

Structure of property rights to preserve biodiversity in countries in transition.

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1. Problem definition

Giving their natural characteristics, forests have the particularity to issue various, sometime contradictory, expectations and needs on the utility to provide through the forest management. That could be explained with the chain: Commodities → Characteristics → Capability → Utility (Sen, 1985) and with the Barzel concept of "attributes" which define any good (Barzel, 1997).

In the last decade, the capability of forest to enhance biodiversity comes to being a "new discovered" attribute of forests, which attract new claimants on forest use. The classically accepted idea is that new entrants cannot come about if a single owner wholly owns the resource (Pearce and Turner, 1990). Privately owned forest should mean an exclusive right of owner to decide whom may access and use resource.

But with the increasing demand for environmental forest services and products, the use of forests is diversifying. That induces substantial changes on the content of "property rights on forests", first of all at one operational level. The private owner has lower and lower control on the access of "new entrants" attracted by environmental services. A capture of rights to use the resource is operating *in facto*, whenever an attribute of a good, such the biodiversity, lefts in the public domain. In this case, the State has to take measures to reduce the losses associated with the public use of a private good. The State can delineate full property rights to the asset, or can restrict the behaviour of the owners in order to enhance the separation of their individual economic rights (Barzel, 1997).

The first alternative (establishing full property rights on biodiversity) involves high costs in delineate and transfer the property rights. That could be the reason explaining the high share of public ownership in forests (Zhang, 2001:198).

The second alternative is the regulation of the private forestry. Most currently restrictions aim 1) to preserve the forest use of the land, even if other alternative land uses are economically more interesting for the owner, and 2) to impose or to incite to those forest practices which are able to preserve a certain level of biodiversity. In this second case, the State us a liability rule aiming to preserve the biodiversity.

Both, the property rule and the liability rule represent an allocation of rights in using the forest resource. When transaction costs are positive, it is important to know who initially possesses the legal right and what that right means (Bromley,

1998). That is the reason why we analyse the property rights distribution in use the forest resource. A next step of the analysis should be the matter of effectiveness: it is this structure able to preserve the biodiversity?

2. The analytical framework

The object of the analysis is the structure of rights related to the conservation of the biodiversity. First of all, we need to describe this structure of rights. We identify three main situations characterising the distribution of property rights. Then, for each of them, we appreciate the effectiveness of property rights approach in preserving the biodiversity. For doing this we used empirical results from a set of studies realised in countries in transition during the last decade.

2.1. The structure of rights

2.1.1. The right to manage biodiversity vs. the right to use biodiversity.

The scholar distinction between the private and the public goods is built on the characteristics “excludability” and “subtractability”. Excludability refers to the ability of an individual to deny the use of the good or of the services to another individual ; the subtractability refers to the amount that the consumption of a good or service subtracts from its repeated consumption (Bass and Hearne, 1997 :12). Biodiversity is characterised by low excludability and low subtractability, so this service is commonly referred to as public good (Bass and Hearne, 1997). The low excludability and the low subtractability of the biodiversity avoid the allowance of private rights, even if, for other natural resources, such as fisheries, one can imagine corrective measures in order to delineate private rights (Falque and Massenet, 1997).

For that reason, we consider from the starting point that in preserving the biodiversity, the right “*to use*” has little importance comparing with the right “*to manage*”. That is because no responsibilities are attached to the use of forests: the tourists as user are less concerned by the preservation of biodiversity than the manager of forests. Secondly, a right is effective only when the possibility to reinforce it exists. Or, in using the forests, is impossible to reinforce each of the rights to use because of high level of transaction costs, also because of opposite ways to use forests.

Instead, the right to manage the biodiversity could be defined and reinforced easier as a private right.

2.1.2. The preserving of biodiversity as legal presumption.

Analysing the right to manage instead the right to use biodiversity has also the advantage to avoid a wide set of misunderstandings related to the definition of

biodiversity. The right to manage biodiversity does not need a strictly definition of biodiversity. It could be defined from a case to other, on the bases of specific technical rules. Respecting these rules means respecting the biodiversity level. Here is acting the same kind of relative presumption that characterises the field of environment protection: if the holder's actions are conforming to the technical, formal rules, *one can presume* that the holder is preserving the quality of environment.

2.1.3. The two level of the property rights analysis.

In studying the structure of the property rights, our approach uses a two level analysis:

the formal level: who owns the main good (the forest), who owns the right to manage biodiversity. The formal level represents the "legal property rights" (Barzel, 1997), the rights resulted from a legal regulatory framework of the forest management;

the operational level: where things happen, where things are decided (Schlager et Ostrom, 1992). This level expresses the economic reality of property rights exercise (table 2).

We make a distinction between the right of the owner to the main good (the forests = forestland and the stand) and the others rights generated by the main good, such as public access into forests, the rights to harvest non wood forest products, to manage game, etc. (table 1).

Table 1. The ownership of the "main good" and the ownership on "managing" the biodiversity

Ownership on the "managing biodiversity"	Ownership on the main good	
	PRIVATE	STATE
PRIVATE	Plenty ownership	Restricted ownership (residual claimant)
STATE	Restricted ownership (residual claimant)	Plenty ownership

A "bundle" of rights is attached to any good (Alchian, 1965; Alchian and Demsetz, 1973; Furobotn and Pejovich, 1972). For the case of forests in CIT, in

analysing the legal regulation we can make the affirmation that owner rarely owns more than a property right on the main good (forestland and stand). Even if in western countries, the forest owners are protesting each time when a new environmental rule brings constraints in forest management, the reality is that the property right of the owner is limited to the forest land and to the timber, sometime only to the forestland.

In order to clarify who possesses a right and what kind of rights, we will use the conceptual framework described by Schlager and Ostrom (1992). The owner is the person having the right to decide the access to the resource and to obtain the products of the resource; the right to manage the forestland; the right to exclude non owners from the use of the resource; the right to sell the good or to lease it (table 2).

Table 2. Bundles of rights associated with positions

	Owner	Proprietor	Claimant	Authorised user	Unauthorised user
Access and Withdrawal	X	X	X	X	X
Management	X	X	X		
Exclusion	X	X			
Alienation	X				

Source: Schlager and Ostrom, Property rights regimes and natural resources: a conceptual analysis, *Land Economics*, August 1992, 68(3): 249-262

For analysing “where things happen” and “where things are decided” in forestry, we need to make reference to the forest management plan. The forest management (FMP) plan is originally a facultative management tool, but in CIT the FMP become a tool to implement the national forest policy. As consequent, with few exceptions, the rules of forest management are decided not by the owner, but by the State.

If the State imposes all the rules for managing biodiversity, and the forest owners have any rights to propose something or to be involved in the management plans making, one could say that the right to manage biodiversity is hold by the State, not by the forest owner. Otherwise, in this case, the right to manage biodiversity becomes a collective-choice right.

3. The structure of rights aiming to preserve biodiversity

We analysed the Forest Code or the main forest law of Baltic countries (Latvia, Estonia, Lithuania), Eastern and Central European countries (Slovakia, Romania, Poland, Bulgaria, Slovenia, Ukraine, Byelorussia, Moldova) and of Central Asiatic republics (Georgia, Kazakhstan, Kyrgyzstan, Armenia). Less embarrassed with a historically established situation of property in forests, the legislation adopted in CIT formally expressed that the forests “are a good of

national interest". If the private property has been allowed in forests, the legislation imposes to the holders two main restrictions (a sustainable forest management and a multiple-use forest management) as well as a compulsory forest management plan.

The analysis of property rights on forests in CIT lead us to identify three main solutions adopted by the State:

- the biodiversity is protected by a property rule: the State assumed the protection of the biodiversity through the public property of the land;
- the biodiversity is protected by a liability rule (Calabressi and Melamed, 1972): the State accepted the private property on the forestland, but introduced the liability of the owner for preserving the level of biodiversity;
- the biodiversity is protected by a conventional rule. A contract is signed between the owner of forestland and the State.

Hypothetically, the three solutions could be possible in the same national legislation. We did not take into consideration the "share" of forestland under these rules in the total national forests. Our attention was concentrated to identify which is the prevailing rule in allocating rights to manage biodiversity.

3.1. First case: a property rule protects biodiversity

The "property rule" appeared in Eastern and Central European countries at the moment of privatisation of forests. Even in Estonia, who promotes largely the private property on the land, the Forest Code from 1998 statutes that: "in order to ensure the stable state of the environment and multiple use of the forest, the area of state owned forest shall be at least 20% of the area of the mainland of the Republic of Estonia" (art. 4 , Forest Code of Estonia). With few exceptions, the State prefers to keep protective and protection forests in public property. In the others countries (Ukraine, Byelorussia, Moldova, republics from Central Asiatic region), the private property is not allowed for forestland, even if it could be possible in agricultural land.

The property rule means that the owner of the land has also the right to manage biodiversity. More frequently, the State possesses the main good (the forestland) and the right to manage biodiversity. That is in forests of Byelorussia, Ukraine, Kyrgyz Republic, Kazakhstan, and Georgia. Also, that is in public forests of all other Eastern, Central and Baltic European countries (table 3). That could be, but is less probable, the case when the owner of the forest is an NGO which main activity is preserving the biodiversity (table 4). The hunters' associations could be in this situation, if they have a property right on the land.

Table 3. Public property rule protecting biodiversity

	Owner: the State	Claimant: NGOs	Authorised user: local population	Unauthorised user
Access to the land and Withdrawal	X	X	X	X
Management of forestland	X	partial		
Exclusion from the managing of biodiversity	X			
Alienation	No alienation if public property			

Table 4. Private property rule protecting biodiversity

	Owner: the NGO	Claimant: the State	Authorised user: local population	Unauthorised user
Access to the land and Withdrawal	X	X	X	X
Management of forestland	X	partial		
Exclusion from the management of biodiversity	X			
Alienation	X			

A difference with the Western countries is that the public property is really a “plenty” property, giving that no (or few) NGOs exist for claiming a “residual control” in the management of biodiversity. Yet, the level of biodiversity protection is not guaranteed, for two reasons:

the orientation of the State policy for the timber production. The wood crops and the use of woodlands for pasture and haymaking could have negative impact to the flora composition (UNEP Programme, National Reports, Byelorussia, 1998).

the State failure in implementing a sustained multiple use. For some countries, the exploitation of forest recourse is that the specialists compare with the exploitation of a mine (Müller et Sorg, 2000). Increasing poverty and limited alternative sources of income, have resulted in a reliance on natural resources to sustain life (Ministry of Environmental protection, Kyrgyz Republic, 1999)

3.2. Second case: an liability rule protects biodiversity

The owner holds the land, but the right to manage biodiversity is hold in fact by the State. Even if the owner has to undertake some practical operations related to the preservation of the biodiversity, he has not the right to manage the biodiversity (table 5). He just puts into practice compulsory guidelines provided by the State through the forest management plan. That is the case in the private forests of Romania, Poland, and Slovakia. An attenuation of liability rule is possible when the private owner could receive State subvention for acting into respect of biodiversity. Thus, in the Romanian case, the owner could receive compensation if the environmental restrictions have for results a loss of income; in Slovenia the State supports until 80% the costs of silvicultural operation if this operation is undertook carefully in protected or protection forest. In any case, the State has a residual control to the management of the forestland and to the management of biodiversity.

If the owner does not comply with the rules of forest management plan, he is punishable. The Romanian law introduced a fine for those private owners who do not comply with the previsions of forest management plan for cutting trees. Several times, the Constitutional Court confirmed the constitutionality of juridical decision on this matter.

Table 5. Liability rule for protecting forestry

	The forest owner	Claimant: the State, or the NGO	Authorised user: local population	Unauthorised user
Access to the land and Withdrawal	X	X	X	X
Management of forestland	partial	X		
Exclusion from the management of biodiversity		X		
Alienation	X			

The logic of the liability rule is to prevent the disturbance of biodiversity at the lowest cost. If the biodiversity is disturbed in private forests by the private owner's acts operation (wood harvest, wood plantations, and pastures of cattle in the forests), the lowest way to act is to prevent those operations that could have negative impact. The problem is that this restriction reduce the operational-rights of owners to the same extent that an authorised user.

3.3. Third case: a conventional rule protects the biodiversity

The right to manage biodiversity is held by the State, but is conceded conventionally to the owner of the land. From the viewpoint of rights held on forestland and on timber, we have a plenty property rights; for the viewpoint of right to manage the biodiversity, the owner of land is an “proprietor” (table 6).

Table 6. Conventional rule protecting the biodiversity

	The forest owner	Claimant: the State	Authorised user: local population	Unauthorised user
Access to the land and Withdrawal	X	X	X	X
Management of forestland	Conceded	partial		
Exclusion from the management of biodiversity	X			
Alienation	X			

The difference from the second case mentioned above is that, even when a payment exists, in the first case this payment is just a compensation for the losses of private owner, because the right to manage the biodiversity is not a property of the owner. In the present case, the payment is effectively a payment of an environmental service, the preserving of biodiversity. The only example that we have until now comes from Estonian legislation. The forest management plans are not compulsory; they contain only recommendations for the private owners. A contract could be concluded between the private owner and the State for the protection of « key biotope ». Thus “the protection of the key-biotope in a forest which belongs to a private law or a local government shall be performed on the basis of a contract entered into between the Forestry Board and the owner of the forests” (art. 31, Forest Code of Estonia). Through the contract for « key biotope », the State assumes the obligation to pay; that is the reconnaissance of a real right, attached to the main good, the forests. Similar proposals have been made also in the literature for the carbon sequestration potential (Rosenbaum, 2001).

4. Discussions

About the effectiveness of structure of property rights in preserving the biodiversity: the key problem for the first two cases is the weakness of State during the transition period (Hay and Schleiffer, 1996). Especially in countries from Central Asia, the forest play an important role as livelihood and the State misses the necessary resources (financial as well as institutional) to implement a sustained multiple use of forests. Also, even if FMP are established in Eastern

European countries, the problem of control remains. Positive steps were made with the recent creation of a control body for both the private and the public forests. Concerning the case of "conventional" rule for preserving biodiversity, as we mentioned above, it is a unique example, provided by the Estonian legislation. We do not have at this time statistics about the implementation of this key-biotope. But we think that it could be a good example about the allocation of property rights in preserving the biodiversity.

About the efficiency. An efficient allocation of rights in forestry has to reduce the transaction costs related to the procurement of environmental services. The intervention of the State has to promote those rules economising on transaction costs (Facchini, 1997). That is, to distribute rights to those who can enhance biodiversity at the lower cost. Should the State use the property rule and to distribute forestland management to the NGO with activities in environmental protection? Or should the State encourage the new appeared private owners to respect the FMP, which seems to guarantee at least some level of the biodiversity? Thus, a next phase of this study should be comparative and to bring an answer to the question how efficient are the solutions adopted for the preservation of the biodiversity.

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Abstract

Structure of property rights to preserve biodiversity in countries in transition.

The recently changes of property rights structure in the countries with economy in transition could be viewed as an initial allocation of rights to use the forest resource. We pointed out that the rights to manage biodiversity is more important for its preservation than the rights to use biodiversity. Based on the scholar property rights approach, we define an analytical framework for analysing the rights on managing the biodiversity in countries in transition (CIT). Thus, among the variety of property rights regimes in CIT, we could identify three main solutions governing the preservation of the biodiversity: the property rule, the liability rule and the conventional rule. Some empirical studies from the CIT suggest possible directions to analyse their effectiveness and efficiency.

Keywords: managing biodiversity, property rights regimes, liability rules, property rights rule

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