Work Package Report 6: Shared, plural and cultural values of ecosystems – Summary

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How to read this report

The UK National Ecosystem Assessment follow-on Work Package on Shared, Plural and Cultural Values (NEAFO WP6) report consists of the following main documents:
- The full report
- A summary to the full report
- A handbook for decision-makers, analysts and practitioners

The summary and full reports both start off with a set of key findings. The summary key findings can be read as an executive summary. The full key findings provide more detailed conclusions and an overview of the evidence that supports each of the findings, with reference to the report sections where one can find further detail.

The summary and full report apply the same section headings and numbering. This facilitates using the documents side-by-side, allowing the reader to dip in and out of the full report where he or she is interested in greater depth or wants to look up references. Note that the full report also contains a list of abbreviations.

The handbook provides a brief explanation of what shared, plural and cultural values are and why they are important to national and local government, business, NGOs, policy-analysts and practitioners. It provides an overview of methods for assessing shared, plural and cultural values and incorporating them into decisions, with short examples and case studies.

In addition to these three documents, WP6 has also produced an interim report titled *The value of potential marine protected areas in the UK to divers and sea anglers*, which can be read independently or as supporting material for the marine protected areas case study in Section 4.4.

Key findings

Finding 1: Shared values resulting from deliberative, group-based valuation are different from individual values. Case study evidence suggests that they are more informed, considered, confident and reflective of participants' deeper-held, transcendental values. Deliberated, group-based monetary values may be a better reflection of real welfare impacts than non-deliberated individual values, if derived through a carefully designed and managed process. Although more research is needed to expand the currently small evidence base on deliberative monetary methods, group deliberation has the potential to significantly enhance elicitation of values.

Finding 2: The ethical, moral and justice dimensions of many environmental issues necessitate approaches that allow for the elicitation of shared and plural values. Key ethical concerns include: 1) providing a space and opportunity for people to identify values that they may find difficult to articulate (e.g. spiritual, identity); 2) recognising that some values cannot be traded without discussion and negotiation (e.g. the legal or felt rights of local people, intrinsic values of other species); and 3) understanding that it is often difficult to isolate valuation from decision-making processes because people feel there are strong ethical or moral issues at stake that need to be debated (e.g. the justice of the process, fairness in the distribution of benefits or disbenefits, responsibility, and issues of sustainability and future generations).

Finding 3: Catalyst and/or conflict points can play a key role in the emergence and articulation of values at a societal or community level that have not previously been outwardly or explicitly articulated. Catalyst and conflict points can be symbolic and are often linked to wider contested issues and meanings about who is involved in decision-making, whose voice counts and who receives the benefits or disbenefits of environmental change. These catalyst points can potentially be connected to feelings of powerlessness that give rise to concern and protest. By recognising transcendental societal and communal values (the deeper-held and overarching values held by society and communities), it becomes possible to make these values explicit and incorporate them in decision-making to better anticipate and manage conflicts.

Finding 4: There is a diversity of ways in which shared, plural, cultural and social values are used, but they are rarely conceptualised. The UK NEAFO provides a clear theoretical framework that distinguishes and categorises different dimensions and types of shared values. The proposed range of value types was both identifiable and distinguishable within case study results. This suggests that the framework provides a useful basis for operationalizing shared values for decision-making.

Finding 5: Shared and social values in the sense of value to society is conceptualised very differently by conventional economics and other disciplines. Neoclassical economists have generally undertaken valuation by equating social value with the aggregate of individual values. They consider values as fundamentally commensurable. In contrast, literature from other disciplines consistently considers values as plural, not just in the sense that multiple things have value, but also that there are multiple dimensions to value that cannot necessarily be captured in a single metric. Within mainstream economics, the difficulties associated with commensurability and aggregating values have long been recognised, but have also been neglected. An interesting area for future debate between economic and non-economic views on values may be the normative nature of value-aggregation.

Finding 6: A mixed method approach is required to elicit the multiple dimensions of shared values and to translate deeper-held, transcendental values into contextual values and preferences. Monetary valuation is limited to quantifying values. Other methods are needed to understand their meaning or content, and the communal, societal and transcendental values that underpin them.

Psychometric, non-analytical and interpretive methods (e.g. storytelling) can reveal those shared values. They can be combined with deliberative-analytical methods (e.g. deliberative monetary valuation and multi-criteria analysis) to provide a comprehensive valuation that can quantify values, understand their individual and shared meanings and significance, and better include ethical dimensions.

Finding 7: Deliberative and social learning processes help people to understand the values held by others; they can lead to increased sharing of values and/or to greater acceptance of the decisions emerging from such processes. Deliberation clearly affects what values participants express compared to non-deliberated processes. There is also a growing body of theoretical and empirical research suggesting that deliberation has the potential to affect how people understand and shape the values of others. Although rarely considered in the economic literature, the concept of social learning helps to explain some of the processes involved in deliberation. The extent to which deliberation or social learning helps participants express and shape values will depend upon the frequency and depth of interactions and the timescale over which interactions occur. Only a shift in cultural values (e.g. less emphasis on material wealth), reflected in other societal institutions (e.g. changes in the indicators used to measure national progress) is likely to achieve sustainable outcomes in the long-term.

Finding 8: Media analysis is a promising avenue for characterising different types of shared values at a large scale, as well as assessing the conflicts between the communal values of different sectors of society. There has been a marked increase in public interest in environmental issues over the last decade, which is reflected in their increased media coverage. Media content and discourse analysis is able to distinguish and characterise the plurality of cultural, societal and transcendental values and their interrelationships, and can offer a picture of the self- and other-regarding values that underpin environmental issues and conflicts. Social media can provide a further forum for understanding societal and communal values surrounding environmental issues.

Finding 9: Aesthetic and spiritual values of ecosystems have a strong non-instrumental component. While they benefit human well-being, they should not simply be classified as just 'services' or 'benefits'. Many spiritual discourses about nature resist talk of consequentialist benefits and economic analysis. These discourses counter assertions of the disenchantment of the world, which is associated with an instrumental environmental ethic and the commodification of nature. Allowing the possibility of enchantment can be a richer way of understanding our experience of nature and alerts us to the limitations of using economic models for valuation and informing decisions about these profound cultural ecosystem 'services'. Faith communities have experience of using these non-utilitarian values in their own decision-making and provide models that could be adapted for use in environmental decision-making.

Finding 10: Subjective well-being measures provide a useful means of assessing 'intangible' cultural ecosystem services and their benefits. Different user groups associate common elements of subjective well-being with environmental settings, providing opportunities for development of standardised measures. In the UK NEAFO, key facets of well-being associated with places in nature across different user groups included: engagement with nature (incorporating elements of connectedness, getting to know nature and the beauty of nature, and taking care of a place); therapeutic benefits (including physical and mental aspects of health); place identity (including a sense of place and belonging); spiritual value (in the sense of feeling connected or responsible to something larger than oneself); social bonding with others; and transformative and memorable experiences. Further empirical work with different user groups and environmental settings would

allow for the continued development of a standardised tool for large-scale non-monetary assessment of cultural ecosystem services.

1 Introduction

The continued exclusion of the many societal values of nature from economic and governance systems lies close to the root of the sustainability challenges facing our future. The UK National Ecosystem Assessment (NEA) concluded that there is no single approach to understanding value, and that a plural approach is therefore needed to identify and account for the full value of biodiversity and ES for human well-being. Conventional approaches to valuing the environment and the economic theory on which these methods are based understand value as ultimately individual. The social value of the benefits provided by ecosystems is typically considered through aggregation of benefits to individuals. People's values are assumed to be pre-formed, and are often elicited through surveys. However, such methods may not be able to fully elicit and reflect collective meaning and significance ascribed to natural environments. This potentially misses out on important, shared dimensions of social value.

Deliberative and participatory approaches to environmental valuation and appraisal are increasingly advocated as a way to better recognise the multidimensional character of values, although the debate is still open on whether these methods should augment, complement or replace more conventional methods such as contingent valuation (CV) and cost-benefit analysis.

In the NEA, 'shared values' or 'shared social values' were included as a separate, distinguishable value category besides economic and health values. However, shared values and related concepts have so far not been clearly defined or established theoretically in relation to valuing nature. There has also been little empirical evidence to establish their significance, or their relation to individual values. For the purpose of brevity we will use the term 'shared' values as shorthand for shared, social and cultural values in their various forms and guises unless stated otherwise.

This NEA follow-on Work Package (NEAFO WP6) aims to characterise shared values, understand their relationship to individual values, and develop methodologies to assess them, operationalising them for decision-making. While this chapter frames issues around shared values within the field of valuing the environment, shared values are of course relevant to a much wider range of policy decisions, and the discussion here will be relevant to all areas where there is a desire to better incorporate social impacts and well-being into policy decisions.

In addition to the key findings that preceded this introduction, this report consists of five main sections. In the remainder of this Section, we will define seven main types of shared values, and key related terms. In Section 2, we review the literature on shared, social, plural and cultural values. The review consists of a rapid evidence assessment and three expert-led reviews on shared values in relation to cultural services, conventional economic valuation, and deliberation and social learning respectively. Section 3 establishes a theoretical framework that considers a typology of shared values and related terms, discusses the relation between shared values and the individual, and develops a framework of deliberative methods for assessing shared values. Section 4 evaluates four empirical case studies. This is followed by a concluding discussion (Section 5).

1.1 Definitions

Shared values and related terms can be interpreted in many ways. To reduce ambiguity and distinguish these different interpretations, we discriminate five *dimensions* of values: (i) the value concept; (ii) the value provider; (iii) the process used to elicit values; (iv) the scale of value; and (v) its intention (Figure 1). These dimensions will be discussed in more detail in our theoretical framework

(Section 3). Along these five dimensions we found seven, non-mutually exclusive main types of shared and social values:

1. *Transcendental values*: principles and conceptions about desirable ends that go beyond or transcend specific situations. Transcendental values are a deeper held type of value; they are often shared between communities or within society and thus termed as shared or social values.
2. *Cultural* or *societal values*: culturally shared principles and virtues as well as a shared sense of what is worthwhile and meaningful. Societal values are the cultural values of a society; societies may be more or less homogenous, so there may be multiple sets of cultural values in one society that overlap to a greater or lesser degree with each other.
3. *Communal values:* values held in common by members of a community (e.g. geographic, faith/belief-based, activity-based, community of practice, etc.).
4. *Group values:* the values expressed through a group as a whole within a valuation context, e.g. through consensus or majority vote, or more informally.
5. *Deliberated values*: Value outcomes of a deliberative process; typically, but not necessarily, a deliberative group process that involves discussion and learning.
6. *Other-regarding values*: the sense of importance attached to the well-being of others (human or non-human), or regard for the moral standing of others.
7. *Values to society*: worth or importance to society as a whole.

Further points of definition involve the values that are generally not considered to be shared. We contrast transcendental values with *contextual values*, which are context dependent. For example, one might value peacefulness (transcendental) and also value the Scottish Highlands (contextual), perhaps because one might experience them as a peaceful place. Beyond transcendental and contextual values, there are *value indicators*, including monetary values. Cultural, societal, communal and group values can all be contrasted with individual values, deliberated with non-deliberated values, and value to society with value to the individual (see **Figure 1** and Section 3).

With regard to the phrase 'plural values', values can be plural or multidimensional across the dimensions we have stated above, but the term may also refer to the notion that individuals will have multiple sets of values depending on framing and mode of elicitation. The term is often associated with the notion of incommensurability, as will be discussed in the next section.

Figure 1. Five dimensions of value and seven main types of shared values. Dimensions are depicted as diamonds. Emerging from the dimensions, we can differentiate between types of values that might be termed shared, social, or shared social values (circles with bold text); and other types of values (other circles). For example, *provider* is a dimension that indicates who may provide values in a valuation setting; societies, cultures, communities and ad-hoc groups provide *societal*, *cultural*, *communal* and *group* values, which are all distinct types of shared values. Individuals also provide values, but these are not termed shared, unless they can be classified as such on a dimension other than that of value-provider.

2 Literature review

The literature review for this work package chapter focused on three key questions. It first considered how shared values were conceptualised. It then looked at the processes and methods used to discover, uncover or identify these values. Finally it explored how values have been incorporated into decision-making processes. To address these questions, we undertook a multi-pronged approach to our review using four complementary methods: 1) a preliminary expert-led review to assist in the development of the seven main types of shared and social values and to act as a basis for framing the case studies and full literature review; 2) a rapid evidence assessment (REA); 3) provision of four context-specific examples in order to examine how dimensions of shared values have been conceptualised and applied in different sorts of decision-making processes; and 4) expert-led reviews of some of the more challenging and contentious issues related to valuing cultural services focussing on spiritual and aesthetic benefits, assessment of shared and social values in conventional economic valuation and critiques thereupon, and deliberation and social learning.

2.1 Preliminary examination of literature

The preliminary review focused specifically on the usage of the terms 'shared', 'social' and 'shared social' values. Within the fields of ecosystem assessment and environmental valuation, these terms have come to indicate a wide variety of different constructs. For example, these include: the sum of individual values or aggregated willingness to pay (WTP); values associated with certain social and cultural contexts; values that individuals only hold in social situations; values resulting from group processes during valuation; altruistic values; and meta-values, i.e. 'shared' values about how values should be treated, such as fairness norms and other procedural values such as respect or justice. Use of these terms was extremely 'fuzzy' and they were often ill defined.

2.2 Rapid evidence assessment

The Rapid Evidence Assessment (REA) approach incorporated some of the principles of a systematic review into a time-limited period. The REA itself was divided into three parts, one concentrated on non-economic literature, the second examined economically-focused literature, and the third focused on shared values in the field of health valuation: these are presented separately. The REA focused on English language literature searching for combinations of 'plural values', 'shared values', 'cultural values', 'social values' paired with 'nature', 'ecosystem' and 'natural environment'. We consider findings from the non-economic literature first.

Within the 117 non-economically focused papers that were identified, half (52%, n=61) discussed values in relation to ecosystems of Europe and North America and primarily emphasised cultural (e.g. leisure, recreation) rather than provisioning, regulating or supporting services. Within the majority of papers (57%, n=67) the term cultural values was used; the terms shared values or social values were each found in under a quarter (the phrase plural values occurred in only four papers). These terms were used interchangeably, and frequently within the same paper. **Table 1** provides specific examples of the ways in which these terms were used across the non-economic literature. Social and cultural values were described in similar ways, while shared values connected to issues of ethics and fairness, shared responsibility and shared meanings. The term plural values, when explicitly stated, was used as a concept to denote when multiple potentially incommensurable dimensions of values were identified, such as aesthetic, heritage, moral, social value, etc. However, there were many papers that implicitly considered the multidimensionality of values. The review highlighted the range of non-economic disciplines that are attempting to understand this plurality and investigate the complexity of values associated with the natural environment. Reduction of

values to a single metric was largely absent with empirical studies employing multiple methods, integrating them for both practical and innovative benefit. The geographical distribution of papers from this review raises interesting questions about the lens through which values and nature were being considered. The environments were predominantly those found in northern latitudes. Values were less related to the dependence of livelihoods on natural resources and more focused on cultural ES.

Cultural, shared, social and plural values were considered in the non-economic literature across four broad domains. The vast majority focused on the identification of values associated with the natural environment generally (43%) or the management of an environmental setting more specifically (41%). The remaining two domains included the consideration of these values in relation to conflict (6%) and participation (3%).

A limited number of papers (6%) demonstrated explicit or substantive integration of cultural, shared, social and plural values into decisions about the management of ecosystems. By broadening the idea of what decision-making might entail to include the explicit consideration of whose values to include and how to involve those value holders (individuals, communities, stakeholders) into the decision-making process, a further four papers were identified. However, the importance of including multiple dimensions of values in the process of decision-making was strongly asserted by all 117 papers.

Within the economic literature, searches for 'plural values' and 'shared values' found very low rates of usage, including in disciplines such as ecological economics. The existence of plural values was sometimes asserted and, while no clear definition was provided, is perhaps best translated as the identification of multiple values. In the terminology of mainstream economics, this falls within the debate about 'incommensurable values' (i.e. values not reducible to a single metric) and their implications for economic analysis and valuation. When the term shared values appeared in the literature, its usage was consistent; that is, values held by more than one person, particularly more fundamental values or norms, such as fairness, honesty, etc. The term 'social values' was more commonly used, usually in the sense of aggregate value to society. Although these specific terms are not heavily used in the economics literature, the concepts to which they relate are debated, though considerably more so by ecological and institutional economists than by neoclassical economists. A more detailed discussion of the key issues in relation to shared values and economics is discussed in Section 2.4.2.

Similar results were found from the examination of health valuation literature; the terms 'plural', 'cultural' and 'shared' values are not used in relation to valuing health care. A small set of papers did discuss 'social' values. Important themes within these papers were societal values vs individual values; inclusion of a range of values rather than focusing on a single metric such as Quality Adjusted Life Year; and issues of equity and the severity of illness. As with the environment, health is a morally and emotionally charged subject and discussions around incorporating transcendental values of fairness and responsibility were identified. There is increasing interest in the field of health care valuation to moving beyond the conception of value as purely utilitarian and individual. There is also increasing consensus that health value is multidimensional. The review identified interesting opportunities for cross disciplinary learning and sharing of insight with regard to methodological approaches, e.g. use of choice experiments (CEs) that investigate social WTP, or intregration of the person trade-off technique used to assess value to society in health valuation with the use of deliberative methods more common in the environmental field, sometimes called 'communitarian' approaches in the health field.

Table 1. Specific examples of different values as discussed in the reviewed non-economically focused literature.

Value Term	Described as…	Observations made in the literature…	Manifestation through…	Contribute to…	Links to theoretical framework – Types of shared values
Cultural	Sense of place Stewardship obligation Recreational Aesthetics Education/scientific Cultural/historical Spiritual, sacredness To live in a place Reinhabiting Insideness	Frequently discussed as/in conjunction with ES Moral dimension Difficult to map across different communities	Place names Performing arts Oral traditions Rituals/festivals Knowledge Traditional craftsmanship	Place-based identity Spiritual connection to land	Other-regarding values Cultural or societal values Transcendental values
Social	Recreational Aesthetic Biodiversity Future generations Life sustaining Therapeutic	Contested concept Some more easily quantified Differing degrees of influences on experience, belief, behaviour Perceptions are filtered through social values	Tourism Real estate Recreational fishing Research studies Landscape painting Performing arts Sense of place Childhood play & discovery	Civic engagement in decision-making	Cultural or societal values Group values
Shared	Fairness Care Justice Shared senses of 'selves in place' Nature's creativity of processes provides human opportunities for expressing universal values Resilience Shared responsibility Normative principles for a profession Core beliefs providing perspectives on severity, causes of habitat degradation	Ethical principles needed for professions that modify the landscape (e.g. planning) These are or need to be across multiple stakeholders Distinction between core beliefs & preferences; preferences considered secondary beliefs	Set of principles or professional standards Shared vision across multiple groups Civic engagement Shared values may be recognized through deliberative approaches	Professional ethics Collective sense of ownership Increased feelings of responsibility Increased participation & engagement	Transcendental values Other-regarding values Value to society

2.3 Context-specific examples

In the full report, we provide four examples that investigated how dimensions of shared, social, cultural and plural values have been conceptualised and applied in different arenas and decision-

making processes. The first two are real world examples and provide reflections on the effort to part privatise public forests in England and the siting of wind turbines in the UK countryside; the former provides an opportunity to consider how and when these types of values emerge within the public sphere while the latter examines the reasons for and against such siting through the lens of the values typology that we have developed. The third is a conceptual example and explores shared values and the commons. The final, methodological example considers what data sets already exist that can provide further insights into these types of values.

2.4   Expert-led literature reviews

Three expert-led reviews addressed key conceptual and methodological areas considered germane to the overarching review questions. The first considered how the spiritual and aesthetic values of nature have been conceptualised, and how this may then inform decision-making. The second reviewed limitations of economic valuation approaches to evaluating shared values, and the third explored the role of deliberation and social learning in shaping and expressing shared values.

2.4.1   Expert-led review one: Shared values, cultural ES and their spiritual and aesthetic benefits

Although some of the spiritual and aesthetic benefits of nature can be considered in economic terms, monetary valuation of spiritual and aesthetic values presents particular technical, philosophical and ethical challenges. This expert-led review therefore considered how aesthetic and spiritual values of nature have been conceptualised in the literature. It considered how they may be collectively held as shared, often transcendental values, and how shared aesthetic and spiritual of nature can be assessed to inform decision-making.

Aesthetic benefits from nature were often conceptualised quite narrowly in the literature as 'scenic value'. Some of this literature sought to identify universal characteristics of landscapes that make them aesthetically pleasing to the viewer. Other literature recognised the plurality or 'intersubjectivity' of individual aesthetic judgements, recognising a range of legitimate grounds for aesthetic judgments about nature, from scientific knowledge to emotional and imaginative responses. Studies have shown how natural beauty can produce feelings of inspiration, harmony, peace and security. However, while considering aesthetic preferences, most of these studies stopped short of assessing the extent to which aesthetics may shape, or be shaped by, deeper-held, transcendental values, and the extent to which these values may be shared by particular groups or communities of practice.

Spiritual benefits from nature were conceptualised in the literature in a range of ways. In the traditions of natural history and romanticism from the 18th century, nature is viewed as a way of discovering spiritual insight as much as it was something to be studied and understood in scientific terms. Other literature focuses on the link between spirituality and indigenous relationships with the natural environment, emphasising the shared value of particular locations or natural features in the landscape for local communities in Britain. There is a growing awareness of a 'sacred presence in nature' and renewed interest in outdoor worship, pilgrimages and 'sacred sites' in the UK, including in Christianity. Linked to this, some literature explored the extent to which specific characteristics of the natural environment (e.g. greenness, openness and natural sounds) may facilitate spiritual experience and enrichment. This evidence suggested similar landscape features facilitated the co-emergence of both aesthetic and spiritual values in particular locations. Although often implicit, it was clear that much of this literature was concerned with transcendental values, both those shared within a community of practice e.g. a religious community or movement, and more widely in a

society when less explicitly religious. Because they are implicit and people may be reluctant to express them in certain contexts, these transcendental values are often not recognised in decision-making, so that deliberation may be necessary to make them more explicit. Interpretive and mapping methods also provide opportunities to bring out spiritual and aesthetic values and the way they may vary across land- and seascapes.

Although a number of landscape designations are informed by aesthetics (e.g. Areas of Outstanding Natural Beauty and National Character Areas) there is no explicit protection afforded to the spiritual benefits of nature[1], and no explicit evidence was found that spiritual values have driven policy decision-making in the UK. However, spiritual concepts and metaphors can have transcendental power in shaping the way a culture conceptualises and interacts with nature. As such, spiritual values of nature and spiritual disbenefits of degrading nature have been used to promote new cultural norms in relation to the environment. Many spiritual discourses about nature resist talk of consequentialist benefits and economic analysis. These discourses counter assertions of the disenchantment of the world associated with the commodification of nature. Allowing the possibility of 'enchantment 'as a way of approaching our experience of and connection to nature alerts us to the limitations of economic models for valuation and decisions about cultural ES.

2.4.2 Expert-led review two: Shared and social values in conventional economic valuation

In terms of value in the sense of worth (contextual values), many mainstream economists have gone about valuation by equating social value with the aggregate of individual values. Whether something has value to an individual would depend on his or her preferring that thing over another, with an assumption that satisfying preferences generally increases individual welfare (subject to information and cognitive constraints). From this perspective, it is possible to consider things such as the value an environmental setting has for others, future generations, or other species, as long as it is assumed that they are part of what drives people's self-regarding, individual preferences and demand. It has to be assumed that people trade these things off in the same way as any other goods, so that they can be rendered commensurate in the same monetary terms.

When aggregating preferences, some kind of agreement is thus needed on how to aggregate within dimensions (i.e. how much does each individual count), and across dimensions of valuation (i.e. how are different value criteria to be made commensurate). Hence, critiques of conventional welfare economic approaches to valuation and appraisal typically concentrate on assumptions around commensurability of different (plural) values, and the aggregation of individual preferences to value to society.

The question of commensurability is problematic in welfare economics because, if value is by its nature plural, then there are many possible ways of trading off more than one dimension of valuation. Take, for example, appraisal of a hypothetical proposed mining project. Dimensions of value could be the usual costs and benefits (expected revenue, construction and operational costs, etc.), the livelihoods of people, the cultural impact of the project, and impacts on local biodiversity. In conventional economic analysis, if the benefits outweigh the costs after compensation, the project would be 'efficient' and deliver a net value to society (even if these compensations do not actually take place). However, cost-benefit analysis enforces a set of assumptions that the ecological, social and cultural dimensions of value can be compensated fully and justly. Unless all parties completely agree about how different dimensions should be traded-off against each other, it

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[1] With the possible exception of Faculty Jurisdiction over churchyards.

is not possible to come to any single conclusion. Plurality of values is not just a theoretical issue, but is also reflected in the wide range of motivations that underlie WTP in (contingent) valuation studies, including moral and political stances as well as expressions of welfare gains or losses.

In terms of the aggregation of individual preferences, it first needs to be assumed that satisfaction of preferences is desirable in itself. Some authors argue that this is not self-evident. Individuals sometimes exhibit preferences which do not appear to observers to increase their well-being (for example drug use or self-harming behaviour), or preferences may be sadistic, envious, racist, unjust, etc. Preferences also are often uncertain and transient. Others follow a different line of argument. In CV and other stated preference studies, but also in actual markets, behaviour and WTP is in part determined by other-regarding values and moral norms. Thus, it goes beyond the selfish utility maximisation assumed of individuals by welfare economics. This means that economic cost-benefit analysis (CBA) does not actually establish value to society: if individual preferences are not just about one's own welfare, by necessity summing their overall satisfaction does not equate to a measure of social welfare.

Even when we assume that individual prefernces can be aggregated to the social scale, there is no objective way to aggregate the preferences of diverse individuals, and mainstream economists themselves have questioned whether aggregation of individual preferences in CBA can lead to any kind of consistent ranking of policy alternatives. To resolve these issues, critics have argued that valuation should seek to elicit not only consumer preferences based on an 'I want' but also citizen values around notions of 'society should', determined through shared democratic deliberative processes.

2.4.3 Expert-led review three: Shared values, deliberation and social learning

There is limited research that directly considers how deliberation or social learning influence how values are shaped or shared. However, it seems clear that values are shaped by social interaction and the norms and cultures in which these interactions are embedded. Deliberative and social learning processes may therefore provide opportunities for helping people understand the values of others and, if designed appropriately, can lead to increased sharing of values or greater acceptance of the decisions that emerge from such processes, even if the values that underpin those decisions are not shared.

There is mixed thinking about whether deliberative processes can shape or change how values are expressed (and whether or when this may be desirable). Some argue that while these social interactions may change how people understand or approach a situation, they do not necessarily result in changes to their values. Others argue that people do not always have pre-formed contextual values; rather, they tend to form these values through deliberation with others. The extent to which deliberation with others helps participants shape and express values is likely to depend upon the frequency and depth of interactions and the time-scale over which interactions occur. The likelihood that deliberation will facilitate the sharing of values is seen to depend upon the diversity and initial preferences of participants in a deliberative process and the way in which interactions are managed (in particular the management of group power dynamics, e.g. through professional facilitation).

From the discussion in this Section, it is possible to extract five key factors that affect how values are expressed and shared. These need to be carefully considered in the design of deliberative processes to elicit values:

1. Extent to which people are able to make their values explicit and/or deliberate around certain tasks (e.g. education, social-economic status).
2. Context in which the social interaction occurs (e.g. how questions are framed or how power dynamics are managed).
3. Extent to which the deliberation or social interaction occurs (e.g. intensive, less intensive).
4. Extent to which values are explicitly considered in deliberative processes (e.g. the degree to which values are discussed directly will affect the extent to which participants reflect on which values are important).
5. The length of time over which social interaction occurs.

2.5 Literature review: Synthesis discussion

Findings from all aspects of the literature review illustrated the plurality of ways in which shared, cultural, plural and social values are conceptualised. The review as a whole highlights a lack of clarity of meaning, a fuzziness of concept and an interchangeability in usage of the terms shared, cultural, social, and plural values. Within the literature there is clearly a set of values that are considered core or fundamental, such as ethical or moral issues or key beliefs that are part of individual or community identity. It also highlights often strong contextual cultural and communal values related to specific places, objects or practices, which may be seen as special, sacred, protected or taboo. Both of these types of values can be incommensurable and give rise to protest if people are asked to monetise them or trade them off. Plural values, while a term that was infrequently used explicitly, was nonetheless implicitly present, reflecting the multidimensionality of values both within (e.g. citizen vs consumer values) and across value holders, and across different dimensions of value. As such, it may be fruitful to distinguish it as a distinctly different category from the other sets of terms. How to incorporate this plurality is a critical question in both the research about values and the management of specific places.

The review highlighted the range of disciplines that are attempting to understand this plurality and investigate the complexity of values associated with the natural environment. There were key conceptual differences between the non-economic and the economic literatures based on fundamentally differing epistemologies. The non-economic literature implicitly considered values as plural not just in the sense that multiple things have value, but also that there are multiple dimensions to value that cannot necessarily be assessed through a single metric. There was a willingness to accept this plurality and a focus on understanding those values; sometimes from groups whose voices are not always heard, such as indigenous groups or the marginalised. Conversely, the mainstream economic literature considered plurality primarily as a technical issue (as protest responses, such as refusing to state WTP, and lexicographic preferences, i.e. preferences that trump other preferences), while in the broader economics literature, value plurality is largely discussed in terms of (in)commensurability – the possibility or otherwise of aggregating different value types. Perhaps the most promising area for debate between economic and non-economic views on values is the discussion on the normative nature of value-aggregation, an issue which has been recognised by but perhaps been neglected in mainstream economics. In the natural sciences, shared values are not generally considered, but they feature implicitly in the adaptive (co)management literature where the epistemologies and values of disparate stakeholders need to be reconciled with those of natural scientists.

The review also brought out the interplay between shared values and CES. Review of the literature on spiritual and aesthetic values points out the complex nature of CES, where values defy being conceptualised as instrumental. The review showed that there is a strong link between transcendental values and cultural 'benefits'. Value ascribed to places does not necessarily flow from receiving benefits, but can be inspired by duty and virtue, or it can arise in a relational way. Whether

or not because these cultural 'benefits' are hard to frame into a utilitarian framework, the lack of integration of CES into decision-making is starkly evident, a point that is also emphasised by UK NEAFO WP reports 5 and 9.

3   Theoretical framework

This part of the chapter first develops a detailed typology for shared, plural and cultural values. We then discuss the relation between shared values and the individual. The third section discusses assessment of shared values and the fourth section of the framework conceptualises deliberative processes to capture shared values.

3.1   Dimensions and types of shared values

To reduce ambiguity and distinguish different interpretations of shared values, we discriminate five *dimensions* of values: (i) the value concept; (ii) the value provider; (iii) the process used to elicit values; (iv) the scale of value; (v) and its intention (**Figure 1**).

In terms of the *concept of value*, we make a distinction between values in the sense of "*criteria that people use to select and justify actions and to evaluate people (including the self) and events*" (Schwartz, 1992, p1), values in the sense of opinions about worth or importance, and the worth of something itself, often expressed in monetary terms. Another way of looking at this is that values can be differentiated between guiding principles and goals that transcend specific situations (e.g. fairness, honesty, enjoyment), which we will call *transcendental values*, values that are dependent on an object of value and hence contextual and attitudinal, which we will call *contextual values* (e.g. clean water), and measures of the worth of something (e.g. WTP of £100 to improve water quality), which we will call *value indicators*. Because transcendental values are often associated with ethics and normative beliefs, which are shared culturally, it is these values that are sometimes characterised as shared, social or cultural values, in contrast to contextual values that are more allied with attitudes and preferences. In psychology, transcendental values are seen to be relatively stable.

We distinguish four *providers of value*: individuals, groups (in a valuation setting), communities, and societies as a whole. Societies, as a whole, share *cultural* and *societal values,* which may be considered shared principles and virtues as well as a shared sense of what is worthwhile and meaningful. Within societies and cultures there is a wide range of social groups that may express distinct *communal values*, including local communities, faith groups, groups of people that share an activity such as recreational users of the environment, communities of practice, etc. In addition, there are the ad-hoc groups associated with research, such as a discussion group of stakeholders or a focus group with members of the public, which can come to collective value outcomes that we term *group values*, for example in techniques such as citizens' juries or multi-criteria analysis (MCA). We here conceived of shared values as values that are *expressed* collectively, regardless of whether they are *held* individually or collectively. This way, we do not need to come to a final conclusion on whether, ultimately, anything other than individuals can hold values.

The dimension of *elicitation process* distinguishes between *non-deliberated* and *deliberated values.*

In terms of *scale*, we can distinguish the individual scale, and the 'social' scale, which has bearing on *values to society*, or in relation to society. An example is that one might highly value enjoyment and a varied life for oneself (e.g. reflected in consumer behaviour), but in relation to society other values such as fairness or responsibility might be more important (e.g. reflected in voting behaviour). An example at the level of indicators is that one might be willing to pay £10 to improve water quality (individual scale), or think that the local council should invest £1 million in a water treatment plant (social/societal scale).

The dimension of *intention* relates to whether values are self-regarding or are other-regarding, altruistic values. For example, I may value my own life enjoyment (self-regarding), but also that of my neighbour or that of future generations. *Intention* differs from the *scale* dimension, as values for others are not necessarily values in relation to society.

On the basis of these five dimensions, we thus identified the seven main, non-mutually exclusive types of shared values defined in Section 1.1: transcendental, cultural/societal, communal, group, deliberated and other-regarding values, and values to society.

3.2   Shared values and the individual

Individuals adapt transcendental and cultural values through implicit and explicit socialisation processes. In sociology the formation of values, both cultural and individual, is seen as a socio-cultural phenomenon. These values at the societal level are acquired over time and become embedded within the culture of a particular society. Societal values are promoted, imparted, transmitted, changed and maintained in a variety of ways such as through exposure to formal and informal customs, laws, norms, cultural traditions and societal institutions. There can be catalyst or conflict points (from terror acts to highly-contested political issues such as road-building in the UK in the 1990s, or the recent debate on forest ownership), where societies debate values and these are potentially moments of re-valuation or recognition of values that were previously not outwardly or explicitly articulated. At the societal level values "*represent the implicitly or explicitly shared abstract ideas about what is good, right and desirable in a society*" (Schwartz, 1999, p25). Individual values can be seen as a product of cultural values, but are also interpreted through each person's own individual experience. Some argue that we can infer these collective values by aggregating the values of individuals as they will point to underlying common values and are a product of shared culture. However, others argue that deliberation through the public sphere, public debate, and consultation are needed to articulate and develop shared social values.

3.3   Shared values and total economic value

It is commonly perceived by both users and producers of valuation evidence that other-regarding values are addressed by environmental economic analysis through assessment of Total Economic Value (TEV). TEV includes 'altruistic' value (for people alive now), 'bequest' value (for future generations), and 'existence' value (for other species). These value-components together make up 'non-use' value, which, along with direct and indirect use value, completes the framework.

However, the theory of conventional economic appraisal assumes that values of individuals are purely self-interested and this assumption is a requirement of Bergson-Samuelson social welfare functions that are used to aggregate individual to values to value to society as a whole. From this perspective, WTP, revealed preferences in markets, and altruistic, bequest and existence values are conceived to only relate to the personal satisfaction ('warm glow') that one gains from knowing that others might benefit from some environmental good. If this were not the case, there would be a danger of double counting, as satisfaction of an individual's preferences may be counted by both that individual, and by others. Thus, CBA is theoretically incapable of evaluating social welfare impacts if one believes that altruistic, bequest and existence values exist as something more than warm glow alone.

Conversely, if one interprets TEV less strictly and its non-use components as other-regarding, TEV can be linked in various ways to the different types of shared values. First, bequest, existence and

altruistic values may be seen as various components of other-regarding values. Second, TEV components may be underpinned by transcendental values, such as justice and fairness in relation to others. Third, these values may be associated with communal values, stemming or being strengthened by being part of a community where these kinds of values are held in common. Fourth, similarly, they may be supported by societal and cultural values. Fifth, they may become more or less important or articulated when elicited through a deliberated process, and sixth, they may be expressed as a group verdict, rather than as individual values. In practice, in using conventional valuation methods, most types of shared values (transcendental, cultural, societal, communal, other-regarding) would be implicitly elicited within any TEV based assessment; neither stated nor revealed preferences can avoid being influenced by them. However, using conventional means, it is likely that they are both incompletely captured and poorly understood.

3.4 Assessment of shared values

There has been a presumption in standard economic approaches that preferences are pre-existing and stable and can therefore be elicited through stated preference methods (e.g. questionnaires) conducted at a single point in time and with little need for deliberation. However, as discussed in Section 2.4.3, increasingly it is argued that preferences and contextual values are not pre-formed but need to be generated through some kind of transformative learning process, which may be assisted through deliberation. In group deliberative processes, participants have the opportunity to express and debate their own knowledge, perspectives and values with others. Group values might be expressed as a consensus or majority view on what the group believe to be in the best interest of society. In deliberative monetary valuation, this could be translated in an appropriate welfare measure at the individual scale (e.g. what might be a fair price for individuals to pay) or at the social scale (a deliberated social WTP, or the worth of something to society). A deliberative process could also result in the recognition of a diversity of values or of important constraints, e.g. respecting certain fundamental rights. Of course, it is important to consider the potential for power dynamics to bias outcomes towards more powerful (e.g. vocal) members of a group and there is now a robust evidence base for best practice deliberation to minimise such effects (see Section 2.4.3).

Lo & Spash (2012) set out three approaches to incorporating deliberation into valuation. 'Preference economisation' primarily seeks to utilise deliberation to ease the respondent's cognitive burden associated with expressing stated preference monetary values. 'Preference moralisation' seeks to bring out transcendental values and deliberation is extended to address non-economic considerations including social norms, rights and procedural fairness. Within our conceptual framework, 'moralisation' is seen as a value construction or translation process where transcendental values are brought in and related to a context, so that contextual values can be formed. Building on a conception of transcendental values as much broader than just ethics, including a wide range of life goals and aspirations, 'moralisation' can be seen to be a broad process. A third approach, 'choice democratisation', focuses on valuation as a deliberative democratic process and includes elements of both 'economisation' and 'moralisation'.

In terms of methods, we can distinguish between 'deliberative' and 'analytical-deliberative' methods. Through deliberative processes, individuals are encouraged to express and develop their views as different evidence and perspectives are considered. The outcomes of deliberative methods are often qualitative and might include priority lists, recommendations and verdicts. Analytical-deliberative methods such as deliberative monetary valuation (DMV) and MCA integrate deliberative techniques with more formal decision-making tools. Outcomes from such methods are often expressed in monetary terms or other type of quantitative ranking or rating. The NEA discussed these as 'hybrid' valuation methods, as they incorporate some of the benefits of both monetary valuation and deliberative methods.

Interpretive and psychometric methods also have potential to address particular types of shared values. Interpretive methods can reveal communal and transcendental values, while the latter can also be assessed using psychometric survey-based methods and interviews. Societal and cultural values at a larger scale can be assessed through ethnographic methods, media content and discourse analysis, and other interpretive methods. Participatory mapping is particularly useful for assessing communal contextual values (also see NEAFO WP5). **Table 2** provides an overview of methods that can be used to assess shared values.

Table 2. Overview of methods that can be used to assess shared, plural and cultural values.

	Technique	*Description*
Deliberative	In-depth discussion groups	Group (usually 4 – 8 people) discussions (often repeated), during which participants shape the terms of discussion, develop themes in ways relevant to their own needs and priorities.
	Citizen's juries	A small cross section of the general public who come to a considered judgement about a stated policy issue / problem through detailed exposure to, and scrutiny of, the relevant evidence base. Group responds by providing a recommendation or 'verdict'.
	Deliberative opinion polls	Technique designed to observe the evolution of the views of a large citizen test group as they learn about a topic. Typically the group votes on the issues before and after an extended debate.
Analytical-deliberative	Participatory modelling	The involvement of stakeholders in the design and content of analytical models that represent ecosystem services and their benefits under different spatial and temporal conditions.
	Deliberative monetary valuation	Techniques that use formal methods of group deliberation to come to a decision on monetary values for environmental change. May be allied to survey-based techniques (contingent valuation or choice experiments) or use a non-econometric approach to establish values (e.g. by incorporating citizen's juries).
	Deliberative multi-criteria analysis	Techniques that involve groups of stakeholders designing formal criteria against which to judge the non-monetary and (sometimes) monetary costs and benefits of different management options as the basis for making a decision.
Interpretive, potentially deliberative	Participatory mapping/GIS	A group of stakeholders consider or create a physical or digital map to indicate landscape features that are valuable (and/or problematic). Participants may also rate or rank these features for importance. Map layers can also incorporate photo, video, artwork, poetry etc.
	Storytelling	Participants are asked to tell stories about their experiences of or in relation to places. These may be reflected upon in a group setting to discuss values related to these experiences.
	Interviews	Participants are interviewed about their values, beliefs and preferences. Group interviews allow for deliberation and are similar to in-depth discussion groups. However, in group interviews, terms are set by the interviewer rather than the group.
Interpretive	Media analysis	Use of a range of textual analysis tools (particularly content, frame and discourse analysis) on (mass) media outputs and social media content over a selected period of time.
	Desk-based	A wide range of qualitative techniques including ethnography and

	Technique	Description
	cultural history study	participant observation, genealogy, life history methods, dramaturgical analysis, textual analysis of various sorts including discourse, content and frame analysis.
	Other interpretive methods	A wide range of qualitative techniques including ethnography and participant observation, genealogy, life history methods, dramaturgical analysis textual analysis of various sorts including discourse, content and frame analysis.
Psychometric deliberative	Values compass	This method asks participants to consider which of their individual transcendental values are most important by ranking or rating them, and then asks to discuss the degree to which these values are important for one's community, culture or society. Values can also be ranked or rated on a group basis.
Psychometric	Subjective well-being indicators	These can be used to assess how and the degree to which places contribute to one's well-being, and are thus highly suitable for assessing the value of cultural ecosystem services using a quantitative non-monetary metric.
	Other psychometric	Psychometric testing refers to the measurement of psychological phenomena and processes, e.g. knowledge, experience, attitudes, values, beliefs, norms. Psychometric models can be used to better understand the impact of deliberative processes on values.
An extended table with spatial and time scales and resources required can be found in Table 18 of the full report and in the handbook on shared, plural and cultural values for decision-makers.		

3.5   The deliberative value formation model

The values, beliefs, norms etc. that can surface in a deliberative process can be wide ranging. The notion of 'moralisation' as described above suggests that a carefully designed deliberative process that explicitly aims to bring out tacit values can make transcendental values explicit more formally. This allows participants to apply them to a concrete context, on which information and beliefs (e.g. on the consequences of actions, on responsibility, and on behaviour control) are also exchanged, which is likely to lead to formation of norms. This influences the formation of contextual values, which may be debated through indicators such as rankings or WTP. **Figure 2** provides a simplified model of this process, which we have called the Deliberative Value Formation (DVF) model. Considering the relation between individual and shared values as a dynamic interplay (Section 3.2), we can then identify a range of processes that are responsible for shaping value outcomes:

a) Adjustment or development of views as a result of changing understanding, resulting from exposure to new knowledge.
b) Adjustment or development of views after considering the reasoning of others.
c) Arising of implicit layers of values, e.g. as a result of debate or deliberative exercises, participants realise things that are of (potentially profound) importance to them that they had not realised explicitly previously.
d) Adjustment or development of views as a result of group dynamics, including peer pressure and power dynamics.
e) Consideration of others' values and needs can lead to an increased felt sense of responsibility, realisation of other-regarding values and sense of 'common cause'.
f) Adjustment or development of views as a result of social desirability bias, which may include a 'feigned' version of e.

Clearly, not all deliberative valuation processes will lead to all of these effects though they often operate together. Social-psychological theory supports the notion that in these processes learning in terms of knowledge and in terms of values are intimately entwined. The diversity of these processes raises questions about the legitimacy of the deliberated and group values that arise. While there is a considerable literature on minimising the impact of problematic social processes through best-practice design and facilitation, an evidence base has yet to be built up for applying this in ES valuation.
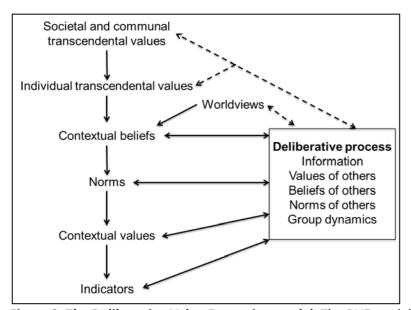

Figure 2. The Deliberative Value Formation model. The DVF model provides a conceptual model of the process of value formation from societal and transcendental values to contextual values and value indicators, in relation to the deliberative process. Arrows indicate direction of influence. Solid arrows indicate potential for value change or formation in short-term processes. Worldviews and transcendental values, while they influence the deliberative process, are assumed to be relatively enduring and are only likely to change as a result of long-term and repeated deliberative processes (dashed arrows).

4   Case studies

This part of the chapter discusses four case studies based on new research. This empirical research provides examples of:

- how a wide range of different methods can be used for assessing the different types of shared values as discussed above;
- how shared values may differ from individual/aggregated individual values, both in terms of magnitudes, and ontologically;
- how deliberative processes may affect values through the process of value construction and translation from transcendental to contextual values according to the DVF model discussed in our theoretical framework (Section 3.5).

Two local scale case studies are followed by two national scale case studies, each focusing on values related to marine and coastal environments, testing a mix of deliberative, monetary and non-monetary methods for assessing shared, cultural and plural values. The first local case study is the Inner Forth Landscape Initiative (IFLI), which consisted of a regional assessment of a range of ecosystem service values using deliberative monetary valuation, conceptual systems modelling and participatory mapping in local communities in the Central Belt of Scotland, to support project design and implementation by an Royal Society for the Protection of Birds (RSPB)-led partnership for a multi-purpose landscape management project. This case study is shared with NEAFO WP5.

The second local case study looks at the cultural benefits of inshore fisheries at Hastings, working with the Hastings Fisheries Local Action Group and a wide range of local stakeholders. Fieldwork consisted of three iterative workshops that included a range of deliberative and deliberative-analytic tools, considering the value of the marine environment alongside other social priorities.

The first national case study is an assessment of the value of cultural ES of potential marine protected areas (MPAs) to divers and sea angler in England, Wales and Scotland, in association with the Marine Conservation Society (MCS), the Angling Trust (AT) and British Sub-Aqua Club (BSAC). The central methods used here were: an online survey that includes a CV exercise as well as well-being indicators for non-monetary valuation of marine cultural services; and a series of workshops using DMV and MCA. Here the deliberated and group values elicited through the workshops could be compared to the individual survey values.

Finally, a second national case study, 'coastal and marine values in the media', used content and discourse analysis of a wide range of media publications to assess shared values around marine environments and the coast. The aim of this case study was to evaluate this approach as a means to understand broader cultural, societal and communal values around particular environmental contexts.

Figure 3 indicates the location of the case studies. **Table 3** provides an overview of the types of shared values assessed and methods applied per case study.
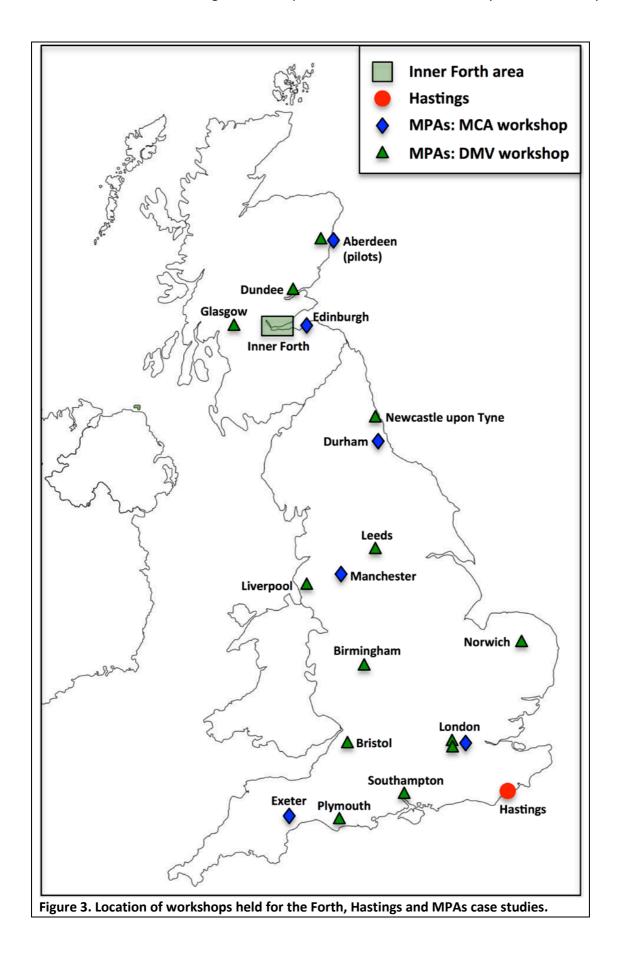
Figure 3. Location of workshops held for the Forth, Hastings and MPAs case studies.

Table 3. Case studies, types of shared values assessed and methods and tools used.

Case study	Types of shared values assessed	Methods and tools used
Forth	Deliberated values (vs non-deliberated)	DMV Participatory systems modelling
	Group values (vs individual)	DMV
	Communal values	DMV Participatory mapping/GIS
	Transcendental values	Structured group discussion Psychometrics
	Other-regarding values	DMV
Hastings	Deliberated values	SWOT analysis Participatory systems modelling MCA DMV (participatory budgeting) Structured group discussion Informal deliberation
	Group values	MCA DMV (participatory budgeting) Rankings
	Communal values	Storytelling Goal ranking
	Transcendental values	Schwartz compass Structured group discussion
	Other-regarding values	MCA DMV (participatory budgeting)
	Value to society	MCA DMV (participatory budgeting)
MPAs – Online survey	Communal values	Well-being indicators
	Transcendental values	Psychometrics
MPAs – DMV workshops	Deliberated values (vs non-deliberated online survey)	DMV Structured group discussion
	Group values (vs individual)	DMV
	Communal values	DMV Storytelling Well-being indicators
	Transcendental values	Schwartz 'compass' Psychometrics (change vs survey)
MPAs – MCA workshops	Deliberated values	MCA Carousel group discussion
	Group values (vs individual)	MCA
	Communal values	MCA
	Transcendental values	Psychometrics (change vs survey)
	Other-regarding values	MCA
Coastal and marine values in the media	Cultural and societal values	Content analysis Discourse analysis
	Communal values	
	Transcendental values	
	Other-regarding values	
	Value to society	

4.1 Research design across case studies

The three deliberative workshop-based case studies (Forth, MPAs and Hastings) built on each other in terms of methods development. Central to them were the two 'hybrid' valuation methods

highlighted in the NEA: MCA and DMV. The Forth case study, which was developed first, combined DMV with participatory conceptual systems modelling and psychometric testing. Elements of the DMV and psychometrics fed into the MPAs case study. The MPAs study added MCA, storytelling and use of a 'values compass' to compare monetary against non-monetary techniques and more effectively elicit transcendental values during deliberation. The Hastings case study took those three elements and also developed the systems modelling exercise derived from the Forth study, whilst adding a novel implementation of DMV based on participatory budgeting.

There was considerable novelty in the design of the case studies, with to our knowledge no previous studies combining monetary valuation with participatory systems modelling or storytelling, only a very limited number of studies linking economic and psychometric models in valuation, no previous studies developing a non-econometric implementation of DMV as in our Hastings study, and no previous studies developing a deliberative MCA or DMV design on the basis of an explicit model of value formation.

Central to the first three case studies are the two 'hybrid' valuation methods identified by the NEA: MCA and DMV. In DMV, small groups of participants explore the values that should guide their group decisions through a process of reasoned discourse. DMV can either use an econometric approach for establishing monetary values based on CV (MPAs case study) or CEs (Inner Forth), or it can establish a societal WTP directly through deliberation and negotiation (Hastings). In the Forth and MPAs case study, we implemented DMV both as deliberated individual values based on individual WTP and deliberated group values based on a 'fair price'. Here participants were asked to act on behalf of the interest group they represent and consider what would be a fair price to ask a member of their local community (Forth) or divers and anglers (MPAs) for improvements in the environment.

MCA is a decision-support tool for exploring issues and making decisions that involve multiple dimensions or criteria. It allows less tangible cultural benefits related to ES to be systematically evaluated alongside economic, social and environmental priorities thereby providing a way of valuing criteria upon which it may be difficult or controversial to place a monetary value.

Although MCA and CV based DMV allow for ethical pluralism in terms of the deliberative process, they generally attempt to reach a single utility measure. These methods therefore imply that it is possible to empirically estimate value, in a similarly positivist way to neoclassical economics. However, the work also included a range of deliberative and narrative based techniques based on a more interpretivist epistemology, for example methods based on storytelling and visioning, or where values were discussed in groups and multiple values returned where consensus was not possible. This also served to include the different 'ingredients' of the DVF model (Section 3.5), including opportunities to share information and learn from each other (conceptual modelling, SWOT analysis), share experiences, perspectives and beliefs (storytelling) and moralise the discussion (various exercises geared towards bringing out transcendental values). The MCA and DMV itself were framed in such a way as to stimulate 'democratisation' of values, e.g. by asking for a fair price in DMV.

We incorporated sets of psychometric questions before and after deliberative exercises based on the Values-Beliefs-Norms (VBN) theory (Forth and MPA case studies) and on the more general Theory of Planned Behavior (TPB) (MPA case study only). VBN provides a conceptual model that includes biospheric, altruistic and egoistic values, environmental worldview, beliefs around responsibility, and consequences of behaviour, and personal norms to explain behaviour towards the environment. The TPB relates behaviour to a sense of control and the norms of other people.

The aim of including these questionnaires was to be able to better evaluate the impact of the deliberations in light of the DVF model as described in Section 3.

We will now briefly discuss the methods and results for each individual case study. A more general discussion across case studies will follow (Section 4.6).

4.2   Local case study 1: Inner Forth

This case study developed a novel methodology that linked DMV with participatory conceptual system modelling (**Figure 4**). The study evaluated proposals associated with the Inner Forth Futurescape and Inner Forth Landscape Initiative (IFLI) projects. The Futurescape revolved around a number of coastal realignment and conservation habitat creation/restoration proposals. The IFLI focused on community-led regeneration of the landscape, mixing cultural and environmental initiatives. The first stage of data gathering consisted of a workshop with 28 stakeholder representatives from a wide range of sectors, where a number of conceptual models of the Inner Forth, linking economy, environment and society, were developed. The second stage revolved around a series of CEs in nine workshops with 52 community council representatives in total. CEs are a valuation method where participants are asked to weigh and choose between different scenarios, with each of the scenarios providing different environmental attributes, at a different cost. Because tasks are repeated with different combinations of attribute levels, WTP can not only be established for scenarios as a whole but also for each attribute (see WP10: Tools and Methods). Scenarios were framed as the creation of a new conservation area in the Inner Forth. Attributes included were water quality, number of bird species extinctions, overall bird population size, new woodland planted, and various recreational facilities in the new area.

The CEs were repeated three times. At the start of the workshops, participants completed a paper-based CE individually, without discussion, which asked for their individual WTP. Then participants were asked to discuss which transcendental values were most important to them. After this they were given a set of the most important system variables derived from stage one, and were asked to build a conceptual model of the Forth social-ecological system. It was then discussed how the most important transcendental values interacted with the system. A second individual CE followed. Then a third CE took place, but this time choices were made by the group (consensus or majority vote) on the basis of what would be a 'fair price' to ask the public. Thus three sets of monetary values could be compared: individual pre-deliberation; individual post-deliberative exercises; and deliberated group values[2]. At the start and end of the workshops, individuals also completed a psychometric questionnaire on the basis of the VBN theory of environmental behaviour, so that we could better understand potential changes resulting from deliberation.

The final part of the workshop consisted of a participatory mapping exercise, where small groups were asked to discuss and point out, as a group, which features (natural or man-made) within the IFLI project boundary were interesting, special, or should be conserved, and which features were problematic. The aim of this exercise was to gather practical, spatially explicit information on cultural services that would be of direct use to the IFLI, while also adding a practical and concrete element to the fairly abstract DMV and systems modelling exercises. The UK NEAFO WP6 report provides more detail on this component of the research.

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[2]In order to be able to make this comparison and to respect minority positions, we modelled individual votes for the group-based valuation.

The different stages of the CE in the Forth showed significantly different outcomes for two attributes; cost, and bird species extinctions, whereas preferences for other attributes did not change. WTP for all attributes but extinctions *decreased* by 56% between the non-deliberated and deliberated individual results. WTP decreased by a further 39% in stage three (deliberated group values), to end up being only 27% of what it was for the non-deliberated individual values. Thus, participant established that a 'fair price' was substantially less than they were willing to pay as individuals. Relative to other environmental attributes, preventing extinctions became more important as a result of the deliberative interventions , although WTP for this attribute still decreased by 45%. However, in the third stage, the 'fair price' for preventing species extinction did not significantly decrease further. Compared to the non-deliberated individual values, in the group deliberated values the relative importance of preventing extinctions doubled.

Linking psychometric test scores with WTP showed that (as might be expected) participants with more pro-environment norms were willing to pay significantly more for prevention of species extinction. Participants with a greater self-ascription of responsibility for environmental issues were willing to pay more overall. The psychometric tests also indicated substantial differences between the before and after deliberation results. Even while participants were already pro-environmental in terms of both their transcendental values and worldview, nonetheless their scores for biospheric values and environmental worldview increased significantly. Another interesting effect of the deliberation was that scores in the psychometric tests became more consistent across different indicators, as measures of reliability for the components of the psychometric instrument increased.
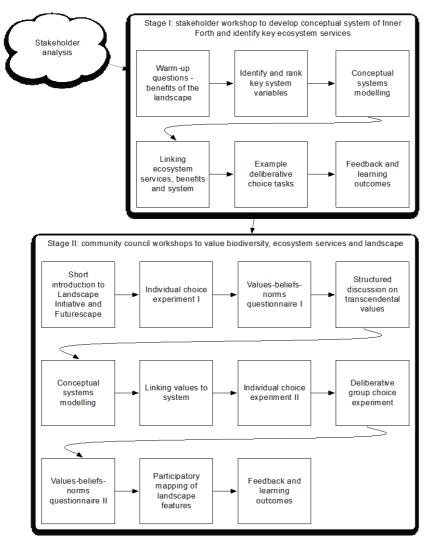
Figure 4. Forth case study: methods outline.

4.3   Local case study 2: Hastings

This in-depth local case study focuses on valuing ES around inshore fisheries and marine conservation in Hastings, Sussex. Working with the Hastings Fisheries Local Action Group (FLAG) this case study focused on shared values for the cultural benefits of the marine environment and activities within it, particularly inshore fisheries, such as a shared sense of identity and sense of place. The main stage of data gathering consisted of three intensive workshops with 11 local stakeholder representatives, and included deliberative MCA and DMV extended through a mix of quantitative and discourse based qualitative non-monetary valuation exercises. These group deliberative interventions included: a SWOT analysis of the Hastings community; structured in-depth discussions; shared storytelling and reflection; a transcendental values 'compass'; participatory conceptual systems modelling; visioning; and informal deliberation during group beach walks. The MCA and deliberative exercises finally led to an innovative implementation of DMV through policy package development and negotiation and participatory budgeting.
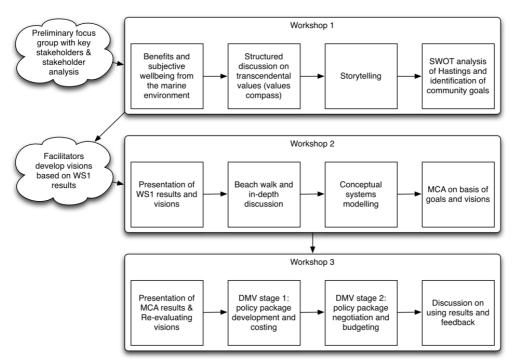
Figure 5. Hastings case study: methods outline.

The initial part of workshop one focused on discussion of transcendental values and well-being. Following a round of storytelling on why the marine environment was important to each participant, small groups used a list of Schwartz values to reflect on the deeper values the personal stories had elicited (both for the story-teller and group). A number of values emerged as being dominant including 'sense of belonging'; 'enjoying life'; and 'protecting the environment'. Values of self-direction (including creativity and freedom) and social justice also featured prominently (**Figure 6**). When these results were presented back in workshop two, participants expressed that they were struck by the way that these values accurately captured their view of the core values and identity of the town. After these discussions on deeper held values, a more pragmatic SWOT analysis ultimately led to 10 key goals that reflected environmental, social, economic and cultural aspirations (**Table 4**).

Based on workshop one results, the researchers developed four 'visions' for Hastings in 2030: *City of Culture*, *Green Hastings*, *Greater City* and *Business as Usual*, that were then put into a physical context through informal discussion during a beach and seafront walk, which led to participants linking the marine environment with the need for improving education and locally culturally appropriate economic regeneration.
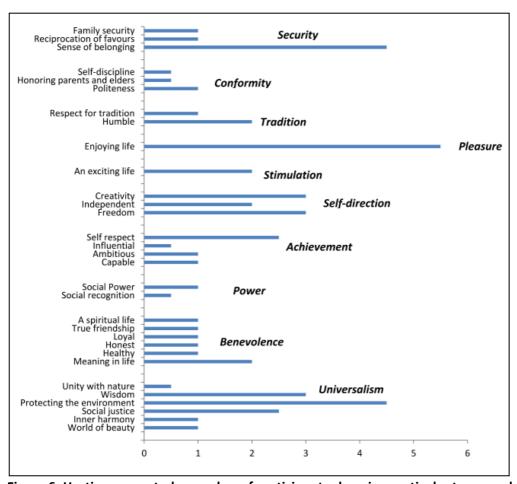
Figure 6. Hastings case study: number of participants choosing particular transcendental values as most important. The y-axis shows value items, bold type indicates Schwartz value categories.

Table 4. Group key goals for Hastings used in MCA and DMV exercises.

1.	Reduced unemployment
2.	Increased social justice
3.	Increased community cohesion
4.	Economic growth
5.	Resilience to climate change
6.	Conservation of biodiversity
7.	Reduced pollution
8.	Strong cultural identity
9.	Engagement with nature
10.	Well-educated population

Participants continued making extensive connections between a wide range of issues in a conceptual systems modelling exercise similar to that in the Forth case study. Results showed an appreciation of the highly inter-linked (and complex) nature of the relationship between variables as participants made extensive linkages between ecological, social, economic and cultural variables. Well-being was related to not only economic factors but also pride of place, social cohesion, social justice, biodiversity, and in the long term, resilience to climate change. In a discussion of feedback loops and chains, level of education was again seen as a central variable, with education facilitating a wide range of positive outcomes including reduced deprivation and more cultural activities but also more engagement with nature and hence potential for increased environmental sustainability. External investment, improvement of infrastructure and economic growth were also seen as important in driving other variables, with varying emphasis on social justice. While participants reported that they

had felt this to be a challenging exercise, feedback reports also showed this to be one of the most rewarding in terms of shared learning.

An MCA was then conducted to evaluate the visions. First, the ten key goals identified earlier were ranked in terms of importance between 0-100, first by individuals and then deliberatively by the group as a whole. A key change from individual to group regarded resilience to climate change, which increased in importance from a mean of 60 to a consensus score of 100. The second stage involved scoring visions in terms of their ability to deliver goals. Weighted scores show the Green Hastings vision was perceived by the group to be best able to achieve goals, followed by City of Culture. The former scored highest because it was the only vision that was seen to significantly address important goals related to biodiversity, climate change and pollution.

In the final workshop, a DMV was introduced where Hastings would receive a hypothetical Strategic Sustainable Development grant by the EU of £45 million to spend between 2015 and 2030, and where participants were asked to find agreement on social WTP for different policy options. Investments would focus on the 10 key goals, and participants were asked to negotiate a policy package, mixing and matching elements of the different visions and adding new policies. In development of options, participants focused on maximising synergies of the policies in terms of different environmental, cultural and social-economic benefits. This process was partly enabled by the shared learning and common knowledge of the complex inter-linkage of community variables (economic, cultural, social and environmental) developed in the systems modelling exercise in the previous workshop. Examples of this included improvement of the harbour arm, both as a sea defence to adapt to climate change and as a support for the beach launched fleet central to the cultural identity and touristic attractiveness of the town; and development of an affordable eco-housing project, which again addressed environmental, social justice and economic goals.

The policy pragmatism involved in this exercise and its explicit link back to the group goals identified in workshop one was an important methodological consideration in helping the participants translate into practice the shared values identified through the iterative workshop format. Although participants came to consensus on the final policy package and budget, the resistance to the exercise format was explicit with the group wanting to rank the policies using a non-monetary format as well as attributing monetary value. This highlighted the group need to seek a democratic or fairness approach in the allocation of funds, and to reflect that social WTP was not necessarily equivalent to value to society, because money allocated reflected cost as much as value.
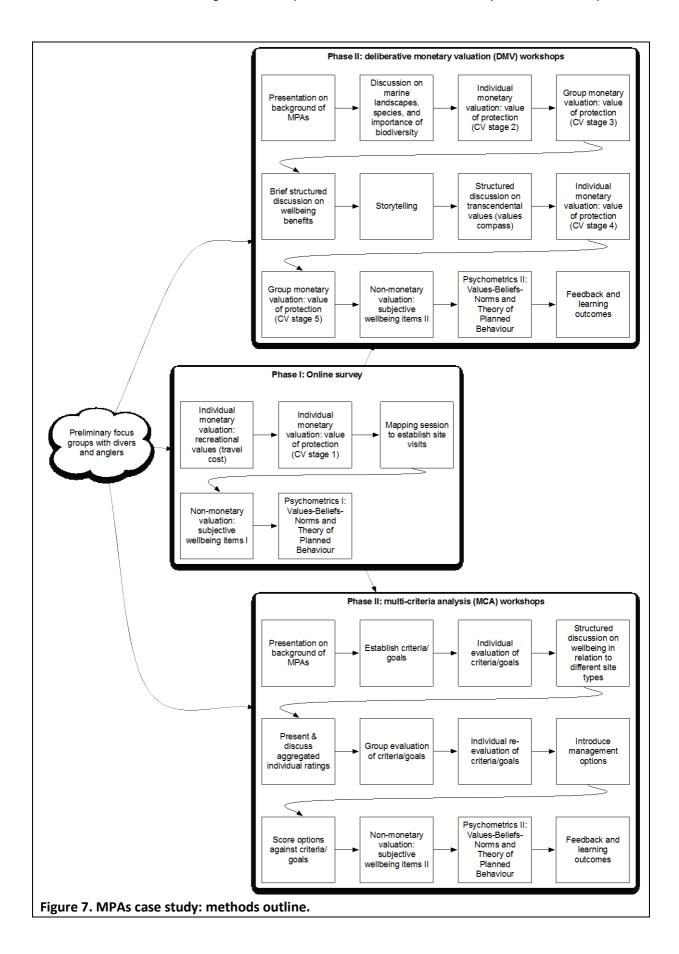
4.4   National case study 1: Marine protected areas

The Marine Protected Areas (MPA) study, investigating the monetary and non-monetary values of a range of cultural service benefits associated with marine settings, is the most extensive of the four case studies reported here. Data gathering consisted of two phases: an online survey with 1,683 divers and sea anglers across the UK, and a series of 11 DMV workshops with 130 participants in total and five MCA workshops with 55 participants across England and Scotland. Most workshop participants had also participated in the survey.

The survey contained a monetary valuation component but also a novel non-monetary survey instrument on subjective well-being that was developed specifically for this study to assess the benefits of marine cultural ES. The online survey led to an extensive peer-reviewed NEAFO interim report on UK divers and sea anglers' aggregate use and non-use values for 25 Scottish potential MPAs, 119 English recommended Marine Conservation Zones (MCZs) and seven existing Welsh marine Special Areas of Conservation (Kenter *et al*. 2013b; available from http://uknea.unep-

wcmc.org). As such survey results are only presented here where they are relevant to our discussion of shared values.

Across these two data-gathering phases, the case study results can be effectively divided into a number of components: 1) monetary valuation (non-deliberative survey vs workshops); 2) non-monetary valuation using multi-criteria analysis (MCA workshops); 3) non-monetary valuation using subjective well-being indicators (survey vs two types of workshops); 4) non-monetary valuation using storytelling (DMV workshops); 5) psychometrics (survey vs two types of workshops); and 6) participants' preferences on how to elicit values.

Figure 7. MPAs case study: methods outline.

4.4.1　Monetary valuation

Monetary valuation in the survey included a combination of transport-cost based CEs, which were used to estimate recreational use values, and CV questions that asked about WTP towards protecting sites into the future. In the DMV workshops, the same CV questions were asked so that results could be directly compared. An innovation was the use of attributes in the CV tasks, which made it possible to associate WTP with specific aspects of sites, as in CEs. Attributes included vulnerable species, marine landscape/habitats, presence of large fish, other charismatic species, wrecks and rock formations, access options, management restrictions, size, and travel distance. The monetary component of the online survey followed a conventional format, with presentation of limited amounts of descriptive texts and photographs on tasks and attributes to help inform participants. We will call the survey responses 'valuation stage 1'.

The DMV workshops consisted of two stages of deliberation and four further valuation stages (**Table 5**). The first deliberation stage focused on exchange of information. It included a short presentation on MPAs with emphasis on the current governmental plans to implement a network of sites in UK waters. Then facilitators asked participants to discuss marine habitats and species of conservation interest on the basis of a hand-out that contained the same information and photos as was presented in the online survey, and to discuss the importance of marine biodiversity in general. This was followed by valuation stage 2, consisting of a set of individual WTP CV questions, and valuation stage 3, where participants were asked to discuss the same tasks as a group and come to a decision on what would be a 'fair price' to ask divers and anglers[3].

A next deliberative intervention focused on exchange of experiences and values. It included storytelling by participants linked to a group discussion on feelings of well-being associated with visiting marine sites, and a discussion of personal and shared transcendental values on the basis of a values 'compass'. This was followed by another individual and group valuation stage. Participants ended the workshop by completing a questionnaire on psychometrics (a similar VBN questionnaire as in the Forth study, plus several items based on the TPB), subjective well-being (identical to that in the online survey) and an evaluation what their preferred means of having their values elicited had been: survey, workshop individual values, or workshop group values.

Table 5. MPA DMV workshop outline with different valuation stages.

Online survey	
Valuation stage 1	Individual WTP
	Psychometrics, well-being indicators
DMV workshops	
Deliberation: information stage	Presentation and discussion on biodiversity
Valuation stage 2	Individual WTP
Valuation stage 3	Group-based fair price
Deliberation: moralisation stage	Storytelling and well-being discussion
	Transcendental values compass
Valuation stage 4	Individual WTP
Valuation stage 5	Group-based fair price
	Psychometrics, well-being indicators, feedback

Overall WTP in stage 1 (online survey) and 2 (individual values, deliberation on information only) was very similar, which implied reliability of the CV design and approach used. In stage 3 (group values expressed as 'fair price', deliberation on information only), WTP decreased by 35% compared to the online survey. In stage 4 (individual values after information and moralisation based deliberation),

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[3] As with the Forth study, in order to be able to make more accurate comparisons and to respect minority positions, we modelled individual votes for the group-based valuation.

WTP decreased 18% compared to the online survey, while in Stage 5 (group values expressed as 'fair price', after information and moralisation based deliberation) WTP decreased by 51% compared to stage 1. Thus, as was the case in the Forth case study, both group-based decision-making and moralisation had a negative impact on overall WTP, and reinforced each other.

Changes in monetary values of particular attributes[4] could also be seen across the different deliberation treatments (none; information; moralisation) and between individual and group-based valuation. The support for management restrictions (e.g. on dredging and trawling) appeared to increase after both the first and second deliberative intervention. Thus, both giving more information and prompting participants to consider their transcendental values increased participants' perception of the importance of management restrictions at marine sites. In contrast, the combination of moralisation and group decision-making in stage 5 led to negative appreciation of restrictive access options (shore only and boat only). Here, discussions pointed towards an arising sense of solidarity between users around access rights. In both group discussion stages, presence of large fish became significantly less important. In contrast, WTP assigned to charismatic species, protection of vulnerable species and wrecks appeared to be stable across the different stages, suggesting that these anchored the bids. Travel distance was, as expected, a negative parameter and did not significantly change throughout the workshop process, appearing to be unaffected by deliberative interventions or use of a group format.

Because of the large amount of habitats under consideration, it was difficult to tease out stage-specific effects for different marine habitats, but it was possible to compare overall survey vs workshop results. For both the subgroup of workshop participants and the far larger sample of all survey participants, in the survey WTP for conservation was largely independent of the specific habitat that participants were asked about. However, in the workshops, participants had formed clearer preferences as most marine landscape attribute variables became significant. Thus, it appeared that even though the workshops gathered less data there was a higher quality of information as a result of participants expressing more considered choices.

We also investigated if subjective well-being indicators predicted overall WTP; in the group values, WTP aligned significantly more with subjective well-being than in the individual valuation stages. Finally, there were complex interactions between scores on the psychometric indicators for biospheric, altruistic and egoistic values. Participants who had seen a decrease in their egoistic value scores (Section 4.4.5) increased their WTP (expressed through their votes) during the final group valuation stage relative to those who hadn't all else being equal. A different interaction was that those who believed that their social connections had pro-environmental norms were less willing to pay themselves in the workshop setting.

4.4.2 Multi-criteria analysis

The MCA workshops presented participants with a set of goals/criteria that were designed to reflect the cultural and associated values of recreational users (**Table 6**), and a number of scenarios reflecting different MPA management regimes (low, moderate and high levels of protection/restrictions) across different marine settings (e.g. sea loch, harbour, sandy beach). Participants assessed the importance of different goals as individuals and as groups and then scored how well different management options realised those goals at different settings.

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[4] Because WTP was modelled using a logarithmic transformation, it is not possible to state how WTP for various attributes changed in money-terms. However, an indication of the magnitude of changes on the log scale is provided in Annex 11 of the full report.

Table 6. MPA case study: main goals/criteria used in the multi-criteria analysis. Participants could add one goal if desired.

- protect non-damaging recreational access opportunities
- improve fish stocks
- reduce pollution & litter
- protect species & habitats
- improve chance of wildlife encounters
- protect cultural heritage: wrecks, local history
- include local knowledge for monitoring & management of marine environment
- more scientific data: stronger evidence base on status of seas

Focusing the deliberation and scoring on site-based values helped tie values to specific landscapes and was useful for understanding qualitative well-being benefits such as sense of place, identity and memorable experiences. Transcendental values also emerged from the site-based deliberation, where elements of universalism, achievement and pleasure were common themes, and the consensus goal ranking exercise, in which other-regarding and societal values versus self-oriented values were discussed.

Protecting species and habitats was ranked highest both amongst individuals and in the group consensus ranking. There was also a shared view that increased levels of marine protection could improve benefits from a recreational user perspective. MCA scores were highest for the high protection management option as this was considered most likely to deliver value-based goals of recreational users, particularly the importance of species and habitat protection and limiting (damage caused by) commercial fishing; however, participants considered that this would only be effective if regulations were consistently enforced.

The ranking results indicated that participants expressed different values as a group to those expressed as individuals, with the group rankings more strongly orientated towards education and less strongly protecting recreational opportunities. Some groups carried out the group consensus exercise from the perspective of their personal needs as recreational divers and angers, but the majority approached the exercise from a wider societal perspective, where it was felt that prioritising environmental protection would benefit both themselves and wider society. As in the DMV workshops and the Forth case study, deliberated individual values fell between non-deliberated individual values and deliberated group values.

Ranking and scoring results appeared to reflect trade-offs between other-regarding, transcendental values and norms, particularly environmental protection, and self-regarding, utilitarian values (focussed on recreational opportunities). Fairness and proportionality around measures was a consistent theme, particularly for anglers, as participants commented that restrictions on recreational access should be proportionate to those applied to commercial fishing, which was thought to have far greater impacts than recreational use.

4.4.3 Subjective well-being indicators

A set of 15 non-monetary, subjective well-being indicators (on themes such as identity, knowledge, health, connectedness to nature, social bonding) were developed on the basis of a wide range of literature sources on cultural ES and implemented through questions with a conventional 5-point Likert scale response (*strongly agree* to *strongly disagree*). Strongly positive responses to all indicators revealed that sites had considerable subjective well-being value for anglers and divers. On the basis of exploratory and confirmatory factor analysis with the online survey data, indicator statements loaded onto six factors that we thematically summarised as *engagement with nature*, *place identity*, *therapeutic value*, *social bonding*, *spiritual value* and *memory/transformative value*. Out of these six subjective well-being dimensions, *engagement and interaction with nature* scored

highest, followed by *transformative* and *social* values. Overall differences between divers and anglers were small, although divers scored higher on engagement, whereas for anglers place identity indicators scored higher.

Deliberation impacted on well-being scores, with some small but significant decreases with DMV participants and increases in some factors for MCA. There were close links between the marine goals considered in the MCA process and the experience of well-being benefits. The focus of deliberation on the importance of environmental protection and the sharing of site-based benefits and experiences may have contributed to the higher scores given to factors such as *engagement and interaction with nature* and *transformative value* at the workshops. This does not explain the decline observed after DMV, which may be due to more considered choices being made by participants after the deliberative process.

4.4.4   Storytelling

Storytelling during the DMV workshops brought up a range of themes that expressed how communal values, shared experiences and identity related for both divers and anglers. The majority of diver stories related to connection with the environment and in particular their immersion in this environment, so as to feel part of it. Divers experiences were often conveyed as spiritual, magical and imbibed with colour. "*I ticked all of these [values] and more, I added religious which is strange really because I am an atheist. I was in one place and visibility opened up and it was like a cathedral, with jewel anemones lighting up everywhere. I felt like I was in the presence of God, if there is such a thing. I was crying when I came out of the water*.". The diving experience itself was also social and divers referred in their stories to bonding with their dive mates and building trust as a result of their dives. Stories were often related to the exploratory, adventurous aspect of diving and the feeling of freedom felt as a result of taking part in this activity. Divers tended to emphasise this exploration/adventure aspect as a positive for diving in UK waters, which were described as more challenging but much more interesting through their high diversity than commonly dived sites abroad.

The stories told by anglers tended to present this activity as a more solitary, reflective and therapeutic activity than diving, where a stronger connection with place was fostered. Although connection with nature remained a significant theme, anglers referred to themselves as observers rather than the participants that the divers saw themselves to be (*"we are the eyes and ears"*). Anglers also tended to share stories about introducing angling to others and the influence that this has had for someone else. In particular these stories were about passing on knowledge or experience to a younger person.

4.4.5   Psychometrics

In terms of psychometrics, for both the DMV and MCA workshop types, egoistic transcendental values, though low already, declined substantially. In the DMV, egoistic values had a negative influence on WTP, but only in the group values. We were also able to examine whether and when WTP changed in parallel with egoistic values during the workshop; in stage 5, the final group valuation, WTP increased for those whose egoistic values decreased. Biospheric values were high to start with and remained high after deliberation. Altruistic values declined somewhat for both DMV and MCA, but this was only significant for the DMV participants. Other constructs, including both the TPB-specific constructs (behavioural control and subjective norms) remained stable.

4.4.6   Participant confidence and preferences for ways of eliciting values

Almost half of the participants felt substantially more confident about their answers in DMV and MCA workshops than in the online survey; few respondents felt more confident in the survey (**Figure**

8). Asking people for their opinion on which approach should be used to assess their values around marine sites, the majority of participants indicated they preferred the workshop format and most of those preferred group to individual choices (**Figure 9**). Both workshop types were seen as interesting and the vast majority of participants felt they had learnt something new. Almost half of participants agreed that they had exerted an influence on decision-making processes around MPAs and that they had more insight into their own values.
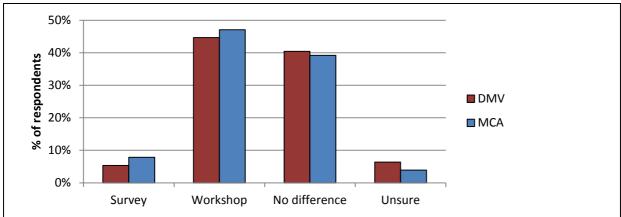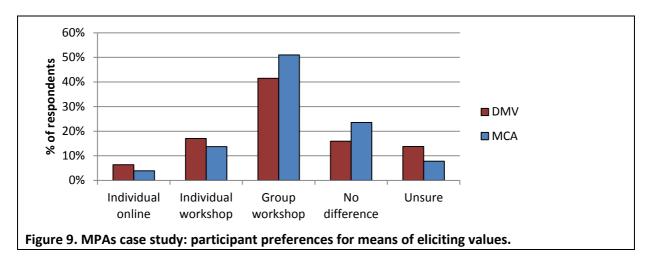

Figure 8. MPAs case study: participant confidence levels in the workshops vs the online survey; where confidence was felt to be highest.

Figure 9. MPAs case study: participant preferences for means of eliciting values.

4.5   National case study 2: The coast in the media

This case study analysed written media coverage of the UK coastline and MPAs to characterise shared and cultural values expressed in different types of media publications and considers the types of values that these might represent for different groups within UK society. It utilised a mix of quantitative and qualitative approaches to the analysis of the expression of values. Content analysis was used to examine large text samples, identify broad patterns and quantify the use of specific terms over a particular time period. Discourse analysis was employed to analyse a smaller sample, taking account of context and focusing on the identification of particular values.

The broader sample studied shows that there was an overall increase of 46% and 200% in the frequency of the terms 'environment' and 'ecosystem' respectively, in national and regional UK newspapers between 2002-2012. It is reasonable to suppose that the overall rise in the frequency of use of these terms indicates an increase in news media coverage of environmental stories over this period, and this is likely to reflect a parallel growth in public interest in such issues. However, the

way in which these stories were covered differed markedly between different media publications. Overall there was significantly greater engagement with environmental stories by broadsheets compared to tabloid newspapers.

In the sample, articles established a relationship between the material loss of coastline from erosion with shared values expressed in terms of national culture, heritage, tradition and identity. By normalising national identity as something that is shared, these stories framed the loss of coastline through erosion, flooding, etc., as a collective loss that compromised shared values for the natural environment. Shared values associated with the coastline tended to be expressed as transcendental societal and communal values.

Within this narrative, it was possible to identify groups with shared communal values for the natural environment that differed substantially from the communal values of other groups. For example, *The Times* characterised the coastal erosion primarily in terms of national identity and security (in relation to war and smuggling), livelihoods and property. In contrast, *The Guardian* linked to a very different type of national identity, rooted in a return to historic times, characterising the coastal erosion primarily in terms of a return to natural coastal habitats that could create a natural buffer to protect coastal communities.

Other-regarding transcendental values (i.e. overarching principles and goals that are not just for oneself) were apparent in coverage of the right to roam debate where access to the coast was claimed to be a citizen right. In these articles, loss of access to the coast can be equated with the loss of other-regarding societal values, and the conflict between landowners and access groups was framed as a conflict between these other-regarding societal values and self-regarding contextual values. Similarly, aesthetic benefits of the coastline were mentioned in 22% of stories, linked to transcendental societal values, and these benefits were used to counter the economic, self- or group-regarding values of coastal wind farms, dredging and drilling activities.

In articles about MPAs, industry (fishing and renewable energy) and Government budget cuts were seen as antagonists, threatening shared values for marine species that would be protected under these designations. In this case, industry was generally associated with individual or collective self-regarding values, pitched against transcendental societal and communal values for the marine environment.

Overall, the study illustrated how news media are part of the public deliberative process, highlighting particular concerns, developing debates, aligning values with stakeholders, and structuring narratives of environmental and ecological risk and protection.

4.6   Case studies: Synthesis discussion

The evidence from both the Forth and MPA DMV workshops showed clear differences between individual and group values. The way in which WTP changed was surprising. On the one hand, overall WTP decreased. On the other, priorities for the allocation of values shifted in the sense of becoming more other-regarding. A third effect was that group-based WTP better reflected non-monetary measures of subjective well-being. In both case studies having to decide on what others should pay, seemed to bring out a real 'scratch on the head' around whether a tax rise (Forth) or suggested donation (MPAs) was just. Discussions about justice focused on: 1) what the benefits really meant and which benefits were ultimately most important, also in the long term; 2) who would benefit: all of society, only some people, or some people who were particularly in need; 3) competing priorities, both whether money should be spent on this or other environmental projects, or non-

environmental social concerns; 4) duties to other species and future generations; 5) responsibilities, e.g. the notion that local people were responsible for local sites, or that everyone, or every local community, had to take responsibility for 'their bit' towards social goals such as protecting biodiversity.

Targeted deliberative interventions helped to bring out many of these processes. For example, the conceptual systems modelling exercise in the Forth helped participants to better understand the wider role of different environmental components in the social-ecological system, while it also brought out competing social demands. Explicitly asking about transcendental values more broadly helped people to consider more clearly what was important to them at a more fundamental level. There was also evidence that deliberation not just altered preferences but also helped to shape them where there were none previously. Deliberative interventions affected both individual and group WTP, but effects tended to be reinforced in the deliberated group values.

The evidence presented here suggests that deliberated group values were more considered, more strongly anchored onto the value of benefits and less an expression of 'gesturing' than non-deliberated individual values, while at the same time more reflective of underlying transcendental values of participants. Evidence includes the results of valuation models themselves, psychometric measures, correlations between subjective well-being and monetary results, and qualitative evidence. As such, deliberated group values may be a better reflection of real welfare impacts than non-deliberated individual WTP. Certainly, participants themselves overwhelmingly felt (**Figure 9**) that the deliberative group-based approach was a better way to elicit their values than the conventional individual survey approach, and they felt more confident in the group setting (**Figure 8**). Despite on-going improvements in framing and techniques, the Achilles heel of CV and similar approaches remains hypothetical bias: the tendency of participants to overstate in surveys what they would be willing to pay in comparison to real life. Exploration of the potential of DMV to reduce hypothetical bias would be a particularly interesting avenue of research.

The notion of a 'fair price' is a particularly useful way to incorporate shared values into valuation, because it allows for consideration of other-regarding values without facing the problem of double counting that would occur if other-regarding values were included in individual WTP. However, theoretical concerns around aggregation (Section 2.4.2) are only fully addressed by a social WTP approach, where WTP is given at the societal scale rather than at the individual scale, such as that taken in the Hastings case study. Either approach addresses to some degree concerns around commensurability of values because ethical dimensions of value can be incorporated into group decisions more explicitly and because transcendental and contextual values can be distinguished more explicitly and valued through different processes. Regardless, concerns around monetary valuation may remain, either because it might be perceived as commodification of nature, or because it risks pegging the value of something to the cost of realising it, as was expressed by participants in the Hastings study.

In contrast to the Forth and MPAs DMV workshops, in the MPAs MCA results deliberation had a less strong effect on individual and group contextual values. Nonetheless, some significant changes in rankings and psychometric suggested participants became more focused on biospheric values and goals. It appears that in the systematic structure of the process, participants co-developed a greater sense of how central the health of the marine environment is for the provision of a range of benefits. The structure of the MCA process itself mimics a number of aspects of the deliberative value formation process, e.g. learning about the basis upon which others would make their decisions by considering a range of criteria. Because MCA design focuses on practical management options the method is particularly useful for eliciting site-based contextual values and structuring discussion at the level of interaction with a particular setting. However, making unambiguous links between

contextual and transcendental values requires careful, integrative design of deliberative exercises and MCA.

The elaborate mixed method design applied in Hastings went into more depth but with a smaller number of participants and on a smaller geographical scale than the MPAs and Forth studies. It showed the potential of the combined use of different deliberative (e.g. in-depth discussion) and deliberative-analytic (e.g. participatory systems modelling) tools, to come to sophisticated consensus-based group values and securing shared learning between stakeholders, in terms of both the motivation for values attributed to the marine environment in Hastings and the democratic outcome value of the process of deliberation and dialogue.

The benefit of social learning from each other's views and knowledge to help inform contextual values and indicators was explicit in the discourse of group discussions and feedback comments. In general, societal/cultural and communal values were evident in the early group benefit ranking exercises with this set of values appearing close to the surface for the beneficiaries in their day-to-day stakeholder roles. Value to society and other-regarding values were more forthcoming from the evaluation of visions and systems modelling that forced participants to discuss and consider the different scales/time periods of benefits and the variety of stakeholders affected. The storytelling exercise was effective in terms of both elicitation and characterisation of intangible cultural ES benefits such as place identity and transformative values, and elicitation of transcendental values. The non-traditional (and non-policy related) context of this exercise allowed participants the freedom to consider cultural ES in a holistic way outside of the restrictions of a policy-related, economic, or other framework. Given the complexity and interdependence of cultural ES benefits it was to be expected that discussions were highly mobile and would result in the emergence of a plurality of types of values, with participants discussing a mixture of transcendental or contextual value types at different scales with different intentions and with varying indicators of those values. The freedom of the deliberative process opened up the multi-dimensional nature of ecosystem values in a way that conventional individual monetary valuation processes are unable to do.

Another way in which the multidimensionality of ecosystem values was unveiled in the different case studies was through incorporation of subjective well-being indicators as a way to rank the cultural ES benefits of settings using a non-monetary metric. The well-being instrument used in the MPAs case study provided an effective way of uncovering the dimensions of well-being benefits experienced by recreational users of the marine environment. During MPAs and Hastings workshop deliberations the well-being benefits, derived from a range of sources and refined through focus groups, provided an important link between the way that individuals value the cultural ecosystem service benefits of the marine environment (e.g. place identity, spiritual values, social bonding) and the deeper held or transcendental values that underlie the well-being benefits they experience. This provided a greater understanding of how people make choices about what sites they should visit or protect and how they should be managed.

Overall, the results show how the deliberative processes clearly made explicit existing communal values as well as constructed deliberated group values through a process of shared learning and in-depth discussion. However, the emphasis of the values that emerged and how they translated into the results was clearly affected by the balance of participants, their expertise, their role in the community and the associated power and knowledge capital they held in the group.

Together, the three workshop-based case studies support the value formation model (Section 3.5), with the deliberative process informing and making evident the transformation from transcendental values (as e.g. identified in storytelling and psychometric surveys) to contextual beliefs and values

(e.g. identified in the evaluation of scenarios), to indicators (as MCA scores and WTP). The outcomes support our theoretical notion (Section 3.2) that the articulation of values at the communal and societal level was thus not just about the aggregation of individual values, but more about the bringing together, exchange and co-production of beliefs, perspectives, knowledge, transcendental values and norms, to ultimately construct a joint statement of what would be of most value to a community or society as a whole.

The final case study, on the coast and marine environment in the media, showed that content and discourse analysis of media publications is able to characterise the plurality of cultural, societal and transcendental values and their interrelations, and can clearly picture the self- and other-regarding value-basis that underpins environmental issues. In particular, it is able to recognise the different values associated with different interests and different sectors of society. This may help predict where conflict could occur as a result of a new policy and how potential tensions might be prevented or managed better by decision-makers. As such, this approach is a promising avenue to characterise societal and cultural values at a large scale and consider changes in values over time. Social media can provide a further forum for understanding societal and communal values surrounding environmental issues.

5   Concluding discussion

In this report, we provided an overview of shared values in the literature and the relationship of shared values with spiritual and aesthetic values and social learning. We discussed the way in which conventional economic valuation considers shared and social values mainly as the sum of self-regarding, individual values, but this is critiqued because there is no single logically consistent way to aggregate individual values. The plural, multidimensional nature of value also poses the fundamental problem of incommensurability of values. We developed a comprehensive theoretical framework that conceptualised shared values and related terms, the relation between shared and individual values, and deliberative processes that can be used to elicit these values. Our four case studies used a wide variety of methods to elicit shared values and empirically demonstrated differences between shared and individual values. In this final section, we reflect further on of the central issues covered by this report and suggest various areas of future research.

5.1   What are shared values?

Our literature review highlighted a lack of clarity of meaning, a fuzziness of concept and an interchangeability in usage with regard to the terms shared, cultural, social and plural values. Within the literature, there was clearly a set of values considered core or fundamental, such as ethical or moral issues or key beliefs that are part of individual or community identity. The literature also highlighted that there are often strong contextual values related to specific places, objects or practices. Both of these types of values tended to be viewed as incommensurable and would give rise to protest if people were asked to trade them off, as they might be considered special, sacred, protected or taboo. Plural values reflect the multidimensionality of values both within (e.g. citizen vs consumer values) and across value providers and across different dimensions of value. Incorporating this plurality is a critical dimension in both the research about values and the management of specific places.

Consequently, we have not provided a single definition for shared values, but have worked with seven distinct yet interrelated and non-mutually exclusive types of shared values: transcendental cultural, or societal, communal, group, deliberated other-regarding values, and value to society (Section 3). In our theoretical framework, we conceived of the relationship between individual and shared values as a dynamic interplay, where values can be considered at multiple levels (individual, community, culture and society). While individuals represent and express their culture, many transcendental societal values are implicit and require group deliberation to be fully brought to light.

5.2   Individual versus shared deliberated values

Conventional monetary valuation methods that solely focus on establishing WTP do not encapsulate the full richness of value motivations that is provided by transcripts of group discussion. While individual methods could be improved with a measure of individual deliberation, this misses out on one of the main advantages of group-based deliberative approaches - the opportunity for social learning. Learning becomes particularly important when we consider that environmental goods themselves often have multiple value dimensions, with some components being more subtle than others. Initially, when valuing particular environmental attributes, only their more obvious (e.g. provisioning) services and benefits might be valued and a social learning process may be required to bring out more subtle shared senses of values with stronger moral, emotional, social-cultural and identity components. Our MPAs case study indeed confirmed that subjective well-being was better reflected in monetary values in group valuation than in individual valuation tasks. Additionally, both

our case studies and the limited past research available on the preferences of valuation participants themselves for individual or group-based approaches suggest that they feel their values are more considered and can be better expressed, after group deliberation.

5.3   Deliberation and value formation

Deliberation (as defined in Section 2.4.3) can inform the formation and expression of values in two broad ways: (i) group deliberation may reduce the cognitive burden associated with expressing individual values; and (ii) deliberation may help shape and/or express transcendental values linked to non-economic considerations such as social norms, rights and procedural fairness. The Deliberative Value Formation model proposed in Section 3.5 suggests that the consideration of others' values and needs can lead to a genuine increased sense of responsibility and concern for others compared to the pre-deliberated state, leading to increased realisation of other-regarding values. Importantly, our case study evidence illustrated that, in deliberative monetary valuation, this shift does not necessarily lead to higher WTP for the environment, as participants carefully make deliberated decisions on trade-offs involving different dimensions of value, and social as well as environmental concerns.

Evidence from the case studies (Section 4), clearly demonstrates that deliberative valuation processes indeed shape and alter contextual values, preferences and WTP. This raises an interesting question; is it problematic that when values are changed or constructed through a social process, these values cease to represent those of whichever wider population is under consideration (e.g. the public, users, beneficiaries)? This issue is discussed in more detail in the full report.

DVF proved to be a useful model both for elucidating and designing deliberative valuation processes, and provides a promising theoretical grounding for the increasing interest in deliberative valuation in the environmental field but also in other areas of policy where the public good or social priorities need to be debated and negotiated. However, more research is needed to consider what might be the most appropriate protocols and techniques for legitimate deliberation, in order to assess the extent of problematic processes such as social-desirability bias and how this can be mitigated, and to further understand the impact of different ways of framing and different approaches to instigate learning.

5.4   Shared values and cost-benefit analysis

A key question in terms of assessment of shared values is the purpose of the valuation exercise. Cost-benefit analysis (CBA), although widely criticised, is one of the most frequently used tools to rank policy alternatives. A pragmatic approach to deliberative monetary valuation can seek to incorporate deliberation into CV and allied methods to 'improve' the elicitation process, but still with the assumption that such values could feed into CBA. However, is it theoretically justified to include shared values, which may be the result of discussing and trading-off self- and other-regarding values, in CBA using a conventional utilitarian social welfare function that assumes maximisation of individual, self-regarding utility? The full report discusses this complex philosophical issue in further detail.

A novel way to incorporate 'moralised' preferences into CBA is to elicit a 'fair price' instead of conventional individual WTP. Examples of this were seen in the Inner Forth and MPAs case studies. A 'fair price' is elicited at the individual level, and in contrast to asking for individual WTP, it asks the respondents to consider what they believe is the value to whoever they are representing as a whole (e.g. the public, a beneficiary group). As such, it encapsulates self-regarding and other-regarding values, and in a sense value to society or some other social unit, but at the individual scale. It

removes the risk of double counting that occurs when we assumedly ask individuals for their self-regarding WTP but in reality receive a mix of self and other-regarding values, and it may be an effective way to help translate transcendental values such as justice into contextual values and a monetary indicator. As discussed in Section 4, case study evidence showed that deliberated 'fair price' measures better-reflected subjective well-being, as elicited through non-monetary indicators. Arguably, aggregating fair prices for non-marketed ES allows for inclusion of other-regarding values and transcendental values into a social-scale welfare measure that could be compared to market-derived measures.

5.5   Comparing methods for assessing shared values

While it may thus be possible include shared values in CBA in various ways, a number of fundamental critiques around aggregation and commensurability have been raised (Section 2.4.2). These suggest that, while CBA can rank options in terms of a particular type of economic efficiency, it is fundamentally incapable of generating a ranking of options in terms of their value to society. Notably, key issues around commensurability and aggregation (Section 2.4.2) have a bearing upon all mainstream economic methods of social valuation, regardless of whether they are based on market cost, stated or revealed preferences.

Non-ecomometric DMV provides one alternative to establish the social value of various policy options directly, without the need for aggregating individual values. This option has to date (to our knowledge) remained unexplored in practice and our case study in Hastings (Section 4.3) has been a first attempt. Here, a group of stakeholders valued different local policy options by indicating how much public money they thought should be spent, after an extensive deliberation process. Policy options were valued directly, rather than through aggregation and attempting to place a monetary/utility value on things that may not be seen as suitable to this.

A further alternative to CBA is the use of MCA to rank policy options. While MCA comes in many shapes and forms, frequently utilitarian assumptions are made to bring together different dimensions of value into a single arithmetic. Consequently, MCA as it is most commonly used shares some features with CBA, which may be seen as either an advantage or disadvantage. However, compared to CBA, when implemented in a deliberative format, MCA outcomes can be better (in)formed, moralised and seen as more democratic. Additionally, it is possible to apply MCA in one of the less common formats that do not force commensurability between different dimensions of value.

Thus, DMV and MCA, as 'hybrid' methods, can be used as analytical policy or project appraisal tools in parallel to or as an alternative to conventional monetary valuation and CBA. However, for evaluation of shared values in the sense of the deeper held values of communities, non-analytic, qualitative and interpretive approaches, such as the storytelling exercises used in some of our case studies, can bring out the meaning of values whereas analytical quantitative approaches on their own only provide an indication of trade-offs. The importance of non-monetary qualitative evidence lies not just in providing an alternative to monetary valuation, but also in their potential to reflect value that is relational and experiential.

Quantitative and qualitative methods can therefore be used in tandem to comprehensively understand not just how ES affect human well-being, but also what nature means to us. A mixed method approach such as was used in the Hastings case study can put ES in a broader societal perspective and consider values across ecological, social and economic domains. Such an approach is particularly useful for operationalising the Ecosystems Approach, where ES are seen as part of a

dynamic and complex social-ecological system. Table 18 in Section 3.4 of the full report provides a detailed overview of methods in relation to different shared values.

5.6 Shared values, legitimacy and decision-making

An interesting avenue of research in relation to shared values and deliberative methods is to consider when and where decision-makers see shared value evidence as having more or less legitimacy than evidence based on the values of individuals. While there has now been decades' worth of valuation evidence produced with the explicit aim of policy-makers taking better account of environmental benefits and costs, this has yet to be translated into tangible improvements in terms of environmental outcomes (see UK NEAFO WP9). In addition to the quality of evidence, decision-makers' ideas of 'better' are aligned to different perspectives of legitimacy, to different concerns about what evidence is defensible and to the usability of the evidence.

In conclusion, while both the theoretical and empirical components of this study highlight that there are important differences between individual and shared values, considerable further research is necessary in terms of developing methods for assessing the wide range of shared values of nature. Such evidence-generation should strongly involve decision-makers to assure that approaches, methods, and results are considered legitimate, relevant and useable. This way, a more comprehensive, democratic and social valuation of policy alternatives can be achieved and the considerable collective meanings, significance and value of nature recognised and safeguarded.