Chapter VII
SUMMARY AND CONCLUSIONS

EPILOGUE

The World is confronted with the acute problem of rapid depletion of its natural resource endowment -- the very base of human survival. The problem has worldwide dimension, but its severity in terms of resource degradation and human sufferings is alarmingly higher in the case of common property resources in developing countries. CPRs not only comprise a substantial proportion of natural resource base, but the survival of overwhelming majority of people, particularly most vulnerable sections of rural poor, is also intimately tied with them. Unfortunately, their environmental and societal significant notwithstanding CPRs are continued to be depleted in terms of both area as well as physical quality. This unabated areal shrinkage and physical deterioration of CPRs is increasing the plight of poor in the developing countries, in particular, and is threatening the very sustainability of humanity and other life systems, world over, in general.

In the present study attempt has been made to examine the extent and nature of the CPR-problem in a relatively prosperous state of India, (Haryana) and to suggest certain measures to mitigate it. The major objective of the study are: (i) to examine the major contributions of CPRs; (ii) to present spatial variations in the availability of CPRs; (iii) to bring out the trends in the availability of CPRs since late 1960s; (iv) to explore the causes and implications of the patterns and trends in the availability of CPRs; and (v) to suggest some effective management system for regeneration and sustainable use of CPRs. To accomplish these objective, rural Haryana has been selected as the area of study, and 432 sample households from eight sample villages have been surveyed using semi-structured questionnaires during 1995.

CPRs AND PEOPLE SURVIVAL

It has been found that CPRs invariably contributed to the livelihood to people in this relatively developed state also. The main discernible sources of livelihood provided by CPRs in the sample villages during 1994-95: (i) supply to biomass resources, namely food items, fibers, fuelwood, cattledung and fodder; (ii) provision of CPR-based
activities including animal grazing and stone quarrying; and (iii) provision of space for refuse dumping, fuel/fodder keeping, crop threshing and animal stalling. Despite the fact that CPRs were severely degraded and encroached upon the considerable proportions of the sample households depended on them for their biomass resource requirements. The percentage of households obtaining different biomass resources varied between 8.8 in the case of fibre items to 44.7 in the case of fuelwood. CPRs were capable to provide only very few wild fruits (jhar-ber, ker, date palm and mango) in the meager quantities (0.3, 1.8, 0.1 and 0.7 kg per household per annum, respectively) as food items. But, people obtained the considerable quantities of fodder and fuelwood from them (25 and 9.6 quintals per household per year, respectively). Further, about 25 and 9 per cent of the sample households depended on commons for CPR-based activities of animal grazing and stone quarrying during 1994-95. Some of the households also used CPR-space for refuse dumping, fuel/fodder staking crop threshing and animal stalling. Besides these, CPRs also contributed to the income and employment of rural households in the State. These resources provided an annual economic returns of Rs 5565 per household, 64 per cent of which was constituted by CPR-based activities of stone quarrying (38 per cent) and grazing (25 per cent). The ration between agricultural production and income derived from CPRs (1:0.12) reflects that CPRs hold significant place in the household economy of the farming community also. Apart from income, CPRs also provided employment of about 88 mandays per household during 1994-95. About two-third of such employment emanated from the stone quarrying and animal grazing. Fodder and fuelwood collections were other significant providers of employment to rural people in Haryana.

The analysis also reveals that the nature and extent of the contribution of CPRs in people's survival have strong regional bearing. Thus, the stone quarrying, in which 49.3 per cent of the sample households in the Aravalli Region were engaged and which contributed about 70 and 64 per cent of total income and employment originated from CPRs in this region, did not exist in any other ecological region. CPR-space for refuse disposal, crop threshing, fuel/fodder staking etc. was also used only in hilly regions. Fibre items (bhabar) was provided by CPRs only in the Celiac Region. CPRs did not
supply fodder in the Western Haryana and food items in the Eastern Haryana Region. Hence, the extent of contributions of CPRs in terms of their number was higher in the hilly than the plain regions of the State. The contributions of commons in terms of their quantities was also higher in the households belonging to hilly regions than the plains. Further, the most developed region of Eastern Haryana recorded lowest level of contribution, while the least developed region of Aravalli recorded the highest level of contribution of CPRs in household economy amongst different ecological regions. The income and employment generated by CPRs makes such regional variations quite clear. The income and employment derived from CPRs were many time higher in the hilly than the plain regions. These were respectively seventeen and eleven times higher in the Aravalli region than the Eastern Haryana Region. Thus, the hunch that CPRs contribute more in the livelihood of people belonging to hilly than the plain regions has been accepted.

It has also been found that socio-economic class had direct effect on the level and nature of the household’s dependence on the CPRs in the State. The households belonging to higher class used CPRs mainly for comparatively more beneficiary activities, hence stone quarrying (mainly its contracting) and animal grazing comprised about 93 per cent of the total income derived from CPRs by these households in 1994-95. Contrary to it, in the absence of private assets of land, animal and money, the wage labour households engaged mainly is low paid activities of stone breaking, and fuelwood, fodder and food collectors. The level of benefit derived from commons in terms of both proportions of the households as well as extent of benefit consistently decreased with increase in class hierarchy. The rate of such decrease was very sharp between wage labour and small peasantry classes. The income obtained and employment generated from CPRs were respectively four and nine times higher in the households belonging to the wage labour than the owing higher class. Thus, our hypothesis that the poor people depend more on CPRs in comparison to rich has also been accepted.
STATUS OF CPRs
The published data related to land helped only in bringing out the broader orders of magnitude of CPRs in India and Haryana. By applying certain assumptions with respect to ownership or use rights on the landuse classification data, it has been found that CPRs comprised about 34 and 29 per cent of the total area in India during 1970-71 and 1993-94, respectively. Amongst different states, CPR-area encompassed higher percentages of the total areas (45 and above) in the states lying in the Western and Eastern Himalayan regions, and medium percentage (30 to 45) in the states located in the tribal forested belt of central India. All major states in South India had lower proportions of their areas (15 to 30 per cent) as CPRs. Commons occupied very little area in agriculturally developed and densely populated states of the country. The status of CPRs in terms of numbers of users was highly unsustainable in the country because only one hectare of common land was available for eighty rural inhabitants during 1993-94. The status of commons in Haryana in terms of both their magnitude and number of users was very precarious. Common-area not only covered very low proportion of the total area (about 7 and 6 per cent during 1970-71 and 1993-94, respectively), but was also characterized by wide inter-district variations. It varied between 3 per cent in Jind district to 14.45 per cent in Ambala district in 1993-94. One hectare of CPR-areas was available for the use of 50 rural people in the State as a whole in 1993-94.

The analysis based on micro-level information from the sample villages brings out several elements of CPR-status. It reveals quantitative, qualitative, operational, ownership and occupancy status of CPRs. Even though the sample villages were selected from the universe comprising only the villages with common-area, CPRs still accounted for only about 13 and 18 per cent of the total area in rural Haryana (all sample villages) during late 1960s and early 1990s, respectively. As excepted, common lands comprised several times higher proportions of total area in the hilly than the plain regions. Hence, the hypothesis that the hilly regions had higher CPR-area than plain regions has been accepted. The human pressure on CPRs assessed by per capita availability of common-area reveals that commons were faced with serious human pressure throughout State, but its acuteness was several times higher in the Eastern Haryana Region in Comparison to
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other ecological regions. Hence, another premise that pressure on CPRs is higher in agriculturally developed region has proved true.

The operational status of CPRs has been examined by evaluating the relative area under local landuse categories of cultivated area, forest area, current and other fellows, and area under hills, water bodies, roads and pathways and other common uses. It has been found that the status of CPRs in terms of its operational value was also not encouraging because a substantial proportion of CPR-area (74 and 81 per cent in late 1960s and early 1990s, respectively) was composed of landuse category of area not available for cultivation (gair mumkins), more particularly of area under hills and forests. The current and other fellows, which have higher operational value in terms of their potential to produce biomass resources, were limited in area in the State. Ironically, a considerable fraction of CPR-area (about 13 and 10 per cent in late 1960s and early 1990s, respectively) was under PPR (private property resource) based cultivations. The occupancy structure determines the part of CPRs actually accessible to people for common purposes. The private operators including non-inheritors, land grabbers and socio-religious workers not only occupied a sizeable proportion of CPR-area (about 6 and 5 per cent in late 1960s and early 1990s, respectively) in the sample villages, above 90 per cent of such area was constituted by fertile part of common land, i.e., cultivated area. The common lands under the possession of these individuals were indeed de facto PPRs. Unfortunately, such de facto PPRs occupied relatively higher proportion of common-area in the Eastern Haryana Region, where CPRs already comprised very meager area. The CPRs in the State were, though, owned by several village and governmental bodies, village panchayats were predominant owner.

The qualitative status has been assessed by evaluating the extent of CPR-area actually accessible to village communities to get biomass resources, and by examining the condition of soil and vegetation on them. The analysis reflects that only about 66 per cent of the total CPR-area was available to provide biomass resources in rural Haryana during early 1990s. The Aravalli hills and forest area in the Celian Region constituted 80 per cent of such area. The qualitative status of CPRs from the view points
of area available for biomass production and its physical quality was deplorable all over rural Haryana (sample villages), but it was highly threatening in the Eastern Haryana Region. In comparison to other regions, the quality of CPRs was better to certain extent in the Celian Region. In a nutshell, CPRs in terms of both area and physical quality were in a critical condition all over the State. However, status of the CPRs was highly distressing in the agriculturally developed region of the Eastern Haryana where in the name of CPRs to provide biomass resources to people mainly degraded lands along/around water bodies, and roads and pathways were available.

**RECENT TRENDS IN THE STATUS OF CPRs**

The area under CPRs had declined with -3.34 per cent annual exponential growth rate in the country as a whole during 1970-71 to 1993-94. But, it had recorded increasing trends in Himachal Pradesh, Meghlaya, Goa, Daman and Diu, and Pandeichery. The annual rates of exponential growth amongst rest of the states/union territories varied from -4.37 per cent in Dadra and Nagar Haveli to 0.01 in Jammu and Kashmir. The CPR-area had also declined in Haryana as a whole with -0.36 per cent annual exponential growth, but it had increased in four out of total seven districts. Interestingly, the area under CPRs had increase with higher rate of annual growth (1.77 per cent) in Ambala district, and had decreased with equally higher negative growth rates in Jind and Karnal districts (-2.29 and -1.77 per cent, respectively). The CPR-area had expanded with an exponential growth rate of 0.69 per cent per year in the sample villages altogether over the period from late 1960s to early 1990s. Though, the CPR-area had increased in all the ecological regions, excepting Aravalli, but the rate or increase was dramatically higher (2.26 per cent per year) in the Celian Region. Hence, the hypothesis that CPR-area has decreased all over State and rate of such decrease have been higher in the Eastern Haryana Region, has been rejected.

As far as trends in the qualitative status of CPRs in rural Haryana during the last two and a half decades is concerned had severely deteriorated though the area available for biomass production had recorded marginal increase.
The drastic decline in the number and quantity of products originating from CPRs, in the intensity and diversity of the vegetation cover over them, and in their carrying capacity during previous quarter of century reflects the acute degradation of CPRs. Thus, the hunch that physical quality of CPRs has deteriorated throughout State has been accepted.

DETERMINANTS OF THE STATUS OF CPRs

The extent CPRs as well as changes in it are the result of the interaction amongst the influences exerted by various factors, many of them cannot be included is a scientific analysis. Thus, such influences pertaining to some of the factors have been examined at different levels (state, district and ecological regions). The regression analysis had been used to as certain the determinants of inter-state variations in CPR-area. Its results show that from the selected two independent variables, the area available for cultivation, a surrogate variable of ecological factors, was mainly responsible for state-wise variation in the CPR-area, while population pressure played a limited role in it. The selected variable jointly explained about 80 and 63 per cent of the total inter-state variance in the CPR-area in the country during 1970-71 and 1993-94, respectively. But, about 88 and 92 per cent of the total explained variance during 1970-71 and 1993-94, respectively, were directly attributed to ecological factors. At district level in Haryana, the ecological factors and development of social infrastructure emerged as main factors determining the extent of area under common property. However, the strength of influence exerted from each of these factors varied across different districts. For instance, in the districts lying in less developed hilly and semi-arid regions, the ecological factors were more significant factor to determine the size of CPRs, while development of social infrastructure was so in the districts located in the relatively more developed regions. Similar to inter-state analysis, population pressure does not indicate much effect on CPR-area in the inter-district analysis.

The more precise inquiry of the determinants of CPR-area, using direct variables of ecological factors, area occupied by the social infrastructures and populations pressures have been induced by using information collected from sample villages. It
reveals that the regional variations in the areal extent of CPRs were mainly caused by ecological diversity. The differences in the levels of infrastructural development had also played some role in it. To sum up, the ecological factors had profound and pervasive effect on the patterns of CPR-area at all the three levels.

The causes of trends in CPR-area across different states in India and different districts of Haryana have been determined by identifying the probable directions of dynamics in area amongst CPRs and other landuse sectors, and then budgeting the rates of change in area on the basis of these identified directions. It has been found that about 43 per cent of the shrinkage in CPR-area in India as a whole over the period from 1970-71 to 1993-94 was directly attributed to the expansion in the reserved forests. The increase in agricultural and non-agricultural sectors was responsible for rest of the loss in the CPR-area in the country. But, the intensity and even the directions of influences exerted by these forces in determining the trends in the CPR-area varied across different states. For instance, appositive to all India view, the decrease in the area under reserved forests was the main reason for increase in CPR-area in Himachal Pradesh, Manipur and Tripura; while acceleration of areas under agricultural and non-agricultural sectors was so strong in Karnataka, Nagaland and Mizoram that area under CPRs had decelerated even after considerable gain of area from reserved forests. The shrinkage in common-area in Haryana as a whole was caused mainly by extension in the non-agricultural sector and partly by the increase in agriculture and reserved forests. Surprisingly enough, the area under non-agricultural uses had declined in Ambala, Rohtak and Mahendragarh districts during 1970-71 to 1993-94. The inconsistency in official methods of data collection seems to be only reason for it.

The more precise process of change in the status of CPRs in rural Haryana has been traced out by working an information collected from the sample villages. The analysis of khasra-wise information reveals that the area included from the state forests, area appropriated by panchayats from biswedars, and land acquired by government for construction of social infrastructures were the factors increasing CPR-area in the sample villages during late 1960s to early 1990s. But, the area included from state forests was most strong reason as it alone accounted for about 77 per cent of the total area added
in CPRs. The privatization of common lands was the only cause for curtailment in CPR-area in the sample villages. However, the factors causing acceleration in CPR-area were more powerful than the decelerating factor. Thus, common-area had increased in all excepting Aravalli region.

As far as the determinants of physical deterioration of CPRs are concerned, it has been found that the consolidation of landholding was a significant factor underlying degradation of CPRs, as it diverted the pressure of biomass resource requirements from private to common lands. Apart from it, improvements in the transport and communication, change in rural economy from subsistence to market-oriented, and emergence of quite profitable markets of CPR-products especially in urban-area during the last about two and a half decades many fold increased the exploitation of CPRs and hence contributed greatly in their degradation. The widespread introduction of package technology in crop cultivation had induced the horizontal and vertical extension of cropped land both on private as well as common lands, and thus increased the pressure on remaining CPR-area. The increase in population over the last quarter of century had also resulted in perceptible over-exploitation of CPRs.

**EFFECTS OF CPR-DEGRADATION**

The most distressing effect of degradation of CPRs and diversion in their uses has been the scarcity of household energy and fodder faced by many sections of the population in rural Haryana. Due to their degradation, CPRs provided only 37 per cent of the total fuelwood consumed in the household sector of rural Haryana in 1994-95. The corresponding proportions were below 5 per cent in the plain regions of Haryana. As a result of it, there has been widespread switching over to inferior fuels, particularly dung cakes. The people has also been forced to walk long distances and to devote more time and effort to obtain fuelwood, which in turn further exacerbated the conditions of already over-burdened women and under-educated children. The historically free sources of household fuel (fuelwood and dung cakes) have been monetized, in which the worst sufferers were the poor households. All these changes reflect the severe shortage of biomass energy in the household sector of rural Haryana. It has almost become a crisis.
particularly in the Eastern Haryana Region, and in the poor households.

The degradation of CPRs had also resulted in very meager supply of fodder from these resources (0.25 per cent of the total fodder/foliage consumed in 1994-95) in rural Haryana. It had created a serious fodder crunch, especially in the poor households. The rural people in the State, more particularly poor, had either entirely given up their traditional occupation of livestock rearing or had drastically cut short the size of livestock holdings. The increased private cost of animal rearing had also induced changes in the composition of the livestock holdings mainly by reducing the size of less productive animals (cattle and young stocks). The proportion of households with animal husbandry as the main occupation had decreased from 16.5 to 1.9 per cent in rural Haryana over the period from 1966-67 to 1994-95. All these changes reflects serious shortage of fodder particularly faced by the poor households. Thus, the hypothesis that the poor people are facing acute shortages of fuelwood and fodder has been accepted.

CPR-MANAGEMENT: POLICY ISSUES
The diagnosis of the existing systems of CPR-use and management in the sample villages reveals that no effective formal or informal institutional arrangement function of devise and implement the rules to CPRM. The elected village Panchayats, a formal institution responsible for the development and management of CPRs, have miserably failed to establish any effective mechanism for the said purpose. The traditional socio-cultural and religious ethos of self-restrained use of CPRs have almost withered in the State. Thus the use of common property has been predominated by highly individualistic and opportunistic attitudes of users and by the drastic competition amongst them. More precisely, the prevailing CPRM has been highly unsustainable, in efficient, and inequalitarian. It was producing very negative out comes with respect to both CPRs and rural society.

Amongst different CPRM systems the community-based collective management has been found most suitable system to regenerate the CPRs and to regulate and coordinate their use in the existing internal and external situation-specific factor in the rural Haryana. The suitability has been judged on the basis of both theoretical reasoning...
viability, practical feasibility and environmental sustainability. For establishing the effective collective management, there is need to develop, legitimize, empower and support as autonomous, a political and effective village based institution, other than village panchayat, with specific purpose of CPR-management. It needs change in the existing legal and administrative framework. The ultimate success of restoration and sustainable use of CPRs however depends on the overall socio-economic development of rural area, and on the thorough empowerment of the rural masses in terms of good education, training, information and financial assistance. Hence, there is a need of serious reforms in rural development approach used by the decision makers in the country.

**PROLOGUE**

The common property resources contribute significantly in the livelihood of people in rural Haryana, in general, and of those belonging to poor households and to less developed regions, in particular. But, these significant sources survival have been in critical condition in terms of both their area as well as in physical quality. Although *de jure* area under CPRs has recorded some increase during the last quarter of century, however CPRs has faced with the serious problems of physical deterioration an encroachment. This continued depletion of CPRs has threatened their sustainability and exacerbated the impoverishment of poor people by creating severe shortage of biomass resources. The failure of existing CPR-management systems, transformation of rural economy, overall development, population growth and certain government policies have been formidable causes for deterioration and encroachment of CPRS. The community-based collective management with popular participation of all people and with liberal legal, technical and financial support of government seems to be the most appropriate solution to this ongoing plight of peoples.