



ELSEVIER

Editorial overview: Leveraging the multiple values of nature for transformative change to just and sustainable futures – Insights from the IPBES Values Assessment

Unai Pascual, Patricia Balvanera and Michael Christie



Current Opinion in Environmental Sustainability
2023, 64:101359

<https://doi.org/10.1016/j.cosust.2023.101359>

1877–3435/© 2023 Published by Elsevier B.V.

Unai Pascual

Basque Centre for Climate Change (BC3), Sede Building 1, Scientific Campus of the University of the Basque Country, 48940 Leioa, Basque Country, Spain Ikerbasque Basque Foundation for Science, Bilbao, Basque Country, Spain Centre for Development and Environment, University of Bern, Switzerland
e-mail: unai.pascual@bc3research.org

Unai Pascual is Ikerbasque Research Professor at the Basque Centre for Climate Change. He has engaged in IPBES activities as co-Chair of the Values Assessment (2018–2022), as Lead Author of the Global Assessment, and as member of the Multidisciplinary Expert Panel (MEP). He is member of various global scientific steering committees including the Global Land Program. His work centres on global environmental issues, including biodiversity loss and climate change, mainly from an interdisciplinary ecological-economics perspective.

Patricia Balvanera

Instituto de Investigaciones en Ecosistemas y Sustentabilidad, Universidad Nacional Autónoma de México, Morelia Michoacán, Mexico Unidad Académica de Estudios Territoriales, Instituto de Geografía, Universidad Nacional Autónoma de México, Mexico

Patricia Balvanera is a full professor at the Institute for Ecosystems and Sustainability Research of the National Autonomous University of Mexico. She was a co-chair of the IPBES Values Assessment from 2018–2022. She explores the role of biodiversity in contributing to human well-being, co-designs more sustainable food systems through local transdisciplinary processes, and develops conceptual frameworks and

Addressing the nature crisis requires systemic transformations in society, especially regarding what and how political and economic decisions are made, and understanding how we take everyday decisions that affect our relations towards nature. Underpinning transformational change towards more just and sustainable futures thus requires assessing the role that nature's values play in decision-making across scales and how valuation methods and approaches can best guide decisions. Given the diversity of the values of nature, it is key to map out what those values look like, and how they are formed and evolve over time in relation to institutions (i.e. society's conventions, norms and rules). This special issue draws on the IPBES Values Assessment published in 2022 and engages with key questions about the role of values and valuation of nature for transformative change towards more just and sustainable futures. The special issue presents papers that review topics about how to conceptualise value diversity and undertake valuation to guide decisions geared towards transformative change. It also focuses on how power, justice and socio-environmental conflicts intersect with nature's values, and the role of diverse values in conservation and development policy instruments.

Nature's values, transformative change and sustainability

Current policy responses to the nature crisis tend to be reactive, generally addressing negative impacts on nature once they have occurred, and incremental, taking one small step at a time. Such responses primarily focus on addressing the negative consequences of nature's diminished ability to deliver (mostly) material benefits to people [18]. Policy measures are also often based on economic and technological solutions that attempt to nudge human activities away from current deleterious practices [9,20,22]. Yet, it is increasingly recognised that in order to create the necessary conditions for society to navigate into more just and sustainable future pathways, (deep) transformative changes are required that address the root drivers of the nature crisis. This would involve system-wide reorganisations across technological, economic and social factors [27]. Such a transformative change inevitably entails focusing on key underpinning aspects of human-nature relations, such as societal goals and values [5,20].

In 2018, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) launched a methodological assessment on the diverse values and valuation of nature (known as the Values Assessment) to explore the many ways nature is valued (and undervalued) by people and the implications of these values for decision-making about nature [3,26]. The Values Assessment was approved by the IPBES Plenary in July 2022. This approval of the assessment reflects that global science

monitoring strategies, at local to global scales.

Michael Christie

Aberystwyth Business School, Aberystwyth University, Aberystwyth, Wales, UK

Mike Christie is Professor of Environmental and Ecological Economics at Aberystwyth University, specialising in the economic and social valuation of biodiversity and ecosystem services. He was co-Chair of the IPBES Values Assessment (2018–2022). He is interested in exploring ways in which valuation methods, such as stated preference methods, might be enhanced to improve people's preference revelation. Other areas of expertise include outdoor recreation, tourism, agri-environment, and economic impact.

and policy concur (at least discursively) in terms of acknowledging that addressing the global biodiversity crisis implies confronting substantial barriers tied to powerful vested interests favouring the status quo that emphasises market values of nature. It also proclaims the need for recognising and integrating a wider diversity of values about nature into decision-making and in particular leveraging those values that are aligned with sustainability outcomes [26]. This message from the Values Assessment has influenced international agreements such as the Convention on Biological Diversity's Kunming-Montreal Global Biodiversity Framework that has called for incorporating nature's multiple values into local to global actions [8].

The Values Assessment has also shown that transformative change towards more just and sustainable futures requires the activation of a set of four values-centred leverage points (VLPs) [18]: 1) adequately recognising the values of nature by undertaking plural valuation; 2) meaningfully including the diverse values of nature into decisions, by embedding valuation into inclusive (i.e. fair and democratic) decision-making processes; 3) undertaking institutional changes based on reformulating policy and regulations to consider nature's diverse values; 4) shifting personal beliefs, values and paradigms that underpin how people relate to nature and to each other in more just and sustainable ways [18] (Figure 1).

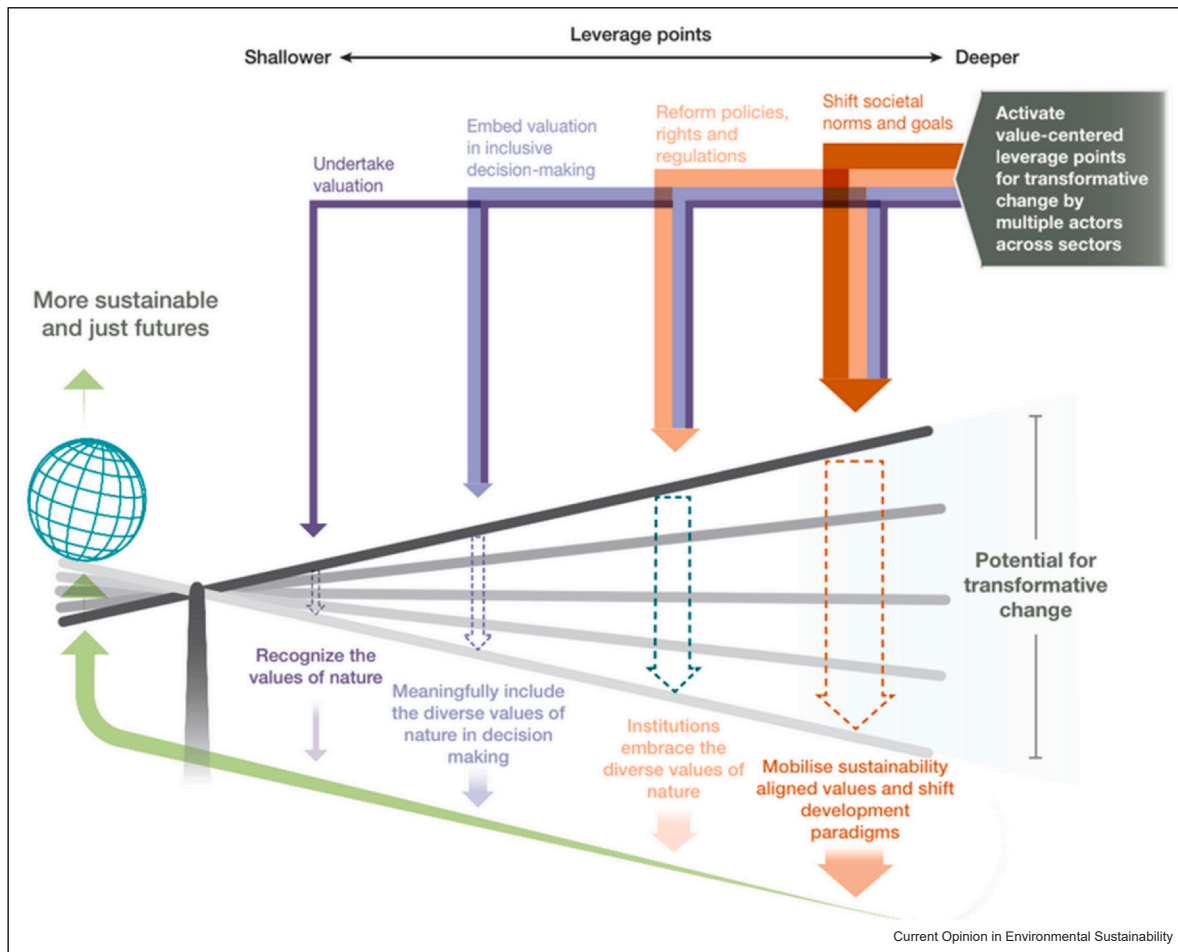
These VLPs are not independent steps but rather complementary. The specific mix of strategies to activate the leverage points would depend on the social–ecological context (e.g. what are the key features of nature, society and their current state), the institutional setup (i.e. what norms and rules underlie the decision-making arena), the actors involved (e.g. who will be affected or benefited by decisions about nature and consideration of alternative interpretations of concepts such as sustainability and justice [18].

Just activating VLPs alone would not automatically propel transformative change as this would also require other levers associated with the allocation of responsibilities (e.g. the principle of common but differentiated responsibility), and rights (e.g. property rights). However, the fundamental role of values for transformative change has not been sufficiently addressed in science and policy [18]. A focus on VLPs thus involves engaging with value plurality as well as tempering values such as individualism, consumerism and materialism, while promoting sustainability-aligned values such as stewardship and care, as well as embracing alternative (instead of non-dominant) visions of a good life [6,9,18].

The special issue wheel

This special issue includes a set of 14 papers based on in-depth reviews of different strands of the literature on the values of nature and provides evidence and novel ideas that support the importance of the four VLPs as part of broader transformative strategies needed to address the nature crisis, and each discusses how such VLPs may be activated or — how far short society is in terms of activating them. The papers rely on academic and grey literature as well as on case studies from around the world. The volume is structured into five complementary blocks, with each block exploring the fundamental role of nature's values in transformative change (Figure 2).

Figure 1



VLPs for transformative change towards sustainability and justice.
Source: Ref. [26].

Conceptualising values of nature

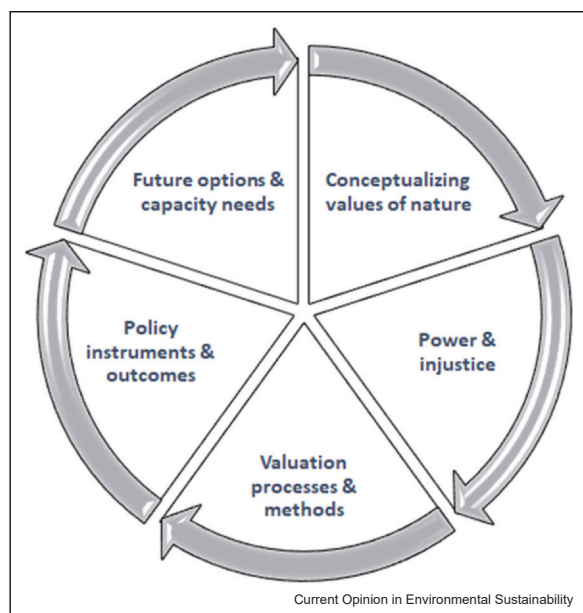
The concept of value has multiple interrelated meanings and therefore it is defined differently depending on the disciplinary lens that it is applied [19]. Raymond et al. [23] present the typology of nature's values used in the Values Assessment and illustrate how it can be used as a tool to better understand how multiple value conceptualisations shape decisions about nature. They clarify how the typology helps to better understand different value expressions that coexist for a given natural entity. For example, there may be divergent (or overlapping) *specific values* (i.e. instrumental, intrinsic and relational values) of a given forest for different people. In addition, it explores the relationship between different value categories. For instance, *broad values* (i.e. life goals and guiding principles) are determined by *worldviews* (i.e. the lenses through which people perceive and interpret the world), which then are expressed contextually as *specific values*, and can be measured using

value indicators. Also, the way these different values influence behaviour is explored. Gould et al. [10] address this issue by assessing different theories of human behaviour and explore how these theories link to values and value-related constructs, including values as principles (e.g. life goals) and values as worth (e.g. preferences, priorities). They then critically examine the notion of *value-action gap*, that is, when people's actions do not fully align with their values, and explore approaches to address this gap.

Power and (in)justice

Since values form, evolve and are expressed in conjunction with exercising 'power' (i.e. the capacity of actors to mobilise agency, resources and discourses to achieve a given goal), it is fundamental to pay attention to the interactions among values, and different forms of power as well as the multi-dimensional notion of justice. Such interactions are key in socio-environmental conflicts and

Figure 2



The wheel of the special issue and the five interacting broad topics.

thus understanding them can help identify the challenges and opportunities to manage conflicts underpinned by value clashes [18]. The companion papers by Arias-Arévalo et al. [2] and Lenzi et al. [16] focus on a values perspective on social power and justice, respectively. Arias-Arévalo et al. [2] present a typology of power relations linked to values of nature that help differentiate among two different types of power in society: discursive and structural power. They argue that addressing these dimensions of power can contribute to a VLP approach to transformative change. More specifically, *discursive power* relates to the discourses and knowledge that shape worldviews and values. Discursive power includes the power to frame or communicate issues and in turn privilege some values over others (i.e. *framing power*). *Structural power* highlights how historic-specific sociocultural, political and economic systems result in the prioritisation of certain values. Linked to structural power is *rule-making power* (i.e. the power to create rules, and to direct them towards certain interests and values) and *operational power* that refers to who holds formal or informal rights to nature and what and whose values are embedded within these rights structures. Lenzi et al. [16] clarify three key dimensions of justice in the context of nature's values: i) *distributive justice* related to the fair sharing of the benefits and burdens of access to nature, ii) *procedural justice* about the fairness of decision-making processes and iii) *recognition justice* linked to the acknowledgement of the different values of different actors. Their paper helps understand

how promoting these different dimensions of justice as broad values can help achieve sustainability transformations. Then Ozkaynak et al. [17] focus on alternative analytical approaches to facilitate dialogue for assessing diverging worldviews and broad values that underpin socio-environmental conflicts. They assess the role of i) *consensus analysis* to assess how the ideas and values about nature are convergent or divergent; ii) *ethical analysis* to identify and socialise the moral judgements at stake in decisions; iii) *framing analysis* to dissect what is more or less important for people and to propose alternative accounts in ways that disputants can subscribe to; and iv) *worldviews assessments* to explore the different meanings and the meaning-making systems that inform how people interpret, enact and co-create reality. They point out that transforming any socio-environmental conflict, also involves addressing the power inequalities by designing institutions and fostering capacities to embed and use these approaches in policymaking. Jacobs et al. [13] add to this the risk that valuation exercises have been used — deliberately or not — as a tool for decision-making.

Valuation processes and methods

The assumption of rationality used in policy implies that decisions need adequate knowledge (e.g. based on updated empirical evidence and theories) about the diversity of values through relevant and robust valuation methods and practice tailored to any given social-ecological context [18]. However, the practice of valuation is very different according to what needs or wants are at stake. Schaafsma et al. [24] review evidence about how valuation studies have grappled with the issue of environmental justice and find that while there is no shortage of methods to account for the diversity of values, the majority of valuation studies fall short of adequately accounting for environmental justice across its three main dimensions: distributive, procedural and recognition justice, as introduced by Lenzi et al. [16]. They point out that improving valuation to enhance justice outcomes, requires paying attention to how valuation processes consider (explicitly and implicitly) whose values are represented. Termansen et al. [25] highlight the main opportunities for embedding valuation into decisions, which requires improving current valuation practice by following guidelines to address trade-offs between three valuation quality criteria: relevance, robustness and resources, the so-called *3Rs*. *Robustness* is about representing people's values of nature reliably and fairly; *relevance* refers to the capacity to visualise the diversity of values of nature that matters to people; *resources* (e.g. time, expertise and funding) are about acknowledging these are limited when undertaking valuation. They further propose a five-step

approach as a practical way to support *plural valuation* (i.e. the process that assesses the diversity of values that are attributed to nature and how these values relate to each other, and to improve the uptake of valuation in decision-making) [21,28]. However, plural valuation is not a panacea. Jacobs et al. [13] discuss the current and future challenges of applying plural valuation. They stress that valuation is inherently a political process that involves making decisions about why certain values matter and whose values should count towards decisions. This discussion thus challenges methodological valuation research efforts that mostly focus on the ‘how question’, and as such forego political considerations embedded in the ‘why’ and the choices for valuation.

Values in policy instruments

Reflecting on why and whose values matter is important for improving the ways valuation is designed and used, especially when researchers and decision-makers care about the fact that values are likely to be diverse and may compete between each other. This is typically the case when policy instruments need to be designed for biodiversity conservation at the local level. Being cognizant of the diversity of local values and the role of power relations among actors can enhance the quality of policy instruments in terms of their capacity to achieve better ecological and social outcomes [18]. Chaplin-Kramer et al. [7] review the existing evidence about the social and ecological impacts of protected areas (PAs) by noting how recognising and respecting the values of people locally lead to more positive outcomes for nature and for people. They highlight how combining i) respect for the values and knowledge about natural resource stewardship by local communities, ii) co-learning and iii) co-management is key to deliver such positive outcomes. Similarly, Bremer et al. [4] analyse different Payment for Ecosystem Services (PES) case studies implemented in diverse social–ecological contexts to evaluate i) how diverse values tend to be (or not) articulated through PES programmes; ii) what implications these inclusion or exclusion processes have for programme evolution and outcomes; iii) whether these outcomes support broader processes of transformative change. They find supportive evidence that considering local values is necessary to improve the social and environmental outcomes of PES programmes. The results of the reviews presented by Chaplin-Kramer et al. [7] and Bremer et al. [4] concur that integrating local values combined with securing decision-making capacities by local communities can strengthen the social and environmental outcomes of conservation policy instruments. In the context of ‘developmental’ interventions such as large dams or mines, Lele et al. [15] find that both relational and even instrumental values of (and knowledge held by) historically marginalised and ecosystem-dependent

stakeholders are ignored. This happens to a great extent due to the absence of equity as broad value and procedural justice, or democracy in the institutions of decision-making.

These papers stress the key message that transformative change is about recognising and embedding diverse values in decisions, especially considering those of marginalised stakeholders, while at the same time reforming the institutional and governance models that underpin decisions that impact on people and nature, as well as their relationships.

Future options and capacity needs

It is unlikely that any transformative change will occur without reimagining the future. Scenario-building plays a key role in shaping the imagined futures and is influential in guiding policy. However, the role of values in different imaginary futures remains largely understudied [18]. Harmáčková et al. [11] assess the combinations of values that underlie different types of scenarios that are normatively described as desirable or undesirable from a justice and sustainability perspective. They find that there is a general skew of scenarios towards focusing on specific values (of nature) and that broad values are rarely accounted for. This is a blind spot for sustainability policies given the importance guiding principles that shape human–nature interactions. Interestingly, they find that global and regional sustainability scenarios tend to depict a greater diversity of specific values when compared with business as usual or further dystopian future visions, which tend to be dominated by individualistic and materialistic values towards nature and nature’s contributions to people. Horcea-Milcu et al. [12] further reflect on the different ways to deliberately intervene to mobilise the transformative potential of nature’s values in order to integrate such values-based interventions into pathways towards sustainability. They identify the inevitable tensions emerging from the different ways in which transformations towards sustainability are conceived, between promoting or shifting away from values that are desirable for some and less desirable for others and the level at which to intervene, be it individual, collective or societal. Lastly, Kelemen et al. [14] show optimism in that embracing a diverse values perspective to foster transformative governance is possible, as a necessary condition for rehauling decision-making processes towards sustainability and justice.

Values-centred leverage points for transformative change: main findings

Table 1 shows the 14 contributed papers to the special issue and their connections to the VLPs for transformative change. The 14 papers are grouped into five broad

Table 1
The 14 articles included in the special issue ordered by broad topics and their connection to the VLPs.

		VLP1: Recognize diverse values	VLP2: Include values into decisions	VLP3: Carry out institutional change	VLP4: Shift social norms & paradigms
Conceptualising values of nature	1				
	2				
Power and (in)justice	3				
	4				
	5				
Valuation processes methods	6				
	7				
	8				
Values in policy instruments	9				
	10				
	11				
Future options & capacity needs	12				
	13				
	14				

Note: Raymond et al. [23] (article #1), Gould et al. [10] (#2), Arias-Arévalo et al. [2] (#3), Lenzi et al. [16] (#4), Ozkaynak [17] (#5), Schaafsma et al. [24] (#6), Termansen et al. [25] (#7), Jacobs et al. [13] (#8), Bremer et al. [4] (#9), Chaplin-Kramer et al. [7] (#10), Lele et al. [15] (#11), Kelemen et al. [14] (#12), Horcea-Milcu et al. [12] (#13), Harmáčková et al. [11] (#14).

topics (by colour) covered in the IPBES Values Assessment. The shading indicates the emphasis on a given VLP (darker colour implying greater emphasis).

The first VLP concerns the adequate recognition of the diverse values of nature using the wide diversity of valuation methods and approaches that are currently available. In this regard, the typology of values presented by Raymond et al. [23] guides the identification of what and whose values may be under- and over-represented in decision-making, and can help conduct plural valuations of nature. In order to guide and design valuation processes, it is important to pay attention to designing more plural valuation processes that account for trade-offs across the 3Rs, that is, robustness, relevance and resources [25]. But since plural valuation is not a panacea either, it is as important to reflect about how to conduct (plural) valuation as

whose values are at most need for being recognised and why so, which inevitably brings to the fore the power and political dimension of valuation [2,29], especially so in situations of current or potential socio-environmental conflicts [16,17]. Engaging in active exploration of the values that underpin how we understand the world and interact with it, is the basis for constructive dialogue, and helps overcome conflicts between advocates of different sustainability pathways and different ways to conceive what are desirable and undesirable values [12,17]. Whilst we have the conceptual and methodological elements to activate the first leverage point, it ought to be noted that this is a shallow leverage point [1], in the sense that it may be relatively easy to activate it but its impacts alone are unlikely to alter deeper structural elements underpinning key economic and political decisions affecting human-nature relations.

The second VLP involves including the diverse values of nature into actual decisions, by means of embedding valuation into inclusive decision-making processes. This entails designing valuation processes that are well-attuned to the specific social and ecological context at stake and respond to the specific needs of the different stages of the decision-making process, in ways that adequately represent the diversity of values involved. As shown by Gould et al. [10] the key to embedding values in decision-making processes lies in a better understanding of how values are linked to human behaviour change. This VLP can be activated through the design and implementation of conservation policy instruments. For example, in the case of PAs, Chaplin-Kramer et al. [7] argue that effective conservation in co-managed PAs, such as via Indigenous community-conserved areas and territories that protect stewardship values of local people and restore traditional resource governance systems, is more likely to be supported by local communities over the long term, especially when they perceive that their own livelihood interests are secured by having decision-making power over their territories. In a similar vein, Bremer et al. [4] point out that the transformative potential of PES programmes would be limited if they over-emphasise efficiency framings and lack a clear perspective on aspects around justice (as a broad value) since otherwise it can crowd out solidarity and care-based motivations towards nature protection. It is also key to incorporate the value plurality held across people and cultures to mobilise values for transformation, and allowing the diversity of values to coexist through collaborative processes that alternate between plurality and convergence towards consensus [12]. Further, strengthening bottom-up processes, for example, through deliberative fora, can be highly instrumental to reflect on general societal principles (such as well-being and fairness). This would need to account for ethical considerations relative to consequences of actions [17].

The third VLP is about fostering deeper institutional changes based on reformulating policy and regulations to consider nature's diverse values. This requires creating space to allow for the diversity of values to be expressed in decision-making by accounting for power imbalances [24,2] and fostering coherence in the implementation of policies and related decisions across various sectors, scales and jurisdictions by addressing value trade-offs. One example of catalysing this VLP is by reforming the way environmental impact assessments (EIA) are conducted as these do not adequately represent the instrumental, relational and intrinsic values held and expressed by marginalised stakeholders. This is demonstrated by Lele et al. [15] for the case of EIAs on large-infrastructure projects (e.g. hydropower

dams and mines), which are part of the backbone of the dominant growth-focused extractivist development paradigm. To activate this VLP, they call for reforming the way EIAs are implemented, for instance, by improving the integration of so-far invisibilised values of marginalised stakeholders. This would require legally recognising the rights of affected communities and including marginalised stakeholders in decision-making, as well as respecting free-prior-informed consent from Indigenous communities, among other legal measures. Similarly, Chaplin-Kramer et al. [7] point out that institutional enablers such as those fostering the active involvement of local communities and diverse stakeholders in co-management schemes, demonstrably improve the effectiveness of more than 3000 PAs worldwide. Both Arias-Arévalo et al. [2] and Horcea-Milcu et al. [12] stress the need to dismantle asymmetric power relations in decision-making contexts in ways in which individual agency can be fostered to support collective action as an active ingredient of transformative change efforts. Given that transformative change will not be void of conflict situations as clashes between interests and values will likely compound, Ozkaynak et al. [17] highlight how transforming governance through long-term social change can be facilitated by a blend of tools to make visible the plurality of worldviews, and address the barriers to conflict transformation. Kelemen et al. [14] point out that transformative potential of policy instruments increases when more diverse values are addressed in their design and implementation. They also find out that weaving values into policymaking is possible at several junctures of the policy process, but that for this to occur, various types of capacities must be enhanced at all levels, both for public and private actors.

The fourth and deepest VLP deals with shifting individual and collective beliefs, values and paradigms that underpin how people relate to nature and to each other in more just and sustainable ways. This is linked to norms that shape what is considered to be just and sustainable and what kinds of futures and development pathways can be envisioned as possible and desirable. Working with values to eventually change the core goals and intent of society is ultimately necessary for the kind of profound, system-wide change that is required. One of the most profound changes required to transform current socio-economic and institutional structures involves (re)balancing power relations to ensure that once historically disenfranchised groups gain rule-making power (translated into operational power). For example, questioning the hegemonic perspectives in environmental policy regarding conceptualising human-nature relations through notions of, for example, natural capital and 'green' economy [2]. There is clearly a need for

fundamental shifts in values away from the current dominant ones that are not aligned with pathways towards sustainability. Top-down approaches to do so entail formal and informal education, and strategically communicating to promote values aligned with sustainability. These would be supported by bottom-up initiatives that engage with public deliberation and contestation at the societal level, through empowered communities and individuals capable of exercising their agency [12].

Final words

The special issue raises a basic and intuitive point, yet one that it is not yet ingrained in the policy arena: beyond calling for pluralising values and valuation in science and policy, what is most needed are concerted efforts across scales, sectors and stakeholders to foster sustainability-aligned values and dampen those that work against it. This entails simultaneously acting upon all four VLPs. This, in turn, will entail interventions aimed at the individual level, by shifting and reflecting on the way people's values affect their everyday decisions, as well as at the collective level by enabling and acting on positive shared societal values that can also allow for reimagining visions of alternative futures away from dystopian scenarios. We hope that this special issue will provide useful material for all those that are interested in propelling transformative changes to address the coupled nature and climate crisis from a values perspective. We hope the reader will be able to use this special issue as a springboard to help reformulate research avenues and identify ways to better connect knowledge to action so that the very structures (including the intertwined social institutions and values) that underpin the future of all people and nature are positively transformed.

Declaration of Competing Interest

None.

Acknowledgements

We would like to thank all the authors who have contributed to this special issue and to all the reviewers who have constructively provided insightful comments to each of the papers, including Anna Wienhues, Aroha Te Pareake Mead, Baird Callicot, Bill Adams, Claudia Bieling, Daniela del Bene, Eduardo García-Frappoli, Esther Turnhout, Francois Bousquets, Gillian Barbara Ainsworth, Garry Peterson, Gillian Barbara Ainsworth, Hiroe Ishihara, Joan Martinez-Alier, Joern Fischer, Josh Farley, Julia Leventon, Julia Martin-Ortega and Kyriaki Remoundou, Maiko Nishi, Mark Tadaki, Patrick Samlthorn West and Terre Satterfield. UP acknowledges Basque Centre for Climate Change's Maria de Maeztu excellence accreditation 2023–2026 (Reference no. CEX2021-001201-M) provided by grant no. MCIN/AEI/10.13039/501100011033. We are also grateful to the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), who commissioned the *Values Assessment*. Finally, we want to thank to IPBES Executive Secretary Anne Larigauderie and IPBES Chair Ana María Hernández for their strategic vision and continued advice. The IPBES *Values Assessment* was made possible thanks to contributions, including non-earmarked contributions, to the IPBES trust fund from governments. All donors are listed on the IPBES web site: www.ipbes.net/donors.

References

1. Abson DJ, Fischer J, Leventon J, Newig J, Schomerus T, Vilsmaier U, Von Wehrden H, Abernethy P, Ives CD, Jager NW, Lang DJ: **Leverage points for sustainability transformation**. *Ambio* 2017, 46:30-39.
2. Arias-Arévalo P, Lazos Chavero E, Monroy-Sais AS, Nelson SH, Pawlowska-Mainville A, Vatn A, Cantú-Fernández M, Murali R, Muraca B, Pascual U: **The role of power for leveraging the diverse values of nature for transformative change**. *Curr Opin Environ Sustain* 2023, (this issue).
3. Balvanera P, Pascual U, Christie M, Baptiste B, González-Jiménez D: **Methodological Assessment Report on the Diverse Values and Valuation of Nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)**. *IPBES Secretariat* 2022, <https://doi.org/10.5281/zenodo.6522522>
4. Bremer LL, Nelson S, Jackson S, Izquierdo-Tort S, Lansing D, Shapiro-Garza E, Echavarría M, Upton C, Asquith N, Isyaku U, Asiyambi A, He J: **Pascual U: Embedding local values in Payments for Ecosystem Services for transformative change**. *Curr Opin Environ Sustain* 2023, (this issue).
5. Brondizio ES, Settele J, Díaz S, Ngo HT: **Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services**. *IPBES Secretariat* 2019,1-1082, <https://doi.org/10.5281/zenodo.3831673>
6. Chan KM, Boyd DR, Gould RK, Jetzkowitz J, Liu J, Muraca B, Naidoo R, Olmsted P, Satterfield T, Selomane O, Singh GG: **Levers and leverage points for pathways to sustainability**. *People Nat* 2020, 2:693-717.
7. Chaplin-Kramer R, Neugarten R, Gonzalez-Jimenez D, Ahmadi G, Baird TD, Crane N, Delgoulet E, Eyster HN, Kurashima N, Liopis JC, Millington A, Pawlowska-Mainville A, Rulmal J, Saunders F, Shrestha S, Vaughan M, Winter K, Wongbusarakum S, Pascual U: **Transformation for inclusive conservation: evidence on values, decisions, and impacts in protected areas**. *Curr Opin Environ Sustain* 2023, (this issue).
8. Convention on Biological Diversity. *Kunming-Montreal Global Biodiversity Framework*. Decision CBD/COP/DEC/15/4. United Nations Environment Programme (UNEP) 2022.
9. Díaz S, Settele J, Brondizio ES, Ngo HT, Agard J, Arnett A, Balvanera P, Brauman KA, Butchart SH, Chan KM, Garibaldi LA: **Pervasive human-driven decline of life on Earth points to the need for transformative change**. *Science* 2019, 366:eaa3100.
10. Gould RK, Soares TM, Arias-Arévalo P, Cantú-Fernandez M, Baker D, Eyster HN, Kwon R, et al.: **The role of value(s) in theories of human behavior**. *Curr Opin Environ Sustain* 2023, (this issue).
11. Harmáčková ZV, Yoshida Y, Sitas N, Mannetti L, Martin A, Kumar R, Berbés-Blázquez M, Collins R, Eisenack K, Guimaraes E, Heras M, Nelson V, Niamir A, Ravera F, Ruiz Mallen I, O'Farrell P: **The role of values in future scenarios: what types of values underpin (un)sustainable and (un)just futures?** *Curr Opin Environ Sustain* 2023, (this issue).
12. Horcea-Milcu A-I, Koessler A-K, Martin A, Rode J, Soares TM: **Modes of mobilizing values for sustainability transformation**. *Curr Opin Environ Sustain* 2023, (this issue).
13. Jacobs S, Kelemen E, O'Farrell P, Martin A, Schaafsma M, Dendoncker N, Pandit R, Heita Mwampamba T, Palomo I, Castro JA, Anali Huambachano M, Filyushkina A, Gunimeda H: **The pitfalls of plural valuation**. *Curr Opin Environ Sustain* 2023, (this issue).
14. Kelemen E, Subramanian MS, De Vos A, Amaruzaman S, Porter-Bolland L, Islar M, Kosmus M, Nakangu B, Nuesiri M, Arroyo Robles G, Yiu E, Emerton L: **Zólyomi A: Signposts on the road towards transformative governance. How a stronger focus on diverse values can enhance environmental policies**. *Curr Opin Environ Sustain* 2023, (this issue).
15. Lele S, Del Bene D, Avci D, Roa-Avendaño T, Roy B, Sahu G, Harris M, Moore D: **Values and knowledge in decision-making on environmentally disruptive infrastructure projects**. *Curr Opin Environ Sustain* 2023, (this issue).

16. Lenzi D, Balvanera P, Arias-Arévalo P, Eser U, Guibrunet L, Martin A, Muraca B, Pascual U: **Justice, sustainability, and the diverse values of nature: why they matter for biodiversity conservation.** *Curr Opin Environ Sustain* 2023, (this issue).
17. Özkaynak B, Muradian R, Ungar P, Morales D: **What can methods for assessing worldviews and broad values tell us about socio-environmental conflicts?** *Curr Opin Environ Sustain* 2023, (this issue).
18. Pascual U, Balvanera P, Anderson CB, *et al.*: **Diverse values of nature for sustainability.** *Nature* 2023, **620**:813-823, <https://doi.org/10.1038/s41586-023-06406-9>
19. Pascual U, Adams WA, Díaz S, Lele S, Mace G, Turnhout E: **Biodiversity and the challenge of pluralism.** *Nature Sustainability* 2021, **4**:567-572, <https://doi.org/10.1038/s41893-021-00694-7>
20. Pascual U, McElwee PD, Diamond SE, Ngo HT, Bai X, Cheung WWL, Lim M, Steiner N, Agard J, Donatti CI, Duarte CM, Leemans R, Managi S, Pires APF, Reyes-García V, Trisos C, Scholes RJ, Pörtner H-O: **Governing for transformative change across the biodiversity-climate-society nexus.** *Bio Science* (7) 2022, **72**:684-704, <https://doi.org/10.1093/biosci/biac031>
21. Pascual U, Balvanera P, Díaz S, Pataki G, Roth E, Stenseke M, Watson RT, Dessane BE, Islar M, Kelemen E, Maris V, Quaas M, Subramanian SM, Wittmer H, Adlan A, Ahn S, Al-Hafedh YS, Amankwah E, Asah ST, Berry P, Bilgin A, Breslow SJ, Bullock C, Daniel C, Daly-Hassen H, Figueroa E, Golden CD, Gómez-Baggethun E, González-Jiménez D, Houdet J, Keune H, Kumar R, Ma K, May PH, Mead A, O'Farrell P, Pandit R, Pengue W, Pichis-Madruga R, Popa F, Preston S, Pacheco-Balanza D, Saarikoski H, Strassburg BB, van den Belt M, Verma M, Wickson F, Yagi N: **The value of nature's contributions to people: the IPBES approach.** *Curr Opin Environ Sustain* 2017, **26-27**:7-16, <https://doi.org/10.1016/j.cosust.2016.12.006>
22. Pörtner H-O, Scholes RJ, Barnes DKA, Burrows MT, Diamond SE, Duarte CM, Kiessling W, Leadley P, Managi S, McElwee P, Midgley G, Ngo HT, Obura D, Pascual U, Sankaran M, Shin YJ, Val AL: **Overcoming the coupled climate and biodiversity crises and their societal impacts.** *Science* (6642) 2023, **380**:eabl4881.
23. Raymond CM, Anderson CB, Athayde S, Vatn A, Amin A, Arias-Arevalo P, Christie M, Cantu-Fernandez M, Gould RK, Himes A, Kenter JO, Lenzi D, Muraca B, Muali R, O'Connor S, Pascual U, Sachdeva S, Samakov A, Zent E: **An inclusive values typology for navigating transformations toward a just and sustainable future.** *Curr Opin Environ Sustain* 2023, (this issue).
24. Schaafsma M, Ahn S, Castro AJ, Dendoncker N, Filyushkina A, González-Jiménez D, Huambachano M, Mukherjee NH, Mwampamba TH, Ngouhouo-Poufoun J, Palomo I, Pandit R, Termansen M, Ghazi H, Jacobs S, Lee H, Contreras V: **Whose values count? A review of the nature valuation studies with a focus on justice.** *Curr Opin Environ Sustain* 2023, (this issue).
25. Termansen M, Jacobs S, Pandit R, Mwampamba TH, Dendoncker N, Schaafsma M, Contreras V, Jiménez D, Gundimeda H, Lee H, Filyushkina A, Huambachano M, Palomo I, Castro A: **Five steps towards transformative valuation of nature.** *Curr Opin Environ Sustain* 2023, (this issue).
26. Pascual U, Balvanera P, Christie M, Baptiste B, González-Jiménez D, Anderson CB, Athayde S, Barton DN, Chaplin-Kramer R, Jacobs S, Kelemen E, Kumar R, Lazos E, Martin A, Mwampamba TH, Nakangu B, O'Farrell P, Raymond CM, Subramanian SM, Termansen M, Van Noordwijk M and Vatn A, *Summary for Policymakers of the Methodological Assessment Report on the Diverse Values and Valuation of Nature of the Intergovernmental Science- (IPBES) Policy Platform on Biodiversity and Ecosystem Services* (IPBES), 2022, IPBES Secretariat, doi:10.5281/zenodo.6522392.
27. Visseren-Hamakers IJ, Razzaque J, McElwee P, Turnhout E, Kelemen E, Rusch GM, Fernandez-Llamazares A, Chan I, Lim M, Islar M, Gautam AP: **Transformative governance of biodiversity: insights for sustainable development.** *Curr Opin Environ Sustain* 2021, **53**:20-28.
28. Zafra-Calvo N, Balvanera P, Pascual U, Merçon J, Martín-López B, van Noordwijk M, Mwampamba TH, Lele S, *et al.*: **Plural valuation of nature for equity and sustainability: insights from the Global South.** *Glob Environ Change* 2020, **63**:102115.