

Nature governance for collective well-being: reconciling holistic sustainability and human development

Nature
governance

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Received 20 February 2022
Revised 21 June 2022
Accepted 22 June 2022

Abstract

Purpose – This article aims to contribute to the literature linking the three pillars of sustainable development with the human development field. To do so, it analyzes how a group of stakeholders that participate in collective action for nature governance in Segre–Rialb, Catalonia, build collective capabilities and reconcile a holistic sustainable development with human development and collective well-being. The analysis is performed using nature governance and the capability approach theories. In particular, the framework providing the lenses to examine the collective action for nature governance is based on Elinor Ostrom's Institutional and Analysis framework and the collective capabilities concept.

Design/methodology/approach – The study is based on documental analysis (legal document namely and online resources available in Catalonian website) and a few online interviews since all fieldwork was canceled due to the coronavirus disease 2019 (COVID-19) pandemic.

Findings – The case study reveals that collective action for nature governance has a twofold function: it materializes holistic sustainability and produces capabilities, reconciling sustainable and human development. Therefore, the research proves that people who work together to govern nature can boost a holistic perspective of sustainability and reconcile sustainable and human development.

Originality/value – First, this work aims to reconcile sustainable and human development fields that have been usually separated in academia, contributing to the research body that has attempted to relate human development and sustainability. This analysis uses a holistic perspective of sustainability, including the social, economic and environmental aspects connecting them to human development; this was not deeply explored before. Finally, the rigorous documental analysis, namely legal texts that allow reaching conclusions, is relevant since all fieldworks were canceled in 2021.

Keywords Sustainable development, Human development, Collective capabilities, Nature governance

Paper type Research paper

1. Introduction

Human development and sustainable development are two interlinked and interdependent concepts. Sustainable development creates principles for development, and it is instrumental in evaluating human development progress around the world (UNDP, 1994). According to Neumayer (2012): “On a very fundamental level, human development is what sustainability proponents want to sustain, and without sustainability, human development is not true human development” (p. 562). Human development becomes a core aspect of sustainability when it aims to provide people with the capabilities to pursue a healthy life, education,

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The author would like to thank the reviewers and Editors for taking the time and effort to review and edit the manuscript. The author would also like to thank for the valuable comments and suggestions that have improved the quality of this article.



participation and fill basic needs (Neumayer, 2012); therefore, sustainability has no sense if life opportunities are impoverished and miserable (UNDP, 2020).

The United Nations has recognized this relationship highlighting the need to protect the environment to guarantee well-being opportunities for future generations. This means sustainable development and human development are essential elements of the universal life claims; both aspects are part of the same overall design (UNDP, 1994). This relation also emerges in the Sustainable Development Goals, while human development refers to the lens to think or analyze development problems, “Sustainable Development Goals provide a development destination: human development allows one to design the route to get there” (UNDP, 2021).

Despite the relevance of sustainable and human development, academia and policy fields do not reflect this relation. Both areas have been separated in the academic field or analyzed using a fragmented version of sustainability, taking only one aspect of sustainable development (whether social, economic or environmental) concerning human development (Neumayer, 2010). In the policy, empirical data show the contradiction between high and very high levels of human development and strong sustainability. It means countries with the best human development index are the most unsustainable, and the countries with the worst human development have shown to be the most sustainable (Neumayer, 2012). Therefore, society must balance high standards in human development and firm sustainability commitments, and the academy must include a holistic approach of sustainability to be linked to human development.

However, to balance human and sustainable development and consider sustainability from a holistic perspective seems challenging. A scientific consensus claims that the current path for human development is not sustainable, environmental systems are under intense pressure, and billions of people lack the opportunity to fill basic needs and access clean water, energy and food (Moyer and Bohl, 2019). In academia, researchers still fragment sustainability or give more attention to the economic and ecological aspects putting aside the social pillar (Mohamed *et al.*, 2019; Boström, 2012).

This article aims to contribute to the literature linking the three pillars of sustainable development with the field of human development. To do so, it analyzes how a group of stakeholders that participate in a collective action for nature governance build collective capabilities and reconcile a holistic sustainable development perspective with human development and collective well-being. The article is structured as follows: the second section elaborates a literature review on the principal contributions that link sustainable and human development. The third section develops a theoretical proposal that connects sustainable and human development. It relies on the nature governance field to incorporate the sustainability aspect using the Institutional Analysis and Development framework. Human development is set taking the capability perspective, using the collective capability lenses. The fourth section provides the context of the case study and the methods for data collection. The fifth section includes discussion and results.

2. Literature review

This literature review explores research strands in sustainable and human development. Specifically, it aims to look at whether researchers have taken a comprehensive definition of sustainability that includes economic, social and environmental pillars, and how this holistic notion of sustainability has been related to human development. The body of research is divided into three trends; the first trend focuses on highlighting the general relations between sustainable and human development. The second body of research links the social aspect of sustainability with human development using the capability approach. A third trend develops the ecological part of sustainability and its relationship with human development, exploring ecosystem services or the environment and social relations.

There has been an effort to explore how sustainable and human development interact and what correlations emerge from this interaction. Neumayer (2010, 2012) explored first the tendencies in policies and the academia that separate sustainable and human development. Second, the correlation between both fields concluding that countries with a high economic and human development level seemed to be the most unsustainable. De Neve and Sachs (2020) found a positive correlation between sustainable and human development in terms of Sustainable Development Goals (SDGs) and well-being. However, they noted a negative correlation between the SDGs 12 (responsible consumption) and 13 (climate action) and well-being, meaning that countries with higher levels of subjective well-being tend to pollute more. Ballet *et al.* (2004) took a different approach; rather than comparing sustainable and human development, they created principles and foundations to combine both fields and discuss durable social development. Similarly, Lessmann and Rauschmayer (2013) attempt to merge sustainability and human development, creating a concept of sustainable development based on the capability approach.

Considering that sustainable development is founded on social, environmental and ecological pillars (Duran *et al.*, 2015; Boström, 2012; Mohamed *et al.*, 2019), the second trend of research focuses on the social aspect of sustainability and its connection with human development. It examines social interactions linked to sustainability issues from a capability perspective. Pelenc *et al.* (2013) explored how individuals create a collective actor to implement sustainable solutions in Chile, looking at the relation between the individual and collective levels and capabilities. Boni *et al.* (2018), Biggeri *et al.* (2018), and Anand (2007) explored the relationship between collective action and capabilities. Boni *et al.* studied rural communities' processes in Colombia under the capability lens. Biggeri *et al.* examined societal arrangements based on individual and local community dynamics that affect people's capabilities. Anand focused on culture and identity as fundamental aspects of collective action and capabilities emergence. Aligned with Anand's research, Griewald and Rauschmayer (2014) explored an ecological conflict using the capability perspective to understand actors' positions and stakeholders' participation in a legal process for environmental protection. Finally, Van Jaarsveld (2021) focuses on Nussbaum's capabilities approach and its relationship with nature and environmental values.

The third strand of research explores the ecological aspect of sustainability and its interaction with human development and capabilities. Kolinjivadi *et al.* (2015) suggested that payment for ecosystem services (PES) combines nature conservation and human well-being through incentives. According to their research, different PES designs can improve water quality and capabilities for well-being. Forsyth (2015) demonstrated how ecosystem services could be reconciled with development from a capability perspective. To do so, he considered ecosystem services as functionings using a Senian view related to capabilities instead of functions in the sense of ecosystem properties. In line with this research on ecosystem services and capabilities, Polishchuk and Rauschmayer (2012) explored the effects and relation of ecosystem services on human well-being. Moving from the ecosystem services-capability relation, Pelenc and Ballet (2015) related the ecological aspect of sustainability and human development by analyzing natural capital and its connection with strong sustainability and capabilities.

These research trends have represented progress for the sustainability and human development fields and give an account of the gaps for future research. The first body of research points out the relation between human and sustainable development, analyzing tendencies and building new definitions to merge both fields. However, it does not explore sustainable development as a three-pillar definition; therefore, the social, economic and environmental aspects of sustainability concerning human development are not developed. The second trend explores the social part of sustainability linked to human development. This body of research brings the collective level into capabilities and links socio-ecological

sustainability to human development, but the ecological dimension of sustainability in connection to human development remains weak, and the economic dimension is not considered deeply. The third body of research addresses this gap working on the ecological aspect of sustainability interacting with capabilities, namely merging ecosystem services and capabilities. However, there is still room for the social aspect. Therefore, it is relevant to explore the relationship between sustainable development and human development, taking a holistic definition of sustainability where economic, social and environmental aspects interact with human development.

3. Theoretical proposal

This chapter develops a theoretical proposal that aims to merge theories on sustainability and human development. On the one hand, nature governance brings sustainability from a holistic perspective that combines social, ecological and economic aspects. Specifically, this theoretical proposal uses the view of Elinor Ostrom, who developed a significant work on nature governance. On the other hand, the human development aspect is incorporated through the capability approach, particularly the collective capability lens, which Ibrahim developed (2006) and Pelenc *et al.* (2015).

3.1 Governance of natural resources: a holistic approach to sustainable development

Due to the relevance of natural resources, its governance is a primary concern in order to guarantee adequate people-environment interactions (Forsyth and Johnson, 2014). Natural resources provide people, namely in rural areas in developing countries, essential assets for survival; therefore, nature governance can help modify poverty-environment relationships (Nunan, 2015; Baldwin *et al.*, 2018). Nature also generates a set of goods and services such as clean air, landscapes or water regulation that contribute to human well-being. These nature services are conserved, distributed and managed through nature governance (Nunan, 2015). To understand how nature governance works for conservation, environment equilibrium, and people well-being, it is necessary first to understand what governance means and then observe how it operates about nature to arrive at theoretical lenses that will be used to study nature governance.

Governance is a political science concept that refers to the interaction between society, state, and market in environmental, economic or political affairs. This scheme introduced a change from government to governance, where the state's authority and functions are spread to new participants and scales such as international organizations, NGOs and businesses (Arts *et al.*, 2012). It means that in the global and local dimensions, new modes of networks, public participation and forms of local politics appeared (Arts *et al.*, 2013). This concept was extended to the environmental field when problems such as climate change, deforestation and biodiversity loss became evident and needed a comprehensive approach beyond the traditional state or private management (Nunan, 2015). Therefore, scientific and societal sectors began to think about suitable ways to manage natural resources (Arts *et al.*, 2013).

Before nature governance became popular, nature management was conceived as a task for the government or the private sector. One of the most influential mindsets in this regard was expressed by Hardin (1968) in the tragedy of commons. According to his theory, people who share a common pool resource will always choose their self-benefits, trying to obtain the maximum utility without considering neither other users nor the resource's sustainability. As a result, first, the resource is depleted. Second, only state regulation or private ownership can prevent resource extension. An opposite vision was exposed by Ostrom (2011), showing that users of the common resources could distribute benefits and avoid or resolve conflicts overcoming the difficulties of interaction in socio-ecological systems. Ostrom's vision materializes the concept of governance in natural resource management.

Ostrom's research had a pivotal role in changing the mindset regarding nature governance from an individualistic economic perspective to cooperative behavior. Her framework has offered valuable elements for understanding people–forest relations (Gibson *et al.*, 2000), ecosystems and human systems interactions (Barreteau *et al.*, 2016), and local nature governance that have assured sustainability of natural resources (Ostrom, 2011; Costanza, 2001) and cooperatives and economic initiatives for sustainable nature governance (Vatn, 2010; Jacobson and Robertson, 2012). Ostrom's work offers a perspective and analytical elements suitable for understanding sustainability as a three-pillar concept that integrates social, economic, and environmental aspects and multiscale and multistakeholder exercises.

3.2 *Human development and the capability approach*

The capability approach is a framework developed by Amartya Sen and Martha Nussbaum to evaluate and examine how well-being, agency, and social policies work in society (Robeyns, 2005). This is not a theory that explains poverty or inequality but rather a theory that conceptualizes, measures, and evaluates well-being phenomena and policies that influence them (Crocker and Robeyns, 2009). This approach aims to evaluate what people are effectively able to do or be in their specific context. This assertion means, under their context, how people can achieve the life they consider valuable (Robeyns, 2005, p. 95).

The approach is based on four concepts: freedoms, also called capabilities, functionings, well-being and agency. Freedoms or capabilities refer to a person's real opportunity to achieve valuable things (Robeyns, 2005). The idea of functionings talks about a person's real achievements that make a valuable life (Alkire, 2005). This means functionings are achievements, while freedoms are possibilities to achieve something (Robeyns, 2005). The concept of well-being is related to goals that positively impact one's own life. The set of freedoms and functionings produce well-being (Alkire, 2005). Agency assesses a person's standard of living based on sympathies and commitment beyond a person's well-being (Sen, 1987). The concept of the agency goes beyond self-interest and is linked with altruistic goals that a person achieved or is free to pursue (Crocker and Robeyns, 2009).

3.2.1 Collective capabilities. To address the gap between the individual and collective levels within the capability approach, researchers developed concepts such as group capabilities (Stewart, 2005), collective capabilities (Pelenc *et al.*, 2015; Evans, 2002; Griewald and Rauschmayer, 2014; Ibrahim, 2006) or collective group freedoms (Carter, 2004). In particular, “the concept of collective capabilities refers to a newly generated functioning bundles people obtain because of their engagement in a collectively that help them achieve the life they have reason to value” (Ibrahim, 2006, p. 7). These capabilities are reached through collective action and represent a benefit for a community and not only to a single person. Here, collective action refers to the situation where the interests of several social actors converge and lead them to a voluntary engagement to pursue a project (Comeau, 2010). Through this engagement, actors achieve collective capabilities that allow them to access communal well-being (Deneulin, 2008) and collective freedoms (Pelenc *et al.*, 2015; Ibrahim, 2006).

Collective action is supported by a collective agency process in which social interactions are developed through formal or informal meetings or another stage that enables group encounters. Thanks to the agency, people find shared values, choose common goals and build a well-being representation. As a result, they obtain freedoms or capabilities to transform these common goals into functionings or achievements. When a group has selected the objective and the functionings to pursue, they are able to start a collective action (Pelenc *et al.*, 2015). As Evans (2002) expresses: “Organized collectivities are fundamental to people's capabilities to choose the lives they have reason to value. They provide an arena for formulating shared values and preferences, and instruments for pursuing them, even in the

face of powerful opposition” (pg. 56). When people cooperate, they can transform freedoms into functionings or generate new freedoms. These results will depend on the environmental, institutional, organizational or social factors that influence the process and determine the outcomes (Pelenc *et al.*, 2015).

So far, the election of the collective capability perspective allows connecting collective actions and the capability approach; the second step for the theoretical proposal is strengthening the sustainability aspect. To achieve this, the institutional analysis and development framework is incorporated. Human development and sustainability are merged, taking the collective capabilities and the institutional analysis and development framework.

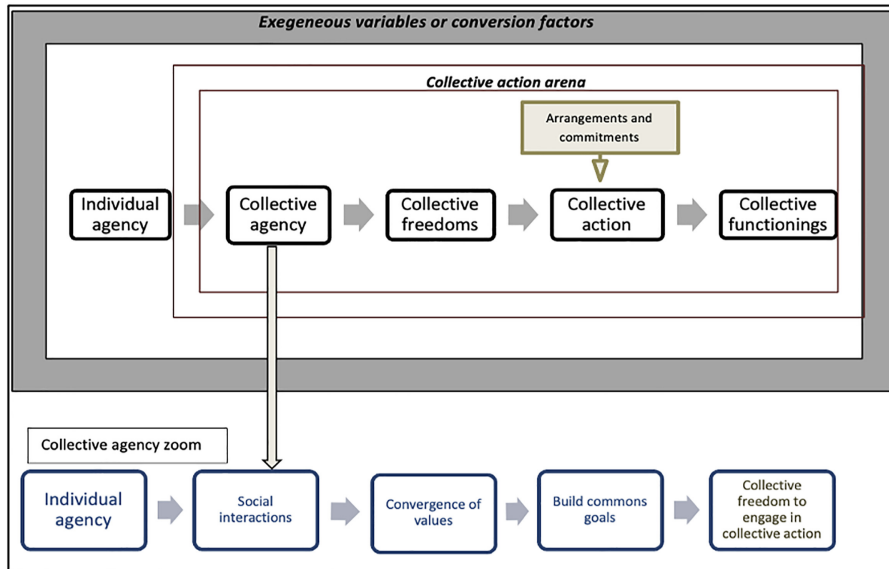
3.3 Analytical framework for analyzing collective capabilities and collective action for nature governance

In this part, elements of the Institutional Analysis and Development Framework (IAD) theory and collective capabilities will be merged. This framework combines Pelenc *et al.* (2015) and Ibrahim’s (2006) work on collective capabilities and Ostrom’s (2011), specifically, aspects of the IAD. Previous sections developed the concepts of nature governance, capability and collective capabilities, which offer the basis for collective action for collective capabilities emergence. Ostrom’s work helps understand people’s interactions around and with natural resources. However, if one aims to examine the outcomes of a collective action process for human development, the capability perspective is needed. Collective capabilities enrich the analysis; it helps to study what people obtain in terms of well-being. Both theories include similar concepts for analysis; this overlapping makes it easier to integrate and work simultaneously with them.

Given that aspects of both frameworks are merged, new categories for analysis arise. Exogenous factors go beyond the groups and ultimately shape collective action and collective capability processes. The *environmental exogenous factors* refer to the general environmental conditions affecting the collective action arena and the capability process. The *exogenous social factors* are related to cultural aspects, social networks and social relations. *Institutional exogenous factors* refer to the legal framework and policies and social norms or codes that determine a group’s conduct. Finally, the *organizational exogenous factors* category is based on Griewald and Rauschmayer (2014) to talk about collectivities instead of individuals. Organizational conversion factors include the organizational structure, organizational resources and dynamics.

Figure 1 summarizes nature governance and collective capability processes. The framework establishes a collective action arena as the social space where individuals interact, can potentially develop collective agency and engage in collective action. The collective action arena frames a collective agency process where social interactions, the convergence of values, and the construction of common goals occur. As a result of this agency process, the first set of collective capabilities and freedoms emerge. These freedoms enable future actions to achieve functionings; this means people can transform freedoms into functioning, taking further steps under a nature governance context.

In sum, the collective agency offers people the opportunity to pursue common goals to achieve freedoms and functionings. This process is formed by public discussions and social interaction where people gather common values and agree on goals to pursue as a group. As Ibrahim (2006), Pelenc *et al.* (2015), and Griewald and Rauschmayer (2014) pointed out, the collective agency process creates the first set of capabilities that can become collective functionings under the conversion factors that enable the process. As a result, the community’s well-being improves. The capability approach helps to understand community well-being regarding people’s freedoms and functionings to achieve a valuable life and the materialized observable achievements (Sirgy, 2018).



Source(s): Own elaboration based on Ibrahim (2006), Ostrom (2011) Pelenc *et al.* (2015)

Figure 1.
Collective action and
collective capabilities
integration

4. Methodology and case of study

(1) Case context

The Rialb reservoir is located in the northern part of Lleida province, in the Catalanian region, in the Pre-Pyrenean mountains. The reservoir lies bounded by the mountains of Peramola, Oliana, Bassella, Baronia del Rialb, Ponts and Tiurana ([Estudi Ambiental Estratègic PDU l'Embassament de Rialb, 2020](#)). The Rialb is the largest reservoir located entirely within Catalonia and one of the largest in the Ebro basin. Its construction began in 1992, but it would start operations in 2000. It has a 400 hm³ capacity and a water mirror of 1,500 ha, receiving water contribution from the rivers Segre, Rialb and Ribera Salada ([Societat Catalana d'ordenació del territori, 2009](#)). Its primary recipients are the Urgell canal and the Segarra-Garrigues canal. The reservoir provides water to 80 municipalities and has a hydroelectric power plant, managed by NECSO SA, with an estimated power of 100 GWh/year ([Consorci Segre Rialb, 2016](#)).

The dam's construction represented a radical change in a territory that has been affected by demographic, economic and social factors. This infrastructure produced the relocation of Tiurana and Miralpeix and some of its aggregates, where around 300 people lived. Due to the expected impacts, neighboring villages opposed the works, delaying the project for years. However, the construction started in 1992, and it began operations in 2000. The new Tiurana village was relocated close to the reservoir and was inaugurated in 2007 ([Societat Catalana d'ordenació del territori, 2009](#)).

As a result of the territorial reconfiguration, the six municipalities around the reservoir and the Lleida province brought the idea of forming a supra-municipal organization. The dam construction gave a trigger to create the Segre-Rialb Consortium, a supra-municipal organization that pursues social, environmental and economical promotion ([Consorci Segre Rialb, 2015](#)). The consortium has tried to give a new meaning to this infrastructure and create alliances with public, private and academic sectors to develop projects that take advantage of

their natural and cultural assets (Consorti Segre Rialb, 2016). One of these projects to embrace the new territorial reality was the Urbanistic Master Plan developed between 2017 and 2021.

The Master Plan was centered on ideas to boost territorial balance, strategies for urban development, expansion of protected areas, improvement of river resources, and conservation of heritage and landscape (Pla Director Urbanistic d'Embassament de Rialb. Document per La Aprovació, 2020). The processes had a participatory approach, including the inhabitants, social organizations, institutional actors, and the touristic sector. In 2018, the Plan carried the participatory phases, gathering proposals that could be included within the final version.

The possibility of a participatory process around territorial development and nature governance in Catalonia has had a long political and legal path. After the colonial period, when Spain was sunken in an economic and political crisis, water appeared relevant to restoring Spanish status (Lopez-Gunn, 2009). With the idea to promote rural sector development, Spanish policies focused on providing a national hydraulic system with a network of dams and reservoirs at the beginning of the XX century. This hydraulic paradigm has dominated water and territorial development in the country. With the arrival of the democratic period and the New Spanish constitution in 1978, regions gained independence for territorial development and natural resources governance (Torrecilla and Martínez-Gil, 2005). Besides, increasing environmental awareness has opened possibilities for more participatory approaches in affairs such as water or forest management (Fernández, 2008).

(1) Documents as data

Due to COVID-19, the fieldwork was removed. The research was methodologically based on documental analysis of public information such as official documents, laws and local newspapers; few online interviews complemented the methodology. Paper-based and computer media documents have been recognized as a relevant source of information during qualitative (Flick, 2018), offering for longitudinal analysis a stable source of data with a lack of reflexivity, which decreases possible bias involved in subject-researcher interactions (Fielding *et al.*, 2017). Since this research uses official documents in its analysis, there is high reliability, in-depth information, and easy and free access when other sources are difficult to access (Flick, 2014).

The Master Plan process was analyzed through the information available on the official websites: the Territori Gencat, the Participa Gencat, Segre–Rialb, Baronia Rialb, and the newspapers Segre.com and La Vanguardia. The Segre–Rialb Consortium has a quarterly magazine that provides information about community meetings and interviews. This magazine is produced and written by people who participated directly in the Master Plan process. Further, the Centre de la Propietat Forestal (CPF) and the Centre Tecnològic i Forestal de Catalunya (CTFC) websites were consulted to understand their participation in the Master Plan Process.

The BOE (Spanish Official Bulletin) website was consulted to research Spanish and Catalanian legislation. It gathers laws and edits that allow an understanding of the institutional framework around urban planning and water and forest management. In addition, the New Water Movement reports and websites were consulted to understand the evolution of water governance in Europe and Spain.

5. Nature governance for collective well-being: results and discussion

In order to understand how a holistic view of sustainable development and human development can be reconciled and work together, this section will analyze stakeholders' involvement in an *Urbanistic Master Plan* in Catalonia, Spain. The analysis will use collective capabilities and institutional and analysis framework lenses. This section first summarizes

the process of nature governance. A second part examines the results in terms of capabilities, which means freedoms, functionalities and collective well-being.

(1) Building the collective action arena for interactions

Nature governance in the Segre–Rialb region was developed through stakeholders’ participation in the Urbanistic Master Plan for the Rialb reservoir. This process involved the community, representatives of the local administration, academia and touristic sectors. It was carried in stages that allowed participants to build agreements promoting sustainable tourism, territorial cohesion, holistic forest management and an ecosystem services approach with future economic development compensation for forest services. Following the theoretical proposal developed in section 3, the first step to understand a nature governance process is to examine the action arena of social interactions meaning where the governance process was carried out and who participated.

According to the reports produced by the Consorci Segre Rialb, the Generalitat de Catalunya, local media information and the reports of the SINCERE Horizon project, the participatory process was developed in the six municipalities through sectorial, community and mayors’ meetings, one Itinerant voting mechanism (Caixa itinerant) and an online platform for citizen proposals. This action arena of social interactions joined academic, institutional and citizen sectors to gather values, goals and proposals for the territorial development in the Rialb reservoir. Table 1 summarizes participants divided into five groups and spaces where the interaction occurred. Between 2020 and 2021, the meetings were developed online due to the COVID 19 pandemic. Further, the urbanistic Master Plan was delayed, and the process was finalized in 2021.

(1) Collective agency process

The collective agency process in Segre–Rialb was developed through public discussions that facilitate the emergence of shared values, agreements and common goals. According to the reports produced by the Generalitat de Catalonia, the Segre–Rialb Consortium, and the Master Plan memories, during the public discussions, participants remarked on values such as water and forest as identity and cultural landscape, landscape as cultural heritage, forest

Collective action arena	Community	Mayors ^a	Research centers	Public administration	External participants (EU universities and research institutions)
Who	170 people 1,070 online proposals	6 mayors in sectorial meetings	6 local research centers	14 governmental organisms	4 EU research partners
Where	Six municipalities’ meetings (2017) Online platform <i>Participat. Gencat</i>	Baronia de Rialb	Six municipalities Barcelona meetings Online meetings between 2020 and 2021 due to COVID 19 pandemic	Six municipalities Barcelona meetings Online meetings between 2020 and 2021 due to COVID 19 pandemic	Six municipalities Barcelona meetings Online meetings between 2020 and 2021 due to COVID 19 pandemic

Note(s): ^aMayors are in a different category since they represent the Consorci Segre de Rialb, which has a different legal regime

Table 1.
Collective Arenas for interaction and participants

as patrimony. Those values gave the first ideas to establish common goals to pursue. The subsequent collective goals linked to nature governance included building a holistic forest management approach in the Master Plan, including the ecosystem services perspective to manage the forest and creating future monetary compensation for forest services. Finally, stakeholders agreed on including landscape as identity as the guiding principle and ax to organize Segre Rialb territory.

Although values and common goals emerged in the context of the Master Plan process, the Segre Rialb region had previous experiences that allowed them to have a solid participatory background. In this sense, the six municipalities created in 2008 a legal figure to promote sustainable tourism and development. Further, in 2017 they developed a previous planning process that involved a participatory stage. This sense of community and the relevance of common history has been emphasized by [Parés et al. \(2015\)](#), [Ibrahim \(2006\)](#), and [Griewald and Rauschmayer \(2014\)](#) concerning the emergence of shared values. In addition, the relevance of organized collectivities to formulate shared values, common goals, and preferences was highlighted by [Evans \(2002\)](#) as a milestone in collective agency processes. [Table 2](#) summarizes the elements of the collective agency process.

(1) The exogenous variables that influence the process

Exogenous factors are the contextual elements that influence the collective action arena and all the collective processes. It was established in chapter one that environmental, organizational, social and institutional aspects are the exogenous factors influencing nature governance and collective capabilities materialization (see [Table 3](#)).

The *exogenous institutional factors* are rules and norms that enable nature governance and capability processes. For this case, the external institutional factors are the legislation allowing stakeholders' participation in urban planning processes, water and forest management legislation, rules regarding municipalities' designations. In particular, the law allows the municipalities to form consortiums; in turn, this legal structure enabled urban planning processes. The law 2/2002 promotes people participation and social cohesion in urban planning processes. The urban planning law 3/2012 advocates for sustainable urbanism. It is remarkable that without this favorable legal context, in the end, participation in the territorial planning process would not have had possibilities. This decisive role of institutional factors in the collective agency is also displayed by [Pelenc et al. \(2015\)](#) in their

Action	Public discussions	Common values within the community	Collective goals
Community participation in Master Plan for the Rialb-reservoir	The PDU began in 2017 with promotion of stakeholders' involvement in the PDU. It finished in 2020 The <i>social interactions</i> took place in five workshops in Ponts, Oliana, and Baronia del Rialb. Students, citizens, and mayors of every municipality were involved; additionally, they used a moving participatory mechanism called "the itinerant box" (Caixa itinerant)	Water as identity Value of forest as patrimony Territorial diversity Water as landscape	Sustainable tourism Forest management from a social, environmental, and economic perspective Inclusion of an ecosystem services approach into the Master Plan to obtain economic retribution for forest management Forest management to enhance water resources

Table 2.
Collective agency process in Segre Rialb

Table 3.
Exogenous factors
affecting collective
agency and collective
actions

Exogeneous factors	Influence in Segre de Rialb
Institutional exogeneous factors	Constitution 1979 The Legislative Decree 2/2003, of April 28, 2003 document of formation of the Segre Rialb consortium urban planning law 3/2012 Previous legislation around water and forest planning New Water Culture movement and principles
<i>Organizational factors</i>	Statutes that enable the Consortium's public activities
Environmental factors	Dam construction in the region Water quantity problems Decreased of agricultural works
Social factors	Hydraulic paradigm in Spain Recent awareness regarding environmental issues and water problems New water governance movement

previous study regarding a collective agency process in Chile. The research performed by [Rauschmayer et al. \(2018\)](#) suggests similar conclusions.

The process in Segre Rialb seemed to be influenced indirectly by the evolution of water legislation. For decades, water management in Spain was ruled by a supply approach that relied on the construction of infrastructure across the country ([Garrido and LLamas, 2009](#)). This water management created the engineering and technical paradigms around water resources giving aside people's participation in water governance ([Lopez-Gunn, 2009](#)). However, water institutionalism has evolved in Spain since the arrival of democracy, and more progressive policies and the emergence of civil movements have promoted more inclusive water governance ([Embid, 2002](#)). In this context, the Water New Culture principles have received more attention in policies and laws ([Sánchez-Martínez et al., 2012](#)). In this case, values such as water as identity, forest for water, or water landscape have been promoted for years through the New Water Culture movement.

Environmental exogenous factors found in the Segre Rialb case are the construction of the Rialb Reservoir between 1992 and 2000. According to declarations published in the *Segre Rialb Actualitat*, the reservoir produced territorial changes that forced the municipalities to look for instruments that embraced the new reality. They created the Consortium as a response to the impacts made in the region. The Consortium, with support of the Generalitat of Catalonia, promoted the realization of the urbanistic planning process, which materialized in 2017. Further, water scarcity problems and the abandonment of agricultural works have forced the community to reconsider forest management strategies to improve water quantity and quality.

According to information published in the *Segre Rialb Actualitat* and the SINCERE project, the municipalities have experienced a continuous decrease in the population and agricultural activities. As a result, the unmanaged forest has increased in the region, negatively affecting water quality and quantity and creating the risk of wildfires. This environmental factor motivated the local population and the administration to search for forest management strategies that contributed to water conservation.

- (1) The first set of collective capabilities: the construction of new values around water resources

It was established in [Section 3](#) that when the collective agency is developed, the group is granted the first set of freedoms or capabilities; they can transform these freedoms into functionings through further collective actions. In the nature governance process in the Segre Rialb emerged the next set of collective freedoms or capabilities:

Being able to participate in a territorial planning process and sectorial meetings for urban development – Although participation is also an individual capability (Crocker and Robeyns, 2009), for this case, participation means the possibility to bring as a group proposals strategies and build new values around water, forest, and landscape.

Being able to raise new values around landscape and nature to be included in the Master Plan – The collective agency process allowed the emergence of values regarding landscape and nature. In all workshops, stakeholders pointed out the relevance of the landscape for their identity and how it can be used to promote tourism in the region. This capability can be transformed in future collective actions promoting this mindset, such as sustainable touristic projects. For the moment, this capability was captured in the Article 1 in final version of the Master Plan published in 2021 (Pla Director Urbanistic d'Embassament de Rialb. Document per La Aprovació, 2020).

According to Nogué and Vicente (2004), the landscape is a center of meaning and symbolism with material, spiritual, symbolic and ideological values. It helps to create an identity and a sense of belonging. Further, landscape and nature are immaterial assets that contribute building sustainable touristic strategies such as “Nation brands,” which strengthen local capacities and nature-human relations (Hassan and Mahrous, 2019). In particular, in Catalonia, the landscape has had a relevant role in creating a national identity and promoting touristic initiatives.

The Master Plan memories, the Segre Rialb reports, and SINCERE reports showed that the collective agency process brought the capability to boost new values around water, such as *water as identity, water as landscape, water as leverage for the territory, and forest for water, living forest, cleaning water*. These new values help to modify previous conception around water management shape by a hydraulic approach based on infrastructure taking water as an element for economic development (Lopez-Gunn, 2009; Parés et al., 2015).

Being able to propose an ecosystem services approach to be included in the official Master Plan – Research centers and mayors from the six municipalities promoted the ecosystem services approach. The workshops and sectorial meetings allowed them to consolidate this idea of understanding the fundamental role that forests have in the water cycle. As a result, stakeholders proposed to include an article that summarized this approach within the final Master Plan document.

So far, the collective nature governance has shown to be effective in developing agency and obtaining collective freedoms or capabilities. This reflects previous findings regarding the instrumental relevance of collective actions to formulate common values, create a sense of community and establish common goals. In this regard, Ibrahim (2006) demonstrated how people working together created self-help groups to enhance their income in low-income neighborhoods in Egypt; as a result, their well-being improved. Pelenc et al. (2015) showed similar conclusions establishing how those social interactions triggered common values and motivation in people participating in creating an environmental NGO in Chile. Similarly, Griewald and Rauschmayer (2014) pointed out the relevance of common values and motivations to pursue legal actions for ecological sustainability in Germany.

(1) Collective capabilities or freedoms transformed into functioning

When a group of stakeholders has developed agency, this means when they have gathered common values and goals, they achieve the first set of capabilities or freedoms that enable them to pursue goals in further collective actions. In this case, the insights obtained during the participation stages were brought to sectorial meetings. Dependencies that manage forestry affairs and the academic sector promoted the ecosystem services approach during the final version of the Master Plan. Besides, the mayors of some municipalities recognized and supported this approach regarding forest governance.

5.1 Achieved functioning: being able to include in the Master Plan forest–water nexus as an aspect of the legislation

The final version of the Master Plan was published in 2021; it integrated a multifunctional forest management perspective in the objectives of (*article 1*) as a critical element for territorial development and recognized the forest land in Segre-Rialb and the watershed as providers of ecosystem services, which should be guaranteed and promoted as an economic asset that can generate green jobs in rural areas. The *Article 38* in the final version of the Master Plan approved in 2021 also established forest management and the ecosystem services approach.

6. Future research

The findings of this study have to be seen in the light of some methodological limitations. First, there was a lack of fieldwork due to COVID-19, which restricted direct interaction with the community involved in the participatory citizen processes. Although there was a complete compilation of those processes on official websites, direct contact through face-to-face interviews can provide a better understanding of people's behaviors, preferences or opinions. Therefore, future research based on fieldwork can offer relevant insights and a broader understanding of nature governance and human development relations using direct subjects' views and experiences.

In addition, the lack of fieldwork prevented the use of participant observation that could offer an understanding of attitudes and interactions in the community during the workshops and citizen meetings. The online interviews helped in this regard, but participant observation in future research can nourish the finding of this research.

7. Conclusions

Stakeholders in the Segre de Rialb developed a nature governance exercise through their participation in the Urban Master Plan process. This context allowed them to settle on values such as water and forest as identity, the patrimonial value of the forest, territorial diversity as an asset and water as a landscape. Participants also agreed on common goals, such as including an ecosystem services approach in the Master Plan and promoting local initiatives for forest management. Further, they established a dialog with the public administration in sectorial meetings aiming to materialize in the values, agreements and goals gathered previously.

This process conducts to achievements to this community in terms of sustainable development. First, as [Nunan \(2015\)](#) remarks, nature governance facilitates access to natural resources and their sustainability, namely, in regions suffering ecological pressures, which is a relevant matter in the Baronia de Rialb region considering the water problems and the lack of forest management strategies. Therefore, the environmental aspect of sustainability is addressed through participation in the Master Plan. Second, since nature governance requires people participation, collaboration and cooperation, the social part of sustainability is boosted through local governance strategies. In particular, the participatory stage in the Master Plan gathered stakeholders' concerns and ideas to organize their territory and manage natural resources. Third, the inclusion of an ecosystem services approach joint to forest and water management strategies stimulates the local economy incorporating the economic aspect of sustainability.

In terms of human development, the participants achieved freedoms and functionings in the Master Plan process. Stakeholders were able to establish new values around water, forest and landscape that were included in the final version of the Master Plan. They also raise a new mindset regarding water resources moving from the hydraulic paradigm to a social and

ecological paradigm. In this process, they also were able to create proposals such as an ecosystem services approach and multisectoral forest management. Finally, thanks to sectorial meetings with the administration, the legal text of the Master Plan includes the ecosystem services and the multisectoral forest management; this means capabilities were transformed into functionings. As a result, the community's well-being improved. The capability approach helps to understand community well-being regarding people's freedoms and functionings to achieve the activities and situations they consider valuable, and the materialized observable achievements (Sirgy, 2018). In the Segre Rialb, community well-being is represented by stakeholders' freedoms and functionings during the nature governance process.

Nature governance in Segre Rialb has a twofold function of reconciling sustainable and human development. On the one hand, in terms of sustainable development, this process joins the environmental, social, and economic aspects of sustainability through the promotion of public participation, the emergence of new values around water, forest and territory, and the inclusion of an ecosystem services perspective, sustainable tourism and forest management strategies to incentive economic activities in the region. This seems particularly relevant considering the challenges of promoting economic performance and achieving inclusive growth to eradicate poverty (Albagoury, 2021); therefore, the promotion of holistic, sustainable development focused on environmental, economic, and social aspects which can offer valuable insights.

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