



EXTERNALITIES AND PROPERTY AS GUIDING FACTOR FOR THE MANAGEMENT OF COMMON POOL RESOURCES

Externalidades e Propriedades como Fator Orientador Para o Gerenciamento dos Bens Comuns

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Abstract: This article aims to reflect about how can be managed the common pool resources oriented by principles of externalities and property. Thus, the guiding concepts for decision making regarding these two factors were those of the positive or negative externalities generated from the exploration, and the use of a good as well as the aspects related to the property of resources. Based on the understanding that resources can be categorized, as being rivals and / or excluders, and their consume generate externalities to other social actors in the present, as well as to their own possessors or potential users in the future. Therefore, based on the study of these relationships, a better decision-making process can be reached on the issues of ownership of access, and on management as to the preservation and use of common pool resources. Moreover, it is necessary to understand that every resource consumed promotes, at some point, positive or negative externalities to other individuals. In addition, the simple monetization of resources does not solve the problem of negative externalities. Therefore, based on the categorization of the property that has to be exercised, and the externalities, it is possible to understand how to manage a common pool resource. This situation helps to understand the exercise of control and usufruct of the common pools.

Key words: Common Pool Resources; Externality; Sustainability.

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EXTERNALIDADES E PROPRIEDADES COMO FATOR ORIENTADOR PARA O GERENCIAMENTO DOS BENS COMUNS

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RESUMO: Este artigo tem como objetivo refletir sobre como os bens comuns podem ser gerenciados orientado pelos princípios de externalidade e propriedade. Assim, os conceitos norteadores para a tomada de decisão em relação a esses dois fatores foram os das externalidades positivas, ou negativas, geradas a partir da exploração e uso de um bem, assim como os aspectos relacionados à propriedade dos recursos. Ao entender que os recursos podem ser categorizados, como rivais e / ou excludentes, e seu consumo gera externalidades para outros atores sociais no presente, assim como para seus próprios possuidores ou potenciais usuários no futuro. Portanto, com base no estudo desses relacionamentos, um melhor processo de tomada de decisão pode ser alcançado nas questões de acesso à propriedade e no gerenciamento da preservação e uso dos bens comuns. Além disso, é necessário entender que todo recurso consumido promove, em algum momento, externalidades positivas ou negativas para outros indivíduos. Além disso, a simples monetização de recursos não resolve o problema de externalidades negativas. Portanto, com base na categorização da propriedade que deve ser exercida, e nas externalidades, é possível entender como gerenciar um recurso. Essa situação ajuda a entender o exercício de controle e usufruto dos bens comuns.

Palavras-Chave: Bens Comuns; Externalidade; Sustentabilidade.

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1. Introduction

The production and consumption system supply the demands of society by private goods and services. Consequently, it is necessary to exploit resources of the most diverse types for this system function. Thus, when dealing with resources, it can be said that several discussions can arise, mainly because of the advantage in free-market systems has always been to control these resources (Barney, 1991). However, there are some resources that are consumed collectively like the oxygen present in the environment, forests, schools in the seas and rivers, game animals, public parking spaces, streets and public avenues, etc. (Ostrom, 2000; Ostrom, 2008; Hardin, 1968).

To discuss the use of resources is necessary to understand how the ownership and management of these resources are. Although there are resources that are privately owned, there are also resources of property and common use such as those mentioned above and those are of collective use and are called common pool resource. We can say that based on the relationship between the availability and the use of these resources is that socio-environmental conflicts occur. In this way, the problems generated by the common pool resource come from their scarcity, which is increasingly frequent due to the crisis in their normal rate of regeneration, which is caused by economic action (Libiszewski, 1992). On the other hand, actions that impede the capacity of resources of resilience make the discussion about common pool resources emergency.

Common pool resources can be understood as the set of benefits that are shared by all members of a society, or at least most of them. This feature is also called the common pool resource. It is worth mentioning that this is a shared economic good, independent of any system of legal property rights (Ostrom, 2000; Ostrom, 2008; Hardin, 1968).

Starting from the reflection on the private goods and the common goods this article aims to reflect on how the common pool resources can be managed. For this purpose, it is argued here that by understanding better how the externalities of the use of these resources are generated, a guiding bias can be established to make decisions regarding their use. Although this topic has already been discussed by Hardin (1968) e Ostrom (2000; 2007; 2008), this topic still has relevance of being treated in order to contribute with the understanding and diffusion of the subject.

2. Common Pool Resources and Externalities

2.1 The property right on the goods

Individuals to meet their needs and desires need goods and services that are produced or available in nature. It is worth mentioning that the use of natural resources such as wood, ore, among others, occurs even for manufactured products. Besides, when it comes to production, it is necessary to remember that the production or transformation of natural resources, as well as their consumption, generate waste that will be sent back to the common environment – common pool resource. In the same way, when you remove common goods from nature you also remove your ability to generate ecological services (Huntsinger & Oviedo, 2014).

To understand the use of common pool resources in society, we must discuss the right of ownership. Thus, we can define four property categories of common resources, namely: open access, private property, communal property and state property (Feeny *et al.*, 1990). It is worth emphasizing that the property question raised here is related to the ability of the possessor of a good to make decisions and take care of the good; ownership is related to being able to manage to make the good sustainable.

Common resources that have open access are those where there is a lack of well-defined property rights. Moreover, in many cases, the access to these resources is not regulated, and in turn is "virtually" free. Examples of this free access to common resources may be fishing in some lakes or in the open sea, furthermore to the use or pollution of ambient air. In contrast, when private ownership of this type of property is exercised, it may exercise the right to exclude others from using its resources. Being that the case to regulate the use of these resources are invested powers in an entity, that can be an individual or an organization. It should be noted that property rights are generally recognized and regulated by the State (Berkes, 1989).

Another category of property is called communal property. It means when the resource is maintained by an identifiable community as interdependent users. These users can exclude strangers from the community while regulating the use by members of the local community. It should be noted that within this type of society the rights to use the resources are not likely to be exclusive or transferable, the rights of access and use are equal. Some

examples of this type of property can be found in some coastal fishing and pasture properties, which are managed as communal property (Berkes, 1989; Ostrom, 2008).

In State property, the rights to the resource are invested exclusively by the government, which in turn makes decisions about access to resources, level and nature of the holding be regulated. The category of State assets may refer to goods of which the general public has equal access and use rights, such as highways and public parks. An important point in the nature of the State property regime is that it has the power of coercion of the police to assert its use or exclusion. Another very important point is the generation of revenue to administer state property part of the taxpayer payments through taxes and fees.

Therefore, when introducing the concept of property in the use of resources, it is possible to reflect on the exploration and capture of them. Accordingly, when individuals, governments, and companies try to solve order problems related to resources access and exploitation, tends to see two types of solutions. On the one hand, the ownership of resources exercised by the State, occurring the administration and availability of access by government action. On the other hand, private property can be exercised, whether individual or corporate, making use of free competition in the market for regulation in the exploitation of resources (Bollier, 2008; Hardin, 1968). It should be stressed that the maintenance of a property, regardless of who owns it, will need social and financial resources that will be generated in different ways.

Then, based on the preference for private or state property, the discussion about the exploration or management of common property leads to reflection on one's own survival on the planet. This premise is true when we adopt the perspective that resources are all common, because the natural, social and even economic environment suffer from the influence of all the existing actors in society, and to a certain extent on the planet.

Although the management of natural resources is more frequently discussed as common goods, it is necessary to understand that better management of social and economic resources are also important for society well-being. It is a fact that the crisis of 2008 affected every planet when the scarcity of financial resources in some localities. Notwithstanding the crises that occur at the beginning of the 21st century, it is increasingly evident that society is globally interconnected, not only by political, economic and technical systems but also through biophysical systems supporting life on the planet (Mann, 2017; Morin, 2013; Henderson, 1991; 2003).

Thus, for better use of resources by individuals, organizations or the State, it is required to understand the relationships arising from their exploitation and supply. In fact, the assets of our economy can be grouped according to two characteristics (Passuello, Oliveira, & Mendes, 2009), which are:

- a) Exclusion: people can be prevented from enjoying the economic good because their access is regulated. Laws recognize and enforce private property regimes.
- b) Rival: the use of an economic good by one person reduces the benefits to others.

Based on these two functions and the objectives that individuals seek to meet their needs and desires, goods can be categorized according to their production and consumption (Hines, 2008). This relation of rivalry and exclusion with respect to goods can be verified in Figure 1.

| | | |
|------------------|-------------------------------------|-----------------------|
| | Excluding | Non-Excluding |
| Rival | Private Property | Common Pool Resources |
| Non-rival | Products "Club" (communal property) | Public Goods |

Figure 1 - Resources regarding their functions
Source: Adapted by the authors, 2018 (Hines, 2008).

So, rival goods are those whose use by one person prevents their simultaneous use by another. The goods that are exclusive to those whose used by a certain individual, and they can be protected. On the basis of these categories presented in Figure 1, four types of goods can be described as follows:

- a) Private goods are both rivals and excluders.
- b) Common goods (common access resources) are rivals but whose nature makes it difficult or impossible for others to use them.
- c) "Club goods" (communal property) are not rivals, but some individuals may be excluded from use.
- d) Public goods are neither rival nor exclusive. But, they are difficult to manage when for access to all, as it is usually about the guardianship of the State.

Therefore, reinforcing the idea of the management of common goods, it is known that these goods are rivals, but they are not exclusive. Thus, the available commons can be understood as shared resources that a community builds and / or maintains. Examples can be cited: common public resources such as libraries, parks, streets, etc.; common natural resources such as lakes, animals, vegetation, etc.; and common environmental resources such as atmosphere, water, and biodiversity (Bollier, 2008). In turn, these natural or environmental goods contain an element of negative externality inherent in having no associated price when they are exploited or used (Passuello, Oliveira, & Mendes, 2009).

Another way of understanding common goods is presented by Espeleta & Moraga (2011). These authors stress that the International Forum on Globalization proposes three types of common pool resources:

- a) The first type includes water, land, air, forests, fish stocks, i.e. the biological resources that are necessary for life.
- b) The second type that can be categorized as culture and which includes knowledge.
- c) The third type is a socially common property. This category is made up of resources that ensure public access to health, education and social security.

Based on these cultural and social dimensions of the common goods a new attitude can be adopted when exploring and consuming common goods. Ostrom & Hess (2007) describe that the ability to exploit what was once accessible generates fundamental changes in the nature of the resource, that is, this type of common good provides a new approach in the property ownership determination. The fact that it modifies this relationship is that these types of commons are neither rival nor excludable. Unlike natural resources, their "intangibility" means that the exclusive property of the good is not exercised. So, sharing is not only acceptable but also beneficial since it improves its characteristics.

2.2 Exploration externalities and resources usage

As stated previously, people organize themselves in society so that their needs are fully and safely supplied, so that goods and services are needed for their subsistence. In addition, for a given company to function properly, resources must be managed based on a short-term economic vision, but also looking at the sustainability of medium- and long-term resources (Beck, 2014).

In this way, it is worth emphasizing that when thinking about a society one must understand that economic growth and socio-environmental development must always be linked (Sen, 2000). The problem created between privileging the short-term economic to the detriment of long-term socio-environmental sustainability can be exemplified by the use of a high-value resource such as trees or river water, as their market values often do not account the socio-environmental cost to society due to its shortage.

Therefore, trees cut to make charcoal, furniture and other wooden utensils, as well as drinking water used for expensive washing, backyards, among other uses of little importance to maintain the life of the people, can

generate serious damages to the subsistence in the planet (see: Mekonnen & Hoekstra, 2016; Kanemoto, Moran, & Hertwich, 2016). It is worth noting that these losses occur on a large scale and accumulate more and more (Brown, 2003).

Thus, in the composition of the market value of the goods, it is often not considered the total costs, present and future, for the use of these resources. So it is admitted that the passing on of these costs affects the environment when its shortage, workers in reducing wages and citizens in the lack of public services or payment of taxes (Bollier, 2008; Sen, 2000; Beck, 2014).

So, in dealing with the use of natural, social or economic resources for the production of goods or services, present and future costs must be taken into account. Although the costs incorporation increases the price of goods, they can still be understood as value aggregators. The reason for this reinforcement is due to a greater awareness of the future availability of resources, despite the fact that the pricing of negative externalities is restricted to limiting instrumental rationality; this is a form of perception common to all because of the concept of environmental value is very loaded with subjectivity.

Therefore, the perception of value in relation to products and services depends on an evaluation of the other based on their personal beliefs and values. To facilitate the understanding of asset values, they are presented here based on three categories (Pearce *et al.*, 1989), namely:

- a) Value in use - is the value attributed to a good by the user;
- b) The value of option - value that they attribute to the permanent possibility of using it;
- c) The value of existence - is the value attributed to existence itself, regardless of current or future use expectations.

These approaches help in the evaluation of goods and services in general and of common goods in particular because in determining the use, choice or existence of a good, it determines losses or gains in relation to the consumption of resources in the future. Since the burden of consumption is often not assimilated by those who are consuming in the present, this is one of the main questions about sustainability: the Future. Moreover, when the losses of unconscious and inconsequential exploitation of resources are highlighted and understood, the externalities of this process are exposed.

Externalities are represented by the cost or benefit that an agent, in the performance of an economic activity, imposes on third parties. Since this can happen positively or negatively on economic activity or even on another income or welfare economic agent without a corresponding compensation (Coelho, 2012; Gonçalves, & Ribeiro 2013; Cruvinel, Pinto, & Granemann, 2012).

In this way, externalities derived from the actions of an agent in society have a natural, social or economic repercussions on resources for all (Eltz, 2012; Coelho, 2012). In a simple way, externalities are costs or benefits that are not included in the present prices of goods and services.

It should be emphasized that civil society, public sector and private sector have a relevant role in the implementation of initiatives that make it possible to maintain the competitiveness and sustainability of the production and consumption system, but that this present state of affairs does not affect other agents or the same agents in the future (Xavier, & Caldeira-Pires, 2004; Caldeira-Pires, Rabelo, & Xavier, 2002).

However, when there is a concern with the externality and it is compensated, it ceases to be an externality, and thus becomes internalized. According to Coelho (2012) two conceptions arise from this concern that try to explain the internalization of externalities. They are the theory of welfare economics and the theory of economic analysis of law. The former externalities would be market failures that the State must correct. The latter, it seeks to reconcile the application of legal norms to standards of economic efficiency (Gonçalves, & Ribeiro, 2013; Coelho, 2012).

Cavalcanti (2004), and Figueroa (2005) question the logic of commensurate with the immeasurable, that is, the use of a metric such as the monetization of all resources and goods indiscriminately. Thus, by monetizing goods in the form of economic valuation of externalities, it may become a trap for individuals, organizations, and the state. The question that is reached is related to the transfer by the internalization of natural resources that are not renewable, which generates damages to the society that can not be recovered like the health of the people or the consumption of goods essential to life.

Therefore, in dealing with the common goods and the generated externalities of their exploitation or consumption it is important to understand that value or value measurement is not something easy, or in some cases accepted. So, for the administration of common resources in the production of goods and services, it is necessary to base themselves on the concept of inalienability (Bollier, 2008). Since this concept is related to something that cannot be sold, then ownership of the common goods belongs to everyone and to no one, because its use benefits those who consume at first, but harms everyone by their scarcity in the future.

2.3 Externalities and common pool resources

At the beginning of this study we explored the concept of common goods that describes a wide variety of phenomena since it refers to the social and legal systems that are used for the administration of resources that are shared use (Bollier, 2008). This can occur according to Ostrom (2000) in a fair and sustainable way. This is an idea contrary to what Hardin (1968), when he emphasized that any system of shared administration inevitably results in a "tragedy of commons".

Hardin (1968) described that a feature when it is free and shared access can ruin its existence. This situation he calls "tragedy of common goods". The author has attempted to prove that, like pasture and livestock of common access, where anyone can raise livestock unrestrictedly and free, property will be led to a common ruin.

According to Hardin (1968), a restricted land case may be admitted that shepherds wish to maximize their production and increase the size of the herd whenever it is possible. In this situation, the usefulness of each additional animal has both a positive and a negative component:

- Positive: the shepherd receives the profit on each additional animal.
- Negative: grazing is slightly degraded for each additional animal.

The cost of overexploiting pasture is an example of a negative externality used as an example of a "commons tragedy". Another modern example of the use of common goods that can be cited is the existing congestion in large cities, so a public good suffers from overuse and loses its value to all. In the latter case, the negative externality generated by free access to the common good causes everyone to lose mobility.

Hardin (1968) sets out two solutions to the problem of the scarcity of common goods, which are privatization or private property. Since the author was concerned with the way in which the population grows and consequently the availability of common goods is altered more and more people yearn to enjoy the common resources to meet their individual needs and desires, there is pressure on systems and resources, be they natural, social or economic.

Bollier (2008) draws attention to the fact that Hardin (1968) describes a system of open access to resources such as land, which is done without any kind of regulation. To do so, the described land resource presented without limits and without the existence of rules to manage the access to it and its use. In this way, anyone can take what they want, since no one is administering the commons.

On the other hand, thinking about the conscious management of common goods, Ostrom (1986) considers polycentric and multi-actor governance as a way of solving the problems of scarcity arising from the use of common goods. Therefore, for the author, the interaction between national, regional and local governance can increase the likelihood of priority common goods conservation.

Ostrom (2000; 2008) argues that local citizens can create organizations with sufficient competence to decide how to manage collective assets, this being done by the aforementioned communal properties. In this way, the state through laws in any scope can incorporate the capacity of local actors in the exploration and use of common goods. Which in turn would lead everyone to a level of awareness about the preservation and future need of these goods. The research based on Ostrom's analysis has shown that human groups do not make unbalanced use of natural resources, as they assumed Hardin (1968).

Therefore, the idea of citizen management of common goods is to establish transparent and effective rules to give access to resources that are common in a shared way. So, with this set of rules, one can ensure the proper preservation and use of the resource while protecting the community that shares these assets (Bollier, 2008).

Ostrom's (2000) studies show that as long as the principles and rules of collective ownership set are well-defined, and accepted and respected by all, it is possible to avoid the inconsequential exploitation of common property. In this dynamic, it is worth remembering that common goods are rivals, but they are not exclusive, so self-government makes access easy and maintained to all. Thus, Ostrom (2008) deals with the promotion of self-government, which would be a third way to the aforementioned nationalization and privatization. Moreover, with the use and development of cooperative institutions organized and governed by the users of the common goods themselves, a situation can be promoted that is beneficial to all.

Therefore, to administer the common goods one must attribute or recognize the value of an externality and its internalization in the economic calculation. On the other hand, it is worth questioning the effectiveness of measuring by means of monetization the externalities arising from the exploitation of common resources. This aspect was greatly explored when discussing Carbon Trade (McHale, Hall, Majumdar & Grimm, 2017; Klein, Siegwolf & Körner, 2016).

In order to facilitate the understanding of the influential elements in the administration of common goods, one must seek to recognize the main aspects that interfere in the categorization and the exercise of ownership of these goods. Initially, it should be pointed out that goods should be categorized as to their aspects of being rival and / or excluding (Table 1). So that after this categorization it is possible to determine the type of property or access to the common goods and the generated externalities of its exploration and use.

Notwithstanding the type of common good, it is often the role of the state to harmonize the conflicting interest of the various agents in the use of these goods. This agent can regulate the economic cannibalization of the externalities that are triggered by society, as this can produce threatening situations that affect everyone in a planetary society and increasingly interconnected (Beck, 2014; Morin, 2013).

In this way, by understanding how to use the common goods, in addition to the costs of their exploitation, an awareness of the costs of use, choice or existence of a good can be spread. Thus, this conceptual framework helps in making decisions about who owns the property and can manage the commons in order to determine present and future responsibilities.

Therefore, by calling the assets available in a society "common", one assumes that it is shared and belongs to the people in general, ie, it does not belong to the government or to a private entity. A resource that is common serves broader purposes than those intended in the market (Bollier, 2008). In determining who will be entitled to ownership of a good, the externalities of its exploitation and use must be taken into account. It is worth emphasizing that the way humanity interacts with nature and transforms the planet will cause it to organize itself or defend itself (Gore, 2013; Morin 2013). In this way, by recognizing the current state of things and making decisions based on the externalities generated thereby, nature can be transformed into a resilience state.

Contrary to this situation, when the future resources state in general, and common property in particular, is not taken into account, it would promote the deprivation of resources already in the present moment and its shortage in the future. As Sen (2000) points out, the development consists of the elimination of deprivations of liberty that limit the choices and opportunities of people to exercise their condition as an agent.

Final Remarks

At the end of this study, the issues related to property ownership were addressed, focusing on the management of common pool resources. This subject is addressed in two important positions. On the one hand, Hardin (1968) speaks of the scarcity generated by the shared use of common pool resources. On the other hand, Ostrom (2000; 2008) and Ostrom and Hess (2007) deal with sharing as a way of preserving common pool resources.

In order to deal with this theme, better understandings of the concepts that determine whether the access to the good is rival and / or excluding, as well as the generated externalities of its exploration and use are suggested here. These concepts can assist in the choices that arise when determined to whom it is the administration of the common pool resources. Therefore, based on the study of these categorizations in terms of property, function (Figure 1), and the kind of externality, a better decision-making process can be reached on the issues of access, and on management as regards preservation and the use of common pool resources.

In addition, it is necessary to understand that the consumption of all goods can promote, at some point, positive or negative externalities to other individuals. Awareness of the externality type can help to discuss the type of ownership and management that should be adopted. On the other hand, the simple monetization of resources

does not solve the problem of negative externalities. Therefore, based on the categorization of the property that has to be exercised and the externalities, it is possible to understand how to manage a good. This situation helps to understand the exercise of control and usufruct of the goods. It should be remembered that this property that is discussed here is related to the ability to determine the use and maintenance of the property.

Thus, taking into account some questions such as: Who should own the property of the common pool resource? What are the negative or positive externalities generated from the exploitation and use of the common good? What is the competence of the agent responsible for administering the common pool resource? These and other questions can help not only the present state of the common good, but their ability to regenerate and sustain themselves for future generations.

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