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Preliminary note¹

Common Pool Resources in India - New Evidence on the PPR-CPR Hypothesis

G. Ananda Vadivelu²

In the predominantly agrarian socioeconomic context of India, studies (that) do not explore the connections of environmental changes with agrarian structures and processes delink environmental politics from the agrarian world that is both the locus and the object of these politics- Agarwal and Sivaramakrishnan (2001, p.4).

The importance of common pool resources (CPRs), particularly to the poor, in the semi-arid zone of India has been well documented. However, these studies have largely been in the nature of case studies - the exception being Jodha's comprehensive attempt in the 1980s to cover a large representative sample. The availability of the household data from the 54th round of the National Sample Survey (NSS) for 78,990 households across various zones provides us an opportunity to revisit the private property resources (PPR)-common pool resources (CPR) hypothesis by using a larger sample across the various states (districts which comprise the semi-arid zone). In fact, there are two hypotheses: (1) there is a strong relationship between PPR ownership and extraction of resources from CPRs due to their complementarity in terms of the inputs from CPR products that feed into PPR production activities, (2) the linkage between the 'poor' especially the landless and the small and marginal farmers is stronger as subsistence needs are met from the CPRs.

The paper would examine this competing hypotheses by analyzing the differential dependence on CPRs (use and collection of fodder, fuelwood, non timber forest produce (NTFP), common water resources) by using the household data from the following categories of households- landless, landed poor and others from the semi-arid zone. Appropriate econometric techniques would be used to analyse the household data. The case study literature particularly in the semi-arid context would be used to infer whether the findings at the macro level are in concurrence with the micro level findings and areas for further micro enquiry will be identified. The methodological limitations of the NSS

¹ This is a preliminary attempt as the work on the analysis of the unit level data is at an initial stage. This note does *not* present the data on the PPR-CPY hypothesis.

² Doctoral Student, Institute for Social and Economic Change, Nagrabhavi, Bangalore-560072, India.
Email: vadivelu@isec.ac.in and vadivelu26@rediffmail.com

survey would be pointed out and suggestions would be put forth to overcome them to enable a more nuanced understanding of the commons.

Jodha's pioneering work on common pool resources (CPRs) in the 1980s resulted in a spate of literature highlighting the importance of CPRs to the agrarian economy and to the rural poor. 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 forest zones and even predominantly agriculture dominated belts of the country³. There is enormous literature, which documents the 'importance' of CPRs and reviews of these studies are provided in Chopra and Dasgupta (2002, p.37-42), Beck, et.al. 2000(p.148)⁴.

Jodha highlighted that in his case study villages between 84 and 100 per cent of households gathered items such as fuel, fodder, food and fibre items from CPRs whereas only 10-28 per cent of the rich did the same. (Jodha 1986: 1172) Poor households, moreover, met between 66-84 per cent of their fuelwood needs from CPRs. In general, these same poor households gathered many more products from CPRs than the rich. Monetarily speaking, poor households derived between Rs. 445-830 annually (or about 15-23 per cent of income) from CPRs while the rich only about Rs. 300. These benefits were also translated into significant employment generation, namely of the order of 36-64 days of work only for CPR collection per worker in poor households (1175). Finally, Jodha's work highlighted through use of the Gini coefficient that income inequality decreased if CPR income was taken into account. As highlighted at the outset, Jodha's findings have by and large been corroborated by subsequent research. CPRs continue to be important sources of fuel, fodder, food and NTFP, important sources of income, significant generators of employment and crucial reservoirs in the lean season and periods of drought.

Beck *et al.*'s study of 12 villages in West Bengal (2000) puts the contribution of CPRs to the rural poor at 12 per cent which was a decline from an earlier study by Beck (1994) from 3 villages in West Bengal which found that between 19 to 29% of income of the poor accrued from CPRs. Pasha's study of 3 villages from Karnataka found that CPRs made up 10% of gross income of poor households. The study by Iyengar and Shukla (1999) from Gujarat found huge variation in the contribution to non-farm households, which ranged from 1 to 22 %. Others have attempted to supplement case studies of CPRs with a more macro-level understanding of the extent of CPRs, the main purpose being to see whether or not CPRs are declining or not. Given the importance of CPRs in the rural economy, it is worthwhile to estimate the extent of CPRs there in India. An important attempt at doing so was undertaken by Chopra *et al.* Chopra *et al.*'s work (1990) uses nine-fold land classification data to estimate the total area of CPRs. Chopra *et al.* (1990) suggest that other than current fallow, cultivable waste, pastures, and protected and

³ Chopra and Dasgupta, 2002, p.37-42, Beck, et.al. 2000 provide a summary of the studies.

⁴ Estimates suggest that about US \$5 Billion a year accrue to the rural poor from CPRs but in terms of its share of total household income it accounts for only 12%. This was about two and half times the amount of FDI flowing in 1996 and twice the amount of official Development assistance in the same year(Osman, et.al, 2001, citing Beck and Ghosh, 2000).

unclassified forests can be broadly categorised as CPRs. Based on this classification, the authors concluded that 21.55 per cent of all land in India (1980-81 figures) was CPR with the rider that this estimate might be slightly high given the fact that not all protected forests are CPRs.

Reviewing the debate

In the 1980s, when many were lamenting the failure of land reform in the Indian countryside, Jodha's work on CPRs raised a different type of question, namely who benefits from land reform and who loses out. What emerged from his own study were a few things: (1) that privatization for the most part was captured by the rural rich and that land that the poor obtained through privatization was often of poorer quality; (2) that the privatization of CPRs led to the loss of major income from CPRs and (3) that the poor were the bigger losers in terms of lost income. This was happening when the planners were more engaged in developing Private Property Resources (PPRs) through various package of practices (promotion of high yielding crop varieties, supply of electricity for groundwater lifting devices, etc) and there was an "inadequate understanding of the survival mechanisms of the poor as well as the complementarities between CPRs and PPRs" (Jodha, 1986, 1169).

Although various studies have supported the argument that privatization of CPRs has not helped the poor because they were captured by the rich, the lands distributed were of poorer quality, there was loss of access to the commons (Jodha, 1986, Karanth, 1992, Shanmugaratnam, 1996), some studies do indicate the poor have benefited from encroachment of common land (Bokil, 1996). Bokil's study from Marathwada region in Maharashtra shows that the Dalits benefited from the encroachment of the village common land. They not only benefited from the agricultural income derived from the land, but their position as cultivators enabled them to bargain better wages from the better landed. In fact, the nature of the labour contract changed⁵.

Let us examine the hypotheses on the CPR-PPR relationship. The first is that there is a strong relationship between PPR ownership and extraction of resources from CPRs due to the complementarity in terms of the inputs from CPR products that go into the PPR production activities; the alternative hypothesis is that the linkage between the 'poor' especially the landless and the small and marginal farmers is more stronger as the subsistence needs in terms of fuelwood, NTFP and fodder are met from the CPRs, the logical extension of the alternative hypothesis is that the dependence of the "better landed" on CPRs would be lesser as they would rely more on the PPRs.

⁵ "Before the encroachments almost all the dalits used to be employed by the large landowners on annual bonds. This kind of labour relationship was dramatically altered once dalits started establishing access to land and began retaining those plots despite adverse socio-juridical conditions....This practice was substantially altered(though not completely abolished) as the encroachers accorded primacy to cultivating the encroached lands and preferred to work as wage labourers as and when required....What regularization, or state intervention, did was to end the uncertainty under which dalits lived and put a final seal on the changed relationship"(Bokil, 1996, p.2257-58).

The above hypotheses have been tested by various micro level studies, the availability of the data from the 54th round of the National Sample Survey provides us to undertake a disaggregated analysis across zones and the states across the country, which the paper would attempt to provide.

Jodha (2001) from the micro level study involving households from Andhra Pradesh, Maharashtra, Gujarat and Rajasthan provides strong empirical support to show the complementary role of CPRs in PPR development. The inference of Jodha (2001, 130-132) is as follows – “ 31 to 42 percent of the total farm inputs used during the pre-sowing to pre-harvest stages of cropping are contributed by cash or kind inflows from CPRs. Such contributions during other stages of the cropping season are smaller because alternative means are available, such as high wage earnings, etc. A still greater dependence on private resource-based farming on CPRs is revealed by the extent of support is receives for the sustenance of field animals. Maintaining these animals without CPRs would have implied diversion of a substantial proportion (48-55%) of crop lands from food and cash crops to fodder crops. The alternative option, i.e. reducing the number of animals to a level sustainable by own fodder/feed resources, would have implied loss of own farm inputs, e.g. draft power (69-76%) and farm yard manure (35-43%).

Analysis of CPR collection and use⁶

The 54th round classifies CPR products as fuelwood, fodder and others, which include manure, fruits, roots and tubers, vegetables, gums and resins, honey and wax, medicinal plants, fish, and leaves and weeds. As can be seen from Table 1, fuelwood continues to be the major item collected from CPRs. Approximately 58 per cent of total CPR collections are fuelwood collections. 25 per cent of collections are fodder and 17 per cent are 'others' There are important differences again between agro-climatic zones. In Isl, DP, WHg, EG, EHg, CHg, WHm, EHm and MG over 50 per cent of total collections are fuelwood collections. In UG, as much as 69 per cent of total CPR collection is in the form of fodder. In TG and MG, 51 and 39 per cent of total collections are fodder resources. Other zones with a high total contribution from fodder are WHm (39 per cent), GC (30) per cent, TD (29 per cent) and WHg (25 per cent). In EHg, EHm and CHg, other sources are the second most important CPR product used.

Comment: See corrected table(No.9), I will do the corrections and send it to you

⁶ Since the analysis of the Unit level data is at a preliminary stage, in this note we present only the aggregate scenario across zones(only for Fuelwood and ‘Selected Material’ and Water) the evidence on the PPR-CPR hypothesis would be presented in the Paper which would be submitted as early as possible.

Table 1
Percentage Contribution of Different CPR Products
across Agro-climatic Zones

Agro-climatic Zone	Fuelwood	Fodder	Other
WHm	59	39	2
Ehm	53	8	39
UG	48	5	47
MG	52	39	9
TG	44	51	6
UG	31	69	0
Ehg	64	4	31
CHg	62	18	20
WHg	68	25	7
DP	72	18	10
EG	65	18	17
WC	49	13	38
GC	61	30	9
TD	71	29	0
Isl	79	3	18
India	58	25	17

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

The dependency on fuelwood thus continues to be the most significant. 62.3 per cent of all rural households use fuelwood (Table 8). The numbers are higher, in general, in the forest terrains, namely in EHg (77.8 per cent), Isl (74.0), GC (73.0 per cent), WHm (72.8 per cent) and WHg (68.8). 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 collection of fuelwood is high in zones such as WHm, EHg and Isl, it is very low in the Gangetic Belt. Though the low level of fuelwood collection could also be partly due to the fact that fuelwood is purchased, the data on sale of fuelwood suggests that overall only 1.1 per cent of rural households at the all-India level sell fuelwood collected from CPRs.⁷

⁷ This could be partly a reporting problem, i.e. people do not admit that they are selling fuelwood because it is not legally permitted.

Table 2**Percentage of Households Using and Collecting Fuelwood
across Agro-climatic Zones**

Agro-climatic Zone	Per cent of Households Using Fuelwood	Per cent of Households Collecting Fuelwood from CPRs
DP	79.9	63.5
Ehg	77.8	70.7
Isl	74.0	63.5
GC	73.0	54.6
WHm	72.8	67.0
WHg	68.8	57.0
EG	68.5	47.5
CHg	61.6	45.2
WC	58.9	27.3
Ehm	57.0	42.7
UG	54.2	24.2
TG	52.9	26.2
LG	50.3	33.6
MG	46.0	31.9
TD	44.5	10.6
India	62.3	44.8

Source: Computed from Table 10.1, page A-55, Table 11.1, p. A-65, NSSO, 1999.

Source: Computed from Table 10.1, page A-55, NSSO, 1999.

The highest usage of firewood is from 10 districts in Rajasthan, which falls under DP zone. The other zones where the dependence is higher are: Isl (74%), GC (73%), WHm (72.8%) and WHg (68.8%). The disaggregated data on collection across households for Rajasthan reveals that the majority of the collection is done by the non landed poor (31.10%) followed by the landed poor (21.17%) and the others(14.10%). The sale of firewood is done by 0.6% of the “poor” households 0.6% and 0.7% of the non landed poor and landed poor respectively) and 0.1% of ‘others’.

The next highest zone is Ehg(77.8%) comprising of Delhi, districts in Bihar, Madhya Pradesh, Maharashtra, Orissa and West Bengal. Let us examine the case of West Bengal where we have a good micro level study to substantiate the NSS data. In West Bengal as is the case with the other states in the zone- the proportion of the ‘non landed poor’ engaged in firewood collection (51.10%) is more than that of the ‘landed poor’(28.07) and ‘others’. The data on the operation of the market for fuelwood shows the market is almost non-existent with only 0.4 % of the non landed poor, 0.3% of the landed poor and none of the ‘others’ reporting selling of firewood. However, we hypothesise that the

estimate is an underestimate due to ‘reporting problem’ as there would be reluctance by the respondents to report that they are collecting fuelwood, especially in the case of certain CPRs where it would be *illegal*.

The micro level evidence (Beck and Ghosh, 2000 study from 12 villages) substantiates the findings for the country as a whole that the greater proportion of collection of CPRs collection is being done for fuelwood is true. It was found that between 60 and 80% of the collections were for fuel by poor (households having less than Rs.15,000 yearly income) households. However the disturbing finding (which probably would hold true in many other parts of India is that) that poor people were being excluded from the customary access to CPRs due to agricultural intensification, commoditisation of CPRs, environmental degradation and population growth (ibid, p,152)⁸.

Selected⁹ Material

The zones where the 'selected' produce are important are predominantly hilly tribal tracts of the country or other forest dependent areas such as WC, LG and Isl. Table 3 gives details with regard to selected 'other' items which are collected by rural communities. The all-India figures illustrate that overall dependence on selected items is limited to only 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 WHm, fish for people in EHm and fruits, roots and tubers and leaves in EHg. While the numbers seem low, the comparative profile gives an indication as to the relative importance of NTFP in different agro-climatic zones.⁹

⁸ The evidence from Nabastha village in Bardhaman district indicates that intensification of agriculture-“introduction of canal water for ‘rabi’ and summer crops and greater exploitation of groundwater (has lead to) large scale reclamation of waste lands (including grazing lands) has lead to a decline in access to fuel, fodder, fish, etc” (ibid, p.151).

⁹ One would expect to see more dependence on NTFP in CHg, WHg and EHg as well. For example, in states such as Madhya Pradesh and Orissa, there is a several hundred crore trade in tendu leaves.

Table 3
Dependence on Households (%) on Selected CPR Items across Agro-climatic Zones

Agro-climatic Zone	CPR Product							
	Manure	Fruits, Roots, Tubers etc.	Gums and Resins	Honey	Medicinal Herbs	Fish	Leaves	
WHm	37.4	0.6	-	0.4	0.7	0.1	2.5	
Ehm	1.5	8.5	1.0	1.2	1.2	16.2	7.9	
Ehg	2.5	16.8	0.5	0.5	0.7	3.9	18.3	
Isl	-	10.5	2.7	2.7	1.3	1.4	6.8	
CHg	0.5	4.7	0.3	0.4	0.1	0.7	10.6	
WC	0.4	3.4	-	0.3	0.1	2.5	1.3	
EG	0.9	2.0	0.0	0.1	0.1	0.8	2.6	
DP	2.3	0.6	0.1	0.0	0.1	0.5	2.0	
GC	1.8	1.7	0.0	0.1	0.0	0.1	3.0	
WHg	0.2	1.6	-	0.5	0.0	0.4	2.0	
LG	0.0	0.7	0.0	0.1	-	2.7	3.0	
MG	0.6	0.6	-	0.0	0.0	2.2	1.5	
TG	0.9	0.2	-	0.1	-	0.7	1.0	
UG	0.2	0.2	-	0.0	0.0	-	-	
TD	0.1	-	-	-	-	-	-	
India	2.0	3.2	0.1	0.2	0.2	2.0	4.5	

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

Water

In terms of water, the landless and smallest of the marginal farmers make least use of CPWRs. This would support the general finding that the landless rarely have access to water rights in most parts of the country (Table 4). The more interesting finding is that these categories of farmers also have less access to CPWRs for livestock rearing purposes. Unfortunately, there is no disaggregated data for agro-climatic zones which does not allow us to look at CPWRs across different agrarian economies. But one can presume that size of operational holdings is an important factor in terms of overall water use.

Table 4

Percentage of Households Reporting use of CPWRS for Different Purposes by Category of Households, All-India

Category of Households (ha)	Irrigation	Livestock rearing	Household enterprise	Fishing
Landless	13.7	23.9	2.9	2.7
<0.20	7.9	11.8	2.8	1.5
0.2-0.5	45.7	34.1	2.8	2.7
0.5-1.00	42.6	41.5	2.8	3.4
1.00 or more	32.6	46.5	2.9	2.2
India	22.8	29.8	2.8	2.5

Source: Table 25.2, p.A-195, NSSO, 1999.

Conclusion

Secondary data, can only give a broad picture of how CPRs play a role in the rural economy. The data on CPR use does not capture the manner in which different actors struggle/contest over access to these resources. The most likely way to overcome this particular limitation is to 'reintegrate' the study of the commons with agrarian studies. Our hope is that our analysis and the hypothetical assertions made by us would feed into more detailed and focused case study enquiries of the commons.

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