Chapter 10
Natural Parks and Sustainable Development: A Theoretical Study

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Abstract We analyse the role of Natural parks in Europe and Italy in mediating among diverging interests about the use of natural resources. Using standard economic concepts, we highlight that natural parks provide different types of goods and act as place-based institutions for sustainable development.

Introduction

Established mainly with aesthetic and recreational purposes between the end of the XIX and the beginning of the XX century, during the 1950s the so called scientific and conservationist approach highlighted their nature preservation role, a kind of open-air science museums.

Nonetheless, during the 1960s parks are progressively alleged to become an instrument to increase wellbeing of local communities through natural capital interpretation. Due to the work of scholars and practitioners such as Valerio Giacomini and Robert Poujade, a new "systemic approach" guided the studies on natural parks, oriented to consider a park as a complex territorial system carved by man's activity through the centuries, and aimed to pursue sustainable development. This is the framework for the establishment in 1967 of early Regional Parks in France [13].

From this perspective, the park is a tool to recompose the latent conflict between the specific objectives of the economy (growth of average incomes and employment at the local level), the society as a whole (equity, respect for cultural and gender differences, production of social capital and mutual trust) and ecology (protection of biodiversity and—in recent years—fight against climate change).

Our contribution proposes an interpretation of the activity of protected areas in Europe and Italy to achieve the objectives of sustainable development, referring to theoretical elements of environmental microeconomics. In section "Introduction" we recall the notion of Sustainable development and associate it to the activity of

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natural parks; in section "Natural Parks and Sustainable Development", we provide a taxonomy of the type of goods and services provided by natural parks; in section "Park Supplying Goods: Searching for a Taxonomy" we focus on the role of natural parks as a place-based institution. A final section recaps the main issues and concludes.

Natural Parks and Sustainable Development

The notion of sustainable development is ambiguous. In the famous *Blueprint*, David Pearce counted as many as 25 formulations of sustainable development [12], a number in the meantime grew exponentially and which today finds its most extensive treatise in the publication of the 17 Sustainable Development Goals (SDGs) by the United Nations.

This plethora of definitions is suggestive not only of the complexity of the subject, but also of its intrinsic contradiction, generated by the need to include heterogeneous elements in the same concept: development, which connotes change, modification of the *status quo*, dynamics; and sustainability, which refers to conservation and maintenance of integrity [6].

One of the best-known and most quoted expressions of sustainable development is the one proposed by the Brundtland Report and adopted by official documents in 1992 Earth Summit in Rio de Janeiro, according to which sustainable development is "(…) development capable of satisfying the needs of the current generation without compromising the meeting the needs of future generations" [16]. The Report highlights the existence of three components in sustainability,: the economic one given by the ability to generate income and employment in a long-lasting and satisfactory way; the ecological, consisting in the need to keep ecosystem's ability to provide usable resources and services; the social one, concerning equal opportunities between generations, guarantees of safety, health and education conditions for citizens, respect and equal dignity for each culture.

The coexistence of the three dimensions, each with a system of values and an objective function in mutual potential conflict, generates an intrinsic tension, which also explains the difficulty in pursuing sustainable development. The profit maximization goal, typical of the economic system, can have negative impacts on the ecosystem, through the excessive withdrawal of resources and the generation of waste, and it can be in contrast even with the objectives of social equity (think to the existing contrast between technological efficiency and basic employment, generating the progressive marginalization of large segments of manpower). The objective of protecting the environment and biodiversity, on the other hand, can conflict with established social rules or traditions [14].

Sustainable development is the attempt to reconcile the conflict between previous sectoral objectives, allocative efficiency, distributive justice, and sustainable dimensional scale [3], in the will to find a balance between the three dimensions, overcoming the latent tensions. The "triangle of [8] allows the visualization of the issue:

Each vertex of the triangle corresponds to a maximum fulfilment of the component (100%) and of the corresponding objective, while each shift from the pure positions along the axes implies a trade-off between one objective and another. The concept of sustainable development consists precisely in the renunciation of the full maximization of each dimension, in favour of a compromise equilibrium, represented in the graph by the area enclosing the incenter of the triangle.

Once transposed to protected areas, Munasinghe's triangle allows to understand that a park is a complex reality in which divergent interests seek a composition under the concept of sustainability: the trade-off between ecological and economic objectives takes shape whenever limitations on production activities with a high environmental impact are enforced (for instance, the ban on turbo-blower rakes for collecting clams in the lagoons of the Po River Delta Park), but also—in the opposite direction—when visit to environmentally sensitive areas within a natural park are allowed. The trade-off between economic and social objectives occurs whenever we assist to the employment of social workers in the maintenance of the park (such as Aspromont National Park at the end of the 1990s) or to the current support given by many protected areas to the establishment of "community cooperative", a third sector firm with social purposes, including the maintenance of essential citizenship services for local communities subject to market failure. Finally, the trade-off between environmental and social objectives is highlighted in the management of hunting activity, allowed limitedly to residents in the "contiguous areas" of many parks as required by the Italian Framework Law on Protected Areas (Law 394/1991).

Figure 10.1 indicates the area closest to the lower left vertex as a representation of an under-utilization of natural resources, which implies the possibility of expanding the withdrawal with no risks in terms of non-sustainability; on the contrary, the upper vertex represents situations of over-use of natural capital, so that for the purposes of sustainability environmental protection interventions, limiting the purely economic objectives, are required.

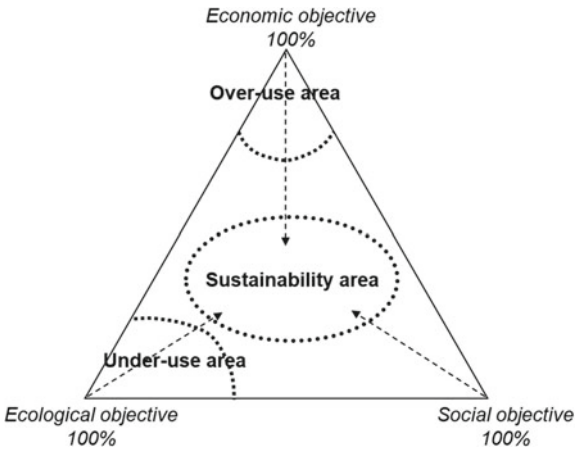

Fig. 10.1 Sustainable development and the Munasinghe triangle

To be achieved, sustainable development requires cooperation between subjects searching through confrontation the way to overcome conflicting interests, in the spirit of maximizing overall social welfare. This aspect recalls and substantiates another well-known theoretical model to solve contractually the issue of externalities and proposed originally by Ronald [2]. The Coase theorem, currently a cornerstone of environmental economics, claims that it is sufficient an ex-ante (even random) assignation of the property rights, to achieve the social optimum level for the use of a resource. As a matter of fact, the negotiation between the subjects interested in a rival use of the asset (and the consequent transfer of rights from the legitimate holder to the counterpart)—to define the equilibrium of the system, i.e. the desired level of environmental externality, in this case the exploitation of the natural resource and the related costs and benefits.

A Park, in this sense, can be viewed as a place where to negotiate and mediate among diverging interests, where the local community and the scientific one find the desired balance between the two model extremes represented by the 100% conservation of the natural capital and the unconstrained localization of any anthropic-productive activity. If so, it is not surprising that integral protection is absent or restricted only to small areas, particularly sensitive from the point of view of biodiversity, in most of Natural Parks in Europe.

This equilibrium includes levels of tangible and intangible compensation among stakeholders. When the property right *à la* Coase is assigned to nature protection supporters, negotiation can open to the implementation of activities with non-null environmental impact, such as tourism both sustainable (tour-guide for hikers, bird-watching) and conventional (the numerous ski-lifts present in almost all mountain parks), or extracting and polluting activities: this is what happens with royalties paid by Italian National Oil Company for oil drilling in National Park of Val d'Agri or, until few years ago, with compensations for emissions paid to municipalities of both regional Po River Delta Park (in Veneto and in Emilia-Romagna) by the coal-fired power plant in Polesine Camerini.

In a highly anthropized environment such as the European territory, a protected area can easily be established in places with a high use of resources, for example for agricultural purposes; in similar cases, one can imagine a property right assigned to the farm, who can evaluate compensations for adhering to agri-environmental agreements and reduce the impact of its activities.

Despite the negotiating opportunities highlighted by the Coase Theorem, the process is seldom put into practice, and the establishment of a natural park is mostly enforced by law. The reason is already present in the original work of Coase, who claims that the presence of transaction costs, often particularly high due to both the number of subjects to be involved in the negotiation and the high degree of internal conflict, generates the failure of the process. Nonetheless, specific practices are implemented in the field of environmental protection to reduce transaction costs: in France, the negotiation preceding the establishment of a protected area is followed by a facilitator (the *Animateur*), appointed by the government to increase the possibilities for dialogue between the parties and overcome the reasons for conflict; in Italy and other European countries, Local Agenda 21 initiatives are used for the same purpose.

Park Supplying Goods: Searching for a Taxonomy

Sustainable development relates to thicken relationships between agents, shifting the focus from products to goods. But what kind of goods? The economic taxonomy for goods is based on the dual criterion of rivalry (in consumption) and excludability (from benefits); the former triggers whenever the enjoyment of a good by the consumer generates a simultaneous reduction in the possibilities of consumption for other agents; the latter remarking that it is possible excluding consumers from the benefits once a good has been made available (Fig. 10.2).

According to economic theory, lowest levels of both rivalry and excludability define a (pure) public good, while the opposite (i.e., highest levels for both criteria) identifies private goods.

Differing from the previous categories, we find two types of collective goods: *commons*, characterized by high rivalry and low or null excludability, and club goods, described by high excludability and low rivalry. While *commons* distinguish free access resources, club goods are commodities generating utility and positive externalities only for particular categories of users, so that outsiders have no interest in taking advantage of the free access.

A fifth kind of goods is given by merit goods, equally possible for both private and public goods, whose relevant feature is being subject to systematic under-rating in the utility by consumers. Since they are not willing to pay the price requested by the market, to avoid the market failure the provision of this type of goods is ensured by public sector (paternalism).

Natural parks provide all previous kind of goods according to different conditions. If the supply of public goods such as natural landscape or biodiversity is straightforward, living apart the issue if proposed examples have more nature of public or

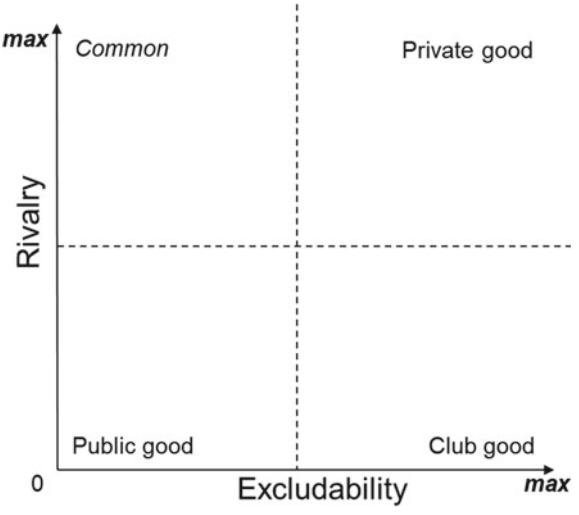

Fig. 10.2 The different kind of goods according to rivalry and excludability

merit good,[1] we can point out that many private goods, such as the management of an accommodation site (among the others, Peak National Park in England) or of an "adventure park", i.e. that particular kind of entertainment related to walking and climbing the trees (Regional Park of Colli Euganei in Italy) are sold in the market by park authorities. But the same happens for commons (the harvest of firewood from forest maintenance in many mountain parks) and even for club goods (for instance the management of nursery schools for local communities by Italian National Park of Cinque Terre in the first decade of 2000s).

Nonetheless, the ability of local agents to collaborate and produce collective goods is considered a distinctive element for development. Collective goods provision expresses a high level of self-organization by local communities, ability to recognize and fulfil own specific needs, being the natural playing field for place-based institutions.

Governing Collective Goods: The Natural Park as a Place-Based Institution

Until the 1990s, the theoretical models addressing collective goods basically belonged to two categories. The first one following and developing the intuition of Garrett Hardin, whose seminal article postulated the inevitable exhaustion of the environmental resource due to time inconsistency: each user gets a direct and immediate benefit and bears a shared and delayed cost from exploitation (whole benefit today, divided cost tomorrow), which favours over-use and exhaustion [7].

The second dates to [4], who achieved the same result as an application of the Prisoner's dilemma model to the collective goods issue, so that the appropriation of the good is represented as the dominant strategy of a non-cooperative game with complete information: the rational agent is obliged to anticipate the defection, and the non-cooperative equilibrium self-impose.

It takes almost two decades before Elinor Ostrom, first and until 2019 only woman Nobel laureate for Economics, proposes a new solution to the so-called "tragedy of the commons". Natali and Silvestri [11] starts from the empirical observation of local communities that self-designed long-lasting institutions to successfully govern the use of natural resources.

Ostrom remarks the high level of self-organization expressed by local communities in the production of collective goods: the ability to recognize own specific needs, and to exploit opportunities peculiar to the place, the need for coordination, the acceptance of information and implementation costs to bear [10].

[1] It is known the opposition of [5] to the public funding of US Natural parks: "*Park's entrance (…) are few (…), so that it is easy setting up toll barriers and collect entry fees. If audience wanted this kind of holiday enough to bear the related burden, private firms would certainly have enough incentives to ensure the maintenance of such parks (…). I really do not see in these cases, effects (…) so relevant to justify government activity in this field*". One possible answer to Milton Friedman's astonishment could be that visiting National Park is a merit good.

The production of (local) collective goods is a primary task of place-based institutions (Barca, xxx). They take charge of the onerous work of involving public and private, individual and collective, local and external actors, for the most accurate identification of the need to be considered, and of the possible alternatives, the finding and organizing of assets required for the production of the goods. They take a guiding role in the production of collective goods, namely a fundamental management function to collect and coordinate a multiplicity of contributions.

This kind of activities are assuming growing importance with respect to economic dynamics increasingly attentive to relational aspects, linked to non-market factors and contextual conditions. Although their role was initially unveiled with reference to industrial districts [1, 9], they are not to be associated exclusively with that productive organization, nor only with manufacturing activities. In any type of territorial context, local development consists of the ability of local agents to collaborate both to produce collective goods, such as environmental heritage and resources, enriching external economies [15].

Apart from some advanced cases, it is hard for a park acting as an alternative to productive activities, a supplier of private goods in market failures contexts, nonetheless a park can act be an instrument of sustainable development, an agent of that system of coordination, production and exchange of collective goods which represents the future of a mature system.

Territorial public institutions develop policies and actions rooted in and aimed to places. In parks, this approach applies both to protection and to economic promotion: the protected resources are physical and linked to the equilibrium of the local ecosystem; human activities are the expression of social environments where relationships and cultural propensities have their own character.

Conclusions

A common feature of many European parks is that they are called daily to "re-negotiate" the mandate for nature conservation with the citizens. In parks operating in heavily anthropized territories this is due to pressures deriving from alternatives in the use of protected resources; in those with demographic crisis, such as mountain areas, to act as coordinator and bridging relationships for the production of collective goods.

The contribution of parks to sustainable development is possible from both the function of coordination and the supply of resources necessary for the production of (collective) goods. The mission of protected areas is the protection of natural resources. This is not an easy task, due to the conflict with local interests which have the economic exploitation of the natural resources as their possible expectation.

The intrinsic value of nature is not always perceived by citizens: protecting habitats means preserving them for future generations, a weak option, unpopular in times of crisis, and destined to lose against short-horizon choices with tangible and immediate economic outcomes.

One way to promote the protection of nature in the long term, is making natural resources the key for relationships capable of generating sustainable development. The production of collective goods, i.e. goods responding to situated and specific needs of local communities, is aimed to this purpose.

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