

Civic Uses as Complex Socio-Ecological System: A Proposal for an Analytical Framework

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Abstract. Civic use rights are a particular category of real rights over collective-owned or public lands that allows local communities to enjoy agri-pastoral-sylvan properties and use them for individual or commercial purposes. Properties encumbered by civic use rights have had a crucial importance in Italy to guarantee access to natural resources to local communities and contributed to shape the present cultural landscapes, especially in mountain and inner areas. In this sense, properties encumbered by civic uses represent strategic assets to preserve common natural resources and the landscape. Based on this, the Italian legislator recently guaranteed public bodies the faculty to transfer civic use rights from properties that lost their original agri-pastoral-sylvan purpose to another public property land of equal environmental value. This raised an evaluation question related to the assessment of the value of the land encumbered by civic use rights.

To answer this question, the current paper presents an analytical framework that supports in the definition of criteria to be addressed by decision-makers in cases of transferral of civic use rights. The framework combines different methodologies in a multidimensional model built on the basis of Ostrom's Design Principles (DPs) for the commons; the Socio-Ecological System Framework; and social impact assessment.

Keywords: Commons · Civic use properties · Socio-Ecological System · Ecosystem value · multidimensional evaluation model

1 Introduction

In western and central Europe, common ownership of properties and collective agriculture land-use systems have been widely maintained as traces from a past where common properties were seen as a mean to access economic and productive assets [1, 2]. As such different forms of collective ownership have been maintained in extensive or unproductive land-use settings, especially in inner areas [2, 3]. Additionally, in mountain areas, such as the Alps, the Pyrenees and the Carpathians, still nowadays it is possible to find common use of forests and grassland systems, such as pastures, that present different governance arrangements [2–6].

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The phenomenon of collective ownership of agri-pastoral-sylvan lands is extensively diffused also all over Italy, especially in mountain areas, where pastures and forests are shared among the different members of the local community [7]. A particular form of real rights over collective-owned lands or public properties is represented by civic use rights ("*usi civici*") that allow local communities to enjoy agri-pastoral-sylvan properties, and use them for sustenance or exploitative purposes, as recalled by Article 11 and 12, Law 1766/1927 and Article 3, Law 168/2017 [8]. Civic uses are particularly relevant as they cover almost 10% of the Italian territory with over 600,000 hectares of agricultural land and over 3 million hectares of national forests and graze encumbered by civic use rights [9–11]. In fact, this peculiar legal regime is typical of rural areas, where, historically, common ownership of the land was pursued and encouraged resulting in the creation of a common agri-pastoral-sylvan heritage. Additionally, civic uses also present a historical value recalling the history and development of the landscape and the territory at large [10, 12].

Collective use properties such as those encumbered by civic use rights represent a peculiar form of social arrangements that allow use and enjoyment of sylvan and agricultural lands through a self-organised management system, while preserving natural landscapes and the underpinned resources. In this sense, civic use properties became a fundamental mean for the protection and preservation of natural resources and rural landscapes in connection with Article 9 of the Italian Constitution, while promoting the generation of economic and social benefits for the local community [13]. Descending from this, one important challenge that civic use properties shares with common-pool resources is related to the detrimental effects to the ecological and social spheres deriving from both over-exploitation and under-use [2, 14–16]. However, this dynamic received little attention in literature even though in some cases civic uses have been characterised as socio-ecological systems [2, 4, 16, 17].

Based on the considerations made, this paper addresses civic use rights through the lens of socio-ecological systems (SES) developed by Ostrom to better understand the self-management model prescribed by the Law 168/2017 and assess how users' interactions with natural resources can support in the preservation of the ecological value of civic uses while generating social value for the local community. The use of Ostrom's socio-ecological system framework promotes the view of civic use rights as a complex system where natural and anthropic components interact with each other to generate social and ecological effects capable of influencing each other [1, 2, 14, 16]. Adopting the lens of SES supports in defining civic use properties according to the basic characteristics of the commons: non-exclusivity, scarcity and shared stewardship [18]. Thus, supporting to understand how crucial civic use rights are for the protection of environmental resources and agri-pastoral-sylvan landscapes. Additionally, using Ostrom's SES to analyse civic use properties allows to take into consideration also the social outcomes related to the collective use of agri-sylvan-pastoral properties, thus highlighting the social value of these lands in addition to their economic and ecological value that has been addressed in many previous studies [8, 9, 17, 19–21]. Lastly, Ostrom's SES framework allows to provide new contextual and conceptual insights also on the governance of civic use properties.

In this light, throughout the paper we aim to achieve two objectives. Firstly, we investigate applications of the Ostrom's socio-ecological system framework (SESF) to properties encumbered by civic use rights in a way to define the subsystems to be investigated and, secondly, we explore the connections between anthropic actions and the common resources. Descending from this, we aim to propose an analytical framework that allows to understand the social value connected to civic use properties and how it can enhance their potentiality to preserve natural ecosystems and cultural landscapes. According to this a set of multi-dimensional criteria will be defined to address a particular evaluation issue connected to the transferral of civic use rights as provided by the Italian legislation. The use of multi-dimensional criteria analysis has proven in many cases to enhance transparency and legitimacy in decision-making supporting public and private decision-makers in the process [22–24].

The paper is structured as follows: paragraph 2 presents the characteristics of civic use rights in the Italian legislative context, while paragraph 3 constructs the case to understand civic use properties as complex socio-ecological system and paragraph 4 addresses how to evaluate the social value of civic use properties. Building on the considerations made, paragraph 5 presents a proposal for a multi-dimensional analytical framework to analyse civic uses and to assess the case of transferral of civic use rights from a public property to another one. Discussion about the use of the analytical framework will be carried out in the conclusive paragraph.

2 Characteristics of Civic Use Rights in the Italian Context

In the Italian jurisdiction, civic uses are regarded as perpetual real rights over a public or private property attributed to a given community that can be exercised by all members part of it [8, 9]. Nowadays, civic uses can be found mainly over publicly-owned properties encumbered by collective use rights attributed to the community residing in the municipality or hamlet where the property is located [8]. Given their peculiarities, civic use rights are inalienable, nor subjected to acquisitive prescription; thus, inextinguishable rights (Article 3, Law 168/2017 and Article 12, Law 1766/1927).

Properties encumbered by civic uses are generally divided into two main categories: forest and grassland, on one side, and cultivated lands, on the other. The latter are commonly found in flat lands and former latifundio properties, as such, the modern rights descend from a concession from the landlord to use the land for sustenance purposes [25]. The non-cultivated properties, such as forests and graze, are typical of mountain areas where the local communities were historically used to share the resources to sustain themselves and the community at large [8–10, 25]. Over the centuries these rights evolved and together with the sustenance goal, the beneficiary communities started to use properties encumbered by civic use rights for exploitative purposes, especially with the development of the economy towards a capitalistic system [10, 25]. A process of de-privatisation of civic use properties started with the Law 1766/1927 and ownership of lands encumbered by civic use rights was transferred to municipalities and other local administrative bodies [13]. In this sense, the legislator ended the feudal practice of collective use rights and started to regard civic use rights as tools to protect natural resources and the cultural landscape as recalled by the Law 168/2017, given the fact that in vast majority act upon properties covered of woods and permanent graze.

Following the adoption of the Law Galasso, the relevance of civic use rights became crucial with regard to the preservation of natural heritage and landscape, thus revitalising the discussion about this peculiar form of collective use rights. The Constitutional Court in its jurisprudence recognised the primary role of civic uses to protect natural resources and landscapes, thus limiting administrative actions by the regions over properties encumbered by civic use rights. In the judgement given with sentence 345/1997 the Court addressing the Abruzzo Regional Law 23/1996, that provided a simplified procedure to change the destination of use of properties encumbered by civic uses when they lost their original purpose due to public interest, highlighted that for their very nature civic use rights are subjected to private law and thus excluded from the regional legislative power. The same is confirmed in Sentence 71/2020 where the Court analysing the Calabria Regional Law 24/2010 restated the private law nature of civic use rights and the primacy of national law over regional law with regard to civic use rights, thus excluding civic use properties from administrative actions and activities. Furthermore, the Court in the same judgment stated that the changes of destination of use can only be conducted according to the economic benefit for the beneficiary community, as prescribed by the Law 168/2017.

The Law 168/2017 also prescribes that even in cases of dissolution of civic uses rights, the land will retain its importance in conserving the natural and cultural landscape, thus preventing possible modifications that go against this interest. Moreover, with the latest reform to the Law 168/2017 new provisions regarding civic uses were added to Article 3 (paragraphs 8-bis, 8-ter and 8-quarter). The new paragraphs provide that administrative bodies can allow municipalities to transfer civic use rights over superficial lands to their disposable assets, proven that there has been an irreversible and lawful transformation of the property itself. This means that civic use rights can be transferred from lands that no longer pursue the original destination of use (e.g. former graze hosting telecommunication infrastructures) towards lands with an equal ecological value as the original land encumbered by civic uses.

3 Understanding Civic Uses as Complex Socio-Ecological Systems

Civic uses, providing a right of collective enjoyment of agri-pastoral-sylvan properties, entail a way to manage common resources, that are non-exclusive and subtractable, thus capable of suffering from scarcity [18]. In fact, while none of the members of the community can prevent others to enjoy the property, the fact that one of them use a portion of land and the resources included therein it, limit others to benefit from the same pool of resources, subtracting a number of resources to the entire community [18]. This presents one of the typical problems of the commons: how to manage the available resources in a way that all members of the community can enjoy the resources available without over-exploit them [18].

In a way to better understand the issue and analyse the connection and interactions between anthropic activities and the set of natural resources underpinned a property encumbered by civic uses reference to the Socio-Ecological Systems developed by Ostrom will be made. Using this lens allows to investigate how the mentioned interactions can generate outcomes at the system levels and, thus, generating shared social

value for the community of beneficiaries of civic uses. In conducting this assessment two different tools will be used: the Socio-Ecological System Framework (SESF) and the Design Principles (DPs) that supports to identify the variables to be taken into consideration when conducting an evaluation about the social value of a property encumbered by civic use rights.

3.1 Socio-Ecological System Framework

Socio-ecological systems are systems where human and natural aspects interact constantly in a way that natural resources promote the well-being of local communities and, at the same time, communities have an impact on natural resources determining their conservation or exhaustion [2, 14, 16]. In systems as such, different stakeholders collaborate with each other to protect the valuable resources and allow fair and just access to the resources for all members of the community [14]. In a complex SES, subsystems can be identified according to the framework provided by Ostrom: resource system; resource units; users; and governance system as shown in Fig. 1. In a system as such the life of the local community is highly interlinked with the preservation of natural resources, thus it is foreseeable that the local community will be able to define a management model that ensures everyone's enjoyment of the natural resources even in regime of scarcity, while preventing their overexploitation by users [14].

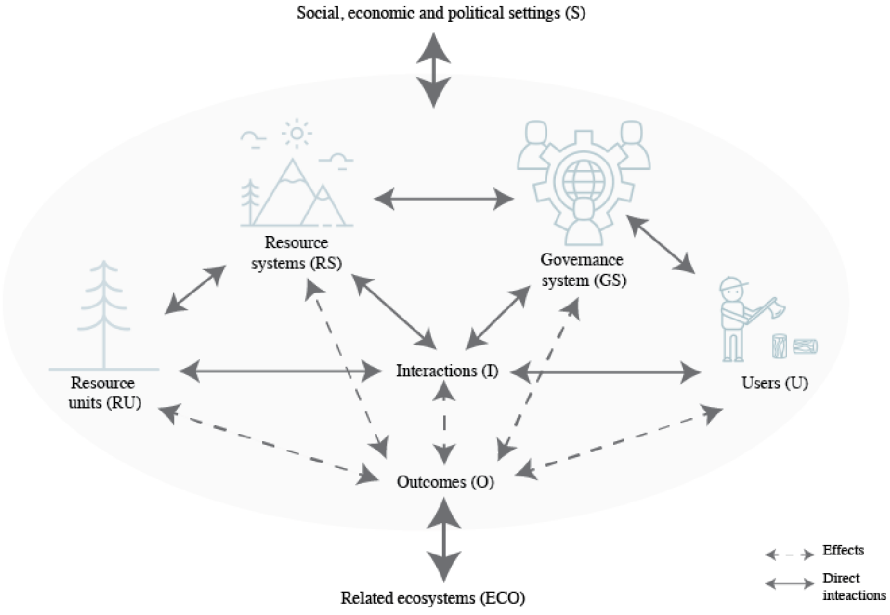


Fig. 1. Socio-Ecological System Framework adapted from Ostrom (2009)

As seen in the figure above, the different sub-systems have direct interaction with each other, in particular: the resource units (RU), for example the trees in a forest, are part of a

broader resource system (RS), in this case the forest encumbered by civic uses [14, 26]. RU are generally used by the users (U), the community of beneficiary of civic use rights that might enjoy the resources for different purposes (e.g. harvesting, auto-consumption, exploitative or commercial purposes, touristic or cultural activities), thus enhancing the opportunities for different interactions (I) among the different subsystems and with the external actors and related ecosystems (ECO) [14, 26]. In a way to maximise enjoyment by different users and protect the resources, the community generally adopt a governance system (GS) that comprises a set of rules that all users decide to obey to [14, 26]. GS generally ranges from model of public management (top-down) to self-management models (community-based) and might enhance or hinder interactions between the other subsystems.

In a SES the interaction between the subsystems generates social and ecological outcomes (O) for the entire community and for the territory. In particular, the main interactions are related to the harvest of resources and the maintenance of the resource system according to natural re-generation patterns [14, 26]. This results in outcomes that are experimented by each subsystem in different ways and that contribute to the mitigation of scarcity of resources and to the overall benefit and well-being of community. The outcomes generated are also capable of influencing the GS adopted and change its conformation to adapt to the changes occurred at the SES level. Socio-ecological systems are influenced by the social, economic and political settings (S) and, at the same time, they have a series of impact on related ecosystems especially in terms of climate adaptation, pollution and social justice. For this reason, a set of variables has been defined by Ostrom to be taken into account and measured when dealing with SES (Table 1).

In cases of properties encumbered by civic uses, whether cultivated or sylvan-pastoral lands, the subsystems refer to natural resources (trees, grass, crops, soil, etc.) understood as the resource units; the forest, graze or cultivated land as the resource subsystem; the local community residing in the municipality or hamlet where the civic use property is located as users; and the presence of *Ente esponenziale* as a governance system. This body is typical of the Italian legal system that defines it as a legal entity that promotes and protect a general interest of the community. The law although does not prescribe a certain legal form for the creation of *Enti esponenziali*, leaving the decision about the governance arrangements to the community. Therefore, leading to a multi-stakeholder system that requires the adoption of a cooperative behaviour by all members of the community to overcome overexploitation of the resources [18].

Looking at a property encumbered by civic uses as a complex SES allows to take into consideration the typical interactions that are represented by anthropic activities in terms of harvesting and exploitation of natural resources as well as utilisation of the resource unit and the underpinned landscape for cultural or touristic purposes. Those interactions have effects on how the resources regenerate in the given property and how the collective use of the land can generate a distributive effect for the local community.

Table 1. Second-tier variables under first-level subsystems (S, RS, RU, U, I, O and ECO) in a SES framework. Ostrom (2009)

Social, economic and political settings (S)		
S1 Economic development	S2 Demographic trends	S3 Political stability
S4 Government resource policies	S5 Market incentives	S6 Media organisation
Resource systems (RS)	*Governance systems (GS)*	
RS1 Sector (e.g. water, forests, pasture, fish)	GS1 Government organisations	
RS2 Clarity of system boundaries	GS2 Nongovernment organisations	
RS3 Size of resource system	GS3 Network structure	
RS4 Human-constructed facilities	GS4 property-rights system	
RS5 Productivity of system	GS5 Operational rules	
RS6 Equilibrium properties	GS6 Collective	
RS7 Predictability of system dynamics	GS7 constitutional rules	
RS8 Storage characteristics	GS8 Monitoring and sanctioning process	
RS9 Location		
Resource Units (RU)	*Users (U)*	
RU1 Resource unit mobility	U1 Number of users	
RU2 Growth or replacement rate	U2 Socioeconomic attributes of users	
RU3 Interaction among resource units	U3 history of use	
RU4 Economic value	U4 Location	
RU5 Number of units	U5 Leadership/entrepreneurship	
RU6 Distinctive markings	U6 Norms/social capital	
RU7 Spatial and temporal distribution	U7 Knowledge of SES/mental models	
	U8 Importance of resource	
	U9 Technology used	
Interactions (I) → Outcomes (O)		
I1 Harvesting levels of diverse users	O1 Social performance measures	
I2 Information sharing among users	(e.g. efficiency, equity, accountability,	
I3 Deliberation process	sustainability)	
I4 Conflicts among users	O2 Ecological performance measures	
I5 Investment activities	(e.g. overharvested, resilience, bio-diver-	
I6 Lobbying activities	sity, sustainability)	
I7 Self-organising activities	O3 Externalities to other SES	
I8 Networking activities		
Related ecosystems (ECO)		
ECO1 Climate patterns	ECO 2 Pollution patterns	ECO3 Flows into and out of focal SES

3.2 Design Principles and SES Framework

In Ostrom's seminal work on commons' management eight Design Principles are proposed as rules of engagement to develop governance arrangements that promote the sustainable management of common resources [18]. Ostrom's DPs are detailed in Table 2 below. Using the DPs have proven to be relevant in in several other studies [2, 27].

If confronted with the SESF, DPs provides a set of normative prescriptions that can be found in the governance system within the SESF [2] supporting in the definition of the management arrangements that better suit the specific context. The adoption of the DPs as a starting point supports in the analysis of the context and it will have an influence on the different variables part of the SESF presented in Table 1 above, with particular reference to users and GS.

Table 2. Design principles (DPs) applicable to commons adapted from Ostom (1990)

Design Principles (Ostrom, 1990)
DP 1 Clearly defined boundaries
DP 2 Congruence between appropriation and provision rules and local conditions
DP 3 Collective-choice arrangements
DP 4 Monitoring
DP 5 Graduated sanctions
DP 6 Conflict-resolution mechanisms
DP 7 Minimal recognition of rights to organise
DP 8 Nested Enterprise

This analysis supports in understanding the factors that can be controlled by the local community in a way to enhance environmental and ecosystem conservation efforts and maximise the capacity of civic use rights to protect cultural landscapes. Therefore, what is necessary, in these cases, is to define a management system aiming to the long-term survival of the common resources that interact with the existing national and regional laws to promote shared ownership of the resources themselves while guaranteeing fair and just outcomes to the local communities that benefit from the property encumbered by civic use rights.

Performing an analysis according to the DPs and SESF can enhance the value of public properties subjected to civic use rights to pursue the general interest to preserve natural resources as recalled by the Law 168/2017 while empowering local communities to take actions in the natural resources' preservation in connection with administrative bodies and promote social and ecological benefits for the entire SES.

4 The Evaluation of the Social Value of Civic Uses

As presented above the SESF takes into account the outcomes created by the different kind of interactions between the subsystems: social outcomes can be generated by users' interaction with the resources and can be enhanced or hindered by the governance system, designed according to the DPs and put in place in the specific context, here understood as the resource system. The outcomes generated and experimented by the community shall be taken into consideration when addressing the social value of a land encumbered by civic use rights.

When dealing with the cases of civic use rights over a public property, social outcomes deal mainly with social justice, equitable access to resources and well-being of members of the local community [14, 28]. Thanks to the configurations of the governance model and management arrangements at the community level, additional outcomes can be generated in terms of innovative bottom-up solutions for the safeguards of the resources and the enhanced interaction between the SES and the external contexts [29]. Innovation also plays a role in promoting the protection of rural and cultural landscapes developing

bottom-up solutions that involve the entire community in the effort and promotes further economic opportunities for all members [20, 30, 31].

When addressing the measurement of social outcomes, it is fundamental to take into account the issue of attribution of the effects to a certain activity in a way to establish a direct relationship between the stakeholders' actions and the effects that the community experiment [32–34]. Depending on the type of interactions inside the SES social outcomes may vary. For this reason, as a starting point, it is fundamental to address the analysis of the specific context where the property encumbered by civic use is located and the stakeholders' configurations within the community and their needs, capabilities and expectations [24]. In conducting this kind of assessment, the DPs defined by Ostrom and presented above can be applied as a guideline to better understand the case study and to rate the actual governance model in place. As a second step, the use of the lens provided by SESF becomes crucial to take into account two fundamental dimensions: social justice, in particular distributive equity and social inclusion, that may lead to the enhancement of capabilities of the users [28, 35].

Considering the social justice dimensions, it becomes necessary to evaluate the issue from two different perspectives: the results and the process. With reference to the former civic use rights represents a way to distribute resources among community members and the effects that this directly have for the users. In particular due consideration should be given to: the income effect, addressing how the use of the common property affects the economic return for the members of the community [2, 14]; the entrepreneurship effect, taking into consideration how access to a common land promotes different forms of entrepreneurship, either individual or collective, and the creation of jobs at the community level [2, 36]. On the other hand, when addressing the process of managing the properties encumbered by civic uses, a specific attention should be reserved to the inclusion of marginalised groups and to the democracy of the governance model designed to ensure higher results in terms of cohesion and sense of belonging to the community and how the presence of the civic use property is capable of affect community networks and relationships between different stakeholders [2, 14, 36].

The outcomes described and their combinations with other contextual factors might bring to the creation of additional benefits for the community. For this reason, an approach based on the Theory of Change (ToC) is useful to understand both the mechanisms behind the creation of shared value for the community and the processes that lead to the creation of specific effects and changes [34, 37]. An approach based on ToC allows to create a visual narrative model of the interactions (I) studied and to reflect on the causality nexuses that lead to the generation of the experimented outcomes (O), analysing whether those links are logical and realistic [38] In this sense, it becomes more important to assess the role that interactions between stakeholder and the available resources as well as to isolate some context specific variables that play a role in the generation of outcomes [38].

Lastly, given the fact that civic uses do not only protect the natural environment but also cultural landscapes, in addition to the assessment of social outcomes at community scale it becomes necessary to address the issue of social value at the territorial scale. In doing so, building on the ToC approach we can better understand the value that the civic use rights have at the territorial level and how the outcomes observed and studied are

capable to shape the rural landscape over time [1, 31, 39]. In this sense the evaluation of the cultural value of the landscape shall be addressed in a dynamic way, taking into account different transformation of the territory over time and the effects that the social outcomes observed had on it as well as the role that the landscape played in the life of the community, [1], thus affecting mentioned outcomes.

5 A Proposal for an Analytical Framework

Against the background presented in the previous paragraphs, a framework to analyse the social value of properties encumbered by civic use rights is developed starting from Ostrom's SESF presented above. In particular, the analytical framework developed, on one side, add Ostrom's Design Principles to the SESF in a way to better understand the character of civic use properties in their context, especially with reference to the self-management of the civic use property. Whereas, on the other side, analysing the social value of a land encumbered by civic use rights will reinforce the measurement effort with reference to the outcomes in the SESF. Therefore, providing a way to analyse both the internal efficiency as suggested by Ostrom as well as external efficiency of the system that can be evaluated according to the social value of the property encumbered by civic uses. Furthermore, evaluating the social impact supports in understanding the relevance of the DPs and the SESF variables to understand the intrinsic and extrinsic characteristics that lead to the generation of positive societal impacts. This allows to combine the DPs and the SESF and to transform them in a rating model that provides recommendations on how to enhance the SES performances. The analytical framework is presented in Fig. 2 and discussed below.

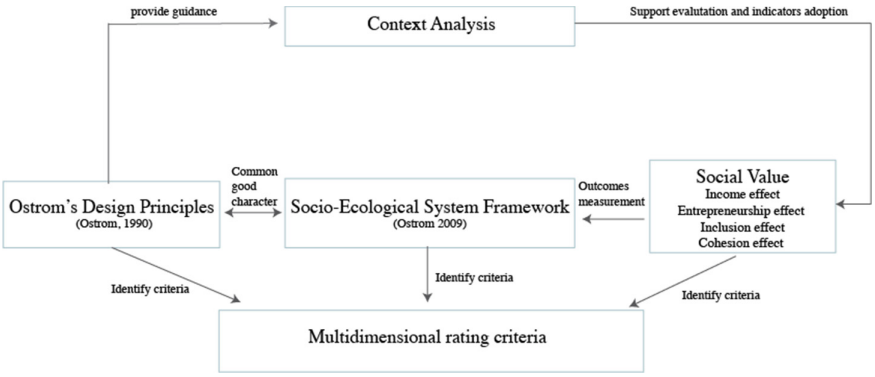


Fig. 2. General framework highlighting links between Ostrom's DPs, SESF, ES and Social Impact Assessment

The developed framework supports in conducting an analysis of the context according to Ostrom's DPs and allows to identify a set of multidimensional criteria to be addressed when managing common goods and collective use properties, as it is the case with civic use properties. The framework can be applied to different cases of collective

rights over public or private property so that criteria can be adapted to the different contextual circumstances. In the cases of civic use rights transferral as provided by the Italian law, the present framework will provide a combination of criteria that public bodies shall consider in order to select a property not only of equal ecological value as the original one, but capable of generating positive outcomes for the community. Recurring to multidimensional framework will support public decision-makers in conceptualising the problem, analysing it according to a set of criteria and understanding how the decision taken might have effects in terms of environmental management, social justice and social cohesion at the community and territorial level [22, 40]. This will further enhance transparency and accountability in the decision-making process [22, 24].

5.1 The Issue of Transferral of Civic Use Rights (Article 3, Paragraph 8bis and 8ter, Law 168/2017)

As we have seen above, a recent change to the Law 168/2017 introduced specific provisions to allow municipalities to transfer civic use rights over superficial lands to their disposable assets, proven that there has been an irreversible and lawful transformation of the property itself. According to the law, the transferral is possible towards lands with an equal ecological value as the original land encumbered by civic uses. Methodological issues to be taken into consideration when evaluating the environmental value of a property encumbered by civic use rights have been discussed in literature, recurring to approaches such as the Total Economic Value [17, 21].

Moving the civic uses to another land entails some changes in terms of resource units (e.g. shifting from a chestnut grove to a pinewood), having effects also in terms of productivity of the property and the way in which the community make use of the resources. In this sense, applying the methodology described above can lead to define a set of criteria that guides decision-makers to enhance the sustainability of the civic use property seen as a SES, identifying *ex ante* possible social and cultural outcomes at the community and individual levels.

Proper understanding about the context (i.e. the territory) where the civic use property is located and the immaterial context formed by configurations of stakeholders and their interactions is needed. In doing, Ostrom's DPs and SESF provide a general framework that allow to understand better the local conditions and the specificities of the community that benefit from the civic use rights. Through the analysis of the DPs the evaluator can understand the collective choice arrangements and behaviours of the stakeholder, especially in cases of conflicts, as well as understand the legal boundaries and limitations that exists and whether the community agreed on monitoring and sanctions systems. At the same time, the evaluation allows to understand whether some sort of entrepreneurship and leadership have been nested in the context and what is their value at the community level by recurring to the combined analysis according to the DPs and SESF.

Conducting a dynamic assessment will give a guidance on how to shape the subsystem configurations to maximise the capacity to generate social outcomes, thus analysis also the efficiency and equity dimensions included in the SESF. In this light, an evaluation regarding social outcomes shall take into considerations:

- How the new resource system (land) will increase or decrease the income of the members of the community that use the common good;

- How the new configuration of interaction between the subsystems generates entrepreneurial opportunities or innovation patterns at the community level;
- How the new configuration includes actors or members of the community that were previously excluded;
- How the transfer of civic use rights enhances the sense of belonging to the community through the new configuration of interactions.

Based on these considerations, in the next paragraph we aim to identify a set of criteria that can be used when taking a decision related to transferral of civic use rights between from a land that lost its original destination of use to another public property. The set of criteria can be applied in different circumstances when decisions about the transferral of civic use rights is needed.

5.2 Defining a Set of Criteria for the Transferral of Civic Use Right

Given the general reconstruction of the decision problem, a set of criteria have been developed according to the analytical framework present above in a way to highlight direct and indirect effects of the interactions between the different subsystems. The criteria defined leads to a rating system based on efficiency (internal and external) and equity that can be applied to different cases of transferral of civic uses rights from a land that lost its original destination of use to another public property of equal environmental value. In this sense, the social value of civic uses should lead to select those lands that can guarantee inclusion, social cohesion and distributive justice through the civic use rights and, thus, acting upon a number of the second-tier variables included in the SESF that shall then be considered as criteria when addressing the issue of transferring civic use rights from a public property to another one.

The different criteria are presented in Table 3 and will be commented below. The criteria have been selected to be applicable to all cases in which a decision about transferral of civic use rights needs to be taken. Thus, a selection of the most appropriate DPs and SESF variables have been conducted based on a general decision-making problem that public bodies might face when recurring to the provisions for the transferral of civic use rights included in Article 3, par. 8-bis and 8-ter of the Law 168/2017. When selecting the criteria, a recognition of previous cases that used DPs and SESF to evaluate common use properties have been conducted [2, 4–6, 16]. The criteria shall be taken in consideration in an integrated way to rank different alternatives and to compare them to find the one that can better satisfy all criteria, or the higher number possible, according to specific context certain variables.

The framework so defined allows to understand the connection between the DPs and SESF when conducting the assessment of alternative lands to be encumbered by civic use rights. In doing so, each criterion and sub-criterion will be evaluated according to an interval scale ranging from 0 to 10, where “0” represent the worst level of performance and “10” represents the maximum level of performance in the given dimensions [41, 42]. Using an interval scale enhance consistency within each criterion and increase comparability of results from each proposed alternative [41, 42]. A scale constructed in this way allows to take into account different nuances that increase variability and differentiation. The scores assigned on the described scale will be attributed according

Table 3. Criteria and sub-criteria to be considered when deciding about the transferral of civic use rights from a public property to a new one.

DPs	SESF subsystem	Criteria	Sub-criteria
DP 1 Clearly defined boundaries	Resource systems (RS)	Clarity of system boundaries (RS2)	Proper definition of the boundaries of the civic use property and resources
		Size of the resource system (RS3)	Equal or comparable to the size of the original property
DP 2 Congruence between appropriation and provision rules and local conditions	Resource systems (RS)	Productivity of the system (RS5)	Comparability with original land
		Equilibrium properties (RS6)	Maximum harvest capacity of the system
		Predictability of system dynamics (RS7)	Predictability of the privileges coming from the new land
DP 3 Collective-choice arrangements	Governance system (GS)	Network structure (GS3)	Density of the social network
		Collective-choice rules (GS6)	Presence of multi-stakeholder governance arrangement
	Interactions (I)	Information sharing among users (I2)	Degree of information sharing among stakeholders
DP 4 Monitoring	Users (U)	Number of users (U1)	Capacity to change the number of users
		Socioeconomic attributes of the users (U2)	Capacity to promote diversity and inclusion among users
		History of use (U3)	Capacity to protect historical/cultural value of the civic uses and the landscape
	Resource Units (RU)	Spatial and temporal distribution (RU7)	Level of spatial distribution

(*continued*)

Table 3. (*continued*)

DPs	SESF subsystem	Criteria	Sub-criteria
			Level of temporal distribution
	Resource Unit (RU)	Economic Value (RU4)	Capacity to produce marketable amount of resources
DP 5 Graduated sanctions	Governance system (GS)	Monitoring and sanctioning (GS8)	Presence of a sanctioning mechanism
DP 6 Conflict-resolution mechanisms	Users (U)	Norms/social capital (U6)	Capacity to promote trust and shared ethical values at community level
	Interactions (I)	Conflicts among users (I4)	Capacity to resolve conflict among users
DP 7 Minimal recognition of rights to organise	Interactions (I)	Self-organising activities (I7)	Level of self-organisation within the community
DP 8 Nested Enterprise	Users (U)	Leadership/Entrepreneurship (U5)	Capacity to promote innovation through civic uses
		Technology used (U9)	Level of development of the technology employed
Outcome (o)			
Development opportunities for the community	Development opportunities for the community	Development opportunities for the community	Development opportunities for the community

to qualitative analysis of the characteristics of the alternative lands to be encumbered by civic uses and on how these characteristics can influence the generation of social outcomes. A comparison with the characteristics the original land will also be conducted. Based on the ranking obtained a difference between the initial situation and the proposed changes will be calculated and assessed how the new setting will affect the 4 social outcome dimensions taken into consideration.

Using a framework as such will support in the design of management arrangements that are capable of enhancing access to resources by a given community, promoting a

model of self-organisation and have positive societal impacts on the members of the community. Below we will analyse some of the main criteria and how they should be addressed in the analysis.

The size of the resource system influences the capacity to create a self-management model and thus should be taken into consideration as a context variable when moving civic uses from one property to another one [14]. The choice of the new land, or portion of land, should privilege small and medium scale properties with an equal environmental value compared to the original one.

Transferring the civic use rights from one property to another one might change the resource available in the system and for this reason the productivity of the system (i.e. its capacity to generate goods/resources) and the predictability of the system dynamics (i.e. reaction of the resource system to harvesting by users) shall be taken into consideration when deciding about the transferral [2, 14]. In this sense the choice about the new property to be encumbered by civic use rights shall go in the direction of systems with a similar production pattern as the original one so that it can be predictable both in terms of quality and quantity of the resources available over the year. Connected with this, the decision-makers shall also take into consideration what are the effects that the transferral will have with regard to the economic value of resources to be calculated in terms of production that exceed the sustenance need of the community and that can be sold in the market [2, 14].

As mentioned above, the transferral of civic uses from one property to another one might have effects in terms of the number of users that benefit from collective resources which might result in changes to the network structure and the collective choice rules (i.e. the ability to take management decision at the SES level) [2, 14]. In this sense, once established the value of the land, its size and production pattern, public bodies shall privilege those alternatives that aim at inclusion of traditionally excluded groups and promote multi-stakeholder governance arrangement that extend the network structure and enable participatory decision making. To conduct this analysis the decision-maker shall also take into account the socioeconomic attributes of the members as they can represent important variables to contribute to social inclusion and social cohesion.

Furthermore, in a way to promote social innovation through civic uses, the leadership/entrepreneurship and the social capital variables shall be taken into consideration. The first one refers to the presence of entrepreneurial patterns inside the SES that can facilitate the self-organisation models at the community level and promote the generation of income and development effects as described above [14]. Additionally, the level of social capital and trust between the members of the community is crucial to achieve the mentioned social outcomes. In this sense, the transferral of civic use rights shall be regarded as an opportunity to foster the creation of social capital at the community level and promote forms of shared leadership.

Lastly, dealing with civic uses requires a knowledge of the history of its creation and the historical use of the property encumbered by civic uses [1]. In this sense, the public bodies, when transferring civic use rights, shall promote the preservation of historical use of the collective resource and look at properties that can guarantee continuity with the past and the traditions of the territory. This can have a positive effect in safeguarding the intangible heritage of the territory and protect the cultural landscape through the

civic uses. In fact, knowing the history of use will privilege those properties that have a higher value for the preservation of the landscape that was shaped over the century by the presence of those real rights over the collective property and maintain the specificities of the context.

6 Conclusions

Civic use rights are conceptualized in the Italian legal system as perpetual use rights belonging to the members of a given community over a public or private property. Those rights evolved over time from a mean to guarantee access to agri-pastoral-sylvan properties to peasants subjected to a given landlord to a way to enhance access to natural resources and protect them. At present days, civic use rights are still present all over Italy in mountain and other inner areas where forest and grazelands are largely encumbered by different forms of collective use rights. As such, civic use rights became crucial to protect and preserve rural cultural landscapes (Law 431/1995 and Law 168/2017). In connection with this, a recent legal reform introduced paragraph 8-bis in Article 3 of the Law 168/2017 that allow municipality to transfer civic use rights from a property that lost its original purpose to give access to agri-pastoral-sylvan resources to another public-owned land proven that the latter has an equal environmental vale of the former one.

In the paper we presented a view of civic use properties can be understood as complex socio-ecological systems where the users agree on a model to manage the available resources in the system to prevent overexploitation and promote a shared stewardship for their conservation. Furthermore, throughout the interaction between the users and with the resources, a SES will generate positive environmental and social outcomes for the entire community and for connected ecosystem. Thus, understanding civic use properties as SES will facilitate their analysis as collective goods and resources allowing to valorise their management models in connection with their role in the preservation of natural and cultural landscapes.

Seen through this lens, the analysis of civic use properties requires the use of a multi-dimensional framework to understand the complexity of the issue. The framework provides a combination of Ostrom's DPs with SESF in order to define criteria and sub-criteria to be taken into consideration and the effects that the variation of those criteria might have over 4 social justice dimensions - income effect, entrepreneurship effect, inclusion effect and social cohesion effect - understood as the results of the external efficiency of the system. In this light, the innovation of the framework proposed lays not only in the combination of SESF and DPs, but also on the assessment of the social value of civic uses that will enhance understanding about the value of common use property.

The framework has been proposed for the assessment of the transferral of civic use rights from one property to another public-owned land in line with the requirements of the Italian law. Along this line, a general set of criteria to be taken into consideration by decision-makers have been defined according to social and socio-economic dimensions in addition to the equal environmental value criterion provided by the Law 168/2017. Using the proposed analytical framework will enhance the decision-making process by understanding the role of the community of users in the system and highlighting

entrepreneurship, and possibly innovation, patterns that can further promote positive societal outcomes at the SES level.

Applications of the proposed analytical framework are still needed in order to understand its value and how it can be applied to different cases dealing with common-use property and transferral of civic use rights. Future research is needed to assess whether the developed framework can be useful in connection with economic evaluation methodologies that are generally used in cases of civic use properties.

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