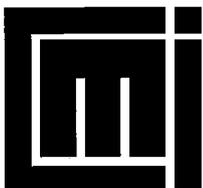


Deforestation and entrepreneurship in the North West Frontier Province, Pakistan

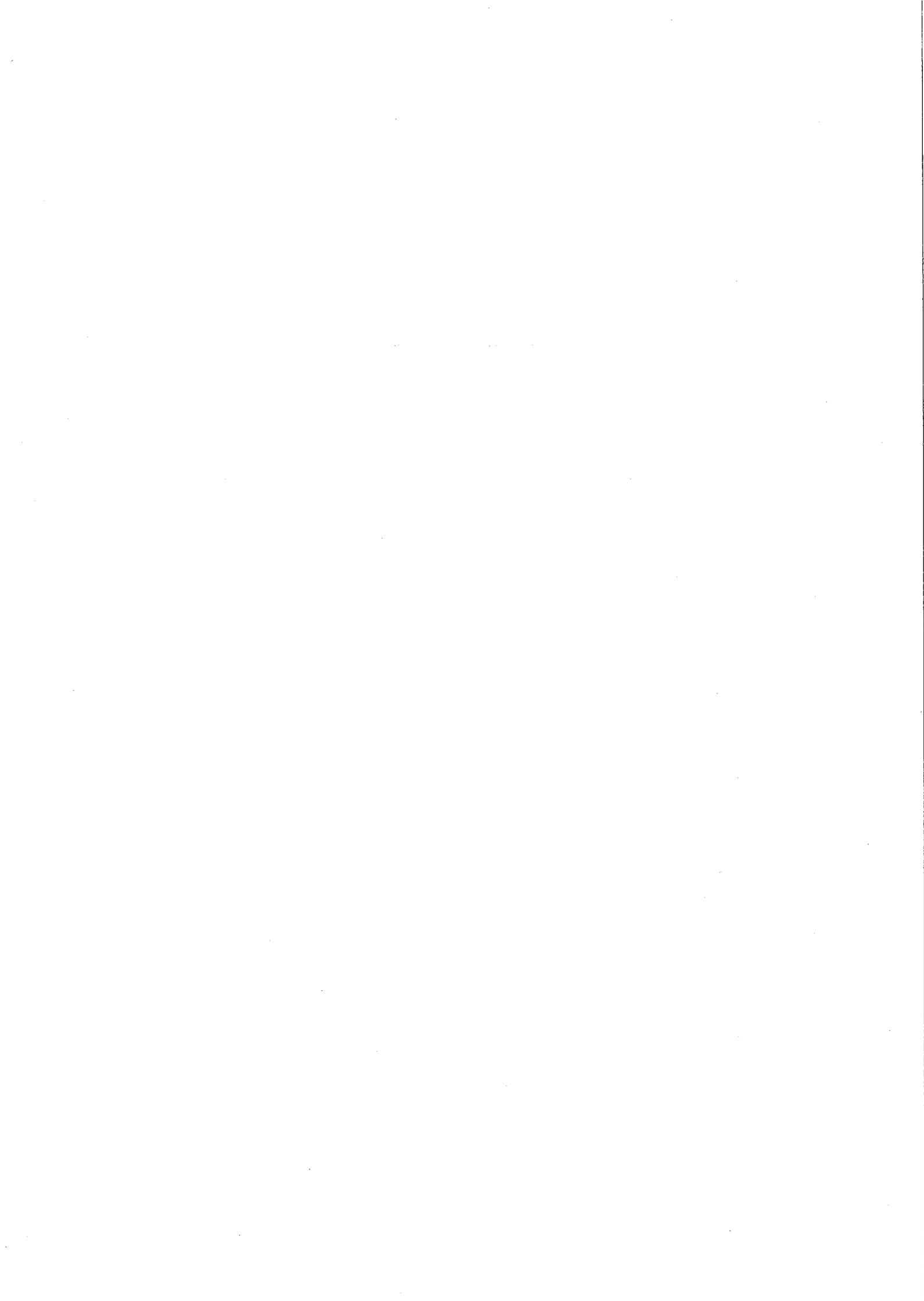
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WP 1996: 11

ISSN 0804-3639



Working Paper
Chr. Michelsen Institute
Development Studies and Human Rights
Bergen Norway



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Summary:

Deforestation is a global environmental concern, but the underlying processes vary across regions and countries. In Pakistan the threat to forests and biodiversity does not come primarily from local farmers, but from unsustainable commercial logging. Employing an actor-oriented approach, the paper focuses on private timber merchants (forest contractors) acting as intermediaries between the provincial bureaucracy and local forest owners. Loopholes in the forest legislation, combined with weaknesses in the organization of forest harvesting, have enabled contractors to prosper. Forest contractors have detailed knowledge of weaknesses in the forest legislation and know the sentiments, needs and demands of local people. By combining such insights contractors turn their middleman position into a profitable enterprise, thereby contributing to increased pressure on remaining forest resources.

Sammendrag:

Avskogning er et globalt miljøproblem, men de underliggende prosessene varierer mellom ulike regioner. I Pakistan er det kommersiell tømmerhogst og ikke lokale bønder som representerer den største trusselen mot skog og biodiversitet. Dette notatet fokuserer på skogkontraktører som mellommenn i Pakistans skogforvaltning. Svakheter i skoglovgivningen gjør det mulig for private tømmerhandlere (skogkontraktører) å etablere seg mellom lokale skogeiere og provinsbyråkratiet. Analytisk kan skogkontraktører karakteriseres som rurale entreprenører. De har detaljert kunnskap om skoglovgivningen og kjenner krav og ønsker fra de lokale skogeierne. Ved å kombinere denne innsikten skaffer kontraktører seg økonomisk gevinst og bidrar til økt press på de gjenværende skogressursene.

Indexing terms:

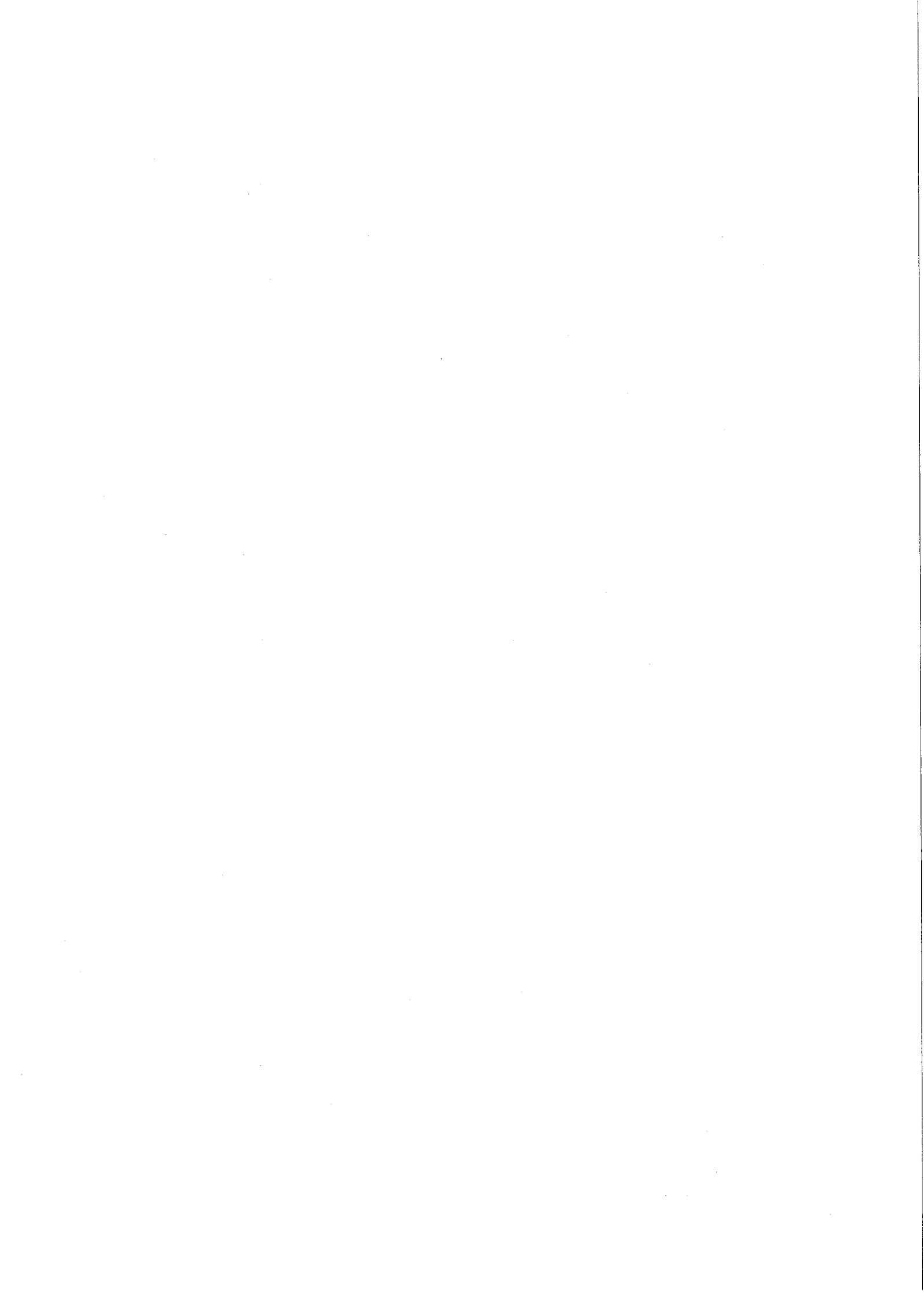
Deforestation
Entrepreneurs
Resources management
Property rights

Stikkord:

Avskogning
Entreprenører
Ressursforvaltning
Eiendomsrett

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Introduction

This paper analyzes the social and institutional factors behind the high logging pressure and deforestation in the North West Frontier Province (NWFP) of Pakistan (Figure 1). Forest management may at first appear as a dull subject, one best left to specialists such as foresters and, possibly, historians. Over the past decades, however, there has been a shift from viewing forestry as primarily a technical exercise, to emphasize the social context of forestry as well as its embeddedness in institutional and political fields of larger scale. People who live among the forests hold the key to their conservation, but as this paper should demonstrate, the conservation of forests is not only dependent on local management practices but influenced by forest policies, various stakeholders and market demand.

The NWFP holds about 30 per cent of Pakistan's remaining five per cent forest cover (Jan 1993:2; NCS 1992:175). Most of the coniferous forests in the province are found in the Malakand and Hazara Divisions.¹ About 88 per cent of the forests being commercially exploited in the NWFP are under some form of private ownership. It has been estimated that if the present rate of deforestation continues, the remaining forest will disappear within the next 30 years. Gaining a better understanding of the dynamics of deforestation in private forests is urgent and holds the key to understand deforestation in the province as a whole.

While the prime focus is here on the causes of contemporary deforestation,² it is evident that present day practices are embedded in the environmental history of the South Asian continent. As such the 'major factors in the depletion of the Himalayan forests..[are]..essentially a historical question' (Tucker 1987:328). In order to understand the process of deforestation in the NWFP, there is a need to combine an understanding of current management practices with a diachronic view of the underlying factors which have shaped them. The rationale behind forest management must be sought in the interface between the economic payoffs to different stakeholders and the legal and institutional framework of forest management. This paper argues that shifting forest policies, bureaucratic reforms, market demand for timber and rural poverty exposed the private forests in the NWFP to damaging logging pressure. Central actors in this process were local middlemen, the forest contractors (*tekhedars*), who took advantage of the unplanned implications of federal forest policies. In order to understand how this process unfolded we have to return — quite appropriately — to its roots, namely British colonial forest policies in the 19th century.

¹ The Federally Administered Tribal Areas (FATA), which make up about one-third of the NWFP, have substantial forest resources but are not considered due to lack of adequate data (but see, Khan et al. 1993).

² As Hamilton (1988:8) has remarked it is a problem that 'the generic term "deforestation" is used so ambiguously that it is virtually meaningless as a description of land-use change'.

Figure 1
North West Frontier Province



Forest management in British India

Deforestation is a problem throughout the hilly and mountainous areas of South Asia and its origins can be traced to early colonial forest policies affecting most of the Western Himalayas (Tucker 1982). Early 19th century forest exploitation in British India focused on 'hardwoods', in particular sal (*Shorea robusta*). Later when the hardwoods had become depleted, the interest turned to 'softwoods', primarily Himalayan cedar (*Cedrus deodara*) which was used for railway sleepers. The commercial exploitation under British administration was already in the 1850s so high that doubts were raised about its sustainability (Tucker 1982:116) and the period 1850-1860 has been termed 'the first period of massive deforestation in the

Himalayas' (Tucker 1987:329). The first forest laws were promulgated in 1878, and the Indian Forest Law introduced two main legal categories; 'Reserved Forests' and 'Protected Forests' (Tucker 1982:117). Reserved Forests were set aside to be managed by the newly created Forest Department. The Protected Forest category was instituted to give temporary shelter to forests until management plans could be worked out. The prime motive for demarcating the Reserved Forests was to safeguard valuable timber, especially Himalayan cedar, for the needs of the state. Thus, 'the Forest Department spent the next half century demarcating the Reserved Forests in which they worked with private contractors to harvest timber for distant markets' (Tucker 1987:329). After the state had demarcated the Reserved Forests, selected areas were set aside to fulfil the subsistence needs of local communities. Originally known as 'public wastelands', they were later termed Guzara Forests (Azhar 1989, 1993). Demarcation of the first Guzara Forests began in 1882 and involved curtailing local privileges such as grazing rights, firewood collection and grasscutting. Due to strong local protests, demarcation had to be suspended and some of the initial restrictions relaxed but felling of timber remained a state prerogative (Schickhoff 1995a:12). The combination of high pressure and commercial exploitation in the Guzara Forests continued well into the 1930s (Azhar 1993:120). In 1938 a commission reviewing the management of the Guzara Forests advised that management should be transferred to provincial forest departments and involve local users in management (ibid.).

Not only the delimitation of Guzara Forests was problematic. The demarcation of Reserved Forests in Kumaon (Uttar Pradesh, U.P.) met with very strong protest and coincided with a nationwide outcry against British colonial oppression. In 1921 thousands of acres of forest were set ablaze in Kumaon and massive forest fires raged for more than a month (ibid.:118). Investigating the incident, a fact-finding commission — the Wyndham Commission — concluded that the U.P. Forest Department should devolve control of the new forest reserves to local villagers. In 1923 the new forestry plan adopted the Wyndham Commission's recommendations, and granted local villagers ('concessionaries') more control of the use of forest. According to the new plan, villagers were now entitled to a percentage of the revenues from commercial felling of forest. Instead of saving the trees, this increased the logging pressure. Since the Forest Department lacked the manpower resources to carry out logging, the department 'auctioned the right to harvest marked trees in preannounced tracts each year. The winning bidders sent their own crews into the hills to cut the purchased trees' (Tucker 1984:344). Since competition was intense, 'winning bidders became determined to squeeze maximum profits from their coupes' (Tucker 1982:119). Despite local protests, this 'forester-contractor coalition' continued well into the 1930s (Tucker 1984:350).

World War II and the transition to independence for Pakistan and India in 1947 marked a 'second great wave of deforestation' (Tucker 1988:91). High demand for timber during the war meant that prices skyrocketed. By taking advantage of favourable market conditions, 'private contractors could make fortunes in one season by dealing directly with individual owners, often bypassing the Forest

Department entirely' (Tucker 1984:350). The forest policies of British India had to a large degree 'saved' the Reserved Forests but there was a heavy toll on the Guzara Forests after independence. In the late 1950s, the NWFP forest department undertook heavy felling in the Guzara Forests (Azhar 1993:122).

Forest laws and classification in Pakistan

The colonial legacy of forest management is evident in present day Pakistan and the forest legislation which was instituted before partition has to a large degree remained unchanged.³ A legacy of its colonial past, the state of Pakistan inherited a bundle of different legal categories of forest (Khattak 1976a, 1976b). As already described, the major work of classifying forest was undertaken through region-by-region land settlement in the 19th century. To document which rights ('concessions') had been granted to local people, their rights and privileges were specified in a document known as the *Wajib-ul-Arz* ('land obligations') (Jan 1993:17). These rights included firewood collection, grazing rights and the right to timber for house construction.

Forestry management in Pakistan is regulated by the Forest Act of 1927, and for the Hazara Division especially, the Hazara Forest Act of 1936. While the Forest Act of 1927 has been amended several times, there has not been any changes concerning the penalties prescribed for offenders. As an example, the maximum penalty under the Forest Act is still either a fine of Rs. 500 or six months in jail, penalties which are no longer adequate to discourage offenders.⁴ Ownership of forest in Pakistan is complex, with a number of legal categories where ownership and use rights are shared between the state, the communities and in some instances, individuals (NCS 1992:174). The Forest Act distinguishes between state-owned and private (i.e., non-state) forest (Table 1). Among state owned forests, the two most important tenure classes are the Reserved and Protected Forests. In Reserved Forests local people have no rights at all and even firewood collection is prohibited. Moreover, all types of human use including livestock grazing are prohibited, unless specifically permitted by the government (Jan 1993:3). In Protected Forest this principle is reversed and with the exception of commercial timber harvesting, both grazing and firewood collection are allowed unless explicitly banned by the government. The Protected Forest category is often used in cases where ownership is disputed, but is not meant to be a category where forest shall remain indefinitely (Khattak 1994:1).

³ However, Pakistan is currently undertaking a major revision of its environmental legislation (Knudsen 1995). The most important planning documents are the 'National Conservation Strategy' (1992), the 'Forestry Sector Master Plan' (1992) and the 'Sarhad Provincial Conservation Strategy' (1993).

⁴ In practice, no-one has been sentenced to jail for violating the forestry laws. In general they are only asked to pay for the excess volume of timber. The value of Pakistan rupees is 30,86 to US\$ 1 (1995).

Table 1
Legal classification of forest in Pakistan

	Category	Ownership	Management	NWFP (km ²)	Pakistan (km ²)
<i>State</i>	Reserved Forests	State	State	940	16820
	Protected Forests	State	State	40	9940
	Other	State	State	1470	2510
<i>Private</i>	Guzara Forests	Communal	State/Communal *	5850	6220
	Communal Forests	Communal	Communal	8090	8780
	Other	Private	State	420	510
	Total			16810	45780

* Communal management by Forest Cooperative Societies.

Source: Jan (1993:7)

The 'private forest' category is the most problematic in Pakistan's forestry and reflects the historical struggle between state and local communities for control with forest. The two most important tenure classes are Guzara and Communal Forests (Table 1). Guzara Forests proper are only found in the Hazara Division and regulated by the Hazara Forest Act of 1936. Communal Forests are a sub-category of Guzara Forests and mostly found outside settled areas.

While Guzara Forests can be owned either individually or jointly (families, communities), Communal Forests are joint village property (Jan 1993:5). Although both Guzara and Communal Forests are classified as 'private' (Table 1), they are only nominally controlled by local communities and management is, in most instances, a state prerogative. In general, these forest are the joint or communal property of local shareholders who are entitled to proceeds from the sales of timber ('royalties'). The size of the royalties range from 60 to 80 per cent of the revenues with the remainder going to the provincial government. The present management system in private forests lacks credibility in the eyes of local communities and have made them prone to over-exploitation. In order to understand why, there is a need to look more closely at the system of forest management and harvesting.

Forest management and harvesting

Most of the remaining coniferous forests in the NWFP are found in a narrow altitudinal belt ranging from 1,500 to 3,000 meters above sea level. The conifers which are commercially exploited are Himalayan cedar (*Cedrus deodara*, 'deodar'), spruce (*Picea smithiana*), silver fir (*Abies pindrow*), blue pine (*Pinus excelsa* or *wallichiana*, 'kail') and chir pine (*Pinus longifolia*). Himalayan cedar is because of its high market value, the most intensely logged species, and due to its climatic requirements, the conifer with the least spatial extension (Schickhoff 1995b:74ff).

Forest planning in Pakistan has traditionally focused on timber harvesting rather than forest regeneration. Forests in the NWFP are logged in accordance with a harvesting plan, known as a 'Working Plan' (Khattak 1994). Areas suited for commercial forestry are delineated into sections known as 'compartments' where a prescribed harvesting volume ('prescribed yield') is fixed for the compartment as well as the 'felling cycle', that is the period from one harvesting to the next. A major problem with current Working Plans is that they prescribe a harvesting volume which is too high and do not provide funds for regeneration (Khattak 1994). Despite official statistics showing massive tree-planting efforts in the NWFP, regeneration of coniferous forests is low (cf. PFI 1992:7). The reasons for this seem to be a combination of improper care and lack of technical expertise in forest nurseries, free grazing of animals and land-use change.

The total volume to be logged from a compartment is known as the 'standing volume'. The marked trees which together constitute the compartment's standing volume are cut, the bark removed and the logs transported to the nearest road. From the perspective of sustainable use, it would have been preferable to transport the timber as round logs which entails only 10-20 per cent volume loss. Most of the timber which is logged in NWFP is, however, converted into scantlings ('scants', 'sleepers') which averages more than 50 per cent volume loss. Conversion into scants is a wasteful harvesting method but preferred due to the lack of motorable roads. The scants are transported down the steep mountain slopes to the nearest road or stream on custom made slides (*phatoo*) built by skilled lumberjacks. A recent technical innovation is the use of skyline cranes (*zangā*) which make it possible to transport round logs over great distances. Due to higher initial purchasing costs skyline cranes are not yet in common use (cf. Usui 1994:38).⁵ Whereas local technology such as timber slides and skyline cranes have made it possible to harvest timber in steep slopes and distant valleys, the construction of new roads simplify transport and increase logging pressure. A recent study of fifteen field sites (primarily in the Northern Areas), confirms the strong correlation between accessibility and deforestation (Schickhoff 1993a).⁶

The impact of timber logging is aggravated by crude felling methods which cause collateral damage to timber stands. Instead of directional felling, trees fall downhill, thereby damaging standing trees and undergrowth (cf. Guha 1989:166). There is also a tendency not to spare seed trees with mature cones which are vital to the natural regeneration of the species. Natural regeneration is also hampered by a very high grazing pressure, especially in Guzara Forests where people have rights to livestock grazing (Schickhoff 1995a:14). There is also a substantial

⁵ For a more detailed comparison of the costs of various harvesting methods, see Ayaz and Stöhr (1988).

⁶ Moreover, the study estimates that 45 per cent of the forest cover has vanished, primarily during the last 20 years. This coincides with the completion of the Karakoram Highway through the region in the late 1960s and is further proof of the link between accessibility and deforestation. The link between roads and deforestation is also documented by Khan et al. (1993:14) using remote sensing data from the Khurram Agency (FATA).

piecemeal logging of single trees by subsistence users who need timber for firewood and as building material. The most extensive forest loss is, however, due to deliberate over-cutting and violation of Working Plans in the commercial forestry sector. To understand the underlying causes, it is necessary to consider the changes in the harvesting system and forest policies which began in the 1970s.

Implications of changing forest policies

Forest administration in Pakistan is divided among the federal and the provincial authorities, but implementing forest policies is a provincial responsibility. Until 1977 the NWFP Forest Department (FD) was in charge of both felling and marketing operations. This organizational set-up was problematic because it was not open to public scrutiny. Moreover, the FD was reliant upon private timber merchants, 'forest contractors', for carrying out the actual timber harvesting. Until 1973 forest contractors could bid for standing trees and once they got the tender, took charge of felling and marketing operations. Thus, forest contractors under minimal FD supervision, logged the trees and later sold them. Known as the 'contract' or 'permit system', this led to widespread over-harvesting. When the contract system was abolished in 1973, no alternative had been prepared to replace it. In order to strengthen the FD as well as to find an alternative to harvesting by contractors, the Forest Development Cooperation (FDC) was established as a semi-autonomous organization in 1977 (Jan 1990:28).⁷ The intention was to let the FDC replace contractors and handle both harvesting and marketing. In reality, the FDC continued to sub-lease harvesting to contractors (Treacy 1994:7). However, as long as contractors only logged the trees (i.e., they were labour contractors) they had no vested interest in over-cutting but earned money from working efficiently. Initially, the FDC only worked in government controlled Reserved Forests in Hazara. The rates for felled timber were determined by calculating backwards; from the market price to the standing trees ('stumpage rate'). In Reserved Forests people have no share in the revenues, therefore the stumpage rate was only a means to calculate the government revenue as well as the FDC's administrative charges.

This changed when the FDC began timber harvesting in Hazara's Guzara Forests, where the local owners are entitled to proceeds from the sale of timber. The Guzara Forest owners refused to be paid in accordance with the stumpage rate. They argued that the FDC's charges were too high, and due to long period from harvesting began and until it was completed, the initial market price used did not reflect rising timber prices. To solve the problem a commission was formed in 1977 to find an alternative to the stumpage rate. In 1981 the commission reached an agreement for a new system termed the 'net-sale system' which would

⁷ The effectiveness of this organizational change has been questioned, and both the FD and FDC have repeatedly been accused of bribery and corruption (The Frontier Post 16/12/92; The News 16/12/92).

bring the value of timber in accordance with the market price. The net-sale system was similar to the stumpage rate but the FDC's pre-calculated profit was fixed at 20 per cent. Moreover, owners had to give their written consent to the award of contracts and royalties to owners were to be paid in instalments. The net-sale system's advantage was that it gave forest owners a say in the award of contracts and had in-built provisions for rising labour charges as well as timber prices. Under the net-sale system the harvested timber is auctioned at official timber markets and sold to the highest bidder. When the extraction costs (including taxes) are deducted, the net revenue from the sales is divided between the state and the local concessionaries. The net-sale system was gradually implemented from 1983-84. Originally the net-sale system was designed for use in the Guzara Forests in the Hazara Division but in 1981 the FDC tried to extend it to the Malakand Division.

In order to explain the events which followed we have to consider the increase in timber royalties from the mid-1970s. Initially, royalties were only paid to concessionaries in Guzara Forests in the Hazara Division. The Hazara Forest Act granted shareholders 80 per cent of the royalties while the state was entitled to the remaining 20 per cent as administrative charges. Local communities in the Malakand Division did not have such rights, because they were not provided for in the Forest Act of 1927 and forest royalties were either very small or absent. The reason for this is to be found in the recent history of the area. What is today known as the Malakand Division was formerly ruled by three feudal principalities governing Swat, Dir and Chitral (Barth 1985). In 1954 parts of the Swat principality were declared a Tribal Area and all forests the property of the state. The locals were accorded 10 per cent of the revenue. After abolition of the Swat principality in 1969, the FD took charge of forest administration and fixed the royalties at 5 per cent. After massive complaints, the royalties rose to an average 15 per cent in 1972. Later the same year the government declared that all forests in the former Swat principality would become property of the government (KIDP 1988). In 1974 the Forest Act of 1927 was extended to Swat, Dir and Chitral and all forests declared Protected Forests. A year later, in 1975, they were re-classified as Reserved Forests, the strictest tenure class in the forest legislation. In 1976 the dissatisfaction with the government's forest policy in general and the royalties in particular sparked a revolt in Dir District (Malakand Division). The strength of this protest forced the government to concede that whereas the Reserved Forest classification would remain in place, in practice they would be managed as Guzara Forests, and royalties ranging from 60 to 80 per cent paid to the local concessionaries (Mumtaz 1989:15ff.). In the following years this settlement was extended to all the three districts (Swat, Dir and Chitral) of the Malakand Division (Masud-ul-Mulk 1994:52).

This was the situation in 1981 when the FDC tried to reach an agreement with the forest concessionaries in the Malakand Division. To the FDC this deal was very important because the organization was obliged to deliver logs at fixed concessionary rates to a newly built woodprocessing plant in Chakdarra. Though agreeing in principle to let the FDC begin harvesting, the forest owners in

Malakand did not agree to be paid according to the net-sale system. They feared that they would not be paid the real worth of the timber on the open market, but the low concessionary rates of the Chakdarra processing plant. They therefore demanded pre-fixed rates for their timber. To resolve the issue, a commission used the same method which was utilized for calculating the stumpage rate; they calculated backwards from the market price to the value of the standing trees. The new pre-fixed rates per cft were; cedar (Rs. 51), blue pine (Rs. 37) and fir/spruce (Rs. 22). The new pre-fixed rates did not take into account factors such as problems connected to logging, distance from the road and that the rates had already become outdated due to increased market prices. Thus, despite the fact that the net-sale system was now in place, forest owners in the Malakand Division were paid according to the what came to be known as the 'fixed-price system'. When the Chakdarra factory was forced to close down in 1987, timber could freely be auctioned on the open market. During the period 1981-87 the market rate of timber had surpassed the initial fixed-price rate. It was now suddenly in the FDC's interest to keep the fixed-price system (in Malakand) because the organization now took advantage of the price hike. In view of the fact that the pre-fixed rates were no longer in their favour, the locals demanded higher prices for their timber. The FDC, on its side, feared a lengthy battle over new rates and advocated the virtues of the net-sale system with timber being auctioned at the open market. By the end of the 1980s, two modes of royalty payment were in place; a system of pre-fixed rates ('fixed-price system') and the net-sale system. The significance of this development became even more important as the timber prices escalated.⁸ As the gap between the pre-fixed rates and the market price of timber continued to widen the incentive for pocketing this price difference rose, and forest contractor were quick to take advantage.

Economic strategies of forest contractors

Despite its virtues, the net-sale system never became popular among concessionaries. The main reason was that after being sold on the market place, the refunds from the sales passed through a slow bureaucratic treadmill before being forwarded to the local owners. Both the delay and risk of pilfering that this caused limited the net-sale system's popularity. The key to take advantage of the net-sale system was to short-cut the payback process by offering to buy royalty rights directly from forest owners.⁹ This was a variant of the pre-1973 'contract system' where contractors took charge of harvesting and marketing and bought standing trees directly from forest owners. Instead of waiting for the FDC to tender the work of logging a forest coupe, contractors approached local owners of

⁸ In 1984 cedar logs fetched Rs. 137 per cubic feet on the open market. During the period 1990-95 the price went up from Rs. 199 to Rs. 400 (PFI 1992:15).

⁹ It is important to note that whereas over-cutting is illegal, buying forest royalties is not. Although undesirable from the point of sustainable forestry, forest royalties can be traded.

compartments which shortly were to be harvested. The contractor could find out this by consulting the Working Plan, which is an official document listing when compartments are to be logged and how much is to be extracted. In those areas where official land titling has been completed (for example, most of Swat District), ownership of forest is fixed in an official record (*catoni*) maintained by the local revenue officer (*patwari*) with the name of every owner and their shares (*bach*) in the forest. From this document it is possible to glean the number and identity of the shareholders. To the contractor such detailed information about ownership makes it possible to assess the risk of royalty rights acquisition. Moreover, land settlement in itself reduces the risk of royalty rights purchase because it minimizes ownership disputes. Usually, the contractor negotiates royalty rights purchase with representatives of the owners. For the owners the main advantage is getting paid in advance, instead of having to wait until the compartment is logged.

In areas where official land titling has been resisted (for example, District Kohistan), there is no official record of ownership. In general, forest ownership is shared by all villagers and subject to local negotiations.¹⁰ Ownership is often contested and may cause bitter fight among villages and tribes. This makes royalty rights purchase more risky and because all the shareholders must agree to sell, becomes time consuming and difficult. Due to such problems, harvesting falls far behind that planned under Working Plans and the harvested volume is, in exceptional cases, only 5 per cent of that prescribed under Working Plans. However, in some areas forest ownership has been usurped by powerful leaders (*maliks, khans*), who sell royalty rights at their own discretion. Where features of social organization allow it, contractors can therefore negotiate directly with local power-holders. This makes it easier to close deals and, in turn, allows harvesting to proceed in accordance with Working Plans (Knudsen, forthcoming).

For the contractor it is crucial for making a profit that villagers agree to sell their royalty rights. Without acquiring these rights he is only paid for felling the timber and bringing it to the roadside depot ('labour contractor'). This is a type of work which does not generate substantial profits. In general, contractors offer to pay slightly more than the FDC's pre-fixed rates. For example, the contractor will offer to pay Rs. 60 per cubic feet for cedar, compared to the FDC's fixed rates of Rs. 51. Should the owners still decline to sell their royalty rights, the contractor may try to enlist the support of influential elders, the 'white beards' (*spin giris*) and powerful members of local consensual assemblies (*jirga*) by secretly offering them better than average terms. Thus, the contractor takes advantage of his knowledge of social organization and village politics. Another asset is the contractor's knowledge of forest operations and market conditions. When the compartment comes up for tender, the contractor enters the bidding round. Having already purchased the royalty rights, he can undercut the price of all other bidders.

¹⁰ For a discussion of common property rights in forest, see McKean and Ostrom (1995).

Table 2
Net profit to stakeholders with royalty rights purchase
(harvesting volume 100,000 cft/2832 m³) *

FDC's profit (20%)	664,000
Government (40%)	8,000,000
Contractor	8,400,000
Community	3,600,000
[Community, no sale of royalty rights]	[18,000,000]
* Appendix I gives details	

The FDC on its side, is obliged to award the tender to the lowest bidder.¹¹ When the contractor is awarded the contract, he is in reality entering as contractor the same forest coupe which he has bought through the royalty rights purchase. It is therefore in the contractor's interest to cut more trees than have been marked. As the owner of the royalty rights, his gross profit will be proportional to the amount of timber being auctioned at the timber market.

To explain how this works, consider the following example (for details, see Appendix I). The contractor purchases the royalty rights from the community according to a negotiated fixed price, in this case Rs. 60 per cubic foot. After being awarded the tender by the FDC, the contractor (or his associates) hires skilled lumberjacks who fell the trees and handle the transport to roadside depots. When the timber has reached the depot, the harvested volume is controlled and verified by the FD. If found to be in order, the FD issues a 'transit pass' which enables the FDC to move the logs to the timber market where it is sold according to the 'net-sale system'. As noted above, the current market price of cedar is more than four times higher than the price offered to locals. The revenues from the sales (less the costs of extraction) are divided as 40 per cent to the government and 60 per cent to the locals as royalties. Since the contractor has already purchased the royalty rights, the 60 per cent will be transferred to him directly or through a middleman (Table 2, Appendix I for details).

The gross profit to the contractor is therefore the difference between the costs of purchasing the royalty rights based on the negotiated fixed price and the sum transferred back to him after the timber has been sold according to the net-sale system. In the example above (Table 2), the contractor has more than 200 per cent return on his investment. Neither the government's profit (40 per cent of the net revenue) nor the FDC's precalculated profit are affected by the royalty rights purchase (Appendix I). The community members, however, earn only about 20 per cent (3,6 million) of what they could have earned had they decided not to sell

¹¹ Even if the FDC suspects that royalty purchase is involved, it is bound by the law to accept the lowest bid. However, in order to block tender bids which grossly underestimate the costs of logging, the FDC has begun to fix a minimum price which is quoted in the tender notice.

their royalty rights and opted for the net-sale system directly (18 million).¹² Instead, it is the contractor who profits from the price difference between the negotiated rate and the market price. To understand the reasons why rural communities accept such deals and are willing to sell their timber below its market value, it is necessary to look more closely at the factors which locals must consider when deciding whether to sell or not.

Economic rationality, risk and decisionmaking

Despite the financial clout and ingenuity of forest contractors it remains an enigma why villagers who may be illiterate, but certainly know basic arithmetic, agree to sell their timber for less than one-fourth of its present market value. In order to understand why local forest owners prefer to sell to forest contractors, one has to consider the poverty which characterizes much of Pakistan's countryside. In general, people lack opportunities for paid work and timber is therefore the only commodity which has the potential to contribute substantially to household earnings. In isolated villages where the lack of roads hinders marketing of agricultural products, income from forest royalties can be critical to their livelihood (cf. *The News* 14/12/92). The villagers' primary economic assets are therefore their rights to timber royalties. They generally lack the specialized skills and equipment needed for commercial felling of timber. Moreover, they lack crucial information about market mechanisms and have immediate needs for cash income. To an outsider, the advantages of the net-sale system seem obvious. Instead of agreeing to low pre-fixed rates, the villagers are entitled to 60 or 80 per cent of the much higher market value. However, villagers tend to distrust government officials and are suspicious of the net-sale system. In addition there are a number of other reasons why it is rational for villagers to sell their royalty rights to contractors. They can be summarized as follows (Khattak 1994):

- villagers lack information about the felling schedule, hence do not know when their forest(s) are to be logged
- even when villagers have secure information about felling schedules, they know that felling schedules can be changed or manipulated
- villagers are under the impression that only by agreeing to contractors' offer will their forests be logged according to the felling schedule.
- due to the poverty which is typical of the countryside, villagers must look to immediate needs and not to future benefits, in other words, they have a high discount rate.

The reasons for selling royalty rights to forest contractors seem to be a combination of poverty (high discount rate), the uncertainty which afflict logging

¹² The example is based on harvesting of round logs. Harvesting as scants (50-55 per cent volume loss) reduces the profit to local owners to less than 10 per cent of the market value (HJP n.d.).

operations, combined with the risks associated with future compensation. If the locals were to comply with FDC's harvesting regulations, they would neither be paid in advance nor assured of being paid later.¹³ From this perspective it becomes understandable why accepting the contractor's offer of immediate cash payment is so attractive, even though it in purely economic terms gives them only about 20 per cent of the timber's market value.

Villagers' previous encounters with the state and its representatives have made them aware of risks associated with timber logging. They therefore prefer to take what they can now and leave the economic risk to others. Moreover, locals fear that future market prices may turn out in their disfavour (Treacy 1994:5). The willingness to forego a future benefit as their practice implies, suggests that 'risk discounting' (Angelsen 1994) is a significant factor and promotes short-term decisions. Whereas payments in the order of Rs. 3,6 million may seem very large (Table 2), individual forest owners are entitled only to a fraction of this sum. In general, all male members of a village or tribal segment are entitled to a share of the forest royalties. If the number of shareholders is 1,000, this will give each person Rs. 3,600. This sum is only slightly less than the average annual cash income (Rs. 4,000) in parts of Kohistan and underlines the importance of timber royalties to household viability (Usui 1994:9).

Despite the overall profitability of royalty rights purchase, contractors face various economic risks which can either diminish revenues or cause heavy financial losses. In particular, there is concern over factors which hinder logging of compartments according to the felling schedule, meaning that money invested in royalty rights purchase cannot be recovered. Examples of potential hazards from the perspective of contractors are:

- owners feel cheated and ask for more money
- influential villagers change their mind about the deal
- roadside timber depots are set on fire to protest unjust deals or settle grievances
- the FD stops the transport of timber due to irregularities (over-cutting)
- local disputes over forest ownership delay or block logging/transport operations
- higher costs than assumed (higher transport cost, less outturn volume)
- natural calamities or interventions (flash floods, timber logging ban)

It is common for large contractors to sub-lease part of the total logging work to sub-contractors (petty contractors). Generally, felling and conversion into scants and transportation to roadside depots are sub-leased to petty contractors. This is both a practical way of handling large felling operations as well as to some degree spreads the economic risk. Moreover, contractors tend cover risks on investment by extensive over-cutting (HJP 1993a). A case study from District Kohistan shows

¹³ The FDC is obliged to pay 10-20 per cent of the net revenue as advance payment to concessionists. However, it is likely that payments, in reality, are either much less or withheld by the FDC.

