Public goods, commons and ecosystem services

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1. Introduction

Land use has through history been subject to complicated sets of user and owner rights in order to maximize benefit from land use. Commons denote areas with collective use and ownership. Commons have been associated with inefficient overuse, and private use- and ownership has been emphasized as more efficient.

Since the 18th century the economic rationale of common use and ownership eroded in many European countries and private property rights took over. Rationalism in agriculture and forestry, increase in resource demand, changes in technologies, or institutional factors has been mentioned among the main reasons.

During the 20th century the outputs from land areas diversified tremendously. New products and services caused by new demands in society comprised, e.g recreational amenities, biodiversity, groundwater and climate regulation. The management challenge of ecosystems, farms and landscapes of the 21st century hence pertains to the regulation of multiple outputs of strongly varying character. Agriculture or forestry may produce by-products of public interests such as biodiversity, cultural heritage and recreational opportunities. Consequently multifunctional land use is attaining much interest in contemporary resource management, but is very challenging in terms of regulation. The economic rationales behind the private use- and ownership model for agricultural production may not be applicable to the supply of these modern goods and services. This has revitalized the interest in commons as management models for land areas.
2. Commons in history

Historically, the legal concept ‘common’ was defined in opposition to private, individual property. Economically, common property rights were treated as an implicit necessity caused by the contemporary use of the same resource or area for different purposes. In most cases commons imply both co-ownership and multiple uses.

The various modes of historical commonage may be represented in the cultural landscape around a typical rural village of northwestern Europe.

The most work-intensive natural resource exploitation near the village was dominated by individual property rights. Arable fields and hay meadows allocated in numerous strips were managed individually. The fields were, after harvest, also used as pasture when animals from all farms joined in common grazing. This also took place on fallow land, usually comprising one third of the village land. So, the multiple use of the fields resulted in two concurrent property right regimes: individual use rights to arable and meadow, and common rights to the pasture.

In the periphery of the village lands, a mosaic of forest and dry grassland dominated the landscape. This area was subject to complex forms of common rights. Normally, the identity of all participants in such common pastures was well-defined. Only livestock belonging to the adjacent village communities was entitled to partake. The proportion of the total pasture resource each peasant could draw on was exactly defined. There were, however, many examples of such restrictions being violated.

The extensive multiple use of forests for grazing and wood production was reflected in a very complex ownership structure. The pasture rights to the forest floor were normally possessed by a collective of tenants. Small trees, the so-called ‘underwood’, was also legally attached to tenancy and used by the peasants, either individually or collectively. And finally, the use of large, mature timber and mast trees (called ‘overwood’) was solely in the hands of feudal lords.

The use of the lower parts of the forest and the timber production was obviously competing. If the low forest was intensively used, none of the tress would become really big and useful for timber, but the farmers using the low forest had no incentives to nurse small trees to become suitable logs in the future, because if they became suitable logs, they were reserved for the lord.

Since the late 18th century, the various kinds of commons were in general converted to individually owned, clearly differentiated economical resources. The
transformation from common to individual ownership represent the point where the economies of scale in herding the animals, exploiting marginal natural resources, and in common risk sharing in a society with no insurance, turned in favour of privately owned farms producing for a market. Population pressure and increased wealth, implying increased resource demand, and shift in technology played a role.

3. The segregation and integration of functions.

The abandonment of the common use and ownership regime often implied a functional segregation. Functions other than timber production and hunting were typically excluded from the forests, and the open areas were exclusively used for agricultural production. The segregation and integration of functions, and hence the degree of multifunctionality, has been an issue for discussion for decades. In modern agricultural economics terms, multifunctionality is used to denote coupled production, such as meat and milk which is inseparable in the farm management or a management regime where several goods are produced at the same time at the same area or at the same area at different seasons. Some agricultural outputs are not produced for a market and hence irrelevant for the productivist farmer but may influence other individuals. These byproducts are called externalities, having either a positive or a negative value.

The multifunctionality concept has also been defined in a landscape context. A landscape may be multifunctional if it serves several functions at the same time – i.e. housing opportunities, wildlife habitats, groundwater, climate regulation, and also more intangible functions such as recreational, aesthetic, cultural and spiritual values.

Some functions may exist in harmony in the same areas while other combinations may cause conflicts. Therefore it may be appropriate to integrate some sorts of land use and segregate others. This has often necessitated some sort of public regulation. If conflicts exist between different landscape functions, it may be an appropriate strategy to segregate these functions. However, in most cases the benefit from use of land is optimized when different uses are integrated. The land scarcity and population pressure has revitalized the interest in functional integration after 200 years of segregation.

4. Land use and the commons in an economic perspective

The cease of common management is much in line with modern economy, which, given a number of specific assumptions, argue that a market economy with private property rights
will optimize the use of the society’s resources. The historical evidences indicate that private
ownership, given the specific historical context, may not always represent the most efficient
way of organising land use, however.

The role of property right is crucial for understanding the use and management
of natural resources. Property right regimes can be described by the scope of the exercising
group and the degree of control delegated to the exercising group. Four different categories
are typically used to describe the scope of the exercising group: private, common (collective),
government, and open.

In a private property regime it is a single individual or a juridical person who
exercises the rights. In a common property regime it is a specific group of individuals who
exercises the rights. If this group is a political entity, it is termed a government property right
(state ownership). Open property rights exist when there are no enforced rights, i.e. all who
use the resource has a right.

The degree of control to exercise the property rights may be characterized by
the right to use and regulate the resource. With state-ownership the government often keeps
the right to regulate, but delegates the use rights to individuals or groups of individuals.

Private ownership is efficient given a number of assumptions. The private
owner has incentives to manage and protect the resource because the benefits from an
optimal management will go to the owner. In some instances the private property regime is
problematic, however. If a resource exists in a sufficient amount, there is no need for
restrictions on the consumption and no point in creating markets and imposing private
property rights. For some goods the use is by nature non-rival and non-exclusive. Two
persons cannot eat the same apple, but they can both watch the same TV-programme and if
the program is broadcasted everybody can watch it. Such goods are called public goods and
are often commonly produced. Uncrowded roads, parks and biodiversity are examples of
public goods. For such goods there is no market. While such non-market goods have a
significant value to people, they have no price, and it is typically not possible to assign
property rights for such goods. Imposing private property rights would not ensure an optimal
 provision of these goods. In such cases, common or state ownership may be the optimal
property regime.

Finally there are economies of scale for some goods. The optimal size of the
production can be so big, that a single producer does not have sufficient size to manage an
optimal production. For some branches the optimal size of production is so big that there is
room for only one “firm” on the market, such as electricity and gas delivery services with
high fixed cost and low variable costs. Especially the huge infrastructure investments make
this a natural monopoly. Also in this case, common or state ownership may be the optimal property regime.

In situations where private property is inefficient, the optimal alternative depends on the nature of the resource. Private ownership may still be the optimal property right, but the private owner’s degree of control over the resource may be reduced, e.g. through environmental restrictions. This is a very common situation in agriculture in industrialized and post-industrialized countries. In other situations state ownership, collective ownership, or open ownership may be the optimal property right regime.

In the assessment of property right regimes it is important to include the transaction costs, i.e. costs associated with assigning and enforcing private property rights, identification of optimal resource use regime, negotiation and enforcement of collective rules, and implantation of regulations of private property. If no transaction costs existed, there would be no differences in efficiency between private and collective ownership. Therefore, changes in the society influencing the relative transaction costs may imply other optimal property right regimes.

A typical example of a resource where assignment of private property rights are excessively costly is the so-called common-pool resource which are characterized by costly exclusion of users (non-excludability) and by one individual’s use of resources subtracts from the amount of resources available to others (rivalry). Historically, many common-pool resources have been assigned collective property rights. Due to increased demand for the resource or changes in transaction costs, the resource in question has been assigned private property rights, possibly accompanied by state regulation, or has been transformed into state ownership.

6. Commons – a regulatory instrument today?

In a number of cases land use has undergone a development from multifunctional, commonly owned and managed areas, to mono-functional areas through functional segregation. Usually this development was caused by an economic rationale of agricultural production.

However, during the last century an increasing demand for alternative outputs from the landscape such as recreation and wildlife habitats has emerged. A main reason for this development is that some of the goods of the landscape, which were previously abundant such as ground water and open space, have become scarce. This has revitalized the ideas of functional integration as guiding principle.
The most efficient approach to ensure the provision of multiple goods and services depends on how the goods are related to each other. In situations where integrated production of landscape services is optimal and where many of these services have common good character (non-rival or non-excludable), unregulated private ownership is not likely to provide an efficient use of the landscape. In these cases, restrictions on the rights to exercise the private property rights, e.g. restrictions on land use changes, or internalization of externalities through taxes and subsidies, may be suitable approaches to achieve an efficient and sustainable land use.

In multifunctional landscapes where the provision of different goods and services are interrelated and spatial heterogeneous and there are many different users the optimal regulation of the land use is a huge and complex challenge. In many cases it is complicated by the fact that the provision of many goods are demanded at a landscape level, but delivered in a landscape divided by cadastral systems driven by the logic of agricultural production. In such cases the need for joint management is obvious, and the question of government regulation becomes relevant.

Traditional governmental regulation of private properties may not be the most efficient way to regulate common goods and multifunctional land use. There may be situations where transaction costs involved in designing and enforcing an efficient regulation may exceed the benefits of regulation. In these cases locally, customised solutions may prove very important as an alternative.

An advantage of collective property rights and common property management as compared to general, centralized regulation, could be the exploitation of local knowledge in design of locally customized rules for land use, better revelation of the local population’s demand for e.g. recreation, and less costly enforcement of regulation as the local users employ social control amongst themselves.

Therefore, the optimal organization of the use of landscapes will depend on the socio-economic context, i.e. the demand for landscape services, institutional factors, and the character of the common resource in question.

Formation of co-operatives or networks among farmers or other land owners, aiming at the supply of multiple landscape services reaching across property borders, are known in several countries.

With cooperatives, the public benefits from reduced transaction costs, and the land owners benefit from economies of scale in the production of landscape goods and
services. A cost-benefit analysis of the arrangement is very difficult however, because of the indirect and long-term effects on farmers’ behavior.

One cannot expect that local voluntary institutions possess the incentives to implement actions and regulations, which ensure an optimal provision of services, if the causality between action and effect is too diffuse or not recognizable at a local scale. This may be the case when it comes to provision of e.g. biodiversity, greenhouse gas reductions and groundwater, as described above. Therefore governmental/national regulations will not be redundant but necessary for ensuring an optimal provision of such goods. In some situations, a combination of the two approaches (voluntary cooperative action and public regulation) may be the solution, as the public regulation forms the frame within which the local actors can act adequately in order to find optimal solutions to manage the common resources.

6. Conclusion

The historical development has showed that private land use and land ownership was appropriate for the production of agricultural products, and at least superior to the commonage of the 18\textsuperscript{th} century. Private land use and ownership proved efficient in the gap between 1800 and the mid 20\textsuperscript{th} century when agricultural production was in focus. However, the private use and ownership proved inefficient with the increasing importance of alternative outputs emerging as public demands in post war Europe, such as recreational values, environmental goods, cultural identity and others. Whenever the dominant functionality shifted from agriculture to something else, the private ownership has been limited by restrictions, to the point where the public has taken complete control of the land. The sound and sustainable regulation of multiple outputs may require some kind of revitalization of the commonage. The decision as to the exact distribution of common rights and private rights depend on the most important or valuable output from the land. The commonage may take many forms, but local customs play a critical role, as it did in history, where resource exploitation was based on thorough local knowledge. For the future common management regimes, analysis of functionality and multifunctionality will be needed in order to design the most appropriate management regime.
Further reading:


Bell, A., Parchomovsky, G. 2008 The Evolution of Private and Open Access Property Community and Property. Theoretical Inquiries in Law 10 1, 76-102


