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**Common Pool Resources and Communal Control:
Two Case Studies in Himachal Pradesh, India**
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**Common Pool Resources and Communal control:
Two Case Studies in Himachal Pradesh, India**

The Sirmour district, Himachal Pradesh, India, lies in the outer western himalayan range. The tract is by far mountainous with deep valleys and, therefore, cultivation has to be carried out on steep slopes which are extensively terraced.

Mixed-farming is the main occupation in the mid-hills and basically consists of agriculture, livestock and forest produces. Hence, communal forests (*mushtarka*), common grazing lands (*ghasnies*) and gravity flow irrigation

system (*khul*) were taken as the three major common property resources in our study¹. People combined various type of resources such as private resources, state-owned resources and commonly-owned resources in their day to day functioning. Since the 80's, farming systems at Dhamla and Chauras villages have evolved like the rest of the economy in the district, moving from one of subsistence characterised by a diverse and self-reliant mountain agricultural system based on food-grains, to one that is mainly cash driven and market-oriented based on vegetable crops.

Due to several factors like increasing population pressure, socio-economic disparities within village communities, codified environmental laws and public sector interventions, many changes have taken place in the field of natural resources management, especially those resources that lie under the category of Common Pool Resources (CPRs).

This study attempts to survey natural resources management in two villages of Sirmour district, Himachal Pradesh, according to the modes of access to and usage of resources in the context of historical development and changes over property right regimes.

We argue that, in the context of mid-hills economy, current property regimes on natural resources are not consistent with mixed-farming systems on account of:

- inappropriate public sector intervention (vs. state expansionism) has resulted in the *de facto* partition of common grazing lands.
- people ask for being entitled to control resources which they use as commons in response to the insensitivity of public control.
- it is the numerous and diverse capacities to escape individually from both legal and customary systems of sanctions which makes the rules-in-use unviable.
- customary regulations and communal control may provide "social boundaries" to the use and abuse of nature.

Finally, we show that collective action can emerge, in some circumstances, as an efficient alternative complementing to privatization and nationalisation. To demonstrate this, we use the current theories of common property resource systems.

LAND LAWS, FARMER'S EXPECTATIONS AND THE COMMONS

Renewable resources which are not produce but, extensively harvested, are mostly used as common property resources. In the Himachal Pradesh context and, until 1974, pastures and wastelands, part of the forest surrounding villages, river beds, irrigation channels and common paths, belonged to the *Panchayats* (village government) and were used for the benefit of the village community or for common purpose of the village. This area was termed as *shamlat*² or *shamilat-deh*, in accordance with the *Punjab Village Common Lands Regulation Act, 1961*. The *shamlat* was the non-exclusive property of the whole village community³, so that it was not subject to alienation as a result of individual decision-making processes.

Due to increased State concern over the environment in the 70's, especially in the form of national afforestation schemes, the indian administration wanted to apply "scientific methods of management" on open wastelands

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² This type of land was found only in the area added from Punjab to Himachal Pradesh since 1966 (Punjab Re-organization Act, Act No.31 of 1966).

³ Before the Land Reform Act (1954), common lands were restricted to the landowners (*malikan-deh*) after which user rights have been extended among all residents (*sakin-deh*), including the non-proprietor bodies (*ghair-maliks*). State also began participating in the decision-making regarding communal management of CPRs after 1954 (Chakravarty-Kaul, 1996, p.23).

which were previously used as traditional common pastures (because fodder was not cultivated due to the lack of cultivated area). To facilitate this, the *Himachal Pradesh Village Common Land Vesting and Utilisation Act*, 1974, was passed. This Act resulted in the transfer of common lands ownership from the *Panchayats* to the State government, except “lands subjected to partition between individuals co-sharers before the date of commencement of this Act”⁴.

Due farmer’s expectations about the role of these lands, the law has resulted in unexpected but strong inducement to partitioned the land. The farmers used this clause of the Act in order to secure both access to and individual benefits from the commons subject to nationalisation. A sub-group of landowners, mostly influential and well-informed people, approached the *patwari*⁵ to proceed with the shamlat partition. The initial partitioning of grazing lands first took the form of illicit encroachments which were later legalized by political leaders in the 80’s as a result of political clientelism.

This change in access to the village commons has several negative outcomes:

-Large tracts of the newly private pastures have been increasingly converted into cultivated lands as predicted in Jodha (1986), reducing the scope for animal rearing.

-Agripastoralists who have been excluded from this “wild” privatization” have been forced to graze their cattle in the forest and/ or to intensify green lopping. This poses a threat to the natural regeneration of forests due to heavy trampling and grazing of young plantations.

-Shortage of green fodder from the village commons has induced an intensification of green lopping on selected species such as *Ban (Quercus leucotricophora)* and *Moru (Quercus semecarpifolia)*. After 25 years of intensive and selective lopping, these two species have mostly disappeared in the areas surrounding Dhamla village.

-Forest lands which are *de jure* public lands are used, *de facto*, as a common open to all.

The remaining parts of the shamlat which have not been encroached upon but, vested in the State government, have been bifurcated into grazing land (50%) and, Allotable Pool Land (50%) for landless and small farmers not owning more than one acre. But, as interviews revealed, “time-consuming and intricate procedures” have discouraged many small agriculturists from applying for allotment of *nau tor* lands. Part of eligible farmers who have applied on time have not been allotted with due to lack of politico-administrative connections. These *nau tor* lands, located above the irrigation channel and adjacent to the forest area, have been converted into poor rainfed cultivated land as predicted by the theory (Jodha, 1986).

Finally, encroachments and further political regularisation have been important factors responsible for both the shrinkage of grazing lands and consequent intensive use of forest for lopping and grazing. This example illustrates how inappropriate public sector intervention has led to the spoliation of small agripastoralists and has had adverse effects in terms of socio-economic justice.

GRASSLANDS

As the Sirmour State Gazetteer⁷ told us: “It is customary among the hill people to divide their wastelands into two parts, the *charand* or pasture land, and the *ghasan* or grass reserve. As a regular operation, grass is gathered from *ghasan*, in October, into small bundles (*pula*) which are stored in conical stacks (*poha*).”

Grasslands are mostly composed of *dholu (Chrysopogon montanus)* and *bagar (Tameda nasira)* which grow in abundance during the monsoon season (*barsat*). Another common practice consists of removing bushes out of the grassland to maximise the grassland unit surfaces. Depending on the natural productivity of grasslands, some people stimulate its biomass productivity by firing poor grasslands at the end of the summer season, in June. Fire propagation is closely monitored by farmers, especially if the grassland is mixed with *Pinus roxiburgii*⁸ whose needles are lying on the ground. This practice provides an effective prevention strategy against the risk of accidental fire.

⁴ Himachal Pradesh Village Common Land Vesting and Utilisation Act (Act No. 18 of 1974)

⁵ *Patwaris* are the land revenue collectors at the village level.

⁶ I use the term “wild privatization”, taking into account the absence of previous listing of individuals co-sharers in the use of common lands.

⁷ Sirmour State Gazetteer (1969)

⁸ The afforestation of grassland with *Pinus roxiburgii*, as it is done in the mid-hills, has been criticised due to its adverse effects on biomass productivity and related risk of natural fire (see R. Kumar Thakur, 1996).

On account of grass resource seasonality, customary rule imposes on graziers restrictions on access to grasslands over a period of time. The rule in practice was to prohibit access to the grasslands during the monsoon season (July to September) until it could be collectively harvested in September/ October. Regulatory in nature, these informal restrictions were monitored and enforced by mutual agreement among the user group.

The size of the herd allowed to graze the *charand* in summer, was not a binding criterion. However, up-stream regulation existed according to which households were entitled to graze only as many animals in summer as they were able to feed in winter period (when extra sources of green fodder is not available). This rule aimed at preventing rearing for commercial purposes which could take place during the grazing season. It was the same old rule related to commonly-held resources which sets a limitation on individual benefits- working within the limits of its labour force, a single household is entitled to remove as much as it can derive from the common pool resources as long as these benefits are not cash or market-oriented. In this way, household needs defined “social boundaries” on the usage of commons in the context of subsistence economies. Equity in the mode of usage is achieved through the restriction of labour force to household’s members, and equality in the mode of access is achieved through the village-based criteria for entitlement which consists in “belonging or not belonging to it”.

The theoretical outcome of the rule is that, wherever common pool resources are concerned, the resource and/ or the benefits derived from the resource cannot be dissociated from its non-commercial final usage⁹. The social control over final usage of resource is a salient feature of the customary regulation systems. Converse to the ownership-based regulation system of standart economics, the nature of the final usage is as of much importance as the right of resource disposal. This is the rural-based source of social legitimacy on governing the use of resources.

Current patterns of common grazing lands management

Current patterns of grazing lands management remain unchanged. It is a common feature in mountain areas to close the access to grassland during the rainy season when other source of fodder are available, especially fodder trees like *Biul* (*Grewia oppositifolia*) or *Robinia* (*Robinia pseudoacacia*) from private plots and *Ban* (*Quercus sp.*) from the forest. Last, but not least, some complementary sources of green fodder are also available on the path and field banks like *phapra*¹⁰ (*Fagopyrum sativus*) or *bhabhar* (*Nettle sp.*).

But, on account of significant change in livestock breeding patterns, division of grassland into *charand* and *ghasan* has lost its specificity. Local cows which grazed on their own on steep slopes in the past have been replaced by stall-feed cattle. That is why grasslands are mostly used as grass reserves for winter periods. The three or four winter months compel people to stock important quantity of dry fodder.

On an average, all household members spend fifteen days to a month harvesting private pastures during the months of September and/ or October. Because most of the village common grazing lands have been converted into private ones, the remaining common grazing areas are very few in number and are of poor quality. These have been nominally managed by the State Forest Department since the enactment of the *Himachal Pradesh Village Common Land Vesting and Utilisation Act, 1974*.

Privately owned grasslands

Privately owned grasslands are not fenced but access is restricted to the owning family. Natural boundaries such as a tree, a stone, a rivulet or a crest are customarily used to demarcate the limit of property. Interviews reveal that 72% and 40% respectively of the sampled households of Dhamla and Chauras hold private grasslands. In both villages, Rajput¹¹ owners of private *ghasnies* are twice in number as compared to scheduled cast owners and, they own 6 to 8 times more *ghasnies* than scheduled cast owners. At the same time, we notice that the partition of *ghasnies* is also related to the size of the previous agricultural land holding of encroachers.

In the following part, we have tested the double hypothesis, according to which, the previous land size holding before partition and the caste group affiliation could be relevant in explaining the patterns prevalent in the

⁹ The rule which consists in attaching the resource to its final usage (restricted to local needs) explains how and why private and market-oriented resource exploitation are not legitimate by local people. That is also the case of forest exploitation by state agencies which symbolizes the urban bias.

¹⁰ *Phapra* (*Fagopyrum sativus*) is the only crop grown for fodder in the mid-hills. It is cropped on the field banks.

¹¹ Rajputs were the dominant caste in both villages.

partitioning of village common lands, and its unequal distribution among encroachers across both villages. Do economic and/ or caste factors mutually reinforce themselves or not ?

As an introductory remark, first criteria which determines the “right to decision-making related to village common lands” and/ or the “right to speak” is to own some agricultural lands. As is common in rural communities, right holders are those proprietary bodies who own some lands in the village, so that landless people were not involved in the partitioning process.

Two complementary questions have been raised:

1-Out of the whole 55 sampled households, 30 households have encroached upon some lands whereas 20 have not. The following question is “What factors determine encroachments ?”.

2-Out of the 30 beneficiaries, “What factors explain the size (ha) of the encroachment ?”.

In both cases, we have used a two variables linear regression: $(Z) = c + a*X + b*Y$

-The dependent variable is (Z). It specifies “Ghasnies encroached upon (ha)”

-The independent¹² variables are:

-(X) specifies “the land size holding before partition” as an indication of “economic power”.

-(Y) specifies “the caste group affiliation” as an indication of “social position in the village”.

Regression 1/ Question 1: “What factors determine encroachments ?”

The total signification of the regression $F = 31,8 (0,000)$ is verified

The signification of coefficients is, a (0,000) and b (0,070) are significant but not c (0,338)

$R = 0,742, R^2 = 0,533$

$$Z = -3,4 + 12,2*X + 10,6*Y$$

(-0,96) (6,48) (1,85)

We can conclude from this regression that the “economic power” factor is more significant than the “Caste group affiliation” factor. Large landowners have benefited greatly from this “wild privatization” at the expense of landless and small holders.

Regression 2/ Question 2: “What factors determine the size (ha) of the encroachment ?”

The total signification of the regression $F = 14,3 (0,000)$ is verified.

The signification of coefficients is, a (0,000) and b (0,166) are significant but not c (0,738)

$R = 0,718, R^2 = 0,480$

$$Z = -2,7 + 11,8*X + 14,3*Y$$

(-0,33) (4,60) (1,42)

In this case also, the “economic power” factor bypasses the “Cast group affiliation” factor in explaining the size of the encroachments. The size of encroachments is directly and positively related to the initial endowment (ha) of the landowners.

On the whole, Rajput caste group represents 63,5% of the partition beneficiaries and they have received 91,5% of the total grazing land partitioned. In terms of “right to the partition”, the economic class hierarchy has influenced the partitioning pattern to a far greater extent than the cast hierarchy (nevertheless, these two factors mutually reinforced each other). As a socio-political outcome, privatization of the commons have benefited the wealthiest farmers at the expense of the powerless. This *de facto* spoliation explains why, due to overstocking practices, other farmers are currently facing shrinkage of grazing land which compels them to purchase dry fodder from grassland owners. It points out the economic outcomes arising from not taking into account the repartition effects of common pool resources re-allocation through privatisation.

¹² The co-linearity of these two variables, (X) and (Y), being inferior to 50%, the two variable linear regression is relevant.

IRRIGATION CHANNEL

Irrigation channels are the second major CPRs used by village communities in the mid-hills. Because there is no system of underground water in these areas, irrigation is mainly through gravity flow irrigation systems locally termed as *Khul*. These irrigation channels were built 200 years ago by the farmer's ancestors without state patronage:

“By far, the major source of irrigational water supply is the age old method of directing water from various springs, streams or rivers through small rills to the cultivated fields. This archaic method of conducting water may be improved by human efforts but cannot be abandoned in any case. In some places, the khuls are made by hired labour, but the villagers generally invite their friends and people of the surrounding villages to work on a new khul, giving them satt¹³ for breakfast and a good meal of meat and rice...The annual repairs are generally effected after the monsoons. State aid for repairs to the khuls can be obtained, but it is not always applied for and khuls are often allowed to fall into disrepair and disuse (The Sirmur State Gazetteer, 1934).”

After some years of state patronage, it was written that:

“This old system is now on the brink of extinction because they are now constructed with the financial help provided by the government to which villagers contributed a fixed percentage of the total cost” (Himachal Pradesh District Gazetteer: Sirmour, 1969).”

Irrigator user group and annual maintainance of khul

Irrigator user group represents 72% and 83% respectively of Dhmla and Chauras sampled agriculturists. As this old report told us, there is still no alternative to *khuls* for irrigation in the mountain areas. The immediate consequence of this is that the agriculturists' reliance on *khul* is maximum in the absence of alternatives, especially during *rabi*¹⁴ season for vegetables (which are more sensitive to water stress than food grains).

Khul consists of a network of primary, secondary and tertiary diversion structures, *pacca*¹⁵ and *kachha*, which compel irrigators to undertake annual maintenance and repairs. These are done on a regular basis twice a year. Desilting following the monsoon is carried out in September/ October, while repairs before the peak season for vegetables are carried out in February/ March. However, landslides and other occasional damages are dealt with through daily supervision that two young males are put in charge of (by riding up on it after school). As far as annual repairs are concerned, in both villages, *Hella*¹⁶ system prevails rather than the traditional *Kohlis* (water masters) prevalent in Kangra district (see J.M. Baker., 1997). In the absence of a water master, mutual monitoring and consensual agreements are adopted within the user group in accordance with customary rules recorded in the *Wajib-ul-arz*¹⁷. Each irrigator household contributes 1 or 2 mandays each time on a voluntary basis and/ or makes a monetary deposit for equivalent hired labour force in case of impediment. Even if monetary funds from Irrigation and Public Health Department (I.P.H.D) are granted to Panchayats through Block Developments to pay for important tasks and materials, distant administration and officers cannot monitor the effective control of, and participation for, annual repairs and daily maintenance.

At the village level, social control exists to secure the effectiveness and equity of individual contributions to collective burden. In case of voluntary free riding from one of the co-users, the whole user group is customarily entitled to impose a penalty within a set of graded sanctions. Depending on the circumstances, the frequency and the solemnity of its disturbance, the offender can be sentenced to a monetary fine and/ or the group can decide to sever social relations with all family members of the free rider until he contributes his share. In that case, the offender will have to host a meal for the whole user group in order to effect his reinstatement.

¹³ *Sattu* is the flour of parched grain.

¹⁴ *Rabi* and *Kharif* seasons are the two indian agricultural seasons, respectively the dry and rainy season.

¹⁵ *Pacca* and *kachha* mean solid and soft building materials such as cement, stone or simply land.

¹⁶ *Hella* system, which we have found in Sirmour district, consists in a system of voluntary contribution of work to collective and/ or private tasks based on reciprocity. Even if it is very effective in both villages, increasing socio-economic households differentiation is progressively eroded it.

¹⁷ *Wajib-ul-arz* is the book of the Village Administration Paper where rules related to the management of land and khuls are written (Urdu language) and kept at the patwari office.

This example of social restraint on non cooperative behaviour aims at disproving the game theory assumption¹⁸ according to which, betrayal is always the dominant strategy rather than co-operation, in the absence of complete information about player's behaviour. In that case, there is no need to know about the co-user's provision of labour contribution because the probability of penalty occurrence is high, if not absolute. Conversely, opportunism (rent capture opportunity) arises as soon as the probability of penalty occurrence is not absolute or its probability is unequally distributed among the co-user due to socio-economic disparities.

Such modality of communal control, decentralized, horizontally co-ordinated and locally enforced, is efficient. Accordingly, the absence of formal organisation to secure the occurrence of penalty makes this indigenous arrangement less expensive for the whole society in terms of public expenses.

To conclude, as Baker argues in his paper, the extent of reliance on a commonly-held resource is one of the two parameters which makes a common property resource management regime successful or not. And, far from decreasing, the farmer's reliance on irrigation channel has risen continuously with the shift from traditional to cash crops over the last twenty years.

Irrigation use patterns and interactions between irrigators

At the operational level, the pattern of interaction among irrigators remains in the form of mutual agreements for sharing irrigation water rounds. Because both *khuls* are perennial, there is stress on water availability for irrigation. Depending on the distance from the main channel, the crop and the slope, between a half hour to one hour is taken to irrigate a one *bigga*¹⁹ plot. Observations reveal that five to six co-users can each irrigate one of their plots simultaneously, so that the distribution of rounds results from daily inter-individual bargaining according to crop specific requirement, extending even into the night if necessary. In case of litigation, a third party (a sub-group of co-user and/ or an elder) is consulted to settle the dispute. Hence, negotiation at the lowest level is the core mechanism of co-ordination.

In the Chauras case, irrigation rounds allocation is used as a means to solve hamlet and caste conflicts. Rajput households located at the beginning of the main channel are using their "locational power"²⁰ to solve their disputes with the second hamlet- access to water from the *khul* is used as a tool of bondage by the political elite during the peak season. That is why some of the bonded irrigators call for "pure government management" of the *khul*: "Government should restore access to the *khul* by enforcing new rules."

People's perception of the *khul* management regime

People's perception of the *khul* management regime clearly argues in favour of "Joint Management", consisting of state financial provision and village maintenance & repairs.

Table No. 1 : Household irrigation channel management preference

	HHd (units)	Dhamla	HHd (units)	Chauras
Pure village management	3	17%	4	23%
Joint management	15	83%	16	58%
Pure government management	0	0%	6	19%
<i>Total</i>	18	100%	25	100%

Source: Dhamla & Chauras survey/ Pachhad & Renuka tehsil/ Sirmour district

Lying at the two extremes of the sampled households at Chauras are, bonded irrigators calling for "Pure Government Management" of the *khul* to avoid caste and class struggle by choosing the "Exit Option"²¹ from the

¹⁸ Back to the fields, social interactions at the village level are manifolds. Each individual playing different games with the same set of players, people are compelled to adopt the "tit for tat" aged old rule which re-introduces time and memory effects. Due to temporal and spatial dimension, common pool resource dilemma as multiple and repeated games cannot be as simple as given by Hardin's results (See Axelrod R., Hamilton W.D., 1981).

¹⁹ *Bigga* or *bigah*, is a local unit of measurement (1 *bigga* = 1/12^c ha = 0.08 ha).

²⁰ Locational power (or externality) refer to a specific geographical location which confers dominance to a sub-group and results in asymmetric relation within co-user in the access to a common pool resource.

²¹ See Hirschmann Albert O. (1970).

traditional system of management, while, dominant Rajput agriculturists argue for “Pure Village Management” to avoid state interference.

Between the two extremes, most irrigators make a clear distinction between monetary funds from I.P.H.D and labour contributions. First is the state financial provision for achieving important tasks requiring monetary contribution for materials and hired labour. This has been the case when the main diversion structure has been cemented all along. Second is that people wants to keep immediate control on small repairs which have to be carried out in time through voluntary contributions, without waiting for time-consuming public sector interventions.

Resource ownership and people’s perception

The Chauras experience reveals that a shift in ownership over the *khul* regime has modified people’s perception of their duties. *Khul* property rights have been vested in the I.P.H.D. under the “Himachal Pradesh Minor Canals Act²²” six years ago to avoid internal conflicts. The prevailing *hella* system consisting of voluntary labour contribution has been eroded- irrigators now contribute a fixed rate for the utilisation of the *khul*, and hence expect to be completely freed from labour contribution as a consequence. But according to farmers, proper timely maintenance is not done by the I.P.H.D staff and irrigators are compelled to contribute individually (and/ or by sub-groups) for the repairs closest to their plots. As a result, commonly-held *khuls* at Chauras are no longer maintained along the lines of the *hella* system on the account of internal conflicts and socio-economic differentiation within the group.

State involvement in *khul* management regime approximates the user group’s ability to adjust with the stress induced by the heterogeneity of the user group but, in terms of cost and effectiveness, state involvement does not automatically provide a better alternative.

COMMUNAL FOREST

Communal forests, termed as *mushtarka*, are the third major source of CPRs we have identified. They are mostly mixed forests comprising of *Chil* (*Pinus roxiburgii*), *Kail* (*Pinus wallichiana*), *Deodar* (*Cedrus deodora*) and few remaining *Ban* (*Quercus leucotricophora*) in Dhamla village while, these are *Ban* (*Quercus leucotricophora*) and *Moru* (*Quercus semecarpifolia*) in Chauras. Forests were scarce and fast depleting in Dhamla whereas it was relatively abundant in Chauras.

People and forest

From the forest, people derives a number of direct advantages and manifold items for agriculture, breeding of livestock as well as human needs. These are of two categories:

-Timber Forest Products (T.F.P) for housing and agricultural implements, branches and dead wood for cooking, marriages and funerals, charcoal, staking and fencing or bark for tannins and/ or making rope and,

-Non-Timber Forest Products (N.T.F.P) like fodder tree and grass for cattle, pine needles²³ and dead leaves for farming activities, wild berries and plants for food, medicinal plants²⁴ and other minor forest products we even don’t know yet.

Last, but not the least, there are indirect and collective advantages too, like the control of flood water in the rivers and the streams, the prevention of landslides and soil erosion, the conservation of wild flora and fauna as well as the maintenance of temperate climatic conditions. All these tangible and intangible benefits, permanent or seasonal, belong to collective commons.

²² Himachal Pradesh Minor Canals Act, 1976, grants the government authority to levy a tax for the use of *khul* water, “keeping due regard to the maintenance and operation charges for the system and the cost of water rates”. This tax is separate from the one assessed by the Revenue Department on irrigated land (*Khul abbal/ kuhl dom*).

²³ Pine needles, termed as *shrawal*, are collected from both *Pinus roxiburgii* (*Chir*) and *Pinus wallichiana* (*Kail*) to protect stones fruits in packing cases during transport operations on trucks as well for making brush and broom (*schuta*) for painting and cleaning houses.

²⁴ The medicinal herbs constitute one of the chief factor in the medical system of Ayurvedic treatment. At present, these herbs are being exploited commercially in Rajgarh and Nahan Forest Division (Himachal Pradesh District Gazetteers: Sirmour, 1969).

While forest survey and settlements were undertaken by the Forest Department to demarcate forest estates, local people have traditionally been using forest resources as common property resources. Official settlements recognized that forest resources were common properties and, that people had legitimate rights to use them for meeting their domestic needs. As the Himachal Pradesh Gazetteers (1969) reports, “Simultaneously to the revenue settlement, a detailed forest settlement was also carried out and, the rights and concessions of the people were well-defined.” These rights and concessions were recognized in all the forest settlements:

Table No. 2 : Rights and concessions to local people recognized by forest settlements

Rights	Concessions or privileges
-right to grant of timber for housing	-collection of flowers, fruits and bark of tree
-right to graze of cattle in the forest	-collection of medicinal herbs and plants
-right to lope trees	-removal of shrubs
-right to collect pine needles	-removal of earth, stones and slates
-right to collect fuel-wood	

Source: in A. Bhatia, 1997, I.C.I.M.O.D, p.15

In both the villages, forests ownership is distributed among:

-Communal forests (*mushtarka*) owned by the Revenue Department and included in the *Shamlat* for the benefits of villagers. These are managed by the Forest Department: “*In addition to formalisation of forest as CPRs, the forest settlements also delineated a buffer zone between forest lands and villages. It creates a balance between the use of forest resources for national needs and for meeting the domestic requirements of the locals*” (A. Bhatia, 1997, p.15).

-Forests owned by the Forest Department and classified as Reserved forests: “*With a few exceptions, all the State forests are reserved under Chapter II of the Indian Forest Act 1927 and, they are managed under the same Act. In the reserved forests, which were carefully surveyed, cultivation and cattle-grazing were strictly forbidden, and timber cutting was limited by several regulations*” (The Himachal Pradesh Gazetteers: Sirmour, 1969).

-Forest owned by the Forest Department and classified as Territorial Forests. These are managed by the Wildlife Division as a sub-division of Forest Department. In these forests, access is strictly forbidden to local people. These are only found in Chauras village which part of its upper forest is include in the *Chur Dhar*²⁵ Wild Life Sanctuary²⁶ since 1986.

But, regardless of forest legal ownership, forest resources lying in the immediate vicinity of the village are used as common property resources. Our interviews show that people feel legitimate user of natural resources close to them, thinking that the primeval ownership of natural resources such as forests, streams and stones timelessly belongs to the mountain *Devi*'s. As a consequence of their sacred entitlement to access to, and remove resources from forest, people honour the forest deities by performing several rituals of investment and also provide the *Pujari*²⁷ annual sustenance. Men's action on nature is still ruled and framed by religious belief which co-exists and/ or interferes with temporal power structures.

Forest management, user group interactions and institutional formalisation

We assume that forests located in the *shamlat* of Dhamla and Chauras villages are managed in two different ways on the account of their extent and relative scarcity. The hypothesis according to which common property resource management vary positively with resource scarcity (Easter & Palanisami, 1986) and that increased risk of depletion led to formation of common property regimes (Wade, 1986) is relevant in Dhamla case.

Dhamla institutional response to increasing resource scarcity

While a set of forest regulations were in use in both *mushtarka* as well reserve forest of Dhamla- the dense mixed forest has been continuously depleted over these last 20 years up to the point that only conifers remain. *Ban*

²⁵ *Chur Dhar* is the highest peak in Sirmour district culminating at 3647 m. That is why, even if Chauras forests are abundant, accessibility is restricted to the surrounding area of the village, no more.

²⁶ Asking the District Wildlife Officer, Nohra Dhar, if the control of poaching was effective, he said “No case has been reported”. Then, asking what he needs the more to achieve his task, he said: “Guns, staff and ammunitions”. It points out the difficulties meet by Forest Officers to enforce effective control over large track of forests.

²⁷ *Pujari* is the brahmin (hindu priest) in charge of the local *deity*'s up keep. He lives in the village temple and conducts rituals related to men's interface with nature through several *pujas* (ceremonies) which consist of investment celebrations based on tangible and intangible reciprocal gift exchanges.

oak which was lopped intensively for feeding cattle during the dry season goes on the brink of extinction. Other factors such as illegal felling and encroachments for housing and/ or cultivation also contribute to forest depletion. It is as much the existence of the forest itself as the people's helplessness which has become a common dilemma for the villagers.

According to the villagers of Dhamla, it was the death of the late Forest Beat Guard in 1995 which raised the necessity for collective action. The absence of any government representative for several month has given the opportunity for self-organisation. On the other hand, the numerous conflicts with surrounding villagers and the illegal felling of valuable species by the Forest Mafia²⁸ which had remained unsolved by the Forest Department also motivated people to restore, by themselves, the control over the surrounding forest as is related in the Forest Protection Committee Proceedings. This led to the creation of a Forest Protection Committee (F.P.C) at the village level in 1996. As predicted by the theory, growing resource conflicts and depletion induced institutional changes, internally initiated, from informal rules of agreement to a formal organisation.

The committee²⁹ decided, on the consent of all members³⁰, that "State Forest of Dhamla to be closed for 5 years". We first underline that, regardless of legal status, the enactment has been taken for both type of forest, communal as well as the state reserved forest to which people are not entitled to. A set of operational rules had been enacted as follows:

- complementing the legal system of forest regulations and/ or sanctions, green lopping of *Quercus sp.* and *Deodar*, illicit felling and encroachment on government lands will be monitored and/ or sentenced directly at the committee level. In accordance with the type of forest offence and its solemnity, a set of graded punishment (sentences could be a simple caution, a monetary fine and/ or confiscation of the tool's offender) is enforced until the case is handed over to Forest Department and law court.

- provisions have also been made to control up-stream activities of the village saw-mills.

- control of all timber transportation is to be effected with the installing of a forest check post (barrier) on the single road crossing the village. The installation of the forest check-post and the appointment of a *chaukidar* (village watchman) has already been successful with the dismantling of two "forest mafia"³¹ organisations.

- last but not least, the committee will have to give its approval, prior to the Forest Department, regarding the allowance of Timber Distribution (T.D) recorded as a collective right. For the purpose of housing and small agricultural implements, inhabitants of villages are entitled to received 1 tree from the Forest Department every 5 years. Beyond this quota, people have to purchase it from the Forest Department at the market rate. According to our investigations, 64% of the sampled right holders³² thought T.D allowance by Forest Department was "not fair". Timber Distribution is one of the most controversial matter of conflict between people and the Forest Department. Three sources of discontent are involved:

- it has been reported that the process of applying is both "time and influence-consuming". On an average, it takes minimum one year to get satisfied. As a result, some farmers adjust by exchanging T.D rounds according to their needs or some other, by overstocking and selling their surplus. This *de facto* creation of a timber parallel market supports the idea of public failure in supplying adequate services.

- most farmers who do not belong to the local elite say that they are ignored by Forest Department after sending more than one unsuccessful application form whereas, influent ones declare receiving more than their quotas. When middle class people were asked what could be done to enforce their right, most common reply was: "What can we do against Forest Department."

²⁸ Forest mafia means an organised group of poachers, motivated by commercial profit, specialised in the felling of valuable species on a large scale. This felling often takes place at night and/ or during monsoon season when access to the forest is difficult

²⁹ Proceedings of the Forest Protection Committee, 1996.

³⁰ Membership is not restricted by any rule, it is based on voluntarism. Committee is composed of 43 members belonging to the village of Dhamla including, 15 females also belonging to the *Mahila Mandal*. (women committee) All decisions are to be taken by vote.

³¹ According to the President of the Forest Protection Committee, these groups worked in connection with some corrupt Forest Department officials and, inhabitants of the village providing informations. Presently, people arrested in the village were the previous teacher and doctor, not belonging to the village.

³² Only right holders, *shamilat-deh*, are entitled to received T.D for housing. It means that people who does not own some lands, agricultural labourers, tenants or households engaged in tertiary or secondary activities cannot benefit from this collective right instead of its basic needs character.

-regardless of the purpose of application, be it for maintenance or for building purposes, one tree in every five years become so weak that people have no choice but to resort to illicit felling. As far as social legitimacy is concerned, Forest Protection Committee members told us that nobody will be blame within the village for felling 10 trees used to build a new house.

It is evident that the biased allowance of T.D has clearly contributed to an increase in internal conflicts within the village and, its inadequacy to respond to basic needs raised external conflicts with the Forest Department. That is also why the Forest Protection Committee empowered itself to restore equality in T.D allowance within the village. The most interesting provision is the restoration of the same old rule³³ according to which utilisation of timber received from T.D is restricted to non-commercial use: “so that T.D will not be misused”³⁴. People’s perception justifies that the usage purpose of common resources is as much important as the claim to use it.

On the whole, this example of civil self-empowerment in control activities envisioned a decentralized institutional arrangement at the operational level, articulating people’s control with state judicial, financial and technical provision. According to institutional theorists, civil self-empowerment and organisation result from a social demand for institutional innovation facing a shrinkage of institutional supply (Feeny, 1988). Such arrangement may take advantage of better cost/ effectiveness due to people’s closest interests and permanent watchfulness. We should emphasize that, in accordance with E. Orstrom analysis of choice level, these institutional changes have been effected because people have endogenised (internalised) the capacity to modify rules. On one hand they have modified “Operational Rules” codifying who is able to use resources, which resources, when and where. On the other, they have reshaped “Collective Choice” procedures assigning who is entitled to modify operational rules. Therein lies the indigenous and endogenous capacity to cope with socio-environmental challenge.

That is probably why, instead of being in charge with, the Forest Department did not want to register the committee for two years, nor providing any assistance to its activities³⁵.

The Rural Uplift Committee Report³⁶, 1937, told us: “*During the course of the enquiry, people were afforded an opportunity to express their opinion on the forest administration and, as would appear from the results of the enquiries certain complaints, showing that forests were jealously guarded by the ruler, were referred to the said committee.*”

As a matter of fact, the reticence and/ or denial of the Forest Department to share its exclusive competence to manage forest is, to some extent, a common administrative dilemma. In a context of scarce public finances, the lack of transparency within administrative decision-making may result in mismanagement of public resource as related by villagers: “*In a period of financial stress like two years ago, Forest Department staff over-harvests forest by marking young trees which are not even mature.*” It points out that the administration may be subjected to its own organisational objectives and/ or vested interests.

To conclude on the motives of collective action, we can state that the basic purposes of this civil movement are:
-people’s proclivity to collective action is closely linked to their individual degree of reliance on the resource,
-it aims at restoring an effective control on forest area and final resource usage that the Forest Department is unable to enforce effectively,
-it aims at establishing civil control procedures on both user and Forest Department activities to improve social equality in access to, and equity in usage of, forest resources.

Even if collective action emerged without state patronage, it relied on human factor. This civil movement, like many other, depends on the involvement of a charismatic leader in the person of the president. Although he is a native of the village of Dhamla where he owns some lands, he is an atypical citizen (a graduate person with a government job). While reliance on human contribution is limiting the replicability and the predictability of such local initiatives, this example justifies we cannot do without men involvement in management rather than being confident on the sole law.

³³ On this customary rule, see p. 4

³⁴ Proceedings of the Forest Protection Committee, 1996.

³⁵ While the Committee ask to the Forest Department for being granted with samplings for re-afforestation of the *mushtarka*, Forest Department did not provide any.

³⁶ Sirmour State Publications, 1937, in “Himachal Pradesh State Gazetteers: Sirmour”, 1969.

As Anil Agarwal was saying this year in a public meeting³⁷, “*There is no pessimistic view about the people’s response to long-term environmental stress. Empirical case studies tell us that people respond positively to crisis situations. The challenging question is: Would Central government and public agencies willing to understand, support adequately and encourage social engineering mechanisms ?.*”

Chauras response to forest resource seasonality

By contrast with Dhamla forest, the Chauras *mushtarka* forest is not scarce. It is approximately 500 ha out of the 1061 ha of forest recorded in the *jammabandhi*³⁸. Except for collection of fuel-wood, the basic purpose of access to forest is green lopping of *Quercus leucotricophora* and *semecarpifolia* for stall-feed cattle.

According to a natural peculiarity related to *Quercus sp.*, leaves need three years to reach their full size. The management pattern in practice is rotational lopping³⁹. Therefore, the *shamlat* is divided in three parts, not fenced by tangible boundaries, from which only one is open for green lopping for one year and so on. According to foresters and the *Pradhan*⁴⁰, this measure had been adopted 10 years ago by the Forest Department in response to intensive green lopping. But, many farmers declare not to be aware of this regulation. Some marginal farmers, living in scattered⁴¹ households through out the mountains, are ignorant about state regulations as well as decisions taken at the village level by the elite and the influential. In the absence of tangible enforcement capacity or user involvement in the regulation system, it is unclear whether this top-down regulation has been effective or not. Identification of a whole user group and, reaching agreement about decisions which affect their closest interests is often explaining the lack of people’s participation and the lack of social legitimacy which both result in high cost of regulation enforcement and/ or *de facto* open access situations.

Conversely, Chauras farmers criticise the laxity of the Forest Department in the regulation of *gujars* incursion into the village forest for grazing their cattle. *Gujars*, a pastoral caste of shepherds living in the upper part of the forest at *Chur Dhar* in summer season, are currently involved in forest resource and grazing-based conflicts with local people. But, in exchange of gift to Forest Beat Guards of milk and *Ghee*⁴², they are not sanctioned for this. This is another source of discredit which makes farmers not being confident into the power, nor the will of the Forest Department staff, to carry on their duty with authority and impartiality.

Apart from this, Chauras villagers were facing the same misallocation of T.D rounds like in Dhamla village and increasing intrusion of surrounding villagers and forest mafia in their communal forest. While a set of traditional and graded sanctions were still prevailing at the village level, socio-economic differentiation within the village community and internal conflicts related to irrigation prevented people from organising themselves to secure their interest in the management of the communal forest. After two unsuccessful meetings to set up a Forest Protection Committee, some people refusing to join the meeting, the situation still prevails.

As a result, it is the numerous and diverse capacity to escape individually from the legal system of regulations and/ or sanctions which makes the legal framework unable to regulate the user interactions at the ground level. In terms of games theory, the unequal distribution of penalty occurrence probabilities among players addresses strong incentives to adopt a free rider behaviour. In practical terms, the numerous forest offences which are not sanctioned for several reasons make people disrespectful to environmental laws. In political terms, social injustice within individuals led to the erosion of both authority systems, traditional as well legal, and results in the absence of effective regulations. People’s response to the failures of legal system of enforcement is to call for joint management of forest.

People’s perception of forest management regime

³⁷ India International Center (I.I.C), New Delhi, India.

³⁸ Jammabandhi are the revenue records kept at the patwari office.

³⁹ According to Forest Department regulations, green lopping cannot exceed one third of the tree crown.

⁴⁰ Village headman (elected body).

⁴¹ In both villages, summer houses are becoming permanent houses due to partition of inherited land holding between brothers. According to our interviews, every household was owning a summer house for grazing cattle in dry season. Due to this local migration, from the bottom to the top of the mountain, pioneering fronts are occurring at the upper periphery of villages.

⁴² *Ghee*, clarified butter.

People's preference of forest management regime clearly argues for "Joint Management of Forest" with the same previous distinction than for *khul*. People asks for being entitled to control resources which they use as common property in response to the insensitivity of public control.

Table No. 3 : Household's forest management preference

	HHd (units)	Dhamla	HHd (units)	Chauras
Pure village management	3	12%	3	8%
Joint management	22	88%	21	80%
Pure government management	0	0%	2	12%
<i>Total</i>	25	100%	26	100%

Source: Dhamla & Chauras survey/ Pachhad & Renuka tehsil/ Sirmour district

In a joint management regime, control activities could be monitored and enforced by local people complementarily to judicial, technical as well financial provision from the various state agencies. This bottom-up strategy for better regulation may envision a new face for traditional commons. This arrangement between civil and public fields of competence and responsibility aims at looking for "Better State" interventions rather than to "Less State".

CONCLUSION

These two case studies show that common pool resource contributions to the village economy are manifold. There can be no mistake in their role.

Lying outside the market framework, common pool resource contribution to mixed-farming systems is a strength from the point of view of both social justice and agricultural productivity in terms of reduced costs. But, it is a weakness from the point of view of opportunism within co-user interaction system which may result in the tragedy of open access. As a matter of fact, it is the diverse and numerous means to escape individually from the legal system of regulations and/ or sanctions which make the legal framework hardly effective.

We have shown how the government bias, that favors forestry at the expense of grass, has resulted in encroachment upon common grazing lands by the rural elite as a rational response to state expansionism. Both factors explain why the forest is intensively used for green lopping and cattle grazing. Forest lands which are *de jure* public lands are used, *de facto*, as a common open to all.

State property regime is necessary to avoid further private appropriation of public uncultivated lands. However, people's claim for communal control upon resources affecting their livelihood could help in curbing open access situation which prevails as a result of the state agencies insensitivity in control and monitoring activities. In that regard, people make a clear distinction between state financial, judicial and technical provisions for collective goods and, their immediate control over resources. Negotiation and mutual monitoring have been found to be the core mechanisms of social co-ordination within co-users.

While people have maintained over time a set of customary regulations and sanctions upon village resources allocation and utilisation patterns, these regulations are on the verge of extinction as people are not entitled to manage their ecosystem under the law, nor encouraged to do so. One salient feature of these management systems is that, from the point of view of social legitimacy, the final purpose of resource utilisation is as much important as the claim to use it.

The old dichotomy between private vs. state-owned resources is out-dated on account of the current alternative between open access and effective management system. Both cases of successful social engineering mechanisms and failure of communal management show that rural communities and state agencies should learn from and complement each other to build nested institutional structures. If collective action has to be replicable, it should not depend on the existence of some charismatic and/ or atypical citizen. Therefore collective choice arena has to be enlarged towards user-groups. The challenging question is no more “What to do” but, “How to do” ? Therein lies the opportunity for building a common arena for “Collective Action and Negotiation”.

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Annexes

Private grazing land distribution among the cast groups

Cast groups	Dhamla			Chauras			Total		
	Sc	Rajput	All	Sc	Rajput	All	Sc	Rajput	All
Household (Units)	12	13	25	20	10	30	32	23	55
Owners within the group (%)	42%	100%	72%	30%	60%	40%	36,4%	82,6%	54,5%
Average size (ha)	0,3	2	1,6	0,5	4	2,3	0,4	2,7	1,8

Source: Dhamla & Chauras survey/ Pachhad & Renuka tehsil/ Sirmour district

Recorded grassland area in Dhamla and Chauras

Years	Dhamla		Chauras	
	Grassland (ha)	Per cent*	Grassland (ha)	Per cent*
1995/96	32	17%	18	2%
1976/77	57	31%	18	2%
1968/69	57	31%	18	2%
1948/49	48.9	27%	17	1%

Source: Patwaris/ Villages record land use

*Percentage of grassland area to total village geographical area

Private grazing land distribution among the land holding groups

	Households (Units)	Owner within the Group (%)	Average size (ha)	Total received per group (%)
Landless	7	29%	0,9	3,3%
Marginal	33	42%	1,1	28,5%
Small	11	91%	1,1	20,8%
Semi-medium	2	100%	3	10,9%
Medium	2	100%	10	36,5%
Total	55	54,5%	1,8	100%

Source: Dhamla & Chauras survey/ Pachhad & Renuka tehsil/ Sirmour district

Recorded forest area in Dhamla and Chauras

Years	Dhamla		Chauras	
	Forest (ha)	Per cent*	Forest (ha)	Per cent*
1995/96	54	29%	1051	89%
1976/77	72	40%	1062	90%
1968/69	72	40%	1062	90%
1948/49	84	46%	1060	90%

Source: Patwaris/ Villages record land use

*Percentage of forest area to total village geographical area