THE DECLINE OF COMMON PROPERTY RESOURCES IN RAJASTHAN, INDIA

by

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INTRODUCTION

Common property resources — community pastures, forests, waste lands — although rare in Western countries today, are still important in the rural areas of developing countries. Broadly defined, common property resources are those used by a community without any exclusive individual ownership or access rights. This paper examines the decline of common property resources in the arid zone of Rajasthan in India and the factors underlying the decline. In Rajasthan, the introduction of land reforms in the 1950s disrupted traditional arrangements that protected and regulated the use of common property resources, particularly those aspects of key importance to livestock production.

THE SETTING

The arid zone of western Rajasthan is spread over 202,000 square kilometers and accounts for 62 percent of the tropical arid area of India. The agriculture of the region is characterized by crop- and livestock-based farming. Studies have emphasized the comparative advantage livestock farming enjoys over crop farming in the region, and the region's comparative advantage over other regions in the matter of livestock farming. This comparative advantage is the product of two factors. (1) the agro-climatic and land resource base; and (2) and institutional arrangements governing the usage of the natural resource base.

Low and erratic rainfall, highly erodible and infertile sandy soils, and a variety of hardy grasses and bushes make most of the region more suited to livestock raising than to sustained arable farming. Livestock, because they are mobile, are less subject to the adverse impact of localized droughts than crops are. The advantage is lost, however, if a farmer's livestock must depend solely on his own forage and water resources. The mobility-linked advantage of livestock becomes a reality only when they have easy and unrestricted access to spatially differentiated land resources. It is in response to the need for unrestricted mobility of livestock that common property or common access resources emerged as the dominant form of resource ownership and usage by village communities in this region.
In dry areas of Rajasthan, the village-level common property resources that have effectively supported livestock farming in the past include:

- Community grazing lands, including permanent pastures, uncultivable and cultivable wastelands, and fallow lands contributing to the grazing area of the village.
- Village forests and woodlands.
- Private croplands available for public grazing after harvest of crops.
- Community threshing and waste-dumping grounds.
- Community ponds and animal watering points.
- Migration routes and facilities.
- Community facilities for stock breeding.

This paper uses evidence from selected villages of Jaisalmer, Jodhpur, and Nagaur districts in Rajasthan for the early 1950s to the early 1980s. The three districts represent three subzones in terms of aridity and density of populations. Annual rainfall averages between 179 mm and 310 mm. Mixed farming based on annual cropping and livestock raising is common to all three districts, although the importance of crop farming increases as one moves from areas of lower to higher rainfall.

Most of the data presented were collected during the period 1963-66 when the author worked for the Central Arid Zone Research Institute (CAZRI). An important objective was to examine the pattern of land resource use and to compare it with the potential pattern emerging from CAZRI's resource conservation and development technologies. In 1973 and 1978, the author revisited the same villages and documented changes through quick surveys in Nagaur and Jodhpur districts. In 1983, during a short visit, data were updated on specific issues. Six villages from which data were collected in all four rounds are the principal focus of this paper. Considering the total size of the arid
zone, findings from six villages can only be suggestive. However, the broad pattern of change observed was also evident more widely in the area.

DECLINE OF COMMON PROPERTY RESOURCES

From the early 1950s to early 1980s, common property resources in the arid zone declined in area and deteriorated in quality.

Grazing lands

Village forests, permanent pastures, uncultivable and cultivable wastelands, and croplands fallowed for longer periods broadly constitute the total grazing area in the villages. This area is supplemented by cropland in the post-crop season when anyone can graze his animals there. The changing situation of croplands, including current fallows, as a source of grazing will be discussed separately. Table 1 provides relevant information on all other grazing areas. The proportions of common property resources used for grazing in the total land area of the study villages is fast declining.

Significantly the decline in area of common property resources was greater during the decade preceding 1963-64 than in succeeding years. This was the peak period of land reforms in the region. Forests and permanent pastures, which were already small in area, declined the most. The fallow lands declined mainly through a fall in long-fallow rotation.

The trends in the decline of common property resources are also evident for the arid zone as a whole. Land utilization trends for all 11 districts comprising the arid zone of western Rajasthan are shown in Table 2. The common property resources (grazing areas) in the region have been declining consistently since 1951-52. Again, the decline was greatest during 1951-52 to 1961-62.

One consequence of the decline in grazing space is the increase in density of animals per unit of common grazing land. In the arid zone as a whole, the density of livestock expressed in terms of animal units increased from 39 animal units per 100 hectares of grazing land
TABLE 1  CHANGES IN COMMON GRAZING AREAS AS % OF TOTAL AREA IN SIX VILLAGES OF WESTERN RAJASTHAN

Percent of total area in study villages

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Forests</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Permanent pastures</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Uncultivable wastelands</td>
<td>17</td>
<td>13</td>
<td>12</td>
<td>11</td>
<td>13</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td>Cultivable wastelands</td>
<td>18</td>
<td>10</td>
<td>7</td>
<td>6</td>
<td>15</td>
<td>7</td>
<td>4</td>
<td>3</td>
<td>26</td>
<td>12</td>
</tr>
<tr>
<td>Fallow lands (other than current fallows)</td>
<td>15</td>
<td>10</td>
<td>8</td>
<td>6</td>
<td>18</td>
<td>13</td>
<td>10</td>
<td>9</td>
<td>16</td>
<td>13</td>
</tr>
</tbody>
</table>

SOURCE: From patwari records during successive rounds of field work. The data relate to two villages in each district. Data for 1953-54 were culled from village records.
### TABLE 2: CHANGES IN CHARACTERISTICS OF COMMON PROPERTY RESOURCES IN WESTERN RAJASTHAN, 1951-78

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area (million ha)</td>
<td>11.3</td>
<td>9.8</td>
<td>9.2</td>
<td>8.7</td>
</tr>
<tr>
<td>Area as percent of total geographic area</td>
<td>60.5</td>
<td>51.1</td>
<td>47.9</td>
<td>45.1</td>
</tr>
<tr>
<td>Percent decline in CPR area over previous period</td>
<td>-</td>
<td>12.4</td>
<td>6.7</td>
<td>4.5</td>
</tr>
<tr>
<td>Livestock per 100 ha of CPRs (no. of animal units)</td>
<td>39</td>
<td>86</td>
<td>94</td>
<td>105</td>
</tr>
<tr>
<td>Population per sq. km in the zone</td>
<td>30</td>
<td>39</td>
<td>51</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

**NOTE:** Common property resources include forests, permanent pastures, uncultivable and cultivable wastelands, and fallow lands other than current fallows.
in 1951-52 to 105 during 1977-78.

Animal watering points

Animal watering points are important to the support of pasture-based livestock farming. Ponds and tanks are scattered throughout grazing areas in the villages. They are filled by runoff from their respective catchments, which are also used for grazing. Depending upon their capacity, these ponds supply drinking water requirements of animals and humans. They spread the distribution of grazing and ensure some degree of rotational grazing. They were dug by the villagers and in the past were maintained (desilted) through the voluntary or enforced labour of the villagers, as well as by investing part of the revenue collected through periodic auctioning of rights to collect dung and top feeds from around the watering points.²

Details of the history and management of these watering points were collected from two villages. The number of watering points declined dramatically between 1953-54 and 1972-73, from 19 to 8 in Nagaur and from 17 to 9 in Jodhpur. Watering points were depleted because of reduction in their catchment areas and neglect of their desilting requirements. Not only did overall expenditures on upkeep of ponds decline, but the people's contribution and common property resource revenue (generated through auctioning of trees, etc.) have disappeared as sources to support the upkeep of common property resources. Government grants or relief has proven to be a poor substitute for these traditional sources of upkeep.

Private croplands: seasonal common property resources

Public grazing on private croplands in the post-crop season is an important informal arrangement helping stock raisers. Because of this practice of periodic common access, the cropped area could be described as seasonal common property resources. Depending upon crop and soil moisture conditions, the available forage consists of crop leftovers, undergrowth, resprouting of harvested crops, and bushes. The net sown area in the arid region as a whole has increased from about 6.6 million hectares in 1956-57 to 8.3 million hectares during
1977-78. Despite an increase of about 25 percent in the seasonal common property resources for grazing, their contribution to total forage supplies for grazing seems to have declined in recent years. The large-scale introduction of tractors has meant that soil preparation for the next season is finished soon after the harvest of the previous crop. This deprives the animals of any post-harvest grazing. Use of tractors has also led to a decline in the grazing available from long fallows, cultivable wastes, and the like, because tractors are not subject to the constraint a very short wet period imposes on soil preparation by draft animals - a constraint that in the past restricted cropping to a limited area.

Qualitative degradation of common property resources

Qualitative degradation of common property resources is partly a consequence of their quantitative decline and unregulated use. Degradation of resources is easier to see than to quantify. It is difficult to find any official records covering qualitative aspects of common property resources. Yet such phenomena as conversion of pastures into barren patches and substitution of perennial edible species by annual nonedibles have been documented through detailed surveys in the arid zone. According to these surveys, the carrying capacity of such lands has declined far below the present stocking rate.

Rough indications of qualitative degradation of common property resources were revealed by case histories of a few selected common property resources. Since common property resources constituted important sources of revenue for the Jagirdar or Thikanedar (landlords in the pre-Independence period), some useful records were available as early as 1945. They indicated the volume of products collected from common property resources and the revenue generated by their auction. Details for four locations, whose area has remained unchanged are reported in Table 3 to illustrate the decline in the productivity of common property resources due to qualitative deterioration. Availability of timber, top feeds, perennial grasses, and gum declined in all four locations. Felling of mature trees and the growth of
TABLE 3 DECLINING PRODUCTIVITY OF COMMON PROPERTY RESOURCES AS ILLUSTRATED BY FOREST AND GRAZING PLOTS IN NAGAUR DISTRICT

1945-65

<table>
<thead>
<tr>
<th>Production</th>
<th>Plot A (6 ha)</th>
<th>Plot B (10 ha)</th>
<th>Plot C (12 ha)</th>
<th>Plot D (12 ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timber (babul and indak trees)</td>
<td>12</td>
<td>3</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Top feed (loong from khejri)</td>
<td>8</td>
<td>4</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Top feed (pala from ber bushes)</td>
<td>-</td>
<td>-</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Fuel wood (khejri, ker, etc)</td>
<td>6</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Cut grass (kared and dhawan perennials)</td>
<td>13</td>
<td>3</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>Cut grass (bharoot, etc annuals)</td>
<td>3</td>
<td>5</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Dung collection</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Gum (babul and indak trees)</td>
<td>40</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

NOTE: Gum is measures in kilograms. All other products are measured in cartloads. The weight of a cartload ranged from 5 to 10 quintals depending upon the product (e.g. fuel wood versus top feeds) under question. By 1958 due to introduction of rubber-tired bullock carts (chhakada) the standard of cartload changed. Compared to earlier wooden tired bullock carts, the chhakada could accommodate 50 per cent more product by volume and weight. However the figures reported in the table are in terms of load carried by wooden-tired bullock carts.

SOURCE: Auction records of ex-Jagirdar and the village Panchayat. In the post-land reforms period, the practice of auctioning has declined mainly because there is not enough material to auction. This in turn is a result of elimination of most of the trees and complete destruction of even roots of perennial grasses.
stunted and bushy trees elimination of useful bushes, and a decline in superior perennial grasses were other indications of environmental degradation.

CAUSES OF THE DECLINE

The decline of common property resources is a result of multiple forces. It is often not easy to measure the role of specific factors in this process. However, a description of the circumstances influencing people's actions can shed light on the relative roles of different factors. Three factors that seem to have contributed significantly to the decline of common property resources in the arid zone are: (1) land reforms during the early 1950s; (2) population growth; and (3) increased commercialization of the desert economy and common property resources-based activities.

Land reforms

The introduction of land reforms during the early 1950s constituted a major institutional intervention. The reforms encouraged the privatization of common property resources for use as croplands; drastically reduced the private cost of cultivating submarginal lands (including common property resources); and dismantled the traditional arrangements that protected and regulated the use of common property resources.

Prior to the introduction of land reforms, the feudal landlord was the sole custodian or "owner" of the village lands. All farmers except his kinsmen were the landlord's tenants. They paid substantial rent in kind (one fourth to one-half of farm produce) for land they cultivated. Although the common property resources belonged to the landlord, villagers had access to them in return for certain charges. While a fixed proportion of land revenue from cultivated land went as payment to the state ruler, revenue from the common property resources went to the landlord's own exchequer.
Methods of revenue generation from common property resources included a fixed grazing tax per head of animal; the auctioning of produce; a number of different levies on users; and penalties for violation of regulations. The number of different levies and taxes imposed in the princely State of Jodhpur in 1941 varied from 50 to 150, of which 64 were considered legitimate by an enquiry committee appointed by the ruler of the state. Many related to common property resources. Through levies and penalties on the use of common property resources, the landlord exploited the peasants. However, as a byproduct of this exploitative mechanism emerged a management system that protected, maintained, and regulated use of common property resources. Table 4 lists the practices that were essential parts of the management of common property resources in the past and indicates which are still prevalent.

Following land reforms the Jagirdari system was abolished. Peasants were made owners of the lands they formerly cultivated as tenants. The land revenue tax payable annually to the government on these lands was drastically reduced. Vast areas of common property resources, mostly submarginal lands unsuited to cultivation, were distributed as croplands to the landless as well as to those who already had land. Within a decade of land reforms, in the arid region as a whole, 3.4 million hectares of common property resources were transferred to private ownership for the purpose of arable farming. This mean an increase of nearly 50 percent in the land put under the plough in the arid zone. It also meant a decline of between 7 and 26 percent in common property resources for grazing.

The custodianship of the remaining common property resources was transferred to the village community, represented by village Panchayats (elected councils). The provision of common access continued as in the past, but the old system of management of common property resources disappeared (Table 4). The village Panchayats did not impose grazing taxes and levies on users, despite being legally empowered to do so. The maintenance and upkeep of common property resources suffered as the Panchayats depended more and more on assistance from the government for this purpose. The main reason for
TABLE 4  MANAGEMENT OF COMMON PROPERTY RESOURCES IN WESTERN RAJASTHAN FOLLOWING LAND REFORMS

<table>
<thead>
<tr>
<th>Previous Practice</th>
<th>Practice continues</th>
<th>Previous Practice</th>
<th>Practice continues</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicators of private cost of use of CPRs</strong></td>
<td></td>
<td><strong>Indicators of revenue earning</strong></td>
<td></td>
</tr>
<tr>
<td>Grazing tax (ghas mart)</td>
<td>No</td>
<td>Auction of dung collection rights from CPRs</td>
<td>No</td>
</tr>
<tr>
<td>Fee for grazing in some CPRs on priority basis</td>
<td>No</td>
<td>Auction of top feeds from CPRs</td>
<td>No</td>
</tr>
<tr>
<td>Livestock related levies (laag baag)</td>
<td>No</td>
<td>Auction sale of wood from CPRs</td>
<td>Yes</td>
</tr>
<tr>
<td>Compulsory labour contribution for desilting ponds (begar)</td>
<td>No</td>
<td>Penalties for breaking grazing regulations</td>
<td>No</td>
</tr>
<tr>
<td>Penalties for disregarding grazing regulations</td>
<td>No</td>
<td>Cash and kind taxes and levies from users of CPRs</td>
<td>No</td>
</tr>
</tbody>
</table>

| **Indicators of regulated use of CPRs** | | **Indicators of investment in CPRs** | |
| Evenly scattered watering points | Yes | Periodic desilting of ponds | Yes |
| Deliberate rotation of grazing around different watering points | No | Payment to watchman (kanwaria) | No |
| Periodic closure of parts of CPRs (e.g. chaitrakhai) | No | Maintenance expenses of community bulls | No |
| Periodic restriction on entry of animal category (e.g. sheep cattle) to parts of CPRs | No | Support to scouts to survey water and fodder situation on migration routes before animals' migration during drought | No |
| Posting of watchman (kanwaria) with power to enforce regulations | No | | |
| Village phutak (enclosure) to impound animals violating regulations | Yes | | |

**SOURCE:** N.S. Jodha. "Causes and consequences of decline of common property resources in the arid region of Rajasthan," progress report, ICRISAT, Economics Program. Patancheru (A.P.) India
the ineffectiveness of Panchayats, despite their domination by ex-
feudal landlords in some cases, is that they were neither as authori-
tarian as Jagirdars, nor bold enough to take hard decisions (such as
imposing taxes) that would displease their voters.

Over exploitation and depletion of common property resources resulted
largely because there was (and remains) no private cost to using these
resources. Estimates based on detailed investigations in some villag-
es of Nagaur district indicate that prior to land reforms the animal
grazer had to pay Rs41 per household in cash or kind (at 1976-77 pri-
ces) plus Rs 1.25 grazing tax per animal per year (at 1976-77 prices)
(US $1 = 12.50 Rupees). After the land reforms this cost was reduced
to zero.7

Population growth

Increased population pressure is widely considered an important
contributor to shrinkage and depletion of common property resources.
In the case of the arid zone of Rajasthan, however, the role of popu-
lation in the decline of common property resources does not appear to
be dominant. Although no long-term records are available, scattered
and circumstantial evidence supports this view.

In the arid zone as a whole, population grew from 3.6 million in 1901
to 10.2 million in 1972, a growth of 183 percent. This is a greater
increase than that registered for Rajasthan State, 150 percent, or for
India as a whole, 132 percent, during the same period. However, there
are no data on land utilization prior to 1951 against which to assess
the consequences of this growth.

Privatization of common property resources in the arid zone has
invariably meant conversion of common property resources land into
cropland. Hence, the impact of population growth can be judged in
terms of increase in the area of cropland as well as the decline in
the extent of common property resources. The population of the arid
zone increased by 29.8 percent from 1951 to 1961 and by 27.9 percent
from 1961 to 1971. Croplands increased by 50 percent and 7 percent
respectively during the same periods. The area of common property
resources (on a larger base), as calculated from Table 2, declined by around 16 percent and 7 percent respectively. Crude as they are, the above figures do not indicate a close correspondence between population trends and land use trends.

Historical evidence As reported and documented by Rai, one of the major problems of peasants in the princely State of Jodhpur (covering five out of eleven arid districts) was that despite substantial increases in the peasant population (as high as 50 percent in some villages) during 1910-40, the Jagirdars did not allow additions to cropland from common property resources. Instead they raised the levies from one-fourth to one-half of the produce on the already established and overcrowded croplands, and proposed to charge the same (increased) revenue rate for the submarginal common property lands, if any peasant agreed to accept such lands for cropping.

Examination of records of land revenue collected by Jagirdars in our study villages also reveals an insignificant extent of conversion of fallow land into cropland. The area of cropland (including net sown area, current and long fallow) increased by only 1-3 percent during 1935-51. The population of the same villages increased by 43-45 percent during this period. In the face of exploitation by the Jagirdars, the peasants could satisfy their increased demand for cropland only through reduction in the extent of long fallow. However, as indicated in Table 1, long fallow represents only a small fraction of total common property.

Besides the harsh terms imposed by Jagirdars on tenants, the traditional occupational structure contributed to lower pressure on cropland despite increases in population. The traditional caste occupations - services and crafts under the Jajmani system and, outside it, exclusive engagement in livestock raising, petty trading, and so on - kept a substantial proportion of village populations away from the croplands.
Demographic factors in the post-land reforms phase The introduction of land reforms unleashed the forces of population growth. The land reforms of the early 1950s not only liberally distributed submarginal lands to the people, they also changed the economics of land use. Land was granted to people for nominal annual rents payable to the government. In Nagaur district, rent payable as crop share to the Hasiradar was Rs16 per hectare (at 1976-77 prices); following land reforms, fixed rent on submarginal lands was Rs 1.50 per hectare. The low fixed rent reflected the low crop productivity of these lands. The reduced cost of submarginal lands, accompanied by the government's liberal approach to their distribution, induced people to acquire private lands at the cost of common property resources.

Changes in the occupational structure of villages also increased dependence on, and therefore demand for, cropland. The Jaymani system governing patron-client relationships had tied many rural households to their traditional caste occupation (services and crafts). This system was disrupted following the introduction of the land reforms. Dependence on traditional caste occupations now appeared less economically attractive than farming land available for a very nominal charge. Subsidies, credit, and other forms of assistance available mainly to land owners were further incentives to land ownership. This induced traditionally noncultivating households to acquire cropland.

A little-publicized social reform movement among low caste craftsmen was another important development beginning in 1949. Entire communities gave up caste occupations (leatherwork, weaving, etc.) - jobs that, according to the caste leaders of Untouchables, were responsible for their lower social status. Throughout northwestern Rajasthan, crop farming was adopted in place of crafts.

During the feudal period, an important category of absentee landlords consisted of land owners from the Rajput caste who worked in the military forces of princely states. With the merger of princely states in the Indian Union during 1950-52, most of these army units were disbanded. These people returned to find their lands already transferred to their tenants. The rehabilitation of these and other absentee
landlords who lost lands during the reforms again led to distribution of lands once held as common property.

As these examples illustrate, demographic factors have exerted increased pressure on common property resources largely through the opportunities for cultivation created by various provisions of the land reforms programme.

Commercialization of community property resources-based activities

Because of desert conditions and the absence of even a minimum transportation network, most villages in the arid zone were physically isolated from wider markets. Whole village economies were subsistence-oriented. Due to improved infrastructure and transportation facilities, the villages are now better linked with market centers. Barter has been replaced by a largely monetized economy; visiting caravans of traders have been replaced by regular marketing arrangements. Subsistence requirements of producers and local demand are no longer important determinants of demand for several products of the arid lands, particularly animal products. Marketability and value of products have increased substantially, especially in the case of wool, mutton, milk and milk products. Prices of such products, net of inflation, increased by roughly 350-550 percent during the 15 years ending 1964-65. The resulting adoption of sheep and goat raising (traditionally low-caste occupations) by high-caste rich farmers in recent years has added to the pressure on common property resources. Profitability rather than upkeep has become the guiding force behind the choice of enterprises and usage pattern of common property resources. Privatization of common property resources, through legal processes or illegal seizure, and overexploitation by increasing the number of animals on common property resources, have been the major consequences.

Technical innovation The introduction of irrigation, fertilizers, and improved seed varieties has affected a few parts of the arid zone. The most important technological change influencing common property, however, was the widespread introduction of tractors. The introduc-
tion was initially supported by government subsidies to farmers and subsequently gained momentum due to its commercial profitability. For the region as a whole, the number of tractors almost tripled, from 2,251 in 1961 to 6,652 in 1971, and it has increased further since then. In our study of the arid zone, in a cluster of six villages the number of tractors increased from 10 in 1964-65 to 59 in 1973-74, and the proportion of cropped area to total land area increased from 44 percent to 81 percent.

Besides the poor soils, a major constraint to successful cropping on arid lands is the shortness of the wet period required for sowing. Using bullocks and camels, it was difficult to sow large areas in the time available. The introduction of tractors eases this constraint enormously. Even small farmers rent tractors. This has induced businessmen to acquire tractors for hire. These practices reduce the extent of fallows and promote conversion of submarginal common property resources into cropland.

CONSEQUENCES OF DECLINE IN COMMON PROPERTY RESOURCES

The decline in common property resources has several implications. Among the most significant are the long-term implications of increased use of submarginal lands, the distributive implications of privatization of common property resources, and the impact on livestock farming.

Long-term implications

Increased intensity of use of submarginal lands (i.e. through crop farming instead of animal grazing) is not a consequence of privatization of common property resources per se, but rather of the usage practices that accompany privatization. In the case of the arid zone of Rajasthan (unlike the situation in Europe following privatization of common property resources), privatization has invariably meant putting the land under plough. This practice strains the limited use capability of the land. The expected (and in some cases already visible) consequences are soil erosion and decline in overall crop yields. An analysis of area and production data from the early 1950s
to the early 1970s for the region as a whole reveals that the successive additions to the area devoted to rainfed crops have led to corresponding declines in yields per hectare.\textsuperscript{9} The decline in the productivity of remaining (overused) common property resources was illustrated in Table 3.

Distributive implications

Distributing common property resources to the poor deprives them of collective gains, while improving the position of individuals who receive the land. We do not have enough data to assess the net gain or loss to the poor following the privatization of common property resources. But limited evidence suggests this has helped well-endowed land owners more than the poor. As shown in Table 5, in the study villages farm households owning more than 10 hectares of land prior to privatization acquired 59 and 62 percent of total privatized lands in the villages of Nagaur and Jodhpur districts, respectively. On average they added more land to their existing holdings than did poor households. Furthermore, virtually all the common property resources with more fertile soils (e.g., forest, tankbeds, etc) were acquired by large farmers. Most of the poor received their land following official action on their formal application. Large farmers' principal mechanism for obtaining common property resource lands were either fabricating proof of title to certain pieces of land or gaining legal recognition of de facto (illegal) occupancy.

Impact on livestock farming

Since livestock farming is the key activity sustained by common property resources, the impact of the decline of these resources should be greatest on this enterprise. In view of a number of other developments, however - such as improved marketing facilities for animal products, changes in the relative profitability of different livestock enterprises, and institutional change facilitating or obstructing the migration of different categories of animals - it is not easy to isolate the impact of the decline in common property resources on livestock farming.
### TABLE 5 DISTRIBUTION OF LAND ACQUIRED THROUGH PRIVATIZATION OF CPRS IN TWO VILLAGES IN TWO DISTRICTS OF WESTERN RAJASTHAN

<table>
<thead>
<tr>
<th>Size of land holding prior to new land distribution (ha)</th>
<th>Average size of land holding per household before and after new land acquisition</th>
<th>Nagaur</th>
<th>Jodhpur</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percent of new land acquired&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Before</td>
<td>After</td>
<td>(%)</td>
</tr>
<tr>
<td>None</td>
<td>0</td>
<td>2.8</td>
<td>13(--)</td>
</tr>
<tr>
<td>Up to 5</td>
<td>3.9</td>
<td>5.4</td>
<td>10(1)</td>
</tr>
<tr>
<td>5-10</td>
<td>7.8</td>
<td>11.5</td>
<td>12(--)</td>
</tr>
<tr>
<td>10-15</td>
<td>12.6</td>
<td>19.6</td>
<td>25(27)</td>
</tr>
<tr>
<td>Above 15</td>
<td>25.5</td>
<td>35.1</td>
<td>34(63)</td>
</tr>
</tbody>
</table>

NOTE: Data were collected during the first phase of field work (1963-64). They relate to one village each in Nagaur and Jodhpur districts. Total number of households an area involved in the Nagaur village are 281 and 74 (ha), respectively, the corresponding figures for the Jodhpur village are 307 and 77 (ha), respectively. The table excludes a few cases in which land went to people from neighbouring villages; hence the percentage do not sum to 100.

<sup>a</sup> Figures in parentheses indicate the percent share of each group in superior type of CPRs privatized, including forest lands and areas near watering points etc., that have good soils. They are not submarginal lands.
Table 6 compares several aspects of livestock farming in 1963-65 and 1977-78. The average size of livestock holding expressed in terms of animal units has declined. This is true in the case of both small and large farmers. The ratio of unproductive animals (young stock, dry cattle, etc) to productive animals has declined. The extent of stall feeding has increased, while the dependence on common property resources for grazing has declined. These changes are more pronounced in the case of large farmers. Such changes could be attributable to both the decline of common property resources and increased commercialization of livestock farming. Discarding of unproductive animals and greater emphasis on stall feeding help improve efficiency and profitability of livestock production.

Of the remaining two indicators of change shown in the table, the increased proportion of buffalo is surely a result of improved mechanisms for milk marketing. Buffalo milk fetches a higher price than other milk in these villages because of its higher fat content. The increased proportions of sheep and goats in livestock holdings are a response to a decline in common property resources and to higher wool and mutton prices. Cattle find it difficult to graze in the poorer quality common property resources, but sheep and goats can manage. Similarly, it is easy for sheep owners to migrate: they are welcome in the canal areas of Punjab and Haryana for sheep penning. Cattle owners do not have this opportunity.

CONCLUSION

The process of change described in this paper suggests that well-intentioned public programmes like land reform can deprive a region of its comparative advantage in a key economic activity (in this case, livestock farming). Privatization raises the cost of livestock raising and, hence, erodes the region’s comparative advantage. The continuing shrinkage and degradation of common property resources is likely to force further reduction in the size of livestock holdings and changes in their composition. This has already happened to some extent in Rajasthan. Another likely consequence is increased dependence on stall-feeding of cattle and a greater incidence of seasonal
TABLE 6  CHANGES OVER TIME IN LIVESTOCK FARMING IN TWO VILLAGES IN TWO
DISTRICTS OF WESTERN RAJASTHAN, 1963-78

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small farmers</td>
<td>Large farmers</td>
<td>Small farmers</td>
<td>Large farmers</td>
</tr>
<tr>
<td>Average size of livestock holding (animal units)</td>
<td>15</td>
<td>13</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>Share of sheep/goats in animal units (percent)</td>
<td>36</td>
<td>6</td>
<td>42</td>
<td>22</td>
</tr>
<tr>
<td>Proportion of buffalo in milk stock (percent)</td>
<td>5</td>
<td>23</td>
<td>13</td>
<td>46</td>
</tr>
<tr>
<td>Unproductive animals per productive animal (no.)</td>
<td>7</td>
<td>4</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Cattle regularly stalled (except in monsoon) (percent)</td>
<td>6</td>
<td>25</td>
<td>11</td>
<td>49</td>
</tr>
<tr>
<td>Proportion of animal grazing days depending on CPRs (percent)</td>
<td>81</td>
<td>59</td>
<td>76</td>
<td>31</td>
</tr>
</tbody>
</table>

NOTE: Data relate to one village in each district. Details of the first four items relate to the whole village, while the last two items relate to sample households. The details of only two farming groups are presented to indicate the contrast or comparison.

a Those owning up to 5 hectares of land
b Those owning 10 or more hectares of land
outmigration of sheep. However, the lasting consequence of all these changes could be the erosion of comparative advantage that the arid zone enjoys in livestock farming.

Another conclusion relates to the future of common property resources in general. Considering their several advantages - promoting the economic activity best suited to the natural resource base of a region, sustaining the rural poor, and ensuring the use of arid lands according to their capabilities - there is a strong case for protecting and developing common property resources. A government strategy along the following lines might reverse the trends illustrated in this paper: a strict ban on further privatization of common property resources; regulated use of common property resources by introducing some element of private cost for the users; and designation of common property resources as a source of revenue for the Panchayats, to induce them to conserve and systematically manage them as productive resources.

NOTES


2. The purpose of the study was to compare the watering points with Tanka (underground water storage tanks) tried by CAZRI in its rangeland development and management experiments at 52 locations in different arid districts. Findings are described in M.C. Prajapati, et al., "In the dry range lands of western Rajasthan 'Tanka' can be the answer," Indian Farming, 22, no. 11 (1973); and in L.D. Ahuja and H.S. Mann, "Rangeland development and management in western Rajasthan," Annals of Arid Zone, 14, no. 1 (1975).


4. Minor variations existed from place to place, especially in Khalsa villages -- those directly under the administration of rulers of princely states.


