



FOUNDATION FOR ECOLOGICAL SECURITY

A COMMONS STORY

In the Rain Shadow of Green Revolution



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Chapter 1

INTRODUCTION: Crisis and Opportunity

THE PROBLEM

Though the Indian economy is growing at the rate of 9% annually, the geographies in which this development is located and the constituency which has benefitted from it, remain narrow. Drylands, tribal areas and hilly regions have continued to remain largely outside this growth paradigm. The story is not new. These regions, constituting around three-fifths of the net sown area, have remained more or less outside the domain of the agricultural growth witnessed in the irrigated tracts. Crisis in the dryland regions is manifested in terms of reduced land and bovine livestock holding, the breakdown of the agro-pastoral production systems, a change in cropping patterns and depleting groundwater tables. However, the crisis in agriculture in particular and in rural India in general is not only limited to these regions. As has now been sufficiently documented, the main thrust of policies for agrarian development lies in resource intensification and capital investment aimed at increasing productivity, and has peaked out in many parts of the country. Agrarian productivity has plateaued, as indicated by the decline in the rate of growth of food grain production and in the net returns from agriculture even in the prime agricultural regions of India. The introduction of the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), the Forest Rights Act (FRA) and the upcoming National Food Security Act are indicators of the depth of the rural livelihoods crisis.

It is in this broad context that we approach the study on Commons (also known as common pool resources). The study is an attempt to bring to the fore a Commons perspective of agriculture, livestock and rural livelihoods in the dryland and tribal areas of India. Would agriculture, livestock and rural livelihoods sustain in the absence of the support provided by Commons? In finding an answer to this, we explore the potential role of the Commons (land and water resources) in strengthening the viability of the agro-pastoral production systems and the resilience of household livelihoods.

BACKGROUND

The Nature of the Commons

The terms, 'common pool resources', 'common property regime' and 'common property resources' are often used synonymously, but construed differently. The long history of the confusing and conflicting use of these terms necessitates a clear understanding of the subtle yet critical differences between them before analyzing the complexities and significance. A 'common pool resource' refers to a natural or man-made resource system that is sufficiently large to make it costly (but not impossible) to exclude potential beneficiaries from obtaining benefits from its use

(Ostrom, 1990).¹ They are finite in nature (unlike club or toll goods and pure public goods), i.e. subtractable in consumption and are subject to crowding and depletion. Further, exclusion is very difficult and they can be kept from potential users only at great costs with heavy investment incurred to protect and maintain these resources (unlike private goods). Natural resource systems and environmental resources like forest, pasture, fishery etc can be categorized as common pool goods/ resources. Institutional mechanisms and property rights arrangements addressing 'subtractability' and 'excludability' differentiate these from open access resources which are very difficult to protect and very easy to deplete (McKean, 2000).

'Property rights' is used as a term to refer to the social institutions that may have evolved over centuries and that are attached to the resource as specific user groups govern and manage the benefits arising from it. Steins and Edwards (1999) suggest that by terming a resource as 'property' there are a range series of benefits to which rights can be associated.² Common property regime is a property rights arrangement in which a group of resource users share rights and duties towards a resource. Common property regimes range from communal systems of resource use among hunter gatherers, to mixed systems of, for example, communal woodland with individually owned arable fields, all the way to gigantic collective farms in socialist economies, and even, for that matter, to community and other broadly shared rights to regulate the environmental consequences of individual behavior in industrial economies (McKean, 2000).³

The Criticality of Commons: The Indian Scenario

In the Indian context, common property regimes can be understood as regimes evolved by communities to manage and govern their natural resources collectively. They have multiple users and uses and make significant contributions to the rural economy in a myriad ways. N.S. Jodha describes common property regimes as "community's natural resources where every member has access and usage facility with specified obligation. In rural areas of India, these generally include community pastures, community forests, wastelands, common threshing and dumping grounds, watershed drainage and village ponds, rivers and rivulets, as well as their banks and beds" (Jodha, 1995).

Various studies document the contributions from common pool resources to village economies. Besides the flow of benefits to farming systems and animal husbandry in terms of food, fodder and timber availability, there are ecological benefits in terms of resource conservation, recharge of groundwater and sustainability of agro-ecological systems.⁴ Jodha's 1986 study in 82 villages across 21 districts in the arid and semi-arid zones of India highlights the relevance of the common pool resources to the rural economy at large and their importance as a 'safety net' for the poor in particular. The study estimated that 14-23% of household incomes are derived from the common

¹ Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. pp 30. New York: Cambridge University Press.

² Short, C. 2011. *Forest as Commons – Changing Traditions and Governance in Europe*. New Perspectives on People and Forests. pp 62. Springer Science + Business Media.

³ McKean, M.A. 2000. *Common Property: What Is It, What Is It Good For, And What Makes It Work?* People and Forests: Communities, Institutions and Governance. pp 27-51. The MIT Press.

⁴ Notable among them are the following: Jodha, 1986; Jodha, 1992; Pasha, 1992; Beck and Nesmith, 2001; Adhikari, 2005; Dasgupta 2005; Ghate 2005; Menon and Vadivelu, Fuys et al, 2006.

pool resources and they play an important role in reducing income inequalities, which would have been otherwise starker. As per the recent macro-estimates based on National Sample Survey Organisation (NSSO) data, the collections from common pool resources contribute about 3% of the total consumption expenditure in the surveyed households, with certain variations displayed at the state level (the highest being from Odisha, 5.59%). These and other micro level studies have suggested that the flows from common pool resources form a significant part of the local resource use patterns, contributing significantly to household incomes of the poor, providing off-season employment opportunities, and cushioning risks associated with the use of private resources. Beck and Nesmith (2001) have summarized the findings of some of the major studies conducted on Commons in India in a table which has been reproduced below as **Box 1**.

<i>Box 1. Findings from studies addressing CPR use and management in India⁵</i>	
Study	Main Findings
Jodha (1986), 82 village survey in 7 states in dry tropical west and south India	CPRs constitute between 15% and 23% of poor people's income, and contribute substantially to improving village equity. Poor households are losing access to CPRs, and the extent of decline between the mid-1950s and 1980s was between 26% and 52%.
Jodha (1985a), six village survey in arid Rajasthan	Between the early 1950s and early 1980s, all types of CPRs in the arid zone both declined in area and deteriorated in quality. Main causes of decline were land reform and commercialization.
Jodha (1985b), three arid districts in Rajasthan and two districts in Madhya Pradesh	A far greater reliance on CPRs for the small farmer and landless than for large farmers in the areas of grazing requirements, collection of fuel and fodder and consumption of CPR-food.
Jodha (1990, 1986)	For small and marginal farm households, between 31 and 42% of total own farm inputs are contributed in cash and or kind inflows from CPRs. Employment generated by CPRs for the poor was higher than on-farm work or public works. A drastic decline in the number of products, and increased time involved in collection, over a 30-year period was noted.
Iyengar and Shukla (1999), survey of 15 villages in Gujarat	CPRs made up 0.1 to 11% of consumption expenditure of farm and between one and 22% of non-farm households.
Iyengar (1997, 1989), 25 Gujarat villages with a focus on non-forest products.	Dependence on CPRs was largely grazing and fuel wood. Dependence on CPRs was higher in drought prone areas.
Beck and Ghosh (2000), Ghosh (1998), Beck (1998), survey of seven villages from across the	CPRs made up between 10 and 15% of poor households income, and were more important the poorer the household. Poor people are being systematically excluded from CPRs by processes of

⁵ Beck, T and C Nesmith, 2001, 'Building on Poor People's Capacity: The Case of Common Property Resources in India and West Africa, World Development Vol. 29, No. 1, pp. 119±133, 2001

agro-ecological zones of West Bengal	“modernization”.
Chen (1991), single village study of 59 poor households in Ahmedabad District of Gujarat	The poor collect over 70% of their fuel and 55% of their fodder requirements as CPRs and these resources are more important to the poor than the better off. There has been a gradual decline in CPRs in the village over the last thirty years, mainly through privatization. Conflict over CPRs increases in times of crisis.
Singh, Singh, and Singh (1996), study of eight villages in the semiarid region of Punjab	CPRs contributed about 27% to the total gross income of landless and 22% to that of cultivating households.
Agarwal (1997), Agarwal (1995), Agarwal (1991), literature reviews and field work throughout India	30 million or more people depend wholly or substantially on non-timber forest products, which are of particular importance in the lean season. Women and children play a central role in accessing CPRs, and have a more detailed knowledge of cultivated and wild crops than men in some cases. Access to CPRs has declined across India over the last 30 years.
Beck (1994a), study of three villages in West Bengal	CPRs constituted between 19 and 29% of household income of very poor villagers. Conflict over CPRs is central to poor household’s experience of poverty.
Pasha (1992), study of three villages in Karnataka	CPRs made up 10% of gross income of poor households. The area under CPRs has declined by about 33% over the last 20 years.

The Commons in Decline

Despite the important contribution of the Commons to the rural livelihood complex, a significant decline in their extent and quality has been registered over a period of time. This decline has been recorded by several studies (Jodha 1986, Iyengar 1988, Brara 1987, Chopra et al. 1990). The NSSO data of 1999 estimates a decline of 0.38% per annum in common pool resources at an all-India level. The qualitative and quantitative decline in the common pool resources has intensified the conflict over resource use, with the poor families usually at the losing end, either by denial of access to these resources (mainly because of privatization of the common pool resources by a few) or by diversion of these resources to alternative uses (Iyenger, 1989; McKean, 1992; Beck, 1994; Iyenger, 1997; Beck, 1998; Beck & Ghosh, 2000; Cavendish, 2000).

The crisis in common pool resources today is a part of the larger crises of farming systems and rural livelihoods, caused by processes that have led to large-scale resource extraction (water, fuel wood, timber and non-timber forest products (NTFPs), mining, grazing etc.) without considerations of resource regeneration and equity. The indiscriminate resource-use intensification favouring certain production patterns has led to narrow specialization and sectoral segregation. Strategies focused on food grains have ignored the total food chain (a total range of seasonally and spatially variable consumable items) generated by the diversified and interlinked land-based activities.

Intensive cropping programmes encouraging land use intensification has weakened the complementarities of the agriculture and livestock production systems and accentuated the process of decline and degradation of grazing space. The consequences of the breakdown of diversified production systems and indiscriminate resource intensification are manifested in various forms of resource degradation, fall in resource availability and resource productivity, and the degree of desperation in people's responses to the deteriorating situation (Jodha, 2001). It has led to adverse economic and ecological consequences in contemporary rural society, where survival, sustenance and growth are intimately linked to the health and productivity of the surrounding natural resources. Environmental degradation is a major causal factor in enhancing and perpetuating poverty, particularly among the rural poor, when such degradation impacts soil fertility, biodiversity, phytomass availability, water availability, pastures, forests, wildlife and fisheries (National Environmental Policy, 2006).⁶

The crisis is also a manifestation of institutional apathy. Neglect of traditional institutional arrangements and the customary rights of people in the institutional solutions proposed under the different policies and programmes have raised the concerns of legitimacy of these institutional arrangements among those who are directly dependent on them. Programmes for decentralization based on a prescriptive top-down approach without an understanding of the local social-cultural dynamics and the economic and ecological conditions have failed miserably. This has drawn the attention of policy makers to 'local solutions' as an alternative to centralized governance or market led solutions to address issues of environmental degradation (Ostrom, 1990; Chambers, 1983).⁷ Since the 1990s there has been a shift in the policy paradigm towards more participatory forms of development in general and natural resource management in particular, as reflected in the 73rd amendment of Constitution enabling greater role to Panchayati Raj Institutions (PRIs), the introduction of the Joint Forest Management arrangements, and recent Acts such as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) and Forest Rights Act.

However, several challenges remain at the institutional terrain in order to realize the potential of this shift. Studies on institutions have indicated that human-environment interactions take place at multiple scales and are impacted by and influence the wider social-ecological-economic-political settings (Ostrom, 2009).⁸ Governance arrangements at any single level - whether international, national, regional or local, cannot provide solutions for the overarching challenge of governance of natural resources. At the local level, while the user groups have comparative advantages in gathering and maintaining knowledge of local ecological complexity that would be costly for governments to collect, communities may have comparative disadvantages in managing large-scale natural resources and environmental pollution problems. Even at the local level, wide variations exist in the processes through which community manage their natural resources and the resultant outcomes. Extensive study of communities of users has established that polycentric arrangements

⁶ Government of India. 2006. National Environment Policy 2006, Ministry of Environment and Forests.

⁷ Chambers, R. 1983. Rural Development: Putting the Last First. London: Longman; Ostrom, E. 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. New York: Cambridge University Press.

⁸ Ostrom, E. 2009. "A General Framework for Analyzing Sustainability of Social Ecological Systems". *Science* 325 (5939) (24th July: 419-422).

that enable users to develop rules and organizations at multiple levels can work effectively (Ostrom et al. 1978; Bromley & Feeny 1992; Ostrom & Parks 1999).⁹

In the present context, effective formal and informal institutions have not been crafted to protect, develop and manage common lands. The creation of new institutions at hamlet, revenue village or higher levels, required for effectively and efficiently managing resources, usually bypass the Panchayati Raj Institutions (73rd Constitutional amendment), which are the bedrock of local self-governance, have Constitutional mandate, and automatically include every adult citizen as a member of the Panchayat Gram Sabha (Chandrasekhar, 2011).¹⁰ Results of Joint Forest Management (JFM) have been, at best, mixed, in terms of providing access to the communities to limited NTFP. Panchayati Raj Institutions have, on the whole, shown limited capacity to manage and develop common lands and to prioritize MGNREGA and other developmental funds for CPRs. At times, these have also come into conflict with community-led initiatives, both traditional and facilitated by external agencies. In a context where conflict over the management of resources is likely to intensify and governance issues are likely to become increasingly complex, there is a need to review the current status of the Commons keeping in mind their contribution to the livelihoods of the poor and vulnerable communities.

STUDY OBJECTIVES

There are three interlinked objectives of the study:

1. *Assess the contribution of CPRs to farming and livestock systems sustainability:* Usually located in the uplands, common lands play an important role in the flow of water, fodder and nutrients in the landscape. While most of the literature on the Commons highlights their importance as a safety net for the poorer households, the critical ecological functions of the Commons and the resource flows generated thereby for agricultural and livestock production are rarely, if ever, highlighted. This study, therefore, aims to identify and establish the critical role that the Commons continue to play in different ecological regions and across varied production systems like agro-pastoralism, mixed farming systems and forest dependent livelihood systems.
2. *Assess the contribution of CPRs in reducing household livelihoods vulnerability and strengthening their resilience:* The study also seeks to understand the criticality of common pool land resources in the livelihoods of the poor and most vulnerable sections of the rural communities and their role in ensuring the resilience of the households by functioning as a cushion against shocks and as a subsidy. In other words, we seek to map out the key stakeholders in the Commons across different socio-economic groups. Also, while most studies focus on the use of the Commons by the poor, this study seeks to capture the household dependence on the Commons across landholding and social categories.
3. *Map out the institutional environment influencing the governance of CPRs:* In the light of the significance of the Commons, the study has explored the diverse institutional environments that influence the relationship of different socio-economic groups with Commons and determine the influence of community institutions on household's access

⁹ Ostrom, E. and Cox, M. 2010. Moving Beyond Panaceas: A Multi-tiered Diagnostic Approach for Social and Ecological Analysis. *Environmental Conservation* 37 (4): 451-463. Foundation for Environmental Conservation 2010.

¹⁰ Chandrasekhar, L. 2011. *Undermining Local Democracy: Parallel Governance in Contemporary South Asia*.

to Commons. It reviews how common property regimes are perceived by different communities (caste and class groups) in a village and how they perceive their role in the development of the Commons. In order to arrive at an informed understanding of the structure and systems of the CPR (common pool resource) management institutions and what needs to be done to strengthen them in terms of participation and their representation in other formal (Panchayati Raj Institutions, JFM committees, Charagah or Grazing Land Committees) and traditional institutions (Jati panchayats, tribal councils, etc) at the local level. The study has sought to ascertain if the Commons constitute spaces for the poor and are a foundation for equitable development through a study of whether the households are just nominal participants or if they are playing a constructive and consultative role in the governance of the same.

METHODOLOGY

Scale and Sampling

The current study spans social, agro-ecological and agrarian systems in arid, semi-arid and sub-humid regions of India. It covers 3000 households across 100 villages spread over 22 districts in seven states and eight agro-ecological zones. The villages were reclassified into three ecological zones, viz. arid (covering 15 villages), semi-arid (66 villages) and sub-humid (covering 19 villages).

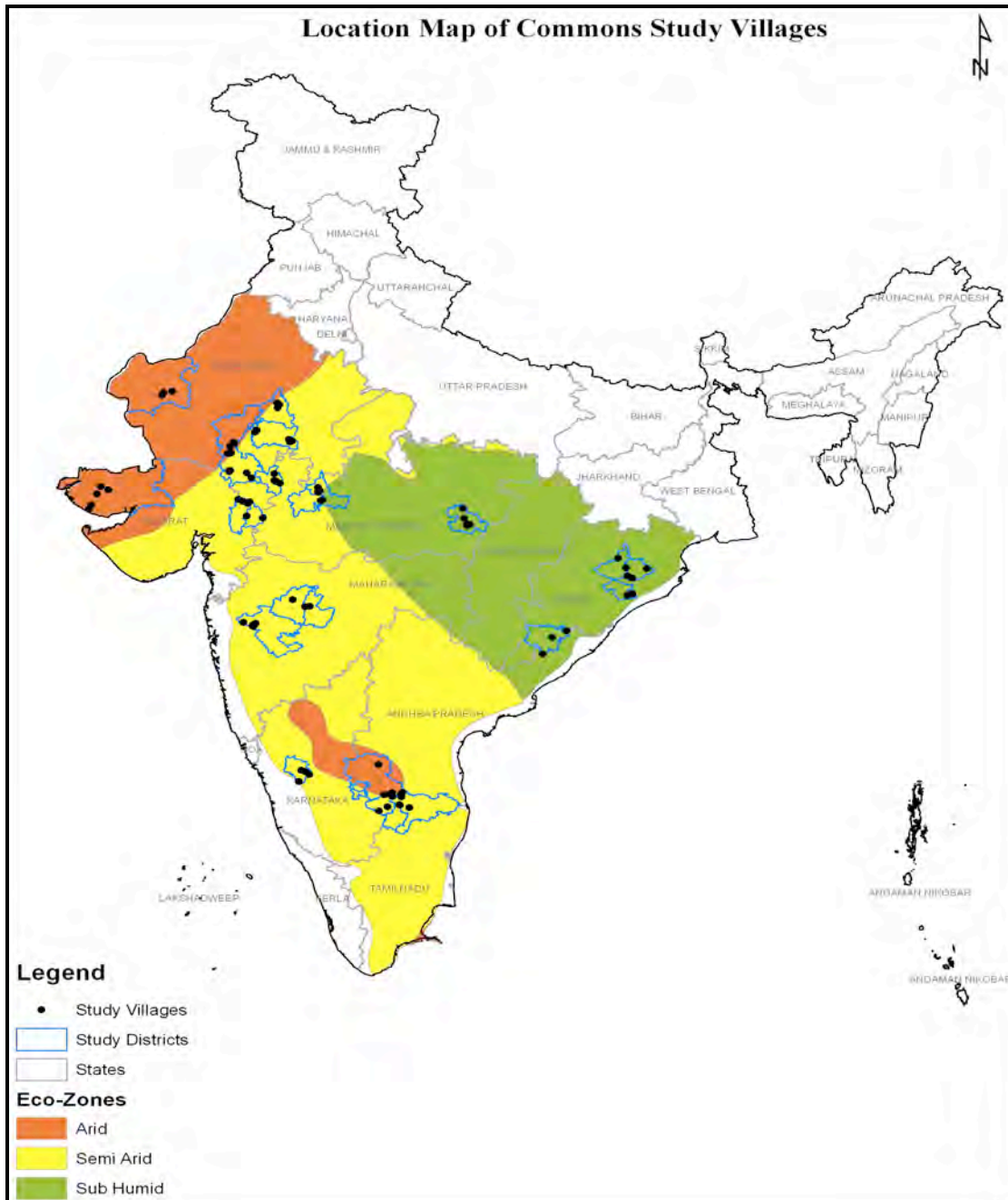
The main focus of the study has been to cover rainfed areas across different ecological regions (arid, semi-arid and sub-humid) in different states. The selection was guided further by the presence of local co-operators to help in the field work. This is a logistic requirement imposed by the nature of the study. The following table and the map indicate the areas where the study was conducted.

Table 1.1: States and districts covered under the study

State	Districts
Rajasthan	Ajmer, Bhilwara, Udaipur, Pratapgarh, Pali and Jaisalmer
Gujarat	Dahod, Panchmahal and Kutch
Madhya Pradesh	Ujjain, Shajapur and Mandla
Maharashtra	Ahmednagar and Aurangabad
Karnataka	Chikballapur, Kolar and Haveri
Andhra Pradesh	Anantapur and Chittoor
Odisha	Angul, Dhenkanal, Koraput and Nayagarh
Number of States: 7	Districts: 22, Villages: 100, Number of households: 3000

In the selection of study districts, care was taken to select those which are representative of the larger situation within the state. Village selection was based on the following criteria:

- Irrigated area less than 40% of the cultivated area
- Common lands, including forests, constituting more than 15% of the total geographical area



In addition, villages were selected to represent the diverse socio-economic contexts and to capture different types of common lands—revenue wastelands, pastures, forests, tanks etc- and institutional arrangements—self-evolved, non-governmental organization (NGO) promoted and government promoted. A master list of villages that met the above mentioned criteria was prepared and the final list of villages, where the questionnaires were canvassed, was drawn through a random sample. Random selection ensured that the villages chosen as a part of the sample were not necessarily those with better resource conditions and/or more successful institutions.

Once the villages were selected, a list of households, along with their respective landholdings, was drawn in consultation with the community. In large villages, one or two hamlets were covered and

the list of households was drawn accordingly. In each village, 20% of the households were surveyed following a proportionate random sampling process. The households were stratified based on the landholding sizes, as landless, marginal (0-1 ha), small (1.01-2 ha), medium (2.01 -4ha) and other category (more than 4 ha). For the purpose of analysis, the medium and other landholding category have been merged in the report.

Brief sample profile

The study covers a total sample of 3000 households wherein 370 households (12.3%) were from arid regions, 2224 households (74.2%) belonged to semi-arid region and 406 households (13.5%) were from the sub-humid region. Of the total households surveyed, around 37% (1107 households) of households were from scheduled tribes (STs) and around 12% (365 households) belonged to scheduled castes (SCs). This constitutes, as a whole, around 50% of the total households surveyed. Of the other households surveyed, around 17% belonged to general category and around 34% of the households were from other backward classes (OBCs). Landless households constitute 15.3% (459) of the total sample, marginal landowners 42.2% (1267 households), small 22.6% (677 households) and others 19.9% (597 households).¹¹

Study Instruments

Both quantitative and qualitative data collected through primary surveys, secondary data collection and focused group discussion. For the collection of data, household and village surveys and focused group discussions (FGD) were undertaken. This was done through active engagement and participation of organizations and the implementation of all the research instruments by staff of partner organizations.

The household questionnaire was administered among the households that were selected based on the criteria mentioned above. The household questionnaire aimed at understanding the status of livelihoods at a disaggregated level and establishing the links between the socio-economic standing of the households and the extent of their dependence on CPRs. Further, it aimed at understanding the role played by different households in the different institutions for the governance and management of CPRs, and the impact of these institutions, in turn, on the access and utilization of CPRs by the households. The questionnaire captured information related to income from agriculture, livestock, wage labour, migration and other sources, and the expenses incurred therein.

The village survey schedule was used to collect information on land, livestock, and other details pertaining to the entire village. This questionnaire was filled up using Patwari records (land data) and through group interviews with members of the communities.

Focus group discussions (FGD) were used to collect qualitative data, especially that related to various institutional aspects. While data on land-use, spread of CPRs and availability of various products on CPRs was collected with an intention to corroborate it with the state or patwari-level data, the main thrust of the FGDs was to understand the different rules and regulations that are extant under different socio-political and ecological conditions. More importantly, FGDs yielded a

¹¹ Details on the sample are provided in Annexure I.

rich harvest of anecdotes which helped us understand the findings from household and village survey and place them within the relevant context.

Conceptual and Methodological Challenges

Defining Commons

The study has used the *de facto* approach for understanding the dependence on common lands. By this approach common pool resources were extended to include all resources which were in use by the community by convention irrespective of ownership and even if they were located outside the boundary of the village. For the purpose of common land estimation, we have included all land resources used *de facto* as Commons excluding current fallows and agricultural area.

Measuring Resilience

Resilience is a temporal phenomenon which encompasses the ability of a system to adapt to different events which cause changes in the existing pattern. The resilience of a household is a measure of its ability to withstand stress and shocks. Stress could be market related, natural resource related or any other. Positive events could be something like giving *patta* (title) over forestland to tribals. All such events force the existing system to resort to adaptive or coping strategies like diversification of livelihood portfolio, improved governance, etc. They could also include strategies like migration, sale of assets, or over-harvesting from CPRs. These adaptive strategies could lead to both, mitigation of stress and an increase in vulnerability. While the coping strategies might contribute to the restoration of the system as it was, they might also lead to a new cycle of stress.

The limitation of the present study is that it is not based on time-frame data and therefore, does not capture resilience strictly as defined in the literature. However, by estimating the contribution of the Commons in the annual household income and expenditure, this study indicates the cushion that they provide to household subsistence levels and a glimpse into their importance for household resilience. At the same time, by contributing to household resilience, they also help in maintaining the rural production pattern with respect to agricultural and livestock production.

Estimating Income and contribution of the Commons to household income

Estimation of household incomes is widely accepted to be a challenge in terms of the range of conceptual issues it involves. This is especially difficult in the case of rural households with multiple livelihood strategies such as agriculture, livestock production, labour and migration. The nature of these strategies, for instance, is such that there is no assured level or a stable amount of income from them over a fixed period of time. There are also issues in terms of the amount of estimating the value of own labour in production.

Given these challenges, in this study, net household income has been estimated by calculating the income from the sale of products from agricultural and livestock production and renting out of inputs, income from agricultural and other wage labour, MGNREGA, services, remittances from migration and other sources, and subtracting from this, the expenditure incurred in the same. To this we have added the imputed value of income from the Commons. This includes income derived through the sale of different produce and the imputed values of produce used for household consumption. The value of produce collected from Commons includes the value of fuel wood, fodder

(both collected and derived through grazing), inputs to agriculture (for fencing, farm implements and soil enrichment), fruit and other edible products and other non-timber forest produce. Rarely recognized as such, the contribution of the Commons to the household economy subsidizes the expenditure incurred. We have chosen to highlight this as income (chapter 3) in order to indicate that in the absence of this contribution, the household would be deprived of a concomitant proportion of its income in meeting these needs.

Chapter 2

ADAPTATION: A Production System in Ecological Succession

PART I

Are Commons an ecological refugium or are they an ecological foundation on which a much larger production system is founded? For the most part, literature has tended to look at the Commons as some kind of 'safety-net', a 'refuge' to which vulnerable households and populations can turn to when all else fails. We seek to develop a more comprehensive understanding of the Commons, wherein they are recognized not only as 'safety net' but also as the foundation on which multiple production systems rest in a manner that strengthens their resilience. It is held that the closer the integration of the production system with the common property regime, the greater is its ability to bounce back from crises; and the weaker the links between the two, the more vulnerable these production systems are to external pressures. We will seek to show that common property regimes have historically had, and continue to have, a critical role in reducing these vulnerabilities. These inter-linkages may be direct, but more often they are indirect, and the challenge before us is to unravel the nested manner in which they operate.

The common pool resource use system is not a production system in itself. It is primarily a foraging system. In a sense it is not subject to the resource transformation that agriculture and animal husbandry are subject to. This is what sets apart the common property regime from the other resource use regimes, giving it autonomy from anthropogenic and other disturbances at least in principle. No doubt common property regimes function within a framework of socially constituted norms and conditions, but the resource base itself is not subject to manipulation, at least in principle. Therefore, while it is understood that common property regime does not exist in autarchic fashion, but that the changes it is subject to are not a function of its internal dynamics but a consequence of its externalities.

In contrast, animal husbandry and agriculture are production systems and not foraging systems. It is with these two primary production systems that CPRs engage. Both draw strong currents from CPRs and from each other. Animal husbandry has had strong links with CPRs. Livestock maintained on open access regimes has historically supported the largest section of the rural population. This is true not just of the nomadic pastoral system but also for a variety of conditions under which animal husbandry has been practised. Transhumance, oscillating between agrarian and pastoral domains, is the most obvious instance. But even the more sedentary forms of animal husbandry associated with agrarian contexts, more often than not, have exploited resources governed by open access principles, at least in part. In its own important way, agriculture also contributed to the maintenance of open access institutions, with fallow lands and post-harvest grazing providing valuable pasturage in interstitial spaces.

It is, however, unquestionable that these conditions have changed rapidly over the last many decades. Common pool resources (CPR) and institutions for their governance have seen a decline

both in extent and quality. As noted in the introductory chapter, animal husbandry based on open access regimes has witnessed perhaps a greater circumscription, and agriculture, far from building accommodative relationships, has become an increasingly exclusive domain geared towards the maximization of production. It is under these conditions that we need to look at CPRs and their relationship with the larger rural production systems.

Table 2.1: Households accessing Commons for various produce

Eco-regions	Households accessing commons for different usages	Agriculture	Livestock grazing	Fodder collection	Water for domestic and livestock purposes	Fuel wood	Food products	NTFP and other products
Arid	98.10%	27.00%	74.60%	4.10%	78.10%	78.60%	55.10%	26.80%
Semi-Arid	97.90%	54.20%	70.00%	25.50%	55.70%	69.30%	33.50%	33.00%
Sub-Humid	97.80%	73.40%	58.60%	26.40%	85.50%	91.40%	43.30%	73.40%
Total	97.90%	53.43%	69.03%	22.97%	62.47%	73.56%	37.50%	37.73%

PART II

We begin by asking the most elementary questions. Regardless of their identity, where they live or what manner in which they make a living—do Commons provide people with anything at all? In order to answer this preliminary question, we have presented in **Table 2.1**, data indicating whether members of the population studied accessed common pool resources (CPR) in any form whatsoever.

While this table does not indicate the dependence on or the significance of these resources to the user, it indicates clearly that regardless of the state of CPRs or their nature, in the study area, the overwhelming majority of members (approximately 98%) in the population continued to access the Commons for one purpose or another. It has been noticed that the Commons are used by people from different sections of the society to meet a variety of needs that range from agricultural inputs to fodder for livestock—both through grazing and through collection—to fuel wood. While in sub-humid regions, more people access CPRs for meeting agricultural needs, in arid and semi-arid regions, a large percentage of households access CPRs for the purpose of grazing their livestock. It may be noted that across all ecological regions, a high percentage of households access CPRs for the purpose of meeting their fuel wood requirements. In the case of both, households accessing CPRs for agricultural needs and for non timber forest produce (NTFP) and other minor forest produce, the percentage ranges from 27% in arid regions to 73% in sub-humid regions. A substantially greater percentage of households appear to access the Commons to graze their animals in the arid regions (75%) as compared to the sub-humid regions (58%), although in the latter also over half indicate that they access it. Without going into further details, it is apparent, therefore, that the CPRs are an important source for meeting various needs for a significant portion of the population across ecological regions.

Keeping this background in mind, the question that now arises is how important are these contributions for the livelihoods of the households. They may access the CPRs because they

exist, but it may not be a very important contribution. Thus, 69% of the population reported accessing CPRs for grazing, but how important are the CPRs to meeting the total pasturage needs? Although it is widely recognized that livestock production systems have had a close dependency on CPRs, it is also held that this relationship has been under considerable stress owing to the reduction in opportunities for open range grazing due to expansion of agriculture, as well as internal transformation of the production system towards intensification, leading to both a transformation in the nature of inputs into the system as well as a shift in the species composition of livestock.

To begin with, we look at the species composition of the livestock population in the study area. Has there been a shift in the species or has there been an overall increase or decrease in the numbers of livestock? This is indicated in **Table 2.2**, which gives the composition of livestock and change in their population between the year 1987 and 2007, based on data from Livestock Censuses for the respective years. The data given here pertains to seven states that have been considered for the study. Apart from the increase in the number of livestock from 242 million to 271 million—a rise of 11.67%—over a 20 year period, what strikes immediately is the decrease in the number of indigenous cattle by 18.19%. It is usually argued that indigenous cattle are gradually giving way to more productive species and breeds, namely buffaloes and crossbred cattle, indicating a change in the hitherto deeply embedded relationship between cattle and agrarian production and in the role that livestock have assumed in rural livelihoods. The other striking increase is in the population of sheep and goat by nearly 39.6% and 19.95%, respectively.

Table 2.2: Trends in livestock population 1987 and 2007 (in millions)#

Livestock	1987	2007 (P)	% Change
Indigenous cattle	98.4	80.5	-18.19
Crossbred cattle	3.1	11.65	264.11
Buffaloes	41.1	53.6	30.24
Sheep	38.5	53.7	39.63
Goats	57.3	68.8	19.95
Others	4.3	2.99	-30.63
Total	242.97	271.31	11.66

Livestock Census-1987 and 2007(P), P: Provisional
 Others includes horses and ponies, donkeys and pigs
 # Data for 7 states included Andhra Pradesh, Gujarat, Karnataka, Madhya Pradesh, Maharashtra, Odisha and Rajasthan.
 All the Districts classified in Ecological Regions – arid, semi-arid and sub-humid.

The two figures below give the relative distributions of species in the two years under comparison. It is most interesting that barring indigenous cattle which decline by a share of 10 percentage points in the total distribution, the other categories do not register a marked increase in the total share of distribution. The two species which have increased considerably in number show an increase of only three to four percentage points in relative share. Overall, we may say that the distribution in the population among species has tended to remain rather stable. The space vacated by native cattle seems to have been occupied not by buffaloes alone but by other species as well, quite possibly by small ruminants, since the base figure for crossbred cattle is too small to make an appreciable difference. If that is the case, the decline of native cattle may not necessarily reflect a shift towards more intensive forms of husbandry. This has important implications for the continuing role of open access systems, in particular common property regimes, in the livestock production system. It might be perhaps that the decline in native cattle reflects a deteriorating state of common pool resources and the condition of open access pasturage in general, with breeders shifting to smaller ruminants which can survive in harsher and less productive environments than even the indigenous cattle.

Figure 2.1: Livestock Composition 1987

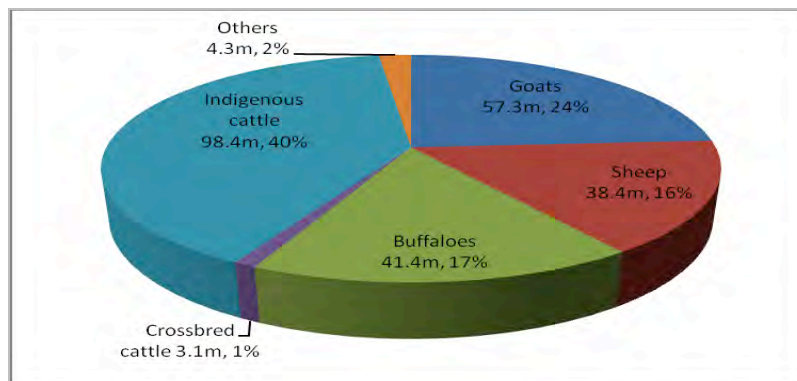
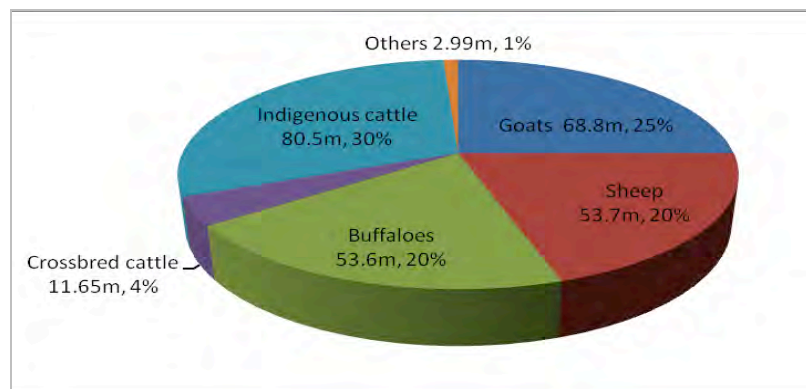


Figure 2.2: Livestock composition 2007



A closer look at these considerations may be had in **Table 2.3** where the same data as in Table 2.2 is given according to ecological regions. There are considerable differences in the environmental and production conditions in these three regions, which play an important role in shaping the differences discernible in the trajectory of livestock composition and growth. In the arid region, we see thus a modest overall decrease in the livestock population, with not only cattle but the sheep

population declining as well. Although the declining figure for sheep should be viewed with caution since sheep population can fall and climb quite rapidly in the course of a few years, it does seem that in the arid regions, there has been an overall decline in numbers, perhaps as a result of environmental deterioration or perhaps due to change in forms of land use or more preference for goats due to their sturdiness and acceptance as a better source of meat and milk.

Table 2.3: Trends in livestock population across eco-regions (in millions)

Livestock	Arid			Semi-Arid			Sub-Humid		
	1987	2007	% Change	1987	2007	% Change	1987	2007	% Change
Indigenous cattle	8.9	7.38	-17.47	54.85	40.94	-25.37	34.63	32.20	-7.02
Crossbred cattle	0.063	0.624	888.74	2.08	7.03	236.91	1.03	3.95	280.79
Buffaloes	4.66	6.17	32.41	29.08	36.42	25.23	7.42	11.02	48.49
Sheep	14.59	11.81	-19.00	20.43	36.25	77.41	3.46	5.66	63.74
Goats	12.72	14.46	13.67	33.86	38.16	12.72	10.76	16.15	50.12
Others	1.42	0.603	-57.63	1.92	1.34	-29.94	0.96	1.04	7.71
Total	42.42	41.07	-3.17	142.25	160.17	12.60	58.29	70.06	20.18

Animal Census-1987 and 2007(P)

Others includes horses and ponies, donkeys and pigs

Data pertains to 7 states – Andhra Pradesh, Gujarat, Madhya Pradesh, Maharashtra, Karnataka, Odisha and Rajasthan

The semi-arid region houses the largest livestock population and for that reason alone, what we make of the trends it shows, may help us in interpreting whether the production system is moving towards intensification or not. Of the major species, it is indigenous cattle alone that show a decline, and it is a moot question as to which species is replacing it. Consider this: while both the buffalo and sheep population showed a considerable increase, the increase of the latter was substantially greater. If we were to measure these increases in terms of comparable animal units, then both species probably show an equal increase in terms of the total animal biomass the ecosystem is supporting. At the same time, it is clear that a much larger number of animals have been added than can be accounted by the decrease in native cattle. What we cannot assume however is that buffaloes have replaced these cattle populations. In the context of an open range grazing system, sheep occupy an ecological niche that is much closer to cattle than the one to which buffaloes are adapted. Whatever may be the particular factors involved, we cannot discount the possibility that it is partly the sheep that are replacing the cattle in this production system, rather than the standard view which involves a shift from an extensive to an intensive production system revolving around buffalo and crossbreds.

The sub-humid region, even though it harbours the smallest livestock population, shows some interesting features. This region shows the greatest increase in livestock population and most interestingly, registers the lowest rate of decline in the population of indigenous cattle. The second largest ruminant population is that of goats which increases by more than 50% in this period, and although the sheep population is limited, it increases by approximately three times. At the same time, the buffalo population also increases by 48%. This pattern of growth of livestock species does not by itself indicate that this region has been witness to a transformation of the production system from an extensive type to an intensive one. Barring perhaps buffaloes, none of the species, whether cattle or small ruminants, need to be kept on intensive stall feeding systems generally. The possibility remains very much open therefore that this marked increase in population has come about within an open access system, within which CPRs might have had an important part to play.

Table 2.4: Trends in livestock population in study villages, 2003-10 (in '000)

	Arid			Semi-Arid			Sub-Humid			Total		
	2003	2010	% Change	2003	2010	% Change	2003	2010	% Change	2003	2010	% Change
Bullocks	-	-	-	7.6	6.7	-11.97	1.2	2.2	77.52	8.9	8.9	0.56
Indigenous cows	16.4	5.6	-65.52	8.7	8.5	-3.09	2.0	2.8	37.43	27.16	16.9	-37.79
Crossbred cows	-	-	-	0.29	1.4	394.06	0.043	0.038	-11.63	0.33	1.45	341.03
Buffaloes	5.5	7.8	43.32	4.2	5.6	34.01	0.506	0.361	-28.66	10.2	13.88	35.93
Sheep	21.05	15.9	-24.10	29.3	38.3	30.92	0.454	0.627	38.11	50.8	54.96	8.19
Goats	11.3	9.9	-12.83	17.2	15.2	-11.49	1.8	2.4	30.97	30.4	27.5	-9.43
Other animals	1.65	0.81	-50.88	0.40	0.47	15.20	0.11	0.13	15.45	2.1	1.4	-35.11
Total animals	55.9	40.2	-28.09	67.8	76.3	12.56	6.2	8.5	37.46	129.9	125.09	-3.762

Data presented here represents 78 villages.

Data collected from village records. 2010 data is based on primary survey.

While the associations that have been made above (between say buffaloes and intensification, or that between cattle and open access grazing, or regarding sheep and goats), are no doubt simplifications, however, they can be treated as useful rules of thumb. The point that we sought to introduce in these opening pages was that if indeed different combinations of species mix in a herding system are reflective of resource use patterns, we should be able to grasp the broad and pronounced tendencies. The above data, based on census records, while recording an enormous increase in livestock, seems by implication to be at odds, however, with the general view that there is a move towards intensive system of livestock production and that the Commons and open access grazing systems in general seem to be in historical decline. But is this really the case? Do we not have enough evidence that common property regimes have been relentlessly undermined? In the light of evidence pointing to such decline and the nature of change of species composition, what seems likely is that the marked increase in livestock population has come about within an open access system in which the Commons might have had an important part to play.

The Census provides data that is obtained on a very large scale. However, it may well fail to capture the nuances of resource relationships that come clearly across in investigations conducted on a smaller scale. **Table 2.4** provides data on livestock population for the years 2003 and 2010 for 78 villages in the same seven states discussed above. As is evident, the trends we see here do not match with the Census data, where, in contrast to the overall increase in livestock population (by around 12%), we see here an overall decline in the number of animals kept. It is striking that there are only two species in regard to which the two data sets match, namely the decline in native cattle and the increase in buffalo population. All the other trends are in greater or lesser degree at variance. The sheep population which in the Census data shows an appreciable increase of around 40%, the village data shows a modest increase of 8%. On the other hand, goats, which have seen a surge in the macro data, witnessed a 9% decline in the study villages during the period under consideration. While crossbred cattle do show an increase, their numbers remain exceedingly small. One class of animals not listed in the larger data set, the bullocks, is shown here as recording an increase of about 0.6% across the period.

This pattern holds true across all the sub-regions. In the arid region, in the Census data (Table 2.3) as well as in the village data (Table 2.4), we see a great decline in indigenous cattle. Again in keeping with the census data, the sheep population registers a fall. However, unlike in the Census data, there has been a decline of 12% in the number of goats in the arid region. Barring buffaloes, all populations register a fall in this region, even those associated with open access grazing systems. In the semi-arid regions, there is an increase in the total number of livestock. This is in keeping with the trends witnessed in the secondary data. The trends with respect to all the species are in sync with the larger data. The only exception is the population of goats, which saw a decline of 11% between 2003 and 2010. The sub-humid region is the only ecological region which shows an increase in the number of indigenous cattle. There has been a general increase in both sheep and goats. However, it needs to be pointed out that the instances of sheep rearing as compared to goat rearing are few and far between. Another significant trend seen in sub-humid region is that there has been an increase in the number of bullocks. The most interesting trend of all perhaps is that it is only in the sub-humid region that we see a decline of almost 29% in the number of buffaloes. This is quite unlike in the semi-arid region where buffaloes increased by close to 34%.

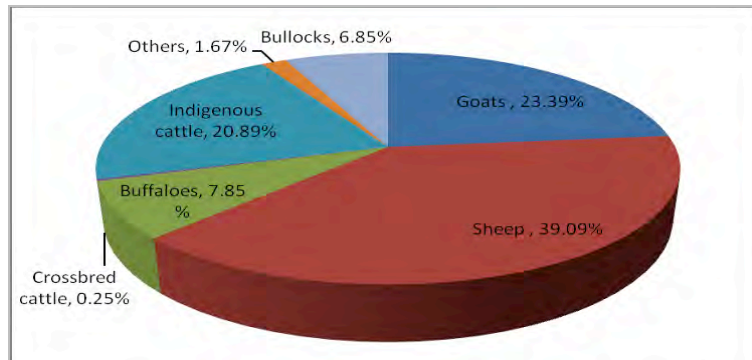
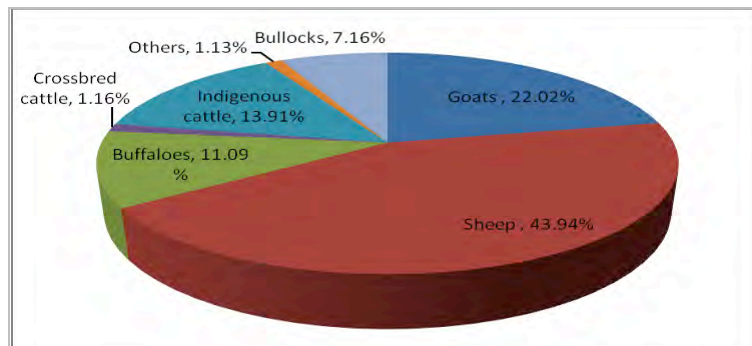
The arid region is scarcely an area where intensive buffalo rearing could progress at such a rate given the environmental limitations. This may be attributed to the fact that a large part of this buffalo population is in fact from Kutch, where they are reared in an extensive grazing system, not an intensive one. Thus, while the overall decline in livestock may well be linked to a decline in the viability of open access for grazing and a deterioration of biomass in general, the considerable increase in buffalo may reflect the intensification process only to a small extent. A similar argument may perhaps also be considered for the sub-humid region, where there has been an overall increase in livestock population despite a decline in buffalo population. While the cattle population registers an increase, it is the goats that increased much more considerably. The sub-humid region also shows the decline in buffalo and the overall stability in the total livestock population may represent the persistence and continued viability of open access systems than intensification.

In the semi-arid region, however, it is clear that all the animals associated with open range grazing are on the decline, barring sheep which are on the rise. As mentioned, sheep and goat populations fluctuate considerably, and it may be said that the goat decline is not a secular trend but a fluctuation. In that case also, however, it is evident that both the small ruminant populations seem to have tapered off. Keeping this in mind and the fact of an overall decrease in population, it would

seem that the crisis of native cattle marks something of a larger crisis in the livestock production system based on open range grazing. Agriculture is perhaps expanding, pastures are becoming scarce and overall an open range system is becoming unviable. What this means is that while the population of buffalo (and also crossbreds) is growing, the overall growth of the system is slowing down. If buffalo and crossbreds reflect tendencies towards intensification, then it does seem that an intensified system will not be able to support a larger, not to speak more diversified, livestock population, as one based on open-range grazing.

Support for such interpretation may be found in the two pie charts given below, indicating the overall species distribution in the two periods in the study villages. We see that apart from native cattle which drastically decline in proportion from 21% to 14%, the rest of the species mix that form the production system are more or less stable. Buffaloes, even as they increase considerably in numerical strength, add a mere 3% to the share in the total livestock population. Goats, even as they decline in number overall, maintain their share in the overall system. In the case of sheep, there is an increase, both in absolute terms and in their proportion to the total livestock population. Overall, the production system cannot be thought to have moved from an extensive to an intensive system. It is much the same system as before; it is just supporting fewer animals than earlier. Rather than buffaloes replacing the native cattle, it would seem that there has been an overall shift to small ruminants from cattle, indicating that access to resources is becoming increasingly difficult. It is unlikely therefore that the decrease in overall number of animals and the increase in buffaloes is indicative of a shift in the nature of production system.

The two sets of data that we see in the census and that obtained from the primary survey at the village level reveal very different trends as far as growth patterns are concerned, but they need to be interpreted in terms of the changes in the overall species composition. If we look at the pie charts, what strikes us is that sheep have a much larger share in the sample data (39% in 2003 and 44% in 2010), while in census data, the proportion of sheep to the total livestock population stood at 16% in 1987 and 20% in 2007. The share of goats in both village data and the census data are more or less same. While in the census data, buffaloes comprise about 20% of the total livestock population, in the sample villages, they comprise 8% (2003) and 11% (2010). It does make one wonder if the ecological niches formerly occupied by the cattle are now being taken over by the small stock and not the buffaloes. It is also evident that bullocks continue to be useful, and have increased in number even if their total presence is a small one. At the same time, since the mainstream argument of a shift towards animals producing greater quantities of milk is made within the context of increasing commoditization, it makes as much sense to produce another commodity for which there is demand if the ecological conditions of production favour the latter. In the light of the widespread resource degradation, including the degradation of CPRs, it makes more sense to keep species which can survive in poorer conditions than those with greater resource needs. This could well be the reason why sheep occupy such a large share of the species composition in the context of overall reduction in the livestock population, and why the goat population in both data sets has remained stable, in terms of proportion of the total livestock population.

Figure 2.3: Livestock composition in study villages, 2003**Figure 2.4: Livestock composition in study villages, 2010**

A further insight into these possibilities may be obtained if we look at the change in land use across different land categories for the states under study in the period between 1981 and 2001 (Table 2.5).

It is evident that common lands have seen an overall reduction in area. Along with permanent pastures and other grazing lands, other land categories that are *de facto* used as grazing lands like barren and uncultivable lands, and cultivable wastelands have all seen a decline by a sizable margin. Insofar as an open range system of keeping livestock is concerned, there is clearly a decline in the resource base available. How then is the animal population increasing as a whole? One compensatory source of grazing lies in the availability of pasture in agricultural fallow. Here, we can see that the area under current fallow has increased by a considerable margin. Grazing on stubble is an important source of forage for small ruminants, especially sheep, and perhaps here it seems that some amount of compensation has become available. The marginal reduction that we see in the net sown area complements this process, adding somewhat to the potential grazing available. However, it is unlikely that either of these two niches can quite offset the overall reduction of Commons in various forms, not to mention the probable deterioration in the condition of the forage. How then are we to explain the overall increase in livestock? A possible explanation in our view is that at a systemic level, the larger livestock population continues to be supported within the framework of an open access grazing regime, which lies at the core of the adaptive potential of the system, but given the attrition of the resource base, the species composition has shifted to smaller animals which can adapt easily to poorer conditions. The increasing availability of fallow lands probably has an important role here, as these provide for grazing in interstitial spaces. In an overall sense, what the system has developed is a mechanism for maintaining the overall biomass under production, by

increasing the number of smaller animals under the given ecological conditions. Livestock continue to be produced under an open access regime, but both the niche and the species composition have been modified, enabling the livestock system as a whole to retain its viability under adverse resource conditions.

Table 2.5: Land use pattern in selected States, 1981 and 2001 (area in million hectares)

	Land use pattern	1981	2001	% Change
1	Forests	27.61	27.0	-2.23
2	Permanent pastures and other grazing lands	7.39	6.46	-12.61
3	Other CPRs (a+b+c+d)	30.76	29.98	-2.55
a	Land used for non-agricultural purposes	7.95	9.10	14.34
b	Barren and uncultivable lands	10.49	9.87	-5.88
c	Miscellaneous tree crops and groves	1.12	1.38	22.91
d	Cultivable wastelands	11.18	9.62	-13.99
4	Total CPRs (1+2+3)	65.77	63.44	-3.54
5	Fallows other than current fallows	5.21	5.62	-2.96
6	Current fallows	6.31	7.79	23.46
7	Net area sown	67.04	66.31	-1.10
8	Total geographical area	144.35	142.61	

Source: Land use data of six states – Andhra Pradesh, Gujarat, Madhya Pradesh, Karnataka, Odisha and Rajasthan, Ministry of Agriculture

PART III

The contribution of Commons in meeting the fodder requirements of livestock, either in the form of grazing or as fodder that is cut and stored, forms an important part of the larger grazing system supporting livestock production. This production system cannot survive off Commons alone, but has to be complemented by a system of stall feeding that is based on purchased or cultivated fodder, or on a pattern of seasonal grazing on post-harvest stubble. The three pie charts given below indicate the relative proportion of feed obtained through Commons, through grazing on post-harvest stubble and crop residues, and that obtained from fodder that has been purchased or specifically cultivated for the three regions under study. It is evident from these charts that agriculture provides an extremely important feedback into the livestock production system in the form of post-harvest stubble grazing and crop residues. While this is true for all the three regions, its contribution is most substantial in the semi-arid region, where it provides the bulk of the fodder requirements. Whereas in the arid and sub-humid regions, crop residues play an important role in supplementing pasture grazing on the Commons in the semi-arid region, it is the main source of fodder. In contrast, the role of purchased fodder in all the three regions remains modest. Fodder from crop residues and post-harvest stubble form a part of both individual resource use pattern as well as a common property entitlement system. We are, therefore, dealing with complementarities

between agriculture and livestock rearing, but within the context of evolution of elastic resource use regimes. The domain of common property regime extends, therefore, well beyond its formally instituted boundaries to include conventions, practices and accommodative cultures that enable or maximize synergies between different types of production systems. Common property oriented cultures and relationships are, in a way, mechanisms that maintain the feedback cycles and complementarities between common pool resources and the rural production systems (agriculture and livestock keeping). Common pool resources thus contribute not just directly to production, but form part of a complementary system of resource utilization.

Figure 2.5: Sources of fodder in arid areas

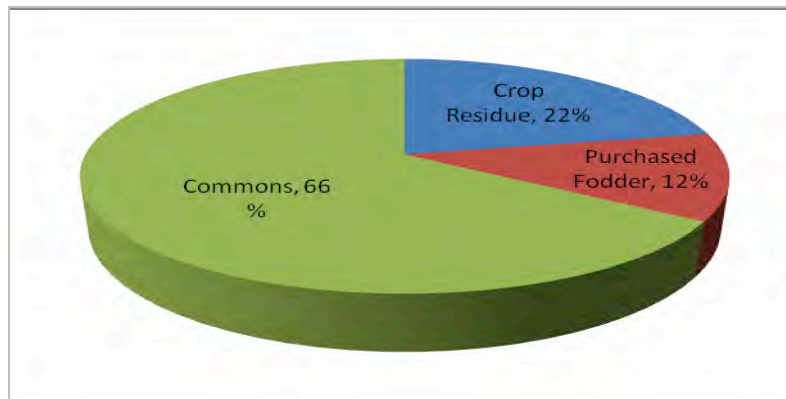


Figure 2.6: Sources of fodder in semi-arid areas

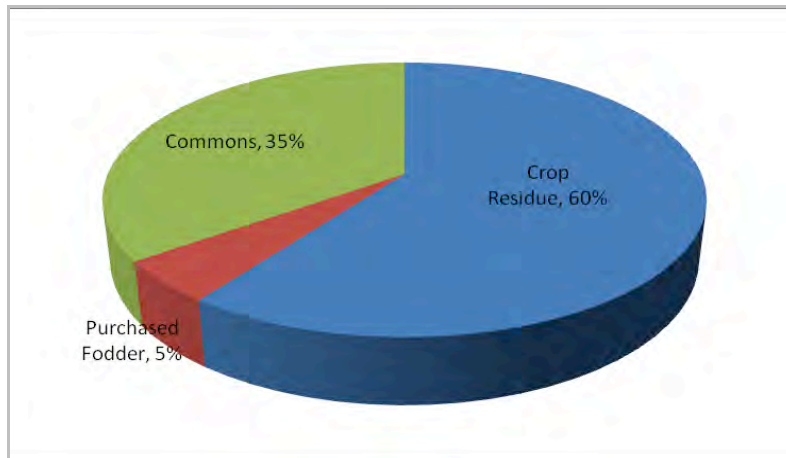


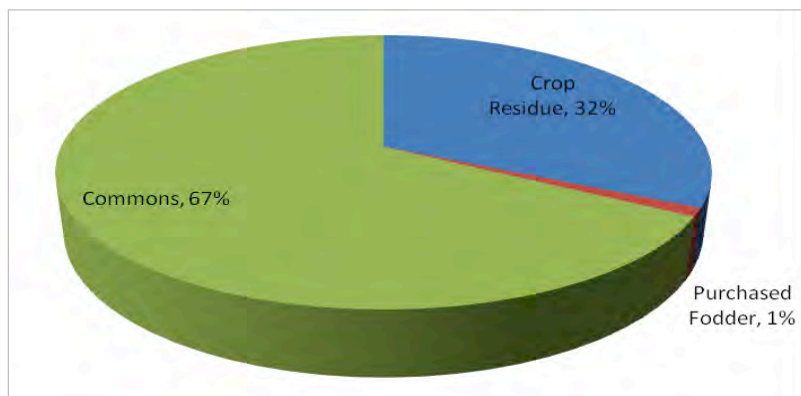
Figure 2.7: Sources of fodder in sub-humid areas

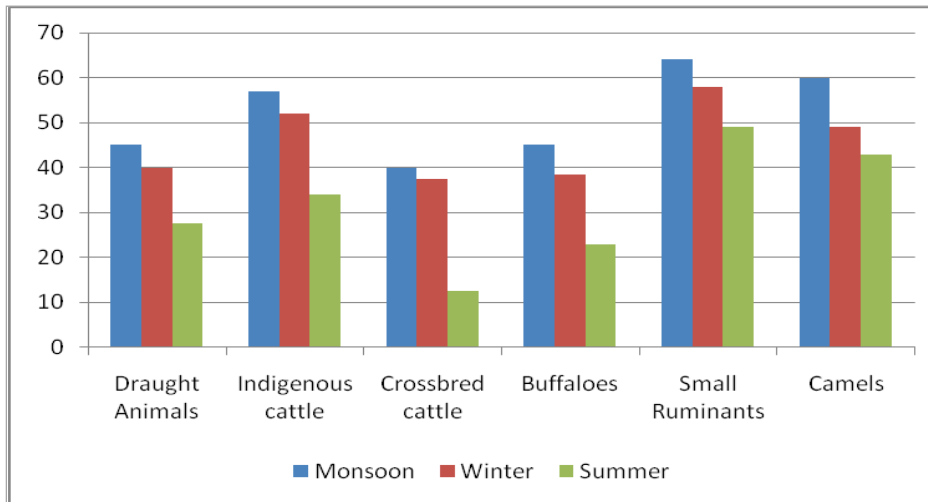
Table 2.6 records the contribution of the Commons to total fodder requirements of different livestock species across the eco-regions. The data clearly indicates that even in their present condition, the CPRs continue to provide a large chunk of fodder requirement of livestock. As expected, the Commons provide for well over 50% of the requirements of small ruminants. In the arid and sub-

humid regions, they provided three-quarters of the total fodder requirements. In the semi-arid regions, well over 50% of the fodder needs are met from the Commons. Keeping in mind that small ruminants are almost always maintained on an open grazing system, we can with some assurance say that these species would be practically impossible to maintain in the absence of common pool resources (CPR) for while both, large and small ruminants, are provided with occasional top feed, the only other source of grazing for small ruminants is the agricultural lands, where they graze on post-harvest stubble. However, this is also a kind of open access system. Native cattle breeds are also reared primarily on fodder obtained from CPRs. The stocks which show relatively low levels of dependence on CPR resources are crossbred cattle and bullocks. In the sub-humid region however, where the number of bullocks increased considerably in the sample villages, it may be seen that a very large part of their feed comes from CPRs. Buffaloes are also substantially dependent on CPRs in the study area.

Table 2.6: Percentage of annual fodder requirement met from Commons across regions and different livestock

	Draught animals	Indigenous cattle	Crossbred cattle	Buffalo	Sheep and goats	Camel
Arid	33.1	62.94	44.63	65.13	83.78	68.25
Semi-Arid	31.09	40.79	29.82	29.95	51.73	29.23
Sub-Humid	67.83	74.02	11.11	58.24	79.3	0

This dependence of livestock on CPRs continues through much of the year, as may be seen from the bar charts given here (Figure 2.8). CPRs form the key niche in the monsoon (July-October) periods, with all the livestock deriving more than 40% of their fodder requirements from the Commons. Even during winter (November-February), the dependence does not decrease much. In summer, which is the lean grazing period, CPRs provide for half of the grazing needs of small ruminants. Far from being a weak link in the chain of production, even under the present circumstances, CPRs continue to provide for all the major livestock groups throughout the year.

Figure 2.8: Dependence of different livestock on Commons in different seasons

Apart from contributing fodder for livestock, CPRs also provide inputs directly to the agricultural system. In **Table 2.7** the percentage of households accessing CPRs for various agricultural inputs and the contribution or significance of these as a percentage of the value of total

expenses on agriculture is given. While the contribution of CPRs to agriculture seems to be modest, it may be borne in mind that the indirect contribution of CPRs through manure provided by animals has not been taken into account in this table. The figure for dung contribution comprises only that which has been collected from CPRs, and excludes dung collected from penning and dung received through livestock sustained on Commons. We see, nonetheless, that around 15% of households collect silt, green manure and dung from the Commons. Collection of fencing material by households is a uniform feature across all the eco-regions with around 35% of households accessing Commons for the same. Considering that fencing is a recurrent need, this is an important asset in all the regions under study. The CPRs also provide material for a considerable proportion of farm implements, especially in sub-humid area, where 60% of households collect timber and other materials for making farm implements. On an average, the value of inputs collected from Commons for agricultural purpose constitutes around 15% of the total agricultural expense incurred by the household.

Table 2.7: Percentage of households accessing CPRs for agriculture and contribution of commons to agriculture

Eco regions	% Households accessing Commons for collection of agricultural inputs				Contribution to agriculture* (%)
	Irrigation from common water resources	Fencing material	Silt, green manure and dung	Farm equipment	
Arid	0.00%	26.80%	1.60%	0.00%	8.5
Semi-Arid	7.20%	34.10%	19.50%	20.90%	17.88
Sub-Humid	14.30%	47.80%	9.60%	59.90%	9.16
Total	7.3	35%	15.90%	23.60%	15.3

* Value of agricultural inputs collected from Commons as proportion of total annual agricultural expenses.

The influence of CPRs as part of seasonally modulated regime of extraction can also be seen if we look at the most vital of resources—water. **Table 2.8** shows the relative dependence of households on different sources of water, community resources (tanks, ponds, rivers), public utilities (hand pumps and community wells) and private sources (taps, tube wells and private wells), for meeting the needs of livestock.

Table 2.8: Livestock drinking source in different seasons across different eco-regions

Season	Source	% Households depending on different sources		
		Arid	Semi-Arid	Sub-Humid
Monsoon	Community sources	62.20	60.67	74.4
	Public sources	38.14	21.68	19.9
	Private sources	24.74	28.49	15.2
Winter	Community sources	46.74	51.51	74.1
	Public sources	37.46	28.10	20.6
	Private sources	39.86	31.34	15.5
Summer	Community sources	50.52	33.30	50.9
	Public sources	35.40	37.26	26.6
	Private sources	38.83	39.83	28.5

Common water sources are made use of by almost all households in different eco-regions. Even households with access to other sources make greater use of CPR sources in the monsoon and winter season. Across different eco-regions, the community dependence on common water sources for livestock is greater than the dependence on other sources.

Here again, the complementary nature of the relationship between different types of the water sources is remarkable. As in the case of fodder resources, the dependence on multiple water sources not only reduces the possibilities of over-exploitation by dependence on any single source. Like an open grazing system, the water utilization regime of livestock also works on similar principles of open access of which common property regimes are a part. As in the case of post-harvest grazing on stubble, in the case of water also, private wells can and often do provide water to animals not necessarily belonging to the owner at certain times of the year. The contributions of common water sources to agriculture are much less striking than in the case of livestock. It is mostly in the sub-humid areas that water from hilly tracts provides irrigation for fields. However, even in the Deccan, there have been historically well-established minor irrigation systems based on community principles. This apart, local water bodies have an important role to play in sub-surface recharge and maintenance of soil moisture in all the regions under study.

PART IV

In this chapter, we have in tried to trace some of the paths through which the Commons contribute to a much wider production system encompassing both agriculture and livestock. The broad question we have tried to explore is not simply whether the Commons will survive under contemporary production conditions but whether the larger livestock and agriculture based production systems would remain viable if the support provided to them by the inputs of the Commons were to cease. In the mainstream view, the widespread decline in native cattle is viewed as a general move away from the historical patterns of complementarities developed around agriculture and livestock based on open range grazing systems and towards an increasingly intensified form of livestock production. Our analysis indicates that the system is possibly moving from one form or type of open access system in which CPRs had a critical role to play to another form of extensive production system where the species composition has been adapted to the changing condition of the Commons. Intensification options seem to be limited in the long term direction that the system seems to be evolving. Recognizing that open access systems and commonly held resources are reducing in both quantity and quality, it has been argued that the shift from cattle represents an adaptation to the emerging land use dispensation in which small ruminants have come to play an increasingly significant role.

Chapter 3

STAKEHOLDERS: In the Commons

PART I

Having argued that the Commons constitute a foundation of agriculture and livestock production systems, we now turn to investigate who are the people benefiting from the Commons-agriculture-livestock complex. We begin with a brief discussion on the contributions of Commons to household economy, following which we take up more detailed analysis of the contributions of the Commons to agriculture and livestock production practices differentiated by social and landholding categories and by ecological regions, thereby locating these households in the context of the overall production system.

In the tables given below are the share of different sources of household income, including that from agriculture, livestock, from employment provided by Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), from labour and other sources, and the share of the imputed value of the income derived from common pool resources (CPRs)³. The data are compared across regions as well as across different social and landholding groups. From **Table 3.1** it is evident that the contribution of wage labour and other sources comprises a major share of the total household income.

Table 3.1: Percent contribution of different sources to household net income

Ecological region	Agriculture	Livestock	Labour and other income ²	MGNREGA	CPRs
Arid	4.04	28.06	35.15	5.49	27.27
Semi-Arid	25.32	13.22	35.16	6.44	19.87
Sub-Humid	26.33	2.50	28.90	3.45	38.82
Total	21.51	14.82	34.49	5.95	23.23

¹ The imputed value of the income derived from the Commons is the value of different produce collected by households from Commons, which includes incomes through sale of different produce and the imputed values of produce used for household consumption. The value of produce collected from the Commons includes the value of fuel wood, fodder (both collected and derived through grazing), inputs to agriculture (for fencing, farm implements and soil enrichment), fruit and other edible products and other non-timber forest produce.

² Includes income received from agricultural labour, other casual labour, remittances from migration, services and other sources.

Overall, we are dealing with a population that needs to earn in addition to what they obtain from agriculture and livestock. This seems to be especially true of the semi-arid region. Together with contributions from MGNREGA, the labour activities contribute around 40% of the household incomes in both arid and semi-arid regions, and around 32% of household incomes in sub-humid regions. Agriculture contributes a modest amount in arid areas and around quarter of the household incomes in semi-arid and sub-humid regions. Livestock provide a large part of the income in arid region, a modest one in the semi-arid region and a small one in the sub-humid region. In contrast to all this, CPRs contribute to a very large proportion of the total household net income, across all ecological regions. On an average, about one-quarter of a household's net income, in the entire population taken together, is derived from the Commons.

Table 3.2: Percent contribution of different sources to household net income across different landholding groups

Landholding category	Agriculture	Livestock	Labour and other sources	MGNREGA	CPRs
Landless	2.02	32.08	29.28	5.76	30.87
Marginal farmers	14.77	7.12	44.60	7.74	25.76
Small farmers	21.85	12.67	34.98	6.83	23.68
Others	38.12	14.96	26.84	3.65	16.43
Total	21.51	14.82	34.49	5.95	23.23

In **Tables 3.2 and 3.3** are presented the different sources of household income across landholdings and social categories. As such, the Commons or common pool resources (CPR) provide a very significant share of the net income for landless households. For marginal and small farmer households also, some 25% of the total net income is derived from the Commons. It is only among the somewhat larger land owning households that agricultural income provides a larger share of the total net income in comparison to that from the Commons. If we look at the social distribution of this aspect, we find that for two groups – scheduled tribes (STs) and other backward classes (OBCs), CPRs provide a quarter of the total net income. It also seems from the table that scheduled caste (SC) households do not derive as much from CPRs as the other social groups; rather, they derive a major proportion of their income from labour and other activities. Households from general populations, on the other hand, derive a considerably large part of their net income from agriculture and livestock, with net income from CPRs contributing around 16%. We have kept for last the comparisons between income from MGNREGA and CPRs. While it is evident that MGNREGA makes some contribution to the net income of SC and ST households, and to the landless and marginal landholding households, it nowhere matches the contributions made by CPRs. Across all the groups, the income from MGNREGA constitutes less than a quarter of the contribution from Commons. For OBCs and groups with land, who are often able to obtain more from the Commons, the income from MGNREGA provides for an even smaller proportion of their total net incomes. Given the considerable weight that has been attached to MGNREGA in the formal policy, however, these observations underscore like nothing else the enormous sustenance provided by CPRs to

rural livelihoods and the role that MGNREGA can play in strengthening the natural resource base in general and the Commons in particular.

Given this background, we now turn to an exploration of the social and economic characteristics of the population that have a stake in CPRs. While income from labour including remittances contribute significantly to the livelihoods of all social and landholding categories, neither of these form a part of the immediate context in which CPRs function or provide for these.

Table 3.3: Percent contribution of different sources to household net income across different social categories

Social category	Agriculture	Livestock	Labour and other sources	MGNREGA	CPRs
Scheduled Tribes	19.21	7.86	37.58	7.19	28.16
Scheduled Castes	24.44	7.00	45.27	5.44	17.86
Other Backward Classes	20.24	20.16	29.32	6.05	24.24
General	26.21	18.91	34.36	4.06	16.47
Total	21.51	14.82	34.49	5.95	23.23

We shall confine ourselves, therefore, to looking at agriculture and livestock rearing. It is true that the state of CPRs and their contribution to livelihoods also influence decisions on migration and labour employment, but in a way that is hard to quantify and substantiate. Agriculture and livestock, as has already been discussed in the previous chapter, are closely linked with CPRs and provide the basic structural categories through which the stakeholdership of CPRs may be usefully understood. The structural locations of CPR stakeholders are explored in the subsequent sections.

PART II

In this section, we look at the access to CPRs by households belonging to different social and landholding categories as well as the extent and nature of dependence on the same. In Table 3.4, the proportions of households, classified by landholding category, that access or make use of the CPRs for agricultural purposes are given. The data clearly shows that the marginal landholding households form what we might call the core group of users of the Commons for agricultural purposes. Across landholding categories, the proportion of households obtaining fencing material was the highest, followed by farm implements. In the case of green manure, silt, etc, we find, however, a significant proportion of small farmers also accessing the same. Overall, one may say that it is the small and marginal farmers who use CPRs most widely to meet various agricultural requirements.

Table 3.4: Percentage of households collecting different products for agriculture purposes in different landholding classes

Landholding category	Irrigation	Fencing	Soil nutrition*	Farm implements
Landless	0.70 (3)	13.50 (62)	5.40 (25)	8.90 (41)
Marginal farmers	7.30 (93)	41.10 (521)	14.90 (189)	32.70 (414)
Small farmers	9.60 (65)	38.50 (260)	22.20 (150)	23.50 (159)
Others	9.70 (58)	34.70 (207)	19.30 (115)	15.80 (94)

*This includes silt, green manure and dung collected from Commons.
Figures in parenthesis are number of observations.

If we look at **Table 3.5**, what strikes us first is that the weakest group in terms of vulnerability—the SCs—actually makes the least use of CPRs for agricultural purposes. Their engagement with CPRs is the weakest; a fact corroborated earlier when we saw that the greater part of their household income is derived from labour, migration, remittances etc. The STs, on the other hand, register the widest engagement with CPRs. Around 10% of the ST households obtain water for irrigation needs, another 13% obtain silt, green manure and so on, and over 40% of the households obtain raw material for farm implements, fencing and so on. The other group which shows a strong engagement with CPRs is OBCs and the general category. Almost half of them report that they accessed CPRs for one utility or another. The higher proportion of households using CPRs for silt etc. as well as fencing and farm implements among these groups is probably a function of the fact that they hold land and pursue agriculture.

Table 3.5: Percentage of households collecting different products for agriculture purposes in different social groups

Social Category	Irrigation	Fencing	Soil nutrition	Farm implements
Scheduled Tribes	10.30 (113)	41.80 (459)	13.70 (151)	40.50 (445)
Scheduled Castes	1.90 (7)	29.70 (108)	12.60 (46)	11.30 (41)
Other Backward Classes	5.40 (55)	32.40 (330)	16.40 (167)	14.00 (142)
General	8.50 (42)	30.00 (149)	22.70 (113)	15.90 (79)

Figures within parentheses are the number of observations.

We need to now look at the contribution of CPRs in terms of the percentage of total expenses on agriculture across social groups and landholding categories. In **Table 3.6**, the contribution of the Commons to total expenses on agriculture across landholding for each region is indicated. Here we find that, on an average, 12% of the total expenses on agriculture, across all regions and landholding categories, are met from CPRs. Close to 25% of the total inputs on agriculture are met from the Commons, as far as the landless (who lease land) and the marginal landholding

households are concerned. As the size of land owned increases, the significance of the contribution of the Commons as a proportion of the total expenditure declines, even though its absolute value increases. It is also interesting that the largest contribution to the total agricultural inputs comes in the semi-arid regions, whereas we have seen fewer households accessing Commons in other regions, indicating that the criticality of the Commons to those who use them is greater in the semi-arid region than elsewhere. Regardless of the region, we can say that it is the landless and marginal landholding groups that are critically dependent on the CPRs.

Table 3.6: Percent contribution of Commons to agricultural inputs³ across landholding categories and ecological regions

Landholding category	Arid	Semi-Arid	Sub-Humid	Total
Landless	2.42	50.12	7.85	25.14
Marginal farmers	37.93	23.6	10.81	22.14
Small farmers	4.74	7.31	8.34	7.31
Others	1.79	3.85	3.09	3.46
Total	8.5	17.88	9.16	12.84

The table on social distribution (**Table 3.7**) shows why the STs have a large stake in CPRs, as observed earlier in Table 3.5. On an average, around 25% of their total agricultural expenses are met from the Commons. It is also interesting that the sub-humid region shows a lower contribution of CPRs to the total agricultural inputs for all groups. This result is somewhat counterintuitive because given the higher availability of the Commons, one would have expected a higher contribution. As in the previous table (Table 3.6), the semi-arid region shows the highest contribution of CPRs to agriculture across all social groups, though it is considerably higher for the tribal households. The SC population seems to be obtaining a lower proportion of CPR contribution in agriculture, even though its value is higher than others. Given that this is a resource impoverished group, with high dependency on labour for incomes, it is important that their access and utilization of CPR resources be strengthened in order to enhance the resilience of their livelihoods. As we saw in the Table 3.5, OBCs are the second largest group of users who access CPRs for agricultural purposes. Although the contribution of CPR is not as high in their case as that for tribal and even SC groups, it is sufficiently important to warrant that the majority of them continue to have a stake in it. What comes across clearly from these tables is that while the Commons form an important core around which the livelihoods of tribal households are built, even in the case of other groups, agricultural inputs collected from CPRs reduce the agricultural costs by as much as 10 to 15%. Thus, while larger landowners and more privileged social groups obtain more from CPRs than the landless, the criticality of the Commons is greater for the latter. Even if we leave aside the indirect contribution the CPRs make through livestock and other common sources, the Commons are subsidizing agricultural production by rural households, thereby reducing their dependency on markets for the purchase of substitutes.

³ Agricultural inputs include cost on purchased and imputed value of seed, fertilizers, manure, hired labour, irrigation etc. Labour of household has not been valued.

Table 3.7: Percentage contribution of Commons to agricultural inputs across ecological regions and social categories

Social category	Arid	Semi-Arid	Sub-Humid	Total
Schedules Tribes	47.42	28.74	11.98	26.06
Scheduled Castes	11.07	16.64	2.17	14.36
Other Backward Classes	5.1	10.76	6.81	8.91
General	0.52	7.26	8.92	6.69

PART III

A greater dependence and wider stakeholder emerges in the case of livestock. In the table below (**Table 3.8**) is given the class distribution of livestock owning households as well as the percentage of total livestock population owned by households in each social category. As can be seen, more than 80% of the households in the sample keep livestock in some form or another, except the landless category, 60% of which keeps livestock. Livestock are, therefore, the only productive asset that a substantial number of resource-poor, including the SCs, possess. What should also be noted in this regard is that even among the SCs, where the proportion of households lacking assets is the greatest, around 40% of the landless possess animals. On the other hand, the complementary nature of the relationship between agriculture and livestock is borne out by the fact that a much larger proportion of the SC households with marginal landholdings also keep livestock (71%). Overall, however, livestock rearing among the SC population is less prevalent than among any of the other groups.

Table 3.8: Percentage of households keeping livestock and share of livestock across landholding groups among social category

	Landless		Marginal farmers		Small farmers		Others	
	a	b	a	B	a	B	a	b
Scheduled Tribes	6.75 (474)	58.88 (63)	51.00 (3581)	87.58 (575)	26.46 (1858)	93.94 (217)	15.79 (1109)	84.62 (99)
Scheduled Castes	12.22 (227)	41.57 (37)	49.17 (913)	70.83 (103)	14.70 (273)	61.43 (43)	23.91 (444)	88.71 (43)
Other Backward Classes	23.13 (2364)	72.81 (163)	21.96 (2245)	75.29 (270)	26.72 (2731)	73.09 (185)	28.19 (2881)	87.16 (194)
General	3.23 (107)	41.30 (20)	16.08 (532)	66.93 (91)	34.33 (1136)	81.10 (105)	46.36 (1534)	84.00 (178)
Total	14.16 (3172)	60.35 (283)	32.45 (7271)	80.27 (1039)	26.77 (5998)	80.50 (550)	26.63 (5968)	85.76 (527)

a): Percentage of livestock kept by the landholding group within each social class

b): Percentage of households keeping livestock in different landholding groups in different social classes

Figures in parentheses are the number of livestock kept and number of households keeping

Among the landholding categories, it is the marginal and small landholders who own the greater proportion of livestock across all social groups. There is no evidence that livestock holding decreases with increasing landholding. In fact, if we go by the data for the largest landowning group, namely the 'others' category, then it would seem that people who own more land tend to keep livestock than those who don't own land. Similarly among the STs, we see that if they own land, they are also more likely to keep livestock. The other population among whom livestock keeping is also widespread is OBCs. The interesting feature of this group is that not owning land does not inhibit them from keeping livestock, a reason for this being that most of the pastoralist and agro-pastoralist populations (Gujjars, Rebaris etc.) fall under this category. Overall, however, as we go higher up the land ownership ladder, the interconnection between land and livestock would seem to get stronger.

Table 3.9: Percent distribution of livestock in different landholding groups across different ecological regions

Landholding category	Arid	Semi-Arid	Sub-Humid	Total
Landless	51.55 (2045)	5.67 (939)	9.94 (188)	14.16 (3172)
Marginal farmers	11.19 (444)	35.65 (5900)	49.02 (927)	32.45 (7271)
Small farmers	6.76 (268)	30.96 (5124)	32.05 (170)	26.77 (5998)
Others	30.50 (1210)	27.72 (4588)	8.99 (606)	26.63 (5968)
Total	100.00 (3967)	100.00 (16551)	100.00 (1891)	100.00 (22409)

Table 3.9 further details the relationship between landholding and livestock holding across different regions. Barring arid regions, landless households do not seem to hold a significant number of livestock (this could be influenced, in part, by Kutch, where OBCs who are landless, own a large number of livestock—especially buffaloes). At the other end of the spectrum, 'other' landholding households are seen to be holding livestock in significant numbers, thereby proving that agriculture and, more importantly, land ownership, has an influence on the number of livestock. Thus, even though we are dealing with communities and groups with inherited social and other differences (both as advantages and handicaps), the primary correlation or principal factor shaping the social composition of livestock keeping is that of land. It is essentially the integrated nature of these two production systems that is being reflected in this association. A look at **Table 3.10** below further elaborates this relationship.

Table 3.10: Average land and adult cattle unit (ACU)⁴ holdings in different landholding categories

Landholding category	Arid		Semi-Arid		Sub-Humid		Total		
	Land in ha	ACU	Land in ha	ACU	Land in Ha	ACU	Land in ha	ACU	Average ACU per unit of own land
Landless	0	7.62	0	1.55	0	1.4	0	3.83	-
Marginal farmers	0.59	2.03	0.56	2.8	0.47	2.46	0.55	2.71	4.9
Small farmers	1.35	2.51	1.41	3.3	1.32	4.13	1.4	3.36	2.4
Others	7.59	4.17	3.93	5.04	3.11	3.55	4.51	4.82	1.1

In these tables is given the association between average landholdings in hectare per household for each landed category and the average holding of adult cattle/livestock units for each group as these are obtained in the three sub-regions being studied. It is clear from these tables that those holding more land are in a better position to hold a high number of animals regardless of the region in which they are located. Even though the marginal households are a major livestock keeping group, on an average, they will be found to keep fewer animals than small farmers or others. However, as is clear from Table 3.10, in proportion to the farmland available, the marginal and small farmers keep a significantly higher amount of livestock. This is represented in the table in terms of average ACU owned by different landholding groups per unit of their own land. While on an average, landless keep 3.83 livestock units without owning any land, the marginal farmers keep 4.9 livestock unit and small farmers 2.4 livestock units, in comparison to 1.1 livestock unit in other landholding category.

Keeping these considerations in mind, let us now look at the contribution of the Commons (**Table 3.11**) to these livestock-keeping households. Given below is the contribution of CPRs to livestock, as a percentage of total fodder requirements, in different ecological regions across different landholding categories.⁵ One thing we see clearly is that the semi-arid region shows the lowest contribution from the Commons, although at 37% it is not an insubstantial contribution. The Commons contribute far more to meeting fodder requirements in the arid and sub-humid regions. This is accounted for by open lands in the arid regions and well-endowed forest tracts in the sub-humid regions. Why is it, however, that the semi-arid regions report relatively low contribution from the Commons for meeting fodder requirements considering that the Commons make the

⁴ Adult Cattle Unit (ACU): Taking a reference body weight of 360 kilograms for adult cattle, the different types of livestock have been converted into a uniform number. For the study taking into considerations the locations studied, following conversion factors were used: One ACU= .75 adult indigenous cattle, .5 young indigenous cattle, 1 adult bullock, .5 young bullock, 1.2 adult buffalo, .6 young buffalo, 1 crossbred cattle, .6 young crossbred cattle, .15 goat, .15 sheep and 1.2 camel.

⁵ Annual fodder requirement of households were calculated based on the average biomass requirement of different livestock and their body weights. To calculate the proportion met through the Commons, an average of fodder requirement met from the Commons in the different seasons based on household grazing and feeding systems was taken.

maximum contributions to agriculture in this region? The explanation for this is that even though the Commons remain an important source of fodder in the semi-arid regions, it is from agriculture in the form of either crop residues or post-harvest grazing that the livestock meet most of the fodder requirements.

Table 3.11: Contribution to livestock from Commons (% annual fodder requirements met from commons)

Landholding category	Arid	Semi-Arid	Sub-Humid
Landless	66.95	41.06	54.33
Marginal farmers	45.58	35.15	70.12
Small farmers	42.92	40.5	68.73
Others	71.58	35.04	67.88
Total	63.69	36.79	67.56

In contrast to these regional differences, the variation in contribution does not seem to change much across landholding classes. While the landless do seem to depend more on the Commons than the landed for the fodder requirements of their livestock, including those in semi-arid regions, it is clear that for landowning groups, owning large tracts of land does not significantly affect their dependence on the Commons. Thus, one might conclude that unlike in the case of the number of animals owned by landholding, which tends to increase with size, the contribution that the Commons make to varying landed population tends, on the whole, to not change.

The data above give only an aggregate picture and in practice, the contribution of the Commons contribution varies according to the species maintained and the conditions under which they are maintained. In the tables below, we explore the distribution of livestock across different landowning groups and then look at the contribution of the Commons to different types of livestock.

In **Table 3.12** is indicated the proportion of different types of livestock owned by the various land owning groups. As we can see, while landless groups do keep small ruminants, the main body of small ruminant keepers is to be found in the marginal land owning group, small farmers being the other main stakeholders. There is, however, a slight variation in the case of sheep, for while marginal and landless classes do keep sheep, this particular species seems more closely held by the somewhat larger landholding category. In the case of the large ruminants, we need to first take note of the fact that the very large percentage of buffaloes held by the landless, reflects the influence of herds kept on an extensive pastoral system in Kutch (Gujarat). This apart, the view that buffalo keeping tends to be associated with larger landholdings does not seem tenable, since it is the marginal landowning groups that are the bulk of the stakeholders. The pattern in the case of bullocks also indicates a concentration among marginal groups.

Table 3.12: Distribution of livestock holdings across landholding groups (%)

Type of livestock	Landless	Marginal farmers	Small farmers	Others
Bullocks	4.8 (142)	42.65 (1263)	23.74 (703)	28.81 (853)
Buffaloes	37.02 (1081)	24.97 (729)	17.19 (504)	20.82 (608)
Indigenous cattle	10.34 (341)	35.21 (1161)	21.02 (695)	33.42 (1104)
Crossbred cattle	9.4 (47)	39 (195)	17.6 (88)	34 (170)
Goats	13.42 (807)	38.26 (2300)	25.53 (1535)	22.79 (1373)
Sheep	10.96 (776)	25.54 (1809)	36.1 (2577)	27.4 (1941)
Camels	19.69 (25)	7.09 (9)	3.15 (4)	70.08 (89)

Figures in parentheses are number of livestock.

In **Table 3.13**, data on the distribution of livestock holdings is presented across different social groups. In the case of small stock, we find that sheep are largely the constituency of OBC. In case of goats, we find that two groups - the STs and the OBCs - control most of the population, with the former covering a slightly larger proportion. Among large stock, buffaloes are mostly the domain of the OBCs with the STs owning the second largest proportion. Barring the SC population, crossbreds also appear to be kept across the board. Around half of the bullock population is maintained by STs. Moreover, indigenous cattle are owned mostly by STs and OBCs.

Table 3.13: Distribution of livestock holdings across social groups (%)

Livestock	Scheduled Tribes	Scheduled Castes	Other Backward Classes	General
Bullocks	49.94 (1479)	8.34 (247)	27.01 (800)	14.69 (435)
Buffalo	21.49 (628)	4.82 (141)	66.39 (1940)	7.28 (213)
Indigenous cattle	37.83 (1249)	8.51 (281)	35.32 (1166)	18.32 (605)
Crossbred cattle	30 (150)	3.8 (19)	41 (205)	25.2 (126)
Goats	40.28 (2423)	11.27 (678)	34.56 (2079)	13.88 (835)
Sheep	17.47 (1238)	7.17 (508)	59.25 (4197)	16.09 (1140)
Camels	3.93 (5)	1.57 (2)	30.70 (39)	63.77 (81)

Figures within parentheses are number of livestock

Table 3.14 gives the contribution of the CPRs to the fodder requirements of different types of livestock, owned by different social groups. Maximum contribution of the Commons to livestock is for small ruminants, regardless of who owns the animal and the number per household. The indigenous cattle are also highly dependent on the Commons regardless of the number of animals owned or the social groups they belong to. In case of bullocks, it is the ST population which shows a marginally greater dependence on CPR as well as holdings. We find here that buffaloes which are ought to be the archetypal stall fed animals are actually dependent on the Commons to a considerable degree. Even if we leave aside the figures for OBC, on an average, buffaloes obtain 25% of their fodder requirement from CPRs. In reality, therefore, there are a variety of conditions under which buffaloes are maintained, including where CPRs have an important role. In this regard, it is noteworthy that even large landowners do not reduce their dependency on CPRs for the requirements of their buffalo stock. Similarly, although the cross-bred population is low, they too depend on CPRs as much as buffaloes. Thus, regardless of social groups, all types of animals obtain between 25 to 60% of their grazing needs from CPRs.

Table 3.14: Annual fodder requirements met from Commons of different livestock across social groups (% of total fodder requirement)

Social category	Bullocks		Indigenous cattle		Crossbred cattle		Buffalo		Small ruminants		Camels	
	1	2	1	2	1	2	1	2	1	2	1	2
Scheduled Tribes	1.33	41.61	1.13	47.46	0.13	13.19	0.57	24.94	3.31	55.47		
Scheduled Castes	0.68	36.11	0.77	45.71	0.05	25.24	0.39	36.05	3.25	57.11	0.01	73.33
Other Backward Classes	0.81	34.82	1.14	47.68	0.2	31.97	1.85	46.56	6.11	60.09	0.04	57.5
General	0.85	32.8	1.21	48.06	0.25	36.74	0.42	30.93	3.95	62.33	0.16	33.33

1: Mean holding per household

2: % of annual fodder requirement met from commons

Table 3.15: Annual fodder requirements met from Commons for different livestock across landholding groups

Land category	Bullocks		Indigenous cattle		Crossbred cattle		Buffalo		Small ruminants		Camels	
	1	2	1	2	1	2	1	2	1	2	1	2
Landless	0.31	34.67	0.74	52.66	0.1	32.54	2.36	66.22	3.45	63.67	0.05	90.33
Marginal farmers	1	39.82	0.92	45.42	0.15	23.70	0.58	26.81	3.24	53.73	0.01	50.00
Small farmers	1.04	40.42	1.03	49.57	0.13	31.41	0.74	35.25	6.04	58.56	0.01	26.00
Others	1.43	33.54	1.85	47.94	0.28	34.35	1.02	35.76	5.55	63.85	0.15	47.84

1: Mean holding per household

2: % annual fodder requirement met from Commons

As seen from **Table 3.15**, the contribution of CPRs to livestock does not vary significantly with the amount of land owned. However, in general, the animals of the landless could be most dependent on CPRs. However, landowning groups with larger holdings of land remain dependent on CPRs possibly because they tend to have larger livestock holding. It may be noted that regardless of land ownership, it is the small stock which has maximum dependency on CPRs. At a broad level, one might suggest that dependence on CPRs is a function of the number of animals kept rather than social identity, and possibly that a large number of animals will require or be associated with a greater dependence on CPRs.

This is further explored in the two bar charts (**Figure 3.1** and **Figure 3.2**) showing the dependence on the Commons of small and large ruminants with changes in the size of holdings. For small ruminants, holdings have been classified as 'Small' (1-5), 'Medium' (6-10) and 'Large' (more than 10), while for large ruminants, they have been classified as 'Small' (1-2), 'Medium' (3-6) and 'Large' (more than 6). Figure 3.1 shows the annual fodder requirement met from the Commons as flock size of small ruminants increase. The data corroborates the above fact that dependence of small ruminants on the Commons is not contingent on the number of animals kept. Further, as flock size increases, households show a higher dependency on Commons. This is true for all eco-regions. In semi-arid areas where dependency on Commons is relatively lower in comparison to other eco-regions, a smaller number of animals can be kept in a grazing system only relying on agricultural and permanent fallows, but as the holdings increase, access to Commons plays a crucial role. In case of large ruminant holdings (Figure 3.2), keeping apart the sub-humid regions, the trends in dependence with changes in size of holdings is not much pronounced. In sub-humid regions, with increase in herd size, the dependence increases from 60 to 90% depicting a further reliance on an open grazing system. This may be possible keeping in view the availability of more forage resources. However, in arid and semi-arid regions, a more or less uniform dependence across herd sizes suggests the limits of pasturage and the ability of the resource system to support animals. So while large livestock owners depend significantly on the Commons and derive more from the Commons in absolute terms, the decisions to expand their herd is dependent on the ability to meet the remaining fodder requirements either from crop-residues or through purchase.

Consequently, while the contribution that the Commons make to agricultural production may seem useful but not critical so long as we take an isolated view of the agricultural system. As we know, it is not from agriculture alone that these households make their living. Therefore, the agricultural system cannot be viewed in isolation but as part of a more complex livelihood/ecological system in which livestock forms an equally, if not more, important part.

Figure 3.1: Size of small ruminant holding and dependence on Commons

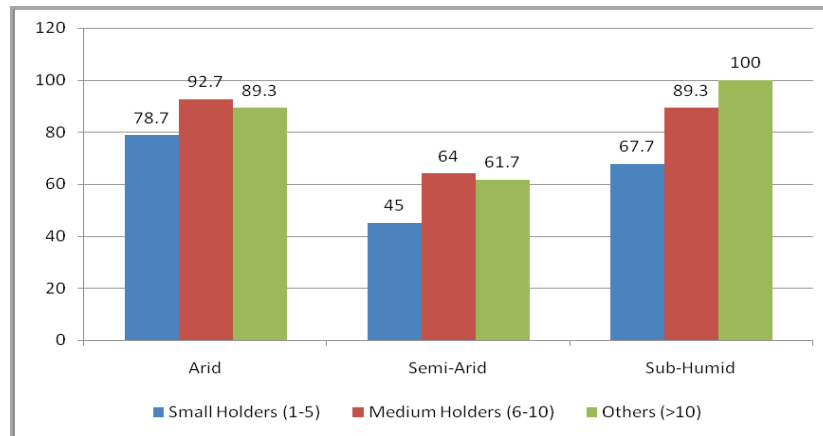
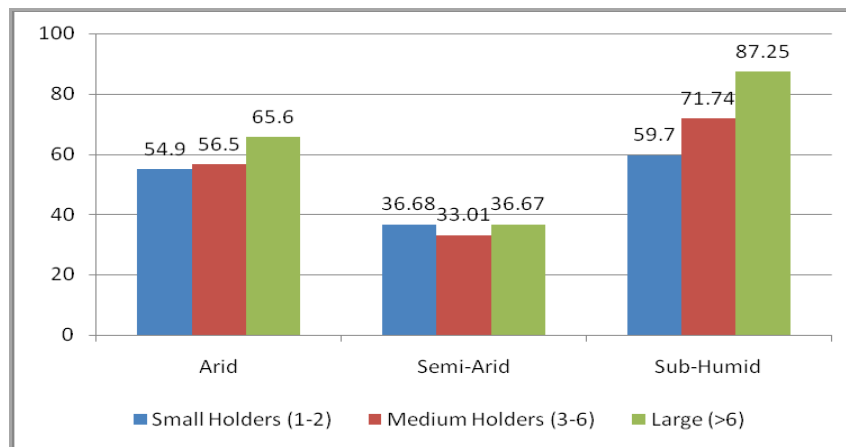


Figure 3.2: Herd size of large ruminants and dependence on Commons



Not only is keeping livestock a mechanism for balancing production risks, it forms a part of a system of mutualities in which one part of the production system provides support to the other, such as in the form of forage obtained from field or stubble grazing and manure obtained for cultivation and from animal droppings. The Commons contribute to the livestock production system, which in turn, is an input to agriculture. The important point is that the indirect contributions of the Commons through these reciprocities are in some ways more substantial than the direct contributions. When one system mediates or processes the resources into another, it adds value to what is being circulated. In itself, thus, while the contribution of Commons to agriculture may not always amount to a critical subsidy, as part of an inter-locking system of reciprocities, these contributions acquire much greater significance and perhaps criticality. Thus, while not everyone keeps livestock, it is more likely that we will find people who keep livestock but have no land. Households living entirely off wage labour will in most cases be bereft of both land as

well as livestock, i.e. they will be asset-less people. As we have seen above, bulk of the population is not in this situation, and it is because the agricultural and livestock systems have retained basic core of viability, that they continue to provide livelihoods. Having seen the critical integration between commons, livestock and agriculture, it is obvious that we need to recognize and strengthen the commons in underpinning them.

PART IV

As is well known, there are other important produce derived from the Commons, such as fuel wood and forest produce. Table 3.16 presents a summary statement of the percentage of households procuring forest produce, its share in the total value of produce collected from the Commons and the total fuel wood requirement met from the Commons.

In contrast to agriculture and livestock which are systems of primary production, the collection of NTFP does not form part of a production system, but instead forms part of a foraging system. The conditions affecting its viability are not determined by the same forces as that influencing the production system. Where the elements of foraging system persist, these can underpin the viability of agriculture and livestock-based production systems and play a crucial role in furthering their resilience. Thus, the role and availability of NTFP, for instance, in directly contributing to the resilience and functioning of livelihoods and agrarian production system can be more critical than the economic value of its collection. However, contemporary efforts towards CPR conservation have often contrived to change their basic character whereby they become subject to the imperatives of the larger production system. As a result, the resilience of the foraging system, livestock and agriculture becomes more vulnerable.

Table 3.16: Percent households accessing Commons for other products

Social Category	Households collecting produce from Commons (%)		NTFP as proportion of total value of produce collected from Commons (%)	Total fuel wood requirement met from Commons (%)
	NTFP and other produce	Fuel wood		
Scheduled Tribes	66.70	82.11	14.66	78.72
Scheduled Castes	45.80	75.62	9.89	66.16
Other Backward Classes	52.30	59.73	10.35	49.55
General	44.20	58.40	10.11	40.21
Landholding category				
Landless	59.30	83.88	12.95	83.25
Marginal farmers	55.10	74.03	12.08	66.56
Small farmers	53.80	63.81	11.66	49.07
Others	55.30	56.28	10.87	38.95

The first point that comes across is that collection of forest produce is independent of land ownership. Landless households collect forest products in a marginally more frequent way than the others. On the whole, well over half the population accesses CPRs for these purposes. On the contrary, collection of forest produce varies across social groups. A much larger proportion of ST households collect forest produce than SC households. While 50% of OBC households availed themselves of these, the 'other' castes accessed them in lesser proportion. The proportion of NTFP and other produce collected from commons to the total value of produce from Commons ranges between 10 to 14% across social groups. The ST households obtain the highest contribution from NTFP and other produce to their CPR income. Across the landholding categories, there is not much difference in terms of the share of NTFP in CPR income. This further corroborates the above point made that landownership has not much influence on households collecting forest produce.

If we look at data for fuel wood collection, we see an inverse relationship between the proportions of fuel wood requirement being met from Commons and size of the landholding. It is among the landless that the greatest proportion of households obtains fuel wood from CPRs. This decreases steadily until in the case of larger landholders, we find that only about 39% of total fuel wood requirement is met from the Commons. The point to be remembered nonetheless is that even among this last group, about 56% do access the Commons for fuel wood. The case of social categories also shows that there is considerable reduction in the use of fuel wood from CPRs, as we go higher up the social strata. Among the STs, close to 80% of total fuel wood requirement is met from Commons and in SCs it is around 66%. It decreases considerably among other social groups. This pattern and that for land both probably reflect the same fact that larger landholdings enable households to obtain fuel wood from their own holdings. Consequently, although fuel wood collection from CPRs and that of forest products do not directly form part of the agricultural or livestock production systems; they subsidize these systems by contributing to the household economies of these producers and thereby enhance the resilience and viability of these larger systems.

PART V

It is the Commons-livestock-agricultural complex which provides stability and security in an unpredictable environment and provides a degree of control in the lives of rural households. This security plays an important role in influencing the degree and type of dependence on the labour market. In its absence, a significant number would be reduced to accepting whatever labour opportunities are available, reducing them to penury. The Commons-livestock-agriculture complex enables these groups to retain a degree of negotiating power in the labour market. Livestock rearing provides a coping mechanism to deflect the crisis in agriculture. However, agriculture and livestock alone do not make for livelihood security; common pool resources are crucial in making ends meet. Agriculture in particular is not enough to enable these households to survive, for it has to be supported by labour, livestock and subsidies provided by the Commons. In contrast to the contribution of the Commons to agriculture, where with increasing land size, its criticality decreases; in the case of livestock, the contribution of the Commons remains constant or increases as the number of animals become greater. The contribution of livestock is more crucial because it is more closely integrated with the common property regime and is thus less vulnerable to external vagaries.

Livestock holdings are more equitably distributed than landholdings. This may be seen in the social distribution of the population under the study where unlike in the case of land, the largest category, i.e. the marginal landholders, also own the highest number of animals. In this regard, it was noted

that small ruminants are crucially dependent on CPRs and they are important for all, regardless of the amount of land owned or the social group they belong to. Livestock production system is also more socially inclusive as can be seen readily from the examples of landless households in our study. We find that landless households as well as those coming from deprived social groups derive far greater livelihood security from the commons especially through their ownership of livestock. The productive role of CPRs in combination with an open access system is also captured most visibly in the presence of pastoral groups who although bereft of land, have a high livestock holding. At the same time, the importance of Commons as the basis for livestock production system is no less for those with more land or coming from more privileged social groups. Similarly, in contrast to the common view that buffaloes are stall fed, it is clear that they too are considerably dependent on CPRs. To summarize, although the stakeholders in the Commons have its core constituency in the landless, marginal and underprivileged social groups; the other social groups and landholding classes also have an important stake in it.

Chapter 4

INSTITUTIONAL FAILURE AND THE COMMONS: People's Perceptions and Case Studies

The decline of the Commons, despite their continuing significance for rural livelihoods, has to be seen as a manifestation of institutional failure. Perceptions and reality of the institutional context, the management of common pool resources (CPRs) or the lack of it, can be one way to look at institutional failure in the CPRs. Rules and management regimes for different outputs of the Commons and its impact on the poor is another. At the same time, it is also important to investigate case studies of CPR encroachments as illustrations of institutional failure highlighting the contestation and usurpation of the Commons in different locations of our research in India.

We begin by reviewing household data regarding perceptions to the access of CPRs over a period of time for CPRs that are under some form of management regime as well as for those that are unmanaged. We analyse perceptions at the individual household level with the changes in the fodder and fuel wood extraction regimes with and some examples from the study areas to highlight some critical factors and conflicts over decision-making in managing these resources. Finally, we look at the issue of encroachment of common lands and water bodies, through examples from our study areas, to highlight a range of factors that result in the privatisation of the Commons.

We have highlighted the significance of CPRs for the livelihoods of the poor and for the ecological well being of the agro-pastoral system. Yet the Commons have seen a significant reduction in area along with an undermining of the institutional mechanisms that enable them to function. While the crisis of the Commons is more than just an institutional crisis, it is in the functioning of the institutional mechanisms that we can see the tensions and contradictions that could undermine it most visibly. As we have already pointed out, neither common pool resources (CPRs) nor the agrarian and livestock production systems function in an autarchic environment. They form part of a much larger complex of relationships in which land as a resource is contested and claimed. This contestation now extends beyond CPRs to even private lands (being acquired for mining, SEZs, real estate, highways, etc.). The contestation is becoming increasingly bitter, reflecting in local level protests and struggles all over India. The role of the state (understood here as more than just the government administration, and representing the interests of particular powerful sections of society) is increasingly coming under scrutiny for facilitating and partnering with the powerful and the elite for encroachment of the Commons, creating a crisis of legitimacy for the state institutions.

Local institutions concerned with the management of CPRs are not immune to the contestations of power within the village and from outside. These institutions, be it the self initiated forest protection committees in Odisha, NGOs promoted project management committees for village grazing lands, or even the informal association of pastoralists and farmers who come together on

common issues – they must deal with the more formal government recognised institutions including Panchayati Raj Institutions, the Forest Protection committees and Water Users Associations. In the case studies given in the third section of this chapter, we will discuss how this negotiation is happening.

PART I

People's perceptions on CPRs status and benefits

For the micro level CPR management institutions, even though the aggregate land resource use is constrained by the laws and policies at the national and state levels (in terms of forest laws, Charagah lands and Water bodies' use), there is greater space for local level contestation of claims. The management and governance of these resources is studied in this section in terms of perceptions of the people regarding the outcomes of access and control over the benefits from the Commons, within the larger macro constraints.

Table 4.1 gives the household perception of change in access over common lands (forests, pastures and other common lands) and common water bodies over the last ten years. The majority perception of households has been that the access to common lands and to common water bodies has increased over the past ten years. This is perhaps due to the larger sample size comprising villages with community-led CPR institutions. Yet, around 39% landless households report that their claims have diminished over time. Across other landholding groups too, around 35% of the households witness the same pattern. In case of access to common water bodies, it is the small landholding farmers who feel the greatest degree of alienation. Across the social groups, SC households feel the highest degree of estrangement happening with more than half the population reporting a decline in access over the Commons. This pattern also holds true for both the OBC and General households. In contrast, a relatively lower proportion of households among the ST households perceive a decline in their access over the Commons.

Table 4.1: Status of Access to CPRs in last 10 years

	Access to common land (%HHs)			Access to common water bodies (%HHs)		
	Improved	Declined	No change	Improved	Declined	No change
Landholding categories						
Landless farmers	50.54	38.88	10.6	75.2	18.2	6.7
Marginal farmers	60.08	34.70	5.2	61.3	25.9	12.8
Small farmers	57.58	36.50	5.9	54.1	32.0	13.9
Others	57.03	34.76	8.2	64.3	24.0	11.7
Social categories						
Scheduled Tribes	69.33	25.00	5.7	75.4	14.9	9.8
Scheduled Castes	39.52	52.79	7.7	38.5	47.1	14.4
Other Backward Classes	48.64	44.23	7.1	54.5	31.6	13.9
General	50.76	41.39	7.8	59.5	29.1	11.5

In **Tables 4.2 and 4.3**, we analyse the responses of households disaggregated for villages with and without CPR management institutions. The results reflect a clear trend in favour of perceived improvement of access by households in villages where CPR management institutions (formal or traditional) exist vis-à-vis villages where there is no CPR management institution. The implication is that CPR management institutions have had a positive outcome on people's access to CPRs for accessing different products.

We examined the changes in villages with no community institutions in Table 4.2. Apart from the expected outcome that a larger majority of the households for villages without CPR management institutions would report a decline in access, the table also throws up another crucial point. While a larger majority of households across landless, marginal and small landholding groups show a declining access over common land and water bodies, a larger proportion of households in the other category see a strengthening of their claims over Commons. Across the social groups, it is the SC and OBC households who lose the most. The perceived improvement in access to the Commons by the ST households, may be a result of the greater participation and control over the forest lands in our sample villages in Orissa, south Gujarat and south Rajasthan, where access to forest lands may have improved as a result of their informal claims and contestations with the forest department, without any formal institutional space created to achieve the same.

Table 4.2: Trends in Access to Commons in villages with no community institutions

	Access to common lands (% HHs)			Access to common water bodies (% HHs)		
	Improved	Declined	No change	Improved	Declined	No change
Landholding categories						
Landless farmers	31.1	58.9	9.9	47.6	52.4	0.0
Marginal farmers	33.2	63.6	3.2	23.6	69.7	6.7
Small farmers	28.4	67.9	3.7	36.7	61.2	2.0
Others	53.2	43.5	3.2	67.9	30.4	1.8
Social categories						
Scheduled Tribes	63.5	31.8	4.7	57.9	42.1	0.0
Scheduled Castes	27.6	66.4	5.9	25.6	72.1	2.3
Other Backward Classes	26.5	69.7	3.8	40.9	54.8	4.3
General	46.1	49.4	4.5	36.8	52.6	10.5

As expected, for villages with some form of CPR management institutions (formal or informal), a greater degree of households report improved access over common lands and water bodies (Table 4.3). Around 65% of households in marginal and small landholding groups feel that their entitlements are being strengthened. Even in the landless group, around 60% of households report an improvement in their access over common lands and more than a two-third of the population report the same for common water bodies. Though a relatively lower proportion of households in the 'Other' category report a decline in access over Commons, the households reporting an improvement remain quite the same in comparison to non-governed situations. The role of community institutions in ensuring enabling conditions for resource access and security of claims for the resource poor households is significantly brought out by the data. Even across the social groups, the two key stakeholders, STs and OBCs, see an improvement in their access over commons. In comparison, a larger proportion of SC households still report a decline in access over the Commons. Though this is significantly less in comparison to the non-governed situations, this could also be a reason for the lesser dependence of these households on the Commons as was shown in the previous chapter.

Table 4.3: Trends in Access to Commons in villages having CPR institutions

	Access to common lands (% HHs)			Access to common water bodies (% HHs)		
	Improved	Declined	No change	Improved	Declined	No change
Landholding categories						
Landless farmers	59.9	29.2	10.9	79.2	13.2	7.6
Marginal farmers	65.4	29.0	5.6	69.9	15.9	14.1
Small farmers	63.4	30.3	6.4	58.5	24.6	16.9
Others	59.5	29.1	11.4	62.9	21.4	15.7
Social categories						
Scheduled Tribes	70.0	24.3	5.8	77.0	12.3	10.7
Scheduled Castes	47.6	43.6	8.9	47.5	29.5	23.0
Other Backward Classes	59.0	32.3	8.7	60.4	21.5	18.1
General	53.1	37.4	9.5	62.8	25.6	11.6

The role of community institutions in ensuring greater access to the resource poor and underprivileged groups over common resources is critical. In absence of these institutions, a much larger section of households can get alienated from the Commons. A comparison of Tables 4.2 and 4.3 proves this point. The ability of the community institutions to secure the rights of the marginalised sections plays a crucial role in strengthening the resilience of these households. However, it should also be noted that the ability of institutions to protect the rights of its fellow members depends on and is influenced by the larger institutional environment. In such circumstances, around 30% of the households across all the landholding groups feel that their claims are not being protected.

One reason for households reporting a decline or no change in access to CPRs or no change could be due to their lower livestock holding and lower voluntary access to the Commons for fuel wood, NTFPs and other products. Households across different social and economic categories or for some of these categories may choose to lower their access to CPRs, irrespective of improved local management and governance. We have shown in Chapter 3 that the livestock holding pattern is skewed in favour of land owning categories. Increased dependence on wage labour could entail migration and reduced dependence on CPRs. For this research, however, we are not in a position to ascertain this differentiation.

Though our research data does not allow us to explore the factors influencing the sustainability of community institutions or the factors influencing the household perception of access to Commons irrespective of a CPR management institution, we can conclude that the lack of community participation in management and governance of CPRs and the lower level of perceived benefits from CPRs, together undermine the future of the CPR and the well being of the resilience of the vulnerable and poor households.

Rules and regulations under which the common pool resource (CPR) users access the Commons not only show a great diversity but also an increasing trend towards commodification. Though benefiting sometimes benefitting the household engaged in the varied product collection from the Commons, more often than not, it serves the interests of the few. The process of commodification in multiple ways starts reshaping the relationship the different social-economic groups have with Commons. At one level, this exacerbates the process of privatisation and control, while at another level, it undervalues the complexity of relationships in which the different components of the system are intricately linked to one another. Even in the context of livestock grazing, the intricate connection the livestock and Commons have, and the role of livestock in relocating the nutrients over time and space, is neglected in rules and regulations which aim to restrict livestock movements. Though it may be necessary to regulate livestock movements to allow degraded systems to recover, it is in the inherent bias against small stock, open grazing systems and differences in perspectives as to what amounts to sustainable resource use that we can locate the continuation of rules and regulations which restricts livestock movement. Community led CPR management institutions, or common property regimes, have a great potential to secure the claims of the resource poor in this dynamic institutional environment. Though the rules and regulations which they craft are as much influenced by the larger institutional environment and orientation, they have a greater scope to bring in the voice of the key stakeholders. This is reflected in the household's perception on improved access to the Commons in villages with community institutions. The presence of community institutions also enhances the potential of the Commons in strengthening household resilience.

PART II

Contestations over produce from the Commons and CPR management responses

In this section, we look at the two major outputs from common lands – fodder for grazing and fuel wood. We look at the different ways in which these are accessed, the CPR management regimes that determine access and the outcomes of these management regimes.

Grazing on Commons

There are mainly three grazing sources, lands that come under the forest department, revenue wastelands and pasture lands. Access to forest lands forms perhaps the greatest bone of contention. The Forest Department has claimed that approximately 30% of the fodder requirement of livestock comes from grazing in forest lands and that this it presents a threat to the forest cover. However, this is not proven by research studies and in the face of increasing restrictions on grazing in forest lands (even in JFM protected areas) which are being contested by many.

There exist considerable variations in the actual manner in which ostensibly standardized rules are implemented and the ways in which communities engage with them. While there exist local situations of acute conflict between local communities and forest officials such as ban on grazing for goats in Andhra Pradesh or ban on grazing of camel in Pali (Rajasthan), more often than not, herders find ways of circumventing official restrictions.

Opposition to animal grazing and finding means for restricting them is endemic to the perspective of the Forest Department. Whether it is Maharashtra where there is a blanket ban on grazing for all animals on forests, or in Karnataka where there is restriction on grazing for sheep and cattle, and an effective ban on grazing of goat, it is largely the owners of small stock and cattle who get the rough end of the stick. Elsewhere, such as in Madhya Pradesh, measures to tax animals grazing in the forest have been in place for a while. Even though with the passing of the Forest Rights Act (FRA), there has been a measure of recognition of the rights of grazers, the underlying bias, even hostility to the presence of animals in state-protected forests is pervasive. In practice, livestock keepers have to resort to various measures to access these forests. In Pali District, we found camel herders being compelled to make informal payments to local officials in order to gain access. The story is the same in many parts of the country.

The animosity to livestock, and in particular small stock, needs to be understood not only in terms of claims over propriety rights between state and shepherd but also as stemming from a basic clash in perspectives on what amounts to a sustainable use of forest resources. Grounded in a limiting concept of carrying capacity, the aim of forest management has always been to find means of reducing populations accessing forests. The dynamic seasonal use of forest resources that make open range grazing systems sustainable in the context of sustained use and capable of supporting substantial livestock populations does not figure in the thinking behind which the rules are developed. Exclusion is the inevitable corollary of an orientation that lends itself to the rhetoric of conservation rather than sustainable use.

In Revenue Wastelands (RWL), we can observe a greater diversity of regulatory conditions. RWL are the most contested resources. These lands are subject to a high degree of encroachment and are also the lands which mostly remain outside the purview of any institutional regulation. Seen as 'wastelands' by the state and under the ownership of the revenue department, these lands are usually the first to be allocated for mining, habitation, allocation of *pattas* to the landless, industries, SEZs, bio-fuel cultivation and several other purposes. These lands, in practice, often constitute some of the most valuable pasture lands, especially during monsoons when forests and agricultural lands are inaccessible. By and large, these lands are usually accessed by livestock keepers under an open grazing system without much of a regulatory system. However, the resources on these lands are sometimes auctioned with the effect of depriving community users of these resources. This can be illustrated from typical by examples from Ajmer, where tree growers cooperatives formed on RWL had put in place rules and regulations which restricted access to large ruminants only. Restrictions on

RWL affect the small ruminants directly as it forms an important resource base for which other animals by and large do not compete. However in other parts of the country even in RWL we find instances of effective ban being implemented such as in AP, Karnataka and elsewhere of more controls on grazing. .

Permanent pastures which are under the custody of the Panchayats are the *de jure* forms of the Commons accessed by livestock grazers. Though accessed usually by the habitations residing close to these patches, in principle, these lands are open for use by all livestock grazers within a particular Gram Panchayat. These are often the best pastures in a village having a high tree cover in addition to grasses, shrubs etc. Investments in these lands are usually minimal and, more often than not, Panchayats are interested primarily in what they can extract from them by way of auction. In some of our study villages, these lands are being governed by community institutions at habitation level. For instance, Panchayat Raj Sub-Committees in Karnataka, pasture land development committees in Rajasthan and village watershed committees have been some of the key institutional arrangements to establish local governance over these pastures. On these lands also, a diversity of regulations can be seen, influencing the access of livestock keepers. For e.g., in Karnataka and Rajasthan, grazing is carried out on a rotational basis, wherein these lands are closed for use for a certain period after the monsoons and are opened after the seeds have dispersed. The institutions formed have also devised ways like charging fees on a per-animal basis, in order to recover the operational costs like that of protection or maintenance and repair works.

From the above, we can notice that across all the resource types, the rules and regulations governing grazing have some elements which are mostly restrictive in nature and not always conducive to livestock keeping on an open access system. The bone of contention behind restricting, regulating and on the whole confining open range grazing system is the belief that these are inherently destructive and unsustainable. The development of cut-and-carry regulatory systems in a wide range of situations and institutional contexts has its roots in this assumption. While it should be recognized that restriction such as imposed through cut-and-carry regimes are often a necessary and important part of process of managing badly degraded systems and helping them recover, this is often translated into a view that it is open range grazing systems that are responsible for the degradation of the system. Once instituted, cut-and-carry systems are often difficult to reverse not only at an institutional level, but also because changes in the livestock composition take place as a result. Once the entire local production system has become adapted to a cut-and-carry regime, it invariably creates interests that will seek to further it. By and large, cut-and-carry regimes are more favourable to large livestock. In this regard, it is therefore extremely important to look at an actual comparison of these two systems of grazing.

In **Table 4.4** is presented a comparison of fodder requirement met from Commons in villages with open or rotational grazing systems and those with cut-and-carry systems. As can be seen, the proportion of annual fodder requirements being met from Commons under open range grazing systems is significantly higher than that in the case of cut-and-carry system. This is true for the various livestock species. In the case of indigenous cattle and small stock, the difference between the two reflects the importance of the support of the Commons maintained under an open access system. However, even if we look at buffaloes, it is clear that CPR-based systems can provide them with a substantial part of the requirements. With a cut-and-carry system, the more productive livestock like cross-bred cattle and buffaloes are maintained on higher amounts of cultivated fodder. The average animal holding of small ruminants shows that larger numbers of animals can be sustained on an open-access system than

through cut-and-carry. The much lower number of small ruminants under cut-and-carry regimes in many cases is a reflection of the stockholders' decisions to sell off small stock.

In **Table 4.5** is presented the proportion of total fodder requirements met under open and cut-and-carry regimes for resource-poor, which include the landless, marginal and small farmers, and more privileged categories comprising those holding more than two hectares. It can be seen that the 'Others' category has a definite advantage in terms of the accessibility in the cut-and-carry regime. However, the small ruminants reduce drastically, regardless of whether it is the resource-poor or the better-off categories. In contrast, for the resource-poor, open or rotational grazing has a definite advantage regardless of the type of livestock under consideration.

Table 4.4: Grazing system in village

	Open or rotational grazing	Cut and carry and rotational grazing
Annual fodder requirement met from Commons (%)	45.74	34.65
<i>Draught animals</i>	38.8	35.72
<i>Indigenous cattle</i>	49.25	38.66
<i>Crossbred cattle</i>	32.55	13.79
<i>Buffaloes</i>	37.72	30.57
<i>Small ruminants</i>	60.22	48.85
Average holding of small ruminants	4.77	2.34
Average holding of large ruminants	3.04	3.12

Table 4.5: Who gains and who loses?

	Resource poor		Others	
	Open or rotational grazing	Cut and carry and rotational grazing	Open or rotational grazing	Cut and carry and rotational grazing
Annual fodder requirement met from Commons (%)	46.45	33.63	43.43	44.21
<i>Draught animals</i>	41.4	34.58	31.74	47.11
<i>Indigenous cattle</i>	49.73	37.56	47.96	47.79
<i>Crossbred cattle</i>	29.07	16.85	39.27	0
<i>Buffaloes</i>	38.71	28.87	34.41	46.02
<i>Small ruminants</i>	59.01	48.02	64.57	57.2
Average holding of small ruminants	4.54	2.29	5.61	2.79
Average holding of large ruminants	2.73	3.06	4.18	3.65

Fuel wood and other produce from Commons

As in the case of fodder, access to and appropriation of fuel wood and other forest produce are governed by numerous norms, rules and regulations. Contemporary institutions may be more inclusive (as compared to the caste and class divided traditional institutions in some parts of the country and in terms of the participation of women), these are also seen as more oriented towards the market.

The Forest Department-initiated JFM Forest Protection Committees have norms that allow for usufruct rights to certain types of NTFPs while timber and certain high value products have different norms of extraction. Revenue sharing with local communities is based on the calculation of cost sharing for all costs of the Forest Department in developing the resource. Enclosure of forest land to grazing is a norm in all such ventures.

Timber is the preferred revenue earner for the Forest Department. In Kotra village in Dahod, the village community and the forest department under the auspices of the Forest Development Cooperative Society are growing teak on almost 200 hectares of forest land to be sold upon maturity (at least 20 years). While the community sees itself as a partner in this effort, and is investing considerable time and effort in the hope of getting returns at some point in time, experiences from elsewhere suggest that the relationship between the forest department and the community is not placed on an even keel and the returns may not necessarily meet the expectations; this is not to speak of the ecological costs that the community will have to pay when 200 ha of forest land is cleared. Interestingly, while formal Forest Department supported institutions arrogate to themselves the right to make cash income through the auction or sale of forest produce, a similar right is denied to households even if their very livelihoods are dependent on it. In Haveri district of Karnataka, for example, the livelihood of the *Lambani* community, which has been traditionally involved in collection and sale of fuel wood, has been adversely impacted

firstly due to a drastic depletion of the resource base and due to the fact that their concerns are not given any credence by the forest department and the other communities alike.

We now look at the various rules and regulations that govern appropriation and provisioning, and monitoring of fuel wood and other resources derived from CPRs. As discussed in Chapter 3, almost 74 percent of households in the study areas access CPRs for collecting fuel wood and around 38 percent of households do so for forest produce. One of the rules with respect to fuel wood that has been seen in almost all the regions is that only dry wood can be collected and that there is a ban on lopping or felling of trees to meet one's fuel requirements. While in some cases, the implementation of these rules is through social sanctions, in some others, punitive measures like the imposition of fines is operative. For instance, in Anantapur, a fine of up to Rs. 25 is imposed on a household for each head load of fuel wood. Similar rules exist with respect to products like timber and other forest produce. Even today, many households depend on timber from CPRs for construction or repair of houses, shelters for animals or for use during festivals. Institutions in many places have evolved rules designed to restrict the collection of timber. These include collection of fees, imposition of fines and enforcement of graded sanctions. At the same time, it has also been seen in places like Angul, that households are allowed to collect timber upon making a payment; however while families in distress are allowed to extract timber for free. Apart from fuel wood and timber, there is a wide range of products, including fruits, tubers, leaves, meat, honey, medicinal plants, water and so on, the extraction of which is governed by a range of rules and customary norms, some evolved by the communities themselves and others that are promulgated by the state.

It has been observed that the state rules often tend to undermine and overwrite indigenous knowledge of the management of forest resources. This and the eventual entry of the market forces have triggered a move away from sustainable harvesting practices towards intensification and commodification of forest produce.

This can be seen in the manner in which a number of forest products are harvested in parts of Orissa and Madhya Pradesh. Mahua (*Madhuca indica*) is an important product for the Baigas¹ in Mandla and other adjoining districts, culturally and otherwise. Traditionally, one or more trees are earmarked for each household which can harvest the fruit and flowers for the preparation of liquor. While sale of Mahua fruit and flowers has always taken place, it is only in the recent times that organized trade of these products is being carried out. Consequently, traders come to the villages during the harvesting season and buy the fruit and the flowers in bulk at a low price and hoard it. For the Baigas, whose lives have now transitioned to a cash-based economy, the money obtained through such a sale is fairly essential. However, the sale of these products has created a shortage for the households, compelling them to depend on the same traders who purchase from them, to fulfil their requirements. In this process, they pay a lot more than what they earn for a kilo gram of Mahua. Another example of commodification can be drawn from Gangaikoppa village of Haveri district in Karnataka, where fishing rights in tanks are given out on lease by the Village Panchayat which uses the money thus raised for the maintenance of the temple. In this case, though people have access to the tank for all other purposes, fishing rights are denied to them forcing people to purchase fish from the very people who have taken the lease.

¹ Primitive Tribal Group inhabiting large parts of Madhya Pradesh

While in the latter case, the community is stripped off its rights over fishing due to the decision of a few people, with respect to for the former, although it may appear that the decision to sell Mahua is at their own volition, in reality the community is compelled to give precedence to pressing financial concerns that help them negotiate a commoditized environment, over their long- term interests. Several other products in different parts of the country like tamarind, bamboo, *chironji* (*Buchanania Lanzas*), *harra* (*Terminalia Chebula*), are in a undergoing the similar process of commodification. While the income earned from the sale of some of these products, including tubers, fruit, medicinal plants, grasses, fuel wood, may not be insignificant, their true contribution is towards supplementing the dietary and livelihood needs of many households, especially in the case of tribal communities.

PART III

CPRs and conflicts in local institutional space

Conflicts over critical decision making around the CPRs, in the local institutional space, is highlighted by weak governance structure of the Panchayat and its capacity to engage with other institutions (JFM and other formal and informal CPR related institutions), and influence outcomes in favour of the poor. Various CPR management institutions have come up in the recent years for forests, other common lands and water resources. In Bhilwara (Mandalgarh block), Rajasthan study area (Mandalgarh block), it is observed that where village communities developed other lands (revenue wastelands of village grazing lands) as village woodlots, that are adjacent to the JFM developed forest lands, the Forest Department does not engage with the village community in developing rotational grazing in the forest lands and village woodlots, so that the land use is optimised. The village woodlot developed by the community on revenue wasteland is so thick with scrub and bush growth that it cannot be accessed for grazing by small livestock. Repeated requests to the Forest Department to open the adjacent JFM developed woodlot for rotational grazing has yielded no result.

The above example illustrates the contradiction and conflict between three local institutions – the village charagah development committee, the Panchayat and the JFM Forest Protection Committee, over the issue of regulation and land use for grazing. The Panchayat, that constitutes the formal decentralised governance authority, seems to have no influence in sorting out the problem. In this specific case, the presence of a political leader in the area and his political aspirations secured through the control over the vast tracts of forestlands overrides the local Panchayat. However, elsewhere too, where this factor does not operate, we do find instances where the JFM Committees and the village self protection forest committees or the village charagah development work exists in silos to each other. The Panchayat seems to exert no influence on the Forest Department and the JFM plots. Where the Panchayats are seen as influencing the CPR decision making, it is in promoting auction and sale of grass, tree fodder, fuel wood and other produce from Commons, to increase revenue. This is often detrimental to the interests of the poor.

Encroachment of Commons: Case Studies

Though the symptoms of crisis in commons is reflected in the action of community, either in the process of privatisation or in the processes which aims to control resource usage by one section of the community to the disadvantage of others, it is in the larger institutional environment that we can better understand the interplay of factors that undermine the Commons. Factors contributing

to encroachment range from policy failure, expansion of agriculture based livelihoods in tribal areas and elsewhere as a means of enclosing more land for private use, usurpation of land by the elites sometimes in the name of and through the allocation of common lands to the landless and by the government, the corporate and public sector, builders and realtors. Encroachment of CPRs can come with or without a change in land use but often as a result of the power dynamics leads to exclusion of the poor from either accessing these land resources, or from seeking an improvement in the same through community initiatives.

Usurpation of Commons by the elite (local and external) and coming in the form of state policy favouring the diversion of Commons to other uses (mining, SEZs, dams, etc.) or the privatisation by local landlords, realty developers and mining interests. There is a distinct trend in encroachment of Commons in favour of the elite. Although in a few instances, we do find that encroachment of Commons is also done as a defensive mechanism by the people to protect the commons from being taken over by outsiders or by state agencies, and not out of individual greed and desire to intensive land use for agriculture. In this section, we would seek to explore, through case studies, the various dimensions in which encroachment takes a form, the environments under which it emerges, and the nature of consequences it entails for those implicated.

Kutch presents a unique physical and cultural heritage of the world. It forms the largest and the most extensive CPR in the study area. Kutch is inhabited by Maldhari, Sindhi and Jat pastoralists. Covering an area of about 3000 square kilometres and 52 villages bereft of any agriculture or private landholding, the region is renowned for its unique eco system with its exclusive pastoral based livelihoods and a rich cultural heritage. Although arid, the area has a wide variety of grasses on which a pastoral based livestock economy has thrived over the centuries. This intricate socio-cultural and economic relationship with the resource is threatened by the decision of the state to open up this region to large corporate houses, dams and housing for ex-army officials. Even more threatening is the proposed plan to parcel out the entire tract of 3000 sq km among the various villages, and which would effectively restrict the existing open-range grazing. Large tracts of land have been allocated to the industry for mining. Natural drainage systems have been disrupted by dams and bridges constructed on the grasslands, leading to a decline in productivity of grasses and the emergence of salinity. It is against this background of a perceived threat to the resources on which their livelihoods are based that some members of the community have, in recent years, begun a gradual process of encroaching and privatising open pastures (especially around the main roads). Far from being an act of aggrandizement, the process of encroachment is seen to be going against the core values and cultural ethos of the community that held the grazing lands as common property for all. It is important to note that the encroachment has not led to a change in the land use (from grazing to agriculture or other use). The encroached area is fenced off but remains pastoral in use. The practice of encroachment is therefore not necessarily a means by which individuals seek to satisfy their greed. Here, it is nothing more than a measure to preserve the basic means by which they make a living.

In the forested tracts of Pratapgarh in south Rajasthan, inhabited mostly by the Meena tribe, the topography is consists of undulating hillocks and valleys with agriculture practised in the valleys and individual homes built on the small hillocks. The sloping land below the homestead on the hillock becomes the private property of the tribal family. This has been the traditional way in which tribal families have expanded in this region. In comparison to the adjoining hillocks which are also under the purview of the forest department, the slopes on the homesteads have a higher density of vegetation cover and greater biodiversity. Though the community has a high dependence on the

adjoining forestlands and have been willing to partner the forest department in conservation over the years, these have been gradually degraded, partly due to illegal felling and a lack of clear roles and responsibilities for the governance of the same. Encroachment of land therefore has not resulted in a complete system of exclusion or cutting down of forests. Whereas collection of forest produce has been entirely privatised, access to grazing remains seasonally open to all members of the local community.

The trajectories of communities encroaching lands can often represent the end game of a long cycle of engagement between multiple actors in the course of which what stands exposed is the powerlessness of the communities to protect their collective interests. An illuminating instance of this complex and convoluted process of state partisanship, private interest and community mobilization may be seen in the case of common lands in the Haveri District in Northern Karnataka, where after a long period of intense struggle, local communities eventually failed eventually to hold on, much less preserve, their community resources.

Common lands have been contested spaces for decades and have been diverted for industrial purposes in Karnataka, like in many other parts of the country. In Haveri and other districts of Northern Karnataka, one such move of the Karnataka state government to give away large tracts of forestlands and wastelands to the Karnataka Pulp Wood Limited (KPWL) - whose sole aim was to produce pulp wood for industries - was met with strong resistance from local communities. In spite of stiff opposition, KPWL cleared large tracts of rich flora and fauna including tamarind, sandalwood, indigenous fruit trees and others, which were extensively harvested by the people, to plant eucalyptus, acacia and pulp wood trees.

What began as a local struggle grew into a state-wide movement that received support from writers, journalists, activists, NGOs and people from other locations as well. The issue was finally settled in the Supreme Court that ruled in favour of the communities, directing the state government to return all lands that were taken over. Following this order of the Supreme Court, many efforts were made to restore lands to their original state and negotiate with the state government to form committees for the protection of these lands. However, the state government chose instead to hand over the lands to Karnataka Forest Development Corporation (KFDC). This move did not foster a sense of ownership among the people and eventually alienated them from their common lands. Over a period of time, with no clear demarcated tenure, these lands caught the attention of political forces, which parcelled them out to the landless, using this as a convenient strategy to nurture their political constituency. While there have been sporadic instances of resistance, local communities have not been able to organise themselves to contest powerful political forces. On the other hand, landless households, which have been cultivating on the land given to them, are being harassed by the forest department, in bouts of punitive retaliation.

Two questions that resonate during discussions with the communities here are: Who owns these lands? And who has the right to take decisions over these lands? At a larger level, the communities understood the importance of Commons to their lives and livelihoods and became a part of the struggle to reclaim their rights. However, the people were estranged from the common lands when an external agency (KFDC) was handed over the responsibility of governing these lands. Land remains a contested resource. This example illustrates how common land was used in the first attempt to alienate it from the people who had been accessing it for their use, and allocate the resource to a joint sector company. When this attempt failed, it was allocated to the landless communities as a part of a vote bank politics.

It is not always necessary for direct hostility on the part of state institutions to bring about a deterioration and eventual destruction of CPRs. This can also be achieved by neglect often calculated to favour dominant local groups. The process can be gradual but irreversible and is intimately tied up with the larger processes of change taking place in the production systems at the local level. An example of the kind which can be encountered time and again may be seen in the fate of Gomalas (Pasture Lands) and Gundu Thopus (Village Woodlots) in the villages of Chikballapur and Kolar districts of Karnataka. We find here that there has been an active and long term process of encroachment of these lands through the area. A recent petition filed under the Right to Information (RTI) Act shows that huge areas of Gomala lands have been encroached upon. In Shidlaghatta Taluka alone, a part of Chikkaballapura district, out of the 5,911 ha of Gomala lands, almost 4806 ha have been encroached upon; leaving a bare 1105 ha of land between the 26 odd Gram Panchayats. This process of encroachment has not been an uncontested one. Local communities dependent on these resources have time and again approached district authorities for proper demarcation and legal recognition of these resources. However, the Revenue Department has is yet to carry out a comprehensive survey of these resources. Behind the delay are the interests of powerful landed groups which have, by and large, been the ones to have encroached. It may be noted that the region has witnessed high agricultural intensification, with falling water levels and lowering productivity, an increasingly frequent occurrence. Expanding the area under cultivation is now one of the few options available to large farmers to sustain their production, and Gomalas and Gundu Topus are their natural victims. Even though the state does not stand here in an active confrontation with the local communities, by failing to act decisively, it has been an accomplice in contributing to the destruction of common resources.

In Ujjain and Shajapur districts of Madhya Pradesh, we witness a similar pattern of usurpation of CPRs by the local elites. Common lands are limited and vulnerability of livestock keeping communities is particularly high. Exacerbating the situation has been the state government's policy to reduce the mandated proportion of pasture lands to the total revenue land from 7% to just 2%; and to vest all District Collectors with the power to divert the land at their discretion without a resolution by the Gram Panchayat. As a result, the land has been usurped by the richer and more powerful rural elite including the large livestock keepers who felt threatened by the looming prospect of a decline in pasturage. They have been able to mute the resistance of the landless and the resource poor households by providing them employment in the encroached lands and crafting mechanisms for sharing resource in lieu of labour.

In the study areas of Ajmer in Rajasthan, people across all sections of the village community seems to be encroaching common lands. Getting them regularized and then selling them off to private parties for mining and other purposes has emerged in recent years as one option for these households in context of failing agriculture land. This is clearly a case where builders and mining agents have facilitated encroachment of CPRs for themselves, and the state has helped facilitated this process. There are reports of an entire village being sold to builders along highways. In a related development, large scale encroachment of common lands in Ajmer district also took place when Bisalpur dam was built and those displaced by the construction of the dam were allotted common lands of the from neighbouring villages. Seeing the disappearance of their Commons to outsiders, the villagers started encroaching common lands.

To conclude, encroachment of CPRs and the failure of institutions (both contemporary and traditional), is to a large extent related to the pressure exerted by the elite and the powerful, often backed by the government. Encroachment of CPRs can also happen as a last resort by the poor to

protect their livelihoods and the takeover of Commons by outsiders. Where encroachment of CPRs is occurring as a means of expanding the subsistence livelihoods, the state is resisting the same as witnessed in the conflicts in forest areas.

Institutional failure could be seen as a failure of the formal institutions at the local level (primarily the Panchayats and the higher level state agencies) in protecting the interests of the resource-poor. Institutional failure also needs to be understood in terms of the greater centralisation of power, of laws and enforcement, where the local voice is not heard and where public policy is increasingly excluding the poor. This perhaps explains why progressive legislation seems to be emanating from the federal government and not as bottom-up legislation from the states. It also helps in understanding why progressive central legislation including the Forest Rights Act has not had much success in legalising community rights over forest lands (very few community claims have been settled).

This does not mean that usurpation of CPRs through encroachment is going on without contestation. The earliest examples have been the famous Chipko movement in the hills of Uttarakhand, the north Karnataka movement and the Narmada anti dam movement. Recently, the certain strong people- initiated movements have been witnessed against the organised state and corporate sector land takeovers including mining in the forest areas and takeover of private lands by SEZs. Institutional failure in preventing encroachments of CPRs, in terms of formal institutional failure of Panchayats, JFM Committees and Water Users Associations, needs to be juxtaposed with the success that informal mass movements and peoples initiatives have had in the recent years.

Chapter 5

CONCLUSION

The larger question that we probed was not simply whether Commons survive under the changing production environment but also whether livestock and agricultural production systems would remain viable if support provided by them to commons would cease. The study, primarily focussing on the rainfed regions, argues that the subsidy derived from the Commons forms a critical contribution to both livestock and agricultural production systems. However, apart from its direct contribution to agriculture (i.e. besides benefits other than those derived from the larger geo-hydrological functions of the Commons), it is in the livestock-Commons interaction that the inter-connectedness of the system and its resilience can be located.

Revisiting the Key Findings

The study shows that in the changing production environment, the livestock systems are adapting from one kind of extensive production system to another, based on a shift in the species kept and also (and as a result) of the niches vacated by agricultural production systems. Our argument is that in an essentially unpredictable environment, it is the Commons-livestock-agricultural complex which provides stability and control to households over their lives.

Agriculture does not fully support household livelihoods, given the inherent unpredictability of the system, which is further aggravated by the changing nature of production. The study shows that support provided by labour, livestock and Commons are crucial to the sustenance of household livelihoods. In fact, the findings of this study show that higher the contributions from Commons and livestock, lower is the vulnerability of households and their dependence on wage labour. Livestock, which is more closely integrated with the common property regime, and relatively less vulnerable to external vagaries, plays a crucial role in this pattern of subsistence. Not only are livestock-holdings more equitably distributed, the dependence on Commons is fairly substantial across all landholding and social groups. Small ruminants, which critically depend on the Commons, form an important component of the system. Even where households have shifted to more intensive livestock species, such as buffaloes and cross-breeds, their dependency on the Commons continues.

The study highlights the continuing role of the Commons in household resource use patterns and its contribution to the household economy. Across arid, semi-arid and sub-humid regions, 20-40% of household incomes are derived from the Commons. The contribution of the Commons is highest in the sub-humid regions followed by arid and semi-arid regions. In all, 53% of households collect inputs for agricultural purposes from the Commons, 69% of households graze their animals on the Commons, 23% of households collect fodder from the Commons, 62% of households access common water bodies for domestic and livestock purposes, 74% of households collect fuel wood from the Commons, 37% of households collect food items for household consumption and 37% of households are engaged in collection of other NTFP from the Commons.

Some significant results also came up in terms of the value of the contribution of the Commons to rural production. It was found that 37-68% of annual fodder requirement of livestock in arid, semi-arid and sub-humid region are met from the Commons. Though the landless and marginal households are critically dependent on the Commons for livestock keeping, the dependence

does not decrease with increasing landholding or with an increase in the size of the livestock holding. In the case of agriculture, on an average, 12% of the total expenses across all regions and landholding categories are met from the Commons. 25% of the total inputs on agriculture for landless households are met from the Commons for the landless households (who hire land), while the concomitant figure for marginal farmers is 22%. As the size of land owned increases, the significance of the contribution of the Commons as a proportion of total expenditure declines, even though its amount increases. Across social groups, we find that contribution of the Commons to agriculture forms an important core around which the livelihoods of tribal households are built. Even in the case of other groups, inputs collected from Commons for agricultural usages reduce the agricultural costs by 10-15%.

The collection of NTFP and other produce from Commons also constitute an important component of the resource use pattern across rural households. 44-67% of households across different social groups reported collection of NTFP. It constituted 10-15% of the total value of produce collected from Commons. Fuel wood collection shows an inverse relationship with landholding, with landless and marginal households depending on the Commons to meet 66-83% of the total fuel wood requirement. Subsequently, though fuel wood and forest produce collection do not form a direct part of the agricultural or livestock production systems, they subsidize these systems by contributing to the household economies and thereby enhance the resilience and viability of these larger systems.

The study further highlights the key role of community institutions in strengthening the claims of the resource poor and underprivileged groups. In the absence of these institutions, a larger section of households get alienated from the Commons. The ability of the common property regimes to secure the rights of marginalised sections plays a crucial role in strengthening the resilience of these households.

Notwithstanding the fact that the Commons support livelihoods and the larger production system in numerous ways, the fact is that overall, the Commons have seen a significant reduction in area along with an undermining of the institutional mechanisms that enable them to function sustainably. The study highlights that the root cause lies in the uncertainty arising from decisions of the State or from a more complex interaction of state-market-community relationships. Encroachment of CPRs is often a result of usurpation of the Commons by the elite (local and external) and comes in the form of state policy favouring the diversion of the Commons to other uses (mining, SEZs, dams, etc.) or the privatisation by local landlords, real estate developers and mining interests. There is a distinct trend in encroachment of the Commons in favour of the elite. Although in a few instances, we do find that encroachment of the Commons takes the form of a defensive mechanism by people to protect the Commons from being taken over by outsiders or by state agencies, and not out of individual greed and desire to intensify land use through agricultural practices.

Encroachments can often represent the end game of a long cycle of engagement between multiple actors in the course of which what stands exposed is the powerlessness of communities to protect their collective interests. The powerlessness is also reflected in the milieu of rules and regulations which restrict usage or enable exclusion by one group of the other. Sometimes emanating from valid concerns, but mostly rooted in an orientation which favours individual concerns rather than collective gains, and based on the alien frameworks of carrying capacities, these rules and regulation are inherently biased against livestock, especially small ruminants, and they contribute in equal measure to the estrangement of relationships between communities and the Commons.

Towards a Desirable Policy Context

The findings of the study indicate that there is a need to strengthen symbiotic relationships between Commons, livestock and agriculture in the rainfed areas of India. Recognising the limitations of supporting a more intensified agriculture and livestock production system, it calls for a shift in orientation which has guided policy making and actions. It is in this context that issues of access, rights and claims over forest and other common pool resources need to be revisited. The passing of the Forest Rights Act marks a significant step forward in recognizing the legitimacy of community rights and customary use regimes in governing forests resources. However, as has been the experience from Joint Forest Management and other programmes to protect and conserve the Commons, the translation of rights in strengthening the access of communities is dependent on the value systems and orientations which guide the objectives of management. While they can be enabling in some cases, they can also bring in more restrictions and exclude communities which are critically dependent on them in others. Further, new market opportunities that tend to treat common lands as 'wasteland' could serve the interests of ascending groups within villages. However, they tend to 'commoditise' and privatise the natural resources that were otherwise accessible to the poor, disposing them even further.

The following are some of the important steps that are essential to address these issues:

1. *Formulating policy on Commons and securing rights of communities on Commons:* The restoration and judicious management of the Commons requires policies securing community rights over common lands, legitimizing communities as stakeholders. A national level policy which reconceptualizes the role of Commons in rural production systems and extends relevant rights and responsibilities to the resource-dependent community needs to be evolved. Such a policy can act as a framework within which the state governments, under whose jurisdiction the common pool resources rest, may also evolve enabling policies and directions.
2. *Increasing public investments for revitalising common land and water resources:* It is often the case that even in programmes aimed at better natural resource management (for example, watershed development programmes or MGNREGA) or specifically, fodder resources (for example, the newly launched Accelerated Fodder Development Programme), common land and water bodies are neglected. This results in a severe shortage of resources available to undertake restoration activities on common lands. There is, therefore, a need to substantially increase public investments to regenerate the Commons in a programme mode. A large proportion of these investments can be met through channelling MGNREGA funds. Estimates suggest that 20% allocation of MGNREGA funds towards common land development can help address eco-restoration efforts on more than 3 million ha. The investments on biophysical components have to be complemented by long term investments on capacity building and institutional strengthening.
3. *Strengthening institutional arrangements for better governance of natural resources:* Given the weak institutional capacities for decentralized management of natural resources, there is a need to devolve natural resource management (NRM) functions to the habitation level while being nested under the Panchayats, creation of Standing Committee on NRM at the Panchayat level with sub-committees at lower levels, and building local and larger stewardship of natural resources. A programme architecture at the district level (and downwards) is required which would strengthen governance at different landscape levels, set up a strong natural resource management agenda, improve planning process (from village to district level), strengthen capacities at different levels, address issues of community rights, develop coherence and convergence between different programmes and schemes.

4. *Influencing the 'common' mindset on the Commons:* There is a need to strengthen information systems and create a database on common land and water resources to dispel myths related to their 'residual' character and thereby their degradation. This would involve assessing the actual extent and status of resources that are generally considered as common pool in nature as well as the nature of property rights governing the same.

The key, therefore, is to move from a piecemeal approach towards the management of natural resources towards long-term policy and programmatic action. The success of this shift would hinge on building capacities of the local communities through appropriate institutional mechanisms. Addressing this on a priority basis can go a long way in addressing the crises under which rural households are reeling, particularly in rainfed areas of the country, and in creating a larger constituency for the Commons.

Annexure 1

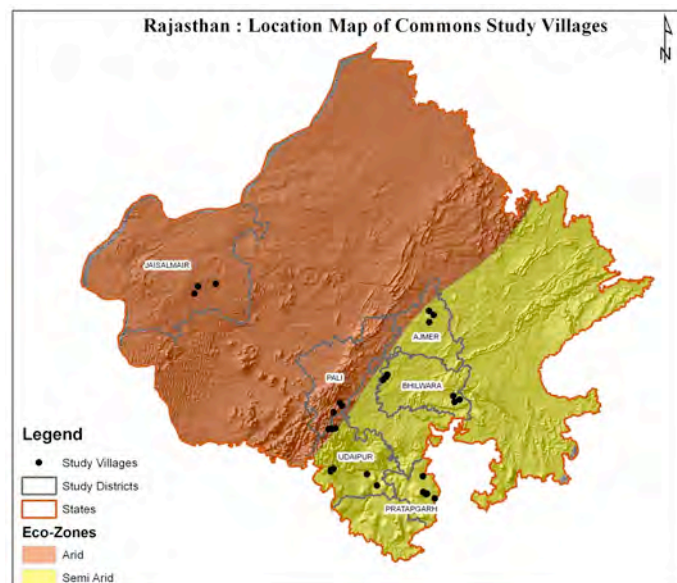
Brief Location Profile

RAJASTHAN

Rajasthan is the largest state in the country. The total area of the State is 342 thousand sq. kilometers. The total population of the state is 56.5 million and the total livestock population is 49.1 million. As part of this study, we covered five districts—Ajmer, Bhilwara, Jaisalmer, Pali, Pratapgarh and Udaipur. Ajmer, Bhilwara, Pratapgarh and Udaipur cover the semi-arid areas and Jaisalmer and Pali cover the arid areas. The details on common land availability, livestock density, poverty and percent of households belonging to schedule tribe and schedule caste households are given in the table below.

State/ Study district average	Common land (% of total geographical area)	Livestock density per sq km	BPL percent	% Schedule caste households	% Schedule Tribe households
Rajasthan arid average	27.9	121.1	10.7	19.4	4.7
Jaisalmer	83.1	44.9	9.0	14.6	5.5
Pali	34.2	169.1	10.0	17.8	5.8
Rajasthan semi-arid average	46.1	162.4	17.8	15.6	22.4
Ajmer	41.2	184.5	14.0	17.7	2.4
Bhilwara	53.9	195.8	27.0	15.7	9.0
Pratapgarh	56.4	168.0	0.0	6.8	61.9
Udaipur	77.3	217.0	20.0	6.2	45.1

Rajasthan: Location Map of Commons Study Villages

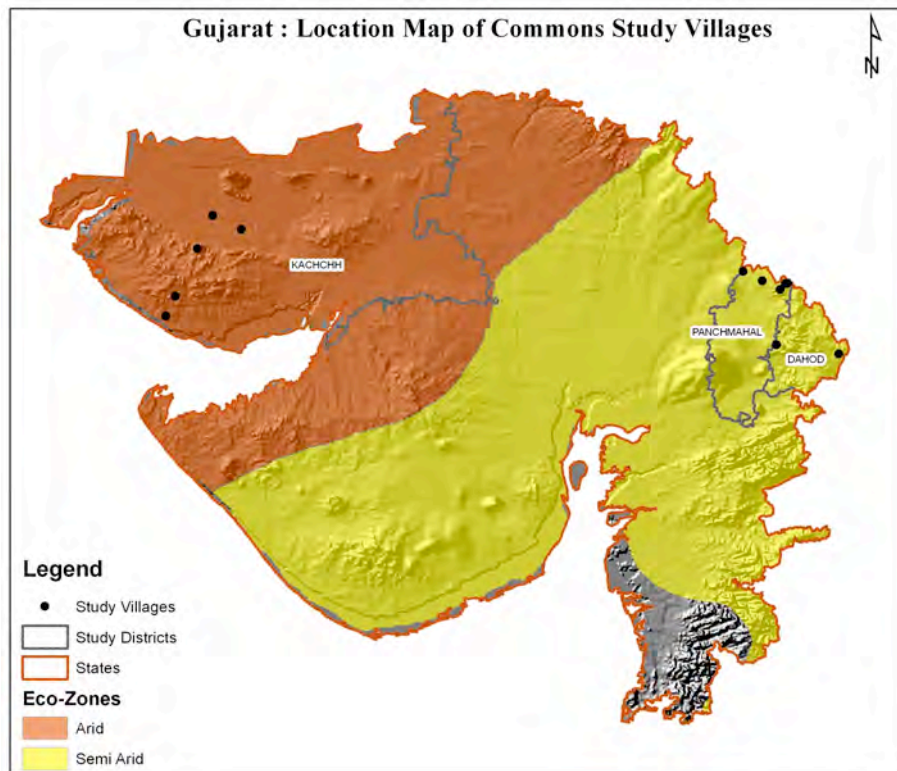


GUJARAT

In all, three districts were covered in the state of Gujarat. Dahod and Panchmahal from the semi-arid region and Kutch from the arid region were covered. Dahod and Panchmahal are mostly inhabited by tribal populations and terrain is mostly undulating. Kutch located in the western part of the districts is known for its pastoral populations. The table below gives a brief idea on land use and the socio-economic condition. In the arid regions of Gujarat around 43% of land use is under common property regime. In the semi-arid areas 32% of total geographical area is under Commons.

State/district average	Common land (% of total geographical area)	Livestock density	BPL percent	% Schedule caste households	% Schedule Tribe households
Gujarat arid average	43.3	103.9	11.8	10.1	4.5
Kutch	83.6	31.8	7	11.7	8.2
Gujarat semi-arid average	32.3	165.6	15.1	6.7	15.9
Dahod	40.1	223.6	37	2	72.3
Panchmahal	40.4	353.7	37	4.6	27.5

Gujarat: Location Map of Commons Study Villages

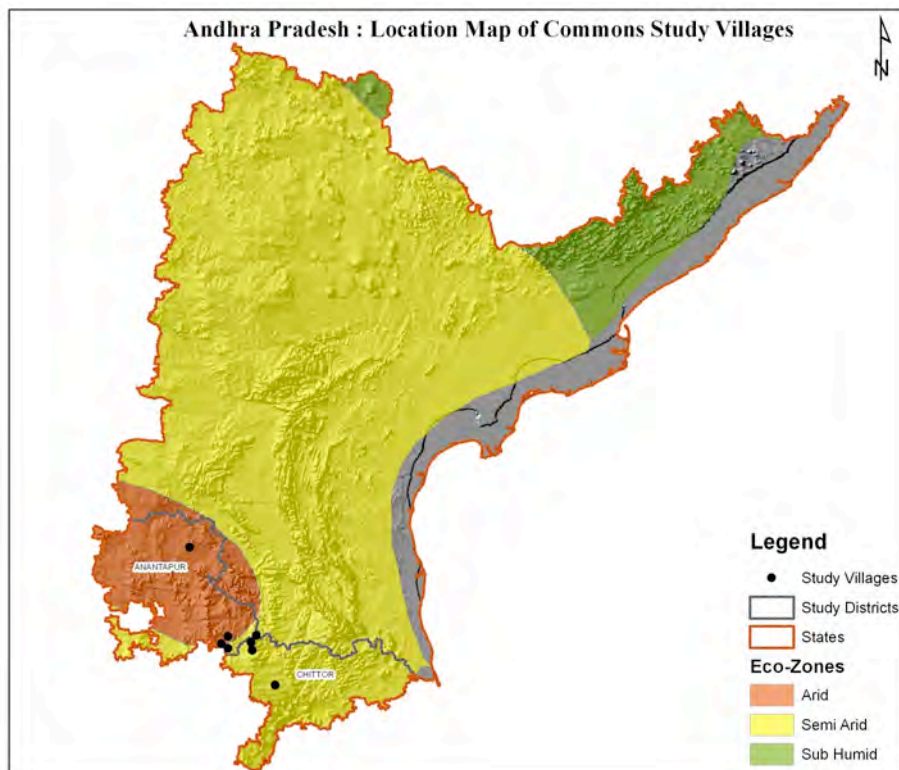


ANDHRA PRADESH

Andhra Pradesh is the fourth largest state in India, by area, and fifth largest in terms of population. In the study, we have covered villages in two districts—Chittoor and Anantapur. Anantapur is the largest district in the state, in terms of geographical area. It is a part of Rayalseema region of the state. Its northern and central portions are a high plateau, generally undulating, with large granite rocks or low hill ranges rising occasionally above its surface. The district receives an average annual rainfall of 381 millimeters. While large tracts of the district are also classified as arid, the villages that were selected for the study retained characteristics akin to semi-arid regions. Therefore, for the purpose of this study, Anantapur has been classified as semi-arid. Chittoor district lies to the extreme south of Andhra Pradesh state, approximately between 12°37' - 14°8' north latitudes and 78°3' - 79°55' east longitudes. Around 57% of the total area is under Commons. The soils in the district are dominantly red loamy and red sandy.

State/district average	Common land (% of total geographical area)	Livestock density per sq km	BPL percent	% Schedule caste households	% Schedule Tribe households
Andhra Pradesh (semi-arid areas)	42.0	165.8	15.8	17.1	6.8
Anantapur	35.0	181.4	22.0	14.1	3.5
Chittoor	57.4	113.7	36.0	18.7	3.4

Andhra Pradesh: Location Map of Commons Study Villages

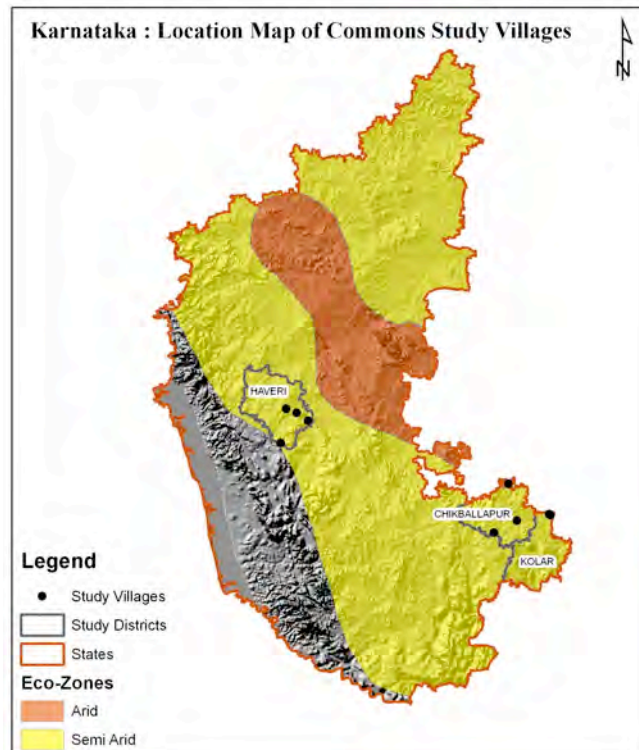


KARNATAKA

Karnataka has three principal geographical zones: the coastal region of Karavali, the hilly Malenadu region comprising the Western Ghats and the Bayaluseeme region comprising the plains of the Deccan plateau. The bulk of the state is in the Bayaluseeme region, the northern part of which is the second largest arid region in India. About 38,724 km² (14,951 sq mi) of Karnataka (i.e. 20% of the state's geographic area) is covered by forests. In the semi arid region of Karnataka 34.2% of total geographical area is under Commons. For the purpose of the study, three districts, Chikballapur, Kolar and Haveri were covered. Chikballapur district is a newly created district in the state of Karnataka and was carved out of the existing Kolar district. Common land constitutes 21-43% of total geographical area in these districts. Data on key indicators is presented in the table below.

State/district average	Common land (% of total geographical area)	Livestock density in sq km	BPL percent	% Schedule caste households	% Schedule Tribe households
Karnataka semi-arid average	34.2	119.4	19.9	18.2	7.4
Chikballapur	42.6	0.0	0.0	23.9	12.0
Haveri	21.0	148.4	18.0	12.2	8.8
Kolar	42.6	144.5	22.0	28.6	4.9

Karnataka: Location Map of Commons Study Villages

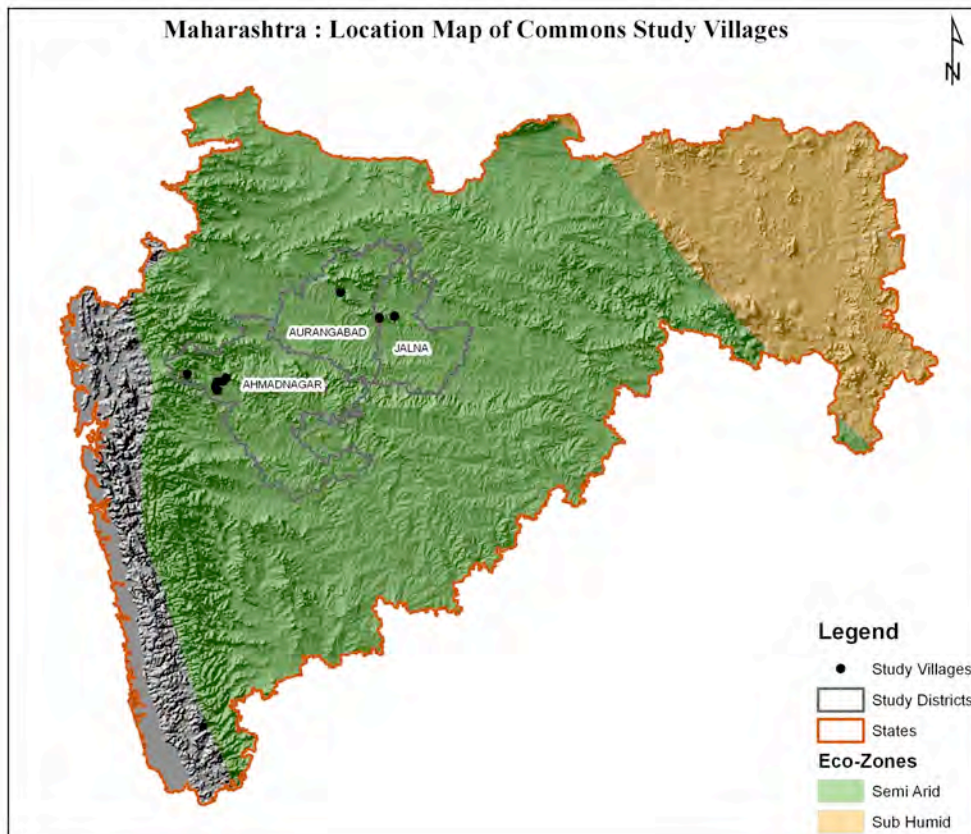


MAHARASHTRA

Maharashtra encompasses an area of 308,000 km² and is the third largest state in India. The Western Ghats better known as Sahyadri, are a hilly range running parallel to the coast, at an average elevation of 1,200 metres (4,000 ft). To the west of these hills lie the Konkan coastal plains, 50–80 kilometres in width. To the east of the Ghats lies the flat Deccan Plateau. The study was undertaken in two districts of the state Ahmednagar and Aurangabad. Both these districts fall in semi-arid regions. Common lands constitute around 25% of the total geographical area in the semi-arid regions of the State. The proportion of BPL households is more than 30% in these regions. Data on key parameters showing the socio-economic condition and the land use is presented in the table below.

State/district average	Common land (% of total geographical area)	Livestock density	BPL percent	% Schedule caste households	% Schedule Tribe households
Maharashtra (semi-arid average)	24.3	116.9	32.9	11.9	10.5
Ahmednagar	21.7	124.2	16.0	12.0	7.5
Aurangabad	21.3	94.5	23.0	13.0	3.5

Maharashtra: Location Map of Commons Study Villages

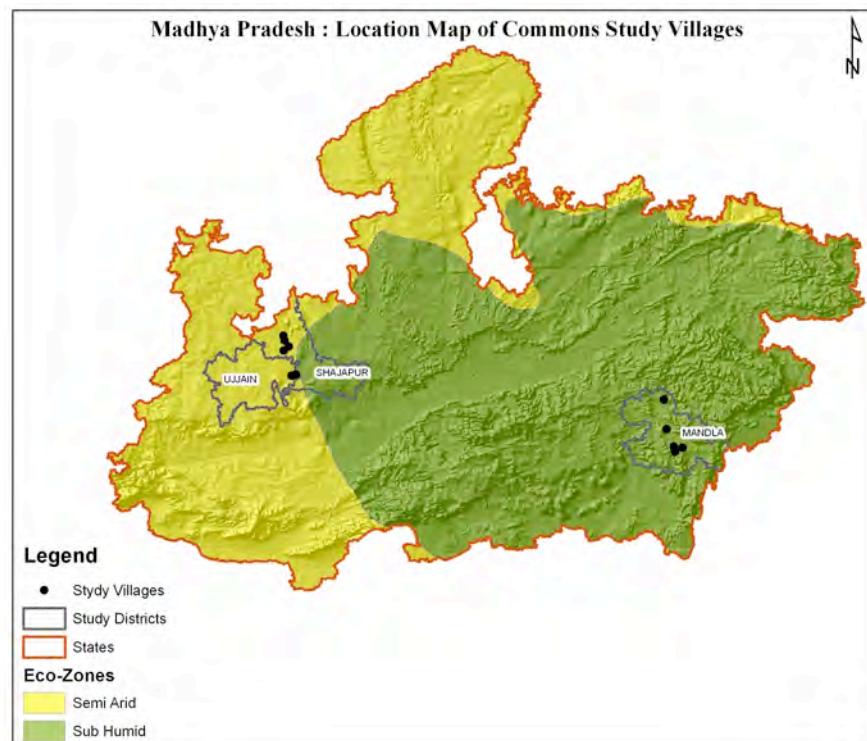


MADHYA PRADESH

Madhya Pradesh has an area of 308,252 km². The districts of Shajapur, Ujjain and Mandla were covered under the study. While Shajapur and Ujjain fall in the category of semi-arid region, the last one comes under the category of sub-humid region. Common land constitutes 44% of the total geographical area with around 40% of households belonging to underprivileged groups. Shajapur and Ujjain district are part of the Malwa Plateau. The entire district is a part of the Deccan Traps flood basalts of the Cretaceous-Paleocene, with deep black and shallow black-brown and alluvial soils. Common land constitutes around 20-27% of the total geographical area in these districts with high concentration of schedule caste populations. Malwa is mostly inhabited by tribal populations and consistently ranks among the 20 most backward districts in India. Around 70% of the total geographical area is under the Commons with forests constituting the major category.

State/district average	Common land (% of total geographical area)	Livestock density in sq km	BPL percent	% Schedule caste households	% Schedule Tribe households
Madhya Pradesh average	43.6	116.8	26.4	14.5	24.7
Shajapur	27.3	102.4	26.0	22.0	2.7
Ujjain	20.1	127.9	25.0	24.7	3.1
Mandla	70.9	93.1	60.0	4.6	57.2

Madhya Pradesh: Location Map of Commons Study Villages



ODISHA

The state of Odisha is entirely in the sub-humid region. In a major reorganization of the state in the 1990's the original 13 districts were divided into 30 districts. For the purpose of the study, we covered Angul, Dhenkanal, Koraput and Nayagarh districts. On an average common land constitutes around 57% of the total geographical in Odisha. Across the study districts covered it constitutes 49-68% of the total geographical area. The table gives a brief detail on the key indicators.

State/district average	Common land (% of total geographical area)	Livestock density	BPL percent	% Schedule caste households	% Schedule Tribe households
Odisha sub-humid average	56.9	137.8	51.1	16.4	27.7
Anugul	62.4	122.4	48.0	17.2	11.7
Dhenkenal	49.3	159.0	48.0	18.5	12.8
Koraput	59.5	104.5	80.0	13.0	49.6
Nayagarh	68.2	118.4	22.0	14.0	5.9

Odisha: Location Map of Commons Study Villages



Annexure 2

State and District Level Data

This section highlights the findings on the access to the Commons and the dependence on them for different purposes at the state and district level. As a result of the diversity of the sample in terms of the location, demographic profile, land use pattern and nature of the Commons, significant variations may be observed.

Table A2.1: Percentage of Households accessing Commons for different purposes across different states

States	Households accessing Commons for different usages	Agriculture	Livestock grazing	Water for domestic and livestock purposes	Fuel wood	Food products	NTFP and other products
Andhra Pradesh	98.5	61	78.6	57.6	65.7	59.5	31.3
Gujarat	95.5	63.9	67.4	100	32.9	84.8	51
Karnataka	99.6	47.1	75.2	72.7	92.4	12.6	36.3
Madhya Pradesh	98.7	62.8	85.3	81.8	76.2	50.6	44.2
Maharashtra	98	31	85.3	71.7	38	14.3	23.7
Odisha	98	68.3	76.1	88.4	90.4	43.7	77.1
Rajasthan	98.7	49.9	88.5	56.4	62.7	42.1	29.6

From **Table A2.1** it can be seen that around 98% of the study households in each access the Commons in order to meet different requirements. Similarly, the proportion of households accessing the Commons for livestock grazing and water for domestic and household purposes is found to be considerably high across all states. However, wide variations can be observed in terms of other usages, which is perhaps a reflection of the difference in the nature of the Commons in the different locations and other socio-economic characteristics of the region. The proportion of households accessing the Commons for agriculture, for instance, ranges from 31% in Maharashtra to 68% in Odisha. In the case of food products, an even greater variation can be observed, i.e. 12.6% in Karnataka and 85% in Gujarat.

Even within the states, significant variations can be seen when the data is disaggregated by districts (**Table A2.2**). For instance, the predominantly pastoral nature of livelihoods of the Kutch households as compared to those in Dahod and Panchmahal is reflected in the fact that 98% of the former access the Commons for livestock purposes while the concomitant figure for the latter is 55 and 46%, respectively. Similarly, while in Jaisalmer, less than 2% access the Commons for

agricultural requirements, for all the other districts in Rajasthan this figure stands at around 50-60% of the households. It is notable that in districts with a predominantly tribal population, such as Dahod, Panchmahal, Udaipur, Mandla and Koraput, a relatively higher dependence on the Commons for water, fuel wood and food products can be observed.

Table A2.2: Percentage of Households accessing Commons for different purposes across different districts

State	District	Households accessing Commons for different usages	Agriculture	Livestock	Water for household and livestock purpose	Fuel wood	Food products	NTFP and other products
Andhra Pradesh	Anantapur	97.40	50.6	81.9	57.6	55.4	52.8	19.9
	Chittoor	100	75.5	74	57.7	80.1	68.9	46.9
Gujarat	Dahod	91.8	89.1	55.5	NA*	92.10	100	13.6
	Panchmahal	94.6	90.3	46.2	NA*	92.10	100	75.3
	Kutch	100	15	98	100	94.4	56.1	68.2
Karnataka	Chikballapur	98.6	54.2	66.7	62.5	91.7	40.3	73.6
	Kolar	100	84.6	87.2	92.3	100	10.3	71.8
	Haveri	100	35.3	76	72.5	91	1.2	12
Madhya Pradesh	Mandla	100	92.5	80.2	81.1	98.1	46.2	66
	Shajapur	97.6	38.1	90.5	81	48.8	51.2	26.2
	Ujjain	97.6	36.6	87.8	85.4	75.6	61	24.4
Maharashtra	Ahmednagar	96.9	21.1	81.3	51.6	50	13.3	13.3
	Aurangabad	98.8	38.4	88.4	86.6	29.1	15.1	31.4
Odisha	Angul	99.3	66.7	79.7	94.1	93.5	27.5	82.4
	Koraput	98.9	78.7	78.7	92.6	90.4	84	85.1
	Nayagarh	91.3	52.2	58.7	60.9	80.4	15.2	43.5
Rajasthan	Ajmer	98.9	53.7	92.6	68.4	54.7	0	20
	Bhilwara	98.9	60.1	92.3	82.5	56.3	31.1	38.3
	Pratapgarh	99.4	59.7	89.9	NA*	98.70	100	70.4
	Udaipur	98.7	51.4	86.7	55.6	86.4	33.7	24.5
	Jaisalmer	100	1.7	94.9	74.4	90.6	91.5	0
	Pali	96.4	58.6	78.6	65	58.6	0.7	17.1

*Not Applicable: In the pilot phase of the study, data on households accessing common water bodies for domestic and livestock usages was not collected.

Significant variations may be observed at the state and the district level in terms of households accessing the Commons for different agricultural inputs (**Tables A2.3 and A2.4**). In the case of irrigation, for instance, only Andhra Pradesh and Odisha register a relatively higher proportion of households accessing the Commons. On the other hand, in the case of fencing material, the

proportion is relatively more uniform. The contribution of the Commons to agriculture, i.e. the share of the inputs derived from the Commons in total expenses incurred on agriculture, ranges from less than 1% in Gujarat and Maharashtra to as high as 32% in Rajasthan.

Among the districts, wide variations can be seen in the contribution of Commons to agriculture in the case of Karnataka and Rajasthan. In Karnataka, it ranges from 2-3% in Haveri to over 46% in Kolar. In Rajasthan, it is less than 1% in Jaisalmer and Pratapgarh while it is more than 73% in Bhilwara. Districts which are relatively more forested, such as Dahod, Panchamahar, Kolar, Mandla, Ahmednagar etc, register a relatively higher proportion of households accessing the Commons for farm implements.

Table A2.3: Percentage of Households accessing Commons for agricultural inputs and contribution of Commons to agriculture across different states

States	% Households accessing Commons for irrigation, fencing, farm implements and soil nutrients				Contribution of Commons to agriculture
	Irrigation	Fencing	Farm implements	Soil nutrients	
Andhra Pradesh	10.7	37.5	29.9	13.5	8.08
Gujarat	1.3	37.1	91.1	8.5	0.38
Karnataka	5.4	29.1	30	14.2	9.38
Madhya Pradesh	5.2	45	92	26.5	13.82
Maharashtra	6	17.7	22	42.2	0.92
Odisha	19.5	44	87.6	21.1	6.42
Rajasthan	5.6	35.9	21	13	32.22

Table A2.4: Percentage of Households accessing Commons for agricultural inputs and contribution of Commons to agriculture across different districts

State	District	% Households accessing Commons for irrigation, fencing, farm implements and soil nutrients				Contribution of Commons to Agriculture
		Irrigation	Fencing	Farm implements	Soil nutrients	
Andhra Pradesh	Anantapur	3	29.2	10.1	17.3	6.68
	Chittoor	21.4	49	52	8.5	10.02
Gujarat	Dahod	0	47.3	89.3	10.3	NA*
	Panchmahal	4.3	50.5	93.1	6.8	NA*
	Kutch	0	15	0	0	1.1
Karnataka	Chikballapur	5.6	27.8	22.7	22.9	5.96
	Kolar	7.7	30.8	79.4	5.9	46.24
	Haveri	4.8	29.3	11.1	12.5	2.25
Madhya Pradesh	Mandla	0.9	61.3	97.8	12.5	17.36
	Shajapur	9.5	31	40	38.5	4.53
	Ujjain	7.3	31.7	0	100	23.68
Maharashtra	Ahmednagar	8.6	10.2	73.3	73.3	NA*
	Aurangabad	4.1	23.3	4.5	36	NA*
Odisha	Angul	7.2	52.3	95.7	33.3	7.33
	Koraput	48.9	33	81.8	12.7	5.27
	Nayagarh	0	39.1	66.7	45.5	5.73

*Not Applicable: In these districts, data was collected on households accessing Commons for agricultural purposes. Data on the quantity of produce collected from Commons was not gathered.

As also highlighted in Chapter 2, multiple sources of water for livestock are used across all seasons and this holds true at the state level as well, as is evident from **Table A2.5**. However, a relatively higher dependence on community sources can be observed during the monsoon season. In Gujarat, the dependence on community sources is exceptionally higher (more than 92%) across all seasons. This high average is an effect of the pastoral population in Kutch which relies heavily on community sources for all its uses. In Karnataka, on the other hand, private sources of water seem to be dominant across all seasons.

Table A2.5: Livestock drinking source in different seasons across different states

States	Monsoon			Summer			Winter		
	community	public	private	community	public	private	community	public	private
Andhra Pradesh	59.7	13.5	26.8	28.5	29.9	41.5	59.3	13.8	26.8
Gujarat	93.5	2.8	3.7	92.5	3.7	3.7	94.4	2.8	2.8
Karnataka	35.8	10.8	53.4	28.1	10.8	61.1	37.4	9.9	52.7
Madhya Pradesh	54.1	31.4	14.5	39.9	39.4	20.7	50.2	34.4	15.3
Maharashtra	39.3	13.6	47.1	12.9	24.3	62.9	35	14.3	50.7
Odisha	68.5	12.1	19.4	40.4	20.4	39.1	67.5	12.6	19.9
Rajasthan	39.5	35.4	25.1	13.4	49.6	37	17.6	47.2	35.2

Table A2.6: Percentage contribution of different sources to net household income across states

State	Agriculture	Livestock	Agricultural labour and other income	MGNREGA	Commons
Andhra Pradesh	-3.86	18.69	33.80	17.39	33.97
Gujarat	7.13	28.36	33.05	4.01	27.42
Karnataka	34.43	7.09	40.58	2.32	15.55
Madhya Pradesh	45.39	7.59	20.70	4.30	21.99
Maharashtra	52.82	18.34	22.45	0.10	6.27
Odisha	23.36	2.59	31.70	1.93	40.39
Rajasthan	9.82	8.44	46.13	9.57	26.01

Table A2.6 gives the contribution of different sources to the net household income at the state level. While the importance of multiple sources, especially labour, in earning a livelihood holds true across states, significant variations can be observed. The contribution of agriculture to net household income was found to be extremely low for the states of Andhra Pradesh, Gujarat and Rajasthan while it was more than 50% in the study areas in Maharashtra. In Andhra Pradesh, the negative contribution may be attributed to the fact that the study areas in the state have been suffering from agrarian distress for close to a decade.

It is significant that while livestock density in the study districts in Rajasthan is on the higher side compared to other districts, its share in the total income is less than 10%. This is so since, in Rajasthan, the study sample included diverse groups such as pastoralists, agro-pastoralists and tribals (with the latter constituting the highest proportion).

In fact, the contribution of MGNREGA to income at the state level reflects the larger picture of MGNREGA whereby Rajasthan and Andhra Pradesh are known to have performed better while Odisha has lagged behind. Maharashtra is a unique case. The contribution of MGNREGA in the state is abysmally low at less than 1% and around 6%, respectively, because the study areas in the state are characterized by widespread cash crop cultivation, i.e. cultivation of onions, tomatoes and other vegetables. Even though there are mainly small and marginal farmers in the area, there is considerable labour demand for harvesting, sale etc. Thus, wages are high, agriculture is remunerative and consequently, there is a less demand for MGNREGA. This intensive agricultural pattern is also responsible for the low contribution of Commons to agriculture (around 6%). Further, these villages are also remote and implementation of the MGNREGA programme is wanting on many counts.

These patterns are reflected, more or less, even when the data is disaggregated at the district level (**Table A2.7**). Variations exist, of course, as in the case of contribution of livestock to income in Gujarat, already discussed above. Similarly, in Madhya Pradesh, the relatively higher contribution of the Commons to income in Mandla as compared to Shajapur and Ujjain may be attributed to the fact that the Mandla has a relatively higher proportion of tribals. Theoretically, however, the contribution of Commons to income is a function of a range of issues, such as nature of the

Commons, the nature of the production pattern and the demographic profile. The negative value of the contribution of livestock to net household income in Panchmahal may be reflective of the shift towards an intensive pattern of livestock production and high-yielding types of livestock such as cross-bred cattle. This is perhaps also the reason for the low contribution of Commons to net household income.

Table A2.7: Percentage contribution of different sources to net household income across districts

State	District	Agriculture	Livestock	Agricultural labour and other income	MGNREGA	Commons
Andhra Pradesh	Anantapur	-6.85	22.52	26.64	26.49	31.19
	Chittoor	-1.67	15.88	39.05	10.71	36.01
Gujarat	Dahod	6.94	4.24	73.98	3.07	11.73
	Panchmahal	24.53	-0.1	53.26	5.64	16.64
	Kutch	2.89	47.94	6.81	4.1	38.24
Karnataka	Chikballapur	21.39	6.34	44.56	9.03	18.65
	Kolar	37.58	15.46	26.78	2.15	18.01
	Haveri	37.48	4.88	43.4	0.33	13.89
Madhya Pradesh	Mandla	36.62	2.18	19.11	8.73	33.34
	Shajapur	47.6	12.91	18.28	2.01	19.17
	Ujjain	54.52	5.04	28.18	2.12	10.1
Maharashtra	Ahmednagar	24.44	24.81	36.59	0.27	13.86
	Aurangabad	68.94	14.66	14.42	0	1.96
Odisha	Angul	16.75	3.82	44.99	1.61	32.81
	Koraput	29.18	1.24	15.14	3.04	51.37
	Nayagarh	47.55	-0.99	0.17	0.19	53.06
Rajasthan	Ajmer	-47.23	4.34	59.08	29.68	54.12
	Bhilwara	4.43	12.85	44.17	13	25.53
	Pratapgarh	39.26	6.78	12.49	5.41	36.03
	Udaipur	12.73	7.78	43.05	9.02	27.39
	Jaisalmer	1.96	10.66	59.59	4.99	22.78
	Pali	8.45	5.87	65.59	9.07	10.99

Table A2.8 shows that across states also, a significant proportion of the fodder requirements of different livestock species are met from the Commons. In the case of Maharashtra and Gujarat, the contribution is relatively lower for draught animals and indigenous cattle as compared to cross-breeds and buffaloes reinforcing the significance of the Commons for even typically stall-fed livestock. In the case of small ruminants, there was considerable variation across states, for instance, the Commons were found to contribute close to 28% of the fodder requirements in Gujarat and a proportion as high as 91% in Odisha. At the district level (**Table A2.9**), Panchmahal and Aurangabad register a much smaller proportion of fodder requirements met from the Commons across all livestock species. For most of the other districts, the aggregate figure is around

40% or more. Also, in most districts, the fodder requirements met from the Commons for crossbred cattle, while far from insubstantial, is lower than that for indigenous cattle, draught animals and small ruminants.

Table A2.8: Contribution of Commons to annual fodder requirements across different livestock species in different states

State	Average annual fodder requirement of different types of livestock met from Commons across different states						Average household fodder requirements met from the Commons
	Draught Animals	Indigenous cattle	Cross bred	Buffaloes	Sheep and goats	Camel	
Andhra Pradesh	48.67	60.14	43.3	39.3	58.51	0	52.18
Gujarat	9.64	26.19	29.31	38.48	27.81	87.92	29.06
Karnataka	41.67	49.94	29.34	35.62	52.04	.	43.68
Madhya Pradesh	54.77	51.69	18.5	40.69	54.64	0	49.99
Maharashtra	20.1	20.1	26.56	23.01	40.88	.	23.59
Odisha	67.34	82.73	16.67	71.82	91.34	0	71
Rajasthan	35.91	46.19	15.77	33.92	64.98	58.06	44.19

Table A2.9: Contribution of Commons to annual fodder requirements across different livestock species in different states

State	District	Draught Animals	Indigenous Cattle	Crossbred cattle	Buffaloes	Small Ruminants	Camel	Average fodder requirements met from the Commons
Andhra Pradesh	Anantapur	33.27	62.05	30.76	40.03	45.49	.	47.52
	Chittoor	58.55	57.67	45.64	32.5	73.39	0	57.5
Gujarat	Dahod	11.13	10.58	0	6.17	18.1	.	11.4
	Panchmahal	3.27	2.78	0	5.44	10.03	.	5.06
	Kutch	39.55	74.74	50.24	81.94	74.86	87.92	68.38
Karnataka	Chikballapur	49.51	62.63	31.43	50	81.82	.	60.94
	Kolar	53.81	48.82	30.29	50	91.43	.	52.47
	Haveri	37.06	35.65	26.21	34.36	28.95	.	34.31
Madhya Pradesh	Mandla	68.96	59.02	0	33.33	9.44	.	58.82
	Shajapur	36.63	43.5	30.83	42.37	77.82	0	40.91
	Ujjain	30.29	48.7	0	39.48	81.55	.	45.57
Maharashtra	Ahmednagar	63.83	52.16	32.69	50.95	74.14	.	59.66
	Aurangabad	3.91	3.59	0	0	3.47	.	3.89
Odisha	Angul	61.86	77.48	20	75	92.73	0	67.83
	Koraput	91.69	90.28	.	63.33	94.32	.	92.25
	Nayagarh	39.62	78.73	0	.	60	.	46.77
Rajasthan	Ajmer	16.67	38.19	25.24	35.85	73.72	46	44.26
	Bhilwara	21.22	46.48	16.94	36.95	52.37	50	37.94
	Pratapgarh	51.21	53.27	40	37.22	90.82	.	54.15
	Udaipur	34.58	38.27	7.32	32.67	49.5	50	33.72
	Jaisalmer	43.33	69.48	50	.	88.12	60.89	75.51
	Pali	8.67	27.43	0	26.5	79.62	100	41.24

Tables A2.10 and A2.11 give the average holdings of land and adult cattle unit across different states and districts. The mean ACU held is fairly uniform across all states, the case of Gujarat reflecting the exceptional case of the Kutch pastoralists. However, while the average landholdings are lowest in the case of Gujarat and Odisha, the ACU owned per unit of land is the highest for these two states. On the other hand, Maharashtra, which has the highest mean landholding, also has the lowest average ACU owned per unit of land. At the district level also there are some interesting results, for instance, the remarkably high average ACU owned per unit of land in Panchmahal and Angul.

Table A2.10: Average land and adult cattle unit (ACU) holdings across different states

State	Average Landholdings (ha)	Average ACU owned	ACU per unit of land owned
Andhra Pradesh	1.74	3.32	3.98
Gujarat	0.54	5.96	8.19
Karnataka	1.32	2.45	3.19
Madhya Pradesh	1.73	3.08	2.87
Maharashtra	2.07	2.05	1.29
Odisha	0.72	2.83	13.27
Rajasthan	1.49	3.41	4.75

Table A2.11: Average land and adult cattle unit (ACU) holdings across different districts

State	District	Average Landholding (ha)	Average Adult Cattle Unit	Average ACU per unit of land owned
Andhra Pradesh	Anantapur	1.61	2.91	2.38
	Chittoor	1.92	3.88	6.24
Gujarat	Dahod	0.74	3.91	5.62
	Panchmahal	0.51	3.17	12.06
	Kutch	0.35	10.46	1.73
Karnataka	Chikballapur	1.15	1.74	1.79
	Kolar	1.25	3.19	7.47
	Haveri	1.4	2.6	2.72
Madhya Pradesh	Mandla	0.9	2.43	3.69
	Shajapur	2.18	4.26	2.74
	Ujjain	2.94	2.2	1.18
Maharashtra	Ahmednagar	1.56	1.44	1.14
	Aurangabad	2.45	2.47	1.39
Odisha	Angul	0.71	2.73	19.97
	Koraput	0.84	3.1	5.28
	Nayagarh	0.49	2.61	6.47
Rajasthan	Ajmer	1.33	3.7	4.52
	Bhilwara	1	4.07	5.65
	Pratapgarh	1.01	3.16	4.21
	Udaipur	0.85	3.5	6.04
	Jaisalmer	6.23	3.58	0.78
	Pali	0.58	2.31	3.17

As can be seen from **Table A2.12**, the share of NTFP in products obtained from the Commons ranged from around 2-3% in Andhra Pradesh to 20% in Maharashtra. It is interesting to note that while Maharashtra records the lowest proportion of contribution of Commons to net household income, the share of NTFP in the total products collected from the Commons. This could be a result of the fact that NTFP products are valued at a lower rate compared to other products derived from the Commons and/or that the proportion of other products derived from the Commons are much lower. Fuel wood requirements, on the hand, met from the Commons constitute more than 60% of the total requirements in all states except Andhra Pradesh and Maharashtra.

Table A2.12: Share of NTFP in products obtained from the Commons and total fuel wood requirement met from the Commons across different states

States	Share of NTFP in the total products collected from the Commons	Total fuel wood requirement met from Commons
Andhra Pradesh	2.42	32.35
Gujarat	8.26	92.88
Karnataka	5.57	77.34
Madhya Pradesh	7.86	63.71
Maharashtra	20.61	21.44
Odisha	8.19	87.87
Rajasthan	3.52	63.5

At the district level, there are considerable variations within a state in the share of NTFP in the total products collected from the Commons (**Table A2.13**). This holds true of all states other than Andhra Pradesh. The variations in the case of fuel wood requirement are relatively lower, the highest being in Andhra Pradesh, Madhya Pradesh and Rajasthan.

Table A2.13: Share of NTFP in products obtained from the Commons and total fuel wood requirement met from the Commons across different districts

State	District	Share of NTFP in the total products collected from the Commons	Total fuel wood requirement met from the Commons
Andhra Pradesh	Anantapur	3.12	18.07
	Chittoor	1.47	52.33
Gujarat	Dahod	0.25	87.05
	Panchmahal	8.57	93.92
	Kutch	16.22	95.25
Karnataka	Chikballapur	12.19	89.01
	Kolar	9.43	96.86
	Haveri	1.81	67.9
Madhya Pradesh	Mandla	11.39	79.32
	Shajapur	5.74	44.15
	Ujjain	2.71	58.94
Maharashtra	Ahmednagar	3.31	25.65
	Aurangabad	35.38	18.59
Odisha	Angul	11.73	90.5
	Koraput	3.85	91.8
	Nayagarh	5.38	70.06
Rajasthan	Ajmer	2.35	55.32
	Bhilwara	2.85	31.05
	Pratapgarh	7.28	76.94
	Udaipur	3.8	80.65
	Jaisalmer	0	52.21
	Pali	2.97	62.23

Annexure 3

Organisation Profile

APPS

Anantha Paryavarana Parirakshana Samithi (APPS) is a collective of 13 NGOs based in Anantapur district, Andhra Pradesh. As a part of addressing the issues of poverty and hunger among the Dalit communities in the district APPS started working with Action Aid India from 1999 in 354 Dalit habitations covering 14 mandals. It has been empowering the Dalits, women and children for sustainable livelihoods through equity and social justice. In this regard APPS has been adopted four key strategies to address social exclusion, hunger and deprivation of Dalits.

www.appsatp.org

FOUNDATION FOR ECOLOGICAL SECURITY

The crux of FES' efforts lie in locating forests and other natural resources within the prevailing economic, social and ecological dynamics in rural landscapes and in intertwining principles of conservation and local self governance for the protection of the natural surroundings and improvement in the living conditions of the poor. FES works with 1,526 village institutions in 27 districts across six states, and assists the village communities in protecting 107,094 hectares of revenue wastelands, degraded forestlands and Panchayat grazing lands (Charagah lands). It supports Panchayats and their subcommittees, Village Forest Committees, Gramya Jungle Committees, Water Users Associations and Watershed Committees in order to improve the governance of natural resources. Regardless of the form of the institution, it strives for universal membership and an equal access of women and poor in decision making.

www.fes.org.in

LOKHIT PASHU PALAK SANSTHAN

Lokhit Pashu Palak Sansthan (LPPS) is a non-profit organization registered under the Rajasthan Societies Act. It was set up in 1996 to support Raika camel pastoralists in an acute crisis. Today its work continues to be inspired and shaped by the close association with this traditional pastoralist community, but its goals have widened to embrace people-centred livestock development and the sustainable management of biodiversity rich agro-ecosystems. LPPS has its base in Sadri, Rajasthan, the drought-prone state in the west of India, where mobile livestock keeping has always been the mainstay of its rural people, especially its pastoralist societies. LPPS aims to support rural livelihoods through participatory research and community implementation of sustainable land use practices. It acts as a bridge between traditional and modern animal cultures and knowledge systems.

www.lpps.org

SEVA MANDIR

Seva Mandir is a non-governmental organization (NGO) working for the development of the rural and tribal population in Udaipur and Rajsamand districts of southern Rajasthan. Its main focus is on strengthening sustainable livelihoods, building people's capabilities and promoting and empowering village institutions. The work area encompasses 626 villages and 56 urban settlements. In total the

organization reaches out to around 70,000 households, influencing the lives of approximately 360,000 persons.

www.sevamandir.org

SAHJEEVAN

Sahjeevan aims at reviving traditional economies and livelihood with gender and conservation perspective through empowering people with knowledge and environment friendly technologies. It works towards to strengthen traditional livelihood options like Agriculture, Animal Husbandry and fisheries with conservation approach and ecological balance, to empower rural Women, Men and Youth to access knowledge, information so that they gain control over natural resources and then make sustainable use of those resources for their livelihood security and to envisage policy framework on cluster based development strategies for Kutch district of Gujarat in collaboration with local NGOS, Sangathans and States.

www.sahjeevan.org/

WOTR

Watershed Organization Trust (WOTR) is a not-for-profit NGO founded in 1993 operating currently in five 5 Indian states - Maharashtra, Andhra Pradesh, Madhya Pradesh, Rajasthan and Jharkhand. WOTR provides capacity building and advisory services to developmental practitioners from 22 other Indian states as well as, occasionally, from 27 countries. WOTR's mandate is to reduce poverty through mobilizing the self help capacities of individuals and communities to regenerate the eco spaces or watersheds they live in, harvest rain water wherever it falls, use it productively, and undertake sustainable livelihoods as well as other initiatives to eliminate their poverty.

www.wotr.org

VASUNDHARA

Vasundhara is a research and policy advocacy group that works on environment conservation and sustainable livelihood issues. The organization was initially conceived to support and strengthen community-based initiatives to protect and conserve forests in the state of Odisha. Over the years, while working and retaining its focus on community forestry, Vasundhara has developed a more explicit focus on the sustainable livelihood of the marginalized sections. It is also embarking on a more direct action on different environmental and biodiversity conservation issues. The interface of conservation and livelihoods now forms the core of its interventions.

www.vasundharaorissa.org

VRDS

Vanisiri Rural Development Society (VRDS) is an emerging environment reform and rejuvenation organization which aims to conserve, enhance and utilize the natural resources in a sustainable manner. The organization endeavors to create enabling conditions for people's empowerment at the grassroots level as well as government machineries through institutional initiatives. The Organization has also embarked upon development of components and systems for various study and documentation with a view to foster self-reliance and technological upgradation. VRDS mainly works in Haveri District of Karnataka.

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