

# Common Property Resources in Different Agro-Climatic Landscapes in India

Ajit Menon and G. Ananda Vadivelu

**Abstract:** *The importance of common property resources (CPRs) to rural communities is no longer in question. An exercise that is, however, necessary is a disaggregated analysis of CPR use across different agro-climatic zones that addresses certain unexplored issues in greater detail: (1) variations in CPR use in diverse agro-climatic zones, (2) differential dependence on CPRs between farmers of different operational size holdings, and (3) legal access to CPRs. Our contention in addressing these concerns is that they are critical to informed policy on the commons that explicitly addresses the potential of CPR-based livelihood strategies and implicitly conservation as well. The paper is largely based on the National Sample Survey 54<sup>th</sup> Round data on CPRs as it presents interesting insights into the above-mentioned concerns based on a survey of 78,900 households across agro-climatic landscapes of the country.*

**Keywords:** common property resources, agro-climatic zones, agro-climatic landscapes, National Sample Survey (54<sup>th</sup> Round)

## INTRODUCTION

THAT COMMON PROPERTY RESOURCES (CPRs) are important sources of livelihood to rural households in general and to the rural poor in particular is no longer in question. Jodha's (1986) pioneering work on CPRs<sup>1</sup> resulted in a spate of literature that illustrated the importance of CPRs not only as regular

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sources of income and employment but also as safety nets in periods of drought. Moreover, while Jodha's work focused primarily on the semi-arid zones, subsequent literature has provided evidence that CPRs are important in other regions as well, namely hilly forest tracts and even predominantly low land agriculture<sup>2</sup> dominated belts of the country. Moreover, implicit in much of the discussion around the commons is that improved CPR management will lead both to more benefits for those who depend on CPRs and improved management of CPRs for conservation purposes.

What remains missing, however, is a detailed examination of variations of CPR use across different agro-climatic zones and a critical analysis of the implications of these variations to our understanding of the commons. In particular, a number of specific concerns that have been touched upon within the CPR literature, and which are crucial to a more nuanced understanding around the commons, require more attention. These include: (1) variations in the extent and use of different CPR products across agro-climatic zones, (2) differential dependence on CPRs by farmers with different operational-size holdings, and (3) legal access to CPRs (*de jure* and *de facto*). This paper considers these questions.

The paper is largely based on the National Sample Survey (NSS) 54<sup>th</sup> Round data on CPRs. The 54<sup>th</sup> Round presents data from across different states and agro-climatic zones both at a gross level and a disaggregated level according to particular CPR products. It also has information on operational holdings and *de jure* and *de facto* CPRs. Our contention is that this data presents interesting insights about our concerns but that researchers thus far have not adequately highlighted these insights. While Chopra and Dasgupta (2002) have analysed the 54<sup>th</sup> Round using various quantitative techniques, their study attempts to answer a very specific question relating to whether households collect from the commons for sale and value addition independent of their role of providing a safety net and that too only in the context of Bihar, Karnataka, Madhya Pradesh and Maharashtra. On the other hand, here we examine the differential use and dependence on CPRs across agro-climatic zones and of farmers with different sizes of operational land holdings for the entire country. However, we have not made use of the unit-level data of the 54<sup>th</sup> Round, which certainly will give further insights at the household-level into how CPRs are used.

The paper is divided into six main sections. First, we introduce the context by reviewing briefly the literature on CPR dependence. The next section examines the question of access in terms of *de facto* and *de jure* CPR use. This is followed by a more disaggregated account of CPR use in terms of fuelwood, fodder and other selected items including non-timber forest products. We then examine the distribution question in terms of use across different operational size-holding categories of farmers. The final section summarises the arguments made and looks at how large-scale surveys of the NSS type can be

improved so as to provide more useful data to understand CPR use in different agricultural systems.

### *The Changing CPR Scenario*

In the eighties, when many were lamenting the failure of land reform in the Indian countryside, Jodha's (1986) work on CPRs raised a different type of question, namely who benefits from land reform and who loses out. His study pointed to three main results: (1) privatisation for the most part was captured by the rural rich and the land the poor obtained through privatisation was often of poorer quality; (2) privatisation of CPRs led to the loss of major income from CPRs, and (3) the poor were the bigger losers in terms of loss of income.

Jodha highlighted the importance of CPRs and CPR products to the rural economy. He illustrated that the rural poor derived between Rs 445 and 830 annually while the rich derived only Rs 300. He also highlighted that, between 84 and 100 per cent of rural poor households gathered items such as fuel, fodder, food and fibre items from CPRs whereas only 10 to 28 per cent of rich households did the same. The data pertained to the 1982–1985 period and only to the states of Andhra Pradesh, Gujarat, Karnataka, Maharashtra and Tamil Nadu. The importance of CPRs to the rural poor has been corroborated by subsequent research and across different agro-climatic zones (Pasha 1992; Singh et al. 1996; Beck and Ghosh 2000).

Jodha's study has been supplemented by attempts to estimate the extent of the commons using macro-level data. The most notable of such studies was by Chopra et al. (1990). They used a nine-fold land use classification data to estimate the total area of CPRs. They suggested that 'other than current fallow', 'cultivable waste', 'pastures', and 'protected and unclassified forests' can be broadly categorised as CPRs. Based on this classification, they concluded that 21.55 per cent of all land in India (1980–81 figures) were CPRs with the rider that this estimate might be slightly high given the fact that not all protected forests are CPRs. In fact, however, if definitions of CPRs are blind to *de jure* and *de facto* distinctions, the extent of CPRs might be much higher.

Chopra et al. (1990) also highlighted that CPRs are steadily declining in extent and quality, a point that is important both for the sustainability of CPR-dependent livelihoods and the natural resources themselves (Chopra and Dasgupta 2002). Another important point is that the non-poor also benefit from CPRs. Some studies, in fact, have argued that while the poor benefit more in relative terms, the rich benefit more in absolute terms (in contrast to Jodha's findings) (Nadkarni et al. 1989; Pasha 1992; Singh et al. 1996). Furthermore, there is evidence that CPRs are often captured by the rich or allocated in ways that privilege the needs of the rich (Karanth 1992). This suggests that studies are needed to examine the relationship between CPR income and size of landholdings more carefully.

It is in this context that we revisit the debate around CPRs. The 'state of our knowledge' with regard to CPRs in India is limited due to incomplete information and inadequate disaggregated analysis across agro-climatic zones. Our knowledge is still confined to broad areas of the country, mostly the semi-arid zones and the forest regions. In addition, there are inconsistencies regarding definitions and methodology used. Discussions about the rural poor often use different definitions of what constitutes the poor<sup>3</sup> and the methodologies used to calculate the value of CPRs are quite often different or not explicitly stated. Finally, we do not know enough about CPRs in terms of their *de jure* and *de facto* status—potentially an important factor in terms of understanding the viability of CPR-based income in the long-run.

The 54<sup>th</sup> Round of the NSS is a useful entry point to enhance this understanding. Schedule 31 of the 54<sup>th</sup> Round focuses on CPRs (among other things) and is a national level survey across agro-climatic zones and states. Surveys were carried out for 78,990 households in 5242 villages (panchayat wards in the case of Kerala). Villages were first classified into four strata according to their size and all households were classified into three second stage strata based on operational holdings/wage labour. According to the size of the strata, a fixed number of households were interviewed.

## **METHODS**

Our analysis is based on a straightforward reading of the existing data, i.e. we have not used any elaborate quantitative techniques<sup>4</sup>. This is the case because our interest is primarily in understanding the use of CPRs across agro-climatic zones in terms of farm size-categories, type of CPR produce and legal status, data that is readily available in the 54<sup>th</sup> Round. We have attempted to draw comparisons across agro-climatic zones. In order for such a comparison to be useful, it requires categorising these zones into some broad-based categories. For purposes of convenience, we categorise the Western Dry Region as a semi-arid and arid pastoral-based agricultural economy. Most of the hill areas such as the Western Himalayas, the Eastern Himalayas, the Central Plateau and Hills, the Western Plateau and Hills, the Eastern Plateau and Hills, the Southern Plateau and Hills and the Islands are largely hilly forested tracts. The Gangetic Plains (Upper Gangetic Plains, Middle Gangetic Plains and Trans-Gangetic Plains) are zones of intensive agriculture while zones such as the Gujarat Coast Plains and Hills (GC), West Coast Plains and Hills (WC) and East Coast Plains and Hills (EG) are a mixture of hilly areas, semi-arid tracts and intensive agricultural areas. Even some of the other hill tracts are clearly mixed in terms of the types of agricultural systems to be found there.<sup>5</sup> Nonetheless, three broad categories are useful benchmarks to start with when examining the use of CPRs<sup>6</sup> and for drawing some useful comparisons in terms of how the use of CPRs differs in broad-based agrarian systems across

these categories. Some internal comparisons are also made in terms of differences within the three categories.

### *Access to the Commons* *De Facto CPRs*

A concern that Beck (1994) raised, in his study of West Bengal villages, was regarding the problem of access to CPRs by the rural poor. In the context of the villages he studied, this was important because gleaned grains were collected by the landless from other people's private lands (*de facto* CPRs) and thus access was difficult. Beck's analysis highlights an important issue, namely that *de facto* CPRs are in fact a better indicator of CPR use, as an enquiry into use of *de jure* CPRs only might underestimate dependence. *De facto* access by definition includes land for which communities do not have *de jure* access. For example, state-controlled areas such as reserve forests, which can be actually accessed openly or used by a defined user group, are *de facto* CPRs. Similarly, private agricultural lands that are accessible to others in the fallow season are also accessible commons. The reverse is possible as well, namely that certain public lands allocated to village communities are effectively privatised. In this section we examine *de facto* CPR use to understand more clearly the extent of CPR dependence across agro-climatic zones.

We present data with regard to both use of CPRs and collection of CPR products. Use includes grazing within the commons in addition to collection of firewood, fodder and non-timber forest products (NTFP) for use outside the commons. Collection, on the other hand, is a subset of use and would only include the removal of CPR products from *de facto* commons but not, for example, grazing within those commons. In other words, use would be a better indicator of dependence than collection alone. Unfortunately, data on what percentage of households use *de facto* CPRs across agro-climatic zones is not available so we have to depend on collection data. Among rural households, 48 per cent are engaged in collections (Table 1). It exceeds 50 per cent in eight out of the 15 agro-climatic zones. The highest percentage of collections was in the Eastern Plateau and Hills (73 per cent), the Western Himalaya (68 per cent), the Islands (68 per cent) and the Southern Plateau and Hills (65 per cent), i.e. mostly the forested tracts. The lowest collection percentage was in the Western Dry Region despite the very high percentage of CPR land availability. This can be explained either by the fact that much of the CPR use in the Western Dry Region does not involve the collection of CPRs or that grazing takes place more on private lands. The lowest percentages are in the Green Revolution belts of the Ganges where CPR availability per household is also the least.

Table 2 shows data with regard to the monetary value of CPR collections across agro-climatic zones using collection data. Data are also provided for 15 states to see how important CPRs are in relation to consumer expenditure.<sup>7</sup>

The average annual household value of CPR collections at the all-India level is Rs 693. This average figure, however, masks significant differences across agro-climatic zones. Gains from CPRs (i.e. collection) are highest in the Western Himalayas (Rs 1939) followed by the Eastern Himalayas (Rs 1219). It is surprising that the value of CPR collection was also high in the Upper Gangetic Plains, (Rs 1070), given the fact that only 30 per cent of households collect CPR products. As we illustrate later, this is because of the high dependence on CPRs by the landless households. In other words, though only a relatively small percentage of total households collect CPR products, certain categories of farmers (the landless especially) are highly dependent on CPR collection.

The value of CPRs as a percentage of consumer expenditure is only 3.02 per cent at the national level (Table 2).<sup>8</sup> States that have marginally higher income dependence in terms of percentage are Orissa (5.59 per cent), Madhya Pradesh (4.93 per cent) and Assam (4.89 per cent). States with a lower level dependence include Kerala (1.17 per cent) and West Bengal (2.09 per cent). These differences are not surprising. Orissa and Madhya Pradesh are states

**Table 1**

*Percentage of households collecting CPR products across agro-climatic zones*

Agro-climatic zones	Households collecting CPR products %
Eastern Plateau and Hills	73
Western Himalayas	68
All Islands	68
Southern Plateau and Hills	65
Western Plateau and Hills	58
Gujarat Coast Plains and Hills	56
Eastern Himalayas	51
East Coast Plains and Hills	51
Central Plateau and Hills	47
Middle Gangetic Plains	39
Lower Gangetic Plains	38
West Coast Plains and Hills	31
Trans-Gangetic Plains	30
Upper Gangetic Plains	30
Western Dry Region	13
<b>India</b>	<b>48</b>

**Source:** Compiled from Table T 9, p. 28, National Sample Survey Organisationa (NSSO), 1999.

Table 2  
*Percentage of income derived from CPR product collection across agro-climatic zones and states*

Agro-climatic zones (Rs)	State	Average value of collection from CPRs (Rs)	Ratio of value of collection to consumption expenditure (%)
Western Himalayas	Andhra Pradesh	1939	2.78
Eastern Himalayas	Assam	1219	4.89
Lower Gangetic Plains	Bihar	408	2.77
Middle Gangetic Plains	Gujarat	464	2.77
Trans-Gangetic Plains	Haryana	528	3.09
Upper Gangetic Plains	Karnataka	1070	2.90
Eastern Plateau and Hills	Kerala	845	1.17
Central Plateau	Madhya Pradesh	744	4.93
Western Plateau and Hills	Maharashtra	674	3.61
Southern Plateau and Hills	Orissa	628	5.59
East Coast Plains and Hills	Punjab	559	2.76
West Coast Plains and Hills	Rajasthan	715	0.91
Gujarat Coast Plains and Hills	Tamil Nadu	658	3.65
Trans-Gangetic Plains	Uttar Pradesh	230	2.75
All Islands	West Bengal	467	2.09
<b>India</b>	<b>India</b>	<b>693</b>	<b>3.02</b>

**Note:** The ratio of the value of collection as percentage of consumption expenditure is calculated using the data from the monthly per capita consumption expenditure from NSS Report No. 448: *Household Consumption Expenditure and Employment Situation in India, 54<sup>th</sup> round, NSS*. The data is presented in the summary tables of the 54<sup>th</sup> Round on CPRs. The data is available only for the above 15 states.

**Source:** Compiled from Table T8, p. 26 and T9, p. 28, NSSO, 1999.

where dependence on forests are relatively higher and the scheduled tribe population is also significant.<sup>9</sup> For instance, Kerala and West Bengal are agriculture-based economies of a less intensive nature than Punjab and Haryana. The low percentage of CPR income in Rajasthan is again best explained by the fact that CPR dependence is less in terms of collection and more in terms of grazing, given the nature of the pastoral economy there. Jodha's study (1990: A-66) in Rajasthan revealed that 84 per cent of the poor depended on CPRs for grazing.

### **De Jure Access**

It is important to examine the relationship between *de facto* use of CPRs and *de jure* access. In most of the hilly forested tracts there is a fairly high per cent of *de jure* CPR land to total land. In the Western Himalayas, 33 per cent is *de jure* CPR land whereas in the Central Plateau and Hills and the Eastern Plateau and Hills *de jure* land constitutes 27 and 20 per cent respectively. The exception is the Eastern Himalayas where both the per cent of land under *de jure* CPRs and the per household extent are well below average.<sup>10</sup> Moreover, the highest per cent of *de jure* land to total land is in the semi-arid tract of the Western Dry Region. Hence, although collection rates of CPR products in the Western Dry Region are low (13 per cent), CPR lands would appear to be important. This suggests that grazing within the commons is the most important activity there. The intensive agriculture belts generally have a low per cent of land under CPRs. This suggests that much of the CPR use in the Upper Gangetic Plains, which has a fairly high level of CPR use (in terms of value), comes from *de facto* CPRs.

The other point to keep in mind is that *de jure* CPRs are declining. During the five years prior to the survey in 1999, 1.9 per cent of the total *de jure* CPR land was lost, a total of 833,300 ha. The greatest decline in terms of absolute area has been in the Central Plateau and Hills, the Eastern Plateau and Hills, the Southern Plateau and Hills and the Middle Gangetic Plains. Except for the Middle Gangetic Plains, these other areas are again hilly areas so one would presume that much of the decline has come in terms of loss of village forest land or grazing lands. One possible reason for this is that some traditional systems of forest management that perhaps were located in village forests are now in reserve forests. There is evidence of the latter from the study by Sarin et al.(2003) in Orissa. The relatively faster decline of CPRs in the intensive agricultural Gangetic belt is because of the small extent of *de jure* CPRs in the first place.<sup>11</sup>

In summary, the following points emerge with regard to CPR usage across agro-climatic zones: while hilly forested tracts, semi-arid/arid economies and intensive agricultural areas are essentially geographic distinctions, they also have different farming systems and socio-economic profiles. The semi-arid zones have a large number of pastoral communities while the forest tracts are

inhabited mostly by scheduled tribe communities. Second, and more importantly, there is considerable diversity within the three broad-based farming systems. The Western Himalayas, for example, though a forested tract is not a scheduled tribe belt; forest dependence is significant and local CPR institutions such as *van panchayats* exist. Similarly, intensive agricultural practices in Punjab and Haryana are very different than agriculture in Kerala.

### *Disaggregated Analysis of CPR Product Use*

The analysis so far has characterised the importance of CPRs across the different agro-climatic zones. A more disaggregated analysis of the type of products collected (not used) from CPRs will help to depict the nature of the dependence in a better manner. The NSS data classifies CPR products as fuelwood, fodder and others which includes manure, fruits, roots and tubers, vegetables, gums and resins, honey and wax, medicinal plants, fish, and leaves and weeds. Approximately 58 per cent of total CPR product collections are fuelwood collections (Table 3). Fodder constitutes 25 per cent of collections and 17 per cent is classified as 'others'. There are important differences again between agro-climatic zones. In the Islands, the Southern Plateau and Hills, the Western Plateau and Hills, the Eastern Coast Plains and Hills, the Eastern Plateau and Hills, the Central Plateau and Hills, the Western Himalayas, the Eastern Himalayas and the Middle Gangetic Plains, over 50 per cent

**Table 3**

*Percentage contribution of different CPR products across agro-climatic zones*

Agro-climatic zones	Fuelwood	Fodder	Others
Western Himalayas	59	39	2
Eastern Himalayas	53	8	39
Upper Gangetic Plains	48	5	47
Middle Gangetic Plains	52	39	9
Trans-Gangetic Plains	44	51	6
Upper Gangetic Plains	31	69	0
Eastern Plateau and Hills	64	4	31
Central Plateau and Hills	62	18	20
Western Plateau and Hills	68	25	7
Southern Plateau and Hills	72	18	10
East Coast Plains and Hills	65	18	17
West Coast Plains and Hills	49	13	38
Gujarat Coast Plains and Hills	61	30	9
Western Dry Region	71	29	0
All Islands	79	3	18
<b>India</b>	<b>58</b>	<b>25</b>	<b>17</b>

Source: Compiled from Table T10, p. 29, NSSO, 1999.

of total collections are of fuelwood. In the Upper Gangetic Plains, fuelwood constitutes only 31 per cent of total CPR product collection. On the other hand, 69 per cent of total CPR product collection in the Upper Gangetic Plains is in the form of fodder. In the Trans-Gangetic Plains and Middle Gangetic Plains, 51 and 39 per cent of total collections are fodder resources. Other zones with a high total contribution from fodder are the Western Himalayas (39 per cent), the Gujarat Coast Plains and Hills (30 per cent), the Western Dry Region (29 per cent) and the Western Plateau and Hills (25 per cent). In the Eastern Plateau and Hills, the Eastern Himalayas and the Central Plateau and Hills, other sources are the second most important source of CPR products. This shows that forest-dependent hill economies mostly depend on the commons (*de jure* and *de facto*) for fuelwood while intensive agricultural economies are more dependent on CPRs for grazing (if at all). The semi-arid/arid economy of the Western Dry Region appears to be similar to the hilly forested economies at least in terms of collection of fuelwood, i.e. a relatively higher dependence on fuelwood as compared to other CPR products.

While dependence on fuelwood is central to questions of the commons, it is important to highlight the fact that the nature of this dependence also varies across the three broad-based categories. Hence, while approximately 60 per cent of all rural households use fuelwood (Table 4), the numbers are higher, in general, in forested areas, namely in the Eastern Plateau and Hills (77.8 per

**Table 4**  
*Percentage of households using and collecting fuelwood across agro-climatic zones*

Agro-climatic zones	% of households using fuelwood	% of households collecting fuelwood from CPRs
Southern Plateau and Hills	79.9	63.5
Eastern Plateau and Hills	77.8	70.7
All Islands	74.0	63.5
Gujarat Coast Plains and Hills	73.0	54.6
Western Himalayas	72.8	67.0
Western Plateau and Hills	68.8	57.0
East Coast Plains and Hills	68.5	47.5
Central Plateau and Hills	61.6	45.2
West Coast Plains and Hills	58.9	27.3
Eastern Himalayas	57.0	42.7
Upper Gangetic Plains	54.2	24.2
Trans-Gangetic Plains	52.9	26.2
Lower Gangetic Plains	50.3	33.6
Middle Gangetic Plains	46.0	31.9
Western Dry Region	44.5	10.6
<b>India</b>	<b>62.3</b>	<b>44.8</b>

**Source:** Calculated from Table 10.1, p. A-55, Table 11.1, p. A-65, NSSO, 1999.

cent), the Islands (74.0 per cent), the Gujarat Coast Plains and Hills (73.0 per cent), the Western Himalayas (72.8 per cent) and the Western Plateau and Hills (68.8 per cent). The numbers, not surprisingly, are much lower in the Gangetic belt where the adoption of other sources of energy is much greater and where forests and *de jure* CPRs are less available. This is corroborated by the collection figures. Whereas the collection of fuelwood is high in the Western Himalayas, the Eastern Plateau and Hills and the Islands, it is very low in the Gangetic Belt. Collection is, however, lowest in the Western Dry Region where only about 10 per cent of households collect fuelwood. Thus, while fuelwood was the most important CPR product collected in the semi-arid/arid Western Dry Region, it is only a small percentage of households that actually collect fuelwood from common lands.<sup>12</sup> The likely reason for this is that fuelwood needs are being met to a large extent from private landholdings.

The livestock data presents a somewhat different picture (Table 5). Of all concerned households, 56 per cent possess livestock, but here too, there are huge variations. In the Western Dry Region and the Western Himalayas respectively, 87 and 86 per cent of households possess livestock. A majority of households, in fact, possess livestock in 10 out of 15 agro-climatic zones. Livestock ownership is below 50 per cent only in the Southern Plateau and

**Table 5**  
*Use of CPRs in the livestock economy across agro-climatic zones*

Agro-climatic zones	Per cent of households		
	Possessing livestock	Grazing livestock	Collecting fodder
Western Dry Region	87	25	2
Western Himalayas	86	55	53
Trans-Gangetic Plains	72	13	16
Central Plateau and Hills	71	31	9
Eastern Plateau and Hills	61	40	10
Upper Gangetic Plains	61	7	21
Gujarat Coast Plains and Hills	59	25	8
Eastern Himalayas	57	20	11
Middle Gangetic Plains	56	16	16
Lower Gangetic Plains	53	14	7
Western Plateau and Hills	50	18	11
Southern Plateau and Hills	42	13	11
All Islands	40	17	4
West Coast Plains and Hills	36	6	7
East Coast Plains and Hills	35	15	11
<b>India</b>	<b>56</b>	<b>20</b>	<b>13</b>

Source: Compiled from Table T19, p. 38, NSSO, 1999.

Hills (42 per cent), the Islands (40 per cent), the West Coast Plains and Hills (36 per cent) and the East Coast Plains and Hills (35 per cent). It is interesting to note that a much smaller percentage depends on *de facto* CPRs for grazing (20 per cent) and collection (13 per cent) of fodder. While the lower dependence on CPRs for grazing is partly due to the fact that only 56 per cent of all households (at the all-India level) have cattle, this cannot explain the extremely low level of dependence. It is plausible that fodder demand is being met to a large extent from private lands. Again, there are significant differences across agro-climatic zones with 55 per cent of households in the Western Himalayas grazing their livestock in common lands but only 6 per cent in West Coast Plains and Hills. Even in a zone such as the Western Dry Region where cattle are owned by most households, the commons do not seem to be the main source for grazing—a finding that is counterintuitive. This needs to be explored in greater detail as it could be due to the dwindling extent of *de jure* CPRs.

The zones where ‘other’ produce are important are predominantly hilly forested tracts of the country such as the Western Himalayas, the Eastern Himalayas, the Central Plateau and Hills and the Islands (Table 6). The all-India figures illustrate that dependence on selected items is limited only to a small percentage of households. However, if one looks at the disaggregated zonal data, it illustrates how particular items are important in particular areas: for example, manure is important to households in the Western Himalayas, fish for people in the Eastern Himalayas and fruits, roots and tubers and leaves in the Eastern Plateau and Hills. While the numbers seem low, the comparative profile gives an indication as to the relative importance of NTFP in different agro-climatic zones.<sup>13</sup>

### ***What about the Rural Poor?***

Central to the debate around the commons has been the question of equity. As mentioned earlier, much of the literature has highlighted the pro-poor element of CPRs, namely that the poor derive a larger per cent of total income from CPRs than the non-poor. Equally important, CPRs have tended to support dry land farming in terms of inputs especially during drought years (Jodha 2001). However, the uses of CPRs are clearly mediated by social structures at the village level, which determine the nature of the distribution (Mosse 2003). Unfortunately, data are not available with regard to disaggregated access to *de jure* CPRs and income derived from CPRs across households with different sizes of operational holdings. It is, therefore, not possible to see whether these pro-poor benefits of CPRs indeed exist within the given agro-climatic zones. Furthermore, these data can only help understand underlying processes and structures to a limited extent though they are clearly central to the struggle over the commons (Beck 1994).

Table 6  
*Dependence on households (%) on select CPR items across agro-climatic zones*

Agro-climatic zones	CPR product									
	Manure	Fruits, roots, tubers etc.	Gums and resins	Honey	Medicinal herbs	Fish	Leaves	Weeds, grass, bamboo, etc.		
Western Himalayas	37.4	0.6	-	0.4	0.7	0.1	2.5	1.3		
Eastern Himalayas	1.5	8.5	1.0	1.2	1.2	16.2	7.9	12.0		
Eastern Plateau and Hills	2.5	16.8	0.5	0.5	0.7	3.9	18.3	5.6		
All Islands	-	10.5	2.7	2.7	1.3	1.4	6.8	7.3		
Central Plateau and Hills	0.5	4.7	0.3	0.4	0.1	0.7	10.6	1.5		
West Coast Plains and Hills	0.4	3.4	-	0.3	0.1	2.5	1.3	2.2		
East Coast Plains and Hills	0.9	2.0	0.0	0.1	0.1	0.8	2.6	2.9		
Southern Plateau and Hills	2.3	0.6	0.1	0.0	0.1	0.5	2.0	1.6		
Gujarat Coast Plains and Hills	1.8	1.7	0.0	0.1	0.0	0.1	3.0	2.0		
Western Plateau and Hills	0.2	1.6	-	0.5	0.0	0.4	2.0	1.9		
Lower Gangetic Plains	0.0	0.7	0.0	0.1	-	2.7	3.0	1.4		
Middle Gangetic Plains	0.6	0.6	-	0.0	0.0	2.2	1.5	1.9		
Trans-Gangetic Plains	0.9	0.2	-	0.1	-	0.7	1.0	2.9		
Upper Gangetic Plains	0.2	0.2	-	0.0	0.0	-	-	0.0		
Western Dry Region	0.1	-	-	-	-	-	-	0.0		
<b>India</b>	<b>2.0</b>	<b>3.2</b>	<b>0.1</b>	<b>0.2</b>	<b>0.2</b>	<b>2.0</b>	<b>4.5</b>	<b>2.7</b>		

Source: Compiled from Table 22.1, p. A-175, NSSO, 1999.

Data are available with regard to the extent of households using and collecting fuelwood, fodder and NTFP produce according to operational size holdings. We categorise the data as follows: landless poor (no land), landed poor (0–1 but disaggregated into 0–0.2 ha, 0.2–0.5 ha and 0.5–1.0 ha) and landed non-poor (1+ ha).<sup>14</sup> Whereas the per cent of landed poor households using fuelwood varies from 58.1 per cent amongst households with 0.50 to 1.0 ha to 49.2 per cent for households with 0 to 0.20 ha, 62.3 per cent of the landless households use fuelwood (Table 7). On the other hand, only 58.3 per cent of the landed non-poor use fuelwood, which is similar to usage by different landed poor groups. The data with regard to agro-climatic zones highlights the fact that the dependence of agricultural labourers is highest in all agro-climatic zones except in the Eastern Himalayas and the West Coast Plains and Hills. The percentage dependence of the landless is greatest in the Gujarat Coast Plains and Hills (86.6 per cent) and the Western Himalayas (79.3 per cent).

The greater dependence on CPR products by landless households is most noticeable with regard to fuelwood. Among the landless households, 59.7 per cent of the landless households collect fuelwood whereas only 33.0 per cent of households with 1+ ha do the same. Here too there are significant variations across agro-climatic zones. More than 70 per cent of landless households in the Eastern Plains and Hills, the Western Himalayas, the Gujarat Coast Plains and Hills, the Southern Plateau and Hills, the Western Plateau and Hills and the Islands depend on fuelwood collection. While the dependence of the non-poor is also higher in these zones, it is significantly less. The overall trend of more dependence for agricultural labourers is an important finding. It suggests that CPRs are important sources from which domestic energy needs are met for the landless households. It also highlights, however, the possible vulnerability of their livelihoods given that many of these CPRs might not be *de jure* under their control.

The livestock question is more difficult to disaggregate. At one level, possession of livestock itself is an asset that differentiates households. As shown in Table 5, the total number of households possessing livestock at the all-India level is 56 per cent with significant variations across zones. While 42 per cent of landless households possess livestock, 88 per cent of the landed non-poor possess livestock. Amongst the landed poor, it varies from 25 per cent for those owning less than 0.20 ha to 66 per cent to those owning between 0.2–0.5 ha to 80 per cent for those owning between 0.5–1.00 ha (NSSO 1999). A greater percentage of landless labourers therefore collect fodder from *de facto* CPRs than do households who possess more than 1 ha. However, the numbers for collection are much lower as it also includes households who do not have cattle. The landless are the most dependent on collection with 31.8 per cent of landless households collecting fodder, something that is expected because of their landlessness and hence lack of options with regard to other fodder sources (Table 8). The data also illustrates that in the Gangetic

**Table 7**  
*Use and collection of firewood across agro-climatic zones*

Agro-climatic zones	% of households using fuelwood					% of households collecting fuelwood				
	Landless	0-0.20	0.20-0.50	0.50-1.0	1+	Landless	0.20	0.20-0.50	0.50-1.0	1+
		(ha)	(ha)	(ha)	(ha)		(ha)	(ha)	(ha)	(ha)
Western Himalayas	79.3	50.2	75.5	81.3	62.4	75.9	44.7	67.7	76.4	53.2
Eastern Himalayas	53.4	45.8	70.1	60.9	60.6	44.2	33.3	52.3	44.1	41.5
Lower Gangetic Plains	59.8	41.4	42.6	43.0	42.0	47.6	25.5	18.4	21.7	16.0
Middle Gangetic Plains	55.6	42.2	46.4	37.5	35.3	49.6	28.5	27.1	17.1	12.2
Trans-Gangetic Plains	59.3	48.9	60.4	49.8	46.3	39.1	28.1	30.8	20.0	11.4
Upper Gangetic Plains	65.6	49.5	43.8	50.6	44.4	42.9	20.4	15.7	8.6	5.0
Eastern Plateau and Hills	83.8	58.9	70.6	76.1	77.9	81.0	46.3	61.3	66.6	67.0
Central Plateau and Hills	72.1	51.6	45.9	47.0	58.4	60.9	31.2	37.5	34.9	36.5
Western Plateau and Hills	75.7	44.8	74.1	73.4	65.0	73.3	33.0	49.5	47.4	40.2
Southern Plateau and Hills	84.1	65.1	81.6	80.4	78.8	75.1	43.6	63.5	56.1	49.9
East Coast Plains and Hills	77.3	51.8	64.3	65.7	62.8	60.4	29.8	41.1	38.0	31.4
West Coast Plains and Hills	61.8	46.3	57.0	65.1	73.9	33.6	10.8	22.7	27.8	43.4
Gujarat Coast Plains and Hills	86.6	47.5	79.3	75.1	66.9	75.3	30.7	59.4	55.8	38.8
Western Dry Region	64.7	44.0	24.7	32.6	39.5	21.2	8.7	12.2	14.3	7.0
All Islands	77.4	57.5	96.9	91.4	83.5	71.5	40.8	31.7	73.4	79.9
<b>India</b>	<b>70.9</b>	<b>49.2</b>	<b>59.2</b>	<b>58.1</b>	<b>58.3</b>	<b>59.7</b>	<b>29.8</b>	<b>38.9</b>	<b>37.2</b>	<b>33.0</b>

Source: Compiled from Table 10.1, p. A-55 and Table 11.1, p. A-65, NSSO, 1999.

Table 8  
*Percentage of households (who possess livestock) collecting fodder from CPRs across agro-climatic zones*

Agro-climatic zones	Category of households						All
	Landless	< 0.20	0.20-0.50	0.50-1.00	1.00+		
Western Himalayas	74.6	53.6	56.5	67.7	37.7	61.5	
Eastern Himalayas	19.1	18.7	22.1	21.8	15.1	18.5	
Lower Gangetic Plains	14.8	12.8	13.7	13.9	12.1	13.9	
Middle Gangetic Plains	50.4	31.1	27.0	21.0	13.6	29.1	
Trans Gangetic Plains	35.5	36.8	24.6	16.7	8.4	21.7	
Upper Gangetic Plains	64.3	49.3	26.9	18.1	7.2	34.0	
Eastern Plateau and Hills	15.2	26.6	18.6	15.3	14.1	15.5	
Central Plateau and Hills	14.7	20.9	10.9	13.6	10.3	12.3	
Western Plateau and Hills	30.2	31.9	24.8	16.6	15.2	21.5	
Southern Plateau and Hills	35.5	40.2	17.9	20.6	17.7	25.6	
East Coast Plains and Hills	36.9	28.5	26.3	26.1	26.1	30.7	
West Coast Plains and Hills	22.0	14.2	14.9	15.5	18.0	18.4	
Gujarat Coast Plains and Hills	21.9	31.6	27.3	9.0	5.1	13.8	
Western Dry Region	11.5	7.3	-	-	-	2.5	
All Islands	15.9	6.2	-	-	7.8	10.2	
<b>India</b>	<b>31.8</b>	<b>30.2</b>	<b>15.2</b>	<b>21.8</b>	<b>12.7</b>	<b>22.7</b>	

Source: Compiled from Table 18.2, p. A-137-A-141, NSSO, 1999.

Table 9

*Total value of collections of selected material by household type across agro-climatic zones (in Rupees)*

Agro-climatic Zones	Landless	<0.20 (ha)	0.2–0.5 (ha)	0.5–1.00 (ha)	1+ (ha)
Western Himalayas	1732	1614	2112	2055	2216
Eastern Himalayas	930	1051	1641	1344	1464
Lower Gangetic Plains	424	528	317	367	200
Middle Gangetic Plains	641	479	362	302	276
Trans Gangetic Plains	762	599	589	438	230
Upper Gangetic Plains	1850	836	921	543	242
Eastern Himalayas and Plateau	862	590	1053	755	907
Central Plateau and Hills	821	489	910	693	721
Western Plateau and Hills	781	410	577	598	610
Southern Plateau and Hills	706	409	678	662	554
East Coast Plains And Hills	633	439	602	529	435
West Coast Plains and Hills	630	865	557	744	886
Gujarat Coast Plains and Hills	835	359	1015	610	518
Western Dry region	609	221	152	316	101
All Islands	559	276	181	666	511
<b>India</b>	<b>777</b>	<b>588</b>	<b>749</b>	<b>679</b>	<b>630</b>

Source: Compiled from Table 23.2, p. 184, NSSO, 1999.

belt the dependence of landless households on CPRs for fodder is extremely high relative to the dependence of the landed poor and the landed non-poor. This would substantiate our earlier claim that in intensive agriculture areas, *de facto* CPRs are of significance.

The scenario in terms of selected 'other' items is different from one agro-climatic zone to another (Table 9). The all-India figure suggests that landless households derive a little more value from CPR products than other groups, something that holds true in many agro-climatic zones as well. It is especially true in the Upper Gangetic Plains.<sup>15</sup> What this suggests is that in intensive agricultural economies, CPRs continue to be extremely important for the landless but perhaps more so in the context of private lands as Beck (1994) had argued in the case of West Bengal. In the Western Dry Region also, the benefits of the landless are significantly more than those of other classes, suggesting that the arid and semi-arid areas of the country might be similar in this case to the low land agricultural belts and more dissimilar from the forest zones. However, in most of the hilly tracts, households with marginal amounts of land derive slightly more value from CPR products in general.

Thus the present results substantiate the results of earlier studies that reported that the rural poor depend significantly more on CPRs than the rural non-poor. Although this is more so the case in hilly tracts, the case of the Upper Gangetic Plains suggests that in economies that are much more commercially driven, the landless households remain significantly dependent on CPRs—albeit from private lands perhaps. This has significant implications in terms of access to private lands and serves as a warning that the arable and the non-arable lands must both be central to discussions around the commons. In other words, while CPRs are important they assume importance primarily in the context of agriculture and not as stand-alone resources. Access to CPRs, must be seen very much alongside access to agricultural lands.

#### ***Beyond the National Sample Survey 54<sup>th</sup> Round***

The 54<sup>th</sup> Round has provided a useful database on CPRs across agro-climatic zones. A number of insights have emerged from this analysis. Broadly speaking, CPR dependence is linked to the nature of the agro-climatic zone: hilly forested tracts, semi-arid/arid pastoral economies and intensive agriculture. While these are not ‘neat’ categories, they provide a useful starting point from which to understand CPR use. The communities living in hilly forested tracts and semi-arid/arid areas depend on average more on CPRs. However, in intensive agricultural areas such as the Punjab and Haryana, dependence is also high. As there are more *de jure* CPRs in the hilly tracts and semi-arid/arid zones, CPRs in the intensive agriculture areas are more likely to come from private lands. Within these broad zones (for example, hilly forested tracts), however, there are also differences with forested landscapes such as the Western Himalayas being very different in social composition and forest use than say the Central Plateau and Hills or Eastern Plateau and Hills regions. Similarly, within the agriculture belt, there seem to be differences between states such as Punjab and Haryana located in the Upper Gangetic Plains and Kerala located in the West Coast Plains and Hills—the former having a greater dependence on CPRs in general.

A more disaggregated analysis (in terms of operational holdings) illustrates that the landless are by and large the most dependent on CPRs and CPR products across agro-climatic zones. This is most apparent in the case of fuelwood. In the case of fodder, large farmers tend to own more cattle, but the poor depend more on CPRs (*de jure* and *de facto*) for fodder. The NTFP economy seems to be important (as a supplementary activity) to all households. Yet, in the Gangetic belt (Upper Gangetic Plains), it is important to note that the landless depend on NTFP more than others. Of course, these are general trends with exceptions to the rule arising as well. Moreover, the pro-poor bias should not be taken for granted as the dependence of the non-poor on CPRs is also considerable.

We have also alluded to the fact that in some areas where dependence is high, *de jure* availability is low. At one level, *de facto* CPRs are legally less secure than *de jure* CPRs. However, here too there are differences. For example, access to reserve forests might be considered illegal by the state and thus accessing these forests has costs associated with it. On the other hand, private lands, which are used as commons while they are fallow are mostly used with the consent of land owners.<sup>16</sup>

In summary, the data from the 54<sup>th</sup> Round reminds us of the importance of CPRs across agro-climatic landscapes and the particular concerns that need to be addressed in each of these landscapes. In the forested tracts, the key issue is access to forest produce. While forest dependence is high, especially among the rural poor, access to forests often remains legally problematic. Even in co-management schemes, the benefits to rural communities vis-à-vis the state are relatively insignificant and in some cases have actually resulted in prior rights being withdrawn. In the semi-arid areas of the country, as Jodha illustrated almost 20 years ago, legal access to forest and pasture for fuelwood and grazing purposes continues to be of central importance as well as the privatisation of these commons. In Green Revolution tracts, the high dependence on NTFP suggests that access to private lands (treated as the commons—gleaning of grains that is undertaken after the harvest) is crucial. This indicates the need to remain open and attentive to understanding what the commons means in different agro-climatic regions and what form of CPR management is necessary to address both livelihood and conservation goals.

Our understanding of CPRs through large-scale datasets can of course be improved if some of the limitations of the dataset are addressed in future rounds. First, no estimates were taken of the *de facto* area of CPRs. As the NSSO itself admits, the ‘survey estimates of CPR land are perhaps on the lower side (NSSO 1999: 18). As the NSSO collected information about the *de facto* use, it could have easily presented this data. That would have allowed us a better spatial understanding of *de facto* CPR lands. The NSSO could even go one step further by trying to classify different types of CPR land into more comprehensive categories based on both types of land and the nature of existing institutions. While it did collect information on *de jure* land types, the three-fold classification of grazing lands, village forests and other lands was not comprehensive enough. Moreover, for conservation purposes, it would be useful to classify CPRs according to the nature of existing institutions so as to enable more effective policy intervention that is targeted at areas where CPR institutions are perhaps more likely to emerge.

Another problem is that estimates of CPR use were restricted to collection – which suggests that the numbers given are significant underestimates. Although we have been able to give a good relative picture of CPR use across different agro-climatic zones, the absolute figures are equally important. That is more so where grazing is a major activity. Here too, more detailed informa-

tion with regard to the livestock economy would have been useful to draw more links between arable land and the livestock economy.

In order to look at the relationship between land holdings and CPR use, the NSSO should use categories similar to the Agricultural Census, namely landless, 0–1 ha, 1–2 ha, 2–4 ha, 4–10 ha and 10+ ha. The current categorisation has 1+ ha as the upper bounds: this will mask significant differences among those who have more than one hectare of land. Although the 54<sup>th</sup> Round also had a report on cultivation practices, no links are drawn between the two.

In conclusion, it is important to point out that the NSSO needs to analyse its raw data more carefully. How do we understand the fact that CPR dependence according to the 54<sup>th</sup> round appears to be significantly less than much of the case study evidence? Are there data collection lapses or methodological problems with the data? It is difficult to tell from the round itself. However, earlier studies of CPRs suggest that dependence levels would be higher than estimated. It is important to highlight that ‘improved’ secondary datasets need to be supplemented by more case studies that allow us to understand CPR use in the context of different agricultural systems. We have tried to highlight, at least partially, some of these differences within the hilly-forested tracts, semi-arid/arid regions and intensive agricultural belts. But the specifics of CPR use will vary even within these sub-regions, i.e. the need to study CPR use in even smaller micro-contexts. Moreover, the use of CPRs is often a struggle/contestation over access to resources, something not easily captured by numbers.

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### **Notes**

1. The term common property resources (CPRs) is often used in different ways. In general, CPRs refer to resources which are used in common and which have the physical characteristics of being difficult to exclude physically (but yet possible at least institutionally) and subtractable. However, often implicit in much of the discourse is that these resources are also managed collectively unlike open access resources that are not. Our use of the word CPRs does not refer necessarily to resources that are managed collectively, but to all resources that are used by a broadly defined set of users. Hence, CPRs might be *de jure* under the control of a defined user group or *de facto* used by a group. In that sense, CPRs might be open access in nature. Chopra and Dasgupta (2002) use the term common pool resource instead to

avoid confusion about property rights. We have chosen not to do so because our main concern is use and claims to access by users and not to property rights distinctions at least *vis-à-vis* area under CPRs. This is the case because we are primarily interested in the dependence of rural households and especially the rural poor on CPRs.

2. We are referring here mainly to agriculture in non-semi arid and arid areas. Beck's (1994) study is based in both alluvial and semi-lateritic zones of West Bengal. The other point to keep in mind is that such agricultural areas have less *de jure* CPRs available. The point made by Beck (1994) is that even in such areas materials such as gleaned grains are important and in fact constitute an important CPR.
3. For example, Jodha (1986) defines the poor as those who have two hectares of dry land or less. Pasha (1992) considers those with less than two acres as poor. Singh et al. (1996) do not define their use of the terms marginal and small farmers though presumably they use the definitions of the Agricultural Census.
4. Our analysis does not involve any econometric analysis. In fact, implicit to our argument is that a simple critical look at the data reveals interesting findings with regard to the use of CPRs across different agro-climatic zones.
5. Details are given here of the different states included in particular agro-climatic zones. The Western Himalayas includes the whole of Himachal Pradesh and Jammu and Kashmir and much of the Uttaranchal (part of former Uttar Pradesh). The Eastern Himalayas encompasses the northeastern states including Assam and parts of West Bengal. The Lower Gangetic Plains includes much of West Bengal, while the Middle Gangetic Plains includes much of former Bihar and former Uttar Pradesh. The Trans-Gangetic Plains includes much of former central and western Uttar Pradesh while the Upper Gangetic Plains includes the whole of Haryana, Punjab and Delhi. The Eastern Plateau Hills consists of parts of former Bihar, former Madhya Pradesh, much of Orissa, two districts of Maharashtra and four districts of West Bengal. The Central Plateau and Hills consist of a large part of former Madhya Pradesh, parts of Rajasthan and a few districts of former Uttar Pradesh and Maharashtra. The Western Plateau and Hills consists of northern Karnataka and parts of Madhya Pradesh and Maharashtra. The Southern Plateau and Hills comprises a large part of Andhra Pradesh, a few parts of Karnataka and parts of Tamil Nadu. The East Coast Plains and Hills consist of parts of Andhra Pradesh, Orissa and Tamil Nadu, basically the Eastern Ghats. The West Coast Plains and Hills comprise the whole of Kerala and Goa and a few districts in Maharashtra, Tamil Nadu and Karnataka. The Gujarat Coast Plains and Hills are made out of the entire state of Gujarat, Dadra and N. Haveli and Daman. The Western Dry Region consists of semi-arid Rajasthan while the Islands are made of the Lakshadweep and the Andaman and Nicobar Islands.
6. Of course, these three broad-based categories will not capture the significant differences that will exist in terms of CPR use within these agro-climatic landscapes. The differences might be so micro-scale in context that only rigorous case study work will highlight these differences. Moreover, some agro-climatic zones, such as Eastern Himalayas for example, include both hilly tracts and deltaic agricultural areas of Assam. Thus, considerable diversity will exist in these zones, which are not revealed at the agro-climatic zone level.
7. Consumer expenditure is used as a proxy for income. This data is only available for states, and not agro-climatic zones.
8. This appears to be very low. The only possible reason for this is that state level data masks the significant differences, that might exist in terms of CPR dependence. Questions, however, need to be asked about the methods of calculation and more specifically whether imputed values of particular CPR products were estimated accurately. Nonetheless, the comparisons across states are still important.
9. According to the 2001 Census, the Scheduled Tribe population in Madhya Pradesh and Orissa constitute 20.3 and 22.1 per cent respectively of the total population. The other states with significant tribal populations include Chattisgarh (31.9 per cent), Jharkhand (26.3 per

- cent) and the northeastern states. While Chattisgarh was part of Madhya Pradesh at the time of the 54<sup>th</sup> Round, Jharkhand was part of Bihar.
10. It is difficult to explain why *de jure* CPRs constitute such a small percent of total area in the Eastern Himalayas. Part of the reason could be that the area under *de jure* CPRs in Assam is low.
  11. More detailed studies are necessary to explain why CPRs have declined in these areas. The faster relative decline in intensive agricultural areas is due to the fact that the initial extent of *de jure* CPRs was far lower.
  12. The picture that is emerging in the Western Dry region is that while there is significant area under *de jure* CPR land, people seem to depend more on private lands for fuelwood and grazing purposes. This is somewhat puzzling given earlier studies in these regions such as Jodha's (1986). Again, further studies are needed at the agro-climatic zone level to explain these findings.
  13. The collection of data, as we suggest in the last section, needs to be undertaken with more care to capture the 'true extent' of dependence. An attempt to factor in the collection made from *de facto* CPRs would substantially address the problems related to the accuracy of this particular dataset. For example, one would expect to see more dependence on NTFPs in the Central Plateau and Hills, the Western Plateau and Hills and the Eastern Plateau and Hills as well. For example, in states such as Madhya Pradesh and Orissa, the trade in *tendu* leaves amounts to several hundred crores.
  14. In our own analysis (and tables), the data for the landed poor is presented in a disaggregated form (0–0.2 ha, 0.20–0.50 ha and 0.50–1.0 ha). This is because methodologically it would be incorrect to club this data, as the sample sizes of the different groups were not necessarily the same. It is also important to point out that the various categories overlap (e.g. 0.20–0.50 ha and 0.50–1.0 ha) which is incorrect in terms of sampling procedure, as the possibility exists of double counting. It is unclear whether this is a genuine problem or a reporting problem (in the results).
  15. This suggests that even in intensive agriculture zones CPRs, in terms of private lands, are very important to the landless. This has significant implications in terms of distribution of private lands.
  16. While the distinction between *de jure* and *de facto* access is important at one level, it is misleading at another level. While communities continue to use resources from lands, which are not *de jure* CPRs, their access to these lands is mediated by social relations. Property rights might provide statutory legitimacy, but access is often mediated by socially sanctioned tenure. Such social dynamics of common property use cannot be captured by secondary surveys such as the 54<sup>th</sup> round.

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