REVIEW AND SYNTHESIS

The importance of understanding the multiple dimensions of power in stakeholder participation for effective biodiversity conservation

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Abstract

1. Biodiversity conservation are increasingly focused on involving stakeholder engagement, making power a key concept in understanding its success and failure. Power is often conceptualized as unidimensional and coercive, but a multidimensional view better reflects structural power, as well as its productive and enabling potential.

2. This paper investigates how different dimensions of power in participatory processes affect biodiversity conservation objectives. Six case studies from Europe and Asia-Pacific were analysed using an adapted framework that explores the interlinkages between '*power over*' and '*transformative power*', looking at the scale and space in which power occurs, and analysing in which arenas of power and under which form of expression it appears. The framework distinguishes between the different ways to exert influence ('power to', 'power with', 'power within', 'power for'), as well as the dynamics of domination and resistance observed in decision-making (visible power), hidden biases and exclusionary experiences (hidden power), and actions that either reinforce or resist social norms and beliefs (invisible and systematic power).

3. Focusing on biodiversity, the different arenas of power allow us to go deeper than the surface issues and conflicting interests of diverse participants, regarding for example wildlife, to question underlying power dynamics. Different expressions of power, more specifically the 'power for' dimension, allow an understanding

of how participants integrate nature and biodiversity in their aspirations. The different levels of power also highlight the need to focus not only on the local level but to analyse how participatory processes are embedded in national, or even international governance in a globalized world. Finally, they shed light on two challenges in participatory processes regarding biodiversity: the representation of non-human interests (designated here as 'beyond-human' voices), and the integration of multiple forms of knowledge systems.

4. *Synthesis and applications*: Integrating power into biodiversity issues involves deconstructing normalized discourses that focus solely on certain more powerful human agents, their interests and scientific knowledge, and creating new narratives, knowledge and embodied practice of learning and action to encompass a wider diversity of voices and views.

INTRODUCTION

Biodiversity conservation approaches are increasingly focused on engaging relevant stakeholders through participatory approaches to reduce conflict, build trust, and facilitate learning among stakeholders, with the aim of reaching greater ownership and implementation of decisions to improve biodiversity outcomes (De Vente et al., 2016; Reed, 2008). While systematic evaluations have shown how stakeholder participation can contribute to biodiversity conservation (Huber et al., 2023; Jager et al., 2020; Reed et al., 2018; Sterling et al., 2017), "tokenistic" approaches to engagement, where for example "conservationists assert their interests to the detriment of others" (Redpath et al., 2013, p. 100) can also lead to more conservation conflict. Past typologies of stakeholder engagement often implied that "the more voices" the better but this does not guarantee positive outcomes for biodiversity, equity or justice (Loos et al., 2023; Reed et al., 2018). Creating new spaces for previously excluded groups to participate is insufficient. An important factor for predicting success or failure of such complex participatory initiatives is the early understanding and appropriate inclusion of social dynamics, including power (Shackleton et al., 2023). Wider attention to power relations in conservation will help better tailor efforts to address conflicts in conservation and ensure fair and sustainable conservation practices.

Power is a highly contested concept with multiple meanings within and across disciplines (Lukes, 1974, 2004, 2021). In the biodiversity conservation literature, power has evolved from an initial unidimensional concept of 'power over' (Cook et al., 2013). 'Power over' is the most recognized form of power and is defined as "the ability of an actor or set of actors to constrain the choices available to another actor or set of actors in a nontrivial way" (p. 33, Allen, 1998). Power in this case can be seen as 'zero-sum'; the more power one person has, the less the other has (Rowlands, 1995). To exert power, people can use resources such as physical resources, money or skills

but also other resources such as knowledge, alliances, or legal authority (Giddens, 1984). Alternative conceptualizations highlight that it is important to also recognize power as a positive force for individual and collective capacity to act for change (VeneKlasen & Miller, 2002).

To contest power over, 'transformative power'—the capacity to effect positive change at various levels (personal, social, political, and organizational)—can be strategically mobilized to propose alternative power structures grounded in equity, inclusion, and liberation. While the concept of transformative power has historically been articulated as 'power to' and 'empowerment' (Gaventa, 2020; Haugaard, 2012), one criticism is that these frameworks often prioritize individual fulfilment, sometimes neglecting the systemic roots of powerlessness and losing sight of the broader transformation of power dynamics (Batliwala, 2007; Christens, 2019; Schutz, 2019). In this article, we revisit this tradition by not only viewing empowerment as the ability to assert oneself but also examining how transformative power manifests in participatory processes for biodiversity, enabling both individuals and institutions to challenge and transcend the domination to which they were subjected. This involves envisioning and implementing shifts in political, social, and economic power dynamics among and across individuals and social groups (Batliwala, 2007; Calvès, 2009; Eyben et al., 2008).

The early conceptualizations of power focused on power at the level of relationships among actors, viewing power as a form of agency wielded by individuals or groups to exert control or resist domination. As such, in participation contexts, power is often associated with the level of power given to individual or more local organizations (Arnstein, 1969; Fung, 2006)—with more power devolution often associated with the idea of better participation processes and, in the case of protected area governance, better social and ecological outcomes (Huber et al., 2023). While useful for identifying the power of agents, their interests,

intentions and alliances in more visible political processes, this agency lens can obscure the way power is embedded in social structures and communicated through discourses and knowledge systems. (Foucault, 1977; Rabinow, 1991; Svarstad et al., 2018). Therefore, there is a growing emphasis on structural views of power, which recognize power as shaped by social norms, beliefs, and behaviours, which shape the boundaries of what is considered socially or politically possible. This highlights the importance of not only examining external manifestations of power but also acknowledging the influence of internalized power, including beliefs, social norms, and culture, on peoples' perspectives and perceptions of what is considered 'right' or 'normal'.

The debate surrounding the distinction between 'power over' and 'transformative power', along with approaches considering the continual interaction between structure and agency, has made significant progress across various fields. In the realm of participation, collaborative planning theorist Patsy Healey (1997, 2003) recognizes planning as a governance activity occurring within complex and dynamic institutional environments, shaped by broader economic, social, and environmental forces that influence specific interactions. Alongside the work on new institutionalism (Peters, 1999), Healey emphasizes that these constraints are not fixed parameters. Agents, while subject to conflicting structuring forces, can demonstrate inherent creativity and inventiveness in their responses (Healey, 2003). She argues for the need to enhance institutional capacity through improved knowledge access and relational interaction to empower local actors to 'make a difference' in the qualities of their place (Healey, 1998). Many of these ideas are filtering into other academic literatures, including studies on environmental governance that question the relationship between the pluralism of institutional structures and actors and their effect on nature conservation (Walsh, 2021; Williams, 2018). However, while these studies discuss the conditions for positive changes in the context of biodiversity conservation, they do not explicitly propose a way to analyse power.

In view of the importance and complexity of power in environmental debates, researchers have explicitly started to explore the multiple dimensions of power (Boonstra, 2016; Morrison et al., 2019; Shackleton et al., 2023). These approaches explore how different forms of power can explain the uneven capacity of actors to influence the goals, process, and outcomes of environmental governance considering both visible and hidden dimensions of power that shape the conditions and terms with which people confront each other, and also invisible forms of power that influence people's desires, beliefs and judgements (Bachrach & Baratz, 1963; Lukes, 1974, 2004, 2021; Gaventa, 2006). They also allow us to integrate other levels of power such as structural power, that impact for example on gender relations, that can in turn affect group dynamics and manifestations of power in participatory processes (Fritz & Meinherz, 2020). While useful in handling the "confetti of labels and theories" that come with the concept of power (Boonstra, 2016, p. 2), those suggestions apply to broader question such as governance and conservation and do not address directly the notion of transformative power, limiting its ability to analyse power in practical situation of participatory processes for biodiversity and potential effect on biodiversity conservation.

In this paper, we investigate how power operates in participatory processes and in turn how it can affect the objectives of biodiversity conservation. To address these questions, we build on the work carried on by gender activists and others in the development field (e.g. Batliwala, 2007; Gaventa, 2006; Rowlands, 1997; VeneKlasen & Miller, 2002) to propose an integrated framework on power, which we apply it to six case studies that focus on different kinds of biodiversity (species to ecosystems) in Europe and Asia-Pacific. Through this framework, we explore the scale and space in which power occurs, the arenas of power and under what form of expression it happens. More specifically, we explore the multiple dimensions of power at play in the context, design, implementation and outcomes of participatory processes in the context of biodiversity conservation. Finally, we discuss lessons learned from the application of our proposed framework to biodiversity conservation, its strengths and weaknesses, and what we can learn more specifically regarding participatory processes in biodiversity conservation.

APPROACH AND THEORY

Transdisciplinary working group

This work is part of a larger project called PowerBiodiv that has the objective of understanding power dynamics in stakeholder participation by integrating theory and practice for effective biodiversity conservation. PowerBiodiv aims to use recognized methodologies for knowledge synthesis including high quality systematic reviews to integrate social and political theories of power in the conservation literature, with solution scanning and expert consultation to access the perspectives, stories, and knowledges not typically represented in conservation literature. The project started with the development of a framework on the multiple dimensions of power in the context of participatory processes for biodiversity through a literature review and group discussion over the course of three workshops with 15 researchers and facilitators with experience in participation, development studies and social change. Those researchers were then invited to propose past case studies in which they were personally involved—as the organizer, facilitator or participant—to test the framework. Through individual interviews with each case study lead carried out by the first author, we analysed the characteristics of the participatory process of each case study (Supporting Information 1) and asked the lead if and how each dimension of power manifested in terms of the context, design, implementation and outcomes of the participatory process. The interviews were recorded and partially transcribed. The objective was to test the framework on case studies and draw lessons on its applicability. We thus do not claim to have conducted a deep systemic analysis of power in the different cases.

Multiple dimensions of power framework

After a literature review on the different ways power have been analysed, we decided to build on the practical experience of gender activists and others in the development field and adapted a power framework from Just Associates [JASS] (2023) and from the Institute of Development Studies (Gaventa, 2006) and the Power Cube (https://www.powercube.net/; Figure 1). The framework shows the continuous interaction and balance between 'power over' and 'transformative power'. By doing so, we acknowledge previous scholars that have argued that both powers need to be seen as interrelated to the same processes (Bradley, 2020; Haugaard, 2012; Kashwan et al., 2019; Pansardi, 2012). 'Power over' is not solely wielded by dominant actors, and 'transformative power' is not limited to subordinate actors, but rather they represent distinct elements within the range of power strategies that all actors and entities may employ concurrently in different combinations (Kashwan et al., 2019). We do not link them with particular dimensions of power, but propose that each type of power can occur in different arenas of power (1), through different expressions of power (2) in different spaces (3) and at different levels (4).

The arenas of power are depicted as nested, intertwining to demonstrate their interconnectedness and how they constrain struggles for power across different contexts, suggesting that strategies for change must encompass all forms of power—visible, hidden, invisible, and systemic (Andreassen & Crawford, 2013; Gaventa, 2020). The expressions of power are represented as a spiral, illustrating the iterative nature of power dynamics and emphasizing that regardless of where one enters the cycle, linking 'power within', 'power to', 'power with', and 'power for' enables a more comprehensive understanding and approach to addressing power. Furthermore, the levels and scales of power are depicted as two-dimensional maps, highlighting that the interaction between power over and transformative power is dynamic and fluctuates across different spaces and times during participatory processes, occurring at various levels ranging from local to global. More theoretical background on each dimension is provided in the subsequent text, along with illustrations drawn from the analysis of the case studies.

Case study descriptions

The selection of case studies was done relative to one common feature: they involved stakeholder engagement partly or wholly to achieve biodiversity outcomes. We then tried to represent different initiatives—from small group to large group of participants and low possibility for participants to decide on the process to high participant-driven processes. In the text, we describe shortly the context of the different case studies and the arguments for the implementation of a participatory processes. More details about the participatory processes (objectives, participants, organization and outcomes) can be found in Supporting Information 1.
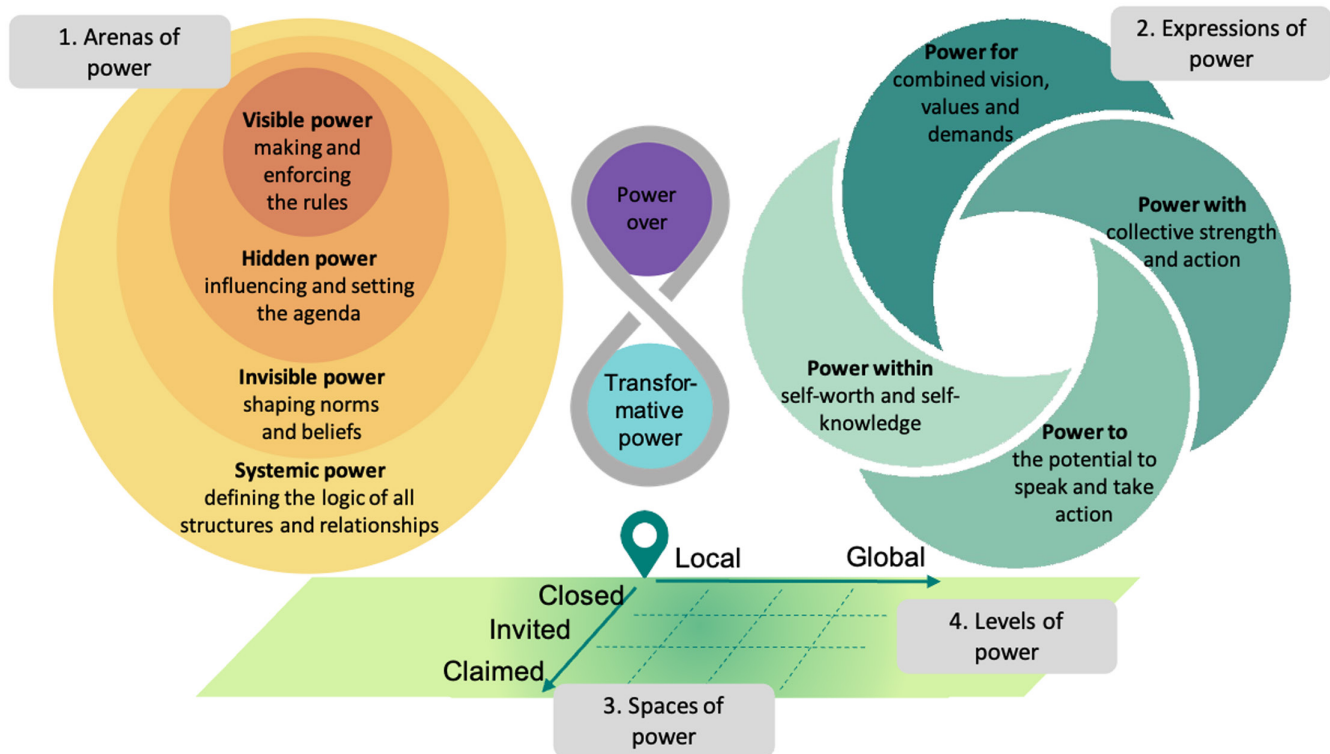

FIGURE 1 Multiple dimensions of power framework adapted from the power framework from JASS (2023) and from the Institute of Development Studies (Gaventa, 2006) and the Power Cube (https://www.powercube.net/).

England

Context

Hatfield Forest is an area that has been safeguarded for its natural beauty, diverse wildlife, and historical significance. As one of the few remaining intact royal medieval hunting forests in Europe, it holds great importance. However, in recent years, the number of visitors has significantly increased from 105,000 to an estimated 500,000 since 2007. This surge in visitors has led to detrimental consequences such as illegal construction of trails and paths on the delicate clay soils, resulting in habitat degradation and a decline in visitor experiences. Initially, the local team responsible for managing the Forest, belonging to the National Trust, attempted to address the issue by closing off certain trails and pathways, installing gates, and posting signs advising visitors against taking specific routes. However, these measures proved ineffective and instead generated strong negative reactions, particularly from the local community. Consequently, the relationship between the National Trust and the local people began to deteriorate.

Participatory process

Recognizing the need for a different approach, the local team took the initiative in August 2016 to launch a project aimed at raising awareness and understanding of the issues at hand. They sought the involvement of impartial experts in participatory decision-making processes, acting as neutral third-party facilitators. The project's objective was to foster dialogue, engage stakeholders, and find collaborative solutions to the challenges faced by Hatfield Forest.

Western France

Context

In Western France, a proposed new airport concerning 1650 hectares of land, including 200 hectares of high-nature interest, faced strong opposition, leading protestors to occupy the site earmarked for the construction and giving the development national media coverage. To proceed with the project, the developer was required to conduct an environmental impact assessment. A specialized consultancy firm was hired to assess the project's impacts on biodiversity and determine the necessary mitigation and ecological compensation measures. Their findings, particularly regarding the area of agricultural land that would need to be restored or rewilded to effectively compensate for the impacts, were a further challenge to the proposed airport's acceptability.

Participatory process

The participatory process consisted in a meeting, organized by the developer with a small number of participants. The meeting's aim was to revise the conclusions from the consultancy and was strongly driven by the developer—without much room for shared designing of the process. It led to a different design and sizing of the proposed ecological compensation, and in the end—with other resistance movement happening externally to this process—the airport was never built.

Papua New Guinea (PNG)

Context

The Coral Triangle bioregion, including Papua New Guinea, presents an interconnected landscape and seascape where decision-making processes for large scale development, poverty alleviation and conservation unfold. This region, recognized as a global marine biodiversity hotspot, faces significant poverty levels despite being rich in valuable resources such as oil, gas, minerals, agriculture, forests, and fisheries. In August 2015 to November 2017, the PNG government's Conservation and Environment Protection Authority (CEPA), which is responsible for national implementation of the Coral Triangle Initiative on Coral Reefs, Fisheries and Food Security, embarked on a project to address the challenge of achieving conservation, development and poverty alleviation through alternative decision-making processes (Butler et al., 2022).

Participatory process

In collaboration with the Australian Government, CEPA aimed to establish the Bismarck Sea as a demonstration site for participatory seascapes planning, balancing diverse outcomes from development proposals. The objective was to conserve marine biodiversity, enhance food security, and promote evidence-based, transparent development decision-making. An advisory group of stakeholders and the research team gathered and co-produced information relevant to climate-resilient development decisions. This informed an inclusive, participatory systems-based decision-making process regarding major investments (e.g. oil palm, tourism, seabed mining), considering potential future risks and benefits, and adjusting them to achieve climate-resilient development pathways.

Thailand

Context

In the highlands of northern Thailand, ethnic minorities have historically been accused of degrading the upper watersheds of major basins through shifting slash-and-burn agriculture. Environmental concerns prompted policies transitioning these communities to permanent agriculture and restricting their access to land and forest resources. Simultaneously, decentralization and public participation efforts led to conflicts over land use between local communities and state agencies. One notable conflict arose in Nan province between a new national park and two communities. Initially, informal arrangements were made between the forest department and locals to accommodate religious rituals and non-timber forest product gathering. However, a new park director, less

inclined towards conciliation, fostered uncertainty and conflict. Key questions arose about the park boundary's future location and rule enforcement within it.

Participatory process

In this complex context, a research team, in partnership with the forest department, facilitated a collaborative process to support the ongoing negotiations between villagers and national park officers by encouraging dialogue and mutual understanding among them. The process paid specific attention to the diverse interests among villagers, including the most marginalized ones, ensuring that their voices were heard and considered in the decision-making process (Barnaud et al., 2008; Barnaud & van Paassen, 2013).

Italian and French Alps

Context

The management of large carnivores in the EU is characterized by significant variations and conflicts. Recognizing this, the engagement of local stakeholders in decision-making regarding large carnivore management becomes crucial. It is evident that a standardized approach to large carnivore management across the EU is inadequate, and instead, management strategies need to be adapted to the specific circumstances of each region. To address this challenge, the stakeholders of the EU Platform on Coexistence between People and Large Carnivores have endorsed the funding of regional platforms in areas where conflicts related to the presence of large carnivores persist. These regional platforms aim to facilitate collaboration among stakeholders and foster discussions on potential solutions for conflicts arising from the coexistence of people and large carnivores, taking into account the unique national, regional, or local contexts.

Participatory processes

The contracted team's objective was not to impose specific solutions but to provide support to the affected parties in engaging in constructive dialogue. Their role was to facilitate discussions among stakeholders, enabling them to collectively address the issues and explore potential solutions. The Grosseto platform in Italy aimed to reduce livestock depredation, particularly sheep, in the region. They implemented measures such as promoting damage prevention tools, training for dog owners, an evaluation system for prevention measures, stakeholder-engaged wolf monitoring, a coalition of wolf reports, and a dedicated Facebook page. The French platform addressed issues around sharing space in the context of measures to protect livestock against wolves. In particular, conflicts between the use of livestock guarding dogs and other land uses were addressed. The term 'platform' was an informal process co-organized with the local partner, the Parc Naturel Regional du Vercors, rather than a permanent structure. The dialogue process led to the development of a joint narrative with support of a communications company and a press campaign to disseminate this joint narrative in 2023.

EXPLORING THE MULTIPLE DIMENSIONS OF POWER THROUGH SIX CASE STUDIES

In this section, we analyse the multifaceted nature of power by exploring its various dimensions, including arenas of power, expressions of power, spaces of power, and levels of power. Through this exploration, we uncover the nuanced ways in which power operates within participatory processes and decision-making contexts.

Arenas of power: Visible, hidden, invisible and systemic

Lukes' book raised important questions on It was initially Lukes who questioned pPower by not only studying who prevails in decision making arenas, but also questioning what was absent from these areas, discussing the three faces of power—the public faces, the hidden faces and the insidious faces (Lukes, 1974, 2004, 2021). Here, we used the adapted terms developed by subsequent scholars to refer to those areas: visible, hidden, invisible and systematic (Gaventa, 2006; VeneKlasen & Miller, 2002).

Power can be exercised in a formal way, referred to here as 'visible power', where contests are observable (e.g. through formal decision-making bodies, and often result in rule making and enforcement; Gaventa, 2006; Lukes, 1974, 2004, 2021). In our case studies, visible power was obvious regarding for example the power to decide where to set up protected areas and the contents of their management plans. This is often a matter of national policy (Thailand, England) while species protection is a matter of European Directives and their national transpositions (French Alps, Italian Alps). However, different case studies highlight the fragmentation of this visible power between different governmental entities and the lack of coordination between them, making it difficult to know during a participatory process who is responsible for which decision, and who should participate in the process (French Alps, PNG). In PNG, there are over 15 government departments that have an interest regarding oil palm development decisions. In the two case studies involving large infrastructure development (PNG, western France), visible power can take the form of financial resources and networks. Finally, during the participatory process, visible power can translate for example, into the ground rules set up to work together (England) or through participants' behaviour (aggressiveness of the airport developer's CEO, western France).

'Hidden power' refers to vested interests acting behind the scenes to control public agendas and policy by excluding other actors and their concerns (Bachrach & Baratz, 1963; Gaventa, 2006; Lukes, 1974, 2004, 2021). The rules of the game are set to be biased against certain people and issues, leading to a 'mobilization of bias', where "some issues are organized into politics while others are organized out" (Schattschneider 1960: 71). Examples of hidden power in our case studies spanned from intimidation attempts (England, Thailand) or threat to put at risk the reputation of a consultancy if

they did not agree to change their result according to the interest of the developer (western France), secret alliances with people in and outside of the participatory processes (western France, French Alps), to corruption (PNG). During the participatory processes, there may be underlying interpersonal conflicts linked to previous issues that are not displayed in the open but that will steer the relationship in the group in a certain way (French Alps). In addition, participant status (e.g. owner versus employee) creates situations where some people are dependent on others and may be reluctant to speak out (Thailand, Western France).

'Invisible power' refers to beliefs, ideology, social norms and culture that shape people's sense of what is right, normal, or true (Gaventa, 2006; Lukes, 1974, 2004, 2021). This includes deeply-held, often unconscious prejudices based on factors such as gender, race, class, sexuality, location, age, and ability. For Lukes (1974, 2004, 2021), this is the most insidious form of power. This author changed his original formulation where invisible power was still deliberately used by powerful actors to manipulate others' beliefs, to one where invisible power is also a process by which all actors are conditioned and constrained by social norms (see also, Gaventa, 2006). Regarding biodiversity, it would include for example the consequences of 'shifting baselines', where ongoing environmental degradation lower people's accepted thresholds for environmental conditions, which constrain the range of potential options for biodiversity restoration or conservation (Moreau et al., 2022; Soga & Gaston, 2018). For example, in the English case study, there were some beliefs about scientific knowledge having higher value regarding nature conservation, placing scientism as an invisible power behind the process. The invisible power at stake in our case studies also highlighted deeply held values towards nature and development. In the case of western France, it was pointed out that biodiversity concerns are now taking over a model whereby the need and benefits of 'economic development' were not questioned. In PNG, there is still a strong assumption that neo-liberal free market development is necessary and a 'good thing'. In the Italian Alps, the effect of globalization and market prices that rule the working conditions of farmers was highlighted. Finally, invisible power also expressed itself in the way in which certain species, people or values were perceived as superior to others during the participatory process. Regarding species, in Italian Alps and the French Alps, the processes concern humans interacting with wolves, a keystone species with significant direct and indirect effects on ecological processes that is also charismatic and well represented in popular European culture (Douglas & Veríssimo, 2013). Regarding people and values, in the French Alps, there was the assumption that urban and neo-rural people's values with regard to nature were more important than the values of rural stakeholders. In Thailand, there was a contempt shown towards mountain communities who were viewed by some actors as uneducated and destroying natural resources.

Finally, 'systemic power' recognizes deeply embedded logics at work that shape and structure social and economic arrangements, such as patriarchy, structural racism, capitalism, and colonialism-imperialism (JASS, 2023). Together, these systems naturalize a dehumanizing dominant–subordinate hierarchy based on the exploitation of each other and nature, held in place by violence, whether physical or symbolic. While invisible power is about socialized and internalized beliefs, 'systemic power' is about the logic and codes that structure the systems of domination of our interaction, relationships and lives. In this case, powerless groups' awareness of their rights and interests is diminished by the adoption of a predominant perspective of the world. They might see domination over them as 'natural', or at least unchangeable, and therefore unquestioned. In our case studies, this systemic power was mentioned regarding the status of women within the Akha culture, an ethnic minority in Northern Thailand, and the balance between matrilineal and patrilineal forms of communal land ownership in PNG.

Expressions of power: Power to, with, within and for

'Power to' refers to the capacity of any individual to attain an end. In our case studies, 'power to' was addressed when mentioning the capacity of particular participants in relation to their legitimacy or credibility due to their position and past experience (French Alps), or their expertise and specific knowledge on impact mitigation and ecological compensation (western France). 'Power to' was particularly important in the design and preparation of the participatory process as different case studies included preparing certain groups prior to the workshops by training some team members in facilitation techniques (England), or training women in PNG to access skills and networks to be more empowered at the community level and strengthen matrilineal land management. Prior support including gaining knowledge and expertise on key issues and regulations, creating a shared understanding and vision, as well as learning the art of public speaking, negotiation and compromise (VeneKlasen & Miller, 2002) are critically important. 'Power to' can also be the outcome of processes that increase the participants' awareness of their own skills and power. In Thailand, it increased their awareness of their 'power to' negotiate with the national park and obtain more rights in forest management. In PNG, local and provincial government staff built their understanding of their role, responsibilities and skills, and the ability to work with others around their own power, specifically women.

'Power with' recognizes the collective strength of a group of people who are able to find common ground and collectively act together to attain shared ends (Arendt, 1969; Partzsch, 2017). 'Power with' was one of the strongest expressions of power in the different case studies we explored. It was expressed prior to the participative process in the case of England in the strong collaboration developed between the agency in charge of the participatory process and the designer and facilitation team. It also appeared in the thematic group organized between workshops in the case of the French Alps, where they talked and felt that they were being listened to, leaving their role and representation to go deeper 'at the human level'. During the workshops themselves, 'power with' occurred in different cases as people were able to

share power, validate acting as a collective and join forces to find solutions (England, French Alps, PNG, Thailand). This was also evident in PNG, when community groups that had been previously excluded from the decision-making process decided to collaborate together and form an alliance with the provincial government and some NGOs to stop oil palm development. 'Power with' was also obvious in the extension of workshops where, in England, they implemented a working group of 12 people to continue working on the action plan for a forest. In PNG, resource owners created a charitable association eligible for funding for local marine protected areas and decided as a group on a monitoring program. In the Italian Alps, 'power with' continued with a nature conservation NGO supporting an association around livestock guard dogs and webinars that opened a dialogue space for people to share their experience. 'Power with' shows the relevance of broadening the conception of power to be not just top-down and repressive; but also bottom-up and enabling (VeneKlasen & Miller, 2002). However, some case studies also discuss the limits of participatory processes, as an approach that could be considered a bit naive or optimistic, as the mobilizations that they create at local levels are not enough to influence higher decision-making processes (Thailand, Italian Alps). This discussion comes back to the dualism between the importance of agency and structure, and the dualism between power over and transformative power and the need to overcome it.

'Power within' refers to a person's sense of self-worth and self-knowledge; it includes the ability to recognize individual differences while respecting others (Kabeer, 1994). One expression of 'power within' clearly expressed in the case studies was the 'power within' of the facilitator and their capacity to accompany the group (England, French Alps). This was regarded as 'power within' since it necessitates that the facilitator trusts their own instincts and competence to determine how best to support the group, while also enabling the group in the process of 'conscientisation' of their own 'power within' and confidence in utilizing it (Freire, 1997; Gaventa, 2020). In other case studies, people's particular traits were highlighted such as a capacity to understand others, be empathetic, express themselves, placing them as a mediator in the group (French Alps). In Thailand, a charismatic community elder, a pioneer of the community forest, was particularly active and demonstrated 'power within' through his capacity to motivate others to come to workshops and act collectively. Finally, 'power within' was mentioned in the western French case study, where it was evidenced in the self-confidence of the technician in his expert position to propose a different solution, and his capacity to engage in a conflictual question.

Finally, 'power for' is the vision, values, and propositions that steer and inspire action and connections, and that move people towards the change they seek to create and practice (Bradley, 2020). In PNG, developing 'power for' was an objective of the project by using future visioning and scenario planning during workshops in order to generate agency and hopefulness among participants, and was a major outcome of the process for community members and for

the provincial government. In the French Alps, the process led to the creation of a common narrative on the presence of livestock guarding dogs in pastoral areas in the context of wolf comeback. 'Power for' is then an important dimension of participatory processes for biodiversity, since it allows stakeholders to find common ground and articulate a shared vision. 'Power for' can also be perceived as an indicator of how far biodiversity concerns have been integrated, and whether representation of 'beyond human voices' have been included.

Spaces of power: Closed, invited or claimed

Power manifests itself differently in different *spaces*—'those who were perceived by themselves or others as powerless in one space might be seen as more powerful in other spaces' (Gaventa, 2020, p. 8). 'Closed spaces' refers to confined decision-making spaces where leaders make decisions with little consultation or involvement (Gaventa, 2006). Most decisions related to issues such as trade, economy, defence, but also decisions in the workplace or political institutions are made in closed spaces. Biodiversity is no exception. In Thailand for example, the decision to build a new national park was made without consulting the local communities. While our case studies focus on participatory processes, there are still many decisions that happen in closed spaces, particularly regarding the organization and design of the participatory process itself (England, PNG, Italian Alps). In the Italian Alps for example, the place where the process occurred was decided beforehand by the group, with the final decision pertaining to an external committee. In PNG, the initial phase of understanding happened in a closed space among the team involved in the project, to decide who to select as key informants, and to ensure confidentiality in understanding power relations among informants. 'Closed spaces' also allow for clear decision-making prior to workshops between facilitators and the institutions initiating them.

'Invited spaces' occur when people are invited by a convener, usually some kind of authority, to participate, get involved or consulted on a decision (Gaventa, 2006). With the increase in forms of participatory governance, invited spaces can be ongoing or one-off. All the case studies involved invited spaces with some workshops with similar groups of stakeholders to create a safe place for them and develop trust (Thailand, French Alps) while other workshops involved more diverse stakeholders. An invited space meant that consideration of power had to be made when deciding who to invite. For example, in England, a process was based on identifying different kinds of knowledge of issues, opportunities and information needed by potential participants that was then integrated with a list of inclusion criteria (e.g. location, gender, age, ethnicity), rather than being based on prior influence or interest. The creation of participant lists can itself be the object of power struggles. In Thailand, for example, when the research team discussed the list of participants with the head of the communities, the latter tried to exclude the most marginalized villagers, claiming that it was useless to invite them. The

research team had to insist on inviting them. Invited space will also be strongly influenced by the absence of participants. In Thailand again, the national park director did not attend the final workshop with participants, using his power to leave an "empty chair" and to prevent the participants from taking any formal decisions on potential solutions.

'Claimed spaces' involve relatively powerless or excluded groups that create some form of autonomous or claimed space (Gaventa, 2006). They can be created by social movements and community associations but occur also on a more daily basis where people gather to debate, discuss and resist outside of institutionalized policy arenas. In Thailand for example, women came in greater number than had been invited, to take advantage of the space and create a group where they could have their say. In PNG, the land-use planning exercise initiated by the local communities in response to opposed oil palm development could also be viewed as a claimed-space. In western France, claimed spaces where opponents to the airport project occupied the area and organized weekly protests in local cities were an important context for the closed space discussions on how to address the project's foreseen impacts.

Levels of power: From local to global

Recognizing the disconnect between power and territory in an increasingly globalized world, Gaventa (2006) recognizes the importance of extending the focus beyond 'community power' to explore power dynamics and citizen action across various levels, ranging from the household and local levels to the national and global spheres. Decentralization has made the local level a key level for participation, but the national level is still considered the critical entry point for change (Blondiaux, 2022). Globalization and new forms of global governance have created a wide array of formal and informal, state and non-state spaces for participation and influence at levels beyond the nation state (e.g. the Post-2020 global biodiversity framework under the Convention on Biological Diversity; Friedman et al., 2022). This led to different questions regarding power as there are risks that campaigning at the global level, for instance, obscures local voices in their own claimed spaces (Gaventa & Mayo, 2009). In most case studies, different levels of power were intertwined: participatory processes occurred at the local level while, for example, some decisions that drove the conflict or decisions regarding the implementation of the action decided by the participatory processes, happened at the national level (England, French Alps, Italian Alps, Thailand). In the Western French case study, while the dialogue happened between a few people at a local level, the consequences of this dialogue could reach the national or international level through national and EU regulations. With the changing patterns of globalization, power must be understood in the inter-relationship of the different levels from local to global and strategies have to consider mobilizing across levels simultaneously, linking action at the supra-national (global), national and local levels (Gaventa, 2006, 2020).

Learning across power dimensions and case studies

Our examples illustrate how 'power over' or 'transformative power' are mobilized, using different expressions of power in diverse arenas during different steps of participatory processes for biodiversity outcomes. However, the different dimensions of power should not be perceived as separate entities, but rather as analytically distinguishable aspects within a given situation. They co-occur in similar situations: to be able to activate 'power with' in a collective will often mean having already some 'power to' or 'power within', and this power can be used as 'power over' to coerce or manipulate others. In Thailand, for example, the charismatic elder who held strong 'power within' was able to motivate the group, creating 'power with'. However, this could have had adverse effects since he was able to influence participants' views to strategically lead the process towards what he thought would be the best collective option, but without being totally empathetic to their specific needs. Visible and invisible power are also strongly connected. Visible power can enable or disable some people to engage, influencing hidden power. With time, a status quo might emerge which leads to the establishment of a form of acceptance that could be considered as invisible power. Similarly, closed, invited and claimed spaces are constantly interacting. Closed spaces can be opened up by claimed spaces (by social movements for example) to become invited spaces, with an increased legitimacy (Gaventa, 2006; Lukes, 1974, 2004, 2021). For example, the Western French case study illustrates an event that took place in a closed space regarding a process where invited spaces (public consultation) and claimed spaces (land occupation by development protester) existed. It shows how keeping a closed space allowed shared interests to be maintained, and was useful for the process to be more efficient, while its transparency upheld fairness. Invited space can also become the result of peoples' autonomous attempts to use their own fora to define their interests, as seen in the case in Thailand, enabling them to engage with the state. Our framework enables these forms to be distinguished and the complexity of power relations to be better understood and taken into consideration.

Our case studies, although very different, present some interesting commonalities – being mostly 'invited spaces' where two-way dialogue took place, and involving professional participatory process designers and facilitators, who, as pointed out by the 'power within', have an influence on the process and the outcomes—potentially allowing hidden or invisible issues to emerge and then influencing power across all the different dimensions Importantly, this highlights differences in the role and posture of facilitators, between those for example who believe in 'dialogue', considering the lack of genuine communication as the main obstacle to being able to work together, and those promoting a 'critical perspective' where power relations

are examined prior to the participatory process and a stand is taken towards those considered marginalized (e.g. with training women in PNG; Barnaud & van Paassen, 2013). Differences can be found as well between those striving for consensus and resolving conflict while others value pluralism and consider conflict as a necessary dynamic for transformation (Dryzek & Niemeyer, 2006; Marino et al., 2021).

DISCUSSION

The objective of this article was to explore the multiple dimensions of power in participatory processes regarding biodiversity to understand and address power dynamics in conservation initiatives. Through our adapted framework, we propose a systematic and useful diagnosis based on power theories which is easily accessible and applicable to real world case studies. In this final section, we discuss the specificity of addressing power in participatory processes focusing specifically on biodiversity conservation and the strengths and limits of our approach.

Biodiversity, participatory processes and power

Biodiversity conservation is an interesting issue in which to investigate power dynamics as it involves relatively clear trade-offs (e.g. with land conversion) and involves people making decisions at different scales (e.g. a landowner or local hunter vs. national legislation or international NGOs). Exploring the arenas of power in biodiversity conservation allow us to go deeper than the surface issue and the conflicting interests of diverse participants to question underlying power dynamics. Some business interests, through hidden power, can capture or collude with government authorities to define policy and implementation, resulting in privatization of natural resources and land grab (VeneKlasen, 2019). When this happens, it typically results in lost biodiversity. In other cases, conservation initiatives without proper participatory processes intervention could help reproduce uneven power by benefit economic elites at the expense of ordinary people (Persha & Andersson, 2014). The expressions of power, more specifically the 'power for' dimension, allows an understanding of how participants integrate nature and biodiversity in their vision, for example whether their values lean towards a vision that represents "nature for nature", "nature for society", or "nature as culture" (Pereira et al., 2020). This could complement existing research on the significance of pluralism in environmental governance, which advocates for a perspective that views the world as multi-natural (Büscher & Fletcher, 2020; Lorimer, 2012, 2015; Walsh, 2020). This perspective emphasizes the constructed and relational nature of what is perceived and valued as nature, advocating for a nuanced, context-specific understanding of conservation practices. Examining the process of negotiating the establishment of a series of national parks across Denmark, Walsh (2021) illustrates how institutional capacity, rooted in pluralistic governance structures,

a relational discursive framework, and an active culture of critical deliberation, has transformed the parks into dynamic forums for discussing nature-society relations within a broad, cross-sectoral, and multi-stakeholder context. The level of power also addresses the need to not only focus on the local level but to analyse how those participatory processes are embedded within national, or even international governance in a globalizing world and how action in one country might affect biodiversity conservation in another. Effective biodiversity conservation needs to be anchored in ecosystem-based management but must also consider multiple levels of governance and therefore multilevel participatory processes.

One of the largest challenges in participatory processes regarding biodiversity is the question of the representation of "beyond human voices" in those processes. There has been a growing interest in conservation governance research in the notion of biopower. Biopower refers to the exercise of power to control life itself (Foucault, 2003), and examines how certain species are given the opportunity to live, while other are left to perish according to the value assigned by human decision-makers to various species and landscape (Biermann & Anderson, 2017; Bluwstein, 2018). This perspective highlights the entanglement of conservation science with issues of nature, culture, space, and history, and the resulting impact on various species, ecosystems, and communities, providing insight on the relationship between power and knowledge (Bixler, 2013; Robbins, 2006; Van Assche et al., 2017). In other cases, nature is often seen as a resource that can be mobilized to express power. If we want to better explore the multiple dimensions of power in relation to biodiversity, we need then to broaden the concept of power that focuses on interdependencies between people to include the interactions between humans and their biotic and abiotic environment (Haraway, 2008; Latour, 1993; Stone-Jovicich, 2015). We need to stop seeing non-humans as objects and recognize that they hold some form of power and agency themselves by adopting "more-than-human" perspectives and methodologies (Shackleton et al., 2023). Embodied practice such as enactment, simulation, role play, body sculpting or forum theatre (see Pettit, 2019), could be used to include these more-than-human perspectives. While the mimicking of an animal's behaviour is often done in the context of environmental education, such approaches are not common in formal decision-making settings, for example in 'invited spaces' where convening authorities may resist recognizing that nature has some power and agency, or moves away from mainstream scientism.

The second largest challenge lies around the integration of multiple knowledge systems. Regarding participatory processes, our results highlight how participatory processes in biodiversity may sometimes overemphasize the need for data, putting a higher value on scientific knowledge regarding nature conservation. This link between power and knowledge has been interpreted by some authors as power being constituted through accepted forms of knowledge, scientific understanding and 'truth' (Foucault, in Rabinow, 1991). The "regimes of truth" is a direct outcome of scientific discourse and institutions, consistently reinforced and redefined through various channels such as the education system, media, and the ever-changing

landscape of political and economic ideologies. It is important to note that the pursuit of truth is not about uncovering an absolute truth that can be universally acknowledged, but rather it revolves around the contestation of the rules by which truth and falsehood are distinguished, and the specific power dynamics that become associated with the concept of truth (Foucault, in Rabinow, 1991). Instead of seeking overarching, context-independent transdisciplinary frameworks aimed at revealing objective truths, nature conservation requires strategies for context-specific learning and governance (Williams, 2018). These strategies should leverage knowledge pluralism and acknowledge the partial understandings of various stakeholders embedded in diverse local contexts. Regarding biodiversity, the knowledge one has will define the kind of nature one might want and the kind of biodiversity power(s) will be used to try to protect or restore (or not). While not questioning the importance of scientific expertise in some cases, the overemphasis of scientific data in participatory processes is a large obstacle to go beyond approaches that include nonscientific knowledge. Here, approaches such as storytelling, and cosmovisions that integrate multiple ways of knowing could provide support (Barnaud et al., 2023).

Strengths and limits of the application of the framework

The proposed framework's main usefulness is to raise critical consciousness on the multiple dimensions of power present in participatory processes, to enrich analysis, and allow some form of categorization that can help overcome the agency-structure dualism. While expressions of power can highlight the agency of actors to act, other dimensions serve as a bridge to reflect on structural power such as invisible and systematic power (Gaventa, 2020). It recognizes that the power of individuals to act is restricted and facilitated by their dependency on the social structures and events that bind them, while simultaneously, these structures and events are created by people's capacity to act (Haugaard, 2003). The framework allows us to analyse the arenas of power, along with the expressions of power and spaces and levels of power, and their interrelationships, shedding light on the dynamics of domination or resistance among actors (Gaventa, 2020). In comparison to previous environmental studies that have started investigating the multiple dimensions of power (Boonstra, 2016; Morrison et al., 2019; Shackleton et al., 2023), our framework gives more space to explore the capacity of power as a positive force for transformative change. It does so by recognizing the importance of reconnecting empowerment with the notion of power, where transformative power relates to 'the goal of fundamental change in power dynamics at all levels' (Bradley, 2020). It is important to note that transformation has also been strongly emphasized recently in sustainable studies and studies on socio-ecological systems as a way to address the current socio-ecological crisis and imply more radical, emergent, and long-term social-ecological changes (O'Brien, 2012; Pelling, 2010; Westley et al., 2013). In this paper, we deliberately decided not to

explicitly discuss this link as we focus on participatory processes for biodiversity, and it would open the discussion to another vast literature from other fields (see also Blythe et al., 2018). However, we believe the link between theories of transformative power and socio-ecological transformation would contribute to achieving a more just environmental transformation.

A key perspective of this work would be to examine which strategies could support the design of power-aware participatory processes in the field of biodiversity conservation. The initial framework proposed by JASS (2023), the Institute of Development Studies (Gaventa, 2006) and the Power Cube (https://www.powercube.net/) put forward how analysing power allows one to plan for advocacy and to find entry points for actions. For example, they propose change strategies for each contested arena of power where visible power will require some form of insider strategies such as lobbying or advocacy, hidden power will require enhancing people's voices and capabilities to speak up, mobilizing and organizing efforts to surmount barriers to participation, and utilizing research and media to contest the framing of issues. Addressing invisible power entails employing strategies such as raising awareness, engaging in adult education, conducting participatory research to validate people's knowledge, utilizing media and popular communication methods to challenge prevailing stereotypes and discourses, and implementing alternative approaches to schooling and socialization. They further argue that instead of relying on a single strategy, it is necessary to construct various interconnected strategies, applied in different sequences depending on the context (JASS, 2023), which at the end open the door to engage with systematic power and build a more unified movement for change. The difficulty lies in identifying these strategies and connecting them to address all aspects of power, and it is only through this process that transformative change may be achieved. While our analysis helps to reveal the differential capacity of individuals to exert influence ('power to', 'power with', 'power within', 'power for') in pursuit of their objectives within various arenas (visible power), hidden biases and exclusionary experiences (hidden power), and actions that either reinforce or resist social norms and beliefs (invisible power), our analysis was done a posteriori, when the participative process was over, which did not allow us to support the development of different strategies to address power. It would be valuable in the future to apply this framework prior to a participatory process to see how it might support the design of a power-aware process.

Furthermore, our analysis might be biased relative to the perspectives of who was reporting on the process, whether researcher involved in the project, participant or project facilitator (Barnaud & van Paassen, 2013; Fritz & Meinherz, 2020; Sterling et al., 2017). Our perspective on power is greatly influenced by our personal position and identity. Seeking to comprehend power dynamics outside of ourselves means recognizing that we are part of the power structure despite the discomfort that arises from critically examining our own power (Barnaud et al., 2016). One way to address this bias might be to repeat the analysis of the multiple dimensions of power with the framework by interviewing different participants of the same

participatory process for biodiversity. This also reinforces the necessity to reflect on our own biases, specifically for the facilitators, and to ask how we integrate power asymmetries (Barnaud et al., 2016).

Finally, we are aware that presenting the duality between power over and transformative power can be considered too normative (i.e. 'power over' being negative and 'transformative' power being positive). 'Power over', however, is not necessarily negative, and can sometimes be necessary, as for example bans on pesticides that are known to be harmful to both humans and ecosystems. It does not have to be coercive or domineering and may instead come out of legitimate processes in the context of representative governance and democratic decision-making processes. Moreover, there is actually a never-ending dialectic relationship between power over and transformative power, where transformative power is used to counter power over, but might in turn become power over someone else. In the case of conservation, while biodiversity interests still suffer from 'power over' by dominant economic development interests, the collective movement to defend nature allows individuals to rally and advocate for new laws or protected areas, which can be perceived as 'power over' other marginalized interests (Adams & Mulligan, 2012). Furthermore, this dialectic interaction between power over and transformative power should not be seen as a single overarching power dynamic, at the risk of ignoring that expressions of power can and should exist independently of relationships based on domination and resistance. This echoes the reflections of the feminist Amy Allen who noticed that feminist conceptualizations of power tend to focus either on power as domination or as empowerment. According to her, this dual vision must be overcome 'if feminists are to develop an account complex enough to illuminate women's diverse experiences with power' (Allen, 1998, p. 21). Whilst power should be seen as a fluid, ever-changing concept that is always present (Russell, 1938), our framework enables some of its complexity to be grasped. While it might be a simplified understanding, it paves the way towards more power-aware participatory processes.

To conclude, power understood as a complex network of interconnected social processes, norms, culture, and discourse is more challenging to discern compared to power depicted as dominating or coercive (McGee, 2019). The evolving dynamics of power requires practitioners to maintain agility in their strategies for collective action, and be responsive to new ways in which power re-shapes itself, while researchers must also ensure that their scholarly field remains dynamic (Gaventa, 2020). Addressing power in its complexity and developing strategies for empowerment requires researchers and practitioners to move towards frameworks such as the one proposed here, suggesting 'usable theory' and building on future case studies of widely varying examples from across the world to become a 'theory frame' along with other frameworks (see Rueschemeyer, 2009 in the comment on the *powercube*, from Lukes, 2021). Integrating biodiversity in the debate around power will highlight normalized discourses around science and practice that focus only on human agents, their interest and alliances, and a particular format of scientific knowledge to move towards building new narratives, knowledge and truth claims and embodied practice of learning and action.

CONFLICT OF INTEREST STATEMENT

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

DATA AVAILABILITY STATEMENT

For this paper, we utilized data from interviews conducted with the co-authors. Due to the sensitive nature of the information gathered, the interview data are not publicly accessible. Readers seeking further details on any of the case studies discussed by the co-authors during the interviews can reach out directly to the lead author for additional information.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

Table A1. Characteristics of the participatory processes for the 6 case studies.

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