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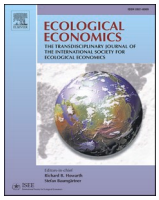

Valuing beyond economics: A pluralistic evaluation framework for participatory policymaking

Richard M. Gunton [a,*], Adam P. Hejnowicz [b,1], Andrew Basden [c], Eline N. van Asperen [d], Ian Christie [e], David R. Hanson [f], Sue E. Hartley [b,2]

[a] Department of Digital Technologies, University of Winchester, Sparkford Road, Winchester SO22 4NR, UK
[b] Department of Biology, University of York, Wentworth Way, York YO10 5DD, UK
[c] University of Salford, Maxwell Building, Manchester M5 3WT, UK
[d] School of History, Classics and Archaeology, University of Newcastle, Newcastle upon Tyne NE1 7RU, UK
[e] Centre for Environment & Sustainability, University of Surrey, Guildford GU2 7XH, UK
[f] West Yorkshire School of Christian Studies, 2 Dale Villas, Leeds LS18 4JN, UK

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ABSTRACT

The sustainability challenges facing societies call for policies and governance systems that are attuned to the diversity of goods that support and enrich human life via ecological, technical and other kinds of systems, and to the plurality of values that people hold across diverse cultures and belief systems. A pluralistic evaluation framework (PEF) is here presented as a tool for considering diverse kinds of goodness as perceived by diverse stakeholders in the design and evaluation of policies or projects. It arises from considering a suite of aspects of meaning (biotic, economic, aesthetic, etc.) at each of three stages, namely: identifying relevant stakeholders, mapping real-world systems and assessing modes of valuing. This framework, drawing on the philosophical work of Herman Dooyeweerd and Dirk Vollenhoven, offers a joined-up, participatory approach to policymaking. We report pilot trials of the PEF with groups of policymakers at a series of workshops, demonstrating that it provides additional perspectives and unification of core issues and can be used in a wide range of areas of policymaking and project assessment. We also illustrate its potential application to a controversial environmental project and outline how a pluralistic evaluation framework can be used in tandem with existing frameworks.

1. Introduction

The social-ecological challenges facing humanity are multifaceted and existential, and well-meaning policy responses can produce unintended consequences or controversy as regards just transitions towards sustainability (Foggin et al., 2021; Krawchenko and Gordon, 2021). Concepts such as planetary boundaries (Rockström et al., 2009; Steffen et al., 2018), doughnut economics (Raworth, 2017), the water–energy–food nexus (FAO, 2014; Hoff, 2011) and "safe and just" corridors (Rockström et al., 2021) are examples of multifaceted framings of these global challenges and call for multi-disciplinary, context-sensitive approaches to address them. This paper arises from a concern that available policy tools can over-simplify such complex problems – epitomised by the prevailing economistic approach to environmental decision-making that has recently come under widespread critique (I. Christie et al., 2019; Dasgupta, 2021; O'Neill, 2017; Silvertown, 2015). There has been a call for more "comprehensive quantitative or mixed quantitative/qualitative toolboxes for nexus research" (Liu et al., 2018), where "nexus" refers to challenges at the interface of multiple sectors of human life. There is, therefore, an urgent need for tools to guide the design, implementation and evaluation of policies and projects to help achieve comprehensive and robust solutions that are both effective and democratically accountable. In short, we need pluralistic evaluation.

Lasting social-ecological improvements call for coherent, value-explicit policies across public, private and civil society sectors. Policies and projects must be subjected to evaluation, yet much of the evaluation

* Corresponding author.
E-mail addresses: rmg@cantab.net (R.M. Gunton), Adam.Hejnowicz@newcastle.ac.uk (A.P. Hejnowicz), envanasperen@palaeo.eu (E.N. van Asperen), i.christie@surrey.ac.uk (I. Christie), s.hartley@sheffield.ac.uk (S.E. Hartley).
[1] Present address: School of Engineering, University of Newcastle, Newcastle upon Tyne, NE1 7RU, UK.
[2] Present address: Department of Animal and Plant Sciences, University of Sheffield, Sheffield, UK

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literature focuses on accountability, and the question of how to measure the concordance between a policy's effects and its stated objectives, leaving broader questions of real benefits to separate discussions of ethics or the assumed public spirit of policymakers (Stame, 2018). Importantly, more attention is now being paid within the evaluation community to the ethical side of evaluation (Schwandt, 2018; Stame, 2018) and to stakeholder involvement, with a growing literature reporting participatory evaluation initiatives (Chouinard and Cousins, 2015; Marchand, 2018). At the same time, while the mainstreaming of environmental concerns in policymaking has increasingly followed a narrative conception of human–nature relations as coupled social-ecological systems (Ostrom, 2009) – an important step forward – this has primarily been considered from an anthropocentric vantage-point in which nature services human needs. In particular, the ecosystems approach (United Nations, 1992), the ecosystem services framework (Millennium Ecosystem Assessment, 2005) and forms of natural capital accounting (Dasgupta, 2021; TEEB, 2010) have progressively offered systematic models for environmental valuation. Despite the benefits of global scope and pragmatism, environmental valuation with reference to monetary exchange value (Costanza et al., 2014) can be portrayed as building in social injustice and exclusion (Lo, 2014; Martínez-Alier, 2002; Spash and Aslaksen, 2015).

It should not be controversial, however, to point out that policies and projects can only be fully evaluated within a framework that is value-explicit and not merely concerned with valuation. The limitations of natural capital-based approaches, for example, are emphasised even in protocols that advocate their use (e.g. Defra, 2018). The primary question to ask of a policy or project is how good its effects are according to the various stakeholders concerned with it, not merely how much value it adds in some pre-specified currency. Different people, groups and communities will have different priorities and attribute different value to various aspects of a given situation, and any publicly oriented agency or business ought to use an integrated pluralistic evaluation framework to account for these. There is a need for a framework that can overcome the antithesis in the human-vs.-nature model and integrate across all kinds of functioning and valuing in an evaluation context.

This paper aims to help meet that need. We present a three-pillared pluralistic evaluation framework that analyses the potential benefits of a policy or project through the same set of lenses as the kinds of systemic impact it may have and the classes of stakeholder it may affect. Section 2 below outlines what is distinctive about our approach to values and valuing, with reference to literature of a philosophical nature. Section 3 lays out our pluralistic evaluation framework, while Section 4 describes its testing and refinement through workshops with policymakers. Section 5 indicates how the framework can be implemented and offers a worked example before Section 6 concludes with recommendations for integrative policymaking.

2. Conceptual foundations: valuing, pluralism and reformational philosophy

A comprehensive approach to evaluation calls for a broad theory of valuing, but the discourse around value, values and cognate terms has long been confusing (Frankena, 2019, 1967). In the social-ecological realm, many contributions continue to explore the human–nature dialectic that is arguably a peculiar feature of Western culture (Dooyeweerd, 1979). These frameworks often cover one or more of (a) objectively measuring the value (goodness) of entities or scenarios, (b) describing human cognitive states (subjective transcendental values) and (c) 'relational values' of the contexts in which humans appreciate objects or scenarios. At one extreme we see theories of objective intrinsic value of Nature that exists irrespective of humankind, while at the other values are seen as people's socially constructed cognitive attitudes to their own ever-changing environments (Hejnowicz and Rudd, 2017).

This paper takes a different approach by avoiding talk of 'values' in favour of the verb 'to value'. Our model draws on philosophical value theory as developed in recent decades (Orsi, 2015) together with insights from Reformational philosophy. These resources enable us to build a tool for participatory evaluation of interventions (policies, projects) that recognises both a subjective and an objective side to valuing, allowing space for meaningful debate and the use of scientific evidence in negotiating trade-offs. Our approach is innovative in three important ways.

Firstly, in speaking of valuing rather than values, we have a natural focus on stakeholders and relationships. Valuing is an active process: 'There are no such things as values' but 'various ways in which individuals, processes and places matter' (O'Neill et al., 2008, p. 1). That is to say, humans value things that are (potentially) valuable – whether material, immaterial, abstract, concrete, universal or particular. Moreover, valuing is an intrinsic part of human life, beginning with the biotic ways in which we positively value the basic goods needed for survival (e.g., food for eating and shelter for protection) and negatively value organisms and situations we perceive as dangerous. This view is shared with a range of traditions, from evolutionary psychology (Kellert and Wilson, 1993) to process philosophy, where to live is to value (Muraca, 2016). It also ties in with value pluralism (Berlin, 1969; Martinez-Alier et al., 1998): the view that there is an ultimate plurality of ways of valuing that cannot be reduced to a single axis, or common denominator. Value pluralism is an inclusive approach that avoids commitment to theories about the translation of disparate values into a common currency, and we outline our version of it in the next section. We welcome the burgeoning field of socially-embedded approaches to environmental evaluation, such as shared and social values elicitation (Kenter et al., 2015), integrative approaches that focus on inclusivity (Jacobs et al., 2016), recognition of people's moral relationships to the environment (Jax et al., 2013) and processes of deliberative valuation (Bunse et al., 2015; Kenter, 2016; Kenter et al., 2016; Lo and Spash, 2013). However, policy evaluation must go beyond eliciting and categorising stakeholders' values to face the challenge of connecting with scientific accounts of what is 'out there' to be valued.

Secondly, therefore, we emphasise the distinction between subjective evaluations (perceptions of goodness) and valued objects (goods). This obvious distinction is all too often confused, as when ecosystem services are construed both as proxies for human benefits and as the ecological processes that underlie these benefits (Gunton et al., 2017). The Millennium Assessment classification (Millennium Ecosystem Assessment, 2005) includes 'supporting services', which are predominantly ecological processes, alongside 'provisioning', 'regulating' and 'cultural services', whereas the Common International Classification of Ecosystem Services (Haines-Young and Potschin, 2018) recognises that supporting services are 'part of the underlying structures, process and functions that characterise ecosystems' and does not include them. Similarly, the current conceptual framework of the Inter-Governmental Panel on Biodiversity and Ecosystem Services (IPBES) separates out supporting services while grouping provisioning, regulating and cultural services under the term 'nature's contributions to people', which are acknowledged to be culturally shaped and perceived (Díaz et al., 2018). The discussions around 'public money for public goods' in the U.K. (Bateman and Balmford, 2018) may be partly confused by this ambiguity between goodness and goods. Our approach addresses this problem in a more radical way, with insight from our philosophical framework.

Thirdly, in recognising both subjective and objective sides to valuing, we add our voice to the growing critique of the traditional intrinsic vs. instrumental value dichotomy. Many authors have recognised the need for an intermediate category for things being good for their own sake (not just instrumentally) but also not on their own (not intrinsically), i.e. having final yet extrinsic value (Orsi, 2015, pp. 31–34). Something like this has been called inherent value (Attfield, 1991; as cited by Spangenberg and Settele, 2016) or included in a relational values scheme (Chan et al., 2016). In our approach, since goodness is, in practice, always attributed in the context of a relationship between a valuing

subject and a valued object or situation (Knippenberg et al., 2018) and must bear some relation to inherent characteristics of the object, this intermediate category can serve to cover all kinds of valuing. Situations where this two-sided relationship is marginalised lie at the extremes of a spectrum from intrinsic value (overlooking the valuing subject) through to instrumental value (overlooking the valued object and its inherent properties). Valuing one's own children is perhaps an extreme case of the former (or the concept of valuing anything de re: O'Neill, 2017), while monetary value is an extreme case of the latter. Multifaceted relational valuing is central to the model of valuing that we adopt (Fig. 1), which we intend to develop more fully elsewhere.

The above points, and the framework we outline below, derive in part from Reformational Philosophy (RP). This tradition, originating in the mid-20th Century with the work of Dutch philosophers Herman Dooyeweerd and Dirk Vollenhoven, outlines a pluralistic structure of reality that is intuitively discerned in the diversity of human society, activities, knowledge and judgment in everyday life (Klapwijk, 1994). RP identifies a sequence of 15 distinct spheres of meaningfulness, also called modal aspects, within which the world is structured by natural laws and inherent norms and thus bears meaning. These aspects are conventionally listed as: numerical, spatial, kinetic, physical, biotic, sensory, analytical, formative, symbolic, social, economic, aesthetic, jural, moral and pistic (here termed 'ultimate') – as shown in Fig. 2. They are empirically discerned from human discourse and culture; the list is accordingly open to revision, but at least useful heuristically.

The possibility of value arises from meaningfulness and lawfulness, so these aspects offer multiple different, basic kinds of possible value – of which economic value is only one. A person can value a situation in several aspects independently of each other (e.g. healthy vs dangerous in the biotic, just vs unjust in the jural). Arguably, valuing is possible from the biotic aspect and onwards through the sensory, analytical, formative, symbolic, social, economic, aesthetic, jural, moral and ultimate aspects. That is, a person could value a situation either positively or negatively in each aspect independently of the others. Such a set of valuations could be said to depend on the person's transcendental values (Schwartz, 1999), but our approach does not need to pry into these – a task that can in any case be difficult and time-consuming in the field. This framework thus offers a comprehensive picture of functioning and valuing in non-human as well as human spheres.

Any kind of policy, project or law may have effects ranging from physical and ecological to social, economic and aesthetic. This is why we seek a framework broad enough to evaluate all kinds of effects, as outlined in the next section.

3. Developing a pluralistic evaluation framework

In this section we present our pluralistic evaluation framework (PEF). Deriving from the ecosystem valuing framework described by Gunton et al. (2017), the PEF arises from crossing the full set of aspects outlined in Fig. 2 with three pillars of policy evaluation shown in Fig. 3: identifying relevant stakeholders; mapping real-world systems and processes; and assessing human appreciation (valuing). A comprehensive evaluation depends upon due attention to the first two pillars, which provide a context in which valuing is meaningful, before using the modal aspect framework to assess ways of valuing. Below, we outline each pillar in turn as a stage in the process of setting up an evaluation. Provisional lists of the main items to consider for each pillar are provided in Table 1.

3.1. Identifying relevant stakeholders

The crucial first stage is to identify functional groups of stakeholders: categories of people or associations defined according to recognizable roles. The suite of aspects provides a useful index to such roles, with the first three providing a preliminary classification and the remaining aspects covering primary concerns. Thus, we first distinguish individuals from groups, local people from visitors, and residents from travellers; then within these basic categories we may recognise stakeholders concerned with managing physical features of the landscape, people's health, relaxation, analysis, education, communication, economy and so on (Table 1). The concept of functional groups of stakeholders provides a way of modelling the interests and responsibilities of real people and associations under convenient headings, while recognising that any one of these is likely to play multiple roles and may also have concern for a range of final beneficiaries. Such functional groups can be related to particular policy scenarios and ethics more easily than demographic groupings based on gender, ethnicity, age, etc.; they can also facilitate the normative recognition of 'rights-holders', helping prevent proliferation of self-interested claims (Foggin et al., 2021). Effective stakeholder identification and engagement is not trivial (Reed, 2008; Sterling et al., 2017; Voinov et al., 2016); the first pillar of the PEF assists with this and, in conjunction with the second and third pillars, facilitates a broad participatory discourse.

3.2. Mapping real-world systems and processes

Social-ecological interventions concern the relationships of stakeholders to all kinds of systems – ecosystems, technological, social,

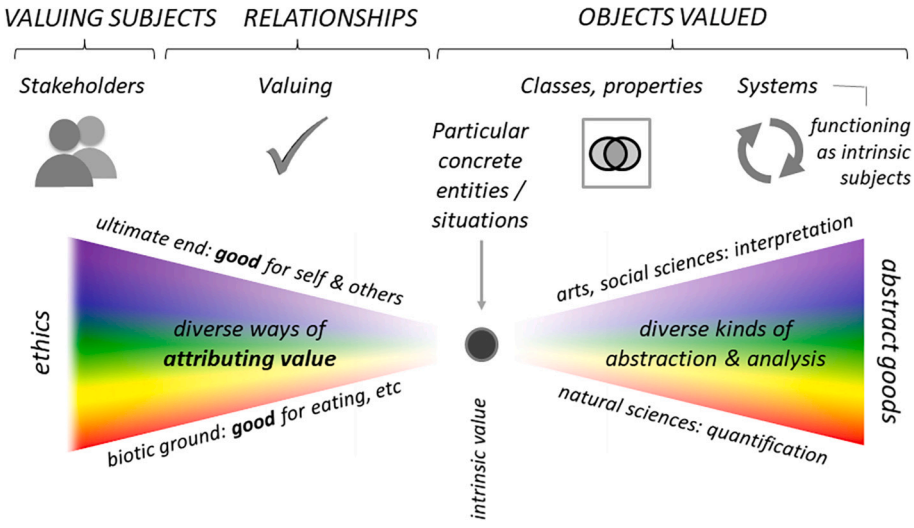

Fig. 1. A pluralistic relational model of valuing. Left side: Stakeholders may value entities and situations in diverse ways (e.g. biotically, economically, morally) in different particular situations. Centre: Particular shape all human experience and therefore our valuing. To value particulars, like family members, favourite places and individual trees, may be described as a recognition of intrinsic value. Right side: By abstraction humans recognise types of thing, like ancient woodlands, oil and cars, and shared properties, like beauty, combustibility and speed; academic study increases the range of these towards abstract processes (e.g. carbon cycling, industrial activity, economic growth) and properties (e.g. biodiversity, carbon uptake rates or GDP). Any of these may become goods valued alongside the particulars that particular people know and love. The horizontal separation of stakeholders, valuing, and abstract objects in this diagram should not obscure the facts that stakeholders are also part of many natural systems and processes, and that valuing is important within scientific research.

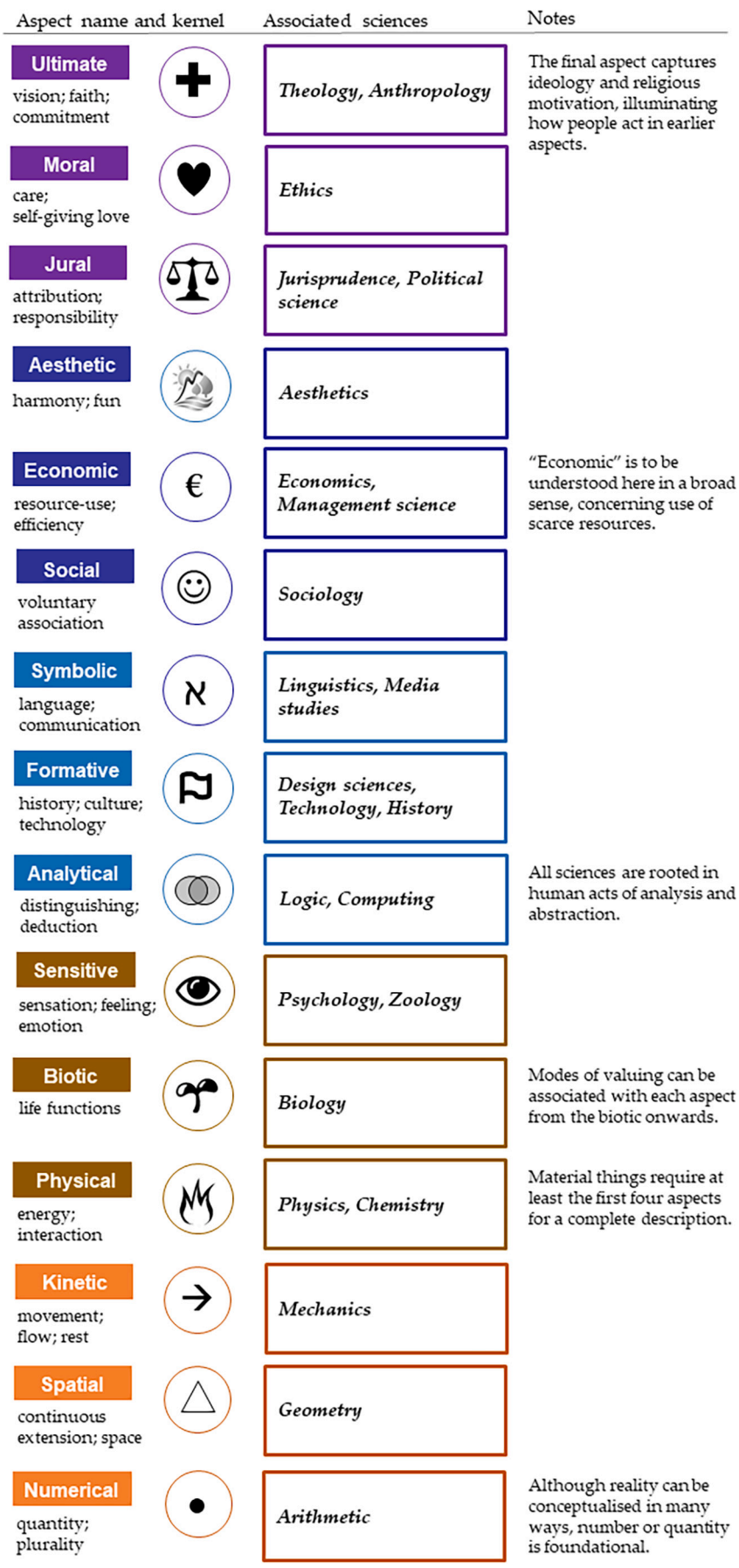

Fig. 2. The suite of modal aspects posited in Reformational philosophy (Basden, 2019, pp. 166–7; Dooyeweerd, 1953). Each aspect is named in a colour-filled box, with its meaning ('kernel') evoked by words below and an icon to the right. The large boxes contain academic disciplines ('sciences' in the broadest sense) that are characterised by each aspect. Lower aspects are said to be 'earlier', simpler and conceptually foundational to those above, which in turn 'open up' the earlier aspects to richer meanings.

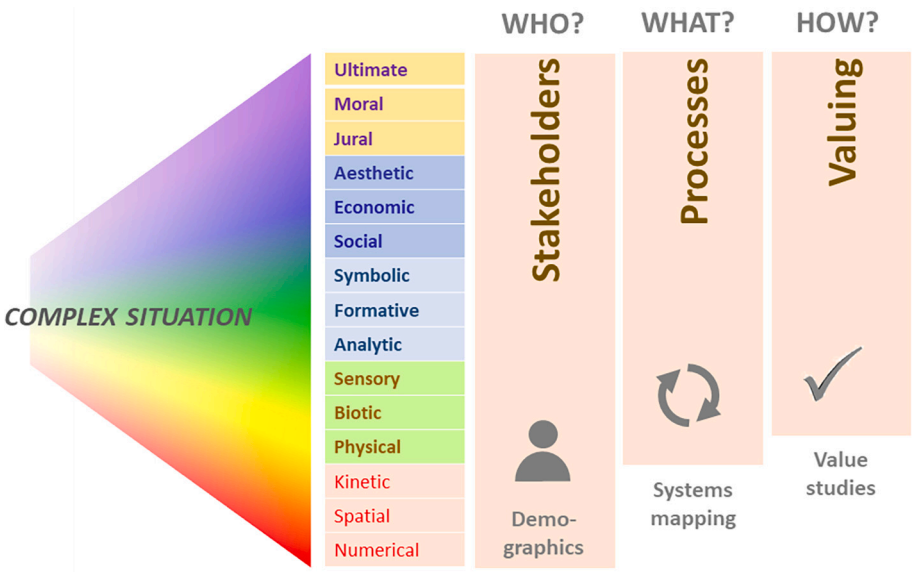

Fig. 3. Overview of the pluralistic evaluation framework. The reality of a complex situation is refracted through the 15 aspects listed on the left, which provide a basis for identifying stakeholders (first pillar), system processes (second pillar, from the physical aspect up to the ultimate aspect) and modes of appreciation (third pillar, from the biotic aspect upwards).

Table 1
Possible interpretations of the modal aspects across the pillars of stakeholders, systems or processes, and modes of human valuing. The terms in the cells of the table are examples rather than definitive interpretations, and further work may lead to revision. For longer lists of terms, see Table 2.

Aspect	Examples of stakeholder functional groups	Examples of system processes	Examples of positive (negative) value attributed
Ultimate	Religious /ideological groups	Ideology; Worldview	Inspiring, Sacred (Unreliable, Sacrilegious*)
Moral	Volunteer groups; NGOs; Children	Public morality	Generous, Cherished (Mean)
Jural	Government; Campaigners	Legislation	Just, Equitable (Inappropriate)
Aesthetic	Arts groups; Tourists	Fashion	Harmonious, Enjoyable (Ugly)
Economic	Businesses	The economy	Efficient, Sustainable (Wasted)
Social	Communities	Social dynamics	Sociable, Welcoming (Inhospitable)
Symbolic	Journalists	Discourses	Informative, Significant (Misleading)
Formative	Historians; Educators	History; Technology	Developed, Innovative (Degraded)
Analytical	Scientists	Sciences	Distinctive, Diverse (Mixed-up)
Sensory	Mental healthcare providers	Emotional life	Stimulating, Comfortable (Unpleasant)
Biotic	Farmers; Foresters	Ecosystems	Health-giving (Toxic)
Physical	Resource managers	Hydrology; Climate	n/a
Kinetic	Residents /Commuters	n/a	n/a
Spatial	Local /Dispersed	n/a	n/a
Numerical	Individuals /Groups	n/a	n/a

* The meanings of the ultimate aspect range from religious to mundane, encompassing the concept of trust at all levels of human life.

economic, and political systems – both locally and globally. It is widely recognised that systems need characterising and monitoring for effective policy interventions, and that there is a need for conceptual frameworks that can integrate socio-political and biophysical processes (Liu et al., 2018). The second pillar of the PEF identifies systems by the suite of aspects, from the physical aspect onwards. Such systems comprise kinds of real ongoing dynamic processes – whether 'natural' or cultural – that may be monitored and studied by appropriate academic disciplines. Natural dynamics such as geological processes and climate change (physical) and ecological succession (biotic) are well documented by scientific study, while economic dynamics are perhaps the best studied of the cultural processes. There can, however, be 'system processes', as we call them for short, characterised by 12 of the 15 aspects (see examples in Table 1). We elucidate this second pillar further in the context of the third pillar.

3.3. *Assessing human appreciation (valuing)*

This third pillar concerns the full range of ways (modes) in which humans may value system processes as objects – whether positively, negatively or both. For example, while a woodland functions biotically as an ecosystem of plants and animals (the second pillar), certain stakeholders may value it biotically (the third pillar) if they eat fruits from its trees or find herbs in it to cure ailments, or value it negatively if it harbours predators or pathogens of domestic animals. Similarly, while planting a woodland may help grow or hinder the economy, stakeholders may value it economically if they perceive it as an optimal and efficient use of the land, and disvalue it otherwise. For example, publicity for the UK's Northern Forest project (http://thenorthernforest.org.uk/) emphasises its expected benefits to human health and wellbeing, to biodiversity and global climate, and to the regional economy, industry and employment, but some of these 'goods' (system impacts) deserve scrutiny to determine why people might value them as 'good'. Health and wellbeing relate to biotic and sensitive modes of appreciation, whereas biodiversity in itself (e.g., richness of genotypes and ecosystems) is normally appreciated analytically (cognitively). Benefits to the economy and industry may be appreciated mostly via increased employment and greater salaries, which in turn lead to enhanced quality of life in a range of ways (biotic, sensitive, formative and aesthetic, for example); alternatively if these 'goods' increase financial inequality then many stakeholders may not value them at all. There may also be properly economic appreciation, such as our general appreciation of efficient resource use and abhorrence of waste. Finally, reducing climate change is widely seen as a duty towards present and future generations: such actions are jurally and perhaps morally good in the eyes of many

citizens and policymakers. Aspects of valuing identify varieties of goodness (see examples in Table 1). Moreover, each successive aspect opens up the notion of goodness in the following aspect (Basden, 2019, chap. 3) – providing a rationale for considering the suite of aspects as a spectrum.

4. Prototyping the PEF: policy workshops

The PEF offers an alternative foundation for policymaking and evaluation rather than any currency for cost–benefit analyses. The complexity of policymaking and the diversity of conflicting visions of what is good for local or wider interests call for rationales of valuing to be discussed and made explicit. We therefore tested and refined the PEF with experts including policymakers, policy analysts, evaluation practitioners and academics concerned with real-world policies, over the course of three workshop events.

4.1. Workshops methodology

Two local workshops and a webinar on the PEF were held during 2018 (Table S1). At each event, data were collected from participants in order to assess the usefulness of the PEF in broadening and balancing the range of modes of valuing considered, and reflections from participants and organisers were synthesised in order to refine the procedure for implementing the framework. The data took the form of textual responses and numerical rankings for questions concerning forms of goodness in policy impact, with participants considering a policy area familiar to them. First, participants were asked to list some generic ways in which a policy might be 'good' or 'improve' a situation; then after the categories of the PEF had been explained, they were asked to list ways in which stakeholders might appreciate or decry the impacts of a policy, classified by the 11 aspects of valuing, which they were also invited to rank by importance. This allowed us to assess three questions: (1) how well prior notions of goodness in policy impacts can be classified into the modes of valuing of the PEF, (2) whether the PEF is likely to assist policymakers in considering a wider range of modes of valuing, especially in the later aspects, and (3) whether the number of terms people provided across the different modes of valuing corresponds to how they perceived the importance of the corresponding aspects.

In the local workshops, data were obtained from small groups of 3 to 5 people working with posters and sticky notes, given 20–30 min to discuss a policy situation familiar to them (Table S2, Fig. S1). In the webinar, participants responded individually by email, having been sent questions and a list of the aspects prior to the webinar. Data were collected in this way from 29 respondents, around 20 of whom were policy-active, over the three events. Full details of the workshop methodology are given in the Supplementary Material.

4.2. Workshops results and discussion

Prior to the presentation of the PEF, participants submitted 188 text items suggesting generic ways in which outcomes from a policy might improve a situation. Of these, 173 comprised value terms with clear enough meaning to be allocated to the aspects by four of the authors (AB, RG, DH, EA) working independently. Comparing the four sets of allocations yielded a consensus allocation (agreed by two or more of the assessors) for 149 of the terms (see Table S3, Supplementary Material for further details). Table 2 presents these terms translated into adjectives that capture the main value-laden component of each.

To address our first question, Table 3 summarises the degrees of consensus among the four assessors in obtaining the classification in Table 2. Consensus was greatest for the moral aspect (on average 90% of assessors selecting it for each text item where it was the assessors' consensus), then intermediate for the ultimate, social, economic and biotic aspects (70–85%). The lowest-scoring aspects here were the analytical (59%), symbolic (60%) and formative (65%), suggesting that these so-called cognitive aspects need greatest attention in order to improve the standardisation of the PEF (although such divergence does not jeopardise its overall usefulness).

After the PEF was presented, 22 participants provided 134 text items (Table S4) denoting forms of goodness in each aspect, and 15 provided importance ranks as requested. Fig. 4 summarises the importance of the aspects as judged by (i) our classification of the terms provided before the PEF was presented, (ii) the number of terms provided for each aspect after the PEF presentation and (iii) the average importance ranks over the aspects. The lines in this chart provide a profile of what modes of valuing were meaningful to respondents, and it is notable that the most-used aspects before the presentation of the PEF (dashed line in Fig. 4: formative, biotic, jural) show decreased usage afterwards (solid line in

Table 2
Participants' terms allocated to each of the aspects of valuing. Terms in bold occurred more than once and are arranged in decreasing order of frequency. Words in brackets provide context to clarify the meaning of a term and were generally used in at least some responses that provided the relevant term. See Supplementary Material for further details.

Aspect	Adjectives
Biotic	**healthy, biodiverse**, **clean, natural, functioning (ecosystems),** supporting (wildlife), productive, resilient, thriving, high-quality (water)
Sensory	**safe, mental health(−promoting), aware, comforting, wild**, exciting, offering experience of wildlife
Analytical	**diverse, biodiverse**, complex, understandable, evidence-based, evaluated
Formative	**educational, effective, practical**, actionable, conserved, creative, future-facing, historic, native, versatile
Symbolic	**iconic,** accessible (informatively), transparent, engaging
Social	**co-operative, connecting (of people), inclusive**, cohesive, common, family-oriented, sharing, well-led
Economic	**sustainable, cost-effective**, accessible (markets), affordable, developed (livelihoods), efficient, non-bureaucratic, provisioning, scalable, well-connected (by transport), within planetary boundaries
Aesthetic	**beautiful, wild, iconic**, holistic, integrated, recreational, high-quality (of life)
Jural	**accessible, equitable, just, protective, inclusive**, applicable, appropriate, depoliticised, egalitarian, enforceable, fair, integrated (decision-making) politically prioritised, trans-governmental
Moral	caring, compassionate, humane
Ultimate	credible, encouraging, inspiring, intrinsic (value), person-centred, trustworthy

Table 3
Summary of assessors' classification of the terms provided by participants in the pre-presentation exercise. For each aspect, the first column shows the percentage of the 149 text items allocated to it by any assessor, the second column shows the proportion of items allocated by statistical consensus (summing to 1), and the third shows the mean proportion of the four assessors who agreed with the consensus allocation of each text item allocated to that aspect (so 1 would indicate unanimity and 0.5 would indicate a minimal consensus of 2 out of 4 assessors; see Supplementary Material, p.4 for an example). The pre-biotic aspects (numerical, spatial, kinetic and physical) are not used here since in the PEF these are not considered aspects of valuing.

	Percentage of terms allocated to aspect by any assessor	Proportion of terms allocated by consensus	Degree of consensus
Ultimate	12	0.03	0.85
Moral	16	0.03	0.90
Jural	25	0.14	0.75
Aesthetic	22	0.07	0.68
Economic	29	0.13	0.74
Social	29	0.08	0.79
Symbolic	9	0.03	0.60
Formative	33	0.14	0.65
Analytical	17	0.09	0.59
Sensory	23	0.11	0.61
Biotic	25	0.13	0.72

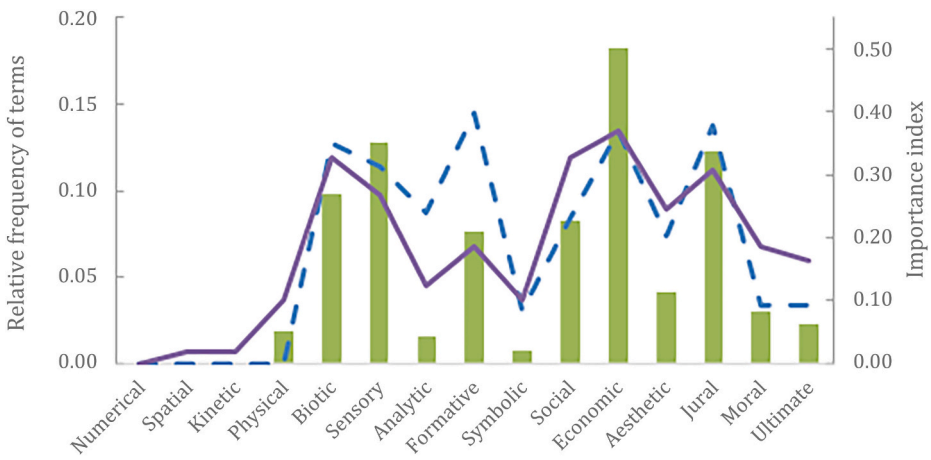

Fig. 4. Summary of workshop participants' interest in the different aspects taken as categories of goodness. The lines indicate the overall proportions of text items (words or phrases, including duplicates) allocated to each aspect for 149 pre-presentation terms (dashed line; data from Table 3, column 2) provided by 19 individual and group respondents before the PEF was laid out, and 134 post-presentation terms (solid line; data from Table S3, column 2) provided by 22 respondents after the PEF was presented. The importance index (bars) for each aspect is based on ranks for the aspects provided by 15 respondents (Table S3, column 4).

Fig. 4). The economic aspect ends up the most prominently used, and was also judged the most important (bars in Fig. 4). While the economic aspect might be expected to dominate because environmental policy-making is heavily influenced by resource constraints, the low appreciation of the symbolic (concerned with clear communication) may indicate an area of neglect, or simply a low priority in environmental policy discourse.

To address our second research question (whether the PEF increases or balances the range of modes of valuing), we used the Simpson diversity index as a measure of evenness across the relative frequencies of each aspect (excluding the first four aspects, which were systematically excluded in the prior allocations). This showed only a slight increase in evenness from 0.89 in the prior allocation to 0.90 after the PEF was presented, which did not allow a rejection of a null hypothesis of no difference ($P = 0.08$; permutation test). Thus, more evidence would be needed to confirm if the PEF may assist policymakers in considering a wider range of modes of valuing – perhaps requiring a longer period for familiarisation with the tool. It is notable, however, that the latest two aspects (moral and ultimate) were used around twice as much following presentation of the PEF. We also find strong positive correlation between the relative frequencies of terms in each aspect and the importance index (rank-correlation coefficient of 0.66; $P = 0.007$). This indicates genuine heterogeneity among the aspects and, addressing our third research question, confirms a correspondence between policymakers' linguistic resources and the perceived importance of the aspects.

Insights from the workshops suggested ways to improve the PEF's application (next section) and also some potential challenges. Clearly, some of the aspects of valuing are more relevant to some areas of policy than others. For example, ways of appreciating the moral (care-focused) goodness of an outcome may be more relevant in more socially focused policy areas than in the environmental scenarios commonly envisaged in the workshops (Fig. 4, Table S3). Crucially, workshop participants were able to propose forms of goodness in each of the aspects, going beyond what the workshop organisers had envisaged (compare value terms in Table 1 with Table 2) – aided by group deliberation at the in-person workshops. While the allocation of terms to the aspects was typically straightforward, in some cases terms were handled in diverse ways, by our assessors (Table 3) as well as by workshop participants. Further work to develop an algorithm for this procedure would be helpful. The most challenging requirement was to separate aspects of valuing from aspects that characterise dynamic processes. Distinguishing stakeholders' actual perceptions of goodness from system states widely taken as goods is paramount for pluralistic participatory policy evaluation. For example, biodiversity and other ecological 'goods' are properties of biotic systems, but people living in an industrialised society probably appreciate these more in analytical or sensory ways than through their own biotic functioning (diet, health and fitness, etc). While the PEF could be used after only a short introduction, further experience or training could help users to make better use of the conceptual framework and maximise consistency from one user to another.

5. How to use the PEF

The experience of the workshops helped refine a process for using the PEF for decision-making purposes. This process has three stages: (1) identifying relevant types of functional stakeholder along with system processes of concern to them; (2) eliciting value judgments relevant to the system processes, from each stakeholder group for relevant scenarios under consideration; and (3) synthesising the information obtained to draw conclusions about overall relative goodness or to make a decision. This section shows how these stages may be implemented, before locating the PEF within a typical policy cycle and providing an example of its application.

5.1. *Identify stakeholders and systems*

It is important to begin by identifying relevant types of functional stakeholder along with the systems and processes likely to be of concern to them and affected by the policy. In Fig. 5, this stage corresponds to mapping out the base of the cuboid. This stage may be iterated during a period of preliminary consultation in order for stakeholders to help identify additional system processes that the policy might affect, which in turn might elicit additional stakeholder groups – perhaps using participatory systems mapping (Lopes and Videira, 2017). Where groups of important stakeholders cannot be consulted directly – for example, spatially remote groups, future generations or non-human animals – their perceptions may need to be imputed by people with as much familiarity as possible. At the same time, many systems are the specialism of an academic community, and relevant academic participation should be included.

5.2. *Elicit evaluative assessments*

Scenarios for comparison will need describing, whether the PEF is being used for appraisal (at the policy development stage) or evaluation (after implementation). The stakeholders then need introducing to the 11 modes of valuing, appropriately tailored to the scenarios and systems of interest. A set of 11 questions concerning the scenario(s) might be provided, such as:

1. How healthy is it for people?
2. How comfortable or stimulating is it?
3. How diverse or interesting is it?
4. How well developed is it?

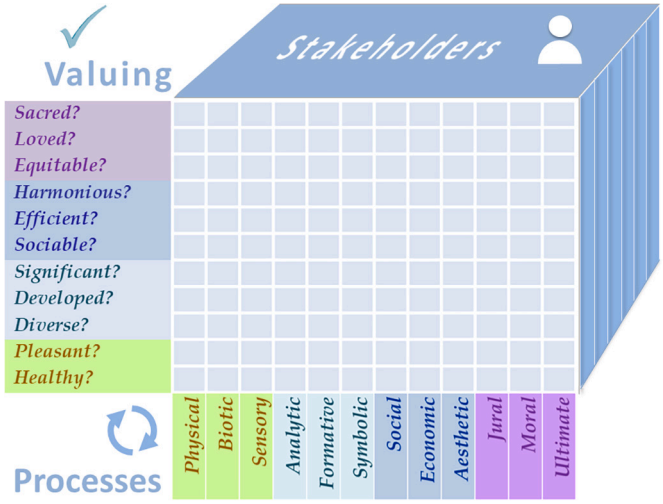

Fig. 5. Illustrative schema for the pluralistic evaluation framework. A set of relevant stakeholder classes is identified (depth layers), and a set of pertinent system processes is listed (columns); each of these sets may represent some or all of the aspects (at least some physical and biotic systems should normally be included). All 11 aspects of valuing (rows) are then considered as each stakeholder class is consulted to find out their perception of the scenario(s) being evaluated in terms of each aspect. The resulting information is then synthesised to draw conclusions.

5. How significant or notable is it?
6. How welcoming or sociable is it?
7. How efficient is it in resource-use?
8. How beautiful or harmonious is it?
9. How fair or equitable is it?
10. How worthy is it of care?
11. How dignified or sacred is it?

Variations on such questions may be required according to the context, and for each system identified in stage 1. Assessments should be obtained in this way for each scenario, covering each relevant system process, before asking each stakeholder to express an overall judgment or preference concerning the scenario(s). This corresponds to filling out the cells of the cuboid of Fig. 5 and then projecting them down to a set of overall assessments, one from each stakeholder.

The type of evaluation required, and resource availability, will determine how much direct consultation of stakeholders can be carried out and how much must be imputed based on existing data and previous experience of similar cases. For a rapid implementation, stakeholders may be given time to consider the questions and then asked to move directly to an overall assessment. In controversial situations, however, face-to-face discussion should be prioritised among stakeholders to assist with mutual understanding as points of agreement and disagreement arise, aspect by aspect. Valuable additional insights and ideas are likely to arise from such discussion.

Different stakeholder groups will naturally have different characteristic concerns and provide different levels of detail in different aspects. It is particularly important to recognise that any institutional stakeholders will have a primary remit (*raison d'être*) determining the aspect of valuing that they can be expected to prioritise (see next section). For example, businesses need to be economically viable, and so economic valuing takes a certain priority by the very nature of what a business is, while some non-governmental organisations are guided by justice, others by care or morality and others by certain perceptions of ultimate value.

5.3. Explore relative overall goodness

The final stage is to draw conclusions about the overall improvement due to the policy, or the relative goodness of the scenarios considered. Each system process may be considered in turn (vertical slices from left to right in the cuboid of Fig. 5) to assess its overall improvement in the eyes of the relevant stakeholders, or each stakeholder may be considered in turn (vertical slices from front to back) to assess their appreciation of the processes affected. A multi-criterion optimisation method (Martinez-Alier et al., 1998; Wątróbski et al., 2019) can provide a formal approach here.

As mentioned in 5.2 above, any institution will have its own primary remit that characterises the mode(s) of valuing that it should prioritise, and this applies to an institution that is using the PEF itself. In general, an institution might legitimately focus on stakeholders' views within its 'leading' aspect (e.g. the jural aspect, for a government institution) along with those earlier aspects that provide its 'constitutive' norms (de Vries and Jochemsen, 2019; Goudzwaard and Zylstra, 1997, chap. 19), while in the aspects beyond this (if any), valuing is likely to be considered for contextual reasons such as public perception. This recognition allows an evaluation to focus on a particular layer – in graphical terms, highlighting a horizontal slice through the cuboid of Fig. 5.

5.4. Application of the pluralistic evaluation framework: an example

The PEF can structure all phases of project and policymaking cycles (Fig. 6), including policy or project appraisal, formulation, implementation, and evaluation, providing an integrative means of generating inclusive interventions and understanding their outcomes and impacts.

By way of illustration, we consider controversies around the siting of wind farms. While recognising that the issues in any particular case are unique and complex, we take the case of Tierra Alta in Catalonia (Zografos and Martinez-Alier, 2009) as inspiration for an overview of how the PEF can be applied. It is recognised that top-down decision making can be a major cause of antagonism (Wolsink, 2007; Zografos and Martinez-Alier, 2009) and that stakeholder participation is important. The PEF would thus begin by using the modal aspect sequence to identify legitimate stakeholder types and, simultaneously, systems of relevance to wind farm developments.

Two physical systems are clearly central: that of the turbines themselves supplying electricity for beneficiaries throughout Catalonia, who thus become a functional group of stakeholders, and the global climate system, concern about which is motivating wind power schemes – and whose stakeholders are in a sense the entire world population (together with other beings, as widely acknowledged). An obvious biotic system is the ecosystem around the installations, where certain amounts of habitat will be destroyed or degraded, and this involves land managers such as farmers as another stakeholder type. Other animals are also stakeholders, and some weighting may be given to the likely deaths of some birds through collisions with turbine blades. Moving ahead to the symbolic aspect, there are communication dynamics, including the notoriety of the Tierra Alta region as the electricity-generating centre of Catalonia (Zografos and Martinez-Alier, 2009), and the role of journalists as stakeholders. This leads us to the social aspect, for consideration of likely effects on the ongoing dynamic of emigration from the region, and to community representatives as key stakeholders. The economic system is prominent: here the owners, staff and potential local employees and contractors of wind energy companies should each be considered as stakeholders as well as local business representatives, actual and potential entrepreneurs, and so on. The aesthetic aspect also features prominently, involving local people and future tourists or immigrants to the region. Justice is a central issue, with debates around fair regional distributions of energy generation and energy consumption, where politicians should bring an overview. Perceptions and forecasts of moral dynamics, as in the existence of community spirit and

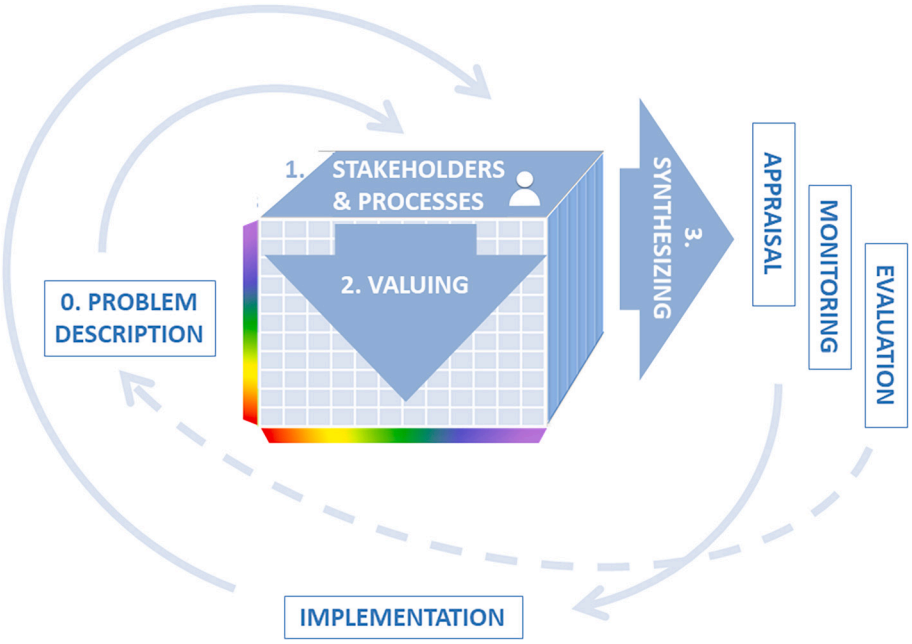

Fig. 6. The pluralistic evaluation framework embedded in a policy cycle. Following description of a problem (stage 0), the three numbered stages of the PEF are sequentially invoked, culminating in synthesis of data for appraisal of options (stage 3). The cycle then continues with the implementation of a chosen option, following which stages 2 and 3 may be used again for monitoring and post-hoc evaluation.

volunteering, should be elicited from community representatives; and finally ultimate commitments, including any religious or ideological dynamics associated with natural and cultural (e.g. Civil War -era) landmarks need documenting in consultation with the most relevant stakeholders available.

As the first stage of the PEF identifies these stakeholders and systems, the second stage involves consultations in which the full suite of modes of valuing (from biotic to ultimate) is laid out for stakeholders to draw upon. In this way it might transpire, for example, that all stakeholders believe that wind power is biotically good, in that electricity supports human life and wind power does less climate damage than prevailing energy sources. In some other modes of valuing there would likely be divergent judgments among the stakeholders, which should be documented and discussed as far as possible. Such discussions around modes of valuing where disagreement occurs should help reduce conflict and might yield creative solutions. This will reduce the burden of the final stage of the PEF, where (presumably elected) decision makers draw together the information and possible solutions or scenarios provided by stakeholders in order to arrive at a best, political solution.

5.5. *Further development*

Our approach could enrich and extend a variety of extant tools. For example, it could be used as the next step beyond ecosystem services assessments, or to open up natural capital accounting to consider a full range of stakeholders and modes of valuing. Also, stakeholder participatory methods such as systems mapping and scenario planning are gaining ground as a useful way of understanding complex environmental systems (Capitani et al., 2016; Lopes and Videira, 2017). These could be expanded into a value-explicit format, as well as being resolved into separate system layers corresponding to relevant scientific disciplines. The PEF can thus help prevent illegitimate dominance of unstated transcendental values (priorities) held by experts or dominant groups – what might be called 'value hegemony' – by retaining evaluators' focus on a broad spectrum of ways of valuing in which stakeholders can express their evaluations with a large number of degrees of freedom.

At the same time, value-explicit consultation methods (Jacobs et al., 2016) could be enhanced with the PEF's value structure, including the posited 11 aspects of valuing and/or the idea of a sequential arrangement. For example, our approach can shed light on why value attribution tends to become progressively more variable among stakeholders as we approach the 'ultimate' end of the sequence of aspects (Söderberg and Eckerberg, 2013). Different religious and ideological ways of valuing a situation are notoriously divergent and may also colour people's ways of valuing earlier in the sequence, such as in notions of what is aesthetically, economically and socially preferable. In the biotic aspect, on the other hand, physiological realities of the human constitution largely determine the range of what may be considered biotically good (nutritious diets, basic hygiene, etc) or sensorially good (predominance of greenery, quiet ambience, etc.). It is important to account for such divergence of attitudes in global contexts where transnational policies are formulated, as well at more local scales – not least between urban and rural communities in the same region.

Future work should explore the usefulness of a pluralistic evaluation approach to wide-ranging policy areas and scales, from regional development plans to the aspirations of the UN Sustainable Development Goals. For example, the PEF could be used to guide the implementation of some of the large-scale and long-term objectives of the UK government's 25-Year Environment Plan (Defra, 2018), and should be particularly helpful in the holistic search for so-called just transitions towards sustainability (Krawchenko and Gordon, 2021). More specific tools could be developed (i) to help elicit plural value judgments from stakeholders, perhaps (ii) using a text analysis interface for semantic coding of free-text responses (McGibbon, 2018); (iii) to facilitate hybridisation with more systems-focused methods and (iv) to contribute to multi-criterion assessment methods. Work is also needed on ways of incorporating people's valuing of particular places and entities, where plural modes of valuing seem to collapse into a notion of unconditional intrinsic value (love), as indicated by O'Neill's focus on *de re* valuing (O'Neill, 2020, 2017). The framework foregrounds the challenge of integrating the diverse interests of stakeholders and the plurality of forms of goodness, which is ultimately a political one.

6. Conclusions

We have described a novel decision-support tool that brings together basic philosophy, public policy and social-ecological systems thinking to provide a standard framework for structuring any kind of policy or project evaluation. Whilst our focus has been on environmental policy development, the framework can equally well be used in any situation calling for assessment of the overall goodness of changes, experimental comparisons or hypothetical scenarios.

Our approach bridges an important gap between valuation and value, on the one hand, and evaluation and values, on the other – providing a robust alternative to monetary approaches (compare Lo and Spash, 2013) by implementing a matrix model of multi-criterion evaluation (Martinez-Alier et al., 1998). Its key innovation is employing a philosophically nuanced common framework to bring together stakeholders, systems and valuing. The PEF thus extends the sustainable development evaluation framework of Brandon and Lombardi (2010), which looks at how systems function in all 15 of the aspects posited in Reformational philosophy to classify sustainable development issues in urban planning and design. Normative issues are implicitly considered there from the biotic aspect onwards, anticipating how the PEF provides a systematic separation of normative considerations (valuing) from functional ones (processes).

In summary, a pluralistic evaluation framework such as described above offers a comprehensive, relational, context-sensitive framework for more transparent, participatory decision making in environmental policy evaluation and elsewhere. It should help make policymaking more democratic and ethically inclusive, reflecting a comprehensive range of modes of valuing extending beyond the usual instrumental ones, and hence delivering better and less-controversial outcomes.

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Data accessibility

The data in this study arise from discussions and are not made available for the sake of participants' privacy.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary material is provided concerning the workshop events: Organisation (Table S1, Fig. S1); Data analysis; Results (Tables S2, S3); Allocation of text items to aspects (Table S4); Discussion. Supplementary data to this article can be found online at [https://doi.org/10.1016/j.ecolecon.2022.107420].

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