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Rural livelihoods in a highland-lowland context and the role of forest resources (NWFP, Pakistan)

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Abstract

The present paper assesses the access to livelihood assets in rural areas of the North-West Frontier Province of Pakistan. Considering the highland-lowland context, it subsequently analyses the market and non-market importance of forest resources for rural households. The analysis is based on data from three selected study locations in the province, collected through a field survey carried out from April to August 2004. Results show that access to various assets widely differs between the high- and lowland context. Forest resources, i.e. fuelwood, are of utmost importance for subsistence-oriented strategies especially in the highland areas, where affordable alternatives are missing. The role of forests in income-oriented strategies, however, is negligible both in the high- and lowland context.

1 Introduction

1.1 Research context, hypotheses and questions

This paper presents some first findings of the 'Sustainable Livelihoods Survey 2004', for which fieldwork has been carried out from April to August 2004 in different locations throughout the North-West Frontier Province of Pakistan (NWFP). The overall goal of the survey, which took place under the NCCR North-South[1], is to give an overview on rural livelihood strategies, i.e. with regard to differences between the high- and lowland context; to assess the importance of forest resources for livelihood strategies; and to evaluate the impact of trade and market liberalisation thereupon.

The paper concentrates on two main objectives. The first is to give an overview on selected livelihood assets in a highland-lowland context and the vulnerability context in which local people operate. The second, to test the hypothesis that *forests are a key resource for rural people's livelihoods, and that especially in the highland, an important share of households was generating its income through forest-related activities.*

One the one hand, this assumption evolved from previous research under the NCCR North-South. On the other hand, the ongoing deforestation that can be observed throughout the province caused intense discussions about the impact local resource use can have upon forests. In 1992, the Provincial Forest Resource Inventory (PFRI) pointed out the alarming gap between supply and demand, concluding that the actual pressure on forests was for the purpose of fuelwood (88% of overall wood consumption)

[1] Field research underlying this paper received support from the University of Zurich, and the National Centre of Competence in Research North-South (NCCR-North-South), with financial assistance from the Swiss National Science Foundation (SNF) and the Swiss Agency for Development and Cooperation (SDC).

rather than for timber (12%).[2] In view of reports about ongoing, extensive illegal cutting for commercial purpose, many experts doubt these figures. However, few doubt the fact that "unless special measures are undertaken, it is apprehended that the major part of the present natural forests would have been liquidated in the next 25 years."[3]

This paper will not be able to re-evaluate the pressure local people put upon forests. According to the hypothesis formulated above, it concentrates on the importance forest resources can have for local people's livelihoods, thus complementing the above-mentioned discussion from a different angle. It thus might help to impose 'special measures' in consideration of local people's needs. As a comparison between the high- and lowland context is a key element of the survey, special attention is paid to potential differences between the three survey locations.

The survey has been based on the sustainable livelihoods approach as formulated by DfID (2001). Box 1 below introduces this approach in a few words. Following this framework, the paper is divided into three parts. After an introduction of the three research locations in section 1.3, section 2 will provide an overview on selected livelihood assets and outline the vulnerability context in which rural households operate, taking into consideration the highland-lowland context. Section 3 assesses the importance of forest resources for rural livelihoods and attempts a first discussion of the research hypothesis stated above.[4]

Box 1 : The sustainable livelihoods approach (SLA)

"The livelihoods approach is a way of thinking about the objectives, scope, and priorities for development. (…) In essence it is a way of putting people at the centre of development (…). The framework views people as operating in a context of vulnerability. Within this context, they have access to certain assets or poverty reducing factors. These gain their meaning and value through the prevailing social, institutional and organisational environment. This environment also influences the livelihood strategies – ways of combining and using assets – that are open to people in pursuit of beneficial livelihood outcomes that meet their own livelihood objectives." (DfID, 2001, 1.1)

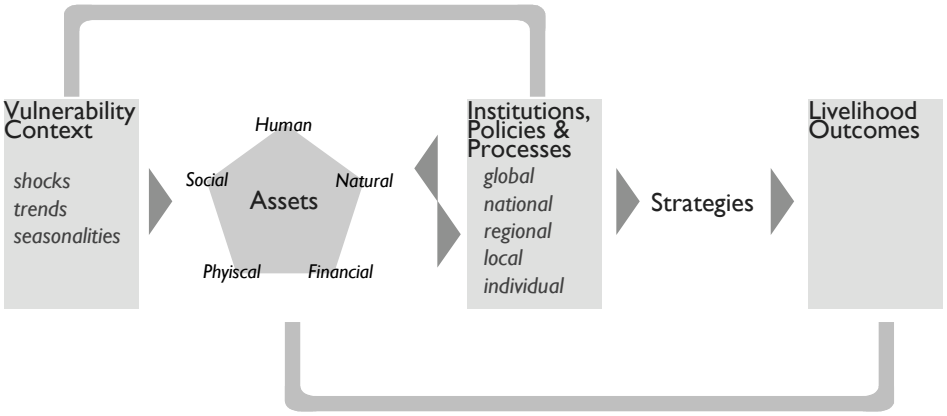

Fig. 1.1 The Sustainable Livelihoods Approach (own graphic, based on DfID, 2001, 1.1)

[2] Government of NWFP, Forest Vision 2025, iv.

[3] Ibid.

[4] If not other sources are provided, the data discussed in this paper are taken from the Sustainable Livelihoods Survey 2004.

1.2 Methodology

The three study locations have been selected according to two criteria, which reflect the interests formulated above (see Table 1.1).

Table 1.1
Selection criterias and study locations

	Kanshian	Gali Badral	Chamttar
Accessibility	very remote	medium	good
Altitude	Mountains	Foothills	Plains

After the locations have been chosen, the first phase of the survey consisted of a household listing, during which basic information on all households in every village have been collected.[5] Information gathered included the number of household members by sex and age, first and secondary source of cash income, and access to land. Based on that data, 80 individuals (above 15 years of age) have been sampled randomly in each village. The sampling procedure therefore guarantees representativeness on the individual level only, while on the household level, representativeness is limited (as in some households, several respondents were sampled and interviewed). It also guaranteed unbiased representation of both women and men.

Thus, about 240 interviews have been conducted during the second phase of the survey, for which approximately ten days have been spent in each location. The structured interviews were conducted orally by a team of two female and two male enumerators and took between one and two hours each. All data has been entered on the spot into Excel spreadsheets and later converted into SPSS, with which the data analysis has been made. In order to get a better understanding of the data collected, focus group discussions with male and female farmers have been conducted in all three locations. Semi-structured expert interviews with local politicians and Forest Department officials complemented the data.

1.3 Village profiles

1.3.1 Kanshian (highland)

Located at an elevation of approximately 2000 metres above sea level, Kanshian lies in a side valley of the Kaghan valley. By road, it is accessible from Balakot only, from where it takes six kilometres and about one hour to reach the central hamlets of the village. A seat in a shared jeep costs about 40 Rs. per head and way. Steep slopes characterize Kanshian valley. Only where the central hamlets are located, the topography allows limited cultivation of crops. Dense forests are growing above the village, between 2000 and 2500 metres asl. Slopes that are closer to the settlement are mostly barren, often showing signs of soil erosion. Two brooks, which merge in the village centre, are the main sources for drinking water and some irrigation. The climate is moderate. Cold winters from November/December to February can bring several inches of snow; summers are warm with a peak of rains in July/August. Spring and autumn are rather dry.

Total population is about 2900 people, splitted into approximatley 415 households. More than 50% of the population are from the *khel* (tribe) *Gujars*, about 20% are *Syed*; many other tribes hold the remaining 30%. Most households are farming and own all the land they cultivate. There are some

[5] Due to the size of the villages, a preselection of hamlets was necessary in Kanshian and Gali Badral. All data given in section 1.3 is based on that preselection, too, and might therefore not correspond to official figures.

owner-cum-tenant households, while pure tenancy does not exist. Most fields are *barani* (rain-fed); only a few plots in the central hamlets are irrigated. All farming households cultivate maize (June to September), and, in a few cases, winter wheat (December to April). Fruit trees are available in abundance, such as walnut, apricot, pear, and apple. Many households do keep a few goats, bullocks or buffaloes. As markets are far away and productivity is comparably low, agriculture mainly serves for subsistence. Electricity is available to most hamlets and households, but power breaks are quite frequent. Pipe gas is not available. There are a few small shops in various hamlets, selling some basic food and goods of daily use. The next market, where all kinds of shops and service providers are available, is in Balakot. For boys, three pimary schools and one high school are locally available. For girls, there is but one primary school, where co-education of boys and girls is practised. Higher education is available in Balakot. Several mosque schools can be found in the village.

1.3.2 Gali Badral (foothills)

Gali Badral lies in the hilly area surrounding the Oghi valley, at an elevation of about 1500 metres asl. While the local bazar and the main hamlets are close to the road, other hamlets stretch along the moderate slopes in the direction of Oghi. The village is accessible from two sides by metalled road. From the bazar, frequent minibus transport runs to Shergarh, Oghi, and Haki. One way to Oghi takes about 35 minutes and 10 Rs. per head. Suitable land for cultivation is very much limited and can mainly be found at the valley bottom in direction of Oghi. On a subsoil of sheer rock, the layer of fertile soil is very thin. Loose, mainly coniferous forest is covering the slopes above the village. So far, deforestation resulted in thinning of forests rather than completely barren hillsides. That is why soil erosion is still limited. As Gali Badral is located on a pass (*gali* means 'pass'), water supply is scarce. Only a few minor riverines are running across the outer hamlets. The climate is moderate with hot summers and cool winters. Most rainfall occurs in June and July, when monsoon season also affects the foothills of the Karakorum. In winter, snow is rare. Temperatures reach an average of more than 25°C in June, and do seldom drop below the freezing point in winter.

The village's population is about 1600 people, divided across approximately 190 households. More than 50% of all residents call themselves *Tanolis*, another fourth of the population are from the *Badral* tribe. The remaining 25% is made up of several smaller tribes. In the whole Oghi *Tehsil*[6], land tenure is not clarified in most cases. This is so because of a court case pending between the family of the *Nawab* (former ruler of *Amb* state, to which Gali Badral belonged), the provincial government, and local residents for more than 50 years already. Thus the majority of local people, who call themselves landowners, owns the land de facto only, not having an official proof yet. Gali Badral is a rain-fed area, where maize is cultivated in summer, and wheat during winter. Due to the thin soil layer and the rugged terrain, productivity is comparably low. Most common fruit trees are apple, peach, and walnut. Similar to Kanshian, many households keep some livestock, such as goats, bullocks, or buffaloes. There is no major irrigation scheme, so that farmers often complain insufficiency of water. Electricity is available to most households in all hamlets. Pipe gas supply does not exist. The bazar along the main road offers various groceries, a bakery, a car repair shop, a pharmacy, a public call office, and many more. There is one primary school for girls. For boys, there is a primary and a high school. In addition, a private English medium school for boys and girls exists. There are also some mosque schools.

[6] *Tehsil* is an administrative category. The categories in Pakistan are as follows (bottom-up): village, union, tehsil, district, province.

1.3.3 Chamttar (lowland)

Chamttar is located about four kilometres southwest of Mardan, at an elevation of 350 metres above sea level in a flat area. The three main hamlets, which form a spatial entity, lie just off the main linkroad between Mardan and Nisadda/Charsadda. Public minibus transport runs regularly between the village and Mardan bazar; one way takes not more than fifteen minutes and about 10 Rs. per head. Chamttar lies in the middle of the Peshawar plain, a vast flat area that is very fertile and suitable for agriculture. The Kabul River, which crosses the plain from East to West, is joined by many tributaries from the mountains in the North, such as the Swat River. Fields are rather large, and settlements are very much concentrated. Dense forest does not exist in the area – the only trees are some fast-growing species such as poplar, which are cultivated in between the fields. Salinization is a frequent problem and can be observed in many places around the village. The climate is very hot and humid in summer and moderate in winter. Temperatures can reach up to 45°C in July, and monsoon season results less in rainfalls than in extreme humidity. Most rainfall occurs in March and August, while June and October are completely dry.

The population of Chamttar is about 2100 people, split into approximately 180 households. All households but one call themeselves *Mohmands*, which is a *Pukhtun* tribe. 58% of households are farming. Most of the land around Chamttar is distributed among a few landlords living outside the village. Thus, most farming families are tenants. Main crops are sugarcane (whole year), maize, and wheat. As productivity is high, and a large sugarmill is located nearby, many farmers produce sugarcane as cash crop. Fruit orchards can be found around the village but belong to the landlords. Electricity is available to most households. Pipe gas supply does not exist. A few small shops sell goods of daily use in the village, and pedlars frequently visit the village. A true bazar does not exist and can only be found in Mardan. There is one primary school in Chamttar, where joint education for boys and girls is practised. There is also a boys' high school. Girls have to travel to Mardan for higher education. Some mosque schools do exist as well.

2 Selected livelihood assets and the vulnerability context

When using the sustainable livelihoods approach, it is crucial to have a general understanding of all livelihood assets (or capitals), even if the importance of one particular asset was to be evaluated. As certain assets can – at least partly – replace others, it is important to know whether and which kinds of alternatives are available. Therefore this section gives a short overview on people's various livelihood assets as recorded by the survey.[7]

2.1 Human assets

Human assets such as household size and literacy give an idea on a household's quantitative and qualitative potential. A household investing into education can increase its alternatives for income generation and might be able to find better income sources in regular salaried jobs, or in starting an own business. This could in turn reduce a household's dependency on natural resources such as forests.

[7] A full assessment of livelihood assets as recorded by the survey can be found in the survey report (Steimann, forthcoming).

2.1.1 Household size

The 'household' has been defined as the economic entity of people that eat from the same kitchen and/or live from and/or contribute to the same budget. According to this definition (which for instance includes migrants sending money back home, but not their wifes accompanying them), household size varies between 8 (Kanshian) and 10 (Chamttar) people. These figures reflect the prevalence of the joint family system in those areas. Migration does not play a very important role in Chamttar, so that in a typical household, all ten members live at home. In Kanshian and Gali Badral, a typical household has one or two (male) migrants. In those two villages, one out of four adult men lives in migration. This already underlines the high importance of labour migration as a livelihood strategy. Although they are already large in number, households seem to be subject to further growth: Asked for long-term changes in family size, a clear majority of respondents above 34 years of age[8] in all three villages said that present households were larger than in the past.[9]

2.1.2 Literacy and school enrolment

Literacy has been defined as the ability to read and write. 55% (Kanshian, Gali Badral) and 70% (Chamttar) of all male respondents said to be able to do that (male average 61%). Only 17% (Kanshian, Gali Badral), respectively 6% (Chamttar) of all female respondents said the same (female average 14%). While we find equal figures in Kanshian and Gali Badral, the difference to Chamttar is striking. Here, *Pukhtun* law[10] and the absence of girls' schools might be the reasons for a surprisingly low literacy rate among women. Yet women are far behind in regard to literacy in all three places. This reflects the official national average, which lies at 55% for men and 32% for women[11].

Regional differences in school enrolment of children between 5 and 18 years are less obvious, yet again reflecting the huge gap between male and female education: whereas boys' enrolment rate is above 80% in all three villages, the girls' rate is above 50% in Gali Badral only. Provincial averages lie at 60% for boys resp. 36% for girls (school enrolment for children aged 6 to 10 years).[12] Lack of sufficient school facilities for girls, which often have to leave school after primary, is the main reason for the low rate in Kanshian. In Chamttar, most of the girls have to stay at home due to *Pukhtun* tradition, which strongly restricts female mobility and does not support female education. In all places, a clear majority of respondents above 34 years said that local school facilities improved. Together with the fact that enrolment rates are higher than the adult literacy rates, this indicates a positive trend

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[8] The cut-off point of 35 years of age (=above 34 years) has been applied when analyzing respondents' perceptions of the past. The figure of 35 was chosen in order to get a detailed perception of a 'past' at least 20 years ago. It must be mentioned that this causes a certain gender bias, as the male-female ratio of respondents above the cut-off is 1.9:1 (male-female ratio in all respondents is 1.1:1).

[9] The annual growth rate for the NWFP is 2.4% (1999 to 2000) (http://www.nwfpbos.sdnpk.org/ nwfpds/2000/contents.htm, date of retrieval 1/2/2005).

[10] *Pukhtun* society not only adheres to general Islamic law but also its own, the (unwritten) *Pukhtunwali*, which is the core of *Pukhtun* social behaviour. "In the ideal, the pursuit of an honourable life (…) is equated with a life approximating to the features of *Pukhtunwali*." (Ahmed, 1980, 87f). As women's acts are considered to reflect (and potentially endanger) their husbands' honour, female activities are mostly confined to the household. In addition to the Muslim system of sex segregation (*purdah*), women's mobility is thus highly restricted. Ahmed (1980, 203) sums up the *Pukhtun* women's lot with a proverb: "For a women either the house or the grave."

[11] Federal Bureau of Statistics; http://www.statpak.gov.pk/depts/fbs/statistics/social_indicators/social_indicators.html, date of retrieval 27/10/2004.

[12] Pakistan Integrated Household Survey 2000/1; http://www.statpak.gov.pk/depts/fbs/statistics/pihs2000-2001/pihs2000-2001.html, date of retrieval 1/2/2005.

in quantitative aspects of education. Visits of local schools, however, revealed striking deficits in terms of available rooms and the number of teachers per student.

2.2 Natural assets

As most of the households in Kanshian and Gali Badral and more than half of all households in Chamttar are involved in agriculture, this section focuses first on land access. Subsequently, access to forest resources will be discussed.

2.2.1 Land access and tenure

Figure 2.1 shows the share of various types of farming and non-farming households. Of all households recorded, 94% in Kanshian and 93% in Gali Badral have access to land. Out of these, more than 97% are involved in farming. In both villages, the vast majority of farming households owns all the land they cultivate (owner farms). Tenancy is not very common; in Kanshian, there is even not a single pure tenant farm (see Figure 2.1). As for Gali Badral, the figures have to be read with care, due to the mentioned court case about the ownership of land (compare 1.3.2). Many people do call themselves landowners but do not have an official proof for it. In Chamttar, however, things are different. Only 61% of all households have access to land, out of which 94% are involved in farming. As the land around the village is mainly divided among a few big landlords living outside Chamttar, most farmers are pure tenants. 42% of all households are not farming at all, thus indicating the importance of other occupations and sources of income in the lowland. In terms of farming households, Kanshian and Gali Badral are quite close to the provincial average, which lies at 83% owners, 6% owner cum tenants, and 11% tenant farms.[13]

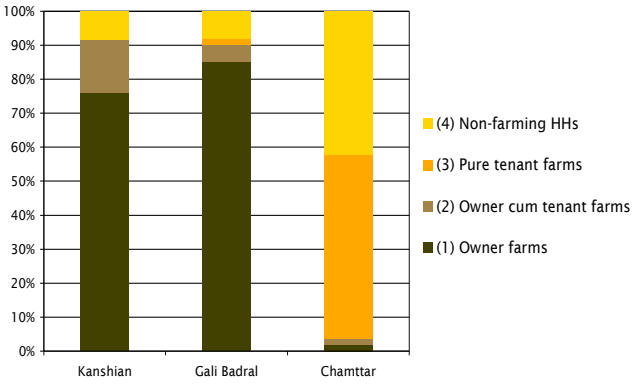

Fig. 2.1 Share of household types by village

Table 2.2 Land access of farming households (all median)

	(1)[14]	(2)	(3)	Total
Kanshian				
[N]	54	11	0	65
Accessible land size in *kanal*	12	16		13
Accessible arable land in *kanal*	5	9		5
Gali Badral				
[N]	52	3	1	56
Accessible land size in *kanal*	10	27	76	10
Accessible arable land in *kanal*	6	12	76	6
Chamttar				
[N]	1	1	31	33
Accessible land size in *kanal*	4	8	10	10
Accessible arable land in *kanal*	4	8	10	10

[13] Agricultural Census Organization: http://www.statpak.gov.pk/depts/aco/publications/agricultural_census2000/agricultural_census2000.html; date of retrieval 1/2/2005.

[14] The numbers correspond to Figure 2.1: 1=owner farms, 2=owner cum tenant farms, etc.

Table 2.2 shows how much land the various farming households have access to on average. All in all, most land is available in Kanshian (13 *kanal*[15]). Yet in Kanshian and Gali Badral, much land is steep rangeland and not arable. In addition, the soil is not very deep and especially in Kanshian mixed up with slate debris. In contrast to this, most of the land in Chamttar is flat, cultivatable and rather fertile (although salinization is a serious problem). This is why although an average household in Chamttar owns less land than a household in Kanshian, more arable land is available (10 *kanal*). Thus, most farmers in all three study villages belong to the group of small farmers, which have access to a maximum of 20 *kanal* of land. This group represents 60% of all farmers in the province.[16]

2.2.2 Forest resources

Dense forests can be found around Kanshian and Gali Badral. Main coniferous species are Blue Pine, Chir Pine, Fir, Kail, and Spruce. Walnut is the most common broad-leaved tree. While the dense mountain forest in Kanshian is very steep and at least 30 walking minutes away from the central hamlets, forests in Gali Badral are less steep and much closer to the main hamlets. In and around Chamttar, dense forest does not exist. Most trees grow in between the fields, where some landowners and farmers raise fast-growing species such as poplar and eucalyptus. Other (wild) species are acacia, wild olive, and mesquite (Kureshy, 1998, 60).

According to local people, 70% of the forests around Kanshian are *Guzara* Forest, and the remaining 30% Reserved Forest[17]. In Gali Badral, all the forest has been officially declared Protected Forest after being resumed from the *Nawab* of Amb (compare 1.3.2). Generally speaking, this means that the formal/legal access to forest resources such as fuelwood and construction timber is easier for residents of Kanshian than for those of Gali Badral. However, reality often looks different, as many people use informal ways to access forest resources (see, for example, Steimann 2003).

Table 2.3 Access to and use of forest resources

	Kanshian	Gali Badral	Chamttar
[N]	71	61	57
% of households owning forestland	11	2	0
% of households using forest as source …			
… for construction timber	66	36	0
… for fuelwood	73	75	0
Primary source…			
… for construction timber	forest	forest market	market
… for fuelwood	forest	forest market	market own land

This is underlined by the figures given in Table 2.3. Every sixth household in Kanshian owns some *Guzara* Forest, thus having exclusive access to timber (with the consent of the Forest Department) and fuelwood, and having the right to deny access to others. In Gali Badral, one household declared to own some forest – yet according to the law, people can own shares in the forest but cannot own the

[15] 1 kanal = 0.125 acre = 0.05 hectare

[16] Agricultural Census Organization: http://www.statpak.gov.pk/depts/aco/publications/agricultural_census2000/agricultural_census2000.html; date of retrieval 1/2/2005.

[17] *Guzara Forests* are privately owned, but managed by the Forest Department; *Reserved Forests* are public forests free of all rights except those specifically admitted; *Protected Forests* are public forests open to all uses except those specifically prohibited. For a detailed definition, see Ahmed/Mahmood, 1998, 17f.

forest itself. But this is a common (mis-) conception among people living close to Protected Forests.[18] In Chamttar, where no dense forests exist, people have access to single trees and bushes only. Yet this does not mean that people's depence on timber and non-timber resources is necessarily lower than in the other two villages. Sections 2.5.1 and 3 will reveal more on that.

2.2.3 Long-term environmental changes

Respondents were asked how the local environment changed since their childhood. In Kanshian and Gali Badral, about 70% of respondents older than 34 years said that the environmental situation became worse, very often mentioning increasing shortage of water for agriculture and people due to less rainfalls in their respective area. As a matter of fact, the whole of Pakistan was affected by a drought that started in 1998 and continued until 2002. During that time, a decline in vegetation up to 20% has been recorded for the districts in which the study villages are located.[19] In the lowland (Chamttar), 45% of the respondents above 34 years said that the environmental situation improved, while 40% said the opposite, often mentioning more (!) rainfalls as the main reason for the worsening conditions. It must be added that the environment is generally more dynamic in the highland than in the lowland. Ongoing deforestation in uphill areas is another factor that can lead to increased erosion and loss of land.

2.3 Financial assets

Financial assets can – at least indirectly – influence a household's dependency on natural resources such as forests. On the one hand, a household keeping livestock (which is considered as a potential financial stock) automatically depends on rangeland and forests as grazing areas, but can use the animals' dung as an alternative energy source. On the other hand, the degree of the household's cash income diversification tells us more about the importance of particular income sources such as forest labour or selling fuelwood. And the better the financial assets, the more options for alternative energy sources are available.

2.3.1 Available stocks

Stocks exist both in form of money (cash savings or bank deposits) or kind (e.g. livestock). Respondents have been asked whether their household saved any money during the last six months, and whether and how much livestock they possessed. Figure 2.4 shows that in all villages, a majority of households keeps some livestock, while only 22% to 44% say to save money.[20] Most households with savings can be found in Chamttar, while the rate of livestock is highest in

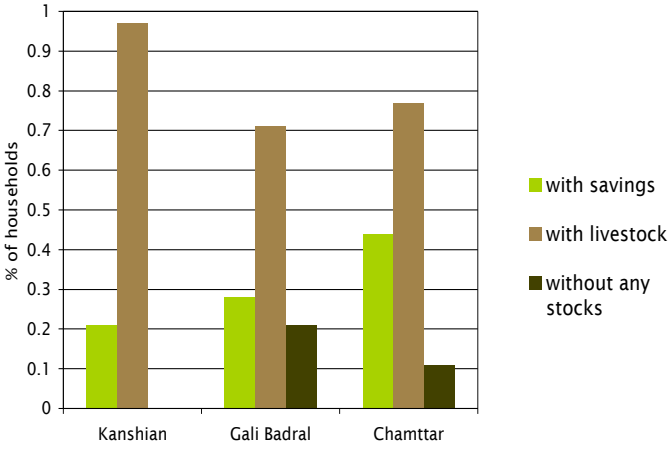

Fig. 2.4 Share of households with savings and stocks

[18] compare Steimann, 2003, 57f.

[19] WFP, 2004, 121.

[20] As financial issues can be very sensitive, some respondents might have been reluctant to tell the truth, so the real figures might be slightly higher.

Kanshian. Both in Gali Badral and Chamttar, households without any kind of stocks exist. In all cases but one, these are owner farms or non-farming households. As for livestock, goats are more common among non-farming households in Kanshian and Gali Badral, while farming households more often keep bullocks or buffaloes, which can be used for field work, i.e. ploughing.

2.3.2 Regular cash income

39% of all households in Chamttar have more than two sources of income (16% have even more than three). In Kanshian and Gali Badral, the majority of households is dependent on one income source only (55% and 54%, respectively), so that the average number of income sources is far below two. In contrast to that, farming households in Chamttar usually have a more diversified income structure. Non-farming households have a more or less equally diversified income structure in all three study villages.

Income types will only be discussed here in terms of their origin. Table 2.5 shows that approximately 60% of the households in Kanshian and Gali Badral are (partly) dependent on externally earned incomes (remittances transmitted by labour migrants). The share of households which can (partly) rely on locally earned incomes – e.g. regular salaried jobs of present households members, or agricultural wage labour – is much smaller in those two villages than in Chamttar, where nine out of ten households can generate income in the local or regional context. It can be assumed that these figures reflect the availability of and access to local and regional labour markets; where the share of locally earned income is low, opportunities to find jobs or to sell products are scarce. In general, non-farm households are less dependent on remittances than farming households. Granted incomes, which include *Bait-ul-Mal*, *Zakat*[21], and financial support by non-household members, are important for 10% of all households in Kanshian.

Table 2.5 Types of income sources

	(1)	(2)	(3)	(4)	Total
Kanshian					
[N]	54	11	0	6	71
Average no. of income sources	1.5	1.9		1.8	1.6
% of households with					
… locally earned income(s)	54	55		67	55
… externally earned income(s)	61	64		33	59
… granted income(s)	7	9		33	10
Gali Badral					
[N]	52	3	1	5	61
Average no. of income sources	1.7	1.3	2	1.4	1.6
% of households with					
… locally earned income(s)	62	67	100	80	64
… externally earned income(s)	69	33	100	20	64
… granted income(s)	6	0	0	0	5
Chamttar					
[N]	1	1	31	24	57
Average no. of income sources	1	3	2.8	1.8	2.4
% of households with					
… locally earned income(s)	0	100	94	88	90
… externally earned income(s)	100	100	32	42	39
… granted income(s)	0	0	3	8	5

[21] *Bait-ul-Mal* is a social welfare institution and provides assistance to the poor and the needy as defined under the Bait-ul Mal Act of 1991. *Zakat* is one of the Pillars of Islam. A Muslim is supposed to give alms to the poor and needy on an annual basis. (http://muslim-investor.com/mi/glossary.phtml, date of retrieval 29/10/04)

2.4 Social assets

Social assets or social capital is a much debated term. DfID defines it as "the social resources upon which people draw in pursuit of their livelihood obejctives." (DfID, 2001, 2.3.2). According to this definition, social resources basically consist of networks and connectedness, membership of more formalized groups, and relationships of trust, reciprocity and exchanges. All these elements are closely interlinked, and do basically increase people's ability to cooperate with others, to expand their access to certain institutions and resources, and to improve their informal safety nets. The following section therefore concentrates on those three elements of social assets.

2.4.1 Membership of more formalized groups

In general, differences both between the three villages and between household groups are not very big; in between 27% and 44% of all households there is at least one (mostly male) member or participant of a formal institution. In Kanshian and Chamttar, Community-Based Organizations (CBOs) are more popular than in Gali Badral. Observations during the data collection confirmed this, as representatives of *Sarhad Rural Support Programme (SRSP)* (active in Kanshian) and *Human Development Foundation (HDF)* (active in Chamttar) were well known among local people, while in Gali Badral, social organizers of *SRSP* or *Plan Pakistan* (both active in Gali Badral) were not very well known. In none of the three villages, organizations such as marketing co-operatives, farmers' organizations, or tribal associations are of any importance.

2.4.2 Networks and connectedness

Formal institutions of regional scope are more diffult to access for local residents. Only a few individuals belong to a political party or represent their village in a Union Council[22] (UC). The number of local (male and female) councillors varies from village to village, as does their commitment to local issues. Whether inhabitants of a village can access their UC or not (e.g. to propose a local intervention or to ask for financial support for a specific idea) depends very much upon their councillors' commitment. In Gali Badral for instance, only one male councillor is representing the village in the Shergarh UC. Nevertheless, he managed to access local development funds on the District level, which are now used for small-scale infrastructure projects. In contrast to this, local residents in Chamttar are desperately looking for a way to access such funds without involving their (apparently disinterested) local Union councillors.

Public and private service providers are other institutions of regional scope that can be accessed by local people. As particularly in Kanshian and Gali Badral, incidence of diseases is very high, hospitals and doctors are the most often frequented places – more than 60% of all households did have contact with such health facilities during the last six months. On average 46% of these visits have been made by women (57% in Gali Badral, 38% in Chamttar). Figure 2.6 further shows that most contacts with banks exist in Chamttar, which is very close to the regional centre of Mardan with a big bazar offering all kinds of financial services. Going to the bank is an exclusively male business in all places. Contacts to NGOs are very much limited in all three villages. The Water and Power Development Authority (WAPDA) is controlling power consumption by installing and checking electricity meters in all households with power supply. That is why households are visited on a regular basis.

[22] Local parliament on *Union* level, consisting of several councillors from each village represented in a *Union*. For details, see Steimann, 2003, 36f.

Contact with the Forest Department is amazingly low in Kanshian and Gali Badral; although there is still a lot of forest around the two villages, and demand for forest resources such as fuelwood and construction timber is very high, people are not in contact with the responsible officials. Considering the fact that forests around Kanshain and Gali Badral are mainly state forests, in which local use is allowed with the consent of the department only, this indicates widespread illegal (or informal) use of forest resources.[23] Contacts with other state institutions, such as the land revenue department, agricultural department, police, or courts are more or less inexistent.

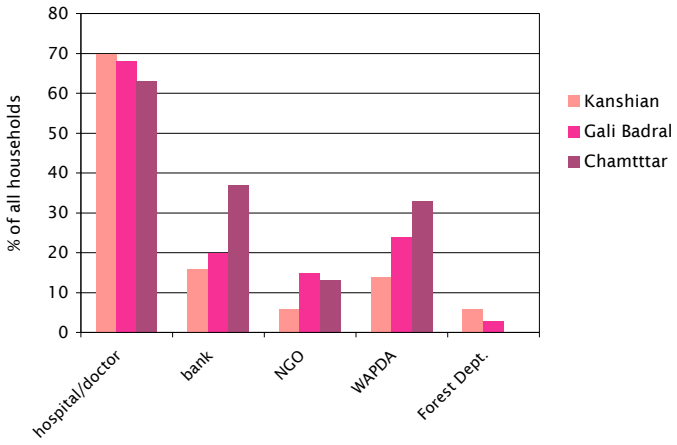

Fig. 2.6 Contact to various service providers during the six months prior to the survey

2.4.3 Relationships of trust, reciprocity and exchanges

Besides using own savings or adjusting meals, taking cash or kind loans from relatives and friends or getting unconditional support from them are the most important coping strategies in all three villages. What they have in common is, that they all partly or fully draw upon social capital. In each village, more than 30% of all households have taken one or several cash loans in order to meet a crisis. Considering that the majority of all cash loans are taken from relatives on a reciprocal basis, one can say that this important coping strategy is strongly dependent on social capital. The same is valid for taking kind loans as coping strategy – as one can assume that these loans are mostly given and taken within the same village, their availability is an indicator for the existence of social capital. Between 9% and 13% of all households in Kanshian and Gali Badral got unilateral, unconditional help by relatives, neighbours or friends when they were in need. In Chamttar, this form of support, which can be seen as a direct outcome of social capital, is of no importance.

Whether products of daily use are exchanged among neighbours depends on the degree of trust and reciprocity among people. Exchange of forest products such as fuelwood, leaves, and grass can serve as an indicator for that, although the availability of these products is highly different between Kanshian and Gali Badral on one side, and Chamttar on the other side. Thus, Figure 2.7 does not say that there is more social capital in Chamttar. It only tells us that where

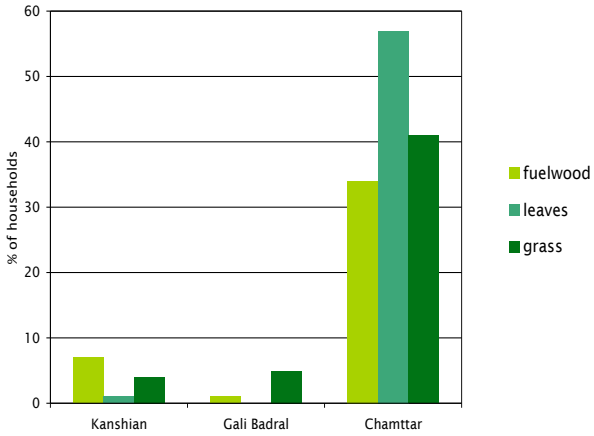

Fig. 2.7 Share of households which from time to time receive/buy forest products from neighbours

[23] For more details on that topic see: Ahmed/Mahmood, 1998; Geiser, 2000; Steimann, 2003; Suleri, 2001.

natural resources such as forest products are scarce, social capital in form of good relations with neighbours becomes a key asset for getting hold of such resources. In contrast to this, forests are accessible for nearly everbody in Kanshian and Gali Badral, so that there is hardly any need for exchange.

Unity, law and order: In all villages, a majority of respondents above 34 years of age is of the opinion that since their own childhood, the sense of unity in their village decreased. The strong majorities in Gali Badral (83%) and Chamttar (76%) cannot only be explained with the respondents' nostalgic radiance. In many cases, people explained that their neighbours became more selfish, and that helping each other was not a matter of course anymore. This is also reflected in people's opinion on the change of law and order in their communities: in between 42% (Chamttar) and 65% (Gali Badral) of all respondents above 34 years say that law and order worsened. This is surprising – the more so as many people say that honour killings[24] became less. One reason for the older people's pessimistic perception might be that the *jirga* (council of elders) lost importance and influence. On average, residents of Kanshian are most, and people of Gali Badral are least optimistic.

2.5 Physical assets

Many physical assets can be described on the village level, as the availability or non-availabilty of roads, means of public transport, electricity, pipe gas, and public services is more or less the same for all households in a village. The respective descriptions for each village were given in section 1.3. Therefore, this section focuses on the availability of physical assets on the household level.

2.5.1 Energy supply

Respondents have been asked which energy sources they used for which purpose (cooking, heating, lighting, other). Figure 2.8 shows the number of available energy sources. In Kanshian, 32% of all households have one or two energy sources only (which are mostly fuelwood and electricity). Half of all the households have three sources of energy available. In Gali Badral, 64% have three sources. In Chamttar, there is not a single household with less than three different energy sources; a big majority (75%) has even five or more. The analysis of the different sources of energy has been summarized in Table 2.9, which shows how different energy sources are being used. It shows that the dependency on fuelwood is very high both in Kanshian and Gali Badral. As winters in the mountains are harsh and long, it can be assumed that the consumption of fuelwood is especially high for heating purpose. Besides that, alternative sources of energy for cooking are scarce and not very common – only 23% (Gali Badral) and 17% (Kanshian) of all households do sometimes use gas for cooking.

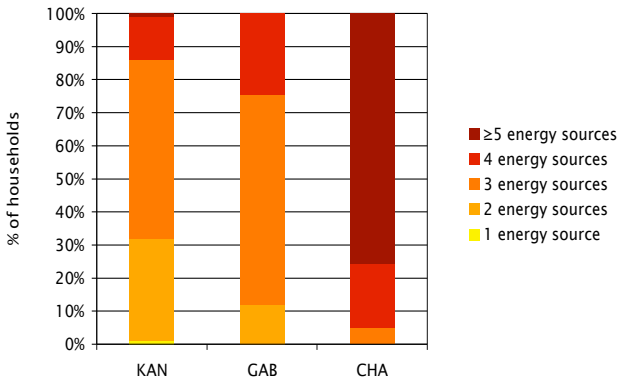

Fig. 2.8 Number of energy sources

[24] "Honour killings of women can be defined as acts of murder in which a woman is killed for her actual or perceived immoral behavior." (Hassan, Yasmeen, "The Fate of Pakistani Women," International Herald Tribune, May 25, 1999, cit. http://gendercide.org/case_honour.html, date of retrieval 28/1/2005.)

Table 2.9
Use of different energy sources *(in brackets: % of households using a source; <5% not listed)*

	Kanshian	Gali Badral	Chamttar
cooking	1) Fuelwood (100%) 2) Cylinder gas (17%) 3) Kerosene oil (6%)	1) Fuelwood (98%) 2) Cylinder gas (21%)	1) Leaf litter (100%) 2) Fuelwood (98%) 3) Dungcakes (91%) 4) Cylinder gas (16%)
heating	1) Fuelwood (96%)	1) Fuelwood (97%)	1) Fuelwood (16%)
lighting	1) Electricity (81%) 2) Kerosene oil (63%) 3) Fuelwood (23%) 4) Cylinder gas (21%)	1) Electricity (98%) 2) Kerosene oil (61%) 3) Cylinder gas (51%) 4) Fuelwood (26%)	1) Electricity (95%) 2) Kerosene oil (77%)

As mountain forests are mainly coniferous, there are hardly any leaves that could be used as fuel material. As the next section will show, fuelwood is mostly collected in nearby forests. In Chamttar, winters are not very cold and much shorter, so that the houses do not need to be heated in winter. For cooking and lighting there are several alternatives to fuelwood available, which are widely used, such as leaf litter (harvest residues and leaves from bushes and trees), dungcakes and cylinder gas. Therefore, the dependency on fuelwood is less in Chamttar. The figures given in Table 2.9 more or less represent the provincial means; more than 90% of all rural households in the NWFP use fuelwood for cooking, and depend on electricity or kerosene oil for lighting.[25]

2.5.2 House structure and tenure

Pakka houses (brick or concrete walls) are generally seen as a sign of wealth, as the construction material is quite expensive. Under this aspect, it is interesting that in Gali Badral, 41% of all houses are *pakka*, while in Kanshian and Chamttar, it is only 7% resp. 18%. Most houses in these two villages are *kacha* (walls made from a mixture of mud or clay and straw). Nearly all households in Kanshian and Gali Badral own the houses in which they live. There are just a few cases of rent free houses; rented houses (against money) exist in none of the three villages. Chamttar has two third of house owners, which are mostly farming households. The majority of non-farm households in Chamttar rent a house for free.

2.6 The vulnerability context

In the understanding of the livelihood approach, 'vulnerability' consists of shocks, trends, and seasonalities, or, in other words, "the external environment in which people exist" (DfID, 2001, 2.2). The following sub-sections will analyze vulnerability in a local context, i.e. in regard to people's own perception of seasonalities, trends and shocks.

2.6.1 Seasonalities

Respondents have been asked which months of the year would be the most difficult ones in order to provide adequate food for their household. Figure 2.10 gives the number of entries per month and village. According to these figures, to make a living throughout the year is most difficult for residents

[25] NWFP Development Statistics, Government of NWFP; http://www.nwfpbos.sdnpk.org/nwfpds/2000/20.htm; date of retrieval 1/2/2005.

of Kanshian; more than 50% of all respondents encounter serious problems to provide adequate food supply in December.

Even the summer months are perceived as more difficult by people from Kanshian than by residents of the other two villages. Climatical conditions get reflected very well in these figures: Where winter is long and harsh – such as in Kanshian and, to a lesser extent, in Gali Badral – making a living becomes more difficult. Due to a short vegetation period and worse natural assets, production of staple food is less than in the lowlands; the maize harvest is comparably poor, and wheat can often be used as fooder for livestock only. Thus, food reserves are often insufficient for the cold period. In addition, the remoteness of highland villages makes it more difficult to purchase food items during the winter months. Although the differences in figure 2.10 are striking, the share of respondents that suffered from a shortage of food during the six months prior to the survey is the same in Kanshian and Gali Badral (each 11%, Chamttar 5%). Yet more households in Kanshian met such a shortage by adjusting their meals, which can be understood as a sign of increased vulnerability.

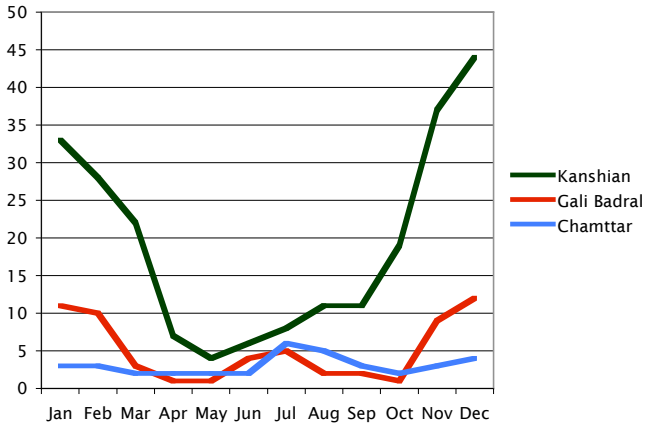

Fig. 2.10 Number of respondents terming a specific month as 'difficult'

The general workload also changes with the seasons and puts different burdens on men and women. Kanshian and Gali Badral have a very similar course of workload, which is only shifted by one to two months due to the differing seasons (longer vegetation period). Both villages show peaks in early summer (wheat harvest and maize sowing) and early autumn (maize harvest, grass cutting). In Kanshian, September is especially hard for women with a peak both in agricultural (daily grass cutting, maize harvest, drying walnuts) and domestic work (collecting fuelwood and other regular tasks).[26] For women both in Kanshian and Gali Badral, most work is to be done from April/May to September. An additional burden for women are weddings and other social events, which are preferably held in summer. In contrast to this, men have more to do in late autumn and winter, when they are processing maize, sowing wheat and collecting fuelwood.

In Chamttar, the long vegetation period (especially of sugarcane), which lasts more or less throughout the year, causes each one peak in early spring (sugarcane harvest) and in September (maize harvest and processing, sowing sugarbeet). Other than in the mountains and foothills, workload is below average in July and August, when temperatures are too high for most outdoor activities. As winters are less cold, fuelwood collection does not occupy as much time as in the other villages. Peak seasons are very similar both for men and women, which to some extent indicates that both sexes are equally involved in agricultural activities. Weddings and social events usually take place in spring and autumn, when temperatures are more moderate. In all villages, the workload would often be higher for many households, would migrants not return home for some time. During the peak season, many

[26] In this context it seems interesting that in Kanshian, most female respondents knew the *Urdu* word for September, but not for any other month.

labour migrants return to their villages in order to help their families harvesting maize, or cutting grass.

The fact that labour migrants often work with insecure contracts leads to irregular money transfers. This means that many households have to cope with a highly irregular (and often uncontrollable) income. 15% of all respondents in Kanshian said that during the six months prior to the survey, such irregularities resulted in a true crisis for their household. Taking into consideration that every fifth household in Kanshian is dependent on one migrant as its only breadwinner, such irregularities can have a serious impact on a household's livelihoods. The same is valid for households with a single, locally earned income. In each village, such households make between one sixth and one fifth of all households, and in 40% out of these cases, the income is only seasonal or irregular (mostly from non-farm labour or an own business). Such households appear to be highly vulnerable.

2.6.2 Trends

Respondents' opinions on the development of their household's purchasing power vary very much. While one half thinks that it improved, the other half is of the opposite opinion. In our context, it is more interesting to know how many households suffered from market fluctuations as producers. In this regard it is interesting to see that in each village, a similar share of 20 to 23% of respondents said that during the last six months, their respective households suffered a serious crisis due to such fluctuations. In many cases, families had to reduce their food consumption, or take cash or kind loans. In the case of Chamttar, where many households depend on incomes generated by selling crops, the price for sugarbeet decreased by 27% within the last year.[27] Although not one household in that village is dependent on this income alone, such huge price variations can have a serious impact on people's livelihoods.

Despite the contradictory perception of their purchasing power, a majority of people in all villages (63 to 71%) was of the opinion that their household's food security increased over time. One would expect that this was due to an increased local production. Yet only a few farmers recorded any production increase, and even farmers that suffered a (partial) decrease in the recent past recorded a better food security. Therefore, more and better job opportunities might have a stronger influence on a household's food security than has subsistence production: between 58% (Gali Badral, Chamttar) and 71% (Kanshian) of all respondents above 34 years said that they had more possibilities to generate income today than in the past.

2.6.3 Shocks

Shocks that did not origin in the household or in a local context have been relatively seldom in the recent past. Only the drought which started to affect the whole country from 1998 onwards, and which caused a decline of vegetation in the study areas, too, can be termed as a shock to people's livelihoods – at least if considering people's own perceptions of that event (compare 2.2.3). The military coup d'etat back in 1999 did not influence local livelihoods directly, although the local government system has been changed since.[28] Competences and financial possibilities of these political bodies remained

[27] Information given by local sugarbeet-farmers.

[28] In 2000, the Musharraf Government initiated a new framework for government structures on district and sub-district level. As a part of a nation-wide devolution process, a local government system was introduced, setting up a framework of local and regional political bodies. For more details, see Steimann, 2003, 35f.

too much limited, and so their measurable – negative or positive – impact at the grassroots level is still close to zero. Earthquakes occur rather frequent in the surveyed area (Hazara), and victims have been reported from other villages further north just months before the survey. In Gali Badral and Kanshian, vibrations repeatedly damaged houses, while nobody was physically hurt. The surveyed villages have not been hit be the heavy rainfalls and the subsequent landslides, which claimed several hundred victims in Hazara and elsewhere in 1992. The nation-wide ban on timber harvesting, which had been put in place as a reaction to that disaster, did not affect people's livelihoods very much, too. Local (formal and informal) use of forest resources continued more or less undisturbed, while the sudden failure of royalties from Protected Forests (only in Gali Badral) could often be compensated through illegal timber business.[29]

3 The role of forest resources in rural livelihood strategies

According to the hypothesis formulated in section 1, this section will try to evaluate the importance of forest resources (both timber and non-timber forest products) in regard to local livelihood strategies. Where possible and helpful, the results will be compared with findings made by other, similar studies.

Availability of forest resources is very much different in the three villages examined for this survey. A description of available forest and other forest-related resources has been given under 2.2.2. Section 2.5.1 could show that despite the absence of dense forest in the plain area around Chamttar, forest products nevertheless play a certain role in people's daily life. However, it is important to distinguish between different roles forest resources can have in livelihood strategies. On the one hand, fuelwood, leaves, and – to a lesser extent – construction timber are used on a more or less regular, if not daily, basis. They are part of subsistence-oriented livelihood strategies, and thus an integral part of daily routines. On the other hand, forest products can be used for income-oriented strategies, such as selling fuelwood on markets, or manufacturing wooden furniture. Considering that, the following sub-sections try to identify the various 'roles' forest products play.

3.1 Fuelwood, timber, and non-timber forest products as part of subsistence-oriented livelihood strategies

3.1.1 Fuelwood consumption

Table 2.9 gives a detailed overview on which types of energy sources people use. It shows that nearly all households in all villages are using fuelwood for cooking purposes. In the mountainous and hilly areas, alternative energy sources are scarce; hardly one fifth of all households has an alternative at hand for cooking (mostly cylinder gas). In Chamttar, alternatives to fuelwood exist: 100% resp. 91% of households use leaf litter and dungcakes for cooking, too. For heating, there is not a single alternative to fuelwood. It is widely used in Kanshian and Gali Badral (96% of households); in Chamttar, where winters are less harsh, only 16% are heating with fuelwood. In addition, every fourth household in Kanshian and Gali Badral uses fuelwood for lighting rooms.

For the hilly areas of NWFP, various investigations on fuelwood requirements have been made. Khattak (1995, 11f) calculated an average per head consumption of 1.5 m^3 per annum. At an average household size of 8.5 people, the fuelwood consumption of one household in Kanshian or Gali Badral

[29] compare Steimann, 2003, 28.

would thus be about 12.75 m^3. As there is no dense forest left in the lowlands, similar estimations are missing for the area around Chamttar. However, one can assume that due to available and widely used alternative energy sources for cooking and the moderate winter season, fuelwood as well as total energy consumption in Chamttar is smaller.

Table 2.3 shows the sources of the fuelwood being consumed. In Kanshian and Gali Badral, most or all fuelwood is collected from the nearby forests. This is rather time-consuming and is the primary occupation for many people (both men and women) during winter; but it is for free, while alternative energy sources such as cylinder gas or electricity are comparatively expensive. Had people more job opportunities, they most probably would spent the time now used for collecting wood on earning money, with which other energy sources could easily be purchased. Yet jobs are scarce, and men often have time enough, as they have relatively little to do in the household, especially during winter. That is why even though electricity is available to most households, it is not being used for cooking and heating. Dungcakes would be a cheap alternative to fuelwood, as they can easily be prepared at home, using cattle dung and straw. Surprisingly, not a single household both in Kanshian and Gali Badral uses dungcakes, although Kanshian shows the highest number both of livestock-keeping households and of animals per household. The reduced accessibility to dung in those two villages might be the reason for that, as it depends upon "whether or not cattle are corraled (as in irrigated areas) or not (in the barani, where only gathering from nighttime enclosures is easy)." (Campbell 1992, 310).

In Chamttar, most people buy fuelwood on the market, for about 70 Rs. per 50 kg. 30% of all households (additionally) get fuelwood from neighbours owning or having access to private land with trees. Considering such restrictions on getting fuelwood, alternative energy sources appear more attractive, as price differences are not too high. In addition, intensive crop cultivation throughout the year (sugarcane) produces lots of residues. Dungcakes, which are used for cooking by nine out of ten households, is another fuel that can be used 'for free'. Comparing the monetary and fuel values both of fuelwood and dungcakes, Campbell (1992, 315) and Sial (2002, 8) show that dungcakes are even cheaper in price than fuelwood, although the burning time of low-density materials such as dungcakes is about three times shorter than that of fuelwood. As collecting dung is relatively easy in an area where animals are mostly corraled (compare above), time used for preparing dungcakes is even less than for collecting fuelwood. Yet opportunity costs must not be forgotten: using dung as field manure would make much better use of its energy value.

Although much cheaper in price than densified fuels (oil, gas), fuelwood, dungcakes and leaf litter cause additional costs in most cases, affecting not only a household's financial, but also human capital: "Emissions from wood fires can be at least 10 times greater than particulates from oil and gas fires, and cause lung diseases (…) and be a carcinogen." (Campbell 1992, 312).

3.1.2 Construction timber

Timber is widely used as a construction material all over Pakistan. While totally wooden houses are very rare even in the mountains, traditional roof types require a layer of wooden beams, covered with smaller branches, straw and loam. More modern types sometimes use steel girders, especially in the lowlands. In Kanshian and Gali Badral, people who can afford it build saddle roofs, timbered constructions covered with corrugated iron. A well-made roof usually lasts for several decades.

Most households in all villages have been found to use construction timber about once in 15 years. Khattak (1995, 11f) estimates that approximately 4% of all houses in a village are renovated or reconstructed each year, and that per house, 30m^3 of standing trees volume are needed. If we consider that an average household lives in one major building (not counting stables etc.), the annual need for construction timber in Kanshian is about 496 m^3 standing volume, in Gali Badral 216 m^3, and in Chamttar 220 m^3. Keeping in mind that alternative construction material is used in the lowlands (mainly steel instead of timber), the timber requirements are most probably less in Chamttar.

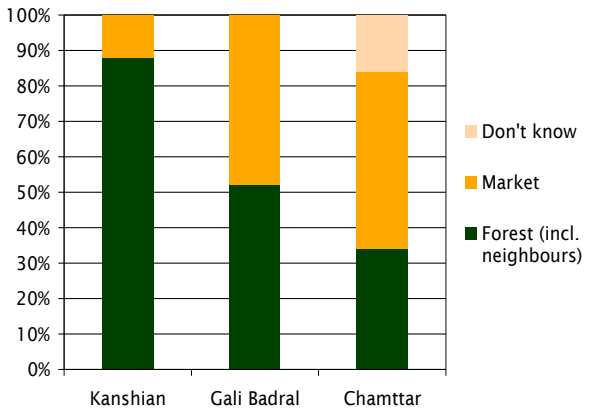

Fig. 2.11 Sources of construction timber

Figure 2.11 shows that 88% of all households in Kanshian get construction timber from the nearby forest. They cut it themselves (with or without an official permit from the Forest Department) or get it from neighbours. Only 12% buy it on a market. In Gali Badral, the share of markets is already much higher. In accordance with the little local forest reserves, the share of 'forests' (in this case own land, or from neighbours) is smallest in Chamttar. Yet the term 'market' does not automatically imply that such timber has been harvested and purchased legally. In many cases, such 'markets' work on a local level, organized by middlemen, which deliver timber against direct payment. That is why it must be assumed that the share of households, which meet their need for timber from local forests, is higher than indicated in Figure 2.11. This is especially valid for the highland context.

3.1.3 Non-timber forest products (NTFPs)

Apart from leaves (which are used in Chamttar by all households, but are mostly crop residues), NTFPs such as herbs and mushrooms are collected by less than one fifth of households both in Kanshian and Gali Badral. The resulting impact on forests can therefore be neglected. Another type of forest use is expected to have a more serious impact: goats, sheep, and other livestock grazing in the forest and on barren land hinder the natural regeneration. This gives support to increased erosion, especially in steep terrain such as in Kanshian. Although only a few households send their animals to the forest (12% in Kanshian; 4% in Gali Badral), most livestock-keeping households keep them on public or private rangeland. This should be understood as an indirect impact on, or use of (hypothetical) forest resources. As the number of livestock-keeping households (98%), as well as the average number of animals per household (5) is highest in Kanshian (where in addition, the terrain is steepest and thus most prone to erosion), this kind of impact is strongest in Kanshian.

3.1.4 Time spent on forest-related activities

The amount of time that people spend on forest-related activities can also be used as an indicator for the importance forests have in their daily life. Respondents have been asked for their daily activities during the seven days prior to the survey. Results show that 17% of all (adult) respondents in Kanshian and Gali Badral at least once a week go to collect fuelwood. Women spent nearly thrice as much time on fuelwood collection than men. In Chamttar, people less often go to collect wood, and

men and women spend about the same time per week. It is important to mention that the survey took place in summer, while the peak season for collection and storing fuelwood is in winter. But the general impression confirms the conclusion made above, that fuelwood as an energy source is of much more importance in the mountains and foothills, than it is in the lowlands.

3.2 Fuelwood and timber as part of income-oriented strategies

3.2.1 Generating income by selling fuelwood or timber

According to Figure 2.12, forest-related incomes by selling fuelwood or timber are negligible. Four households only in each, Gali Badral and Chamttar, are at least partly dependent on such an income. Out of these, only one household in Gali Badral is completely dependent on selling timber. Non-farming households are not involved in such activities, either because they do not have sufficient access to timber, or have other (better) income sources. In Kanshian, not one household seems to generate income by selling forest products. Considering the availability of forests and the observed deforestation, this seems rather questionable; the more so as during the survey, illegal timber harvesting by local residents could be observed. That is why such figures have to be handled with care – although at times local Forest Department officials might be involved in illegal practices, many people might prefer not to mention such sources of income. In another survey (Steimann, 2003) carried out in several highland locations of Swat, many people admitted to sell timber illegally. In other cases, external timber smugglers ('timber mafia') paid local residents for cutting and preparing trees. Although maybe not to the same extent, one must assume that such practices exist in Kanshian and Gali Badral, too. As Figure 2.11 illustrates, Gali Badral has a vivid timber market that mainly functions on a local level – if nearly 50% of all households hence obtain their timber, it seems unrealistic that only two of them run the whole business. Yet timber harvesting is mostly done in winter, and thus can generate irregular or seasonal incomes only. In addition, large-scale timber smuggling requires appropriate means of transport, which are hardly available to local residents. That is why nearly all households with a forest-related income also have another, more regular source of income.

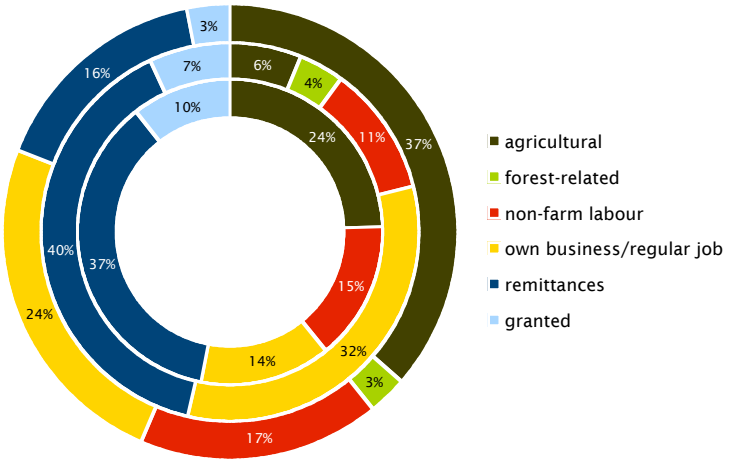

Fig. 2.12 Cash income sources by village (inner circle: Kanshian; middle circle: Gali Badral; outer circle: Chamttar)

In Chamttar, the situation is slightly different. A few years back, the Swiss-funded Farm Forestry Project encouraged local residents to cultivate trees between their fields. Fast-growing species – mostly poplars – have been chosen, which would allow the farmers a soon return on investment if they sold timber and fuelwood on local markets. However, only a few households in Chamttar can profit from this intervention, as most trees belong to a few landlords. In addition, poplars consume immense amounts of ground water, which in turn has an adverse effect on crop productivity.

3.2.2 Forest labour and royalty payments

In the past, the Forest Department often hired local people for harvesting jobs in the local forests. Yet since 1992, when a nation-wide ban on timber harvesting has been put in place, the number of such job opportunities has become close to zero. That is why forest labour is no serious option for income generation anymore. If it is practised today, it is mostly on reciprocal basis among local *Guzara* owners and other residents, not generating any cash wages. The same effect did the ban have on royalty payments to right holders in Protected Forests (which can be found around Gali Badral): as official harvesting has been reduced to a minimum, local people do not get royalties anymore. In the Hazara Division, these payments were 80% of the timber sales proceeds, which was a good yet irregular income for local right holders.

3.3 Synthesis

Forests are a key resource for rural people's livelihoods, and especially in the highland, an important share of households is generating its income through forest-related activities.

This was the hypothesis formulated in the beginning – what can be said about it based on our survey insights? Basically, it is very difficult to quantify the importance forest resources have for rural livelihood strategies. What we can say is, that for subsistence-oriented strategies, forest products such as fuelwood and construction timber are of much more importance in the highlands than in the lowlands. On the one hand, this results from the (still) good availability of forest resources in the upper areas; on the other hand, these products become more important when affordable alternatives do not exist. Up to now, especially fuelwood is of utmost importance for all people living in the highlands. Their dependency on this type of energy source cannot be overestimated.

As for income-oriented strategies, forest products are of more or less the same (minor) importance in all places. Although illegal practices such as timber smuggling might have been 'overseen' by this survey, forests are of less importance as sources of income generation than expected, especially if compared with other, regular incomes from remittances (in mountainous areas), selling crops (in the lowlands), or regular salaried jobs and own businesses (all places). Only in a few cases in Chamttar, trees have intentionally been planted as a mean to earn money (farm forestry).

The statement made by LEAD (2003, 2) that "one single illness in the household would push the family into the poverty trap, compelling the people to resort to deforestation as a source of livelihoods", can therefore be rejected. In the hilly areas, it is rather the poverty trap that does not allow people to reduce their daily dependency on forests in form of fuelwood. Had people more income sources and money available, they could afford to use more efficient energy sources such as oil, petrol or electricity. In turn, this would safe and improve their natural as well as their human assets. However, it is a highly limited range of action which local forest users have. In order to find a sustainable way of reducing the pressure upon forests, it must be kept in mind when 'special measures' (compare 1.1) are imposed.

As the survey's main objective was to draw a broad (quantitative) picture of rural livelihoods, the use of forest resources could not be investigated in all its details. That is why new hypotheses emerge, which could serve as entry points for subsequent (qualitative) studies. One such hypothesis would be, *that rural people are already well aware of the worsening environmental situation (as this paper*

could show), and therefore started to adapt their livelihood strategies – subsistence-oriented as well as income-oriented ones. This would at least explain the surprising little amount of households involved in income-oriented forest-related strategies.

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