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# Property Regimes in Resource Conservation-A Framework for Analysis

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## *Abstract*

This paper develops a conceptual framework for analysing property regimes in conservation of natural resources. Human beings interaction with their environment is governed through institutions of property; therefore they play an important role in the conservation of natural resources. This paper uses concepts from the New Institutional Economics School of thought and from theories of property to develop normative criteria to assess property institutions in resource management.

Key Words: Natural Resource Management, Property Intuitions.

JEL Classification: Q20, P14

## *1. INTRODUCTION*

This paper develops a conceptual framework for analysing property regimes in conservation of natural resources. Property institutions and their role in shaping resource use pattern have only recently begun to be appreciated. The manner in which people use environmental resources depends on the property rights governing those resources [Tietenberg (1994), p. 31]<sup>1</sup>. It is argued that since human beings interact with their environment through institutions of property, and since much of the environmental deterioration is attributed to human activities, roots of environmental problems are to be traced to inadequate and ill-defined property institutions [Hanna and Munasinghe (1995)].<sup>2</sup>

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<sup>1</sup> This point is advocated by the Property Rights School. The Property Rights School also contends that solution to environmental problems lies in a proper property rights structure. This school is a branch of the New Institutional Economics (NIE) School of Thought, whose main postulate is that institutions, broadly defined to mean rules and constraints that provide a framework for human interactions, of which property rights are a lot, affect economic outcomes. See Nabli and Nugent (1989) for an excellent review of these schools of thought.

<sup>2</sup>Hanna and Munasinghe write that most of the environmental problems can be seen as problems of “incomplete, inconsistent, or unenforced property rights regimes” [Hanna and Munasinghe (1995), p. 15].

These property institutions are part of over all institutions of a society (North 1990). Institutions are a set of rules that govern and constrain human interactions<sup>3</sup>. The role of institutions in determining economic performance has been widely studied<sup>4</sup>. Since institutions define the framework within which human interactions take place and hence structure human behaviour, our environment and resource use pattern is influenced by it. We develop these arguments further to construct our conceptual framework.

The paper is structured as follows. The first part of the paper discusses institutions. This is a general discussion, and the purpose is to get insight into the nature and functions of institutions. From there we move on to discuss property institutions and related concepts. Property is defined as a relation among individuals that arise from the existence of scarce goods<sup>5</sup>. This makes the second part of the paper. We then describe natural resources as a special case of common pool resources. In the last part of the paper we draw upon our discussion to sketch up a framework for analysing property institutions for natural resource management.

## ***2. THE INSTITUTIONAL THEORY OF ECONOMIC PERFORMANCE***

The idea that institutions are important in the functioning of an economy is not new. The New Institutional school of thought has made considerable advances on this account, and has earned itself a prominent position in the realm of economics.<sup>6</sup> The actual theorization of the concept, however, is due to the pioneering work of North (1973, more importantly his subsequent work of 1990). This section draws heavily upon his work. North (1990) defines **institutions** as *humanly devised constraints* that shape and guide human interactions. They *reduce uncertainty* in everyday life by providing a structure to human interaction and behaviour (North 1990, p. 3). Institutions include both *formal* and *informal* constraints that human beings develop to shape interactions. *Formal constraints* are the rules that human beings devise intentionally, and *informal constraints* are the norms, convention, and code of ethics that societies evolve automatically over time. As such they are the result of a complex process of evolution, and not of any purposive action.

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<sup>3</sup> This formal definition of institutions owes its existence to North (1990). Khan (1995) quotes Schotter (1981) and Knoght (1992) as other contributors to this definition.

<sup>4</sup> This concept is explored by the NIE School of Thought. According to this school institutions are important in determining the economic outcomes because they, together with other economic constraints, define the opportunity (or choice) set of individuals [see Ostrom 1990), North (1990, and 1991), Eggertsson (1990), Harris *et al* (1995).

<sup>5</sup> Pejovich (1990). See below for further elaboration of the concept.

<sup>6</sup> See Nubli and Nugent (1989) for a review of literature on New Institutional Economics. Also see Harriss, Hunter and Lewis (eds) (1995).

Constraints include both prohibited actions - what individuals are *prohibited* from doing, and conditions under which some individuals are *permitted* to undertake certain actions<sup>7</sup>. They are the *framework* which structure human interactions (ibid. p. 4).

North(1990) ascribes institutions a coordinating function in the society. Rules, by and large, eliminate conflicts of interest by defining what people can expect from fellow human beings. Even though they may at times produce conflicts, rules “reduce the chances for conflict because they reduce the total amount of ambiguity for those concerned by defining specific rather than universalic claims and obligations. It becomes possible to order one’s life with a set of priority regarded as legitimate. Standards and some means of applying sanctions are necessary complements to the rules if a system of social control is to operate within a community” (Colson 1974, c.f. North 1990, p. 38).

An integral part of any institution is the enforcement mechanism; ways to ensure that rules are observed, and punishment is enacted when the rules are violated. The costliness of ascertaining violations and the severity of punishment are considered to be an essential part of the functioning of institutions.

Rawls defines institutions as a “public system of rules that specify certain actions as permissible, other as forbidden, and provide for certain penalties and defences when violation occurs” (cited from Runge 1984, p. 807). This sums up well what has been said so far about institutions.

According to North the major function of institutions in a society is to reduce uncertainty by giving a stable structure to human interaction. Uncertainty comes from incomplete information about the behaviour of other individuals in the process of human interaction. Even if complete information was available, individuals have limited mental capacity to process, organize and utilize information- bounded rationality. This bounded rationality, combined with uncertainty in deciphering the environment, imply the need to develop the regularized pattern of human interactions called institutions.

North combines this theory of human behaviour with the theory of transaction costs to construct his theory of institutions - to understand why they exist and what role they play in the functioning of the economy. Transaction costs consist of cost of measurement, the cost of measuring the valuable attributes of what is being exchanged<sup>8</sup>, and the cost of

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<sup>7</sup>Other terms used to convey the same meanings are “rules” and “prescriptions”. We will use rules and constraints interchangeably.

<sup>8</sup>Commodities, services and performance of individuals have many attributes and their level vary from one specimen to another. The measurement of these levels is too costly to be comprehensive or fully accurate. The information cost in ascertaining the level of attribute yields measurement costs.

enforcement, the cost of protecting rights and policing and enforcing agreements<sup>9</sup>. North (1990) argues that “these measurement and enforcement cost are the sources of social, political and economic institutions” (North 1990, p. 27).

In all societies individuals impose constraints upon themselves to give a structure to their life and to their relations with other human beings. Under conditions of limited information and bounded rationality, these constraints reduce the cost of human interaction as compared to a world without institutions.

## **2.1 Formal Constraints**

Formal rules are devised by human beings to facilitate exchange. These include political rules, judicial rules, economic rules and contracts<sup>10</sup>. Of our interest here are the economic rules which define property rights. Property right is the right to use, earn income from and alienate a resource (Barzel 1989).

North further adds that “rules are generally devised with compliance cost in mind, which means that methods must be devised to ascertain that a rule has been violated, to measure the extent of violation (and consequent damage to the other party to exchange), and to apprehend the violator. In many cases, the cost of measurement, given the technology of time, exceed the gain, and rules are not devised and ownership rights are not delineated” (North 1990, p. 46-47). This, however, is not always the case. In most third world countries rules are devised without paying heed to compliance cost and, therefore, enforcement is limited to the issuance of a decree (Thompson 1977, cited from Bromley and Cernea 1989, p. 25).

## **2.2 Informal Constraints**

Formal rules make up only a small part of the constraints that shape choices; informal constraints are more pervasive. Our structure of daily interactions is “overwhelmingly defined by codes of conduct, norms of behaviour, and conventions. Underlying these informal constraints are formal rules, but these are seldom the obvious and immediate source of choice in our daily life. That the informal constraints are important in themselves can be observed from the evidence that the same formal rules and/or

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<sup>9</sup>Enforcement cost arises from incomplete information. Because we do not know the attributes of a good or service or all characteristics of the performance of an agent we have to devote costly resources to try to measure and monitor them.

<sup>10</sup> “Political rules define the hierarchical structure of the polity, its basic decision structure, and the explicit characteristics of agenda control. Contracts contain the provision specific to a particular agreement in exchange” (North 1990, pp. 46-47).

constitutions imposed on different societies produce different outcomes” (North 1990, p. 36).

These informal constraints are socially transmitted information and are a part of the culture<sup>11</sup>. They do not change immediately in reaction to changes in the formal rules. The resultant tension between changed formal rules and the persisting informal rules has implications for the economic outcomes (ibid. p. 37).

### **2.3 Enforcement**

Rules are not always self-enforcing, and hence their enforcement cannot be taken for granted. Enforcement would not be a problem if information was complete and costless, and when there are gains, for exchange parties, from cooperating. It becomes a problem when information is costly and incomplete, because benefits from shirking then become quite substantial. There are two reasons why enforcement can be imperfect. The first is the cost of measuring the multiple margins that constitute performance. “The second rests in the fact that enforcement is undertaken by the agents whose own utility functions influence outcomes” (North 1990, p. 54).

Self-enforcement is possible when the parties have full information and have enduring and recurrent interaction. “With incomplete information the cooperative solution will break down unless institutions are created that provide sufficient information for individuals to police deviations. It is then necessary to form a communication mechanism that provides the information necessary to know when punishment is required” (North 1990, p. 57).

North argues that ultimately those institutions are required that can use threat of coercion to enforce agreements, and the state is the only authority that can exercise this threat of coercion.

Runge argues that institutions channel the behaviour of people with respect to each other and their belongings, providing assurance by setting the rules of the game. Institutions perform the function of reducing uncertainty of users by defining and stabilising their expectations ( Runge 1984, p. 807). With this we conclude our discussion on institutions. Later, these concepts will be used to develop the analytical framework.

So far we have talked about institutions in general and since property institutions are a subset of over all institutions much of what had been said so far applies to them. Still we have to dig deep into the concept to see what does the concept of property really entail,

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<sup>11</sup>Culture can be defined as the “transmission from one generation to next, via teaching and imitation, of knowledge, values, and other factors that influence behaviour” (Boyd and Richerson, 1985, c.f. North 1990, p 37).

and what important consideration have to be kept in mind in setting up a proper institutional set up.

### ***3. INSTITUTIONS OF PROPERTY- THEORETICAL CONSIDERATIONS***

Property remains one of the most controversial and confused topics of the day. There are considerable problems in the conceptualization of property, which ultimately may lead to a poor realization of what a proper property system should be like, and how it should be constructed. In this section we will discuss what property and ownership is, what exactly we mean when we refer to property rights, what useful purpose does this system serve us, and in the end we would discuss essential features of this system to ultimately use them in building our analytical framework.

We should mention that the Property Rights School<sup>12</sup> asserts that economic performance of countries depends on the property rights structure<sup>13</sup>. For better economic performance it is imperative that this structure should be well defined. We can apply the argument to a particular sector of the economy as well. What this school of thought advocates is efficiency in the use of resources. Resources are used to provide satisfaction to human wants and but they are scarce. If the aim of the society is to increase the overall welfare then these scarce resources have to be used in the most efficient way, and for that we should structure property rights accordingly.

In this section we discuss concepts related to property. It is organized as follows. First we talk about the concept of property, a related concept of ownership and the organizing idea behind property. This is followed by the relationship between economics and property rights. The section ends by discussing different property systems.

#### **3.1 What is a Property- problem of Conceptualisation?**

Macpherson (1978) points out that current usage of property is at variance with the how it is construed in legal systems and in more serious discussions about property by philosophers, jurist, political and social theorists. Every day usage of the term property takes it to mean an object of possession, property is a thing. Contrary to this, ordinary language, Reeve (1986) classifies this as language used by more serious thinkers on the

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<sup>12</sup>Property Rights School is a branch of the New Institutional School of thought. This school of thought highlights the importance of institutions in the economic performance of an economy. We are just introducing the concept here, we will elaborate on it later in the chapter.

<sup>13</sup>Waldron (1988) quotes Posner (1972) as one of the leading proponent of this view. Also see North (1990), Eggertsson (1990).

topic, sees property in a different light. According to it property is not a thing, it is a relation that defines an individual vis-à-vis all other individuals with relation to an object<sup>14</sup>. In legal talks, property is not things but rights, rights in or to things (Macpherson 1978, p. 2).

An important point to notice is the distinction between property and a mere physical possession of an object. Green (1885) explains that “property not only implies a permanent possession of something, or a possession that can be given up with the good will of the possessor, but also a possession recognized as a right” (cited in Macpherson 1978, p. 103). The concept that we want to emphasize here is that of social recognition and acceptance. Macpherson goes further in explaining the concept, for him “to have a property is to have a right in the sense of an enforceable claim to some use or benefits of something ...a claim that will be *enforced by the society or the state, by custom or convention or law*” (Macpherson 1978, p. 3). So, property is not just a claim, it is a claim that is accepted and endorsed by the society at large.

The concept of enforceability needs some more elaboration. Defining property as an enforceable claim implies that there be someone to enforce it, the only body that is extensive enough to do that is the society itself, or its specialized organization- the state<sup>15</sup> (Macpherson 1978, p. 4). Enforceability does not imply that the right rests on nothing but a threat of force. On the contrary, “the threat of force is invoked only as an instrument that is thought to be necessary to guarantee a right”(ibid., p. 3). The social recognition of the claim is very important.

So far we have talked about property right without considering what does it entail? The next section takes care of that. There we introduce another concept, the concept of ownership. The reason is that it gives a more comprehensive and clearer view of the rights that we are talking about.

### **3.2 Property and Ownership**

The concept of ownership is closely related to the concept of property . Snare asserts that property and ownership are interchangeable terms in ordinary language (Reeve 1986, p. 10). Ownership expresses the abstract idea of an object being correlated with the name of some individual, in relation to a rule which says that the society will uphold that individual’s decision as final when there is any dispute about how that object is to be used (Waldron 1988, p. 47).

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<sup>14</sup>We adopt this definition from Pejovich (1990, p. 27). There is consensus among theorists on defining property as a relation between individuals.

<sup>15</sup>We will deal with the concept of state below.



Honore (1961) argues that the property in one of its senses is equivalent to ownership. The concept of ownership is related to the idea of thing owned, and property is sometimes used to designate both. Since property refers sometimes to the legal relation, and sometimes to the thing that is the object of relation, it follows that in one of its senses it is equivalent to ownership.

The concept serves us a useful purpose, it gives a good, and clearer overview of rights we have been talking about so far. This we owe to the work of Honore (1961) who elucidated some common features, which he calls ‘the standard incidents’ of the concept of ownership<sup>16</sup>. Honore suggests that “the owner of an object X will have (1) a right to the possession of X; (2) a right to use X; (3) a right to manage X; (4) a right to income that can be derived by permitting others to use X; (5) a right to the capital value of X; (6) a right to security against the expropriation of X; (7) a power to transmit X by sale, gift or bequest; (8) the lack of any term on the possession of any of these rights; (9) a duty to refrain from using X in a way that harms others; (10) a liability that certain judgments against him may be executed on X” (cited from Waldron 1988, p. 49) It is this bundle of rights, duties and liabilities that constitute a structure of ownership<sup>17</sup>.

Having considered what property is and what property rights are we must ask one question; why does one need this concept? What useful purpose does it serve?

### **3.3 The Organizing Idea behind Property System**

All human life involves the use of material resources<sup>18</sup> and the question of control and allocation of these resources arise in every society. A primal concern of societies is to decide upon the basic principles of this allocation (Waldron 1988, p. 34). The problem arises because resources are scarce, compared to demands made on them. “Each society faces the problem of determining which, among the many competing claims on the resources available for use in the society are to be satisfied, when, by whom, and under what conditions” (Waldron 1988, p. 39). The idea of ownership is one possible way of solving this allocation problem.

The concept of scarcity is worth emphasizing. If resources were abundant we need not have to worry about their allocation and use, but they are not. Waldron asserts that “Scarcity is the presupposition of all sensible talk about property” (Waldron 1988, p. 31). Property rights are relations among individuals that arise from the existence of scarce

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<sup>16</sup>They are not the ‘essential features’ of each and every society, rather they may be present in different societies in different combinations such that some features may be more prominent in one society than in the others, some may even be missing in a society.

<sup>17</sup>The concept of ownership is usually meant to denote exclusive (private ) ownership. Exclusive ownership implies the right to exclude non-owners. Below we will discuss why it is not discussed under the heading of private ownership.

<sup>18</sup>Resources are material things that can satisfy some human wants.

goods and pertain to their use. They specify the norms of behaviour with respect to economic goods that all person must observe in their interaction with other people or bear the penalty cost of non-observance (Pejovich, p. 27). Property system is a system of rules governing access to and control over resources (Waldron 1988, p. 38).

### 3.4 Economic Approach to Property

The concept of property has found its application the field of economics. The subject matter of economics is to make the best possible use of scarce resources, since property rights determine the conditions of access to and control of these scarce resources, a set of particular property right has impact on the economic performance of the economy. This point is advocated by the so called 'property rights school'. They stress that a well-defined structure of property rights induces efficiency in the use of resources<sup>19</sup>. Before we define what is exactly meant by 'well defined structure', we give how property is conceived by economists.

Economists' definition of the term property differs slightly from a legal definition. For them, property is a claim to a stream of benefits coming from a resource. The alteration from the legal definition is trifling; they replace the word object with resource. Resources are something that offers benefits to human beings. Reeve (1986, p. 23) describes resources as objects of want: something people wish for because it provides satisfaction, either direct or indirect, to them. An object becomes a resource when people develop ability to command that benefit stream (Dani, Gibbs and Bromley 1987, p. 14).

What are the features of the well-defined property rights structure? Posner identifies three characteristics of an efficient set of property rights: "it is universal, in the sense that all resources are either owned, or capable of being owned, by someone; it is exclusive, in the sense that other persons may be excluded from enjoyment of the object of the property right; and the property rights are themselves transferable" (c.f. Reeve 1986, p. 24).

Why would this structure induce efficiency? The argument goes as follows: The first condition of universality implies that all things should be owned. Ownership creates interest in the thing owned. In fact Honore (1961) defines ownership as "the greatest possible interest<sup>20</sup> in a thing which a mature system of law recognizes" (cited in Reeve 1986, p. 18). What is this interest? Nozick states that the rules of property determine for

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<sup>19</sup>Demsetz (1967) is one of the pioneering works on this field. Other prominent supporters of this view include Pejovich (1990), Tisdell (1993). Posner (1973) argues that the function of property rights is to create a structure of incentives to use resource efficiently (c.f. Reeve 1986, p. 23)

<sup>20</sup>The greatest possible interest is used to denote that ownership is not absolute, it is constrained by social restrictions. Honore uses the example of umbrella to make his point, an owner of an umbrella may use it for his convenience but he cannot use it to poke other people with it. The ownership rights of the umbrella owner are not unlimited.

each object which individuals are entitled to realize which of the constrained set of options socially available with respect to that object (c.f. Waldron 1988, p. 32). So if an object yields benefits then the owner of the object is entitled to receive those benefits. In other words, property rights channel benefits associated with an object to the right holder and this creates an interest.

The second condition is of exclusivity. Put simply, exclusivity implies exclusive ownership and a right to exclude non-owners. Pejovich (1990) explains that the exclusivity of ownership means that the owner has the right to choose what to do with his asset<sup>21</sup>, how to use it, and who is to be given access to it. He has a right to exclude non-owners from exercising any of these rights. The exclusivity creates a link between one's right to choose how to use the asset and bearing the consequences of that choice. Since the owner of the asset is the only person who will receive benefits from that decision, he will have an incentive to put his asset to the highest value use.

This brings in the basic argument of the economic approach to property rights which is that the costs and benefits of a person's activities should rebound on him, and only on him. Inefficiencies in resource use occur when a person, a decision maker, does not bear the entire consequences of his action. This situation is depicted as one involving externality<sup>22</sup>. Demsetz (1967) argues that a well-defined structure of property rights will increase efficiency in resource use by internalizing these externalities. Property rights should be structured that the harmful or beneficial effects of a person's activities are brought to bear on him rather than on other persons (Reeve 1986, p. 26).

Transferability is another condition. It means that the owner has the right to transfer all or part of his rights to another person in a mutually agreed upon exchange. Transferability provides incentive to move resources from less productive to more productive opportunities (Pejovich 1990, p. 29).

Tietenberg (1992) lists one more condition- enforceability, and quite rightly so. Enforceability means security from involuntary seizure or encroachment by others. What Honore calls a right to security against the expropriation of the asset. Reeve (1986) discusses that interest in a resource is conceptually linked to the means available to protect it. A claim to a resource is taken to be good against and legally guaranteed against any rival claims. Protection may be conceived in two ways- de facto and de jure, de jure protection refers to written laws and de facto refers to actual practice of it. Protection also

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<sup>21</sup> Asset is the object of possession.

<sup>22</sup> "Externality exists when the welfare of some agent A depends directly on his activities and on activities under the control of some other agent B". (Tietenberg 1992, p. 52). The agent B does not bear the entire cost (negative externality) or reap the entire benefit (positive externality) of the action. In the case of negative externality, private cost (of the action) to the agent B will be less than the social cost (cost to the society) and economic activity, e.g., production will take place at level greater than optimum. In the case of positive externality, good will be under supplied.

involves consideration of penalties. The size of penalty determines the degree of protection that the property enjoys.

Together these four conditions determine an efficient structure of property rights. It must be mentioned here that it is argued that the only system that carries these characteristics is the system of private property. As our next task we discuss different property systems.

### **3.5 The Types of Property Institutions**

Property institutions are a subset of over all institutions that exist in a society. Bromley defines property institutions are public system of rule specifying permissible and forbidden actions in relation to ownership, use rights, responsibilities and obligations of individuals and groups (c.f. Runge 1984, p. 807). Waldron defines a property system as a system of rules governing access to and control over resources (Waldron 1988, p. 35).

Macpherson (1973) argues that institutions are man made, and are created with some objective.<sup>23</sup> We make a qualification to this statement and say that although institutions evolve over time, and hence cannot be described results of human action, formal rules are still a result of purposive human actions. So we make amendment to the above statement and say that formal rules are man made are made with some objective in mind. These objectives determine the shape of the institution. Below we talk about three types of property institutions.

#### **3.5.1 Private Property**

A private property system is organized around the idea that each object belongs to some individual. A rule is laid down that in the case of each object the owner of that object is to determine how the object shall be used. His decision is to be upheld by the society as the final (Waldron 1988, p. 39).

Private property system is identified with the objective of efficiency. It is the hallmark of the capitalist system. Pejovich (1990) describes private property, freedom of contract and constitutional (limited) government as the basic institutions of capitalist system. Since the objective of private property system is pursuit of efficiency, the structure of property

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<sup>23</sup>“Institution is man-made, it is assumed to have been made, and to be kept up, for some purpose: either to serve some supposed essentially human needs, which would determine what the institution is; or to meet the wants of the classes which have made it what it is” (Macpherson 1978, p. 1).

rights that has come to be associated with it is similar to one described above, with the only difference that ownership means right of ownership to individuals<sup>24</sup>.

Arguments in favour of the private property system are centuries old. They are reasoned upon the grounds that general welfare of the society under private system of ownership will be greater than in the case of communal or public ownership. One particular example of this argument is found in the work of Aristotle. In his book 'Politics' he argued that the common ownership could be a cause of social disharmony. This disharmony may be avoided if each person is the exclusive owner of his own piece of land; "the amount of interest will also increase, because each man will feel he is applying himself to what is his own" (c.f. Waldron 1988, p. 6).

Private system of ownership is one idea of solving the allocation problems. It faces one criticism on the grounds of justice. The system puts the owner of a resource in a privileged position, the criticism, then, is that why one person should be put in a privileged position vis-à-vis others in a society? Why not claims of every citizen should be treated on an equal basis, and that resource use is to be determined by reference to the collective aims of the society (Waldron 1988, p. 39).

### **3.5.2 Public Property**

Waldron (1988) describes public property system as one where the problem of allocation is solved by a social rule. The rule takes the collective interest of the society as the focal point, and use of resources is determined with respect to this interest. "Questions of how, and by whom resources are to be used are to be resolved by favouring the use which is most conducive to the social interest" (Waldron 1988, p. 40).

The public property system is an antithesis to the private property system. It is the effect of a decision by the state to retain control of a resource itself, and not to allow a resource to be controlled exclusively by any private organization. Whereas in a private property system the individual owner decides about the use of his asset, under a public property system no individual has such an association with a resource that he can make decision about its use without reference to the interest of the collective. The underlying idea of this system is that resources are answerable to the needs and purposes of the society as a whole, whatever they are and however they are determined, rather than to the needs of and purposes of some privileged individuals (Waldron 1988, p. 40)

'State ownership' and 'public ownership' are often used interchangeably<sup>25</sup> but they are distinct from each other. Gaitskell categorizes state ownership as one in which state

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<sup>24</sup>Private business corporations are also private property. They can be incorporated in the systems by defining corporations as fictitious persons.

owns, controls and manages the resource for the community, and public ownership strictly means ownership by the community, but control is with the state (c.f. Reeve 1988, p. 32).

Some authors consider state management as another case of private management, where state has the ownership and control over the resource. Waldron argues that this may be true in those societies where predominant system of ownership is private. In that case, those resources that are owned by the state are owned by it as a nominal owner (Waldron 1988, p. 40). Indeed there is some sense in treating state ownership as a specific case of private ownership. In state ownership, as defined above, the state has exclusive rights over the resource and has the authority to make decision about it, for example, how to use the resource, how to manage it, whom to grant access to it. The only difference with the private property is that in this case the state has to look after the collective interest<sup>26</sup>. Nevertheless, state property is an exclusive property.

As against the state property, public property is one where public has a general access right. Reeve (1986) describes public as an elusive unit, an unspecific group of persons. The membership of public is indeterminate (as against, say, members of a trade union). So if something is a public property then it implies that an indeterminate group of persons enjoys rights of use over it. There are no special qualifications to be met before access is permitted, although there may be rules permitting exclusion (can not enter the park if drunk, ticket for a public transport).

Although, in the case of public property, rights of use are available for the public, the title does not rest with them. Those who have a right to use Public Park do not own it. The title rests with the state who is accountable to the public, and who manages the resource to provide benefit to the public. "Public property is then characterised by the separation of beneficial use, available to an indeterminate group, from title which may be held by a body, an agency, immediately accountable to the public" (Reeve 1986, p. 33).

The concept of accountability is very important, both for public ownership and state ownership, both are entrapped in a structure of accountability. In either case the agency may be treated as the trustee for the public. "Although the public is not the collective owner, the public agency with which the title vest is supposed to control and dispose of the property in the interest of the public" (Reeve 1986, pp. 33-34).

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<sup>25</sup>Reeve (1986) attributes this to the fact that both of them exclude private ownership, state ownership prevents the existence of private property, but the public ownership is usually the antithesis to private ownership.

<sup>26</sup> Macpherson (1978) argues that state property is a corporate property with the right to exclude others, it is an exclusive property, an exclusive right of an artificial person. (Macpherson identifies state as a smaller body of person who have been authorized by the community to command them.) Also see Waldron (1988) and Eggertsson (1990) for this point.

The basic difference between a private property system and a public system is that under a private property regime the owner has the right to exclude others from the use of his property, but grants the right to use in return for a value received but in the case of public property the state has the duty to make use available to the public.

### 3.5.3 Common Property

Common property is a group property where a well-defined set of user has access and control rights over the resource. In a system of common property, rules governing access to and control of resources are organized on the basis that each resource is in principle available for the use of every member alike. In principle, the needs and wants of every person are considered, and when collective decisions are made they are made on a basis that is in some sense fair to all. (Waldron 1988, p. 41) The idea of a common property is somewhat similar to that of public property in that no individual stands in a specially privileged situation with regard to any resource. But it is different in the sense that the interest of the collective has no special status.

The debate over property systems generally revolves around two contrasting types; private ownership versus public ownership; and common property system does not figure prominently in the debate. The reason, probably, is that it is not a dominant mode of resource allocation and management anymore<sup>27</sup>. But, of late, the system has become a centre of discussion, as a solution to resource allocation problem in some part of the world<sup>28</sup>. We will discuss this point in more detail in the next part of the chapter.

The discussion so far suggest as if the above three types are the only types of property systems. This is not the case. These types of property are categorized as the ideal types but no society can be described as representing any of these pure forms. More likely, societies represent a mix of these types of systems; the mix will often reflect the relative political strengths of competing factions (Waldron 1988, p. 44). Moreover, some resources are amenable to some types of property rules than others; no society can ignore this fact (ibid. p. 45).

Finally we turn attention to the resource under question. Resources are something that offers benefits to human beings. An entity becomes a resource when people develop ability to command that benefit stream (Dani, Gibbs and Bromley 1987, p 14). Reeve

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<sup>27</sup>Property historian believe that the common property system was the predominant system in ancient times and the current system, whatever it may be, has evolved from there. See Reeve (1986).

<sup>28</sup>Bromley and Cernea (1989) contend that for under developed parts of the world this system may be the only rational and practical choice.

(1986, p. 23) describes resources as objects of want: something people wish for because it provides satisfaction, either direct or indirect, to them.

#### ***4. NATURAL RESOURCES AS COMMON POOL RESOURCES***

Most natural resources fall under the category of what are called common pool resources. Common pool resources are natural or man made resources where exclusion is difficult and yield is subtractable. As such they share their first attribute with pure public goods and the second attribute with pure private good. The first attribute, difficulty of exclusion, results from factors such as cost of parcelling and fencing the resource and the cost of designing and enforcing property rights to exclude access to the resource. It is this attribute of CPR that makes them prone to free riding by others. The second attribute of subtractability means that resource unit that one person appropriates from the resource is not available to others (Ostrom and Gardner 1993, p. 93). These two attributes collectively make common pool resources vulnerable to extinction, thus highlighting the need to regulate the behaviour of its users.<sup>29</sup> Rules have to be set for a sustainable level of exploitation of the resource; some kind of enforcement mechanism is needed as well. This function is provided by the resource regime<sup>30</sup>. We can envisage three types of regimes for the management of common property resources. These are: (1) State Property Regimes, (2) Private Property Regimes, (3) Common Property Regimes. We have discussed them in some detail.

#### ***5. A FRAMEWORK FOR ANALYSING PROPERTY INSTITUTIONS IN NATURAL RESOURCE MANAGEMENT***

We begin by quoting Macpherson (1978) that institutions are man-made and they are created with some objective in mind. We made an amendment to this statement and said that it is only the formal part of the overall rules that is the result of human action. We draw a logical implication from this that if some objective is defined<sup>31</sup> then appropriate rules must be developed and enforcement mechanism established to ensure that the rule is observed. In this part we will explore this point. We will make a normative criterion, elaborating the conditions that we think are necessary. For this we draw upon the discussion so far. But before that we summarize what has been said so far.

In the first part of the chapter we talked about institutions. Institutions were defined as rules and constraints that shape human behaviour; as such they provide structure to human interaction. We argued for the “New Institutional” point of view that institutions

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<sup>29</sup>The notion of resource management stems from their scarcity, if they were in unlimited supply the need may not have arisen. This applies to all resources and not just common property resource.

<sup>30</sup> A resource regime is a structure of rights and duties characterizing the relationship of individuals to one another with respect to that particular resource (Bromley and Cernea 1989, p. 5).

<sup>31</sup> Which in all eventuality is the sustainable use of natural resources.



have an important implication for economic performance. This is so because they have the potential<sup>32</sup> to increase the flow of benefits from economic activity.

We talked about the important feature of institutions, relying mainly on the work of North (1990). Using his theory we said that the function of institutions is to coordinate behaviour. As Runge (1984) said, institutions set rules of the game so that each individual knows what actions he is allowed to take and what not, what he is expected to do and what he can expect from other fellow beings. To a large extent these rules should eliminate conflict of interest.

We elaborated on the idea that rules not only include formal rules but also informal rules. Formal rules are the result of decision taken by human beings. Informal rules are codes of conduct that evolve over time. They are more pervasive and immune to abrupt changes. As a result, they play an important role in structuring interaction. North (1990) argues that ideally formal rules should be devised so as to make the informal rules more effective.

A rule serves no purpose if it cannot be enforced. Enforcement can come from two sides: (1) voluntary acceptance, and (2) enforcement by an external authority, either society or the state. In the case of voluntary acceptance enforcement poses little or no problem. In the second case it may be a problem, or it may not. Enforcement will not be a problem if the rule earns social acceptance, but if does not then enforcement can be difficult and costly. North (1990) suggests that rules should be devised with compliance cost in mind. Enforcement has two components: (1) ways to ascertain that violation has occurred; (2) sanctions and punishment against that. Effective enforcement requires both, a mechanism to detect violation, and proper sanction to deter anyone from violating the rule. These rules and constraints and enforcement are the essential feature of institutions.

We further argue that when resource conservation is the desired policy objective, then a proper Institutional set up must be put in place to accomplish the stated objective. In other words, rules that are devised must structure human behaviour such that the objective is secured. These rules must be enforceable. We can put these conditions as following;

1. Appropriate rules are devised; appropriate in the sense that if they are respected, they will secure the objective. These rules must be appropriate from the point of view of social set up as well. That is, formal and informal constraints must not stand in contrast to each other. This is important because eventually the purpose of institutions is to coordinate behaviour, and this second condition is necessary to secure that.

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<sup>32</sup>We use the word potential because all institutions are not growth enhancing. The relation between institutions and economic performance is not unique. Institutions can retard performance if they do not function properly.

2. Rules and constraints are enforceable; enforcement has two components; (1) voluntary enforcement, i.e., individual accepts the rule as morally right and observes it, (2) enforcement by an external agency which includes (a) social acceptance, i.e., society as a whole accepts the rule and then uses social pressure to make individuals observe, and (b) enforcement by law, where threat of law (or coercive force) is used to enforce the rule. This still does not mean exercise of this force in the real sense of the word, just the threat that in case rule is not observed some legal action will be taken.
3. Proper enforcement mechanism exists, both *de jure* and *de facto*; it must include,
  - A mechanism to detect that violation of the rule;
  - Penalties, these should be sufficient enough to discourage violations;
  - a mechanism to impose penalties.

This enforcement mechanism is necessary to minimize chances of violations. A simple threat of law will not work if people know that they may not be found breaking the rule, so first condition is necessary for this. Second condition is also important because if penalties are small, they may not deter people if benefits of their actions outweigh this cost.

In the discussion on property, it was defined as an enforceable claim. It is not mere physical possession, neither just a claim, it is a claim that is accepted and acknowledged by the society. It was said that enforceability does not imply that the right rests on nothing but a threat of force. On the contrary, “the threat of force is invoked only as an instrument that is thought to be necessary to guarantee a right” (Macpherson 1978, p. 3). The social recognition of the claim is very important. We talked about a ‘well defined’ property right structure, and that this structure ensures efficiency. We also said that whatever the objective, property rights must be structured accordingly.

“Essential for any property regime is an authority system able to ensure that the expectations of rights holders are met. Compliance, protected and reinforced by an authority system, is a necessary condition for the viability of a property regime” (Bromley and Cernea 1989, p. 17).

Lastly, we talked about natural resources as a special case of common pool resources and that they are characterized by difficulty of exclusion. Since problems of exclusion are directly related to the problems of protection, a system of protection is very important for these types of resources.

With this in mind we turn attention to developing a normative criterion for evaluating property regimes for natural resource management.

(1) The first important condition is that resources are owned. We have said that ownership creates an interest in the resource. In the case of private ownership this interest is personal because the owner can then receive the benefits. In the case of state ownership the state has to look after the welfare of the community/people.

(2) This is related to the first condition, it is important point that the ownership be socially accepted as morally right. Formal property right is compatible with the informal property rights, and there is no conflict of interest as a result of this property rule.

(3) Ownership is exclusive. The owner has the right to make decision about the resource and can exclude others from this process. The decision involves how to use the resource, how to manage it, and whom to give access to it. With regards to these latter points, it is important that:

(a) Management system supports objectives of sustainability;

(b) In case natural resource in question exerts a positive externality then the property right must be structured to internalize this externality.

(c) Since resources are considered to be for the benefit of people, so a system of ownership must be accompanied by a system of accountability ensuring that forests are being managed for the best interest of the people<sup>33</sup>.

(4) A proper enforcement mechanism for the protection of resources. It was said before that common pool resources are characterized by difficulty of exclusion, and this makes their protection against illegal seizure a problem. Therefore an enforcement mechanism is necessary. We earlier said that this must have two components;

(a) A system of communication to detect that a crime has been committed;

(b) A system to impose penalties;

(c) Penalties should outweigh benefits from the crime.

Together these conditions constitute normative criteria that can be used to analyse property regimes in natural resource management.

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<sup>33</sup> Often called 'collective interest'.

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