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**The Role of Administration in  
Desertification<sup>1</sup>  
Land Tenure as a Factor in the  
Historical Ecology of Western Rajasthan**

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The application of any desertification solutions depends on administrative measures. It is regrettable, therefore, though perhaps not surprising, that investigation of the causes of desertification is rarely focused on the mechanics of administration. This chapter considers administration in its function of formulating and implementing land tenure policy. Attention is drawn most significantly to the way bureaucratic dynamics encourage formal classifications that militate against the integration of scientific—let alone local—understanding into the administrative process, with results that exacerbate desertification problems. This study corroborates the underlying argument of the book: that the ultimate social causes of desertification generally lie outside the immediate vulnerable area, in the political and economic centres of the larger society. —Ed.

Land tenure, or the legal framework for rights to land, is conditioned by a number of diverse factors, none of which is predictably determining or predominant. The most significant of these factors are: climatic—temperature, water balance, wind, radiation, and seasonal variation; edaphic—the depth and quality of soil; technological—the available repertoire of techniques; economic—the quantity and certainty of returns, and the availability of capital for investment and markets for produce; demographic—the density and structure of population; social—the dynamics of group formation and individual co-operativeness; political—the degree of stratification or egalitarianism; and cultural—such as values that favour

Zone II. All tahsils or parts thereof which possess mainly lands of FAO classes VI and VII, but a few pockets of land of class IV which could be put under cultivation in a very restricted manner involving two crops interspersed by long (3 to 4 years) fallowing and various conservation practices.

Zone III. All tahsils and parts thereof, having different proportions of lands belonging to FAO class III (land suited to cultivation) and class IV.

These three zones account for 56%, 23% and 21% respectively of the total area of the arid region (Jodha and Vyas, 1969). If one ignores the small pockets of good land within Zones I and II, nearly 79% of the land in the arid region is unsuited to the relatively high intensity land use involved in crop farming—unless transformed by irrigation.

Hence any attempt to increase the intensity of use by putting the land under the plough, particularly on a regular basis, or by overgrazing, tends to expose the land to greater erosion hazards and leads to a fall in productivity even in terms of forage. Further, given the limitation of these lands, especially in the context of climatic variability in the region, crop-farming cannot offer high and stable yields on a sustained basis (cf. Kaul and Misra, 1961; Seth and Mehta, 1963; Jodha and Vyas, 1969; Jodha and Purohit, 1971; and Jodha, 1972).

In Zone I, therefore, limits on the intensity of use, the low productivity, and the high instability of crop-farming tend to impart a comparative advantage to pasture-based livestock farming in large parts of the arid region. In Zone II restricted cultivation with conservation practices characterized by rotations between cropping and long fallows can be encouraged. Zone III can support annual cropping.

## II. IMPERATIVES FOR LAND TENURE POLICY

For tenurial policy and land management, the situation described above implies the following imperatives:

(a) Land use planning and tenurial legislation must follow comprehensive classification of the land according to use capability.

(b) The intensity of land use in each class must be determined and regulated at the level of operating units, such as farm, village, or pasture.

The provisions by which these imperatives may be incorporated into policy are indicated broadly in Table II. The essence of this Table is that an individual's rights in land and his decision about the mode and intensity of land use as well as his obligations as a landowner or user have to be assessed in keeping with the requirements of different land classes.

Unfortunately, this classification is completely neglected in practice (cf. Jodha, 1970). The only classification to be found in the official land records is

Table II. The features of the three zones in the arid regions of Rajasthan and the suggested provisions of tenurial and land-use policies.

Features	Zone I	Zone II	Zone III
1. Land classes	VI, VII	VI, VII, IV	III, IV
2. Share in arid region (%)	56-33	22-52	21-15
3. Farm activity favoured most by the land classes	Pasture-based livestock-farming	As Under Zone I, and restricted cultivation	Normal cultivation and restricted cultivation (on land class IV)
4. Objectives of tenurial policies/arrangements, as influenced by land classification	Conservation and development of land resource base for efficient livestock-farming	As under Zone I, conservation and development of land for restricted cultivation	High farm productivity with high intensity of land use on land class III and restricted cultivation on land class IV
5. Pattern of land use (Land use intensity)	Highly extensive type of land use through natural forage production on pasture/range lands	As under Zone I, and slightly intensive use through crop-fallow rotation system	Intensive cropping on land class III, crop-fallow rotation on land class IV
6. Major area of public policy	Zoning of areas for specific land uses, law relating to development, utilization, conservation of pastures/range lands	As under Zone I, and policy for periodical land retirement from cultivation	Usual land distribution, tenancy regulation policies; land retirement policies for class IV lands

on the basis of present use—an inventory of the actual use of the land, with no reference to capability.<sup>2</sup> Some historical illustration of this situation follows.

*Land distribution.* The tenurial situation on the eve of the formation of the Rajasthan State in 1949 was characterized by a variety of formal and informal arrangements governing the control and use of lands in different princely states. There was a variety of intermediaries—for example, *jagirdar*, *bisweddar*, *muafdar*, *rajvi*, and rack-renting and tenurial uncertainties were common.<sup>3</sup> The early land legislation of the State was designed to regulate rents, protect tenants and finally abolish the intermediaries. The actual tillers of the lands were made landowners and brought into direct contact with the State. Further, vast areas of submarginal lands were distributed as private holdings for cultivation under the various legislations, in particular the Rajasthan Land Revenue (Allotment of Land for Agricultural Purposes) Rules 1957. However, while making the tenants owners of the land as well as distributing new lands to private land-holders, the State did not give any consideration to the use capability of the land. Nor did it impose any obligation on the beneficiaries regarding use or conservation. In other words, with regard to ownership, agrarian legislation in Rajasthan (except for the land ceiling laws) treated the desert lands or submarginal lands in arid areas on a par with the lands in well endowed areas of the southern and southeastern parts of the State.

*Land-use regulation.* No land legislation dealt specifically with the determination and regulation of the use intensity of land. The Rajasthan Tenancy (Government) Rules 1955 and the Rajasthan Land Revenue Act 1956 contain some provisions for the regulation of land use, but their approach is entirely different from what has been described above. They merely stipulate that it is the duty of the revenue officials to ensure that a given piece of land is put to the same use to which according to the revenue records it was put in the past. Thus, through the above laws, the State attempts to regulate the use of the land according to the revenue records and not according to its physically desirable level of use intensity. In effect this procedure tends to perpetuate the existing maladjustments in the land use pattern.

Indeed, the Rajasthan Agricultural Lands Utilisation Act 1954 goes a step further. The traditional practice of rotating cropping and fallowing is a compromise between the intensive and extensive type of land use in the arid area. But the above Act (Section 4) completely ignoring the traditional wisdom of the desert farmer, empowers the district collector to prohibit the fallowing of the croplands. If the landowner fails to cultivate the land and obstructs the alternative arrangements for cultivation made by the collector he is liable to penalty up to Rs. 500 per case. Though no cases of

feudal agrarian order, which had developed over a long period in the princely states of Rajasthan, had a number of exploitative features. The production, distribution and exchange relations between the landowner and the land-user were exploitative. The land use pattern it encouraged was not related to the land use capabilities and hence was already over-exploitative. The land reforms were only concerned with the exploitative features of the feudal order, as they related to the tillers of the land, and not to the land itself. Thus the need for preventing very intensive use of land was completely overlooked, and the conservation needs of the resource base never figured in the land reform laws. Indeed, the real consequence of agrarian reforms through the distribution of additional submarginal lands has been to accentuate the process of over-exploitation.

The neglect of the conservation needs of the arid lands in the land reforms was partly due to the relatively poor political pay off in the context of the immediate socio-political objectives of land reform. Further, in a young state with a long feudal background, the new policy makers did not fully grasp the technical factors, and it was easier to execute common land policies for the whole state rather than have specific policies for different ecological areas. Consequently, the land policies designed for the State as a whole have been applied to the arid region (including Zones I and II) as well.

#### IV. CONSEQUENCES

*Land distribution.* The immediate consequence of the absence of tenurial policies which would have helped to treat the arid lands according to their use capabilities is the indiscriminate distribution of submarginal lands for cultivation. As shown in Table I the extent of the area under private cultivation alone far exceeds the extent of the land in classes III and IV (Zone III) in all the districts, except Sirohi and Pali. Further, as the bracketed figures in the same table show, in most of the districts more than 80% of the area of private holdings is actually cultivated. This implies that the possibility of restricting the already distributed land for less intensive use (such as fallowing for grass) is quite limited. Even in the driest districts—Jaisalmer, Bikaner and Barmer (where lands suited to cultivation are too limited)—the extent of the area of private holdings put under cultivation ranges from 43% to as much as 67%.

Even after the distribution of submarginal lands to private owners, their use intensity can be kept at a low level by adhering to a rotation comprising a crop followed by a long fallowing. But this rotation requires a fairly large size of holding. The smaller the holding, the shorter the duration of the fallowing and, therefore, the less the chances of maintaining a low degree of land use intensity. This fact is clearly indicated in Table III where the extent of the old

fallows (that is fallows other than current or one year fallows), representing the extent of the resting of the land or periodically using it for forage rather than for crop production declines with the decline in the size of the holding.

Table III suggests that in the absence of statutory measures to regulate it, the use intensity of arid lands can be indirectly influenced by distribution. In other words, farmers can be induced to keep the use intensity at a lower level through the provision of bigger land holdings. This inference implies that no newly allocated land holding should be less than a specific size. Similarly, the existing holdings should not be permitted to be fragmented below a certain level. This amounts to fixing a floor limit for arid lands similar to the ceiling limit already imposed generally. However, the distribution pattern of land holdings obtaining in different arid districts (see Table IV) suggests that land distribution policies are not concerned with such provisions. Contrary to the general impression, nearly 45% of the land holdings in the arid region are less than 5 hectares. In several districts the extent of such holdings ranges from 48% to 83% of the total. Even in the driest districts—Jaisalmer and Barmer—the proportion of holdings lower than 5 hectares is more than 20%. On such holdings or even on the holdings below 10 hectares (which account for nearly

Table IV. Distribution of operational holdings by size in the arid districts of Rajasthan 1970-71.<sup>a</sup>

District	Percentage distribution of holdings				Extent % of rented in the total holdings <sup>b</sup>	
	<0.5- 5.0	5.0- 10.0	10.0- 20.0	20.0 and above	Holdings	Area
Jaisalmer	20.65	20.42	25.00	33.92	10.39	2.53
Bikaner	8.34	20.88	33.38	37.39	2.73	2.23
Jodhpur	37.03	21.05	21.84	20.09	6.11	2.80
Barmer	20.90	19.01	25.24	34.85	5.61	2.43
Churu	16.58	26.48	32.17	24.77	4.82	3.35
Nagaur	44.32	25.38	20.96	9.33	5.66	4.57
Jalore	48.94	23.32	18.05	9.69	4.71	3.17
Jhunjhunu	67.78	21.17	9.33	1.72	1.99	1.50
Pali	72.62	13.00	9.31	5.08	13.21	10.60
Sikar	68.61	20.14	9.40	1.86	7.23	5.17
Sirohi	82.88	11.22	4.48	1.43	22.14	15.16
Total	44.86	19.02	23.59	12.51	7.10	3.79

<sup>a</sup> Based on details from *Report on Agricultural Census 1970-71 in Rajasthan*, Government Press, Bikaner, Government of Rajasthan, 1975.

<sup>b</sup> Includes both partly and completely rented in holdings.

60% of the total holdings in the region), adherence to a rotation comprising cropping followed by a long fallow is quite difficult. Owing to low and unstable crop yields, even a farmer with 10 hectares cannot afford to keep a large portion of the area under fallow for 2 to 4 years.

Under existing tenurial policies, therefore, both the opening of the submarginal lands for ploughing through the distribution of such land as private holdings and the permitting of the holding size to become smaller than required by the use capability of the land tend to encourage the higher use intensity of the land. Rapid, large scale tractorization has further reinforced this trend.<sup>4</sup>

The degree of land use intensity encouraged by the pattern of land distribution is not altered by temporary land transfers through private tenancy. As indicated in Table III (last two columns) except in the better irrigated districts, Pali and Sirhoi, only 2-10% of all holdings rent any land from others. The extent of the area falling under the rented category is still smaller and ranges from 2% to 5%.

*Resource depletion.* The consequences of tenurial policies that evolved during the feudal system and those initiated during the post-Independence land reforms are reflected both in terms of the depletion of the land resource and of the falling productivity of land.

Regarding resource depletion, no details covering the whole of the arid region are readily available. Yet the evidence available from different locations clearly indicates depletion. At several locations, the following consequences of mismanagement of arid lands have been noted: the deterioration of fertile lands due to the removal of top soil or the submersion of fertile land under shifting sand dunes (Ghose *et al.*, 1968; Anon., 1965); the conversion of fertile lands into patches of saline wasteland in the low lying areas near the seasonal streams (CAZRI, 1966); the drying up of wells or the increased salinity of well water<sup>5</sup>; the replacement of superior perennials by inferior ones or annual grasses including non-edibles in the grasslands (Orakash *et al.*, 1964); the increased population of malformed or stunted trees; and finally the increased human misery reflected by increased seasonal migration and accentuated pauperization through recurrent famine (Jodha, 1975).

*Declining crop yields.* The impact of extending crop farming on to submarginal land, as encouraged by the tenurial policy, is revealed by Table V. The Table presents the indices of three yearly moving averages of the area and the yield of principal crops of the arid region for the period 1951-2 to 1972-3. The area under all crops shows a rising trend. Only in the case of sorghum (*jowar*) around 1963-4 and sesamum around 1965-6 did the area start to decline. The reasons for this decline will be mentioned shortly. The more striking feature

some of which are well regulated farm practices, while others involve the creation of physical assets. Rotational grazing and rotations between crops and a long fallow, for instance, fall in the former category. Measures such as the stabilization of sand dunes, the creation of shelter belts and micro-windbreaks, the bunding of croplands and contour furrowing, contour trenching, and many other soil works for range lands fall under the second category. The conservation technology, as evolved and recommended by CAZRI, is yet to reach the farmers (Jodha, 1972). Conservation technology is frustrated by a number of problems, the solution of which is linked to tenurial policies.

One such problem stems from the indivisibility of a number of conservation measures. Measures such as sand dune stabilization, shelterbelt creation or the bunding work or regeneration of range lands through a variety of earthworks, can be adopted effectively only on the basis of the catchment, not on the basis of individual farms. These measures require collective action at the village level and above (Jodha, 1967).

Similarly, some regulatory practices such as the rotational use of pastures also require collective action. Before land reform when the jagirdar had absolute authority over the village, such collective decisions were not required. In some villages jagirdars used to enforce certain regulatory measures for the utilization of pastures and forests. Rotational grazing around different watering points, known as *toba*, grazing fees per animal, known as *ghasmari*, the zoning of village land for grazing and cutting fodder through declaration known as *chait rakhai* are a few examples. Most of these provisions disappeared with the abolition of the jagirdari system. The new village panchayats which replaced the jagirdars for the purpose of village administration could not enforce such provisions (Jodha, 1980). In the changed circumstances it is essential to have some form of dual tenure<sup>7</sup> which provides some authority for the group over the lands belonging to individual farmers in a given catchment. This system would not only facilitate the formation of land users' associations but will also help panchayats and revenue authorities to enforce the adoption of conservation technology.

The individual land user's obligations in terms of adherence to conservation practices should be specifically incorporated in the land laws. These laws can be enforced with liberal recourse to penalties in the case of default, and the granting of rent remission as reward.

The provisions involving land users' obligations are more important in the case of grazing land. The present unregulated grazing, for instance, results from lack of provision for grazing rights and obligations in terms of grazing fees, taxes and penalties. There is little private cost for resource use. The incorporation of the above provisions in the land laws may greatly help to rationalize the utilization of grazing lands.

the catchment-based treatment of the lands, all farms should be treated as belonging to the group having their land parcels in the concerned catchment. The group should have authority to undertake conservation measures. It should also be liable to punishment for the mismanagement of the catchment.

Informal arrangements, similar to the one mentioned above, already exist in predominantly Bisnoi-caste villages in the Jodhpur region where the villagers as a group do not permit an individual farmer to cut trees, etc. in his own field. Nor do they allow the killing of wild animals—deer, rabbits, etc., in the whole of the village territory.