Uptake of ecosystem valuations in policymaking in Europe's overseas entities

Application, barriers to use, and opportunities for improved uptake

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Summary

The EU overseas entities support unique ecosystems which are home to an estimated one-third of the globally threatened species, including many endemic species. Because of the importance of biodiversity and ecosystems services in EU ORs/OCTs both locally and to the EU and member states (MS), it is essential to develop effective approaches to biodiversity governance. Yet often short-term economic interests are given priority over the preservation of ecosystem services. Ecosystem valuations offer a policy tool to convert the concrete and abstract value that ecosystems and biodiversity contribute to EU OR/OCT economies into numbers. The NetBiome-CSA project has collected information about the ecosystem valuation resources which exist specific to EU ORs/OCTs, yet so far there has been no broad investigation of the uptake of resources in policymaking. Through a series of interviews with stakeholders in five EU ORs/OCTs, we seek to create a more complete picture of the application of ecosystem valuation in policy practice.

Part I of this report gives an introduction to the concept of ecosystem valuation and its potential usefulness in policymaking. It then includes a review of the literature on governance of natural resources in the EU ORs/OCTs and characterise the state of the art in the integration of ecosystem valuation into policy based on existing literature. Part II presents the results of stakeholder interviews about the uptake of ecosystem valuation in policymaking in the EU ORs/OCTs. Part II concludes with an analysis of the interview results and discussion of their implications for future research and outreach.

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Introduction

In addition to its 28 Member States, the European Union includes 34 overseas entities which are associated with the EU based on the provisions of Part IV of the Treaty on the Functioning of the EU and the items laid down in the Overseas Association Decision of 27 November 2001. Consisting of eight Outermost Regions (ORs) and 26 Overseas Countries and Territories (OCTs), these entities have constitutional ties with Denmark, France, the Netherlands, Portugal, Spain or the United Kingdom and receive support from the EU for economic and social development. While the ORs are integral parts of EU Member States, the OCTs are associated with EU and depend constitutionally on one of the aforementioned EU Member States but are not directly subject to Community law. Substantial differences exist amongst the OCTs regarding their degree of autonomy but they are all sovereign countries, parliamentary democracies and islands with small populations.

The EU overseas entities support unique ecosystems which are home to an estimated one-third of the globally threatened species (Kettunen and Bezerra 2008), including many endemic species. Four of the five French biodiversity hotspots, for example, are located in overseas territories along with an estimated 90% of the biodiversity found within the UK and its territories combined (Foreign and Commonwealth Office 2012). This globally significant biodiversity is essential for the continued provisioning of the ecosystem goods and services that support the local populations as well as for both the local and EU economies. While ecotourism and fisheries activities illustrate the critical role of biodiversity in supporting sustainable development in the regions, the EU appreciates the importance of upholding access to maintained fisheries grounds, marine genetic resources, mineral exploration and a foothold in the high seas in three oceans (IUCN 2012).

Because of the importance of biodiversity and ecosystems services in EU ORs/OCTs both locally and to the EU and its Member States (MS), it is essential to develop effective approaches to biodiversity governance. Yet often short-term economic interests are given priority over the preservation of ecosystem services. Ecosystem valuations offer a policy tool to convert the concrete and abstract value that ecosystems and biodiversity contribute to EU OR/OCT economies into numbers. This makes it easier to communicate the importance of functioning ecosystems to policymakers and other stakeholders who are under pressure to deliver economic benefits. The NetBiome-CSA project has collected information about the ecosystem valuation resources which exist specific to EU ORs/OCTs[1], yet so far there has been no broad investigation of the uptake of resources in policymaking. Through a series of interviews with stakeholders in five EU ORs/OCTs, we seek to create a more complete picture of the application of ecosystem valuation in policy practice.

This report is split into two parts. Part I gives an introduction to the concept of ecosystem valuation and its potential usefulness in policymaking. It then includes a review of the literature on governance of natural resources in the EU ORs/OCTs and characterise the state of the art in the integration of ecosystem valuation into policy based on existing literature. Part II presents the results of stakeholder interviews about the uptake of ecosystem valuation in policymaking in the EU ORs/OCTs, including the barriers and enablers to uptake. Part II concludes with an analysis of the interview results and discussion of their implications for future research and outreach.

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[1] For an overview of relevant valuation studies, see http://www.netbiomedata.org/biodiversity-valuation

Part I – Understanding ecosystem valuation and its application in policy

1 Towards a new paradigm: the concept of ecosystem valuation

1.1 An introduction to ecosystem services

Ecosystem valuation builds on the concept of **ecosystem services**. Ecosystem services describe the benefits that nature provides to human society. These include provisioning services, regulating services, cultural services, and supporting services (see Figure 1 below for examples). They contribute to our social and economic well-being – consisting of the basic materials for a viable livelihood, freedom and choice, good health, and good social-cultural relations – by providing us e.g. with food, fibres, steady supply of clean water, regulation of pests and diseases, medicinal substances, recreation, and protection from natural hazards (MA 2005). Healthy ecosystems, thus, provide a broad range of socio-economic benefits to human society. Ecosystem degradation and declining ecosystem service provision, on the other hand, pose an economic risk to society. Figure 1 below depicts the linkages between categories of ecosystem services and components of human well-being.
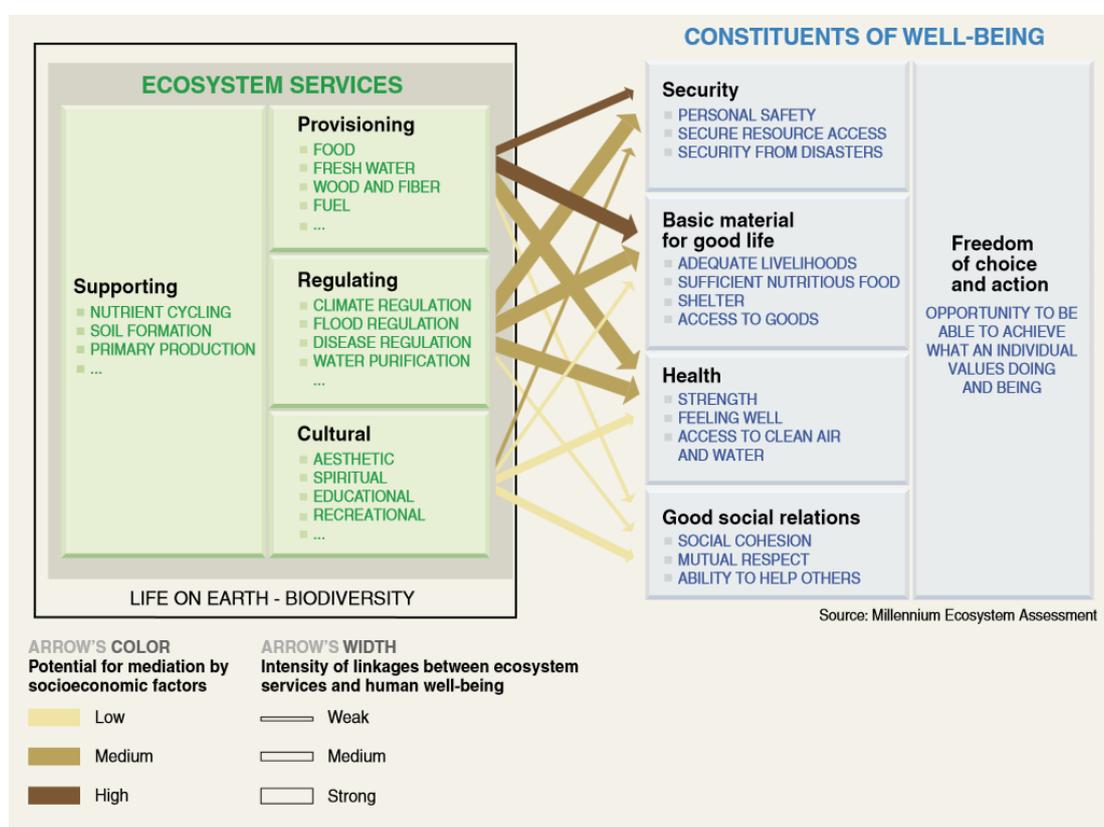

Figure 1 The links between ecosystem services and the constituents of human well-being (MA 2005).

1.2 Ecosystem service valuation: translating the importance of ecosystems into monetary terms

Ecological change, leading to reduced ecosystem quality, may cause changes in the quantity and quality of ecosystem services provided. These changes may affect ecosystem functioning, human health, and economic activities that are dependent on the provision of ecosystem services. A reduced provision of ecosystem services as a result of ecological change thus results in socio-economic costs to be borne by human society. The scope of these costs can be estimated by a variety of methods – the process of determining these costs is called **ecosystem valuation**. Figure 2 below shows the relationships between ecosystem functions, ecosystem services, their benefits to society, and their value in monetary terms.
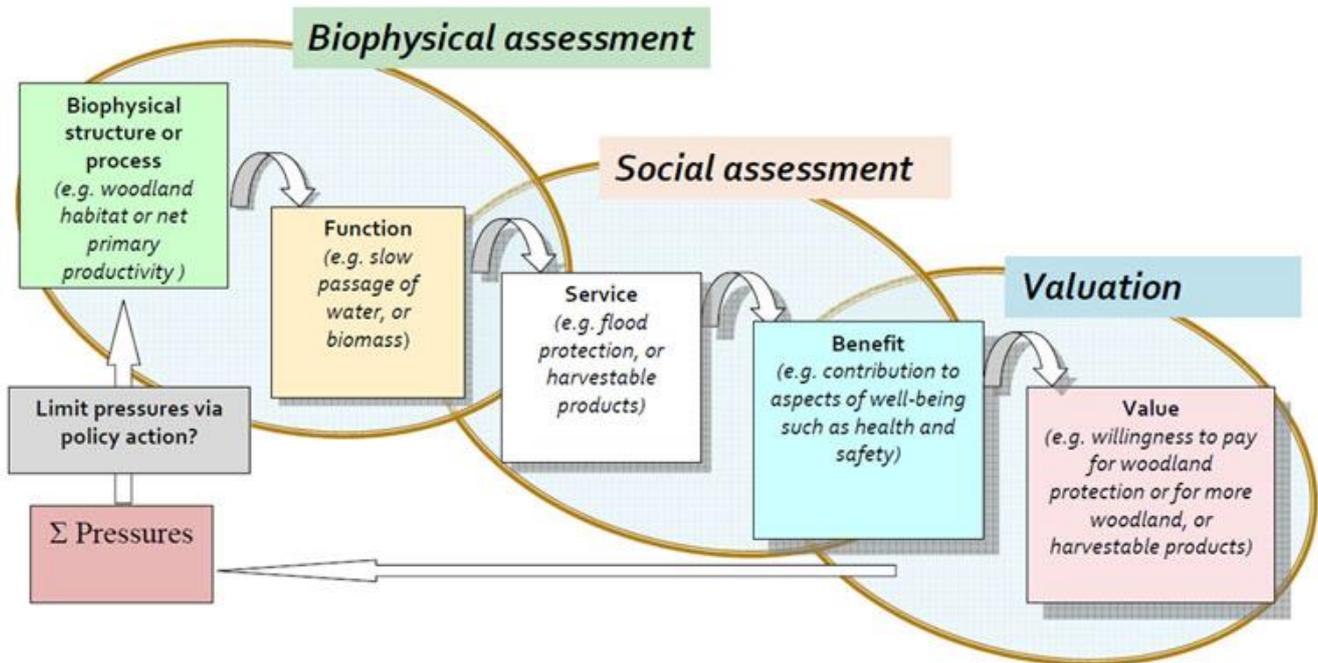
Figure 2 The relationship between biodiversity, ecosystem function and human well-being (Haines-Young and Potschin 2010).

Ecosystem valuation is a useful tool to express the importance of ecosystems in monetary terms. However, the monetary value of ecosystems can not always capture all of the tangible and intangible values of ecosystems in practice, as some values (e.g. cultural values) are difficult to capture in quantitative terms (Reid et al. 2006). Yet, **since economic concerns and cost-benefit analysis are such critical and established parts of policymaking and business decisionmaking, monetary valuation of ecosystem services offers a tool to express the value of ecosystems in ways that decisionmakers can incorporate into existing processes.** The role and limitations of of ecosystem valuation are explored further in the following sections, but first we take a closer look at the methodology of ecosystem valuation.

1.3   How are ecosystem values determined?

A typology of benefits from biodiversity and ecosystem services is provided by the concept of Total Economic Value (TEV), which seeks to represent all the types of value which healthy ecosystems can provide. The TEV framework consists of two main categories: use value and non-use value (e.g. Pearce and Turner 1994; Hanley and Spash 1995; Birol, Karousakis, and Koundouri 2006). Figure 3 provides an overview of the value types which exist within the TEV approach.
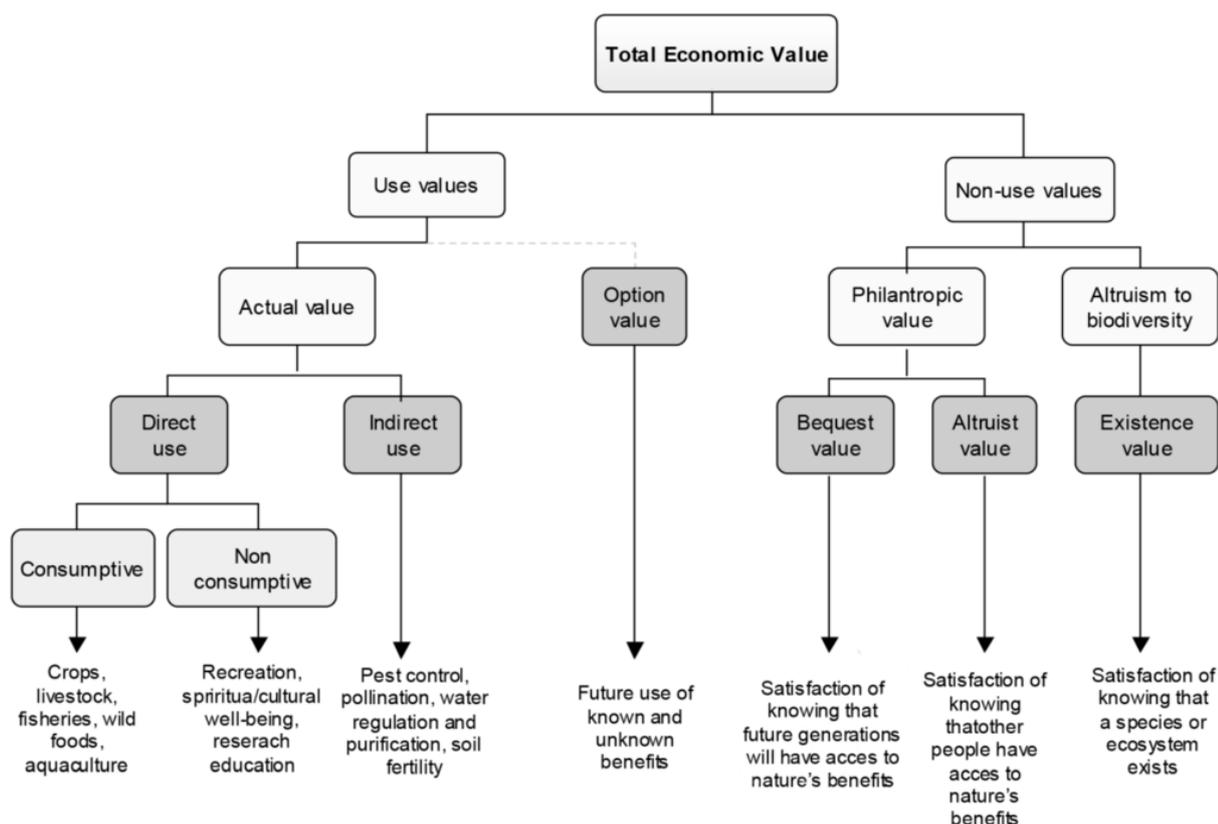
Figure 3 Value types within the TEV approach, according to Pascual and Muradian (2012).

Use values can be direct use values, for example the value of caught fish or harvested wood; Indirect use values, such as regulation of the water cycle necessary for growing crops ; and finally option values, which represent individuals' preferences with regard to enjoying the improved resource in the future (make use of it). Non-use values are often called existence values. They capture values related to moral, cultural or other non-material aspects of a resource's existence, such as the value of simply knowing that a species exists. As mentioned above, in practice it is not always possible to accurately determine all of these values. Even if the values can not always be quantified in practice, their inclusion in the framework ensures that their existence is still acknowledged in the theoretical approach.

The different value categories can be linked to the ecosystem services classification, as presented by the Millennium Ecosystem Assessment (2005) (see Table 1). All categories of ecosystem services provide option values because each service may be used at a later moment in time, although currently undetermined. Direct use values can be assigned to the category of provisioning services, such as the supply of freshwater and fish. Indirect use values are typically assigned to the category of regulating services because these are not enjoyed directly, but affect individuals' welfare. Non-use values are typically assigned to the category of cultural services.

Table 1 Matching the MA ecosystem service typology to categories of TEV.

MA service	Direct use	Indirect use	Option value	Non-use value
provisioning	x		x	
regulating		X	x	
cultural	x		x	x
supporting	No final ecosystem service, hence valued through the other categories			

There are several methods for identifying ecosystem values. Values can be determined through market prices[2], by estimating changes in production[3], costs of replacement, hedonic prices,[4] and by applying contingent valuation[5], among other methods. **Two very well differentiated groups of non-market valuation methods exist: those based on *revealed* or *stated* preferences**. *Revealed preference techniques* are based on the observation of individual choices in existing markets that are related to the ecosystem service that is subject of valuation. Examples are entry fees for nature reserves (Travel Cost Method) or real estate prices, which reflect - amongst other factors - the state of the environment (Hedonic Pricing). *Stated preference techniques*, on the other hand, are based on hypothetical markets: by means of interviews, peoples' willingness-to-pay (WTP) for an ecological improvement or their willingness-to-accept (WTA) an ecological deterioration is determined. Stated preference techniques are applied in cases where no surrogate market for the ecosystem good or service in question exists.

The following section investigates how ecosystem valuations can be applied in policy in general, and then looks specifically at existing knowledge from the literature about their application in the EU ORs/OCTs.

2   The role and limitations of environmental valuations in the policy process

Outlining the benefits of ecosystems and their services can provide economic arguments for the preservation, sustainable management and restoration of these ecosystems. This begins with integrating the value of ecosystem services into traditional cost-benefit analyses, but can also be used to develop and advocate for new types of policy measures.

The ecosystem service valuation approach has become well-established in the academic field, and it is gradually being applied more frequently in policy. Navrud and Pruckner (1997) identify five different uses of environmental valuations in decision-making: cost-benefit analysis (CBA) for both project evaluation and regulatory review, natural resource damage assessment, environmental costing (i.e. externalities), and

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[2] e.g. the money earned by selling a crop

[3] e.g. the difference in the amount of fish able to be sold before and after river remediation

[4] Hedonic pricing refers to an estimate of the value of ecosystem services based on property prices.

[5] Contingent valuation is a method for valuing ecosystem services by asking directly (usually in a survey) what people would be willing to pay for a certain natural good, service, or feature.

environmental accounting. Focusing on EU water policy, (Schröter et al. 2014; McAfee and Shapiro 2010; Marvier, Grant, and Kareiva 2006).

Thaler et al. (2014) highlight that international, national, and regional environmental policies and strategies explicitly acknowledge the importance of environmental costs and benefits, and the need to integrate them into the policy-making process. The same is true for other policy domains.

Ecosystem valuations in policymaking are criticised for attempting to commodify nature, for promoting an anthropocentric and exploitative view of nature, and for supporting a neoliberal approach to conservation which conflicts with anti-poverty agendas (Schröter et al. 2014; McAfee and Shapiro 2010; Marvier, Grant, and Kareiva 2006). However, these criticisms often misinterpret the role and limitations of ecosystem valuation and/or conflate shortcomings in practical application with shortcomings in the concept. Ecosystem valuation and the incorporation of valuation data into policymaking are not a panacea to solve all environmental conflicts - valuation is simply one tool to express the value of biodiversity and other natural resources in a format which decision makers can use in economic contexts (Costanza 2006). Monetary valuation of ecosystem services is not meant to substitute arguments for conservation based on the intrinsic value of nature, but to complement them (Reid et al. 2006). Like any decision-making tool, its effectiveness in supporting conservation and sustainable natural resource management depends on its application in practice, and applications must be appropriately chosen and designed to yield results. Approaches exist, which seek to incorporate more qualitative values alongside quantitative values.

Below, a few of the globally most important approaches for integrating ecosystem valuation into policy are outlined.

2.1   Nature-based solutions

So-called **nature-based solutions**, also referred to as **green (and blue) infrastructure** or **ecosystem-based approaches**, target an integrated management of land, water and living resources. Ecosystems-based approaches promote conservation and sustainable use in an equitable way (CBD 2000) and aspire to maintain the natural structure and functioning of ecosystems. These approaches address the crucial links between climate change, biodiversity, ecosystem services and sustainable resource management, and thus have the potential to simultaneously contribute to several policy aims and local needs. Ecosystem-based approaches also maintain existing carbon stocks, regulate water flow and storage, maintain and increase resilience, reduce vulnerability of ecosystems and people, help to adapt to climate change impacts, improve biodiversity conservation and livelihood opportunities, and provide health and recreational benefits (Andrade Pérez et al. 2010; Naumann et al. 2011).

Box 1 Comparison of costs and benefits of ecosystem-based approaches and grey infrastructure engineering options

Maldives: Disaster risk reduction through coral reefs

Coral reefs and other coastal ecosystems in the Maldives provide critical protection to coastal communities from storms and erosion, substantially reducing storm-related damages and saving lives. Tropical storm events are likely to increase in terms of frequency and consequences with the increasing impact of climate change. These developments reveal the need to protect the reefs and prevent their on-going degradation (resulting e.g. from overfishing or coral mining) through the establishment of marine protected areas. Such actions would cost ca. US$34 million in start-up and ca. US$47 million/year to maintain their critical

protection service. Apart from this reducing the risk of natural disasters, this action could also generate ca. US$10 billion per year in co-benefits through tourism and sustainable fisheries. An irreversible degradation and therewith loss of the coral reefs would require to build hard infrastructure such as seawalls, breakwaters and other forms of coastal protection. Costs for such infrastructure have been estimated at US$1.6 billion–2.7 billion.

(Source: Jones, Hole, and Zavaleta 2012; Moberg and Rönnbäck 2003; Mohamed 2008; Emerton, Baig, and Saleem 2009)

Turks and Caicos Islands: Disaster risk reduction through coral reefs

The protection against erosion and wave damage provided by natural buffers (coral reefs) in the Turks and Caicos Islands has been estimated at US$16.9 million/year. Constructing dykes and levees as hard engineering solution would cost instead US$223 million, which corresponds to 8 % of the gross domestic product.

(Source: Jones, Hole, and Zavaleta 2012; Conservation International 2008; Hendry 1993; Batker 2005)

Calculating the value of the different social and environmental benefits that can be obtained by implementing ecosystem-based approaches is of particular importance, not only to justify the spending from an economic perspective, but also to accurately weigh the costs and benefits of ecosystem-based approaches against traditional engineered approaches (grey infrastructure). There is evidence that indicates that the majority of projects using ecosystem-based approaches can be considered more efficient from an economic point of view, if one takes account of their long-term welfare benefits. In this respect, ecosystem-based approaches can be more cost-effective than traditional engineering approaches (Jones, Hole, and Zavaleta 2012; Naumann et al. 2011; Doswald and Osti 2011). **Error! Reference source not found.** provides examples highlighting the cost-effectiveness of ecosystem-based approaches.

The usefulness of ecosystem-based approaches has been recognised by the EU. In 2013, the European Commission published the EU Green Infrastructure Strategy (COM/2013/0249), "to promote the deployment of green infrastructure in the EU in urban and rural areas". The EU Biodiversity Strategy to 2020 mentions the importance of promoting green infrastructure for preserving ecosystems and their services. Nature-based solutions and re-naturing cities is also a focus of the EU Research and Innovation policy agenda.

2.2   Market based Instruments

Environmental valuations can play an important role in the design of **market-based instruments** (MBI). Market-based instruments consist of direct payments for the provision or compensation for the loss of ecosystem services and include development of compensatory remediation, mitigation and compensation measures and payments for ecosystem services. To be effective, MBI need to be based on accurate ecosystem valuations.

Interest in MBI for environmental policy has been growing since the 1980s (eftec 2010). In the case of environmental damage, for example, the Environmental Liability Directive (2004/35/EC) aims to compensate

for a temporary loss of natural resources pending their recovery. When defining remedial measures, the directive advocates the use of a resource-to-resource or service-to-service equivalence approach. Similarly, the Environmental Impact Assessment Directive (85/337/EEC) and the Strategic Environmental Assessment Directive (2001/42/EC) propose specific mitigation and compensation measures if damage to species and habitats was caused, resulting e.g. in the construction of highways causing irreversible damage to species and habitats.

One of the most prominent examples for the integration of the economic value of biodiversity and habitats into market-based instruments are so-called **payments for ecosystem services (PES)**. PES are incentives offered to resource users or owners in exchange for managing their land to provide specific ecosystem services (e.g. water regulation and provision of drinking water, control soil erosion, carbon sequestration through sustainable forest management). They have been defined as "a transparent system for the additional provision of environmental services through conditional payments to voluntary providers" (Tacconi 2012, 35). Therefore, PES can promote the conservation and sustainable management of natural resources in the market place.

In the next section, we concentrate the focus on the EU ORS/OCTs. We present the overarching context of the governance of natural resources in the EU ORs/OCTs, and then investigate the status quo of the application of ecosystem valuation into policymaking in the EU ORs/OCTs.

3   Governance of natural resources in ORs/OCTs

At EU level, recognition of the need to conserve biodiversity in EU overseas territories as part of European biodiversity commitments has led to the integration of these territories in various legislative measures. The 'Overseas Association Decision' (Council Decision 2013/755/EU) outlines the principles on the association of the overseas countries and territories with the European Union. OCTs and ORs have also been included in the Council of the EU conclusions of 19 December 2011 on the Integrated Maritime Policy (IUCN 2012) and in the EU Biodiversity Strategy to 2020, emphasizing the potential of the BEST initiative to promote biodiversity conservation and sustainable use.

Furthermore, Commission Communication COM (2012)287 on "The outermost regions of the European Union: towards a partnership for smart, sustainable and inclusive growth" takes particular note of the need to support biodiversity and ecosystem services, and identifies paths for sustainability across an array of traditional sectors (e.g. tourism, agriculture and rural development, fisheries, etc). At national level, the UK for example has developed an Overseas Territories Biodiversity Strategy in 2009 and published a White Paper on the Overseas Territories in 2012; the latter sets out its overall approach to OCTs and outlines its role in supporting them to meet the requirements of the Convention on International Trade in Endangered Species, the CBD and the Convention on Migratory Species.

How EU policy is applied to the OCTs is not, however, without criticism. Furthermore, while the ORs implement EU policies such as Cohesion, Birds and Habitats Directives and Common Agriculture Policy and are eligible for EU Structural and Cohesion, agricultural and LIFE+ funding, the OCTs lack a focused framework for conservation guidance. Additionally, although OCTs are eligible for LIFE+ funding, it is difficult for them to comply with funding criteria. OCTs are instead primarily funded through the European Development Fund, the design of which is more targeted towards initiatives supporting economic growth and development rather than biodiversity conservation (Kettunen and Bezerra 2008).

Although the importance of biodiversity for the territories is acknowledged, conservation targets often remain unmet. Contributing factors in addition to those above include the OR/OCT's remoteness (adding to the cost of environmental projects), vulnerability to economic shocks, limited access to technical expertise, difficulty of building and maintaining infrastructures or the supply of sustainable energy. Biodiversity is additionally threatened by invasive alien species, climate change and habitat loss (Defra 2009). Marine conservation in particular is subject to complex jurisdictional matters between the EU, Member State and overseas territories levels (IUCN 2012).

In general, the degree of environmental protection and governance varies among the ORs/OCTs. For instance, an assessment of environmental protection frameworks in the UK overseas territories finds that "there are areas of best practice in many Territories, which can act as a beacon for others to emulate, but that many OCTs still have significant gaps in their environmental governance which urgently need to be addressed"(FIELD and RSPB 2013, 3). The current Nature Policy Plan for the Caribbean Netherlands acknowledges that "limitations in terms of capacity, funding and political support turned out to be the chief challenges" for the implementation of the environmental policy objectives that had previously been defined.

4 Uptake of valuation studies in policymaking: the global context and the status quo in EU ORs/OCTs

Until the beginning of the new millennium, the debate about the services which nature provides and their economic value remained mainly an academic one outside of most policy debates; this changed with the Millennium Ecosystem Assessment (MA). The MA (2005)was a global study initiated by the United Nations which aimed at providing an overview of the status of 24 key ecosystem services at global level and at assessing the consequences of ecosystem change for human well-being.

Since the MA, initiatives to integrate ecosystem valuation into policy have emerged at international, national, and local levels. The most prominent initiative globally is The Economics of Ecosystems and Biodiversity (TEEB), which was launched at the 2010 10th Conference of the Parties of the Convention on Biological Diversity. TEEB has produced many valuation studies as well as conducted capacity building and educational programmes around the world.

Ecosystem valuation faces many barriers to uptake in political processes. Several are identified from the literature by Laurans et al. (2013) and Fisher et al. (2008):

- Valuation studies do not meet quality standards required for policymaking
- The cost of conducting studies is prohibitive
- Researchers have insufficient contact to policymakers and political processes
- Study results are delivered in a format or using language that is not useful or relevant to stakeholders
- Basic understanding of ecosystem functions are lacking
- Disinterest among policymakers

Billé et al. (2012) find that valuation studies are rarely taken up in decision-making and argue that "the common rule is to present an economic valuation, then suggest that it be used for decision-making, but without this use being either explicited or contextualized, and without concrete examples being provided or analyzed." It is also not always easy to track the impact of valuation studies. Valuation studies may not be specifically mentioned in the formulation of a policy but instead have an indirect impact on the thinking or

decision-making of policymakers (von Raggamby and Gerdes 2008). Fisher et al. (2008)found that valuation studies rarely include follow-up appraisals of the uptake of valuation studies into policymaking.

Kushner et al. (2012) identified 13 valuation studies in the Caribbean which had a policy impact, some of which were in EU ORs/OCTs. They isolated a series of factors which increase the likelihood that a valuation study or valuation data will influence policy. These elements are (Kushner et al. 2012, 12):

- "a clear policy question,
- local demand for valuation,
- strong local partnerships and stakeholder engagement,
- good governance with high transparency,
- opportunities for revenue-raising,
- effective communications and access to decision makers, and/or
- media a clear presentation of methods, assumptions, and limitations."

In a review of valuation studies conducted in the context of NetBiome-CSA Deliverable D3.1, it was found that, with a few exceptions (e.g. Bonaire, St. Maarten), available literature indicates that the results of valuation studies are rarely taken up in regional and/or local policy-making across the ORs/OCTs. However, specifically in the EU ORs/OCTs, the conditions that influence the use or non-use of valuation research in policy-making are not known. Given the overseas entities' importance for biodiversity conservation and their unique legal and political status, generating a better understanding of these enablers and barriers is a critical step to improving uptake. The interviews conducted for this study, which are presented and analysed in Part II, seek to close this knowledge gap.

Part II - Policy impacts of valuation studies: results of stakeholder interviews

1   Goals and methodology

More needs to be understood about the uptake of ecosystem valuation in policymaking in the EU ORs/OCTs in order to ensure that an effective policy framework is in place to manage biodiversity and natural resources sustainably. The goal of the interviews is to answer three questions:

1. What is the state of knowledge among stakeholders?
2. What is the relevance of existing ecosystem valuations to the policy process?
3. What can be done to improve the uptake of ecosystem valuation?

12 interviews were conducted between August and November 2015 across the EU ORs/OCTs. Specifically interviews were conducted with stakeholders in the Azores, the Caribbean Netherlands, New Caledonia, the Canary Islands, and the British Caribbean OTs.

1.1   Interviewee selection and representativeness

The choice of interviewees was made to cover as broad a variety of relevant stakeholder types and regions as possible. In order to ensure broad representation and inclusivity, a list of relevant stakeholder types was first identified, and interviewees were chosen with the goal of including as many stakeholder types and as many regions as possible. Two to three interviews were conducted in each represented region to integrate multiple perspectives within each regional context. The inclusion of stakeholders and regions was limited by the short time frame in which interviews could be conducted and limited capacity of stakeholders to participate in interviews. A further limitation is that stakeholders were chosen who were already familiar with the concept of ecosystem valuation, as these stakeholders are most likely to understand the concepts which were targeted in the interviews and give knowledgeable answers to our research questions. This, however, introduced a selection bias, as stakeholders who are relevant to the policy process but who are not familiar with the concept were not included.

Interviewees spanned a range of actors involved in ecosystem governance and management, including governments, NGOs, academic researchers, foundations, protected area managers, and policy advisors. Some of the interviewees can be categorised as multiple stakeholder types, e.g. a government employee who was formerly the director of conservation foundation who reported on experiences from both roles. A table listing the interviewees and their roles is available in included in the Annex: List of interviewees.

The next sections detail the results of the interviews.

2   What is the state of data among stakeholders and where are the knowledge gaps?

2.1   Knowledge/awareness among interviewees

The results give a mixed picture across the included ORs/OCTs. Seven of twelve interviewees responded that they were aware of multiple resources on the valuation of ecosystem services and biodiversity. The remaining five interviewees said that they were aware of some resources, but that the information was insufficient (see sections 2.2 and 3 below). None reported that they were not aware of any resources, but this is probably in part due to the bias in interviewee selection identified above.

2.2   Knowledge/awareness among relevant stakeholders in the regions

The best state of knowledge appears to be in the Caribbean Netherlands, where all interviewees reported a high awareness. In the Azores and Canaries the state of knowledge appears to be the most lacking. Interviewees from these regions reported that there were few resources relevant to them of which they were aware. Both respondents from the Canaries pointed to a low interest in funding valuation studies as the reason behind the insufficient state of data. Most interviewees pointed out that awareness among policymakers in their region was generally low, especially at the local level.

The most commonly reported knowledge gap was the lack of a fundamental understanding of ecosystem functioning. Half of the interviewees claimed that this was a problem in their OR/OCT. This basic knowledge is a prerequisite to being able to create and use valuation studies, yet is still incomplete in many EU ORs/OCT.

The second most commonly reported knowledge gap was related to the type of valuation data available. Four interviewees claimed that although some data was available, it was the wrong kind of data. On one hand, some of the available resources are too specific, looking for example at only one site or one particular ecosystem service, with limited applicability beyond the context in which the study was carried out. On the other hand, some resources were not specific or relevant enough to the OR/OCT, site, or sector in question to be useful for policymaking.

3   What is the relevance of existing ecosystem valuations to the policy process?

Interviewees could pinpoint several cases in which existing ecosystem valuation resources were put to use to support policy processes and decision-making. Three interviewees pointed out seven instances in which valuation data was used to support the creation and design of conservation projects. Three cases (in Montserrat, the Cayman Islands, and the Azores) were identified in which valuation data was employed in decisions on investments in grey and/or green infrastructure. In two instances (in New Caledonia and St. Eustatius), ecosystem valuation data was used to determine restoration or offset mechanisms for detrimental activities, e.g. an oil spill. Several more cases were listed in which valuation data contributed to decision-making, including supporting decisions on harbour and tourism developments (e.g. in the Caribbean

Netherlands and the Cayman Islands) , integration into cost-benefit analysis of projects (e.g. in the Caribbean Netherlands), and to advocate for certain projects or funding distributions (in the Caribbean Netherlands, the British Caribbean, New Caledonia, and the Azores). The utilization of valuation data also played a role in the access to EU and international funding for conservation projects in EU ORs/OCTs in four examples (three in New Caledonia and one in the Canaries), in which integrating valuation made a project more attractive to funders.

Seven cases were highlighted in which the use of valuation data could be linked to concrete impacts. Two interviewees reported three cases in which natural processes were positively affected (two cases of improvements in the local hydrological cycle and one case of the improvement of forest health). Six cases were identified in which the application of valuation data led to a change in policies or regulation. These included the establishment of two tourism-related taxes, the integration into two local policy strategies (a nature policy plan and an island development plan), an increase in funding for conservation projects, and the promotion of endemic species in forestation projects. Notably, five of these six reported applications were in the Caribbean Netherlands; the promotion of endemic species in reforestation occurred in the Azores.

Despite these examples, nearly all interviewees agreed that in general valuation knowledge had a low impact on policy processes, especially at the local level. Awareness and utilization among policymakers was generally found to be low. This was reported even in cases such as the Caribbean Netherlands where the national government strongly supported the implementation of valuation knowledge. Interviewees were able to point to some cases in which ecosystem valuation data was deliberately disregarded in decision making, or in which concerns over direct economic gains so overweighed the insights from valuation data that existing valuation data was ignored, for example the rezoning of part of an important marine park as a harbour area in St. Eustatius, or concerns over the distribution of income and meat from hunting of invasive species overshadowing the value of other ecosystem services in Montserrat.

The quality and availability of data negatively affected its relevance to the policy cycle. Criticisms of the existing resources and data included that there were gaps on certain types of values, with a bias towards consumptive values cited; that regional perspectives were lacking; and that resources were too specific to certain sites, ecosystem services, or aspects of ecosystems. The robustness and reliability was also reported to be perceived negatively by policymakers in some cases, which made them disinclined to apply the resources in policies. However, the lack of awareness or interest of especially local policymakers was seen as an equally or more significant hurdle as the relevance of data. The following section delves into the barriers and enablers to the uptake of valuation resources in the policy process in EU ORs/OCTs in more depth.

3.1 What are the barriers and enablers for the uptake of ecosystem valuation knowledge in policymaking

In order to isolate leverage points to improve uptake of ecosystem valuation data and resources, first the factors which hinder and enable such uptake have to be identified. This subchapter explores the existing barriers and enablers to valuation knowledge's application in practice.

3.1.1 Barriers

Barriers to the application of ecosystem valuation are spread along every stage of the cycle of data generation and policymaking. From the interview responses, four main factors emerged that prevent the uptake of valuation knowledge: **shortcomings in the data, insufficient dissemination, policymakers' limited ability to act, and policymakers' low willingness to act**. These are explained below.

3.1.1.1   Shortcomings in the data

Both the **availability of valuation resources** and stakeholders' **negative perceptions of the quality of data** presented barriers to its active utilisation in policymaking. According to nearly half of the interviewees, the high costs of collecting data and conducting surveys and the lack of funding contributed heavily to the lack of relevant resources in ORs/OCTs. Especially the inability or unwillingness to invest local funds made it difficult to develop relevant data. The challenge of monitoring and updating data presents another barrier to its use. Resources that are perceived to be out of date are regarded as not useful for the policy process, and keeping data up to date requires capacity that is rarely available. A third of interviewees also raised concerns over the perceived robustness and validity of data. Specifically the arbitrariness, subjectivity, and intransparent assumptions behind reported values were criticised.

3.1.1.2   Insufficient dissemination

Beyond issues with the data itself, the insufficient dissemination of existing resources presents a major barrier to the uptake of valuation studies in policymaking. One third of interviewees named **insufficient engagement between scientists, policymakers, and other relevant stakeholders** as a major barrier. As pointed out in the interviews, there is rarely follow up after the completion of a study, nor is enough effort dedicated to making sure the results are accessible. The lack of awareness among policymakers about existing resources was highlighted as a hindrance to uptake, which evidences the criticism of inadequate dissemination efforts.

Reaching beyond issues with dissemination of *data and resources*, **education gaps were evident regarding the *concept* of valuation itself**. One interviewee whose background comprised research and NGO work fundamentally criticised the idea of putting a price on nature, and a second interviewee from an NGO expressed that in his experience, other stakeholders distrusted the concept. These stakeholders perceived valuation as commercialising something which should not be commercialised and saw a high risk of drawing conclusions from the data which could work against conservation interests. This values-based criticism reflects a lack of confidence in the ability of valuation to provide useful input to the policy process. Insufficient educational outreach about the limitations and implications of valuation data may contribute to the spread of this attitude. Distrust in the concept may also link to the perceived robustness and validity of the data highlighted above.

3.1.1.3   Policymakers' limited ability to act

Even when dissemination is successful, policymakers' ability to act on the data may be limited, presenting another barrier to implementation. This stems from both policymakers' personal capacity to understand the data as well as their level of political power Four of the interviewees claimed that **policymakers sometimes find it difficult to understand or use valuation data**. One interviewee from the Caribbean Netherlands also

noted that in his case, the national government had the capacity to use valuation data but the local government did not, meaning that action integrating valuation data could only originate from the national level.

Yet more than their *ability to understand* the data, policymakers' ability to *make policy changes based on the data* was found by interviewees to be limited. Limitations come from a **lack of both internal and external power**. Interviewees mentioned a lack of capacity or political support within policymakers' departments as a barrier. Policymakers in some cases also did not have the political power to implement valuation data in practice. As noted by an interviewee with an NGO and government background, often the policymakers who are aware of and interested in applying ecosystem valuation data are from departments of conservation or the environment, yet these departments rarely have significant political sway. Interviewees asserted that economic actors and their interests are often framed in competition with environmental interests. Economic actors and short-term economic interests enjoy more political power. The combination of this framing and power balance creates a hurdle for implementing an approach which benefits environmental or conservation interests.

3.1.1.4   Policymakers' low willingness to act

Among policymakers who do possess the ability to implement valuation knowledge in practice, the unwillingness to do so presents the final important barrier. According to the interviewees, **some policymakers are simply not interested in using the approach**. In other cases, they are only willing to use valuation when it supports their own existing interests.

The interviews revealed mixed results about willingness to act on the national and local levels. In the Caribbean Netherlands, for example, strong national interest in the approach led to successful uptake in policy. Conversely, interviewees from the Canary Islands pointed out that the lack of interest at the national level stifled opportunities for action. However, interviewees from other ORs/OCTs claimed that the application depended strongly on leadership on the island, and nationally supported action which is not locally led had difficulty finding local support. It is therefore difficult to generalise about the role of national vs. local willingness to act in the ORs/OCTs.

3.1.2   Enablers

Despite the many hurdles which face the integration of valuation in policymaking in the EU ORs/OCTs, examples of successful application help to highlight enabling factors. Enablers include both questions around study design and dissemination as well as political factors, both on the local as well as the national and international level.

Interviewees identified two enablers at the data generation and dissemination stage: **ensuring inclusivity of valuation studies** and **development of simple tools to operationalise valuation data in practice**. Several interviewees voiced the opinion that by increasing participation in valuation processes, stakeholders' acceptance of the results would rise and along with it would rise their willingness to use the results. Developing simple approaches to spatially explicit quantification was also found to be useful. Data has to be delivered in a simple, usable form in order for policymakers to be interested in and able to apply it. The

application of these insights at the data generation and communication level can already promote the policy impact of valuation resources.

At the local level, several political enablers contribute to cases of effective integration of valuation data in policy processes. A crucial enabler is the **existence of a local champion** for the approach who has political power. A local champion could be an influential local stakeholder or a senior person within government. This ensured that valuation found political acceptance and was given consistent attention over time. Key among local-level enablers are **networking** and **making use of a regional perspective**. The ability to compare an island's own experience with that of other islands in the region was found to be useful, such as using (avoided) natural disasters to practically demonstrate the value of ecosystem services to the public and to policymakers. Networking also facilitates the exchange of experiences, knowledge, and resources.

Political enablers also exist beyond the local level. The **connection to an EU country** in most cases played an important role in the availability of funding and expertise to carry out and use valuation studies. This factor stood out as the most frequently named enabler. One third of interviewees indicated that the connection to the national or regional government meant that ORs/OCTs had access to funding, technical capacity to conduct studies and apply knowledge, contacts to businesses, and in some cases political support for implementation an environmental valuation approach.

4   What can be done to improve the relevance/uptake of ecosystem valuation?

Given the barriers and enablers identified in the interviews, stakeholders were asked to isolate leverage points to increase the uptake of ecosystem valuation in policymaking. This section explores insights from the stakeholders' experiences.

4.1   Closing gaps in knowledge and participation

Developing the right kind of data was not often explicitly mentioned by interviewees as a means to improve uptake. However, based on their criticisms of the state of data and knowledge (see Part II, Section 2), it is reasonable to conclude that **filling existing gaps in knowledge** would support a wider integration of an ecosystem valuation approach in policymaking. Research processes and outputs should therefore be designed with usability in mind. This goes beyond just the subject of research. Interviewees mentioned that it is important to **prepare data in a form which is easily usable and accessible to policymakers**, such as policy briefs, concise user-friendly tables, infographics, or popular media articles rather than long technical reports or academic journal articles. Transparently acknowledging the limitations of a valuation approach can also help to educate stakeholders and policymakers on how they can make use of resources while increasing their faith in the validity of valuation data.

Part of making research designs more relevant includes **increasing inclusivity and participation in valuation studies**. Nearly half of interviewees recommended that valuation studies integrate more participation and more diverse perspectives. This can help identify key areas and services for protection, identify the least inappropriate areas to allow potentially damaging activity, as well as increase public awareness about and acceptance of the use of valuation of ecosystem services.

4.2   Engaging with policymakers

Half of the interviewees explicitly asserted that interest exists among policymakers to incorporate valuation data into policymaking, and a third claimed that better outreach and dissemination is a necessary step to promote such integration. In these cases, there needs to **be more consistent engagement with policymakers in order to ensure that a valuation approach is put into practice**. The most frequently recommended measure was iterative meetings and active follow up with policymakers. Three interviewees also recommended offering trainings to policymakers on how to use data. Initiatives such as NetBiome, which explicitly seeks to increase the exchange between policymakers, practitioners, and scientists, were regarded crucial to bridge the gap between ecosystem and biodiversity valuation research and implementation.

4.3   Focus on integration into to existing processes and other policy spheres

Interviewees saw the biggest potential for increasing the uptake of valuation resources in policymaking via **integration in existing processes and policy spheres**. Several specific policy domains were raised in the interviews. The most frequently mentioned were tourism and economic development policy, which were brought up by nearly all interviewees, e.g. to set tourism taxes. This was followed by (marine) spatial planning, mentioned by one third of interviewees, as well as agriculture and fisheries. Stakeholders could also promote the utilisation of valuation data to reduce and resolve land/marine resource use and development conflicts, for example to develop PES schemes or determine compensation measures. One interviewee pointed out that the concurrent pressure on public budgets and on natural resources creates an interest among policymakers in cheaper solutions. In light of this, valuation data can be used to compare the costs and benefits investments in grey infrastructure versus green infrastructure, advocating for effective ecosystems-based solutions.

4.4   Beyond policymakers: educating the public, business, and other stakeholders

Finally, interviewees recommended going beyond policymakers when communicating results of valuation studies. **Raising awareness among business stakeholders and the public about the value of ecosystems and ecosystems** services was seen as a key leverage point to increase awareness and acceptance of an ecosystem valuation approach. Communication beyond specialised audiences can help raise public support for integration of valuation approaches. This can incentivise policymakers to take action.

5   Discussion and conclusions

Based on the insights from the interviews, this section makes recommendations for the next steps for researchers to improve the uptake of ecosystem valuation in policymaking.

The results of our interviews were consistent with the existing literature on the use of ecosystem service valuation data (see Part I, Section 4), yet went beyond the existing literature to give specific insight into the situation in the EU ORs/OCTs. Several key messages emerged from the interviews:

- **Targeting valuation's application in tourism:** Tourism is an immensely important sector for the EU ORs/OCTs, largely driven by their unique biodiversity and ecosystems. Yet although OR/OCT tourism fundamentally depends on healthy ecosystems and biodiversity, tourism-related development is simultaneously a source of pressure on ecosystems. Special effort should therefore be concentrated on integrating valuation data into tourism policy and other policies with a major impact on tourism. Focusing on working with tourism stakeholders in business and policy, rather than only the stakeholders from an environmental or conservation background who are typically those most open to the approach, can raise support for an ecosystem valuation approach among politically and economically powerful actors.

- **Actively engaging policymakers**: in most cases, it was not the lack of ecosystem valuation resources that prevented valuation knowledge from being applied in practice, but insufficient engagement with policymakers. Researchers and other stakeholders should put emphasis on direct and repeated contact with policymakers as well as the translation of valuation knowledge into types of media and formats which are user-friendly for policymakers. This is a necessary step to bridge the existing gap between research and implementation phases of ecosystem valuation.

- **Reaching and including diverse relevant audiences**: to help deconstruct the mistrust of ecosystem valuation help by some stakeholders, researchers should put effort into integrating diverse perspectives at all stages of ecosystem valuation. As the preservation of ecosystems and their services is often juxtaposed against economic and other interests, allowing stakeholders outside of traditional conservation or ecological economic circles to have a voice in valuation is important for legitimacy. In this way, broader coalitions of stakeholders can be built to support the application of valuation knowledge in policymaking, if stakeholders feel like they have had the chance to represent their own interests.

- **Taking advantage of the connection to the EU and national level:** the EU and national level can provide influential support for a valuation approach in policymaking in the EU ORs/OCTs, both in funding and in supportive policy frameworks (see also section **Error! Reference source not found.**). Some EU overseas entities have already recognised the usefulness of this connection and can provide a good example to other ORs/OCTs. Stakeholders can take advantage of this e.g. for funding for valuation studies or to apply existing valuation knowledge to conservation projects, and researchers can emphasise this leverage point when working together with stakeholders.

Several interesting areas for future research also emerged from the interviews. Follow-up research is needed to gain a more complete and nuanced understanding of the enablers and barriers to the uptake of ecosystem valuation in policy processes. This includes expanding the geographic scope to include more EU overseas entities. It would also be useful to target stakeholders who play an important role in EU OR/OCT policymaking but who are not yet familiar with ecosystem valuation. Thirdly, since direct engagement and follow-up with policymakers is so important, a longitudinal study to investigate the policy impacts of research-policy networking initiatives such as NetBiome-CSA or capacity-building programmes could help shed light on the usefulness and areas for improvement for such initiatives.

6   Annex: List of interviewees

Position	Sector	Location	Interview conducted by
Marine biologist in the Instituto Universitario Eco Aqua and professor in the University of Las Palmas de Gran Canaria	Academia and research	Spanish ORs (Canary Islands)	PLOCAN
Graduate in Marine Sciences and member of national NGO "Ecologistas en Acción"/"Ecologists in Action", and spokeswoman of its regional NGO representative in Canaries "Ben Magec"	Academia and research; NGO	Spanish ORs (Canary Islands)	PLOCAN
Director – Conservation International (CI), New Caledonia Office	NGO	French Pacific OCTs (New Caledonia)	ADECAL
Department of the Environment of the Province Sud of New Caledonia	Government	French Pacific OCTs (New Caledonia)	ADECAL
Participation and Environmental Education Officer, Portuguese Society for the Study of Birds	NGO	Portuguese ORs (Azores)	FRCT
Regional Director of Forest Resources, Government of the Azores	Government	Portuguese ORs (Azores)	FRCT
Staff member of the Directorate for the Sea Affairs, Government of the Azores	Government	Portuguese ORs (Azores)	FRCT
Director of the Dutch Caribbean Nature Alliance (DCNA), an NGO cooperative comprising the protected areas management organizations of all Dutch Caribbean islands	NGO; protected area manager	Caribbean Netherlands (Bonaire)	MinEZ
Data Monitoring Officer for St. Eustatius, providing research and monitoring data to the National Ministry of Economic Affairs. Former director of the St. Eustatius National Parks Foundation	Government; academia and research; foundation	Caribbean Netherlands (St. Eustatius)	MinEZ
Policy advisor for the island government of Bonaire, tasked with nature policy development and implementation of the island	Policy Advisor	Caribbean Netherlands (Bonaire)	MinEZ
Manager – Valuing Nature, WWF and The Natural Capital Project. Formerly Joint Nature Conservation Committee (JNCC) project on environmental valuation in UK OCTs	NGO; government	British Caribbean (Cayman Islands)	Ecologic

| Interviewee from the government of Montserrat | Government | British Caribbean (Montserrat) | Ecologic |

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