- Pandey-Brahmin
- Dulal-Brahmin
- Chalise-Brahmin
- Sapkota-Chhetri
- Shrestha-Newar
- Danuwar
- Tamang
- others

residence of land holder

- Melamchi VDC, respective ward
- Melamchi VDC, other ward

- VDC-boundary
- ward-boundary
- regional footpath
- local footpath
- river
- houses

cartography: Joshi/Graner/Nischk (1994/95)

source: (1) Land Measurement Office (Napi Karyalaya), Chautara: cadastral map # 157- 0607/08/09/47/48/49 (1984)
(2) Land Taxation Office (Malpot Karyalaya), Chautara: register of Melamchi VDC up-date: field data 1993/94

MAP 2 K I U L VDC, Sindhupalchok District
Land classification & Land ownership (1984/94)

irrigated land

- khet B-quality (doyam)
- khet C-quality (sim)
- khet D-quality (chahar)

unirrigated land

- bari B-quality (doyam)
- bari C-quality (sim)
- bari D-quality (chahar)
- forest (shrub)
- cliff/slope (bhir)
- landslide

type of holding

- private holding (raikar)
- guthi (religious foundations)

land holder (ethnic/caste group)

- (Yolmo)-Sherpa-Lama
- Bhandari-Brahmin
- Sapkota-(Brahmin/Chhetri)
- kami (blacksmith)
- Tamang
- others

residence of landholder

- Kiul VDC , ward 5
- Kiul VDC, other ward
- other VDC

- VDC-boundary
- ward-boundary
- regional footpath
- local footpath
- river
- houses

Kiul VDC ward 5 — 85°34´E

0 — 200 m

27°56´N

Timbugyangyl VDC

Ichok VDC

Melamchi Khola

Kiul VDC ward 3

Thado Khola

Kiul VDC ward 4

85°34´E

cartography: Pradhan/Graner/Nischk (1994/95)

source: (1) Land Measurement Office (Napi Karyalaya), Chautara: cadastral map # 157- 0247/48/87/88 (1984)

(2) Land Taxation Office (Malpot Karyalaya), Chautara: register of Kiul VDC, ward 5