

OPEN-ACCESS PROPERTY REGIMES IN NATURAL RESOURCES AND HOW THEY ENGENDER RESOURCE DEPLETION: A REVIEW

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Abstract

Open-access property conditions by which there are no property rights for anyone and the rule of capture drives all users of resources to take as much as possible and as quickly as possible result in the non-sustainable exploitation of resources. This paper explains what open-access resource situations are, how they result in resource depletion, and how they may be improved through alterations in their open-access status.

Introduction

Property regimes over land and related natural resource must be understood as part of the larger institutional structure of a society (Bromley, 1999). In other words, property regimes are a social construct and therefore cannot be seen as apart from the society in which we address development problems. Thus, sets of institutional arrangements are continually established to define the property regime over land and related natural resources, that is, whether that regime be one we would call private (individual) property, state (crown) property, common property, or one of open access (none) property.

The centrality of property regimes arises not because property regimes connect people to land and other physical objects. Rather, property regimes are central in development because they connect people to one another with respect to land and related natural resources (Bromley, 1999). Thus, property regimes are contractual arrangements among a group of people, with respect to objects and circumstances of value to them. Property regimes are created by human communities to mediate individual and collective behaviours regarding objects and circumstances of value to members of the community (Bromley, 1999). The development community has gradually come to realize that it will not be successful in addressing resource degradation at the local level so long as the very nature of property and authority systems over natural resources are seriously misunderstood in policy formulation and in the design of donor-assistance programmes (Bromley and Cernea, 1989). For example, resource degradation in developing countries, while incorrectly attributed to “common property systems” intrinsically, actually originates in the dissolution of local-level institutional arrangement whose very purpose was to give rise to resource use patterns that were sustainable. When local-level institutional arrangements were undermined or destroyed, the erstwhile common property regimes gradually converted into open access regimes in which the rule of capture drove each to get as much as possible before others did (Bromley and Cernea, 1989).

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Open-access Resource Regimes

An open-access resource regime is one in which there are no property rights for anyone. Under open-access resource settings, the first individual or group of individuals to appropriate resources becomes, by default, their owner (Bromley, 1999). Ownership of resources under open-access conditions arises from capture and not from prior legitimization by the state. Under open access, individuals are free to use a resource without regard for the implications accruing to others. We say that an individual in such settings has privilege to use the resource but has no right to prevent others from using it. An open-access resource is thus a free-for-all in which the rule of capture drives all users to take as much as possible, and as quickly as possible.

Open-access land tenure, for example, occurs when there is no effective regulation of land use, either traditional or modern (Cleaver and Schreiber, 1992). This allows farmers and others to exploit the land, and the resources on it, in a non-sustainable manner. Also, in open-access, land occupation and use is temporary and there is no incentive for the farmer to invest in farm intensification. Open-access also reduces the incentive for farmers to conserve the land (since it is not theirs).

In general, open-access resource situations result from the absence or the breakdown of a management and authority system whose very purpose was to introduce and enforce a set of norms of behaviour among participants with respect to the natural resource. According to Bromley and Cernea (1989), when valuable natural resources are available to the first party to effect capture, it is either because those natural resources have never before been incorporated into a regulated social system, or because they have become open-access resources through institutional failures that have undermined former collective or private property/management regimes.

How Open-access Conditions Foster Resource Depletion

Open-access situations by which each potential user of a resource has complete autonomy with respect to use of the resource and no one has the legal ability to keep others out invariably results in resource depletion (Southgate, 1988). This is supported by economic theory which clearly shows that unregulated open access will cause excessive rates of exploitation. According to Ruitenbeek (1992), this result normally arises because of two factors. First, when profits or “rents” exist, agents will enter the resource market to extract some of this rent. Second, even if others are barred from entering, say, harvesting and using a resource, those already engaged in the activity have an incentive to try to capture more profit, even though this will decrease the total rent available in the future. In many cases, open access with each individual behaving rationally, can readily lead to complete depletion of a resource. As Gordon (1954) first showed, a competitive group will chronically over-utilize an open-access resource because any economic returns to resource conservation will be perceived by the

group as “excess profits”, in the sense defined by Marshall (1961). Consistent with Marshallian analysis of long-run competitive equilibrium, that group can always be expected to respond to those returns by exerting more pressure on the resource. Thus, any individual who considers practising conservation knows that any gains will be dissipated by increased depletive pressure exerted by other resource users.

Rent dissipation under conditions of open access to a scarce resource can be illustrated by a simple graphic model (Anderson and Hill, 1983; Eggertsson, 1990). Consider a fixed common pool resource (say, a grazing area) that requires labour to harvest its resource flows (Figure 1). VAP is the value-of-average-product curve resulting from labour input and VMP depicts the marginal product. The opportunity cost of applying labour to the natural resource is determined by the (exogenous) market wage in alternative activities. The first peasant will equate the wage rate with the value of the marginal product and will therefore, allocate 1_1 units of labour to resource exploitation, capturing rent equivalent to the area DEFB (Figure 1). Because there are no exclusive rights to the resource, more peasants enter the grazing area, reducing marginal productivity. Since they do not themselves have to suffer the full reduction in marginal productivity – some of it will be externalized to other peasants – they will add labour to the point where the value of the average product equals the wage rate (1_2), a point at which the value of the marginal product may even be negative (Figure 1). Without institutions to govern the use of resources, all rents will be dissipated through the increased harvesting effort (prisoners’ dilemma). The inefficiency created by the over-commitment of effort to the fixed resource is shown by triangle CFG, the area where MC (marginal cost) lies above VMP.

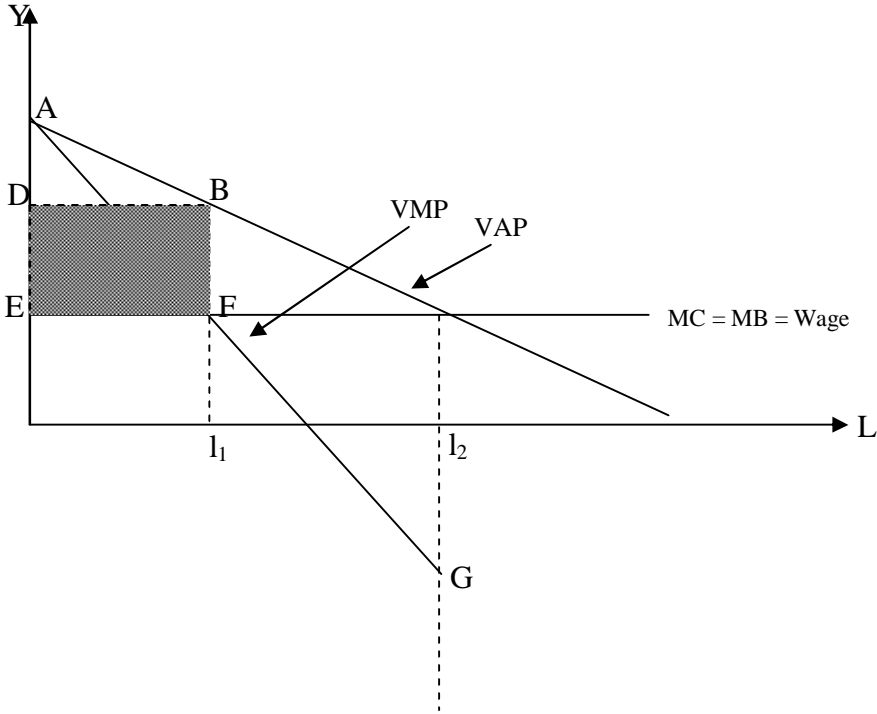


Figure 1: Rent dissipation in the common pool

Source: Anderson and Hill, 1983; Eggertsson, 1990; as cited in Wachter, 1992

Improved Use and Management of Open-access Resources

Attempts to improve open-access resources without altering their open-access status will not yield any lasting return (Southgate, 1988). Whether the conversion from open-access is to private individual property, to common property, or to state property is a policy choice that will have to be made on the basis of the conditions at hand. Regardless of which specific regime is chosen, it will require work to establish a new set of rules which must be made known to all pertinent individuals, and new management patterns and social authority systems established to assure that those new rules are followed (Bromley and Cernea, 1989).

Some authors (for example, Ciriacy-Wantrup and Bishop, 1975) have argued that common property has been used by various cultures throughout history to manage natural resources on a sustainable basis and should, therefore, be the preferred property regime for managing open-access resources. Though there is always the risk that a common property will be over-utilized because any single user will sense that the costs of resource depletion are shared by all users while the benefits are internalized (Demsetz, 1967), the dominant argument has

been that individuals with access to common properties do not consistently opt for activities that deplete natural resources. This is because each of them knows that his decision to allow his livestock to over-graze at one time will probably enhance the inclination of others to let their animals over-graze subsequently. To the extent that his resource use decisions constitute a signal influencing others' resource use decisions in the future, each individual will tolerate some near term sacrifice for the sake of conservation that benefits the group to which he belongs (Southgate, 1988).

Other arguments supportive of the conversion of open-access resources to common property are that, in many cultures, conformity with group norms at the local level is an effective sanction against anti-social behaviour (Bromley and Cernea, 1989). Also, a viable common property regime has a built-in structure of economic and non-economic incentives that encourages compliance with existing conventions and institutions (Cleaver and Schreiber, 1989).

Though bringing open-access resources under a regime of individualized private property has been argued to have the potential of conflicting with prevailing socio-cultural values in developing countries (Bromley and Cernea, 1989), studies have indicated that when open-access resources are privately owned and managed, some environmental problems are less severe (World Bank, 1992). For example, land is less likely to be over-used if its owners have a clear legal title (World Bank, 1992). Similarly, people who have secure rights to the land they cultivate are more likely to take the long view in managing the land. One of the few detailed studies of the connection between greater security and improved land management conducted in Thailand, shows a clear positive link between more secure tenure, access to formal credit, and investment in the land (World Bank, 1992). A major strength of private property regimes is that they appear to be stable and adaptive, because they have the social and legal sanction to exclude excess population, and effectively to resist through the power of the state unwanted intrusions (Bromley and Cernea, 1989).

The nationalization of open-access resources to bring them under more appropriate management ought to be discouraged on the grounds that: (i) most governments have limited enforcement capabilities for publicly-owned resources; (ii) national governments have often created an ownership structure without the attendant capacity to control individual user behaviour; and (iii) the promotion of nationalization carries with it the risk of depriving large portions of the population of their livelihood without delivering on the expected promise of more effective resource management; and (iv) the appearance of management through the establishment of government agencies and the aura of coherent policy by issuance of decrees prohibiting entry to state property, has led to continued degradation of resources under the management of government agencies (Bromley and Cernea, 1989; Cruz and Gibbs, 1990; Bromley 1990).

However, in situations in which government ownership of open-access resources becomes inevitable on account of their especially valuable environmental characteristics, governments will need to develop the institutional

and human capacity required for managing such resources and for monitoring the use of those made available for exploitation. According to Cleaver (1993), this is important to ensure that those meant for protection are in fact protected and those made available for exploitation are used in a productive and sustainable manner. Another major requirement is that current practices of indifferent enforcement on the part of government be corrected and staffing levels and incentives are sufficient to administer and manage the domain which the government has taken unto itself (Bromley and Cernea, 1989). An arrangement in which government has ownership of resources, but assigns legally-binding long-term user rights to individuals and groups may also be an appropriate option. Secure long-term user rights create an incentive to conserve (Cleaver, 1993). For example, the states own most of the land in the Central Visayas region of Philippines and land tenure for the occupants was quite insecure (World Bank, 1983). This led to short-term, low-cost production strategies and to deterioration of natural resources. To counteract these negative effects, the stewardship programme granted leases to the occupants of public lands that provided them with use rights for 25 years and which was extendable to 50, on condition of compliance with a resource management plan (Wachter, 1992).

Conclusion and Recommendations

This paper has shown that unregulated open-access resources typically suffer from over-exploitation and eventual degradation. This is because in open-access resource settings, there are no property rights for anyone and individuals are free to use a resource without regard for the implications accruing to others. Thus, individuals in such settings have the privilege to use the resource but have no right to prevent others from using it. To correct this situation, institutional arrangements that facilitate the conversion of open-access resources to private, public or communal ownership become necessary for promoting their sustainable use and management. Thus, interventions aimed at sustainable use of natural resources must explicitly address the social arrangements among people as they interact with each other and with the natural resource base and help build up forms of social organization conducive to sustainable productive use of natural resources (Bromley and Cernea, 1989).

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