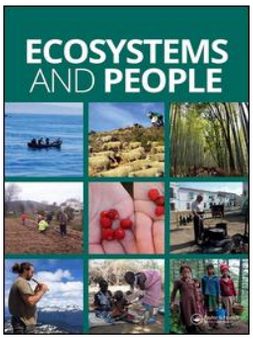

Ecosystems and People

ISSN: 2639-5916 (Online) Journal homepage: www.tandfonline.com/journals/tbsm22

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To cite this article: Mara de Pater (2025) Functions and dimensions of pluralism in transformative governance for biodiversity: a review, Ecosystems and People, 21:1, 2587965, DOI: 10.1080/26395916.2025.2587965

To link to this article: https://doi.org/10.1080/26395916.2025.2587965

Published online: 23 Nov 2025.

ECOSYSTEMS AND PEOPLE
2025, VOL. 21, NO. 1, 2587965
https://doi.org/10.1080/26395916.2025.2587965

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Functions and dimensions of pluralism in transformative governance for biodiversity: a review

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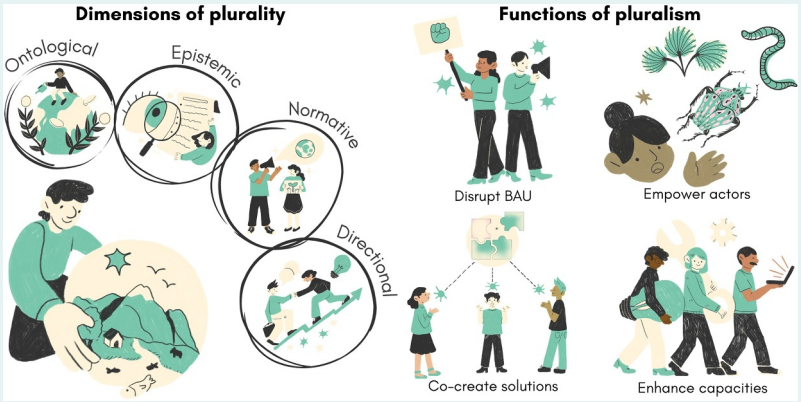
ABSTRACT

Biodiversity governance has thus far failed to foster the transformative changes needed to address the biodiversity crisis. Instead, it has often reinforced dominant paradigms that have contributed to the crisis. Research underscores the importance of adopting the guiding principle of 'pluralism' in governance to become more effective at driving transformative changes. However, the field of transformative governance currently lacks a guiding definition and framework to approach pluralism. This review offers a definition of pluralism that emphasizes that pluralism in governance means recognizing and legitimizing diverse ways of being, knowing, perceiving and relating to the world in decision-making and collective action. It introduces a guiding framework with four relevant dimensions of plurality – ontological, epistemic, normative and directional. These four dimensions, respectively, reflect diverse human–nature relations, knowledge systems, value orientations and future imaginaries in transformative biodiversity governance. Additionally, the review identifies four functions pluralism can serve when adopted and implemented in transformative governance: disrupting business-as-usual, empowering marginalized actors, co-creating novel strategies and solutions, and enhancing capacities to deal with complexity and uncertainty. The review argues that substantial transformations of governance structures are necessary to drive transformative changes, both changes in governance design and processes to align with the guiding principle of pluralism and changes that go beyond pluralism.

GRAPHICAL ABSTRACT



KEY POLICY HIGHLIGHTS

- Adopting and implementing the principle of 'pluralism' in governance for biodiversity can enable its transformative impact by disrupting business-as-usual, empowering marginalized actors, co-creating novel strategies and solutions, and enhancing capacities to deal with complexity and uncertainty.
- Pluralism in biodiversity governance goes beyond diverse participation and the representation of diverse interests, it requires governance processes to recognize and legitimize diverse ways of being, knowing, perceiving and relating to the world of both human and other-than-human actors.
- Pluralism is challenging to implement and requires more empirical and action-oriented research and experimentation in practice.

ARTICLE HISTORY
Received 6 September 2024
Accepted 6 November 2025

EDITED BY
Nadia Sitas; Marta Berbés-Blázquez

KEYWORDS
Transformative change; biodiversity governance; ontologies; marginalized perspectives; imaginaries; knowledge systems

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1. Introduction

Biodiversity is declining at an unprecedented rate, threatening social-ecological systems as we know them (Diaz et al. 2019). While alarming, immediate transformative changes in the impact on and exploitation of ecosystems can still turn the tide on the rapid loss of biodiversity and even lead to restoration and creation of healthy ecosystems (IPBES 2019). Thus far, biodiversity governance efforts have fallen short of addressing the root causes of biodiversity loss and have instead predominantly reproduced and enacted dominant paradigms that have driven the biodiversity crisis (Diaz et al. 2019; Massarella et al. 2021; Depuy et al. 2022; Kok et al. 2022). To effectively address the complex challenges of biodiversity loss by fostering transformative changes, governance must undergo fundamental changes (Patterson et al. 2017; Kok et al. 2022; Pascual et al. 2022).

In the 2024 IPBES Transformative Change Assessment, and earlier research, pluralism was presented as one of the prescriptive principles that could guide such changes in governance (Leventon et al. 2021; Visseren-Hamakers et al. 2021; IPBES 2024). However, the conceptualization of plurality and pluralism remains ambiguous and varyingly understood across the field. In general, plurality refers to the existence of diversity, while pluralism is a normative stance that values the existence of diversity. What diversity is considered varies across the field of transformative governance. For example, some research understands plurality as a diversity of interests and expertise of actors involved in governance (e.g. Delina and Sovacool 2018), others take a narrow focus by either considering a plurality of value orientations (e.g. Raymond et al. 2023) or a plurality in knowledge systems (e.g. Turnhout et al. 2020; Visseren-Hamakers et al. 2021). In contrast, others adopt an all-encompassing approach, often leaving implicit the distinctions between elements. This shows the need to identify what aspects – or dimensions – of plurality are most relevant for transformative governance for biodiversity. Moreover, while the need for pluralism is emphasized in the field of transformative governance, its functions are not always articulated in a comprehensive way. This underscores the need to outline the primary functions that pluralism serves within transformative governance.

While these fragmented interpretations are not inherently contradictory and can be integrated, they provide only a partial understanding of the concept of pluralism, allowing for various interpretations of the term. As observed in the past, when aspirational terms, such as 'sustainability' or 'transformation', are left open to interpretation, they are at risk of being instrumentalized by those seeking to preserve the status quo (Scoones 2007; Feola 2015; Blythe et al. 2018). Hence, it is important to engage with the meaning of such aspirational concepts. Therefore, this article presents a narrative literature review to conceptually enrich and clarify approaches to pluralism within the field of transformative governance, which resulted in a guiding definition and framework of pluralism in the context of transformative governance. The review led to the following definition of pluralism in the context of governance: striving for pluralism in governance involves recognizing and legitimizing the diverse ways of being, knowing, perceiving and relating to the world held by both human and other-than-human actors, incorporating them into decision-making and collective action through thoughtful consideration and representation. The review identified four key dimensions of plurality: (i) ontological: human–nature relations; (ii) epistemic: knowledge systems; (iii) normative: (relative) value of nature and (iv) directional: imaginaries of the future. As well as four functions pluralism can serve when adopted and implemented in transformative governance: (i) disrupting business-as-usual; (ii) empowering marginalized actors; (iii) co-creating novel solutions and strategies and (iv) enhancing capacities to deal with complexity and uncertainty. These four dimensions of plurality and four functions of pluralism are presented in a framework meant to provide guidance for researchers and practitioners in studying and designing and doing governance while striving for transformative changes for biodiversity.

Governance in this case is understood as a 'combination of formal and informal and public and private institutions (including norms, rules, and rulemaking systems) across actor networks at multiple levels' striving for decision-making and collective action (Pascual et al. 2022, 688). In the case of biodiversity, this understanding encompasses arrangements ranging from, for example, formalized global governance united under the Convention of Biological Diversity (CBD) to an informal group of actors managing a local community garden. Subsequently, transformative governance is understood in relation to the definition of transformative change by IPBES (2024): 'fundamental, system-wide shifts in views, structures, and practices' (IPBES 2024, 12). Therefore, transformative governance is seen as governance striving to foster transformative changes which involves creating conditions for transformative change, steering transformative changes and adopting novel governance systems characterized by transformative internal processes (Patterson et al. 2017). Transformative governance is relevant for biodiversity governance as it aims to make governance systems adept in contributing to tackling the biodiversity crisis through the necessary transformative changes

across ecological, social, political and economic dimensions to drive transformative strategies (Visseren-Hamakers and Kok 2022; Gosnell et al. 2025).

2. Methods

This review aims to contribute to an actionable understanding of pluralism within the field of transformative governance, particularly as it relates to biodiversity. Rather than offering a determinate definition or fixed framework, the goal is to develop a theoretical lens that can guide the empirical study of transformative governance cases and aid the design of such governance. To do so, the review followed an iterative, inductive–deductive process in which both a conceptualization of pluralism and a conceptual framework emerged over time. The literature review presented in this article unfolded alongside my ongoing empirical research into transformative governance for biodiversity rooted in principles of transformative action-research and grounded theory. This embeddedness shapes the conceptual development (McGhee et al. 2007; Dunne 2011), making the resulting insights specific to the context of transformative biodiversity governance while maintaining broader relevance to transformative change.

The literature review drew on a narrative synthesis approach. This approach focuses on gathering and interpreting findings from diverse sources in a way that allows for conceptual integration, particularly when the literature spans multiple disciplines and methodologies (Pautasso 2019). Rather than aiming for uniformity or direct comparability, a narrative synthesis emphasizes interpretation, contextualization and the identification of underlying patterns, tensions and meanings across varied bodies of knowledge (Sukhera 2022). I chose a narrative literature review to effectively integrate diverse theoretical perspectives from the social sciences and humanities into transformative governance. This approach allowed for an iterative inductive–deductive process where conceptual categories could develop and refine through engagement with a broad spectrum of literature.

2.1. Step 1: initial literature selection

While presented here as a four-step process for clarity, in practice, the review evolved iteratively, with steps overlapping and informing one another. The process began with an exploratory search on Google Scholar and Scopus using terms such as plural* AND (governance OR participation OR conservation) AND (transition* OR transform*) AND (biodiversity OR sustainab*). Variations were used to probe a range of the literature (e.g. substituting 'biodiversity' with 'nature' or 'landscape', 'plurality' with 'diversity' and 'participation' with 'co-production' or 'inclusion'). Literature was included based on its relevance to biodiversity, governance and relevance to dimensions of plurality or functions of pluralism, prioritizing research aligned with or closely bordering the field of transformative governance, for example, literature related to transitions. In practice, this meant that literature was included if it met the following criteria. (i) If it addressed biodiversity, with broader discussions on environment and sustainability considered relevant due to their inherent connections to biodiversity. (ii) If it related to governance. (iii) If it gave conceptual insight into pluralism. Titles, abstracts and full texts were screened with a view to their potential contribution to understanding pluralism in transformative governance for biodiversity.

2.2. Step 2: emergent identification of dimensions and functions

Instead of using predefined categories, the review inductively identified key dimensions and functions of pluralism by clustering themes from the initial literature set. Through repeated reading, synthesis and comparison, four core dimensions of plurality and main functions of pluralism emerged. These were further specified in relation to biodiversity governance, reflecting both theoretical insight and the practical concerns arising from the broader research context.

2.3. Step 3: expanding and deepening the literature base

In response to emerging gaps and questions, the review was expanded through snowballing and more targeted search strategies. For each identified dimension and function, specific queries were developed (e.g. plural* AND governance AND (values OR normative) AND (biodiversity OR nature)). In this phase, the original inclusion criteria were intentionally relaxed to allow for the incorporation of literature beyond the immediate domain of transformative governance. The focus shifted towards conceptual depth and relevance to specific aspects of pluralism, which meant branching out to fields like political ecology, science and technology studies (STS), as well as critical social science and posthumanism fields in which pluralism is debated. Their relevance became evident as many articles already touched on key concerns in transformative governance, albeit using different terminologies. These insights informed the refinement of search strategies and guided further snowballing, ultimately helping to deepen and specify the review's conceptual focus on

pluralism within the context of transformative governance for biodiversity.

2.4. Step 4: synthesis and framework development

The literature gathered during this extended phase was integrated with earlier findings, resulting in a total of 93 articles and book chapters. Each cluster of dimensions and functions was revisited and refined, with particular attention to conceptual interconnections. In parallel, a working definition of pluralism in transformative governance for biodiversity was developed. This definition, like the framework, emerged gradually through engagement with literature and empirical insights and was refined through iterative synthesis. The result is a theoretically grounded and contextually situated framework and definition that can guide empirical studies into transformative governance of biodiversity.

3. Results

3.1. Conceptualizing pluralism in transformative biodiversity governance

The literature on pluralism within transformative biodiversity governance can be categorized into three main approaches: advocating for pluralism as a prescriptive principle in governance (e.g. Matulis and Moyer 2017; Visseren-Hamakers et al. 2021), contrasting dominant realities with alternative perspectives across various dimensions (e.g. Depuy et al. 2022; Waddock 2024) and empirically demonstrating impacts of pluralism on biodiversity governance (e.g. Premauer and Berkes 2015; Fisk et al. 2024). These approaches vary in their conceptualization of pluralism, focusing on normative or procedural orientations and centring on diverse perspectives. Despite fragmented interpretations, these focuses are complementary and can enrich one another.

Based on the narrative review, I propose to define pluralism in transformative governance as the recognition and legitimization of diverse ways of being, knowing, perceiving and relating to the world, as held by both human and other-than-human actors. It involves incorporating these into decision-making and collective action through thoughtful consideration and representation. This approach embraces a broad spectrum of realities and perspectives that guide actors in navigating and shaping their environments, acknowledging the active roles of both human and other-than-human actors in biodiversity transformations (Blanco-Wells 2021; Hebinck et al. 2023). These other-than-human actors encompass not only non-human species but also entities such as landscape elements, geological formations, technological systems and transcendent entities (Price and Chao 2023).

To enhance the understanding and application of pluralism, I present a framework that identifies four key dimensions (ontological, epistemic, normative and directional) and four functions, which elucidate the potential significance of adopting and implementing pluralism in governance. Although distinct, these dimensions and functions are deeply interconnected. While some studies concentrate on a single dimension or function, most explore multiple, interrelated aspects. To enhance conceptual clarity and guide practical applications, the framework explicitly differentiates between each of the dimensions and functions. This distinction can aid sensemaking with regards to pluralism, it prevents conflation and helps researchers and practitioners identify gaps in knowledge and practice.

3.2. Dimensions of plurality in transformative biodiversity governance

Through the narrative literature review, four dimensions of plurality emerged as most relevant in the context of transformative biodiversity governance. The ontological, epistemic, normative and directional dimensions construct the diverse realities and perspectives of actors, respectively, focusing on human–nature relations, knowledge systems, (relative) value of nature and future imaginaries. They are highly interlinked, with each underpinning the others, and are shaped by context and experiences, evolving over time. Understanding plurality in biodiversity and transformative changes requires disentangling these dimensions. Explicating contrasts among them aids in understanding what shapes different realities and perspectives. Distinguishing between dimensions helps to identify which ones hold greater dominance, recognize marginalized ones and assess their perceived legitimacy. Table 1 provides a comprehensive overview of their application to biodiversity transformation themes. While relevant dimensions may vary by theme and context, this framework serves as a guide to study plurality in transformative biodiversity governance, rather than a definitive framework.

3.2.1. Ontological: human–nature relations

The first dimension identified in the literature is ontologies, which refer to the nature of existence, relationships between beings and perceptions of reality (Hadzic et al. 2009; Kessler 2016; Pascual et al. 2021; Depuy et al. 2022). Ontologies underpin three other dimensions of plurality, which are influential in shaping governance approaches: knowledge systems,

Table 1. Overview of dimensions of plurality in transformative governance for biodiversity.

Dimension and visualization	Broad understanding	Applied to biodiversity transformations	Plural approach in transformative biodiversity governance
Ontological 	Ways of being, understandings of existing and relating to other beings/the world	Human–nature relations	Recognizes different human–nature relations and approaches to relations between humans and nature (e.g. dualist, holistic, hierarchical) *Key literature*: Depuy et al. (2022); Vidal et al. (2024); West et al. (2024)
Epistemic 	Ways of knowing, knowledge, knowledge practices, ways of knowing and interrogating reality	Knowledge systems	Recognizes different systems of knowledge, knowledge practices and ways of understanding social-ecological systems (e.g. academic, essentialist, experiential, ancestral) *Key literature*: Caniglia et al. (2021); Cornell et al. (2013); Turnhout (2024)
Normative 	Value orientations are represented through individual and collective life goals, guiding principles and judgements	The (relative) value of nature	Recognizes differences in value orientation towards nature (e.g. instrumental, intrinsic and relational value orientations) and the difference in relative value attributed to nature *Key literature*: Durán et al. (2023); Mattijssen et al. (2020); Raymond et al. (2023)
Directional 	Includes desired futures, insights and assumptions about plausible and possible futures	Imaginaries of the future	Recognizes different notions about preferable and possible futures and assumptions about processes of biodiversity transformations *Key literature*: Chao and Enari (2021); Kothari et al. (2019); Stirling (2009); Waddock (2024)

value orientations and imaginaries (Pascual et al. 2021; Depuy et al. 2022).

Ontologies differ widely across cultures and contexts, yet a modernist ontology, rooted in colonization and globalization, has become dominant in governance (Jaramillo-Aristizabal 2022). This modernist ontology emphasizes a duality between humans and nature, portraying them as distinct and separate entities (Escobar 2010; Depuy et al. 2022). This separation perpetuates a biodiversity governance that leads to the exploitation and commodification of nature, market-based conservation strategies and spatial segregation of human and natural systems (Gebara et al. 2020; Depuy et al. 2022; Raymond et al. 2023).

Within biodiversity transformations, ontologies are often understood through the lens of human–nature relations. These can range from dualist to oppositional, subordinate, interdependent, relational and holistic understandings of being and relating (Muradian and Pascual 2018; Massarella et al. 2021; Vidal et al. 2024). Dominant ontologies tend to be anthropocentric, viewing humans as separate from and superior to the natural world (Pascual et al. 2017).

In contrast, relational and holistic ontologies, as described by Escobar (2010), emphasize interconnectedness and reciprocity, offering alternatives to the exploitative practices driven by modernist ontologies. The concept of the *pluriverse* can be seen as opposed to modernist and universal approaches (Kothari et al. 2019). It advocates for diverse ways of being and relating to the world, emphasizing relational and holistic ontologies that are often marginalized while also acknowledging the diversity within these ontologies. These ontologies highlight the interconnectedness between humans, nature and socio-economic systems (Escobar 2010; West et al. 2024).

By adopting a variety of ontologies instead of relying on anthropocentric and dualist perspectives, biodiversity governance can more accurately represent the complex and diverse relationships between humans and nature (Raymond et al. 2023). This would also allow the recognition of other-than-human ontologies (Yaka 2024). Meaning that other-than-human actors are recognized in their ways of being and relating honouring their agency and significance (Blanco-Wells 2021).

Based on the reviewed literature, the ontological dimension can be understood as encompassing the diverse ways of being and relating to other actors, entanglements and the world. When operationalized in the context of plurality within biodiversity governance, it involves considering and legitimizing different ways of being as well as the varied approaches to human–nature relations.

3.2.2. Epistemic: knowledge systems

A second key dimension emphasized in the literature is epistemic, focusing on knowledge systems (e.g. Cornell et al. 2013). Epistemology refers to knowledge, knowledge practices and the ways actors understand and interrogate realities (Teffo 2011; Ganeri 2019; Raymond et al. 2023). These knowledge systems fundamentally shape how

individuals and collectives perceive the world. Moreover, which knowledge is considered legitimate largely influences inclusion and decision-making processes within governance (Löfmarck and Lidskog 2017). Therefore, interdisciplinary and plural epistemic approaches in governance are increasingly seen as essential for addressing the complexities of transformative changes. Pascual et al. (2017, 8) show that epistemic plurality in biodiversity governance means recognizing that 'people perceive and judge reality, truth and knowledge in ways that may differ from the mainstream scientific lens'. Examples of classifications include academic, constructivist, essentialist, experiential, indigenous and ancestral systems (Visseren-Hamakers et al. 2021; Raymond et al. 2023).

Knowledge systems are diverse, dynamic and continuously evolving. Individuals often integrate multiple-knowledge systems which makes personal classification less meaningful. Yet, at the collective and governance level, environmental governance often relies heavily on positivist natural-science approaches (Pascual et al. 2021) and 'technocratic and reductionist framings' (Turnhout 2024, 4). This is especially true in biodiversity governance, where natural scientific perspectives tend to dominate over other knowledge systems (Sandbrook et al. 2013). Fisk et al. (2024) highlight this dominance in wildlife conservation, while Hoelting et al. (2024) observe that 'knowledge' in conservation is frequently equated with natural-scientific views of ecosystem services, treating it as a universal truth.

Such technocratic practices can marginalize alternative knowledge systems that provide context-specific insights that could aid situated transformative governance (Gavin et al. 2018; Rivera-Ferre et al. 2021). The literature strongly advocates for integrating social sciences, humanities, Indigenous and Local Knowledge (ILK) and experiential knowledge into biodiversity governance. ILK offers valuable insights from (Indigenous) communities, rooted in generations of interaction with local ecosystems, enhancing sustainable resource management and biodiversity conservation (Turner et al. 2022; Gebara et al. 2023). Other-than-human epistemologies recognize the knowledge and agency of other-than-human entities, challenging anthropocentric views and dominance in decision-making (Price and Chao 2023).

In summary, the epistemic dimension can be understood as the plurality of ways of knowing and the diversity of knowledge practices through which actors make sense of reality. When applied to biodiversity governance, it means considering different knowledge systems and practices as legitimate, thereby diversifying ways of understanding social-ecological systems.

3.2.3. Normative: (relative) value of nature

The third key dimension of plurality highlighted in the literature is the normative dimension, referring to values and value orientations (Leventon et al. 2021; Durán et al. 2023; Raymond et al. 2023). Values can be understood as guiding 'judgements regarding the importance of something in "specific" contexts' (Raymond et al. 2023, 3). Values play a central role in shaping governance processes, being influential in decision-making and influencing the priorities set by individuals and collectives (Kenter 2016; Gavin et al. 2018). Most prominent in the considered literature were value orientations towards nature and their relative values compared to other values.

A broad typology of value orientations towards nature, commonly discussed in the literature, distinguishes between instrumental, intrinsic and relational values (Chan et al. 2016). Instrumental values emphasize the benefits that humans or societies derive from nature, such as resources, ecosystem services or economic returns. This orientation views nature primarily in terms of its utility. In contrast, intrinsic values focus on the inherent worth of nature, independent of any benefit to humans, emphasizing that nature deserves protection simply because it exists (Chan et al. 2016; Durán et al. 2023). Relational values highlight the deep connections and reciprocal relationships between humans and nature, often rooted in cultural and individual attachments to specific places or the broader sense of belonging, oneness and reciprocity with the natural world (Mattijssen et al. 2020; Pereira et al. 2020).

Currently, an instrumental valuation of nature dominates biodiversity governance (Hartmann and Pearson 2024). This value orientation frames nature as a resource, asset or service to meet human needs. While this orientation may support conservation efforts by linking them to economic or societal benefits, it risks oversimplifying the complex relationships between humans and ecosystems, potentially neglecting ethical or cultural considerations (Depuy et al. 2022). A pluralistic approach in governance involves recognizing and accommodating diverse value orientations and enables the coexistence of different ways of valuing nature, whether instrumental, intrinsic or relational (Raymond et al. 2023).

Besides these different value orientations towards nature itself, governance is shaped by how biodiversity and ecosystems are valued relatively to other societal priorities. Often, materialistic and individualistic values, along with an emphasis on economic efficiency and growth, are prioritized over the intrinsic value of nature. This creates a hierarchy where nature is frequently deprioritized

in favour of these other values, impacting decision-making processes and policy outcomes (Elbakidze et al. 2018; Armitage et al. 2020; Pascual et al. 2022; Arias-Arévalo et al. 2023). A pluralistic approach would mean to explicitly consider diverse relative valuations of nature that impact decision-making.

The review shows that the normative dimension means diverse individual and collective value orientations, including life goals, guiding principles and judgement. Operationalizing this in the context of biodiversity governance means considering different value orientations towards nature and towards the relative value of nature as legitimate.

3.2.4. Directional: imaginaries of the future

The fourth dimension, directionality, concerns how actors engage with the future. This engagement can be explicit, through visions, scenarios and strategic pathways, or implicit, embedded in assumptions about possible or desirable futures and the processes leading to them. Notions of the future significantly influence governance trajectories (Muiderman et al. 2022). In transformative governance, especially within complex, uncertain and political contexts, these future imaginaries play a crucial role, making directionality a key dimension. This concept is central to transformation- and transition-oriented research, though it may be referred to by different terms such as envisioning (Frantzeskaki et al. 2012), imaginaries (Chao and Enari 2021; Laterra et al. 2021) and foresight (Muiderman et al. 2022).

Imaginaries related to biodiversity transformations emerge from a blend of normative preferences for the future state of biodiversity, assumptions about plausible scenarios and ontological beliefs about the drivers of change. These beliefs include ideas about processes shaping change (e.g. processes of contestation, technological innovation and legislation), the extent of agency in managing transformative changes and mental models of transformation (Stirling 2009; van den Broek et al. 2024).

The notion of development or sustainable development is dominant in thinking about futures. Stirling (2009) critiques such broad, unitary notions of progress, as sustainable development, as it marginalizes alternative pathways and limits the possibilities to even imagine other futures. Similarly, Kothari et al. (2019) and Demaria et al. (2023) problematize the dominance of modernist, single-track visions of development or progress that overlook a diversity of alternative just and sustainable futures – building on Escobar's (2011) critique on development. Other literature critiques the dominance of certain narratives in foresight. For example, Rutting et al. (2024) note the prevalence of neoliberal and sustainable developmental approaches in scenarios, while Waddock (2024) underscores the dominance of human-centric imaginaries. In short, dominant future imaginaries can be characterized as human-centric and focused on neoliberal sustainable development.

The dominant approaches fail to account for the complexity, context-specificity and multiplicity of transformative changes required, especially the relationship with and agency of other-than-human actors and entanglements (Leach 2015; Gavin et al. 2018; Sklair 2021). The impact of dominant future-oriented ideas on decision-making and collective action highlights the importance of diversifying imaginaries.

In short, the directional dimension comprises desired futures, insights and assumptions about plausible and possible futures. Applying this dimension to transformative governance leads to the understanding of directional plurality as diverse ideas about preferable and possible futures and diverse assumptions about processes of transformative changes.

3.2.5. Overview of the four dimensions of plurality in transformative governance for biodiversity

The review of the different dimensions of plurality showed how ontological, epistemic, normative and directional dimensions construct diverse realities and perspectives of actors. In relation to transformative biodiversity governance human–nature relations, knowledge systems, the (relative) value of nature and future imaginaries were considered most relevant. To provide a comprehensive overview, the four dimensions and their application to the theme of biodiversity transformations are synthesized in Table 1.

3.3. Functions of pluralism in transformative governance

This section explores the functions that pluralism can play within transformative governance, addressing a common gap in the literature where the functions of pluralism are often implicit, underdeveloped or treated narrowly. Rather than viewing pluralism as a driver of transformation on its own, I consider how it contributes to the effects of transformative governance: how it enables or shapes transformative processes and outcomes.

Pluralism does not directly deliver transformative change or create new governance systems. Instead, it acts as a guiding principle – as emphasized by IPBES (2024) – around which governance actors can design processes. Its functional value lies in how it is adopted and implemented in decision-making and collective action: by recognizing, legitimizing and acting upon

diverse realities and perspectives, pluralism becomes operational within governance arrangements.

The review identifies several potential functions of pluralism in this context. These functions clarify what is meant when pluralism is advocated for in transformative governance and help explain the purposes it serves when adopted and implemented in transformative governance. The next sections will elaborate on these functions and show how they connect to the four dimensions of plurality: ontological, epistemic, normative and directional. Importantly, it is a non-exhaustive overview of the main functions identified in the literature, and these functions are not mutually exclusive: they often co-exist within governance practices but require different strategies and institutional designs. Distinguishing between them aids structuring research and guiding governance interventions effectively.

3.3.1. Disrupting business-as-usual

Dominant paradigms can have a perceptual and structural power in governance, as they influence issue framing, goal-setting and collective actions. The perpetuation of dominant paradigms often leads to justifying the exploitation and commodification of biodiversity (Burman 2017; Raymond et al. 2023), prioritizing economic growth over environmental stewardship and equity (Depuy et al. 2022). In doing so, they marginalize alternatives through delegitimization (Raymond et al. 2023), thereby perpetuating the root causes of the biodiversity crisis (Depuy et al. 2022). The section on dimensions emphasized dominant paradigms in biodiversity-related governance. For the ontological dimension, anthropocentric and dualist worldviews are dominant. Epistemologically, natural science and universal technocratic approaches frequently marginalize qualitative social sciences, humanities, ILK and other-than-human ways of knowing. Normatively, the instrumental valuation of nature tends to overshadow intrinsic and relational values with nature receiving lower priority than other (e.g. materialistic) values. Directionally, human-centric and neoliberal sustainable development imaginaries are prevalent.

Adopting and implementing pluralism as a guiding principle to governance processes is suggested to have the potential to disrupt entrenched business-as-usual paradigms in biodiversity governance. Recognizing alternative realities and perspectives can help surface, explicate and challenge underlying views and assumptions (Yates et al. 2017; Fickel 2023; Salomon et al. 2023). Challenging dominant paradigms and considering alternatives encourage a more reflexive governance model. However, a major challenge to overcome is the inclination of governance to seek consensus or appear neutral (Kenis et al. 2016). This inclination can lead to presenting dominant paradigms as neutral and objective, while labelling marginalized perspectives as political or radical. Such framing can hinder attempts to challenge and change established practices (Schulz and Siriwardane 2015).

By challenging these paradigms – in and outside the governance arrangement – adopting pluralism might aid in challenging existing power dynamics. Plurality and power are deeply intertwined as structural and discursive power dynamics influence which realities and perspectives are recognized and considered legitimate, who gets to make decisions and which issues and strategies are deemed legitimate (Arias-Arévalo et al. 2023). Discursive power dynamics can be reinforced or disrupted through legitimacy when certain realities and perspectives are granted authority and credibility, while others are delegitimized (Arias-Arévalo et al. 2023; Lenzi et al. 2023). Pereira and Bina (2020) and Yates et al. (2017) emphasize the importance of creating spaces for dialogue across different realities and perspectives. Dialogue and deliberation have the potential to transform centralized, top-down decision-making dynamics, often tied to technocratic and neoliberal paradigms, into more participatory and deliberative dynamics. While there is potential to challenge power dynamics within governance processes, some research highlights significant obstacles. Bixler et al. (2015) emphasizes the importance of acknowledging that governance exists within a broader institutional and societal context characterized by structural power imbalances, which can perpetuate and influence internal processes. As Leventon et al. (2021, 5) argue, 'we must intervene in broader underlying systems that undermine recognizing plural values (e.g. the pursuit of profit in connected systems and underlying paradigms)'. Failing to address these paradigms, and the structures that support them, limits the transformative impact of governance efforts, as transformative changes require fundamental alterations to societal structures (Loorbach et al. 2017; Leventon et al. 2021).

Fostering plurality across the four dimensions identified in this review offers specific ways to potentially disrupt business-as-usual. Focusing on human–nature relations and values might shift attention from superficial interventions to fundamental system characteristics (Leventon et al. 2021). Including relational ontologies and highlighting cultural, ethical and spiritual values could expand the scope of biodiversity governance to emphasize stewardship and reciprocity, re-evaluating what is considered valuable and whose values matter (West et al. 2018; Durán et al. 2023; Raymond et al. 2023). Incorporating place-based and experiential knowledge systems highlights the limitations of dominant knowledge systems and creates

pressure to broaden the scope of knowledge (Pereira and Bina 2020). Encouraging plural visions of progress might help bridge the *imagination gap* caused by dominant, universal and human-centric notions of the future (Angheloiu et al. 2020; Riedy and Waddock 2022).

In summary, disrupting business-as-usual through pluralism involves challenging dominant paradigms and potentially challenging existing power dynamics that uphold these paradigms, both by explicitly questioning them and by posing alternatives.

3.3.2. Empowering marginalized actors

Adopting and implementing pluralism in biodiversity governance has the potential to empower marginalized actors both in the process and the outcome of governance (Gavin et al. 2018). Recognizing the realities and perspectives of marginalized actors could contribute to procedural and recognition justice. Procedural justice ensures that marginalized groups have access to decision-making forums and mechanisms(Pickering et al.2022), while recognition justice acknowledges the realities and perspectives of marginalized actors, including those in governance (Dawson et al. 2017). These considerations are essential for groups historically ignored or marginalized (Lenzi et al. 2023). Importantly, these justice approaches can extend beyond human actors, involving the recognition of other-than-human actors and entanglements like ecosystems, thereby contributing to multispecies justice (Chao and Enari 2021; Thomsen et al. 2022). The inclusion of the realities and perspectives, as well as the agency of other-than-human actors, is recognized as essential for effectively addressing biodiversity transformations (Daigle and Vasseur 2019; West et al. 2020).

Authors like Pickering et al.(2022) show that combining justice and biodiversity goals might, in the process, require navigating trade-offs between conservation goals and social justice. However, they argue that embracing pluralism could ultimately empower marginalized groups, potentially leading to more socially just and effective conservation outcomes (Pascual et al. 2021; Pickering et al. 2022). Premauer and Berkes (2015) show this through a case study into co-governance between Indigenous peoples and park managers in Makuira National Park, Colombia. They showed that it strengthened conservation efforts and self-governance of Indigenous Peoples, despite conflict and trade-offs that arose.

The review highlighted a common challenge in adopting pluralism in governance: it is often conflated with participation, merely approaching it as participation can lead to tokenism and the exclusion of actors that cannot actively participate (Burman 2017; Beck and Forsyth 2020). In the context of governance, plurality does not require direct participation – realities and perspectives can be recognized and considered legitimate even if they are not voiced by a participating actor. Therefore, it is more relevant to explore which realities and perspectives are deemed legitimate and how they can be represented, rather than concentrating solely on participation (Beck and Forsyth 2020; Reyes-García et al. 2022). Although representation has its own limitations, it can misrepresent or appropriate marginalized voices; it may also facilitate the recognition of actors who are unable to participate directly, thereby challenging existing hierarchies, if done in an accountable and reflexive manner (Alcoff 1991). Challenges in participation can arise around both human and other-than-human actors. In the case of other-than-human actors, their inclusion requires 'embracing humility, relinquishing epistemic mastery, and accepting the unknowability of other-than-human beings' (Price and Chao 2023, 187)

Governance designed around pluralism generally aims to empower marginalized actors beyond the governance arrangement itself, by seeking impact beyond governance processes, challenging structural societal barriers that marginalize certain actors (Leventon et al. 2021; Kok et al. 2022) and through its prefigurative role (IPBES 2019). However, Bixler et al. (2015), Leventon et al. (2021) and Zafra-Calvo et al. (2020) note that governance arrangements tend to fail in addressing barriers to pluralism and power asymmetries in and outside the governance arrangement, which often undermines efforts to empower marginalized actors and can lead to reinforcing existing power dynamics.

The review shows that the four identified dimensions have distinct roles in potentially empowering marginalized actors. A pluralistic approach to ontologies might broaden the concept of biodiversity and human–nature relationships, thereby overcoming the misunderstandings that Pascual et al. (2017) observed between how biodiversity is understood by conservationists and marginalized actors. For example, Htoo et al. (2023) demonstrate how recognizing the diverse ontologies of the Karen people in Myanmar and conservationists can foster more just and inclusive conservation practices that benefit both human and other-than-human actors. Additionally, recognizing diverse ontologies can bring visibility and legitimacy to actors historically marginalized, particularly those of Indigenous and local communities (Sullivan 2017). Reflecting diverse ways of knowing in governance systems, such as legitimizing knowledge systems grounded in the lived experiences of marginalized actors or communities, advances epistemic justice (Salomon et al. 2023). Validating these knowledge systems and recognizing them as complementary to others

might strengthen the role of marginalized communities in governance. This, in turn, could foster equitable partnerships in governance processes and promote intellectual autonomy of those communities (Orlove et al. 2023). Similarly, incorporating plural valuations of nature into decision-making processes might lead to more equitable and sustainable conservation outcomes (Zafra-Calvo et al. 2020). In connection to the directional dimension, participatory futuring methods are advocated to enable marginalized actors or communities to voice their ideas and shape locally driven, ecologically integrated futures (Hensler et al. 2021). Including diverse realities and perspectives through such futuring methods might lead to prioritizing ecological, social well-being and equity (Baumann et al. 2023).

In summary, the function 'empowering marginalized actors' can be interpreted through the lenses of procedural and recognition justice. This empowerment can occur in two ways: by enabling active participation and involvement of marginalized actors, communities or entanglements, and by ensuring representation of these marginalized actors – whether human or other-than-human – within governance structures.

3.3.3. Co-creating novel strategies and solutions

Adopting and implementing pluralism in biodiversity governance is widely recognized as a potential means to achieve more effective and context-sensitive outcomes when adopted and implemented as a guiding principle (Hartmann and Pearson 2024). Strategies informed by plural realities and perspectives might be better attuned to specific ecological and social realities, which can enhance their acceptance and foster shared responsibility (Gavin et al. 2018; Salomon et al. 2023). For instance, Fisk et al. (2024) demonstrate through case studies how integrating Indigenous worldviews into wildlife management practices can lead to outcomes that are just, attuned to the local context and potentially more effective. Moreover, pluralism can enhance transformative strategies within governance by fostering diverse realities and perspectives that serve as catalysts for innovative strategization (Miller and Wyborn 2020; Cortés-Capano et al. 2022). By shifting away from uniform, generalized solutions or technocratic methods, pluralism encourages innovation through co-creative processes, collaboration and deliberation (Delina and Sovacool 2018; Caniglia et al. 2021; Turner et al. 2022). Nevertheless, several authors point out a relevant pitfall: opening up to diverse solutions and directions might lead to conscious indecision under the guise of pluralism (Smith and Stirling 2007; van Mierlo et al. 2020) or paralysis in decision-making (Pascual et al. 2017; White and Lidskog 2023). Both potentially distracting from and impeding on transformative governance processes and outcomes.

The four identified dimensions are all incorporated in this function. Future imaginaries are crucial for developing novel strategies, as they encourage exploration beyond conventional paradigms like economic growth or sustainable development (Wyborn et al. 2020). Plural imaginaries emphasize imagination and creativity to address biodiversity loss and envision sustainable futures. By incorporating diverse realities and perspectives, governance systems can explore multiple transformative pathways simultaneously, enhancing their adaptive capacity and resilience in tackling complex biodiversity challenges.

In these imaginaries, the ontological and normative dimensions play a role. Leveraging plural valuations can be instrumental in co-creating diverse future imaginaries and in reflecting on whose values and visions are represented (Pereira et al. 2019; Scoones et al. 2020). For example, the Nature Futures Framework exemplifies the co-creation of diverse and inclusive future imaginaries by leveraging plural value orientations and integrating diverse worldviews and values, thereby developing multiple locally appropriate and potentially sustainable visions for biodiversity governance (Kuiper et al. 2022; Durán et al. 2023). Similarly, ontological diversity in imaginaries, such as adopting relational approaches to nature, might shift governance from anthropocentric to ecosocial imaginaries that emphasize interconnectedness and shared responsibility and recognize other-than-human realities (Waddock 2024).

Involving diverse knowledge systems can lead to reframing and (re)negotiating the problems governance seeks to address, potentially shifting the types of solutions pursued (Gavin et al. 2018; Pascual et al. 2021). The coexistence of diverse knowledge systems – such as weaving natural and social sciences with local expertise – can, through co-production, serve as a source of transformative, culturally appropriate and context-specific solutions (Miller and Wyborn 2020; Cortés-Capano et al. 2022). Particularly, ILK is highlighted as a valuable, yet often overlooked, source for developing appropriate and innovative solutions and strategies (Reid et al. 2021; Turner et al. 2022).

In short, the review shows the potential of pluralism to open governance up to new future pathways and enhance the creation strategies and solutions that are just and effective in a specific social and ecological context, as well as transformative.

3.3.4. Enhancing capacities to deal with complexity and uncertainty

Biodiversity challenges and transformative changes are inherently complex, uncertain, context-

dependent and ambiguously perceived (Linnér and Wibeck 2021; Lazurko et al. 2024). In the literature, it is suggested that adopting and enacting pluralism as a guiding principle might enhance capacities to deal with this complexity and uncertainty.

Integrating a plurality of knowledge systems, including local, experiential and ancestral knowledge, can potentially enhance governance by offering diverse ways of perceiving and understanding social-ecological systems, and the complexities inherent to their transformation (West et al. 2020; Visseren-Hamakers et al. 2021; Maechler and Graz 2022). Deliberation among diverse realities and perspectives could foster social learning, enabling governance actors to reflect on assumptions, and generate insights where dominant systems fall short (de Kraker 2017; Caniglia et al. 2021). Non-dominant knowledge systems, particularly those from marginalized or Indigenous traditions, may fill critical knowledge gaps, potentially strengthening governance resilience while preventing undesirable outcomes (Gavin et al. 2018; Muiderman et al. 2022; Baumann et al. 2023; Moallemi et al. 2023). For example, in a river restoration case in India, a knowledge integration model was developed to include local knowledge and practice alongside scientific knowledge, which showed the potential to move beyond the existing controlling governance approach towards more precautionary and adaptive approaches (Brierley et al. 2024).

The uncertain future inherent in transformative change necessitates anticipatory governance approaches, supported by the anticipation of a variety of potential futures (Chaffin et al. 2016; Vervoort and Gupta 2018; Muiderman et al. 2022). The literature emphasizes the importance of co-creating and envisioning multiple future scenarios, as these processes facilitate social learning, which is crucial for addressing complex challenges (Pereira et al. 2019). By embracing pluralistic thinking, governance systems can respond to unexpected developments with resilience and flexibility. This approach involves exploring alternative pathways, identifying intervention points and considering unintended consequences, thereby strengthening governance arrangements to be more robust and prepared for emerging challenges (Muiderman et al. 2022). Unlike a single linear trajectory, pluralism embraces a spectrum of possible futures.

Plurality in human–nature relations and valuation of nature might help address complex political and ethical questions, such as acceptable loss and trade-offs, potentially making governance processes more reflexive (Wyborn et al. 2021). Especially in evaluating measures, where current evaluative practices are often limited, predominantly focusing on financial valuations while neglecting diverse notions of human–nature relationships and intrinsic or relational values of nature (Arias-Arévalo et al. 2018). Expanding these frameworks could foster evaluative practices that are more relational, reflexive and better suited to transformative governance (Arias-Arévalo et al. 2018; Termansen et al. 2023). However, Jacobs et al. (2023) highlight the pitfalls of plurality in biodiversity valuation, where plural valuation, implemented within existing biodiversity conservation efforts, often fails to weave non-dominant values and knowledge systems, potentially leading to co-option. The intended empowerment of actors is frequently undermined by existing power inequalities. The authors suggest that effective plural valuation requires specific conditions and capacities to prevent negative consequences.

This review shows that enhancing capacities to deal with complexity and uncertainty means that through the adoption and implementation of pluralism, complementary knowledge might be mobilized, reflexivity promoted and a plurality of potential futures embraced.

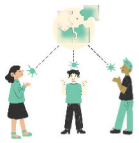
3.3.5. Overview of the four functions of pluralism in transformative governance for biodiversity

The review of the different functions of pluralism showed that the adoption and implementation of pluralism as a guiding principle in governance can disrupt business-as-usual, empower marginalized actors and co-create novel solutions and strategies, and enhance capacities to deal with complexity and uncertainty. Table 2 synthesizes the four functions of pluralism, providing guidance for studying and designing biodiversity governance aimed at transformative changes.

4. Discussion

Biodiversity governance efforts, so far, have largely failed at fostering transformative changes (Diaz et al. 2019; Massarella et al. 2021). Achieving transformative governance capable of tackling the complex and persistent challenges of biodiversity loss requires a fundamental shift in governance (Kok et al. 2022). This review aimed to deepen the understanding of pluralism by defining it in the context of transformative governance for biodiversity as recognizing and legitimizing the diverse ways of being, knowing, perceiving and relating to the world, as held by both human and other-than-human actors, and integrating these realities and perspectives into decision-making and collective action through careful consideration and representation. By detailing dimensions of plurality and functions of pluralism, the review provided a guiding framework to study, design,

Table 2. Overview of functions of pluralism in transformative governance for biodiversity.

Visualization	Function	Main understanding *Adopting pluralism as a guiding principle in transformative governance can help . . . .*
	**Disrupt business-as-usual**	challenge dominant paradigms by explicitly questioning, by posing alternatives and by changing existing power dynamics that uphold these paradigms.
	**Empower marginalized actors**	empower marginalized actors by representation and participation of realities and perspectives of marginalized actors and entanglements.
	**Co-create novel solutions and strategies**	create novel strategies and solutions that are just, effective and transformative in a specific social and ecological context.
	**Enhance capacities to deal with complexity and uncertainty**	enhance capacities by mobilizing complementary knowledge, fostering reflexivity and embracing diverse potential futures.

and do transformative governance.

4.1. Moving from prescriptive guiding principle to practice

Most of the reviewed literature approach pluralism from a theoretical standpoint, often framing it as a corrective to more uniform or technocratic approaches. While this supports a generally positive view of pluralism's potential, it also highlights a gap: there is limited empirical research on its practical implementation in governance. Raymond et al. (2023) also noted this limitation, pointing out that existing literature often provides fragmented insights that tend to be prescriptive rather than descriptive. The few critical approaches to pluralism included in the review showed that realizing the identified four functions is complex and challenging. Adopting and implementing pluralism requires fundamental changes to governance design and processes (Leventon et al. 2021). This involves creating conditions where diverse realities and perspectives of both human and other-than-human actors can be recognized and legitimately considered and adapting processes of decision-making and collective action. However, these fundamental changes present considerable challenges, including resistance to change, entrenched power dynamics and the difficulty of balancing diverse interests. The limitations of current research underscore the need for more empirical and action-oriented studies with practical and creative experimentation in collaboration with governance actors, both incumbent and alternative. Such research could focus on identifying successful strategies for integrating pluralism into governance frameworks, understanding the barriers to implementation and developing tools and methodologies that facilitate this implementation.

4.1.1. Pluralism is not a silver bullet solution

Despite its outlined potential, pluralism should not be understood as the sole feature that shifts biodiversity governance arrangements into transformative governance. There are limits to the contribution of pluralism to transformative processes and outcomes, and achieving transformative governance requires more than simply broadening the range of realities and perspectives considered. Scholars such as Pascual et al. (2022) and Visseren-Hamakers et al. (2021) have identified other key principles for transformative governance, including integrative, multifunctional, multiscale, equitable, directional and reflexive approaches. To adhere to these principles, existing governance structures must undergo profound reconfigurations or transformations to effectively address biodiversity challenges (Visseren-Hamakers and Kok 2022). Emphasizing pluralism as a guiding principle alone is insufficient; it must be accompanied by other deep and systemic changes.

With widespread transformations of governance lacking so far, the question remains whether it is likely that existing governance structures will adhere to these principles? And whether adhering to these principles is enough to shift the dominant paradigm

and thereby drive transformative changes? These questions require us to examine the broader context of governance systems and paradigms.

4.1.2. Pluralism raises questions about legitimacy

Engaging with transformative change and plural realities and perspectives is inherently political and likely encounter resistance from those in power that are challenged or undermined (Scoones et al. 2020; de Geus et al. 2022). However, avoiding engagement with pluralism is equally political, as it often implies a choice to uphold the status quo – a decision that should not be mistaken for neutrality. Moreover, pluralism as a guiding principle is inherently tied to inclusion and exclusion, which raises important questions of legitimacy and accountability. Who decides on inclusion and exclusion? How are these decisions being made? It, therefore, demands a reflexive approach (de Geus et al. 2022).

While legitimacy is typically sought from authorities or democratic processes, the biodiversity crisis transcends traditional constituencies in both geographical scale and temporality, affecting past and future generations and include other-than-human actors and ecosystems (Hendriks 2009; Lawrence 2022). This shift necessitates a re-evaluation to which governance arrangements should be accountable (Eckersley 2020). Thus, accountability and legitimacy should be pursued through alternative means, involving processes that establish clear criteria for actor inclusion or exclusion and promote transparency. These changes can enhance the governance arrangement's legitimacy and accountability, necessitating fundamental shifts in governance and political systems, as well as further research into effective methods for maintaining accountability and legitimacy.

4.2. Pluralism as a means to transformative change or the other way around?

This review, from the outset, framed pluralism as a means to transformative changes by establishing it as a guiding principle for transformative governance. The primary aim was to offer practical insights that could inform the study and design of governance processes focused on fostering transformative changes. As a result, the review adopts an instrumental approach to pluralism, viewing it as a tool in service of transformative changes. This perspective contrasts with Stirling's approach. He advocates for the emancipation of transformations and sees transformative changes as a means of 'determining plural human and ecological ends' (Stirling 2015, 67). Similarly, authors like Demaria et al. (2023), Escobar (2011) and Kothari et al. (2019) argue that there is not one singular transformation, a problem to be tackled or a direction to pursue, but rather a plurality of transformations leading to 'a world where many worlds fit' (Escobar 2015, 460). Escobar (2018) refers to this as 'pluriversal transitions' which looks at processes of transitions or transformative changes as multiscalar, nested and relational, thereby moving away from the conventional hierarchy of prioritizing global scales over changes at local scales.

Rather than opposing this view, the review seeks to provide pragmatic guidance to researchers and practitioners to work with pluralism, not by rigidly defining what pluralism is or is not, nor by strictly determining its dimensions or functions, but rather by providing a guiding definition and framework that may help navigate conceptual ambiguity and offer direction for researchers and practitioners. This approach does not oppose Stirling's call for transformative changes towards plural ends; instead, it could play a prefigurative role in achieving those plural ends. By recognizing and legitimizing diverse realities and perspectives, governance that adheres to the guiding principle proposed by pluralism could facilitate a pluralization of transformative changes. Consequently, the review adopts a narrower focus on plurality and pluralism to provide pragmatic, action-oriented guidance.

4.3. Constraints to the approach of the review

Besides the narrow approach to pluralism, other limitations to the approach in this review are worth mentioning. First, the review was conducted alongside empirical research into transformative biodiversity governance, rooted in the principles of grounded theory and transformative action-research. These research contexts – local and regional European settings – as well as my epistemic commitments associated with grounded theory and action-research, influenced the selection of relevant literature. On the one hand, this approach helped create a framework that aligns with the needs of researchers and practitioners within these transformative governance contexts. On the other hand, I may have overlooked dissimilar contexts and alternative epistemologies, potentially leading to blind spots. Additionally, my position as a scholar from Western Europe at an institute in Western Europe influences this study. It has been a challenge to broaden my understanding of which perspectives exist and should be included in the biodiversity transformations debate. I recognize that I am also susceptible to these blind spots. As a result, this review may have produced different outcomes than the one shaped by varied contexts and guided by diverse ontologies and epistemologies.

Second, the review primarily includes academic literature in English from the fields of transformative governance and biodiversity governance. While the

snowballing method provided deeper insights into emerging themes, it may have resulted in an overrepresentation of aligned research, perpetuating certain biases and neglecting alternative perspectives. Efforts were made to minimize this effect by using varied search strings in conjunction with snowballing. Still, the review lacks contributions from particularly Indigenous peoples and local communities who have advocated and practiced pluralism (IPBES 2024). This led to a limited understanding of the concepts of transformation, biodiversity and governance, as well as restricted views on pluralism and plurality.

5. Conclusion

Through a narrative literature review, this article aimed to deepen the understanding of pluralism within transformative governance for biodiversity. By detailing its dimensions and functions, the review showed that pluralism in governance involves recognizing and legitimizing diverse ontologies, epistemologies, normative and directional orientations from both human and other-than-human actors, integrating them into decision-making and collective action to challenge dominant views, empower marginalized actors, co-create transformative strategies and enhance the capacity to manage complexity through diverse knowledge and reflexivity. However, the review also underscored the limitations of pluralism, such as implementation challenges that may limit its transformative impact, and pointed out the scarcity of empirical evidence and practical insights needed to advance beyond pluralism's promise as a guiding principle. Consequentially, the review calls for more empirical, action-oriented research and creative and practical experimentation in practice. The review shows that pluralism should be employed within governance both as a tool to facilitate transformative changes and as a prefigurative element that supports pluralized trajectories of transformative changes. The review concludes that pluralism alone is insufficient for achieving transformative governance capable of addressing the biodiversity crisis; instead, a comprehensive reconfiguration of governance systems and processes is essential to ensure pluralism is applied in a legitimate and accountable manner, while also adopting and implementing other principles of transformative change.

Acknowledgements

I would like to thank Aniek Hebinck and Derk Loorbach for their support and feedback, Aisha Villabona for their illustrations and Ferguson for proofreading.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This project has received funding from the European Union's Horizon Europe research and innovation program under the grant agreement [No 101059662] (BIONEXT).

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