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Synthesis report on the revised and tested framework, the toolkit and accompanying policy brief

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Contents

Summary

Despite growing evidence that biodiversity is essential for human well-being, it continues to decline. To reverse the trend, society needs to be more convinced that further protective action is necessary. BESAFE addressed this challenge by analysing the effectiveness of different arguments for biodiversity conservation in a range of situations. It produced guidance that can help improve the way we use arguments for conservation and, thus, convincingly demonstrate the value of biodiversity to decision-makers.

This report presents a general synthesis based on the outputs of WPs 1 to 4 and forms one part of the output of the synthesis workpackage, along with the toolkit of guidance briefs (http://www.besafe-project.net/page.php?P=110) and associated web tool (http://tool.besafe-project.net/) and the final policy brief "How to argue for biodiversity conservation more effectively" available at http://www.besafe-project.net/img/uplf/BESAFE_brochure_online_16.pdf.

There is widespread disagreement regarding the most effective way to argue the case for biodiversity. Some consider that most decision makers and policy priorities focus on relatively short-term objectives and in particular economic performance, suggesting that the case for biodiversity has to be made in economic terms if it is to be heard. Others view this as a counsel of despair that will crowd out more noble motives and arguments without any likelihood of success in beating economic development on its home turf. Between these extremes lies the view that neither approach is sufficient, because economic and moral arguments are complementary and stronger together.

This diversity of views prompts us to consider what combinations of arguments will be most effective for the conservation of nature. There may be a tendency to assume that decision-makers are forced to rely largely on financial arguments, and that monetary valuation of ecosystems is the only way of demonstrating their importance, but does this stack up against the evidence from real argument processes (case studies) or indeed against what decision makers and other stakeholders claim (interviews and surveys)? Overall, what argument strategies are most effective under any given set of conditions?

BESAFE researched these questions through a combination of literature review, extensive case studies across Europe, interviews, surveys and stakeholder consultation. Results of these studies are published as several BESAFE deliverables and other publications. This report sets out a synthesis of the main results from across the project, and draws on these to explain the development of a framework for constructing arguments, underpinning a toolkit and web tool that are key outputs of the project. Briefly, the headline messages from this synthesis are as follows:

Multiple motives for conservation

Despite the belief that decision-makers are forced to rely largely on financial arguments, stakeholders and decision-makers consider the intrinsic, cultural and aesthetic values of nature as very important, and believe that other stakeholders and decision-makers respond to arguments about intrinsic values. There is little evidence for, or belief in, the idea that 'self-interested' *arguments* crowd out 'moral' arguments. On the contrary, the arguments are generally used together, and stakeholder believe they are more effective together.

Views on ecosystem services argument framings are mixed. They can frame arguments in a positive way, by emphasising the benefits of ecosystems and nature for humans, and are seen as a useful tool to broaden the appeal of biodiversity to wider audiences. However, their relation to biodiversity is often opaque. Monetisation of some tangible services is broadly accepted, but there are substantial concerns about putting a "value" on biodiversity overall. Ecosystem services arguments are especially relevant at national and international scales. At local levels, ecosystem services language is not well understood by a wide range of relevant actors, and conventional intrinsic value arguments as well as moral and legal obligation arguments are (for the time being) more prevalent.

The results of our study imply that there is a role for several lines of argument supporting the protection of biodiversity: for example, those based on the rights of species to exist, those based on the utilitarian value to humans, and those based on achieving sustainability and resilience for the future. Perhaps the key to improving biodiversity protection is to ensure a better balance between these arguments, and wider dissemination of these arguments to all stakeholder groups.

With this in mind, we propose a typology of arguments (Table 17) with two tiers of benefits and two tiers of beneficiaries, that can be used as a guide to constructing an argument strategy that combines different motives for conservation with a broad appeal to multiple stakes an interests.

Achieving effectiveness

A key observation from our case studies and from working with a range of stakeholders is that the effectiveness of arguments depends on tailoring the choice of arguments, and the way in which they are used, to the situation and audiences. Arguments need to be both credible and relevant. But details of what works, where, and when, are context-dependent and cannot easily be generalised. A number of general conclusions can, however, be drawn concerning the process of finding the right arguments and the way to use them most effectively:

Understand the situation. Knowing the situation, the people involved and their interests is important for the choice of arguments. Argument mapping can be a useful tool to help simplify and understand complex argument threads, as visualised in the BESAFE EU-level study on the implementation of the Biodiversity Strategy. This can identify gaps or areas where arguments are weak and could be strengthened, although gaps can also arise because arguments are not relevant or effective in a particular context.

Tailor arguments to the audience. All stakeholders, not just decision-makers, can be targets to convince. This requires using language and terminology that can be easily understood, choosing arguments that match the goals and interests of the audience, and trying to identify common ground, as well as carefully listening to the arguments from all parties involved.

Use positive framing. Positively framed arguments (emphasising benefits of biodiversity) are often more effective than negatively framed ones (focusing on threats, risks and losses). Ecosystem service arguments can be useful to emphasise the positive benefits of biodiversity for humans, provided that the terminology and concepts are clearly explained to the audience.

Use combinations of arguments. Combinations of arguments help broaden the appeal and facilitate dialogue, especially when combining arguments on the value of nature for its own sake with those on the benefits of biodiversity for local livelihoods and other specific groups. But *over*-emphasising economic arguments at the expense of other motives could alienate stakeholders who are motivated mainly by ethical and moral arguments. Arguments should therefore address all or most of the interests held by actors involved in biodiversity conservation, increasing understanding of the full range of consequences of actions and helping to reach more generally supported solutions.

Be persistent. Decision-making takes time, and the parties involved have to get to know one another and build trust. Arguments are more effective if they persist throughout a process, and repetition and reformulation of arguments can be important tools for learning and building acceptance.

Encourage constructive dialogue. Successful long-term solutions require all stakeholders to be involved in the decision-making process. It is important to encourage constructive dialogue and to avoid becoming trapped in a polarised debate where society divides along fault lines and it is hard to find common ground.

Think across policy levels. Effectiveness can be increased by using arguments and interests from multiple policy levels (e.g. local, regional, national). The bottom-up diffusion of local livelihood arguments to higher governance levels brings 'real' context to strategic debates, while local concerns can benefit from being set in a broader context.

Combine top-down and bottom-up perspectives. Successful conservation largely depends on convincing actors at all levels of the necessity and benefits of protecting and investing in biodiversity, and of the active role they themselves need to play in this process. This calls for processes that consider arguments from different governance levels and that take the interests of all parties into account. In turn, this requires the active participation of all parties in the deliberation process, the building of trust and working towards balanced solutions. Authorities should invest initiating, facilitating and monitoring such bottom-up collaborative decision-making processes, and actively support an adaptive management approach

(where environmental impacts are continually reassessed in the light of new evidence and decisions made through constructive stakeholder dialogue) wherever possible.

1. Introduction and structural organisation of this Deliverable

Early arguments for biodiversity were focused on the conservation of charismatic and rare species and the preservation of habitats and spectacular landscapes through networks of protected areas. The Millennium Ecosystem Assessment and other influential initiatives in the early 2000s triggered a major shift towards recognising the importance of ecosystems and their biodiversity in providing a wide range of services for humans. This "nature for people" framing sought to widen the range of arguments, and to "mainstream" conservation, attaching new importance to conserving nature outside protected areas and throughout all areas of human activity. At the same time it created a context, and policy demand, for attempts to "value" the benefits of nature in economic terms and allow comparison with measures of economic activity. This shift, and in particular the use of monetary valuations, has been contentious. There is concern that arguments driven by ecosystem services and their economic value have become too prevalent, and could endanger biodiversity conservation. While economic arguments resonate strongly with some policy-makers, public support is often driven more by traditional nature conservation motives. Most recently, a softer approach has started to emerge, with a greater focus on the resilience and adaptability of social-ecological systems, i.e. the interconnection of nature and people.

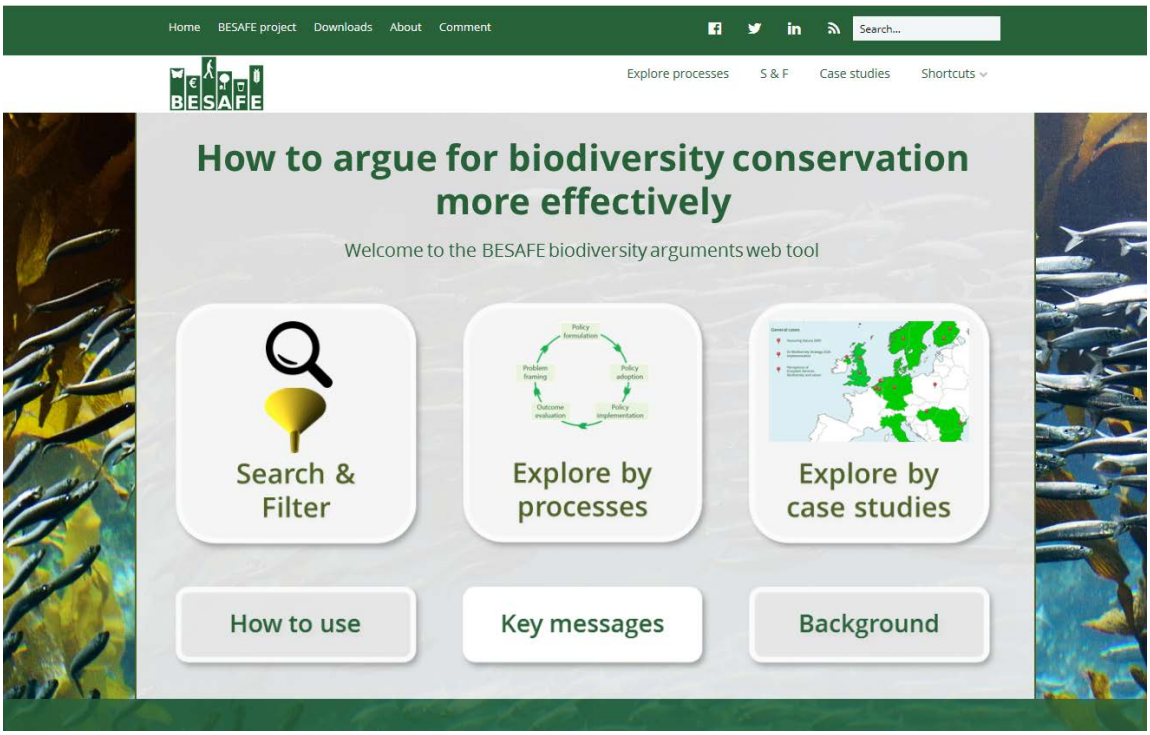
Meanwhile, however, biodiversity has continued to decline. The question still remains: what arguments can convince society to take the actions necessary to stop biodiversity loss? In the BESAFE project we investigated how different types of arguments for biodiversity protection generate effects, and how their effectiveness depends on when, where and how they are used, seeking to determine how the effectiveness of biodiversity argumentation can be improved. Biodiversity protection depends on people and the decisions they take. Different individuals and institutions hold diverse values and priorities, and will be convinced to protect or reduce their impact on biodiversity by different arguments. Understanding how argumentation works, on what value judgements the various arguments are based, and why some arguments are accepted and others rejected in particular situations can be crucial for improving decision-making processes and making people more aware of why biodiversity needs to be protected.

BESAFE aims, therefore, to help policy-makers understand the effectiveness of various types of arguments for biodiversity protection under varying circumstances. Within this project:

- WP1 developed an initial framework of arguments used for biodiversity protection
- WP2 set up a series of case studies (CSs) to investigate how effective these arguments were in a range of different socio-economic and ecological situations.
- WP3 analysed how these arguments can be transferred across different governance scales (local, regional, national and global).
- WP4 explored the links between biodiversity and ecosystem services, and whether different understanding of these links can affect people's valuation of biodiversity.
- WP5 aims to synthesise results across the whole project and present them in useful and user-friendly forms.

This report presents a general synthesis based on the outputs of WPs 1 to 4 and forms one part of the output of the synthesis workpackage, along with the toolkit (http://www.besafe-project.net/page.php?P=110) and web tool provided online at http://tool.besafe-project.net/ and the final policy brief "How to argue for biodiversity conservation more effectively" available at http://www.besafe-project.net/img/uplf/BESAFE_brochure_online_16.pdf. A full list of toolkit briefs, with a brief description of content, is provided in Annex 1 to this report.

Figure 1: Front screen of the BESAFE web tool (deliverable D5.3) http://tool.besafe-project.net/



The report briefly sets out the objectives of the synthesis work (§2) and the data sources and methods from the different work packages and stakeholder consultations (§3).

The main synthesis work is presented in §4, with sections on assessing the potential and actual effectiveness of arguments (§4.1), on the different 'types' of arguments and their effectiveness (§4.2), on the role of argument framing in determining effectiveness (§4.3), on synergies and conflicts across arguments (§4.4) and on dynamic and spatial aspects of argument processes (§4.5).

Following this, we turn to the revision of the argument framework underpinning BESAFE research (§5) and in particular to its transformation from a research-based framework to a framework for aiding the construction of argument strategies (§5.1) and revisions to the argument typology consistent with that goal (§5.3). Finally, §6 presents general conclusions. Annex 1 presents a brief description of the briefs in the toolkit.

2. Objectives

This deliverable is the second of the three deliverables from WP5. The first was the report of the second stakeholder workshop, closely tied to the development of the toolkit (see Annex 1). The third deliverable D5.3 is a user-friendly web tool based on the toolkit, that makes our results accessible and usable for stakeholders. This report covers the following four synthesis tasks:

- Task 5.1: Synthesis of assessments. The case studies in WP2 have been evaluated using the provisional framework developed in WP1 (D2.3). This task draws on the lessons from these assessments, along with theoretical arguments and the results of the WP1 review and road testing of the provisional framework (D1.1, WP2) in order to draw general conclusions about the performance of different arguments and combinations of arguments against the evaluation criteria for different decision contexts and scales (D1.1).
- Task 5.2: Overview of synergistic and antagonistic interactions across mechanisms. In many cases, there are several simultaneous arguments or mechanisms seeking to influence behaviour and conservation outcomes. Depending on the contexts, some of these will complement each other, while others may be contradictory or mutually exclusive. Frameworks may sometimes appear dichotomous, but under certain conditions or scales may become compatible. In this task, these issues are examined and the contexts and scales at which there is conflict (and how it can be reduced) are assessed.
- Task 5.3: Overview of dynamic aspects of arguments. Arguments used at certain stages in decision processes can influence current choices, but also future values, beliefs and evidence. The role of decisions in influencing future evidence is widely recognised through the 'adaptive management' framework. Other forms of learning, and evolution of attitudes and values, will also influence future decision landscapes. Some arguments grow in prominence and may replace others over time, and may shape demands for evidence and argument as the process continues. Where things go wrong, there can be polarisation and entrenchment of opinions in conflict

situations leading to stagnation; in more successful cases, trust-building helps to reach compromise through effective dialogue.

- Task 5.4: Final framework and testing. The results of tasks 5.1 to 5.3 are pulled together to make a revised version of the framework, drawing on all the evidence developed in BESAFE and incorporating findings on conflicts/synergies and dynamic impacts. Results are summarised in the toolkit summary (see Annex 1).

The overall objective of the synthesis is to be able to identify the most appropriate arguments strategies for achieving positive outcomes for biodiversity protection under different circumstances. This report explains the thinking and evidence behind the synthesis of the results of the BESAFE project and makes them available by summarising them into a 'toolkit'. By doing this we unlock our "*analysis of alternative ways to improve biodiversity policy making and governance at local, national and global scales*", for stakeholders, and thus realise the expected impact stated in the call text. The synthesis work generally, and the toolkit and web tool in particular, have been informed through consultation with key stakeholders at these policy scales, drawing on the case study work, links with other projects, and other contacts, and in particular via three stakeholder workshops and testing at the final BESAFE/BIOMOT conference.

3. Data sources and methods

Data sources used for the purpose of this synthesis are summarised below, followed by a description of methods employed for the synthesis and data challenges discussion of the challenges of data organisation and analysis.

3.1. Summary of sources

Work package 5 is concerned with synthesis over the BESAFE project and relies primarily on the other work packages for information and data. The project was designed so that work package 1 would shape the research and develop an initial framework for analysis, which work packages 2, 3 and 4 would then implement and test in various ways. Work package 5 then picks up on the information accumulated to draw overall conclusions across the different research themes and

case studies. In this section, we provide the backdrop to the synthesis by outlining the work and main findings of the individual WPs.

3.1.1. WP1

Identification of arguments for the protection of biodiversity

WP1 began with a literature review to identify arguments advanced for the protection of biodiversity (Deliverable 1.1). The literature review was designed to record arguments, or components of arguments, as they have been expressed in the published literature. WP1 sampled the published literature, ranging from documents written by authors who set out to evaluate arguments for biodiversity to those who mention arguments in passing. In total 582 items of literature were examined. As well as reflecting argumentation that has been used, this literature forms an important part of discourse about biodiversity, and therefore has the capacity to influence future argumentation (Bradshaw and Borchers, 2000).

Results of this review were summarised into a list of 31 premise statements together presenting an overview of the argumentation used by authors (table 4), and taken to be representative for the spectrum of arguments in actual use. The completeness of the spectrum was checked through interviews with leading authorities on biodiversity policy.

A framework for arguments

WP1 drew on the above findings to set out an initial framework for understanding arguments, that has evolved through the project: one role of WP5 is to present a final revised framework (see §5, Figure 15).

We may consider arguments in the sense of interest to BESAFE to be claims or statements intended to convince someone of a particular course of action (to conserve biodiversity in some way). More precisely, WP1 used a definition of an argument as "a set of at least two premises (claims, reasons) that are connected in a specific way" (Phelan and Reynolds, 1996) and broke this down into at least the following parts:

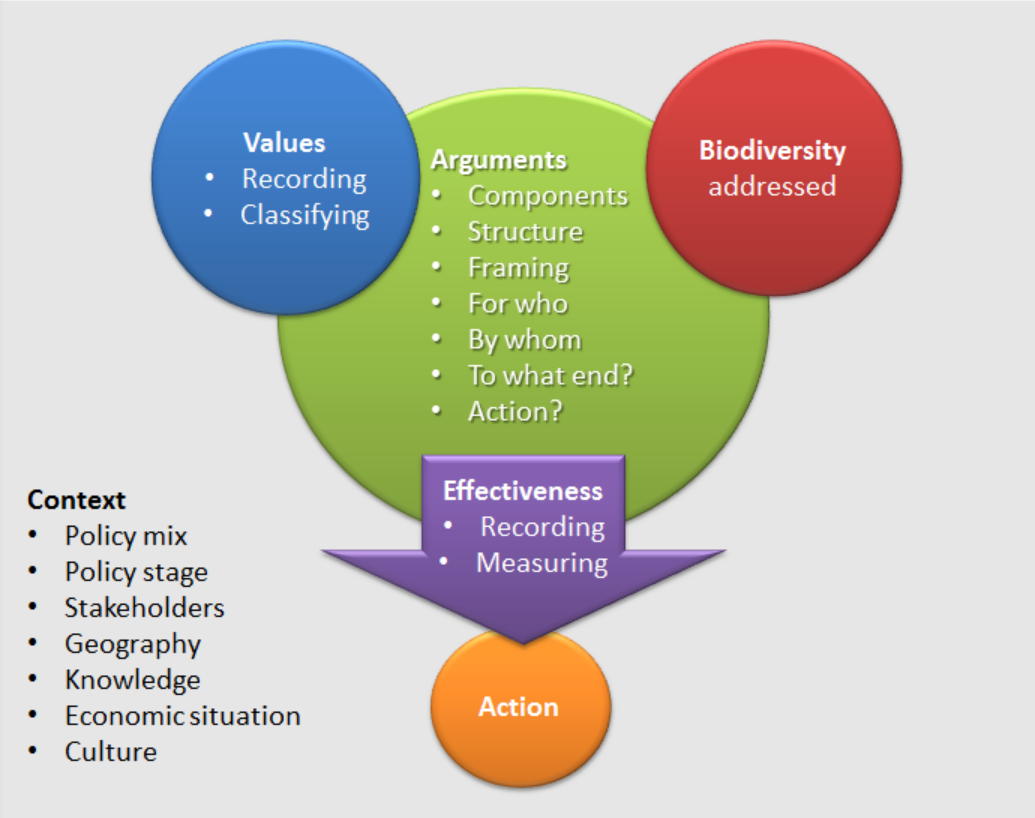
- Premises: <Certain expressions of> biodiversity are good for <benefit receiving entities>
- Inference: because <reasons, proof, evidence, motivation>
- Conclusion: and therefore <type of protective action to be taken>

According to Phelan and Reynolds, the persuasive power of an argument depends on two conditions: first, the reasons must be accepted; and second, the conclusion must be adequately supported by the reasons. In addition, an 'full' argument would also include consideration of the opportunity costs associated with the conclusion (McShane et al., 2011), with the argument being completed, and given normative weight and policy relevance, by the contention that "the benefits to <benefit receiving entities> are more important than the costs to <cost bearing entities>". For further details, see the BESAFE brief entitled "What is an argument".

The development and use of specific arguments cannot be understood in isolation from the policy context and audiences, and the strategies of arguers. In addition to the component parts of arguments, therefore, we also need to record and use these contextual factors in the BESAFE analysis, and see that project conclusions and guidance (toolkit, web tool) recognise the important role of contextual factors in shaping effective argument strategies. We also need to recognise and assess the key features of effectiveness in argumentation, both in terms of the features that enhance the potential of an argument to be effective, and in terms of the indicators of actual effectiveness.

In the light of these considerations, a provisional framework was developed (Figure 2). It is based on conception of argumentation as a process of communication. The framework represents the components on which information needs to be collected to investigate the effectiveness of arguments for biodiversity: the biodiversity situation, the context factors, values and valuation, the arguments themselves and their effectiveness in motivating conservation.

Figure 2: Structure of the provisional framework for assessing biodiversity arguments



3.1.2. WP2

A central objective of Work Package 2 was to select and then compare a set of case studies that would be best fitted to answer the project's research questions. The selection process was conducted in cooperation with the other work packages and is fully described in Deliverable D2.1. Case studies representing a variety of ecological, socioeconomic and cultural contexts were included. At a basic level, the case studies sought to explore what arguments exist, how are they used and how significant are they in biodiversity-related decision making. The case studies also aimed at answering particular research questions in relation to work packages 2, 3, and 4, as summarised in Table 1. The case study approach was utilised in order to generate concrete, context-specific understanding of argumentation processes and the effectiveness of arguments.

Table 1: Research questions for WP 2, 3, and 4

WP	WP title	WP research questions
2	Case studies on the effectiveness of arguments	• What are the methods for assessing the effectiveness of arguments? • What is the significance of different arguments for decision making? • What are potential and observed consequences of various arguments for biodiversity?
3	The interaction between governance scales	• What are the differences and similarities in actors' perspectives on biodiversity conservation between governance levels? • What are the linkages and transmission of arguments and values across the multi-level governance system? • What is the cultural, political and institutional embeddedness of argumentation for biodiversity?
4	Relationship between biodiversity, ecosystem services and values	• How do stakeholders perceive the relationship between biodiversity and ecosystem services, and how does it affect argumentation? • What is the influence of disservices on this perception? • Can the importance of biodiversity for ecosystem services delivery be characterised? • Under what circumstances does a focus on ecosystem services delivery create opportunities/ threats for biodiversity conservation and vice versa? • How do scientific uncertainties on the relationship between biodiversity and ecosystem services affect stakeholder's perception of the value of biodiversity and decisions related to biodiversity conservation?

The BESAFE partners compiled a list of 27 candidate case studies, based on preliminary selection criteria, during the proposal phase of the project. The objective was to ensure and demonstrate that a sufficient choice in case studies was available to fulfil the projects objectives. The selection criteria were related to the issue areas/policy sectors, governance levels, argument types, member states and geographical regions, time scales, and stakeholder groups; the availability of data was also considered. The case studies are presented and summarised in Figure 3 and Table 2. Deliverable 2.3 provides a synthesis of the analysis of the BESAFE case studies; individual case study reports are included in Annexes 1 to 13 of Deliverable 2.3. More information about the two comparative studies investigated within BESAFE can be found in deliverables 3.1 and 4.1.

Figure 3: BESAFE case studies

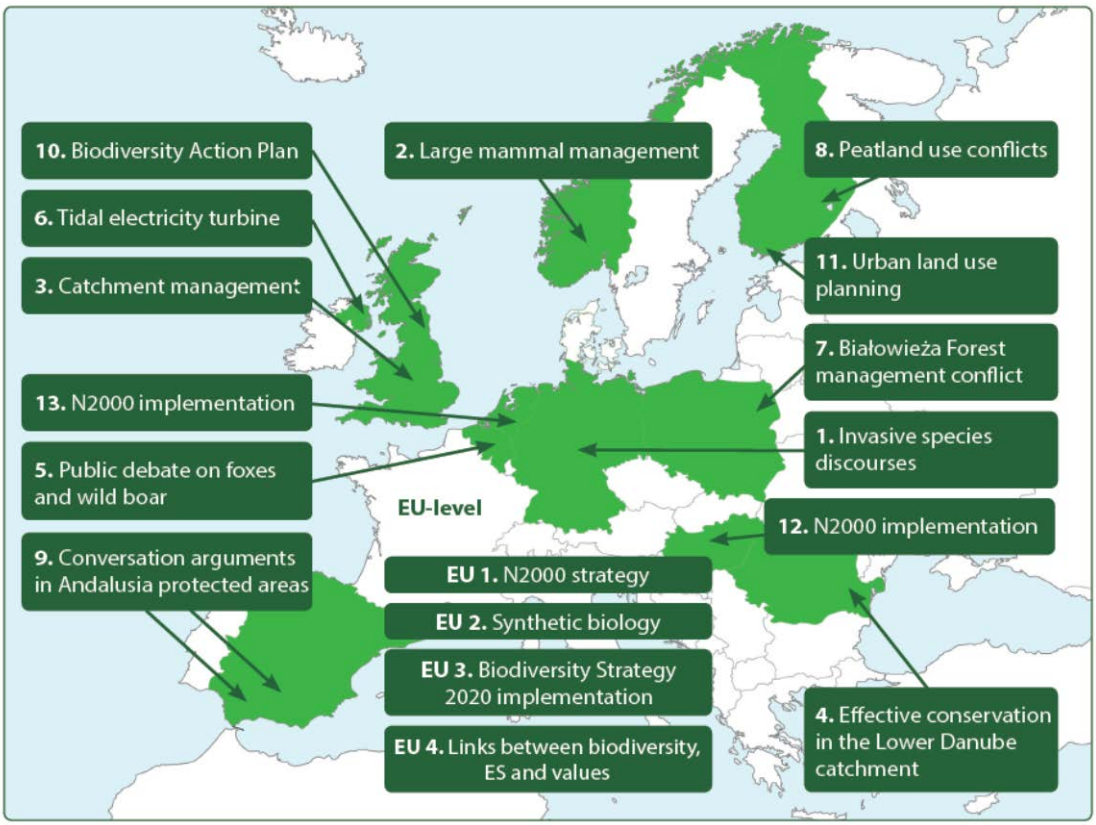


Table 2: Description of case studies

1. Invasive species strategies in Europe
This case study analysed the arguments presented in scientific disputes on the value of invasive alien species (IAS). Further, the case study investigates which of these arguments are taken up in the development of an EU regulation on the prevention and management of the introduction and spread of invasive alien species. The range of arguments on the value of IAS and specifically those arguments used in the EU policy is scrutinized against the background of existing values for biodiversity and ecosystem services.

2. Large mammals in Norwegian wild-lands
This case study investigated the conflict over the management of large carnivores and herbivores in Norwegian outfields. It focused on the processes around the debate that led to a new large carnivore policy in 2011 (on bear, lynx and wolves). The main source of conflict in this case were the perceived and actual trade-offs related to use of the carnivore habitats, as domestic sheep and semi-domestic reindeer grazing in forest and mountain habitats were vulnerable to predation. During the case study, there was an ongoing debate about the new policy especially since the most difficult questions regarding wolf management had been postponed.

3. Water company uses of valuation evidence in investment planning
This study looks at water companies' investment approach in water treatment technologies that protect the environment, such as catchment management in England and Wales. It explores the way arguments for biodiversity and ecosystem services have evolved and influenced the industry regulator and water companies' decisions to invest in catchment

management programmes.

4. Nested Socio-Ecological Systems in the Romanian Lower Danube River Catchment
The case study is about sustainable management of the Romanian Lower Danube River Catchment through conservation, restoration and sustainable use of natural capital versus maintaining current structural configuration and intensification of fishing and agricultural production. It focused on the conflicts between the objectives of sectoral policies and those targeting biodiversity conservation or sustainable use of natural resources.

5. Public controversies surrounding the return of red fox and wild boar to Flanders
This case study focused on the on-going dispute about the rapid spread of foxes and wild boars in Flanders, Belgium, which had led to rise to serious controversies and heated debates. The dispute tied in with broader biodiversity issues, such as the relevance of wild animals in an urbanised region and our co-existence with them. The study analysed the debate and illustrated how different views and arguments were associated with institutional and cultural biases.

6. An underwater tidal electricity turbine; Northern Ireland
The study explored the arguments involved in conflicts of interest brought by different stakeholders in the case of establishment of the world's first commercial scale open stream tidal turbine. The argumentation reflected the commitments to provide new "green" energy sources in the light of risks to marine (and other) biodiversity protection under a "try it and see" adaptive management and monitoring strategy.

7. Białowieża Forest conflict, Poland
This case study concerned a conflict between management and conservation in the Białowieża Forest in Poland, the last large remnant of near-natural lowland temperate forest in Europe. It analysed the different arguments provided by the both sides of the conflict, their variation through time and changing context, as well as their transmission between different governance levels.

8. National Strategy for Mires and Peatlands; Finland
The case study analysed the implementation of the National Strategy for Mires and Peatlands and investigated the arguments used in public debate and a legal process regarding the use of peatlands in the Viurusuo area. It focused on a local level conflict and reflected against a national level debate on the many uses of peatlands.

9. Management plans for the Andalusia national parks; Spain
The case study was located in Andalusia, Spain and involved the only two national parks of Andalusia, both representing unique ecological values and both being embedded in a matrix of land-use and social conflicts. The study analysed the importance people attributed to alternative arguments for protected areas, ecosystem services and conservation, investigating whether the ecosystem service approach was incorporated into conservation strategies to foster multiple biodiversity values.

10. Arguing for biodiversity a local biodiversity action plan area; UK
This case study assessed how argumentation for biodiversity is used for the development and implementation of the UK Biodiversity Action Plan at a local level through a range of different activities by biodiversity practitioners in an urban area.

11. Long-term management of urban green areas, Finland
The case study investigated the planning process of an urban area for over 100,000 inhabitants. Following a conflict between the municipality and the city of Helsinki regarding different development visions of the area in question, a planning process was set up to follow a novel sustainable planning philosophy. The case study investigated the development of arguments in this planning process.

12. Implementing the Natura 2000 network, Hungary
13. Implementing the Natura 2000 network, Netherlands
EU1 Natura 2000 Strategy, EU
These three connected case studies analysed differences and commonalities of interpretation and argumentation in biodiversity conservation between the EU and national (or regional) governance levels. By analysing LIFE projects across Europe, and the Natura 2000 processes in the Netherlands and in Hungary, this multi-level case study investigated the argumentation used to establish the Natura 2000 network, to designate the sites and to implement conservation in the network in practice. It also investigated the effectiveness of the different arguments and demonstrated how arguments changed over time and at different stages of the policy cycle.

EU3 EU Biodiversity Strategy 2020 – national implementation (Comparative case study)
The goal of this study is to identify and analyse differences (and commonalities) of interpretation and argumentation in relation to biodiversity conservation between the EU and national (or regional) governance levels. In particular, the aim is to learn about the argumentation processes at stake in the implementation of EU biodiversity policies and to what consequences for biodiversity conservation this might lead. The issue area will be the EU biodiversity strategy 2020 and its actual transmission into national/regional policy decision-making and implementation. In addition, attention will also be given to the potential role of national/regional level arguments in influencing EU level actions. The main sources of data will be document analysis and semi-structured interviews. The data obtained from the studies in different countries will be gathered in a common format and analysed with regard to finding both common patterns, and distinct approaches to the national implementation of the EU biodiversity policies. By looking at the transfer of arguments from the EU to lower governance level, this study will address particular research questions of WP 3 regarding the linkages through which the transmission of arguments and values between governance levels takes place.

EU2 Synthetic biology
This case study analyses the argumentation process around synthetic biology, primarily through document analysis. It will consider the role of economic concepts and arguments in the development of synthetic biology and its governance. The study is based on a literature review and the utilization of the Q-methodology.

EU4 Perceptions of biodiversity, ecosystem services and values at the national level (Comparative case study)
The aim of this study is to address the particular research questions of WP4 regarding the linkages between biodiversity, ecosystem services and values, and particularly how this relation is perceived by different stakeholders. In the study, Q-analysis will be used to explore different beliefs about these linkages and how they relate to scientific training, perception about scientific uncertainty, areas of scientific expertise as well as management and governance role and expertise. To strengthen the coherence in the project and avoid overlaps the Q statements used in the study will be selected from statements represented in the WP1, WP3 and WP4 reviews. The Q statements will be written in English to allow a cross case study analysis. Q participants will be selected among particularly knowledgeable individuals at the national level of governance in each partner country. This study aims to uncover the different opinions, values and worldviews underlying the various environmental perspectives and attitudes towards biodiversity conservation. The results will help to establish a common understanding across different perspectives and thus help move forward the policy debate in Europe.

3.1.3. WP3

WP3 provides a synthesis of argumentation analysis in real-world cases in "multi-level biodiversity governance" (see Deliverable 3.1). The aim of the research conducted in WP3 was:

- To understand the different argument perspectives of actors on biodiversity issues;
- To analyse the linkages and transmission of arguments on biodiversity in the context of multi-level governance;
- To explore the way arguments on biodiversity are embedded culturally, institutionally or politically.

The study's approach is guided by a three layer analytical framework. This framework comprises three different perspectives to argument-making practice. Together these enable a comprehensive understanding of the role of argumentation in multi-level biodiversity governance. The following research questions guided the synthesis of argumentation analysis in case studies for WP3:

- The first layer takes the perspective that arguments are "products" of communication. The analysis focuses on the verbal content of arguments: what these arguments "say".
- The second layer of the framework uses the perspective of arguments being transactions between arguers and audiences. The focus here is on what actors "do" with arguments, that is, what they aim to achieve with the arguments and what strategies they use.
- The third layer takes the perspective of arguments as being conditioned by the social-institutional networks in which they are transmitted. The analysis focuses on how the arguments and the reasoning they communicate "fit" into the different perspectives, worldviews and functioning of social groups and institutions.

Two types of case studies contributed to the analysis, ten "deep case studies", and a comparative study. Together these CSs represent a wide variety of ecological, socioeconomic and political contexts, as well as a diversity of different governance levels and units. The comparative study was designed to enable a comparison of national-level implementations of the EU Biodiversity Strategy 2020. It was

conducted in six Member States and regions, including UK, Germany, Poland, Finland, the Netherlands and Flanders. The transfer of arguments between the EU and member state levels was a main focus. A full report of the comparative study is provided as an Annex in D3.1. The comparative study was preceded by a background study on argumentation at the global and European levels of biodiversity governance.

Table 3 gives an overview for each case of the multi-level governance (MLG) interactions considered, and the case study's main contributions to the analysis of argumentation in MLG interactions.

Table 3: Details of case study analysis methods (WP2) and their further use in workpackages 3, 4 and 5.

CASE STUDY	WP3	WP4	WP5	Scale	Timespan	Methods
1. Invasive species strategies in Europe	✓			Regional EU	1980 - 2014	Three layer analytical framework
2. Large mammals in Norwegian wild-lands		✓		Local National	2013-05-21 - 2013-07-01	Stakeholder identification and characterisation; Social data (monetary or non-monetary); Ecological (and social) data; Data visualisation. Q-study
3. Water company uses of valuation evidence in investment planning programmes		✓	✓	Regional National	2004 - 2014	Stakeholder identification and characterisation; Social data (monetary or non-monetary); Ecological (and social) data; Data visualisation.
4. Nested Socio-Ecological Systems in the Romanian Lower Danube River Catchment	✓	✓	✓	Local Regional	1991 - 2012	**WP3** Three layer analytical framework **WP4** Stakeholder identification and characterisation; Social data (monetary or non-monetary); Ecological (and social) data; Data visualisation.
5. Public controversies surrounding the return of red fox and wild boar to Flanders	✓		✓	Regional	1995 - 2015	Three layer analytical framework
6. An underwater tidal electricity turbine; Northern Ireland		✓	✓	Local Regional	2005 - 2011	Stakeholder identification and characterisation; Social data (monetary or non-monetary); Ecological (and social) data; Data visualisation.
7. Białowieża Forest conflict, Poland	✓		✓	Regional EU	2000 - 2013	Three layer analytical framework
8. National Strategy for Mires and Peatlands; Finland	✓		✓	Local National	1995 - 2012	Three layer analytical framework

CASE STUDY	WP3	WP4	WP5	Scale	Timespan	Methods
9. Management plans for the Andalusia national parks; Spain		✓	✓	Regional	1993 - 2014	Stakeholder identification and characterisation; Social data (monetary or non-monetary); Ecological (and social) data; Data visualisation.
10. Arguing for biodiversity in practice: A case study of a local biodiversity action plan area; UK	✓		✓	National (regional)	2012 - 2014	Document analysis and interviews
11. Long-term management of urban green areas, Finland	✓			Local National	2010 - 2014	Three layer analytical framework
12. Implementing the Natura 2000 network, Hungary			✓	National	2007 - 2014	Document analysis and interviews
13. Implementing the Natura 2000 network, Netherlands			✓	National	2003 - 2014	Document analysis and interviews
EU1 Implementing the Natura 2000 network, EU level, Europe	✓		✓	National	2014	Three layer analytical framework
EU2 Synthetic biology				National	2014	Q-study in UK and Spain
EU3 EU Biodiversity Strategy 2020 – national implementation	✓			EU (regional)	n.a.	Comparison of arguments in the EU-level Biodiversity Strategy 2020 with those in national-level documents designed for the (obligatory) implementation of the Strategy in six member states or regions (UK, Poland, Flanders, Finland, Germany, Netherlands).
EU4 Perceptions of biodiversity, ecosystem services and values at the national level		✓		National	n.a.	Q-study in nine European case study countries

Note: WP3 denotes s**ynthesis of argumentation analysis in "multi-level biodiversity governance", WP4 denotes analysis of relationships between biodiversity, ecosystem services and values, WP5 denotes successful integration and analysis in the BESAFE database.**

3.1.4. WP4

Work Package 4 undertook an in-depth analysis of stakeholder attitudes to biodiversity and ecosystem services, through (1) literature reviews, (2) a study of stakeholder perceptions using Q methodology in nine countries and (3) five local case studies selected from the WP2 cases. Table 3 presents the list of case studies used in the BESAFE project and the type of analysis they were used in.

1. Literature review of the relationships between biodiversity, ecosystem services and values

Two literature reviews were undertaken to analyse the linkages between biodiversity, 11 ecosystem services and their values. The first review focused on biophysical aspects, gathering evidence of linkages between different biodiversity attributes and the 11 services. The second review focused on socio-economic aspects, gathering evidence of linkages between the 11 ecosystem services, their beneficiaries and how they are valued. This second review restricted its literature search to papers that also made a link to biodiversity attributes, in order to access the availability of information across the full chain of linkages.

2. Q-study of heterogeneous perceptions of the relationships between biodiversity, ecosystem services and values in national case studies

To understand potential divergence between perspectives across EU stakeholders, nine comparative studies were conducted with national decision-makers, NGOs and researchers (in Finland, Norway, Denmark, UK, Spain, Austria-Salzburg, Poland, Hungary and Romania). The three stakeholder groups were analysed independently to reveal whether different views on the value of biodiversity characterise the groups.

3. Detailed analysis of relationships between biodiversity, ecosystem services and values in local case studies

Five local case studies were selected, to explore the relationships between biodiversity, ecosystem services and values in more detail. The case studies, chosen to cover a range of ecosystems (mountains, coastal marine, wetlands, forests, and freshwater) and socio-economic settings, were:

- The Andalusia national parks, Spain
- The Lower Danube River Catchment, Romania
- Large mammals conservation, Norway
- Water companies investment planning, England, UK
- Tidal Energy, Northern Ireland, UK

All case studies analysed the following topics:

- The relationship between biodiversity and ecosystem service delivery;
- Stakeholder perspectives on biodiversity and ecosystem services, and how these perspectives change with increased scientific knowledge;
- Opportunities, threats and trade-offs between biodiversity conservation and ecosystem service provision; and
- Arguments associated with biodiversity conservation and ecosystem services.

3.1.5. WP5

WP5 has been primarily a synthesis workpackage and did not originally seek to develop data independently, but rather to work with the case study leaders to develop agreed protocols for recording case study data in a central database, as discussed further below (see §3.3.1). However in advance of the final stakeholder conference it was decided to add an extra Q-method study to explore the diversity of attitudes amongst the BESAFE and BIOMOT stakeholders in the light of the projects and final discussions (see §3.3.4).

3.1.6. Stakeholder consultations

Stakeholders were consulted on several occasions at different phases of the BESAFE project. This included formal interviews and informal contacts within the case studies and for research in the workpackages as required. In addition there were three formal stakeholder workshops:

- Workshop 1 (23/24 May 2013), focusing on feedback on the initial stages and results of the project, canvassing stakeholder views on the main themes and

looking forward to the information needs of the project outputs and in particular the toolkit and web tool.

- Workshop 2 (13/14 May 2014), focusing on presentation of interim project results, and more detailed consideration of different options for the toolkit and web tool design.
- Final BESAFE-BIOMOT conference (10/11 June 2015), incorporating BESAFE Workshop 3, focusing on testing and improving the draft web tool, feedback on the conference presentations, and final views of stakeholders in the light of BESAFE and BIOMOT results, including the final Q-study and associated discussions.

3.2. Initial results and synthesis

The WP1 review process yielded a diverse range of literature, spread evenly between the peer review and grey literature. Peer review literature included literature reviews, original research, and synthesis/comment; grey literature included press releases/statements, reports, website text, and policy documents. There was a predominance of synthesis and comment papers in the peer review literature, as these are the types of documents where arguments for biodiversity are most likely to be expressed.

About 5% of the literature items contained detailed analysis of multiple arguments, while 28% of the items focused on one particular argument. However, 9% of items made only minor reference to arguments, while the majority of items (58%) made reference to arguments without providing information about the context necessary to full understanding and interpretation of the argument. This is a result of authors making reference to biodiversity conservation as a justification for writing, or for funding a project, without detailed consideration of the parameters of the argument in the context of a specific case.

The review revealed wide variation in authors' understandings or interpretations of biodiversity. About a third do not clarify what they mean by the term, though the reason for this is itself unclear. It could reflect a presumption that the term is well understood and requires no definition. But it may also reflect that the term is difficult to define, with multiple competing interpretations, and/or that it is being treated as a boundary object (Star and Griesemer, 1989) that different

communities agree is "a good thing" without developing a common understanding of precisely what it is. Thus, some authors appear to conflate the term with words such as nature and wilderness (13% of interpretations are "whole of nature"). Where authors referred to biodiversity in its more technical sense, as a measure of diversity in life forms, it was most common that they made explicit reference to some form of the definition contained in Article 2 of the Convention on Biological Diversity[1]:

> *"'Biological diversity' means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems."*

Within the documents focused explicitly or mainly on the process of argumentation for biodiversity identified, there is a clear division between categorisation of argumentation that is based on an anthropocentric point of view (Noss and Cooperrider, 1994), and those that look more broadly to include moral and philosophical considerations (Randall, 1991). Most of the literature specifically about argumentation for biodiversity focuses on the anthropocentric point of view.

The review resulted in an initial listing of 31 typical "premise statements" representing the spectrum of arguments for biodiversity as expressed by authors (Table 4). These arguments cover a wide range of reasons for conservation, ranging from attributing intrinsic value to nature, through moral and religious commitments to nature, other humans or future generations, to individual benefits from interactions with nature, the role of nature in providing basic inputs and functions, more technical observations on the role of biodiversity in ensuring ecological and economic resilience, and so on.

[1] https://www.cbd.int/convention/articles/default.shtml?a=cbd-02

Table 4: Premises identified in the literature review

	Premise identified	Explanation
1	Recognising rights / values of nature itself, for itself.	Arguments where humans argue that values exist independent of humans.
2	Ethical, moral and religious views providing obligations to nature.	A requirement upon humans to look after the natural world.
3	Evolutionary processes should not be disrupted / gene pool pollution.	As a process evolution is something to be safeguarded and not interfered with
4	Ecosystem function / resilience - purpose unclear.	Required for, or beneficial to, the physical, biological and chemical processes that occur in nature. Not clear if this is for the ultimate benefit of nature or humans.
5	Ecosystem function / resilience – anthropocentric.	Required for, or beneficial to, the physical, biological and chemical processes that occur in nature. Author expresses that this is with a view to human dependence on, or benefit from, ecosystems.
6	Ecosystem services (flows leading to benefits).	General reference to environmental goods and services and functions of nature that contribute to human welfare.
7	Specific regulating and supporting services other than climate regulation.	Reference to services and functions of nature that are regulating or supporting as defined in the Millennium Ecosystem Assessment. Examples: pollination, pest control, seed dispersal.
8	Climate regulation service and/or carbon sequestration.	Reference to ways in which biodiversity influences greenhouse gas emissions, sequestration of carbon, or reduction in the rate of human-mediated climate change.
9	Protection against invasive species / diseases in non-human life forms.	Ways in which certain components of biodiversity, however it may be defined, afford protection against species that may not be considered desirable from a human point of view.
10	Social / cultural / heritage / collective well-being and welfare.	Bestowing benefits that are realised/understood primarily within groups of people (communities, countries etc.).
11	Psychological / spiritual / individual well- being.	Bestowing benefits that are realised/understood primarily at the level of individuals.
12	Recreation / tourism.	Enabling or improving experiences that people do not associate with work. Includes recreational opportunities in daily life, as well as travel to see new places. Primarily about the recreation opportunity rather than the economic benefit.
13	Human health / reduction in disease risk.	Improving human health, reducing the risk of ill health. Distinguished from measures of well-being that would traditionally not be addressed by mainstream health professions.
14	Aesthetic value.	Providing visual appeal or experience as an end point in its own right, regardless of its effect on wider psychological, spiritual or human well-being.
15	Biophilia - the desire for relationship and contact with nature.	Reference to the well-being benefits associated with human direct interaction with other species or landscapes or other components of nature, over and above purely visual appeal, or indirect benefits.

16	Intellectual stimulus, education beyond protection of biodiversity.	Providing opportunities for education and human cognitive/intellectual advancement (over and above any benefits on individual well-being). Includes art, design, science, innovation and engineering.
17	Productivity in forestry / agriculture / fisheries / food security.	Reference to increased yield or reduced risks in the agriculture, horticulture, forestry and fishing at whatever scale.
18	Other industrial dependence.	Biodiversity providing specific inputs into industry, other than bioprospecting or forestry / agriculture / fisheries / food security.
19	Business risk.	Reducing risks to business performance, whether this is through natural hazards. Excludes reputational benefits (separate premise statement).
20	Water security.	Providing benefits in terms of water supply and quality. Reducing the risk of failure to meet needs for clean water. Includes reduction in water treatment costs.
21	Energy security.	Providing benefits in terms of the availability of fuel.
22	Economic.	Explicit reference to micro or macroeconomic benefits. May apply to individuals, organisations or national economies.
23	Bioprospecting.	Ways in which nature gives rise to substances that have medicinal properties of benefit to humans. Includes the presence of genetic code that can be exploited for the production of these substances, or other healthcare innovations.
24	Precaution / risk management (current generation / Century).	Reducing the risk of harm caused by hazards over the next 50-100 years. Includes specific hazards or may be unspecified.
25	Precaution (future generations) and option value.	Reducing the risk of harm caused by hazards at points in the future that are not defined. Providing benefits, whatever they may be, for the future, which would be compromised if exploited now.
26	Employment and livelihoods.	Specific reference to employment or other opportunities for income that result from the presence of biodiversity. These relate to the employment and livelihoods as a social goal beyond the economic and other benefits associated with this.
27	Sustainable development / poverty alleviation / future generations.	Relating to principles of sustainable development, the global goal of reducing poverty. Arguments relating to the rights or needs of future generations.
28	Moral, ethical or religious belief related to obligations to other people.	Arguments relating to fair share of natural resources available at present, or in the next 50-100 years. Includes the notions of justice and equal sharing.
29	Legal compliance / political necessity.	Conformity with norms and rules to protect biodiversity is an end in its own right (regardless of broader arguments for biodiversity).
30	Reputational benefits.	Association with conservation or restoration of biodiversity provides indirect benefits that enhance the status or perception of an individual or organisation being 'good'.
31	Species conservation matters (underlying reason not mentioned).	Statements that suggest that species should be conserved, regardless of any instrumental or non-instrumental value they may have.

One conclusion from the literature review is that the 'components' of an argument for biodiversity – the premises, inference and conclusion - are not always clearly identified in argument processes. In particular, it is often left implicit who the beneficiaries are and/or how they benefit – for example in arguments that "biodiversity increases ecosystem resilience" – and indeed this can be seen in the categorisation of the premises (Table 4).

This vagueness is not necessarily a bad thing – in certain contexts, it could be strategically beneficial to preserve vagueness and allow audiences to make their own weightings and draw their own conclusions. Nevertheless, for both analytical and strategic purposes, it is useful to be clear about the categories that are being left implicit. Arguments made in the literature can only be fully understood by interaction with those who put them forward, as well as those who receive them: this is achieved in BESAFE through the case studies. This created the ambition for the BESAFE framework to assist in clearer identification of the component parts of arguments.

Following the observation that these arguments were in some cases vague and incomplete, the framework was revised to clarify the distinction between core components, in a more "reductionist" approach that clearly identified:

- <Biodiversity> What aspect of biodiversity is the argument addressing? Ranging from arguments about 'nature' or whole ecosystems, through specific species, to arguments about genetics or specific functions/outputs of ecosystems.
- <Beneficiaries> Who or what benefits from protecting <biodiversity>? Often human, but with wide variation from specific local groups to 'humanity' or 'future generations' more generally. 'Nature' and specific ecosystems or species are also commonly identified as beneficiaries.
- <Benefits> What form do these benefits take? 17 separate benefits were identified, covering the full range of intrinsic, moral, ecosystem service and other 'values' identified with conservation.
- <Value> What is (are) the value(s) attributed to these benefits?

The possible permutations[2] of biodiversity-benefit-beneficiary give many more possible 'arguments' than the list of 31 (Table 4), while at the same time being conceptually simpler and clearer (Table 5).

[2] It should be noted that not all possible permutations are valid or feasible arguments – in particular, many of the benefit types apply only to human beneficiaries, for example.

Table 5: Database categories for biodiversity, benefit and beneficiary identified in an argument.

BIODIVERSITY ADDRESSED	BENEFIT CLAIMED	BENEFICIARY IDENTIFIED
All Nature / whole ecosystem (in an area)	Rights / values of nature itself (intrinsic value, rightness of pristine/natural state)	Nature overall / intrinsic value
Particular habitat/ecosystem type	Meeting ethical, moral or religious obligations to nature	Specific ecosystem or habitat
Particular species or population(s)	Achieving balance of nature, healthy systems, natural functions	Specific species
Genetic diversity, evolution	Precaution, risk reduction, resilience of services	Humanity/society in general
Spatial/landscape diversity	Poverty alleviation, subsistence, security for disadvantaged	Industry, commercial users, farmers
Specific system function	Sustainable development, obligations or values for future generations	Specific user group (recreational, hunter, consumer)
Specific system output, resource	Social/cultural/heritage/collective well-being and welfare	Residents, landowners
	Psychological/spiritual/individual well-being (also biophilia, intellectual, education)	Future generations
	Human health / reduction in disease risk	
	Recreation, tourism, aesthetic experience	
	Provisioning services, emphasis on quality, naturalness, impacts on human well-being	
	Productivity, resources, industrial use of nature, market products, economic growth	
	Regulation services, carbon, nutrients, water-functions leading to indirect benefits	
	Livelihoods, employment	
	Options for future use, bioprospecting	
	Reputation, looking good, winning customers/staff/voters	
	Legal obligation	

3.3. Methods

The individual WPs, and case studies, have carried out separate analysis written up in a number of project deliverables and papers. The purpose of WP5 is to draw a synthesis of the key themes from across all BESAFE work, drawing overall conclusions based on the body of evidence brought together in the WPs and case studies.

3.3.1. Database

A relational database, drawing on initial synthesis work for the framework for data collection and recording, was developed by WP5. The purpose of the database was to record some key parameters of the data collected in the case studies in standardised form. To facilitate easy and standard data entry, a web-based interface was developed (see example screenshot in Figure 4) along with a comprehensive manual for standardising data entry and the interpretations of different categories. This was in response to the 'challenge' that multiple different methods were used in the case studies, making analysis across case studies difficult (see §3.3.2 on challenges).

The compromise developed in BESAFE allowed each case study to proceed with its own parameters, methods and hypotheses, while also recording parameters on arguments used and their effectiveness in a standard format. This standardisation allows relatively straightforward synthesis, searching and analysis. The database includes a mixture of simple information (such as event type, dates, stakeholders participating), and more subjective judgements by researchers (for example regarding stakeholder roles, argument effectiveness and so on). The database is divided in 3 different sections:

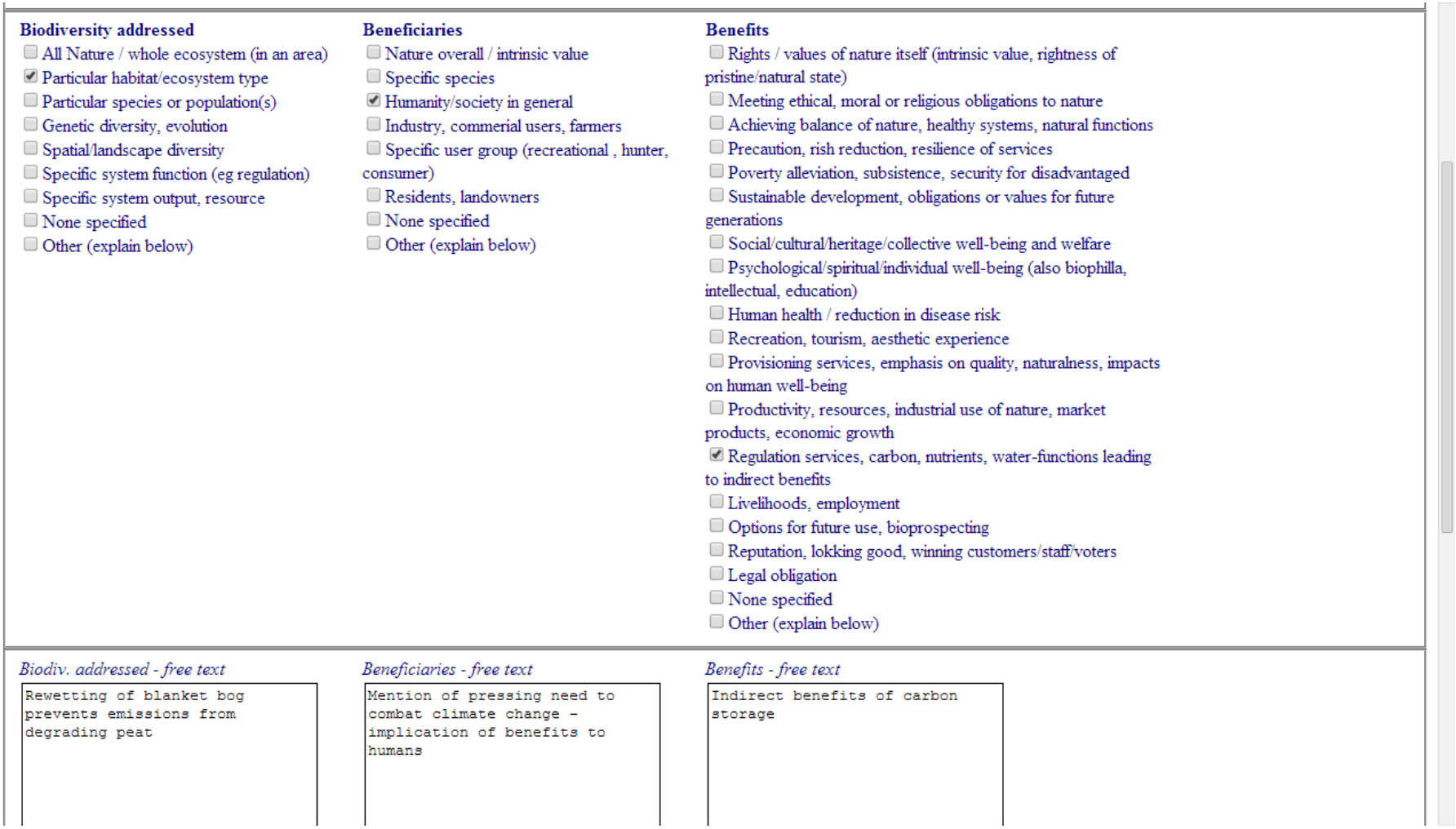
1. Background and context: This section includes information about the decision context, policy stage, stakeholders involved and other factors that form the essential background and context to understanding how an argument has been used. Each case study is considered as composed of a series of 'events' (workshops, meetings, reports, statements, consultations…) at which arguments are deployed. The database records the general type of event, further details of exactly what the event entailed, start/end dates, and details of the policy cycle stage(s) represented by the event. In addition, information is recorded about the

stakeholders participating, their role in the policy process, how they interact in events and how they use arguments.

2. Fundamentals of the arguments: This is the main section of the database, containing detailed information about the arguments and how they are used in specific events, including the type of biodiversity addressed, the benefits, the beneficiaries, the time and spatial scales, and the way in which benefits are measured or described.
3. Effectiveness: a key aim of the database was to assess the effectiveness of the arguments as used in different contexts and decision processes. As discussed in more detail in §4.1, this rested on researcher judgment of variables associated with 'potential effectiveness' and 'observed effectiveness' (Table 7), following from work in WP2 on the determinants of effectiveness.

Individual case studies were not limited by the requirements of the database: additional data collection and analysis was carried out in several cases, for example to explore the interdependencies between actors and processes within their particular social settings. The role of the database was simply to provide a consistent set of basic data for analysis in the synthesis work. The database was used to carry out analysis across all the case studies, and also to construct timelines of arguments for each case study, illustrating dynamic aspects of the argumentation process, including when arguments are introduced, and how they persist or change over time.

Figure 4: Example screenshot from BESAFE database online data entry tool, showing screen for basic argument typology data.



Biodiversity addressed

- ☐ All Nature / whole ecosystem (in an area)
- ☑ Particular habitat/ecosystem type
- ☐ Particular species or population(s)
- ☐ Genetic diversity, evolution
- ☐ Spatial/landscape diversity
- ☐ Specific system function (eg regulation)
- ☐ Specific system output, resource
- ☐ None specified
- ☐ Other (explain below)

Beneficiaries

- ☐ Nature overall / intrinsic value
- ☐ Specific species
- ☑ Humanity/society in general
- ☐ Industry, commerial users, farmers
- ☐ Specific user group (recreational , hunter, consumer)
- ☐ Residents, landowners
- ☐ None specified
- ☐ Other (explain below)

Benefits

- ☐ Rights / values of nature itself (intrinsic value, rightness of pristine/natural state)
- ☐ Meeting ethical, moral or religious obligations to nature
- ☐ Achieving balance of nature, healthy systems, natural functions
- ☐ Precaution, rish reduction, resilience of services
- ☐ Poverty alleviation, subsistence, security for disadvantaged
- ☐ Sustainable development, obligations or values for future generations
- ☐ Social/cultural/heritage/collective well-being and welfare
- ☐ Psychological/spiritual/individual well-being (also biophilla, intellectual, education)
- ☐ Human health / reduction in disease risk
- ☐ Recreation, tourism, aesthetic experience
- ☐ Provisioning services, emphasis on quality, naturalness, impacts on human well-being
- ☐ Productivity, resources, industrial use of nature, market products, economic growth
- ☑ Regulation services, carbon, nutrients, water-functions leading to indirect benefits
- ☐ Livelihoods, employment
- ☐ Options for future use, bioprospecting
- ☐ Reputation, lokking good, winning customers/staff/voters
- ☐ Legal obligation
- ☐ None specified
- ☐ Other (explain below)

Biodiv. addressed - free text

```
Rewetting of blanket bog
prevents emissions from
degrading peat
```

Beneficiaries - free text

```
Mention of pressing need to
combat climate change -
implication of benefits to
humans
```

Benefits - free text

```
Indirect benefits of carbon
storage
```

3.3.2. Data challenges and quality checking

The case study approach covering qualitative and quantitative studies is best suited to create concrete, context-dependent knowledge (Stake 1995; Yin 2003). For BESAFE, this relates to context-specific understanding of argumentation processes and the effectiveness of arguments. The main strength of this case study approach is that it allows attention to be paid to the interdependencies between actors and processes within their particular social settings. There are a variety of specific purposes and research questions across the case studies, all fitting within the general objective of developing the fullest possible understanding of the case.

The differing methodologies employed in the case studies allowed a richer variety of techniques and analyses, but also meant that some analyses could not be attempted with all data. Some case studies do not fit the framework implemented in the database and had to be left out of some analyses as standardisation would not be possible. This especially applies to Q-studies, which do not look at effectiveness of arguments in the context of a specific process, and do not have any dynamic element. Studies using Q-method statements yield interesting results about how different stakeholders perceive different arguments, but do not fit with the framework of analysing actual arguments used and how they change over time (see discussion of Q-method in §3.3.4). Table 3 shows which case studies could be included in the final database analysis.

A particular challenge arises where arguments are used within the context of a certain common understanding. Often, parts of the argument may not be explicitly stated, either because they are already clear to everyone involved, or as a deliberate strategy - ambiguity can broaden the appeal of an argument by allowing people to fill in their own preconceptions and weightings. Hence, there was an unavoidable need for researcher interpretation in identifying some components of arguments; classifications of 'not clear' were used where doubt remained.

Data collection/reporting was sometimes conducted in different ways, in particular where multiple benefit types, beneficiaries and/or biodiversity were noted for a single argument. Differences in interpretation also arose for example in relation to the beneficiaries of legal obligation arguments: the database guidelines held that the beneficiaries were the people/groups who avoided legal sanctions (i.e. the argument is interpreted as "we have to do this or we will be in breach of the law")

but some researchers favoured classifying some part of nature as the beneficiary (i.e. "respecting this law will benefit species X"). These and other points are discussed further below. To address these issues, the database was subjected to two independent rounds of verification and standardisation before conducting the analysis, with queries sent back to original researchers for clarification. In most cases this resulted in a satisfactory data set within the database framework. Where this could not be achieved, cases were excluded from the combined analysis (the individual cases are still drawn on in other aspects of synthesis). In total, 11 case studies were retained for combined analysis.

3.3.3. Synthesis methods

This deliverable is based on qualitative synthesis of results relating to argumentation processes from research carried out in WP's 1 to 4. This synthesis is extended and corroborated by new analysis across the BESAFE case studies. As discussed in §3.3.2, the case studies used different methodologies, but after data checking most could be fitted within the general framework of the BESAFE database. In-depth understanding of the individual cases is derived from the individual analysis within those cases; the database data allow information to be aggregated across all the case studies. The structure of the database shows the detailed arguments within the bigger picture of particular events and the overall policy process. It was used

- To observe frequencies of different argument types and to examine different forms of effectiveness.
- To assess the correlation of different characteristics, for example between potential and observed effectiveness characteristics.
- To generate timelines of arguments and effectiveness in each case study, to explore dynamic aspects of argumentation processes
- To connect different policy and context features to particular uses and effects of arguments.
- To assess the effectiveness of arguments in specific situations.

3.3.4. Final Q study

BESAFE has used several Q studies to research stakeholder perspectives to biodiversity argumentation and processes, including in two of the case studies and as a central method in WP4 (see §3.1.4). Q-method is used to understand and describe people's opinions, beliefs and attitudes in relation to a particular topic (van Exel and de Graaf, 2005). People taking part in a Q study are presented with a list of statements about a specific issue, which they have to rank according to their own judgement. This ranking exercise makes possible the identification of people's own profile such as tastes, preferences, etc. The results of the factor analyses conducted on the rankings is represented by groups of people having similar viewpoints.

The final Q study conducted in the BESAFE project sought to explore stakeholders' views on what makes arguments for biodiversity effective in influencing decision processes. The intention was to test attitudes of well-informed participants/stakeholders following their involvement in the BESAFE and/or BIOMOT projects. The study was carried out on 25 final conference participants at the conference and shortly afterwards. It involved sorting 34 statements according to how much respondents agreed with them.

The statements were drawn initially from BESAFE and BIOMOT publications (deliverables, newsletters, policy briefs, press releases...) and then edited for clarity and a good balance and range of perspectives. They include some statements about what arguments influence decision makers, and some statements about whether the impacts of particular arguments are desirable or not. In particular, we sought to use these statements to tease out views on some areas of particular interest, notably relating to the effectiveness of using arguments in combination, the potential for economic arguments to 'crowd out' moral and intrinsic motivations, the advantages and disadvantages of monetary valuation or benefits, and the particular needs of arguments for mainstreaming to other sectors. The list of statements is presented in Table 6.

Respondents were first asked to carry out a rapid initial sort into three categories (tend to disagree, neutral, tend to agree). For the second stage of the study, they were asked to organise statements from the initial sort into a final sort. This

exercise included 9 options, ranging from 'least agree' to 'most agree', and a strict restriction on how many statements respondents could place under each category - this meant that the sort was not about their absolute level of agreement/disagreement with the statements, but rather about the comparative ranking of agreement with the statements.

After the sorting, people taking part in the study were asked some short debriefing questions, including their reasons for classifying statements as 'least agree' and 'most agree'; at which column in the final sort their (absolute) view shifts from 'disagreement' to 'neutral', and at which column from 'neutral' to 'agreement'; some final short questions about their work (main role/position, other relevant actual or previous roles); and whether they had any formal training in economics.

Results of the Q study are being submitted to the special issue in Biodiversity and Conservation as a stand-alone paper; in this deliverable, the results are drawn on throughout to support the synthesis and conclusions as appropriate.

Table 6: Statements used in the Q study

Statement number	Statement
1	Value conflicts cannot be understood as trade-offs, because different values are often incommensurable
2	Monetary arguments are the most effective way to influence decision makers
3	There are no reliable ways of ranking options, so decisions must be taken through open deliberation and discussion
4	Results from participatory research focusing on stakeholders and social contexts carry most weight with decision makers
5	Effective biodiversity conservation depends on the degree to which stakeholders feel ownership over the policy and decision-making processes
6	Effective arguments need to focus on the role of biodiversity in maintaining the delivery of services to humans
7	Arguments using monetary valuation crowd out non-economic and intrinsic motivations for protecting nature
8	Today's environmental problems are mainly a result of inappropriate pricing of ecosystem services and arguments should focus on the benefits of correcting these market failures
9	Arguments using economic values will support better decision making and increase political support for environmental protection
10	It is both possible and desirable to come to rational decisions regarding the environment without translating its values to money terms
11	Monetary valuation of the environment will encourage policies that shift the impacts of environmental damage to the poor
12	Arguments based on participatory research at local scales have little or no relevance to national and international decision processes
13	Since people do not act out of pure rational reasons, detached and impartial arguments fail to motivate action
14	Effective arguments need to appeal to meaning and emotion, not logic and reason
15	Failure to incorporate information on the value of ecosystem services in decision making will lead to reductions in human welfare and loss of biodiversity
16	The importance of conserving biodiversity for humanity in general is not likely to play an important role in decision making at local levels
17	Arguments can only be effective if they adapt terminology and language to the knowledge and interests of the audience
18	Improving understanding of relationships between biodiversity and ecosystem services is crucial to making effective arguments for biodiversity conservation
19	The most effective arguments convince people of the benefits for them personally, making them realise they have a share
20	Isolated arguments are not likely to be successful: a wide range of complementary arguments is needed to convince many stakeholders
21	Arguments will be more effective if they combine self-interested and ethical reasons for conservation

22	Many decision makers do not understand how their sectors both depend on and impact on biodiversity: effective arguments must focus on convincing them of these links
23	Economic arguments lead decision makers to ignore impacts not expressed in monetary terms
24	Arguments will be rejected if they are not based on robust scientific evidence
25	Positively framed arguments focusing on the benefits of conservation are more effective than arguments focusing on the risks and costs of biodiversity loss
26	Valuing biodiversity in economic terms allows decision-makers to justify destruction of the environment
27	Most decision-makers give little or no attention to arguments based on emotional and spiritual values of biodiversity
28	Arguments about the value of ecosystem services have little traction at regional and local levels of governance
29	Decision makers outside the environment sector will not respond to arguments focusing on ecological benefits
30	Arguments for biodiversity are more effective when they focus on future uncertainty and the need for precaution and resilience
31	Effectiveness depends more on the trust and status of the person delivering a message than on the detail of their argument
32	The moral obligation to protect the interests of future generations is a more powerful motive than any moral obligation to species or the natural world
33	Some protection can be achieved through ethical arguments, but to stop the decline of biodiversity overall it is essential to make a strong economic case for action
34	Building strong communication in science-policy interfaces is of more importance than the robustness of the evidence used to promote conservation

4. Synthesis of BESAFE assessments

The analysis in BESAFE has centred around a number of key themes, each of which is addressed below. We draw together the findings from the work packages, and augment this where appropriate with analysis from the database and the Q-study carried out at the final conference to give overall conclusions. The themes are:

- Assessing the potential and observed effectiveness of arguments. This is discussed in 4.1, covering the ways effectiveness has been assessed, and the relationships between different effectiveness indicators. The effectiveness assessments underpin much of the later analysis.

- Classifying argument types and how effectiveness varies with type. This is discussed in §4.2, which examines the relative frequencies of different 'types' of argument, as defined by the different argument 'components' of biodiversity-benefit-beneficiary, and discussed their relative effectiveness – though noting that argument effectiveness is often more related to framings, combinations of arguments and dynamic/contextual factors than simply to the components of the argument.
- Argument framings and effectiveness are then discussed in §4.3.
- Synergies and conflicts across different argument types and framings are discussed in §4.4, with particular stress on the agenda of mainstreaming biodiversity concerns across all sectors.
- Finally, in §4.5 we discuss the evidence on dynamic and spatial elements of argumentation processes and how these influence effectiveness.

4.1. Potential and observed effectiveness of arguments

The ultimate effectiveness of arguments is difficult to observe, not least because there may be significant time lags between the argument process, the implementation of decisions, and the consequences for biodiversity. The more proximate effects of arguments are easier to observe, within the context in which they are used, and considering the interactions between different arguments. Argument effectiveness can also addressed at a more prospective level, considering the features of the argument that are likely to influence its appeal and effectiveness within a specific context. We refer to these two approaches as observed effectiveness and potential effectiveness.

Exploring potential effectiveness is about making causal inferences about arguments' effectiveness. 'Potential effectiveness' refers to ex-ante features that researchers consider likely to have an influence on actual effectiveness (based on other evidence/literature/theory). Benford and Snow (2000) for example focus on credibility of information and arguers, and relevance to the audiences and policy contexts, as the primary determinants of effectiveness. 'Observed effectiveness' refers to ex-post features that demonstrate actual effectiveness in the case study. The BESAFE project has empirically analysed the effectiveness of arguments for biodiversity conservation, by observing the use of arguments at different policy

stages, at different governance levels and among different stakeholder groups. The project also considered the potential effectiveness of arguments, by studying the logic of arguments and drawing on stakeholder views on the effectiveness.

The variables determined to be both relevant and feasible to collect across the diverse case studies in BESAFE are presented in Table 7. The case study researchers conducted the evaluation of effectiveness, making use of logical inference skills for potential effectiveness, and using analysis where empirical evidence from the data is required for observed effectiveness. Further details of the approach to assessing effectiveness are presented in the "BESAFE Protocol on evaluating the effectiveness of arguments" and in the report of Task 2.1 "Literature review on methods to assess the effectiveness of arguments for biodiversity protection".

Table 7: Variables identified for potential and observed effectiveness

Effectiveness	Variables	Explanation
Potential effectiveness		
	Internal logic and coherence	Whether the argument stands up in terms of its internal logic
	Robustness and data quality	How robust are the assumptions and evidence used in establishing the value claimed
	Timing in context of decision process	Potential for the argument to feed in to the decision process
	Main framing of argument	Arguments can take the form of an appeal to emotions, to morality, to higher authority, to risks, to logic, to economics
Observed effectiveness		
	Persistence	Repeated at many stages
	Accumulation	Increased and broadening use
	Level-crossing	Spread to different policy levels
	Diffusion	Spread to new audiences
	Replacing of arguments	Overriding other arguments
	Changing behaviour	Triggering new processes, documents, activities

The relationships between these factors were analysed to see which 'potential' characteristics seem most related with particular 'observed' characteristics. The framework developed in D1.1 helped summarise the observed and potential effectiveness of alternative ways of arguing for conservation.

It should be recognised that there is potential for bias in the ways individual researchers classify effectiveness of arguments. In their study on the prior belief

effect, Edwards and Smith (1996) explore whether it is possible for an individual, when evaluating an argument, to assess the strength of that argument independently of his prior belief. They find that arguments that are incompatible with prior beliefs are considered to be less effective than arguments that are compatible with prior beliefs, as past beliefs tend to guide current judgments. The researchers were all aware of this and guidance stressed the aim of remaining neutral. Nevertheless it is impossible to exclude such bias entirely, since there is essentially a one-to-one mapping between researcher teams and case studies in the project, although cross-checking between cases was used, and all the data in the final database were checked by two researchers.

4.1.1. Correlating potential and observed effectiveness

Analysis of the database information helped reveal whether any 'potential' variables were actually associated with 'observed' effectiveness. Each argument is assessed only once for each effectiveness criterion – i.e. in relation to the whole case study 'process', not effectiveness at individual event level – partly for practical reasons, but primarily because several of the variables relate to performance over time. The correlations of most variables are shown in Table 8 (the exception being framing, which is not scored on the same scale: see §4.3). As discussed further below, the hypothesised and observed relationships in many cases are not really linear, in the sense that certain features of effectiveness are necessary but not sufficient for arguments to be effective overall, so the correlation coefficients should be interpreted with this in mind.

Table 8: Correlation coefficients between effectiveness scores

Correlation between average of potential scores and average of observed scores: ***0.550***	Potential effectiveness			Observed effectiveness						
	Logic	Robustness	Timing	Persistence	Accumulation	Level crossing	Diffusion	Replacing	Change behaviour	Overall
Logic		0.703	0.400	0.397	0.441	0.311	0.462	0.148	0.291	0.391
Robustness	0.703		0.347	0.423	0.432	0.348	0.508	0.197	0.342	0.444
Timing	0.400	0.347		0.462	0.354	0.277	0.160	0.014	0.161	0.089
Persistence	0.397	0.423	0.462		0.632	0.544	0.507	0.138	0.363	0.468
Accumulation	0.441	0.432	0.354	0.632		0.479	0.659	0.321	0.529	0.560
Level crossing	0.311	0.348	0.277	0.544	0.479		0.611	0.347	0.475	0.648
Diffusion	0.462	0.508	0.160	0.507	0.659	0.611		0.442	0.539	0.647
Replacing	0.148	0.197	0.014	0.138	0.321	0.347	0.442		0.596	0.565
Change behaviour	0.291	0.342	0.161	0.363	0.529	0.475	0.539	0.596		0.664
Overall	0.391	0.444	0.089	0.468	0.560	0.648	0.647	0.565	0.664	

Note: Correlation is between scores for the Green shading for coefficients above 0.6, red shading for coefficients below 0.3.

All of the observed correlation coefficients are positive, though the strength of correlation is highly variable. Correlations within the 'observed' effectiveness categories are relatively high. Overall effectiveness is correlated reasonably strongly with changing behaviour, as would be expected, and with level crossing and diffusion, slightly less so with persistence, accumulation and replacing. Similarly, in the 'potential' effectiveness, logical coherence and robustness are strongly correlated, but neither correlates strongly with timing. Between the categories, however, the correlations are generally weaker. Overall the average 'potential' and 'observed' scores correlate moderately (0.550).

The correlations of the timing scores are particularly interesting, since it is commonly suggested that careful timing is an important strategy for ensuring effective arguments. The results here appear to suggest that timing is modestly correlated with persistence and accumulation, which may be largely explained by the fact that arguments are more likely to be considered to persist and accumulate if they are introduced earlier in the process. But the timing score has very little correlation with other observed effectiveness variables, in particular with overall

effectiveness. The suggestion from these case studies would therefore appear to be that getting an argument in somewhere is far more important than exactly when the argument is made. It should be noted however that there could well be a selection bias here: the cases are all actual policy/argument processes, or to put it another way, we have not studied any cases in which no biodiversity argument process arose because of lack of arguments put forward at a crucial time. So perhaps we should conclude that the results suggest timing is not a deal-breaker once everyone is talking, but say nothing about the importance of timing in setting appropriate argument processes in motion in the first place.

4.1.2. Effectiveness gap

Part of the weak correlation between potential and observed effectiveness can be explained with reference to an 'effectiveness gap': arguments with high potential effectiveness have potential to influence outcomes and behaviours, but do not always do so. Table 9 illustrates, presenting the gap between averages across all observed and potential effectiveness scores for different categories of benefit and beneficiary.

The existence of this gap is not in itself particularly surprising. Although we are considering effectiveness in terms of arguments that are effective in conserving biodiversity, these arguments do not exist in isolation, but rather as part of broader processes with a wider range of stakes and conflicts. It is to be expected that in some cases conservation arguments will not win out, because other stakes are weighted more highly. Similarly, within the suite of conservation arguments, some will appeal more strongly to the interests of particular stakeholders and decision makers than others.

It is interesting, however, to observe the variation in the size of the gap – which is almost absent for arguments about employment/livelihoods for residents, but substantial for arguments about regulating services for humanity (covering in particular climate change). Some of the highest gaps appear to be associated with longer-term, larger scale and uncertain impacts – arguments about risk, or where the beneficiary is humanity generally – compared with lower gaps where arguments deal with growth or jobs for residents or industrial uses, or legal obligations to act. This is consistent with the idea that stakeholders and decision makers will often

give higher weight to arguments about impacts that are closer to home – spatially, personally and in time – than less immediate or more general impacts.

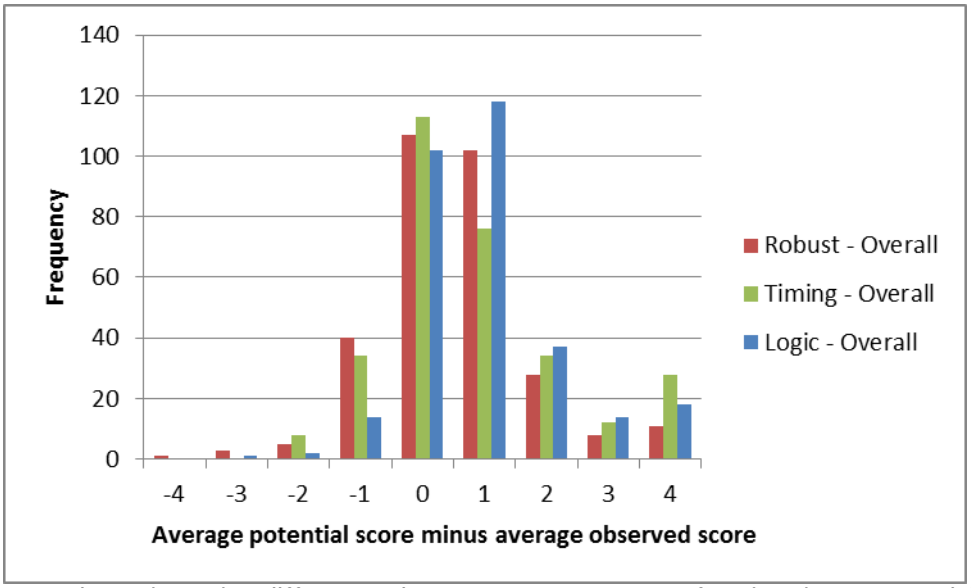
Table 9: Average observed effectiveness minus average potential effectiveness

	Nature	Ecosystem	Species	Humanity	Industry	Users	Residents	Future	Not Clear
Intrinsic	-0.84	-0.62	-0.49						
Moral	-0.50								
Balance	-0.96	-0.58	-0.47	-1.40					
Risk		-1.17	-1.09						
Sustdev		-0.53		-1.01				-0.62	
Social				-0.89				-0.92	
Psych				-1.05					
Health									
Recreate				-0.78		-1.10			
Provide						-0.87	-0.44		
Growth					-0.54		-0.52		
Regulate		-0.65		-1.40			-0.84		
Jobs					-0.55		-0.05		
Options									
Repute				-0.66					
Legal	-0.78	-0.62	-0.50	-0.87					
Not Clear									-0.89

Note: only combinations with 5 or more observations shown. Darker shading indicates larger gap. All entries are negative.

Some details of the gap are shown in Figure 5. This compares the gaps between the individual specific components of potential effectiveness and overall observed effectiveness. The results are similar for all three categories, with very few examples of negative scores (i.e. very few instances of observed effectiveness exceeding potential) and a clear skew towards positive scores, showing observed effectiveness scored lower than the potential effectiveness, including some quite large gaps.

Figure 5: Details of effectiveness gap



Note: bars show the differences between average scores for the three 'potential' categories (robustness, timing and logic) and the overall effectiveness score, all on the same 1 to 5 scale where 1 is very low and 5 is very high.

4.2. Argument types and effectiveness

A flexible approach to identifying and classifying arguments, which accommodates new ideas as they arise, was proposed in WP1 as a result of the literature review. This approach was included into the provisional framework, which outlines the information needed to characterise or 'fingerprint' an argument as well as assess its effectiveness. The process for fingerprinting arguments is however difficult because authors do not always fully explain their position. Arguments for the protection of biodiversity vary greatly in their level of specificity, and are often multi-faceted: some arguments appeal to generic moral viewpoints and relate to all biodiversity, while others relate to particular functions of a select group of organisms in delivering a particular benefit.

As discussed in §3.1 above, WP1 produced a list of 31 typical arguments (Table 4), but for clearer analysis the decision was taken to break arguments down further into component parts, including biodiversity, benefit, and beneficiary (see §3.3.1, Table 5). This resulted in lists of 17 types of benefits, 8 types of beneficiary and 7 biodiversity aspects. The feasible argument 'fingerprint' permutations of these categories are numerous, and there are many possible research questions associated with the use and effectiveness of different combinations in different

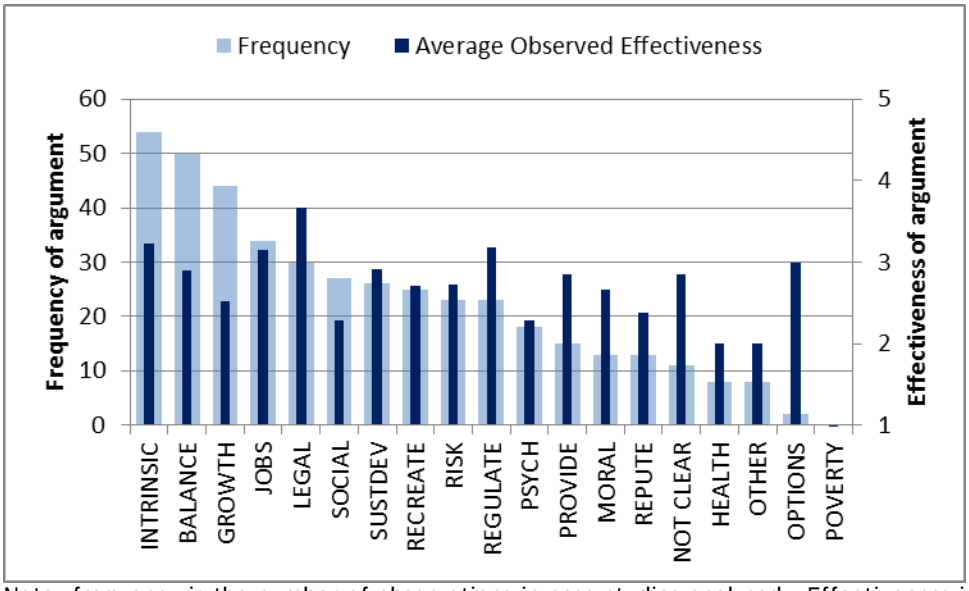
contexts. Perhaps the most important ones relate to the relative effectiveness of different forms of argument, and in particular to the relative value of self-interested and moral arguments for conservation.

4.2.1. Frequencies and effectiveness from the database

The first analysis enabled by the database is to look at the frequency of different argument types across the case studies. Below, we present these results, along with the headline observed effectiveness estimates (the individual effectiveness variables are considered in more detail in §4.1). It should be kept in mind that all the cases are European and this clearly influences the results: for example, we have no observations of arguments in which poverty reduction is the key identified benefit of biodiversity conservation, whereas this would be quite a common argument in other parts of the world.

For **benefits** identified in an argument (Figure 6), the most common argument types relate to the rights of nature, and to the objective of achieving a healthy balance of nature. Arguments about growth and employment benefits from conservation are also frequent. Arguments about human physical or psychological health are relatively uncommon, but arguments about societal benefits and recreation are more frequent. Legal obligations are commonly used in arguments. Arguments about sustainable development, risk reduction and regulating services are also present (though perhaps not as much as might be expected, seen from the perspective of researchers focused on long-term development goals and global changes).

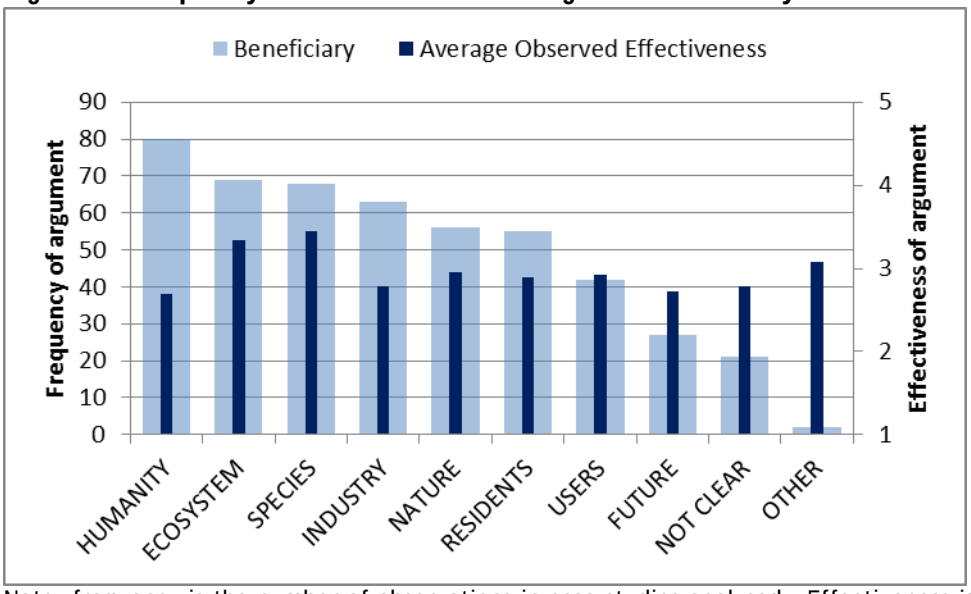
Figure 6: Frequency and effectiveness of argument sorted by *benefits* identified.



Note: frequency is the number of observations in case studies analysed. Effectiveness is the average score for overall effectiveness, where 1 is very low and 5 is very high.

This is further reflected in analysis of the **beneficiaries** identified (Figure 7) which shows that future generations are relatively infrequently identified as the primary beneficiaries in arguments. However this is in part an artefact of the reductionist nature of the database: most arguments are forward-looking to some extent, but the beneficiaries may be more explicitly identified, e.g. as ecosystems or specific groups (in the future) rather than as future generations more generally. The timescale of arguments is also present as an explicit component in the database: in about half of cases, however, the arguments are not specific in relation to timescales. For the remaining half, about a fifth are explicitly short-term, a tenth mid-term, and a quarter long-term in nature.

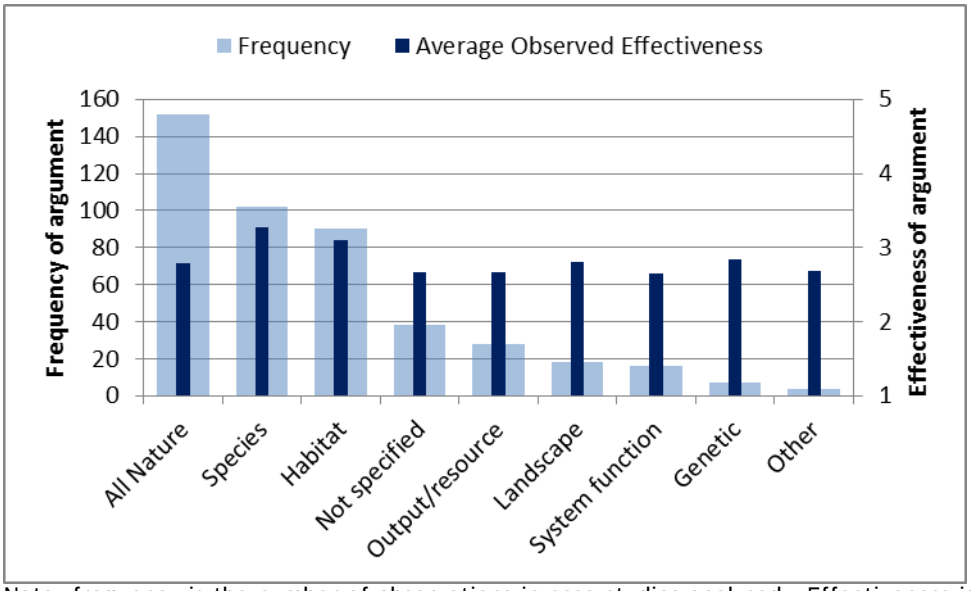
Figure 7: Frequency and effectiveness of arguments sorted by *beneficiaries* identified.



Note: frequency is the number of observations in case studies analysed. Effectiveness is the average score for overall effectiveness, where 1 is very low and 5 is very high.

Regarding the **biodiversity component** singled out in arguments (Figure 8) there is often little specificity, 'all nature' being by far the most common, with a substantial number of 'not specified'. Particular species and habitats make up most of the rest, with rather few arguments focusing at either the landscape or genetic scales, or on specific system functions or outputs. These less-commonly cited components are often characterised by less general understanding and appeal, as well as by substantial data gaps and uncertainty regarding key parameters and relationships.

Figure 8: Frequency and effectiveness of arguments sorted by *biodiversity component* identified.



Note: frequency is the number of observations in case studies analysed. Effectiveness is the average score for overall effectiveness, where 1 is very low and 5 is very high.

4.2.2. Effectiveness of the argument 'types'

As is clear from the discussion in §4.2.1, the effectiveness scores vary according to the build of the argument. In terms of overall effectiveness, the differences at this level are mostly relatively minor, though it does appear that arguments regarding meeting legal obligation tend to be more effective than others, as might be expected. Arguments about social, psychological or health benefits tend to be slightly less effective – these are arguments that are harder to quantify and that often rest on less robust data. On the beneficiary and biodiversity sides, arguments which identify specific species seem to be a little more effective than more generic arguments.

Of particular interest in the analysis is the way effectiveness varies with benefit-beneficiary pairings. Table 10 presents the average observed effectiveness scores for all combinations with 5 or more observations (it should be noted that many combinations are not feasible, hence the large number of blank cells).

The legal arguments are consistently on the more effective end of the scale, whether they are classed as benefiting nature or humans. We discuss further in §5.2.1 issues arising in the classification of beneficiaries of legal arguments.

Again, it is interesting to note that arguments about benefits to specific species and to some extent ecosystems appear to be more effective than arguments about nature overall or humanity in general.

Table 10: Average observed effectiveness scores for benefits and beneficiaries

	Nature	Ecosystem	Species	Humanity	Industry	Users	Residents	Future	Not Clear
Intrinsic	3.03	***3.44***	3.29						
Moral	2.86								
Balance	2.56	3.31	***3.44***	***2.32***					
Risk		2.67	***3.79***						
Sustdev		3.20		2.79				2.80	
Social				2.50				2.54	
Psych				***2.28***					
Health									
Recreate				2.67		3.01			
Provide						***2.16***	***3.47***		
Growth					2.72		2.67		
Regulate		***3.92***		2.81			2.83		
Jobs					2.99		2.79		
Options									
Repute				***2.34***					
Legal	***3.50***	***3.66***	***3.60***	3.37					
Not Clear									***2.35***

Note: Benefits in rows, beneficiaries in columns. Scores are average observed effectiveness for all combinations with 5 or more observations in data set. Green/red cell shading is from highest to lowest. Text in ***bold italics*** is one standard deviation above/below mean.

Further analyses of this basic type can also be carried out. However, it should be stressed that the assessments of the argument components, whether taken individually or together, is interesting primarily from the perspective of seeing which components are relatively more frequent, and where there are clear gaps. Analysis of the effectiveness is somewhat less useful, because in practice the arguments tend to be used in combinations, and in context-dependent ways. Throughout the case study and interview research, we found that effectiveness of arguments depends heavily on details of how arguments are used and framed, and on details of the argumentation process contexts. Below, we look in more detail at these issues, and in particular those associated with argument framing (§4.3),

synergies and conflicts across arguments (§4.4) and dynamic and spatial aspects of argument processes (§4.5).

4.3. Argument framing and effectiveness

The framing of an argument refers to the way the argument is formulated and presented. Framing helps giving meaning to an argument or understanding the argument. Numerous social scientific studies have shown that an issue frame can significantly change both what citizens' think about an issue and the policy support for the issue (e.g. Rantala and Primmer, 2003; Callaghan and Schnell, 2009; Miller et al., 2009). People's decisions can be affected by seemingly trivial differences in the wording of alternative options. Thus, a framing effect in a decision task is said to occur when logically equivalent descriptions of a decision problem lead to systematically different decisions depending on the way in which the problem is framed (Corner and Hahn, 2010; Chong and Druckman 2007).

From the perspective of the BESAFE framework, framing is largely independent of the benefit or beneficiary in an argument. A single argument can be framed in different ways, and relevant variables can be measured or expressed in different ways, or at different scales. The question of whether to use monetary valuation is often one of measurement method and framing, rather than a fundamental difference in the nature of an argument. For example, recreation can be measured via the number of visits or through willingness-to-pay (WTP) for visits, but in both cases the argument could be focused on the benefit to visitors. Alternatively, recreation can be measured in terms of expenditure by visitors or associated employment, and in that case the argument refers to local economic benefits. There is also potential vagueness – is an estimate of the number of visits an argument about benefits to visitors, to local economy, or both? – and scope for confusion relating to measurement units, in particular between expenditure and WTP-based measures.

To explore these issues, the effectiveness component of the database recorded the main framing of the argument as part of the potential effectiveness assessment. Framing could take the form of an appeal to emotions, to morality, to higher authority, to risks, a neutral appeal to logic, or an economic framing. In addition to the database analysis, anecdotal evidence from the interviews carried out in

D1.1 is helpful in highlighting examples of conditions needed to make arguments effective. The final Q study gave further insight into the divergence of views on argument effectiveness.

4.3.1. Positive and negative framings

The importance of framing, and in particular a preference for positive framings, was stressed in the first stakeholder workshop. Positively framed messages are often thought to be more effective than negative frames, despite their equivalent content. For example in the Polish Bialowieza Forest case study, the framing was sometimes negative (economic exploitation through logging destroys unique biodiversity as well as goodwill), where it easily could have been positive (unique biodiversity brings economic gain and goodwill through tourism), and stakeholders felt these positive arguments might be more effective. Biodiversity arguments often end with the conclusion that something should be stopped, or should not be done, and/or by blaming some individual or group for a particular negative outcome. Stakeholders felt that, in many cases, the argumentation could also be phrased in a positive way, highlighting the opportunities. For instance, avoiding the argument "this is wrong" and instead focusing on "this alternative is better, more profitable, more sustainable". Workshop participants also stressed that biodiversity is also about emotion. People often identify with species, habitat, landscapes and other aspects of biodiversity, and arguments that successfully make an appeal to the emotions can be powerful.

Figure 9 shows a wide range of positive and negative arguments that were used in nine examples of arguments to protect or restore biodiversity under the UK Biodiversity Action Plan (Case study 10). The framings can be categorised as:

1. Negative framing as restrictions (for example policy obligation or legal duty to protect important species and habitats identified as important within the UKBAP and local BAP (Biodiversity Action Plan).
2. Negative framing as threats/ problems - these were presented as problems, for example, the problem of invasive species which needs solving, the problem of low genetic diversity - theses were all threats to biodiversity.
3. Positive framing - benefits and opportunities. These were framed as advantages and benefits for accepting the argument and taking the action

which linked with other goals of the receiver, for example the goal to conserve local cultural heritage.

In general, positively framed arguments were found to be more successful than negatively framed ones, especially when they were aligned with the interests of the target audience. Positive framing arguments were linked with more relevant arguments and therefore more effective arguments where win-win situations in theory were possible. However, negatively framed arguments could also be effective, especially in situations where win-win solutions were not possible, provided that they were consistent with the local and national policy context, i.e. in line with legislation and targets to protect biodiversity. In other cases, negative framings were also successful – for example, the arguments surrounding the tidal turbine in a marine protected area in Northern Ireland (case study 6) involved only negative framing of the impacts on biodiversity, while potential positive impacts were not considered at all in the argumentation.

Further evidence on the importance of framing comes from the final Q study carried out at the BESAFE/BIOMOT final conference, that shows most respondents hold fairly strong views in favour of positive and personally-relevant framings. The majority of respondents agree that "The most effective arguments convince people of the benefits for them personally, making them realise they have a share" and also that "Positively framed arguments focusing on the benefits of conservation are more effective than arguments focusing on the risks and costs of biodiversity loss."

Figure 9: Positive and negative framings in UK BAP case

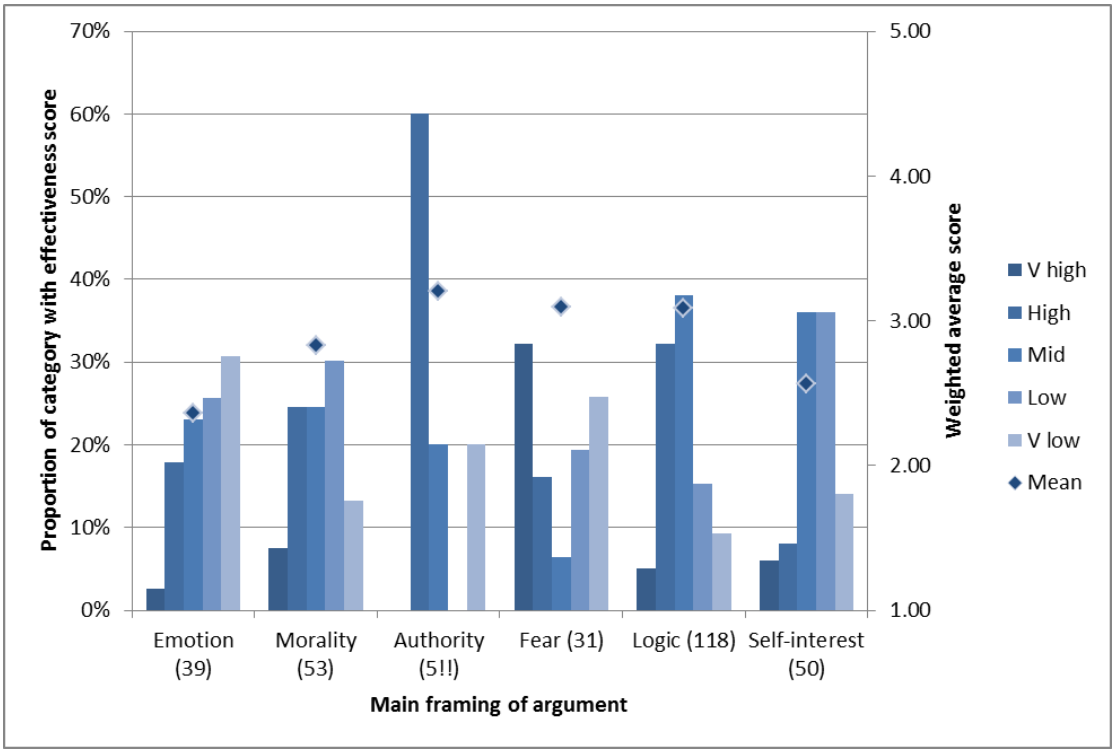
Negative framing	Positive framing
Restrictions	**Benefits and opportunities**
1. Duty to protect internationally important species and habitats 2. Duty to protect nationally designated sites important for biodiversity 3. Duty to protect nationally important species and habitats 4. Obligation to protect nationally important species and habitats 5. Obligation to protect locally designated sites important for biodiversity 6. Obligation to protect local priority species and habitats	1. Reduce costs 2. Resource efficiency 3. Increase resources 4. Conservation of cultural heritage 5. Local character, distinctiveness and pride 6. Flood prevention 7. Improve water and air quality 8. Climate change mitigation 9. Enhance people's lives in urban areas 10. Visual attractiveness of urban areas 11. Physical health 12. Mental wellbeing 13. Children's development 14. Recreation for local people 15. Community involvement 16. Sustainability 17. Economic development 18. Reduce anti-social behaviour 19. Sustainable transport routes 20. Political support
Specific threats to biodiversity	
7. Climate change 8. Actions on site contributing to climate change 9. Human activities (development, agricultural) causing decline 10. Inappropriate management (especially for specialised species and habitats) 11. Recreation pressure 12. Uncontrolled access 13. Socially undervalued habitats 14. Low genetic diversity and disease 15. Invasive species 16. Low awareness 17. Vandalism and anti-social behaviour 18. Unequal action for uncharismatic habitats 19. Public perception 20. Resource availability	

4.3.2. Neutral and emotional framings

The analysis of data on framing collected across case-studies is summarised in Figure 10. Arguments that play primarily to an emotional appeal to conserve nature were recorded as being less effective, but arguments that focus more on the moral obligation to 'do the right thing' were slightly more effective. Another form of emotional argument, playing on fears of loss or damage, were even more effective. Arguments focusing on self-interest, however, were slightly less

effective than average. Arguments using a more emotionally-neutral logic to present the advantages of conservation, meanwhile, were just as effective as those using fear.

Figure 10: Argument framing and overall effectiveness



Note: figures in parentheses are the number of observations of each type. There are too few observations of the 'authority' framing to draw conclusions on the relative effectiveness of these arguments.

These results can be understood in the context of a more nuanced approach to the idea of positive and negative framings, taking account of risk-aversion and endowment effects. People are generally more strongly motivated by risks of loss than by promises of gain, hence fear is a more effective motivator than self-interest. At the same time, most people also have developed senses of morality, so an appeal that establishes responsibility (whether personal or social) is more effective than one that merely plays on emotion without establishing this link to action.

In the Białowieża Forest in Poland (case study 7), for example, the foresters opposing the enlargement of the protected area successfully argued that local people risked losing the use of the forest for services, such as provision of

firewood, berries and mushrooms, as well as losing jobs in the forestry industry. This outweighed the arguments of the conservationists, which were based mainly on the intrinsic value of nature, and were not made personally relevant to other stakeholders.

The lesson to be drawn from the analysis across the case studies is that positive framing is not simply a matter of focusing on possible benefits and downplaying possible risks and losses. Rather, positively framed arguments can be more effective if they emphasize an alignment with some of the relevant actors' goals and interests. Framing that emphasizes an alignment with an actor's goals increases the salience of the argument to the actor, and this is what tends to enhance effectiveness. An emotionally neutral but logical explanation of the benefits of conservation appears to be, if anything, more effective than strategies appealing directly to emotions without giving further rational justification for action.

Hence, most respondents in the final Q study reject the idea that "Effective arguments need to appeal to meaning and emotion, not logic and reason." At the same time, however, they also reject the idea that "Most decision-makers give little or no attention to arguments based on emotional and spiritual values of biodiversity." Looking ahead to the §4.4, these figures link to support for a pluralistic approach that favours using combinations of multiple, complementary arguments rather than reliance on a single framing or approach.

4.3.3. Ecosystem services framings

The interview evidence reported in BESAFE deliverable D1.1 highlighted that effective framing using the ecosystem services concept helped to integrate biodiversity into a wider environmental discourse instead of being treated as a stand-alone issue. Ecosystem services framings are seen as helping broader communication and the potential for opening discussion on entrenched views (such as conservation being a hindrance to farmers) by emphasising the direct and especially indirect benefits people can gain from biodiversity.

Particular emphasis was placed on economic arguments and arguments based on ecosystem services improvements as potentially effective ways to encourage

individuals to support biodiversity conservation, though interviewees also stressed the conditions needed to make such arguments effective: made by the right people, at the right time, in the right cultural climate. Hartman and Weber (2009) for example stress that a receiver will view information as more credible and trustworthy if it comes from an arguer who has similar ideological inclinations, while Sarkki et al (2013) explore the importance of balancing credibility, reliability and legitimacy in the design of science-policy dialogues.

The use of ecosystem service arguments was widespread across the case studies. As discussed further below, these arguments were commonly used in combination with intrinsic value and moral obligation arguments (§4.4). There were however scale-related differences in the use of ecosystem services arguments (§4.5), with acceptance of the concepts and familiarity with the terminology being widespread in international and national level debates, but less common at local levels. The effectiveness of these arguments depends, in effect, on stakeholders understanding and 'buying in' to the particular framework for presenting the benefits of conservation in service terms. This is quite common in expert/professional discourse, but the concepts are less familiar to the general public, and there is some evidence that the framing of ecosystems giving "service" is less appealing than alternative framings for the same concept such as "nature's gifts" (FM3, 2010).

4.3.4. Monetary framings

Opinion is particularly divided on the use of monetary expressions of ecosystem services. These argument framings are actually rather infrequent in the BESAFE case study data, but are increasingly common in some policy processes for certain services. In the UK water industry study (case 3: see §4.5), for example, water company use of ecosystem service arguments eventually led to the industry regulator Ofwat requiring companies to produce monetary valuation evidence for certain services.

Monetary valuation is a contentious issue. To some extent this depends on the type of service and the robustness of evidence that can be produced: BESAFE interviews suggest that monetisation of some more tangible services such as recreation is broadly accepted, but there are substantial concerns about putting a value on

aesthetic or cultural aspects, or on "biodiversity" overall. In particular, there is concern that monetary arguments could 'crowd out' other motives and lead, for example, to reduced concern for the conservation of "useless" species that cannot be shown to provide monetary value.

One of the main themes of the final Q-study was to explore this area in more depth. The results of the study showed two clear groups, plus a third less clearly identified grouping. The motives and views of the first two groups also stood out clearly in what they said to researchers while completing the Q-sorting task.

One group is most clearly defined by being **strongly pro-monetary valuation** as reflected through their placement of many statements relating to monetary valuation (see Table 6 for full list) towards the extremes of their Q-sorts. Especially interesting is that the typical sort for this group agrees strongly (ranked +4) with statement 8, "Today's environmental problems are mainly a result of inappropriate pricing of ecosystem services and arguments should focus on the benefits of correcting these market failures". In other words, according to this group, it's not just that monetary valuation is feasible and can lead to better decisions, it's that the lack of valuation and pricing instruments are the root of current problems. As might be expected, most of this group has formal economics training (7 of 9), and most of the sample with economics training are in this group (also 7 of 9).

The other group is quite the reverse and can be classified as **strongly anti-monetary valuation**. The starkest contrast comes with statement 9, "Arguments using economic values will support better decision making and increase political support for environmental protection", which is ranked at -3 for this group (vs. +4 for the first group and 0 for group 3). But this group is not rejecting the use of arguments about nature's benefits to humans altogether, tending to agree with 15, "Failure to incorporate information on the value of ecosystem services in decision making will lead to reductions in human welfare and loss of biodiversity". Rather, the disagreement is specifically with the use of monetary valuation methods, and the group agrees most strongly (typical Q= +4) with statement 10, "It is both possible and desirable to come to rational decisions regarding the environment without translating its values to money terms". This group was the most numerous

(11) and formed of decision makers and researchers in biodiversity and environment.

The third group is more ambivalent on monetary valuation, and appear to focus more on the need for context-specific argumentation, in particular making a distinction between appropriate arguments for different scales. They strongly agree (typical Q=4) with statement 20 "Isolated arguments are not likely to be successful: a wide range of complementary arguments is needed to convince many stakeholders". However this is the least clearly defined group with the fewest members and the highest variance across responses, so it should be considered more as a set of people who do not fit well into either of the previous groups than as a clear grouping in its own right.

The issue of grouping arguments is addressed in the next section, where we also return to the question of economic and monetary motivations, and in particular to the issue of whether these may 'crowd out' other arguments when used in combination (§4.4.1). The conclusion there is that crowding out is not a major concern at the level of arguments.

In summary, there appears to be an entrenched divide between those who see monetary valuation as an essential tool for mainstreaming biodiversity concerns outside the nature protection community, and those who consider this to be an inappropriate way to consider nature and a useless and perhaps dangerous tool for decision support. This divide seems to correlate with background, and it may indicate a similar divide in how policy makers with economic training and from a conservation background might respond to arguments. In general, it seems that some people will respond to monetary expressions of benefits, while others will reject both this framing and the associated reasoning framework. However, there does not appear to be evidence that using monetary arguments will cause people to ignore non-monetary arguments generally, or in particular moral obligation and intrinsic value arguments.

4.4. Synergies across arguments and effectiveness

Different stakeholders interpret environmental policy issues in differing and sometimes conflicting ways. In biodiversity-related policy processes this relates

particularly to cases where there is (growing) competition between different land-uses and activities in the same space (Doremus, 2003; Haines-Young, 2009). Actors' different perceptions of the policy problems and possible solutions make them respond to arguments in different ways, presenting a challenge for argument strategy, and a need to find normative arguments that appeal broadly and resonate with long-standing or newly-emerging values (Schmidt and Radaelli 2004). Fairclough and Fairclough (2012) highlight that where actors have a number of concerns and goals, linking and presenting bundles of positively framed arguments can increase the likelihood of a claim being accepted.

Interviews carried out early in BESAFE as part of WP1 (D1.1) showed that interviewees often used the economic and ecosystem services arguments together. Interviewees specifically advocated for combining 'utilitarian' and 'intrinsic' arguments, and similarly for drawing simultaneously on the economic, legal, personal, and cultural values arguments working together or being combined somehow. Such an approach seeks to appeal to as broad a range of interests as possible. Against this, we find the fear that use of economic framings and monetary arguments will "crowd out" the moral and intrinsic motivations (see e.g. Luck et al 2012).

The Q analysis conducted under WP4 also revealed that attitudes to nature conservation varied considerably within different expert stakeholder groups. It is not possible, therefore, to assume that all decision-makers will respond to the same arguments. Within each group of experts (researchers, decision-makers, NGOs) there were people who prioritised the rights of non-human species or the intrinsic value of nature; those who responded best to emotional arguments about the beauty of nature and how nature gives meaning to human life; those who rejected emotional arguments in favour of arguments based on the value of ecosystems to humans; and those who favoured protecting ecosystems as an insurance policy against future change.

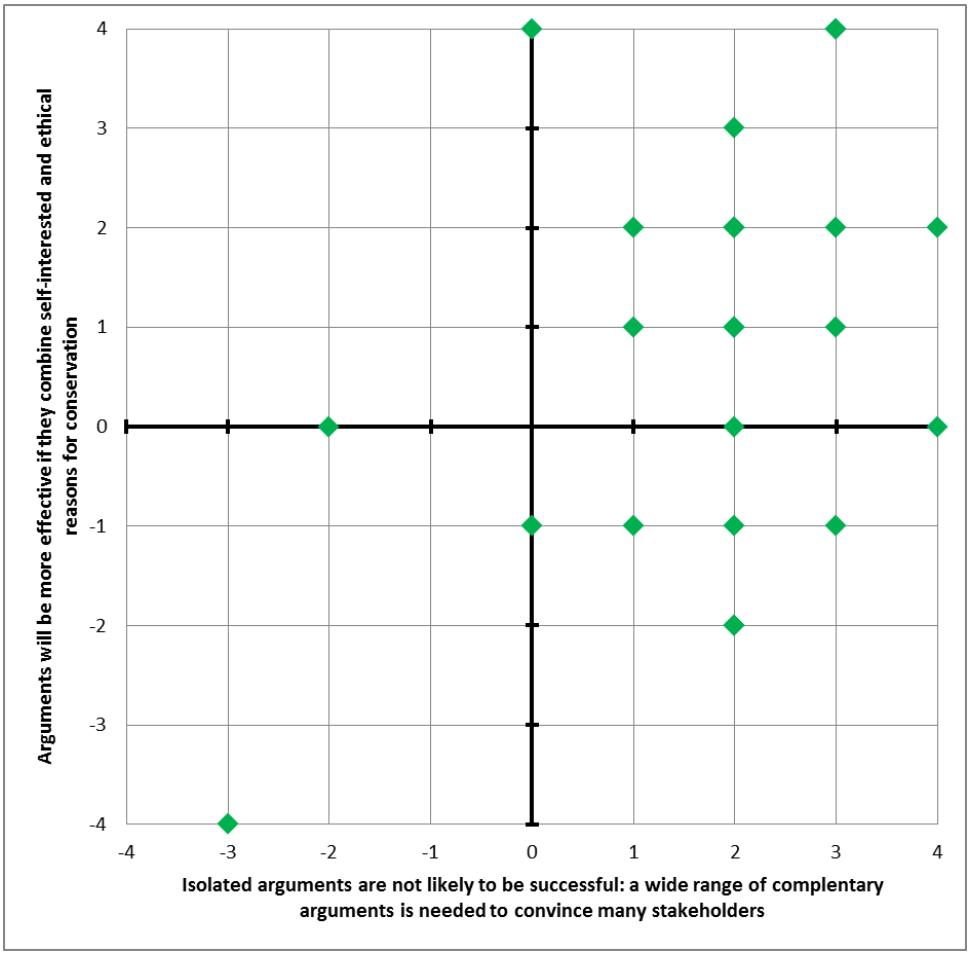
WP4 analysis concluded that effective arguing requires employing a wider range of arguments for biodiversity conservation, especially through acknowledging the validity of the ethical and moral arguments concerning the rights of species to exist, and promoting the "insurance policy" argument more widely. The results of

the study imply that there is a role for several lines of argument supporting the protection of biodiversity. The effects of the arguments are cumulative rather than conflicting.

There is also a broader strategic element in advancing a broad range of arguments. Focusing too narrowly on specific arguments may skew results compared with a full assessment. Kleijn et al. (2015) for example assess arguments for the conservation of wild pollinators and argue that focusing just on benefits to humans is not sufficient to justify biodiversity conservation in most cases. Other arguments, including moral arguments, are needed to support a broader range of species, some of which may not contribute so much to the delivery of ecosystem services.

The final Q-study shows strong support among stakeholders for strategies involving combination of arguments (Figure 11). There was strong agreement across all groups with the statement "Isolated arguments are not likely to be successful: a wide range of complementary arguments is needed to convince many stakeholders". On the slightly different point of combining different framings, there was weaker but still broad agreement with the statement "Arguments will be more effective if they combine self-interested and ethical reasons for conservation."

Figure 11: Q-study responses on combining different arguments and framings



In many BESAFE cases, and reflecting these stakeholder views, we observe a strategy to link together different positive arguments, which may potentially make the argumentation stronger. General arguments relating to the stakeholders' relation with the ecosystem appear more effective than detailed arguments. However, different stakeholders may not perceive the arguments as equally salient which may in practice result in trade-offs in strategic issue framing. In some cases, the actors had a range of distinct and even unrelated goals, for example political decision makers seeking public support. Some case studies also highlight that some features (such as recreation activities and resource availability) can be framed both negatively as problems and positively as benefits and opportunities. Thus, reframing of arguments to emphasize their salience for other goals of the actors and bundling positively framed arguments together may result in a potentially more effective argument.

There were clear examples where the use of ecosystem service arguments combined with arguments on the intrinsic value of biodiversity worked, where arguments based just on intrinsic value would have failed. For example, the arguer in the case of a successful application to buy land for conservation used arguments that were closely aligned with the goals of the decision-maker and local people, including synergies with cultural heritage and recreation opportunities:

> *"it couldn't just be the wildlife aspect, it had to be very people focused […] without doubt they wouldn't have approved it […] we couldn't just say it's great for wildlife, you know, fund us and we'll get a few people on site […] there were other things we had to bring in and highlight to be able to buy this site to secure it."*

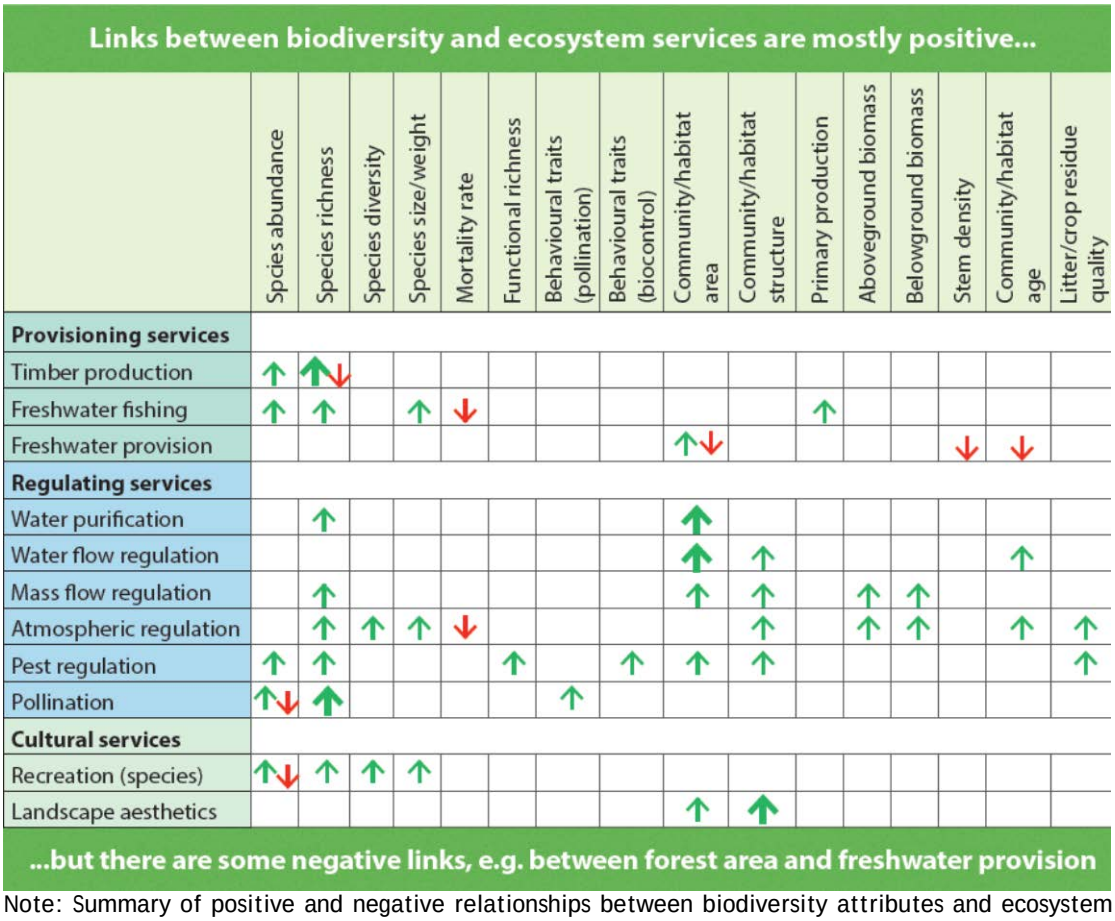
4.4.1. Conflicts between arguments

The evidence presented above suggests that use of multiple and combined arguments is likely to be more effective than focus on single arguments. But conflict will nevertheless arise in most real processes. During the interviews carried out as part of WP1 (D1.1), there were in particular conflicting views over biodiversity as a resource to be managed for production and human material benefit, and management for conservation and broader social purposes. This was associated with conflicting views between an "ecosystem services" paradigm and a "biodiversity conservation" paradigm. There were conflicts in terms of land sharing and sparing, and even on how to select, manage and restore protected areas in the most effective ways. Disagreements were voiced over the Habitats and Birds Directives and whether they should be softened or maintained.

These positions are important in genuine conflicts about the use of resources, where decision-makers are forced to choose between mutually exclusive options. Deliverable D4.1 reviews the relationships between biodiversity, ecosystem services and values, finding that in general a higher level of biodiversity boosts ecosystem service delivery (Figure 12). For example, greater areas of forest are linked to better flood protection and more carbon storage, and more species-rich flower borders provide better habitat for pollinators. Awareness of these links can, therefore, provide additional reasons to protect biodiversity. However, there are some negative links – for example, certain types of forest such as pine or

eucalyptus plantations can reduce freshwater provision in areas where water is scarce. On the other hand, over-exploitation of ecosystem services – especially provisioning services such as food and water, but also some cultural services, such as recreational fishing or tourism – generates significant pressures on biodiversity. So policy and management must be designed carefully to balance competing demands for different services with protection of the ecosystems and biodiversity that provide them. Restoring and protecting ecosystems can increase the delivery of some services, especially regulating and cultural services such as flood protection and aesthetic value, but it may also be necessary to limit the exploitation of some ecosystem goods and services. The capacity of an ecosystem to deliver services can also be increased by reducing other pressures, such as pollution or the spread of invasive species.

Figure 12: Review of links between biodiversity and ecosystem services



Note: Summary of positive and negative relationships between biodiversity attributes and ecosystem services: ↑= strong positive relationship (found in ≥ 50% of papers); ↑= moderate positive relationship (found in 10-49% of papers). ↓= moderate negative relationship. Weak relationships (i.e. those found in <10% of papers) are excluded. Source: BESAFE D4.1

WP4 analysis concludes, therefore, that in most cases it is necessary to seek a balance between economic activity and conservation objectives, with economic activity essential to achieve social goals (for example, in order to maintain a viable rural population), but with a strong need for human activity to be managed and controlled in order to limit damage to biodiversity and ecosystem services. There are important synergies and trade-offs between different ecosystem services both in space and time (Rodriguez et al 2006). In BESAFE case studies, there were strong synergies between biodiversity and many regulating and cultural services, but also many trade-offs, typically between extractive provisioning services and regulating or cultural services. The nature of the extractive service was crucial: intensive activities (e.g. agriculture in Doñana, rice plantations in the Danube) and over-exploitation created the most trade-offs (e.g. eutrophication, erosion, landscape damage, species loss), whereas less intensive or traditional activities had

a wider range of synergies with other ecosystem services and fewer trade-offs (e.g. the cultural value of traditional livestock in Spain).

Broadly speaking, therefore, there will often be a possible course of action which prioritises the human material benefits and another which prioritises conservation, but this is rarely an all-or-nothing situation. There are usually both utilitarian and intrinsic benefits and costs on all sides. Indeed a major rationale for the ecosystem services concept is to facilitate the expression of the material as well as social benefit of ecosystems and their conservation. And opportunities often exist that can enhance multiple benefits and reduce trade-offs, e.g. by promoting and supporting sustainable activities such as eco-tourism, traditional agriculture and organic farming. Nevertheless, most cases involve conflicts with differing emphasis on different categories of value.

The effectiveness of combined arguments is borne out by the case studies. In the Bialowieza Forest case, arguments on conservation were placed in opposition to arguments on economic development and local people's welfare. Conservation was framed by the opponents of park enlargement as something that would impose high economic costs on local communities. The argument supported by robust data on the detrimental impact of forestry on forest biodiversity was not effective alone against this view. Only when supported by strong legal and moral argumentation - international commitments about Bialowieza conservation in particular, arguments about the reputation of the country and also highlighting humans' duty to protect nature – did the arguments start to have traction in motivating conservation.

At this stage in this conflict the arguments of the two opposed groups were very polarised and did not seem to be compatible at all: "conservation" against "livelihoods". However, with time, the livelihoods arguments initially given by the local people and foresters made their way up to the governmental level. The minister increasingly started using this kind of argumentation, focusing on the values important for the local people, such as the value of the forest for local livelihood, shifting away from the focus on intrinsic value of nature. The pro-conservation side adapted and inverted the livelihood-focused framing of their opponents, to focus on the potential livelihoods benefits of conservation instead of focusing on the risk of costs. This shift enabled dialogue between the Government

and the local people. However, because the conflict was by then very advanced, positions had become too polarised, and the arguments of potential economic benefits of park enlargement were not trusted by the local communities. Ultimately, therefore, the argument process did not lead to agreement on a mutually satisfactory solution, and legal action was needed to improve conservation of the Bialowieza biodiversity.

In the final Q-study, respondents broadly reject the idea of monetary arguments crowding out non-economic and intrinsic motives, and support the position that "Some protection can be achieved through ethical arguments, but to stop the decline of biodiversity overall it is essential to make a strong economic case for action".

Similarly, in the WP4 Q study we found that stakeholders from all walks of life attach considerable important to the intrinsic value of nature, and place a high value on cultural and aesthetic ecosystem services, all agreeing with the statement that biodiversity conservation is a moral issue. The same stakeholders, however, rejected the concern that valuation of ecosystems is likely to provide a justification for their destruction.

These positions on crowding out are interesting. There is evidence that crowding out does occur where policy instruments introduce economic incentives and as a result modify people's 'motivational structures' (Bowles 2008; Rode et al 2014). Rode et al. conclude with a "call for caution with economic incentives in situations involving considerable uncertainty regarding the detrimental impacts on intrinsic motivation", and we support that call. However, these findings relate to the introduction of policy instruments that change incentives for individuals and firms – payment mechanisms and so on. The use of economic and monetary *arguments* is a rather different situation: a matter of framing benefits in a certain way, rather than any change in the incentive structure or the benefits themselves. So merely using economic and monetary framings for arguments might be thought less likely to lead to crowding out of other arguments and motivations in *deliberation*. However, if monetary arguments facilitate greater use of monetary incentives in policy, crowding out of intrinsic motives for *behaviour* could be a concern.

Overall, there is no evidence of specific arguments being inevitably in conflict – on the contrary, there are many examples of argument processes combining arguments from right across the spectrum, with arguments about intrinsic values and moral obligations working alongside arguments about ecosystem services and human material benefits. The conflict is not across these different arguments and motivations, but rather regarding the underlying choices, and the determination of priorities. Here, it seems that bundling arguments from different perspectives enhances the appeal to as broad a range of interests and stakes as possible.

4.4.2. Mainstreaming to other sectors

One of the main concerns in biodiversity and conservation policy is the need to mainstream biodiversity and conservation across all policy sectors. This is widely seen as essential to closing the implementation gap in biodiversity policy targets (notably, see CBD 2010: Aichi Strategic Goal A). In Europe, the Cardiff process set the stage for mainstreaming environment concerns across European policy (COM/98/0333 final). The Sustainable Development Strategy put emphasis on balancing the three pillars of sustainable development (Gothenburg Presidency Conclusions; European Council 2001). In practice, however, the Lisbon Strategy focus on '*sustainable economic growth with more and better jobs and greater social cohesion*' has been more emphasised in European policy (Hey 2005).

Currently in the EU, biodiversity mainstreaming is targeted through setting biodiversity concerns in the overarching context of achieving a Green Economy, through resource efficiency, sustainable use of ecosystem services, green infrastructure, and nature-based solutions. Initiative such as The Economics of Ecosystems and Biodiversity (TEEB), national Ecosystem Assessments, natural capital accounting and the EU Mapping and Assessment of Ecosystems and their Services (MAES) are attempts to raise awareness of the issues and stakes related to biodiversity and to provide tools for taking biodiversity into account in decision making.

Attempts at mainstreaming face challenges associated with institutional fragmentation (split competences, conflicts, and scale/boundary mismatch between regulatory authorities and biodiversity processes: Koetz *et al.* 2012) and associated problems of silo mentalities, institutional capture, and sectoral policies

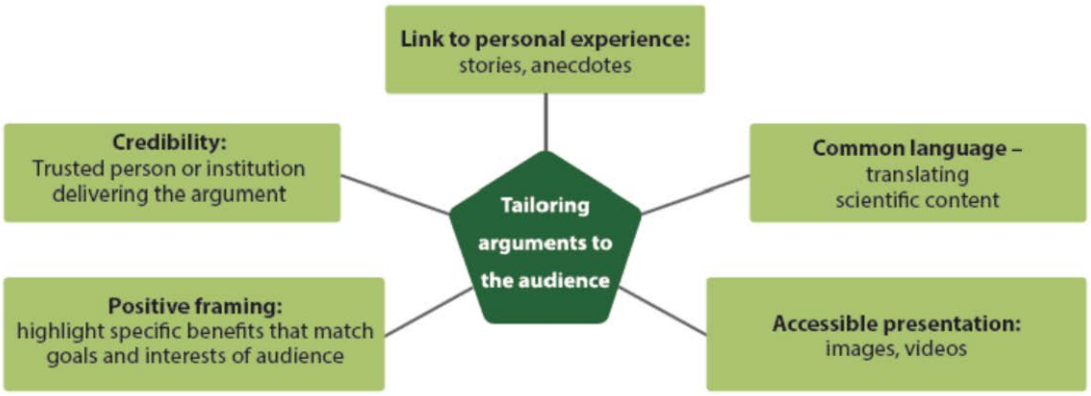
and procedures that do not take adequate account of biodiversity impacts and dependencies, and that can be harmful to biodiversity, for example through inappropriate subsidies to some energy, transport, fishing or agricultural activities.

Against this backdrop, considerable emphasis is placed on the importance of tailoring arguments to audiences (Figure 13), both in the literature and by BESAFE stakeholders. This includes seeking better communication of scientific evidence to improve biodiversity arguments, through iterative processes of dialogue to enhance the credibility, relevance and legitimacy of communication (see e.g. Sarkki et al 2015), as well as strategies for framing arguments in ways that match the interests of audiences.

Improved transfer of scientific knowledge can raise awareness of, and concern over, ecosystem services. For example, in the Andalusian protected areas (Case study 9) and Romanian wetlands (Case study 4) local people were initially concerned mainly with provisioning services, but after dialogue they also recognised and accepted the importance of regulating services. In Northern Ireland (Case study 6), concern over the impacts of a tidal energy turbine on biodiversity and other ecosystem services was gradually alleviated by improved scientific knowledge resulting from the monitoring programme. In the UK water industry (Case study 3), scientific studies helped to persuade the water price regulator to support investment in protecting and restoring water catchments even though quantitative data on the benefits was poor. The investment was widely supported by stakeholders because of the clear and simple logic of the argument (it is better to reduce pollution at source) and the economic benefits for water companies, consumers and farmers alike. These findings highlight the need for better communication of scientific knowledge to key stakeholders, even where the knowledge base is incomplete, especially where there are conflicting perspectives and existing recognition of the breadth of ecosystem services is low. Even with the best scientific knowledge, however, it is important to acknowledge that often decisions will involve difficult value judgements, as in the case of the Norwegian debate on large mammals (case 2) the invasive species discourses (case 1), and the fox and boar case in Flanders (case 5). The ideal outcome in such cases is for all stakeholders to agree on the need for a wide debate about the values attached to

different ecosystem services (as in the Norwegian case) without which there is a risk of polarisation, entrenchment and stagnation (as in the Flanders case).

Figure 13: Tailoring arguments to audiences



BESAFE stakeholders were strongly supportive of the need to tailor messages and communicate effectively about the ways in which other sectors both depend on and affect biodiversity. However, they do not agree that decision-makers outside the environmental directorates are insensitive to arguments about ecological impacts and values. For example, the final conference Q-study respondents broadly disagreed with the statement "Decision makers outside the environment sector will not respond to arguments focusing on ecological benefits", but strongly agreed with "Many decision makers do not understand how their sectors both depend on and impact on biodiversity: effective arguments must focus on convincing them of these links". The issue here is seen as being more one of ignorance than of wilful disregard for ecological consequences. Again, this points to the importance of effective communication and to the value of using multiple arguments in combination.

Similarly, final Q-study respondents prioritise effective science-policy communication over the robustness of evidence, strongly rejecting the idea that "Arguments will be rejected if they are not based on robust scientific evidence" and strongly supporting the statement "Building strong communication in science-policy interfaces is of more importance than the robustness of the evidence used to promote conservation".

Looking at this in more detail, respondents strongly highlight the importance of tailoring arguments to the audiences, but are more divided on the idea that "Effectiveness depends more on the trust and status of the person delivering a message than on the detail of their argument". Related to this, there is strong agreement that it is essential that stakeholders feel ownership over the policy and decision-making processes, but this does not necessarily mean that there are "no reliable ways of ranking options, so decisions must be taken through open deliberation and discussion" – ownership and discussion are central, but can be informed by science and assessments of value.

4.5. Dynamic and spatial aspects of argument processes and effectiveness

The BESAFE database provides a useful approach to explore the dynamic nature of argumentation over time, and in relation to this, how arguments change across spatial scales. As expected, the case studies confirmed that besides the arguments *per se*, the context of the argument is also crucial. Arguments change with time and move across governance levels (**Level-crossing**), depending on context and different strategies. Actors may also utilise different strategies to promote their arguments.

4.5.1. Arguments at different scales

By comparing the categories of arguments between global, European and national governance level, WP3 found evidence that arguments change over time and space at global, European, national and regional level. In particular, WP3 charted the way that arguments on ecosystem services have emerged over time at both global and European level policies. It was shown in some case studies that such arguments were introduced from global/national level to the local policy level, but did not persist at the local policy level.

At both global and regional level, the social arguments are most dominant, while at the European level, economic arguments are more prominently used. At the global level, many arguments focus on social benefits, based on equal access to resources and the role of biodiversity in poverty alleviation.

At the European (EU) level, however, arguments based on the economic value of biodiversity to humans have become dominant. For example, the EU Biodiversity Strategy to 2020 focuses heavily on the links between biodiversity, ecosystem services and the Green Economy. Moral reasons for biodiversity protection are still acknowledged, for example through reference to the need to preserve biodiversity for future generations, but not emphasised. Certain arguments, referring to gender and the importance of human livelihoods and impacts on poor communities are not mentioned at all in the European documents analysed. This also applies to the development of non-binding, voluntary agreements and targets. Ecosystem service arguments often play a role, even though non-specialist audiences are usually unfamiliar with the concepts and the terminology.

Comparison between European and national governance level reveals little discrepancy. Argumentation lines between EU and Member States are relatively uniform. It is observed that among all analysed member states, the UK uses more argumentation lines than other member states to argue the three analysed claims. National authorities echo this argumentation, but also refer to legal obligations as arguments to justify their adoption of EU policy.

At the local and regional levels, where there is a wider range of audiences to convince, ethical and moral arguments are used alongside economic arguments. The study on global/EU comparison revealed a discrepancy between arguments at both levels.

Comparison between actors often indicates a relatively small diversity of arguments used. Most actors use the arguments that nature needs to be protected because of its inherent value. Regional authorities and park authorities also argue that nature contributes to social wellbeing, while national authorities tend to focus on their obligations under legislation or international commitments. Different stakeholders also use varying ranges of arguments, with politicians using the smallest variety of arguments, while the largest variety of arguments is found in the science actors. Variety of arguments also depended on the type of forum or document. Open communication channels (such as internet forums) and non-binding or exploratory documents are much richer in terms of argument variety than closed channels (such as organisations' websites and magazines) and binding

documents. In some documents, such as the LIFE project presentations, the variety of arguments is very limited, often focused on a single argument.

Some case studies have indicated that it happens that arguments of the same type of actor, for instance nature conservation groups, differ between local and regional level. And, also the level of discussion differs, since regional level discussion uses more science in the debates than at local level.

4.5.2. Persistence

WP2 findings show that **persistence** of biodiversity conservation arguments through different policy processes and against counter-arguments is a precondition for their effectiveness. In several cases, similar arguments (e.g. sustainable development or inherent value arguments) persisted or evolved over long periods, sometimes also to new stages in the policy cycle.

Table 11: Persistence and Final Effectiveness

	FINAL EFFECTIVENESS				
PERSIST	V high	High	Mid	Low	V low
V high	18	16	8	4	12
High	5	63	22	15	9
Mid	0	5	54	43	13
Low	2	0	5	26	9
V low	0	0	0	1	6

In the case studies, persistence is necessary but not sufficient for final effectiveness (Table 11). In almost half of arguments identified (151, 45%) the final effectiveness score is graded below the persistence score, while only a few observations show the reverse (18, 5%). An argument that does not persist has little hope of influencing outcomes, unless it's a 'killer' argument that once made effectively brings the process to a stop; an argument that does persist might be effective, but mere repetition is not enough – a stakeholder may repeatedly make an argument that is repeatedly ignored or trumped by other views.

4.5.3. Accumulation, diffusion and level-crossing

Moving on from mere persistence, arguments may "accumulate", growing in emphasis and frequency, "diffuse", being taken up by additional groups/stakeholders, and/or cross levels, being adapted to higher or lower governance levels in a process.

Several of the case studies showed evidence of these related phenomena. In the Andalusian protected areas case study (Spain), where some arguments were used increasingly and with growing emphasis and importance in the process (**Accumulation**). Cultural values of livestock practices originally emphasised by shepherds and keepers started to enter mainstream protected areas management arguments. Several cases witnessed arguments diffused to broad use, various policy arenas and audiences, in particular employment/livelihoods arguments being taken up by advocates of conservation. In the Białowieża Forest case study (Poland), for example, NGOs primarily focusing on nature protection arguments eventually started using livelihoods arguments. Also in the Białowieża forest case study, the same arguments, originally used at local level only, were later taken up by high level actors. In the Natura 2000 case study, productivity and economic arguments work locally across different stakeholders while a more collective water security argument is effective at a larger scale.

The case study evidence for these three features is summarised in Table 11, Table 12 and Table 13 respectively. As discussed previously (Table 8) there is reasonably strong correlation for all three variables, with final effectiveness and with each other. There is no particular bias for the off-diagonal entries – i.e. arguments that are effective tend to displaying diffusion, accumulation and level-crossing, but these features are neither necessary nor sufficient for effectiveness.

Table 12: Accumulation and final effectiveness

	FINAL EFFECTIVENESS				
ACCUMULATE	V high	High	Mid	Low	V low
V high	14	4	1	2	3
High	7	38	10	5	5
Mid	3	25	58	13	8
Low	1	18	19	68	18
V low	0	0	1	1	15

Table 13: Diffusion and final effectiveness

	FINAL EFFECTIVENESS				
DIFFUSION	V high	High	Mid	Low	V low
V high	11	6	2	1	1
High	11	46	24	5	2
Mid	3	18	52	26	9
Low	0	15	10	55	18
V low	0	0	1	2	19

Table 14: Level crossing and final effectiveness

	FINAL EFFECTIVENESS				
LEVEL-CROSS	V high	High	Mid	Low	V low
V high	16	6	1	2	2
High	7	56	12	2	6
Mid	1	18	50	25	3
Low	1	0	13	55	8
V low	0	5	12	5	30

4.5.4. Replacing

Evidence on replacement is presented in Table 15. The relationship with final effectiveness appears to be rather different from other effectiveness variables: rather than being necessary but not sufficient, replacement appears to be more sufficient but not necessary. This is intuitive: arguments replacing others is a clear

indicator that they are hitting home, but arguments can nevertheless be effective even if they do not take over from others - which, after all, may often be complementary. So we see very few cases in which overall effectiveness is graded below replacement (17, 6%) but many in which effectiveness is graded above replacement (122, 40%).

Table 15: Argument replacement and final effectiveness

	FINAL EFFECTIVENESS				
REPLACE	V high	High	Mid	Low	V low
V high	8	0	0	0	0
High	6	11	3	1	1
Mid	5	15	50	5	2
Low	3	40	29	57	5
V low	3	5	7	9	41

In terms of the arguments that replace others, in some case studies this appears to be strategic. Arguments that appeal more directly to the interest of key stakeholders often replace scientific and inherent value arguments that value biodiversity in isolation from society. The new arguments may relate less directly to the conservation of biodiversity, but have more traction in the decision process. This kind of targeted framing of arguments appears in several BESAFE case studies, particularly in situations where different services provided by ecosystems were at the core of argumentation, with arguments framing the issues in terms of benefits relevant for the stakeholders rather than biodiversity conservation *per se.* For example in the UK water industry study (case 3: see §4.5), argument framings were strongly constrained by the official remit of the water industry regulator, Ofwat, and what they were allowed to consider.

In other examples, the replacement is more of a deepening of the analysis as the process moves on: general arguments about the desirability of conservation give way to more specific explanations of the reasons and benefits. In the Finnish urban planning case study, for example, integrated conservation and development arguments were overridden by segregated biodiversity protection and urban development arguments as well as specific ecosystem services arguments (recreation, rain water retention, etc.), as the planning process advanced from the problem definition stage to the implementation stage.

In many cases, accumulation, persistence, diffusion and replacement work together, as might be expected, and as the relatively strong correlations suggest. In the UK water industry study (case 3), for example, the basic water quality argument (changes to land management practices within catchment areas will enhance water quality) persisted for over a decade, but also evolved substantially over that time. The economic regulator of the water sector in England and Wales, Ofwat, started as an audience for water companies promoting the argument, but has now adopted the argument itself. The improvement in water quality and delivery of benefits such as an increase in biodiversity and carbon sequestration, and a reduction in flood risks have been observed in some areas (from qualitative data) and presented as arguments by companies including Wessex Water, United Utilities via SCaMP and South West Water with the Upstream Thinking Initiative.

In response, Ofwat has been persuaded to approve large-scale water company investment in restoring and protecting water catchments, for example by restoring vegetation cover in eroded peat moorland, even allowing water companies to use money from customers' bills to make investments on land they do not own. Ofwat has gradually increased its support for catchment management due to the evidence of water quality improvement and consequently potential benefits to customers in terms of long-term reductions in their bills. Protecting water quality in this way was found in one case to be six times cheaper than conventional water treatment (Wessex Water, 2011). From a background of initial resistance to the use of ecosystem service framings, the situation has evolved so much that now companies are required to produce cost-benefit analysis (CBA) evidence on the value of ecosystem service changes. The results generated by CBA are being used to inform decisions about where and when to invest in catchment management schemes in the future. The water quality argument is coherent and logical, and is now widely recognised and accepted, even though it is also recognised that better data and understanding are needed in order fully to quantify the benefits in terms of raw water quality.

This case illustrates an important point relating to the creation of demand for arguments - a kind of lock-in, whereby using certain arguments and measurements leads to policy makers requiring that evidence for later steps or future decisions in similar areas. The water industry case study presents strong evidence for this,

through the introduction of the requirement for companies to present CBA and the requirement for non-market valuation evidence to assess the environmental, economic and social benefits of catchment management schemes, along with evidence of customer support for these schemes. As a result of the use of these arguments, ecosystem service arguments are now an integral part of UK water industry planning.

4.5.5. Polarisation vs Trust Building

The dynamics of argument processes have to be understood in the context of the human reactions of participants in the debates. In particular, several case studies highlighted the importance of trust-building for effective communication, and the dangers of polarisation and entrenchment in cases where this cannot be achieved.

The polarisation in the Bialowieza Forest case has been discussed in §4.4.1 above. Similar issues arose in the debate on the rapid spread of foxes and wild boar in Flanders, Belgium (case 5). This case is characterised by a highly polarised debate which unfolded along a few related fault lines:

"Let nature be"	***"Control for humans"***
Fox and boar belong here	Fox and boar do not belong in Flanders.
They are useful and provide opportunities: e.g. foxes control rabbits, boar are a tourist attraction.	They pose a threat: e.g. foxes kill chickens, boar attack walkers.
Nature keeps itself in balance	Humans need to control nature.

Several dynamics in the argumentation increased the polarisation of debate and complicated the resolution of conflict. Arguments converged on this limited set of dichotomies (e.g. natural/artificial, belonging/not belonging, useful/harmful and in/out of control). As a consequence, the parties became trapped in a cycle of continuously repeating their arguments based on these dichotomies. This limited the scope for any real debate, emphasising the incompatibility of the viewpoints and closing off the possibility of finding alternative intermediate solutions that strike a balance between the two opposite poles. As the conflict progressed, it was intensified by the use of stereotypes and stigmas surrounding group identities: e.g. hunters are 'cruel', conservationists are elite 'nature fascists'. This further

reduced the potential for a solution to be found, and the debate is still ongoing. The case study highlights the need to find more constructive ways to conduct debates over contentious issues, including 'de-dichotomising' the language in order to find common ground, and building meaningful contact between opposing groups.

The Romanian case study of the unique wetlands of the Lower Danube Catchment (The Small Island of Braila in the Danube Delta) illustrates the potential for an alternative approach. The wetlands are threatened by human activities such as land use change and overexploitation of natural resources that can have major negative impacts on natural ecosystems. Protection of the area improved following the accession of Romania to the European Union, but this led to various conflicts with different sectoral development areas, including transport infrastructure, water supply, intensification of fishing and agriculture, and timber production. However, a long process of awareness-raising and trust-building resulted in gaining the support of interested stakeholders (from the local population to sub-regional, regional and national authorities) for sustainable management plans. The case study highlights the importance of gaining the trust and support of local people by using clear and understandable language to present scientific information, by making good use of traditional local knowledge (e.g. on wetland management), and by building relationships with the local community, convincing and demonstrating to them that their opinion is important and is integrated in the measures taken to protect biodiversity.

Similarly, the Sierra Nevada mountains and Doñana wetlands in Andalusia (Case study 9) contain unique wildlife and habitats, but are threatened by conflicts and trade-offs between ecosystem services. For example, coastal tourism and intensive agriculture (rice and strawberry farming) are causing over-extraction of water in Doñana, while the expansion of skiing and the abandonment of traditional farming have a negative impact on erosion, hill stability and landscape aesthetics in the Sierra Nevada. There are also conflicts between conservationists and local people over the use of the land for farming.

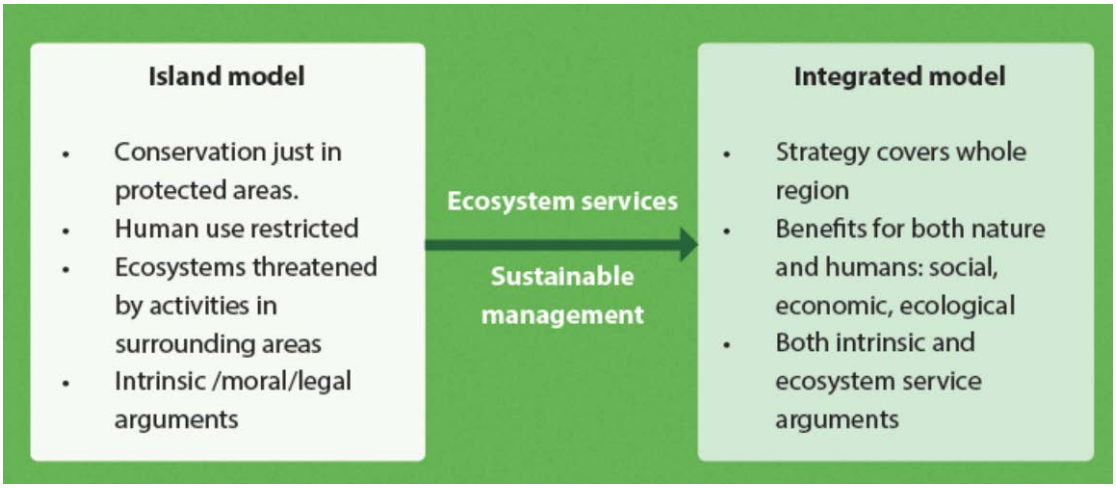
Arguments based on ecological principles have persisted over time, consistent with the protected status of both areas, and one of the main arguments maintained by protected area managers is the need to respect the carrying capacity of the land,

together with the aim of fostering conservation beyond economic profit, and avoiding negative impacts on biodiversity. Although information on ecological impacts was lacking for many years, the precautionary principle was upheld by protected area managers and scientists.

Gradually, the cultural values of livestock practices originally held by shepherds and keepers have started to enter mainstream thinking on protected areas management. In this regard, arguments related to cultural importance (mainly in Doñana, such as traditional knowledge and practices) and economic importance (mainly in Sierra Nevada, such as its role in rural development) have increased in importance.

In consequence, and to address the conflicts, the areas are gradually moving from an 'island' model where strictly protected areas are surrounded by intensively used land, to a more integrated approach that recognises both the intrinsic value of nature and the value of different ecosystem services, and tries to maximise synergies between economy, environment and society (Figure 14). Cultural and environmental services provided by traditional livestock grazing are recognised, and the focus is on finding ways to manage the land sustainably with socio-economic benefits for local communities. Building trust and effective communication channels has been central to making this shift successful.

Figure 14: Shift in management models in Andalusian case study



Finally, approach to construction and operation of an underwater tidal electricity turbine inside the marine protected area of Strangford Lough in Northern Ireland (Case Study 6) highlights how an adaptive management approach to biodiversity and environmental impact issues can uphold the precautionary principle while incorporating different stakeholder views and goals.

Adaptive management is an iterative process in which uncertainty surrounding environmental effects of a human activity is reduced progressively by carefully managed, science-led monitoring of agreed indicators of environmental impacts. From the very beginning, the risks and needs of the different interest groups are continually re-assessed in the light of new information and balanced within an agreed management framework. Continuous monitoring of and new research on a wide variety of potential negative impacts of the turbine on marine species and habitats, including particular concerns about animal collisions with the rotor blades when the turbine was in operation (seals, whales, sharks, diving birds), permitted the turbine development to progress, step by step.

A formal communication platform facilitated regular constructive dialogue between all stakeholders, ensuring that mitigation measures were agreed and taken where necessary, and that any decisions to ignore particular impacts were made only when demonstrated to be of negligible influence. This step-by-step, adaptive approach provides a middle way in negotiations that could otherwise become polarised to the extent that dialogue breaks down, resulting either in refusal of permission to continue, or in ignoring the legitimate environmental concerns and appropriate measures that can be taken to minimise them.

5. Revised argumentation framework and typology

The provisional framework (see §3.1.1, Figure 2) was a structure for analysing the effectiveness of arguments for biodiversity, based on initial literature review and research. It served as a roadmap that was expected to evolve during the course of the Project, especially in the light of findings from the case studies. The provisional framework provided a way of drawing the findings together, allowing for cross-comparison across cases.

The provisional framework comprised the following steps:

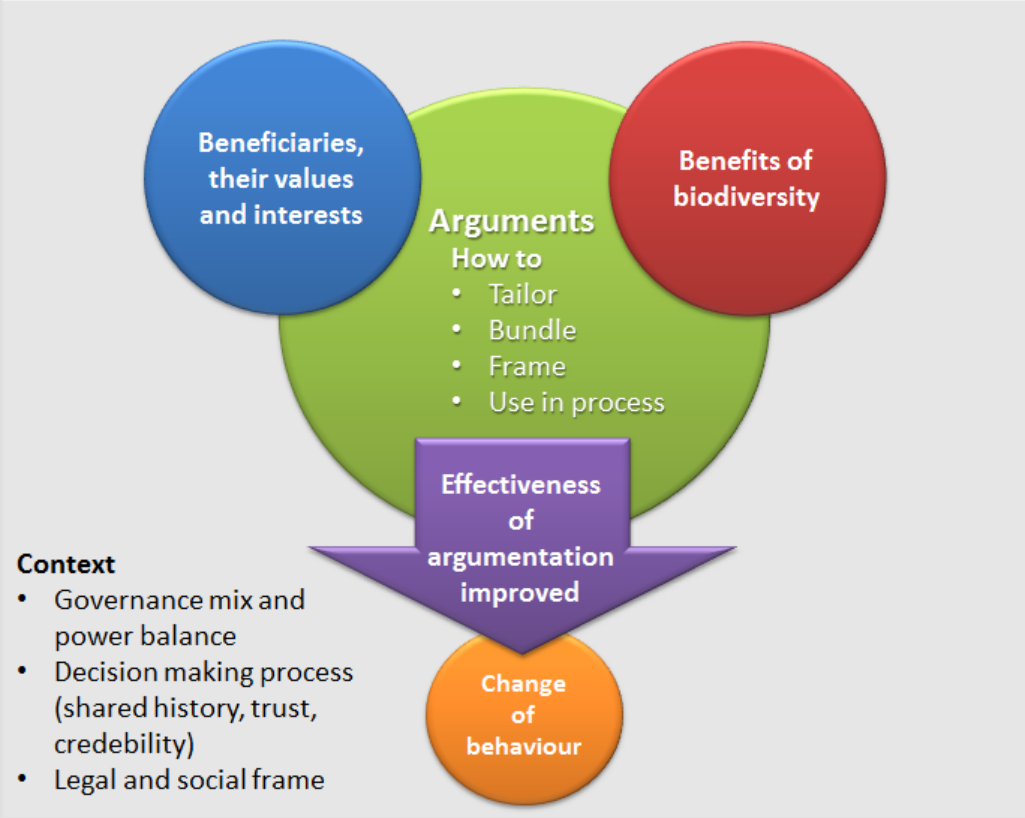
- Definition and structure of an argument and general identification template;
- 'Typing' arguments: Identification and recording of their different parts using the template;
- Identifying and recording the parameters that link the argument to relevant context;
- Quantifying and recording the effectiveness of an argument.

These 4 steps were used by researchers when **breaking arguments down** in order to understand their construction and how they have been used, and to **assess their effectiveness** in the cases analyses.

5.1. A framework for constructing arguments

The final framework that underpins the toolkit and web tool is intended for use by policy makers and other stakeholders for a rather different purpose. The aim is to help users decide how to **build arguments up**, and how to **select, prioritise and use them**. The framework therefore needs to be reframed to orient it towards these goals instead of the research-focused form. The revised framework is presented in Figure 15.

Figure 15: Structure of the revised framework for constructing arguments



The framework is similar to the original (Figure 2) but reflects the changed emphasis and purpose. The main differences are:

1. The argumentation process remains embedded in the overarching context. Whereas in the research-focused framework we were looking at simple classifications of narrowly defined factors with a view to comparison across different cases, the practice-focused framework proposes a richer understanding of broad features of the context: the governance mix and power balance, the history and culture of the decision-making process, and the legal and social frameworks. These features include consideration of different stakes and interests, and roles in deliberation and decision-making, that will shape the arguments and framings that are likely to be successful.
2. The focus is now clearly on identification of the benefits and beneficiaries of (changes in) biodiversity, rather than on identification of the biodiversity changes themselves. This is because the biodiversity component is an

important element in understanding argumentation across many cases in the original research-based framework, but the final framework is to guide argumentation in specific cases, where the biodiversity changes at stake are largely pre-determined by the context.

3. The focus in terms of arguments is no longer in terms of deconstructing how they were made and used, by and for whom, but rather on the need to take the benefits and beneficiaries identified and craft them, in the light of contextual considerations, by tailoring to the audiences, bundling arguments in synergistic packages, framing them appropriately to audience and context (with a preference for positive framings) and using them repeatedly at appropriate opportunities throughout the argumentation process.
4. The focus is not on recording and assessing effectiveness for comparison purposes, but rather on continuously monitoring of the effectiveness of arguments with different stakeholders, and adjusting strategies accordingly, within the overall framework of enhancing effectiveness by changing views, behaviours and decisions.

5.2. Changes to the classifications in argument typology

Alongside these changes in the framework, there are complementary changes in the argument typologies, matching the renewed focus on benefits and beneficiaries. Already in moving from the provisional framework to the database construction a more reductionist form was adopted for the argument typology, as explained in §3.3.1, with separate identification and classification of <benefit>, <beneficiary> and <biodiversity> components of the argument. This approach has some similarities with the classification work conducted by Landers and Nahlik (2013). Aiming to standardize the classification of ecosystem services so that they can be measured, quantified, and valued in a reliable and consistent way, Landers and Nahlik develop the Final Ecosystem Goods and Services (FEGS) classification. The authors define FEGS as "the last components from nature enjoyed, used, or experienced by humans". There are some similarities also with the Common International Classification of Ecosystem Services (CICES). The beneficiary categories used in the BESAFE database are in line with the associated FEGS codes

used in Landers and Nahlik's study. Table 16 shows the correspondence between the BESAFE beneficiary categories and the associated FEGS codes.

Table 16: Correspondence between BESAFE beneficiaries and FEGS codes

Beneficiaries - BESAFE	Beneficiaries – FEGS
Nature overall / intrinsic value	
Specific ecosystem or habitat	
Specific species	
Humanity/society in general	XX.08 Learning XX.10 Humanity
Industry, commercial users, farmers	XX.01 Agricultural XX.02 Commercial / Industrial XX.04 Commercial / Military Transportation
Specific user group (recreational, hunter, consumer)	XX.05 Subsistence XX.06 Recreational XX.07 Inspirational
Residents, landowners	XX.03 Government, Municipal, and Residential
Future generations	XX.09 Non-Use

It should be noted that FEGS do not include codes for non-human beneficiaries. The FEGS focuses on final services, whereas BESAFE looks at arguments for biodiversity rather more generally, and therefore includes arguments that are not set in the ecosystem services framework.

In the light of the data entry and analysis, and lessons learned from the case studies, further changes can be recommended. These include several changes to the ways in which benefits are classified, and also to the treatment of time within the framework.

5.2.1. Arguments about legal obligations

Arguments about legal obligations to conserve or protect biodiversity are common. In the LIFE case study, for example, there were always arguments related to the habitats directive: "protecting a certain species or habitat is legally required by EU legislation" – often made by NGOs to LIFE managers.

The 'legal obligation' arguments caused some difficulties in coding. In particular, there is a general issue regarding how to classify the beneficiary for such legal arguments – some researchers thought of this in terms of the species or habitats benefiting from protection, others in terms of the wider beneficiaries of the

services provided by those species and habitats, and others in terms of the human actors who escape penalties for failure to comply with legislation. The last had been the original intention: the law may be established with respect to wider benefits of conservation, but once in place, the argument "we are legally obliged to do X" is not directly referring to these benefits (they may of course be discussed in additional arguments) but rather pointing out that there is no choice: there are costly consequences associated with failure to respect the law. However some strong views were expressed against this interpretation ("The beneficiary of a legal obligation is, of course, the protected area, in this case, the forest.")

In practice however things are generally less black and white: a case in which there were truly no choice would have little need for arguments. The kinds of legal obligation cited in biodiversity argumentation may have more room for manoeuvre, in particular through get-out clauses relating to excessive or disproportionate costs. So legal obligation arguments may perhaps be best considered as a separate category that 'raises the bar' for any arguments against conservation - there is overlap here with the Precautionary Principle.

The issue of identifying beneficiaries for legal arguments is secondary: the focus is rather on making the argument relevant to the stakeholders and decision-makers addressed, in particular by addressing their *responsibility* for compliance with the obligation, and the implications for *reputations* of meeting the requirement (positive framing) or of failing to meet it (negative framing) . This can operate on different levels, depending on the degree of the obligation (ranging from absolute legal requirements, through reference to formal targets and commitments, to purely voluntary agreements) and the relative emphasis on responsibility and reputational elements can vary in consequence.

5.2.2. Changes to the classification of benefits

The original typology made a distinction between 'intrinsic value of nature' and 'moral obligation to nature'. These categories can in principle be kept philosophically distinct, but the difference is subtle, and in reality most people don't think this way. The documentation (texts and interviews) for the LIFE case study, for example, often showed arguments that people find it 'important' to protect biodiversity, without specifying why. Explicit reference to moral and

ethical obligations are most commonly used when species or habitats are rare, and especially if the species is endemic or when the national distribution is restricted to the site. But in fact the idea that "biodiversity should be protected" can command wide support without any clarity on the rationale – rights of nature, obligations to future generations, self-interest may all feature. Greater clarity here could be useful, but will not be served by maintaining a distinction between intrinsic and moral arguments which for all practical purposes can be considered identical, so the framework is simpler if we combine these motives.

Regarding productive services, we made a distinction between emphasis on 'naturalness' and 'economics'. But this is more an issue of framing than of the fundamental nature of the services. It is simpler and more consistent to classify productive services as a single benefit, and access the different emphases via framing, and also through the beneficiaries identified.

There is some confusion regarding the category "recreation, tourism, aesthetic experience". The guidance given reflected the intention that this should refer to the value for the people engaged in these activities. The value of providing tourism services would then come under livelihoods/employment, and economic growth. This fits well with economists' perspective on the issues, but this reductionist approach does not match very well with the way most people think about it. Rather, they see the activity of recreation/tourism involving and benefiting people involved in both demand and supply. Nevertheless, arguments can often focus only on part of the benefits, in particular where emphasis is placed on jobs and growth (benefits to tourism providers and the local economy) without direct consideration of benefits to the tourists.

The pragmatic solution is to consider recreation/tourism as a single benefit category, and use the beneficiary categories to provide the distinction between demand and supply side benefits. There could be overlap here with employment and livelihoods, and growth, but this is not really a problem. "Double-counting" is a major concern for economists carrying out cost-benefit analysis, but the context for constructing arguments is rather different. It does not matter, in fact, if the arguments "tourism benefits will be provided for tourists and local businesses" and "the local economy will be boosted by tourism" are used together – on the

contrary, it is quite common to present a benefit in several different ways, and audiences are quite capable of understanding that it is the same underlying change that is being discussed.

The benefits categories can also be made more tractable by grouping them into four top-level categories. The benefits are listed below, along with short descriptions – these descriptions are intended to be indicative of the general intention, rather than exhaustive definitions. The specific manifestation of the benefit category will be highly context dependent: these categories are general areas within which some benefit might be located.

- **OBLIGATION**
  - Responsibility: who is responsible for meeting a commitment?
  - Reputation: reputational consequences of meeting commitment?
  - Moral: focus on human obligations to protect and conserve
- **SUSTAINABILITY**
  - Sustainability: setting in context of sustainable development
  - Balance: focus on achieving functional, balanced ecosystems
  - Regulating: focus on specific natural cycles and functions
  - Resilience: recognising the role of biodiversity in reducing risks
  - Options: focus on the unknown future benefits of biodiversity
- **ECONOMIC**
  - Growth: contribution of healthy natural systems to market economy
  - Jobs: employment and livelihoods deriving from natural systems
  - Provisioning: food, water and other basic needs depending on nature
  - Tourism: benefits from nature-based tourism and recreation
- **SOCIAL**
  - Poverty: role of natural systems in alleviating poverty (not observed in any of our cases studies, however likely to be important in some contexts)
  - Cultural: a wide range of benefits associated with social history, tradition, and culture of interaction with nature
  - Health: improvements in physical health associated with natural systems or interaction with them

- Psychological: improvements in mental health associated with natural systems or interaction with them
- Aesthetic: beauty and inspiration associated with natural systems

The idea here is that an argument strategy might not always have something about (say) human health or poverty alleviation, but it should always be possible to create some argument from at least one of the "Social" benefit categories (and so on).

5.2.3. Treatment of the timescale and spatial scale.

There is some potential for confusion through the timescale being present on different levels in the original typology. There is an explicit timescale component: are the benefits presented as immediate/short-term, mid-term, or long-term (or any combination, or not specified)? But time also appears in the beneficiary component, through the inclusion of "Future Generations", and in the benefits, through "Sustainable development, obligations or values for future generations" and "Options for future use, bioprospecting". In many cases, the arguments used in the case studies are not specific in relation to timescales, and when timescales are explicit, they are often multiple (e.g. the same benefits are claimed to arise both at present and in the long term).

The conclusion here is to simplify the structure for 'beneficiaries' by removing the 'future' category, leaving a clearer split between 'natural' and 'human' beneficiaries, each with a set of more detailed categories – matching the two-level categorisation of benefits. There is a group of more 'future facing' benefits (the 'Sustainable' group) but the suggestion for timescale is that each argument should be considered from the perspective of short, mid and long-term benefits, with variable emphasis depending on the context and audiences.

Similar comments apply to the spatial scale: although some arguments have natural tendencies, overall the choice of scale is highly context dependent. Benefit-beneficiary combinations can be tested out for different possible scales of application, with a view to picking the best space and time scale(s) for the context and audiences.

5.3. Revised typology for building arguments

These considerations lead to a revised argument typology that is presented in Table 17. The typology is a guide to possible combinations of benefits and beneficiaries, coupled with a reminder to consider these at different time and spatial scales, and to consider the framing of the argument.

As discussed in the synthesis above (§4), arguments are generally more effective when used in combination, including multiple motives for action. Using the typology presented here, within the context of the argument construction framework (§5.1, Figure 15), it should be possible in any given case to combine at least one argument from each of the top-level benefit categories. Such an argument strategy would always make an argument based on:

1. **The OBLIGATION to protect**. This can arise through the legal framework, setting the proposed course of action within the context of laws or agreements about protection of nature. As a default, the CBD can be used, but there will often be more context- or nation-specific commitments. In some cases, non-biodiversity commitments may be relevant (for example relating to greenhouse gas emissions). BESAFE results also suggest that moral arguments are usually made, that many people expect to see them and respond to them, and that they are not fundamentally crowded out by material arguments. It should always be possible to build an argument for human responsibility to protect nature, without prejudice to other possible benefits of protection.
2. **Achieving SUSTAINABILITY**. Arguments here can be quite general, relating to the role of conservation in achieving sustainable development overall, or to achieving balance in human-nature interactions and healthy natural systems overall. More specifical arguments relate to particular risks and functions, including for example combatting climate change, reducing flood risks, or to possible future benefits of conservation such as new pharmaceutical or industrial products.
3. **ECONOMIC impacts**. Often, the main driver acting *against* conservation will be some economic benefit of development. In many cases it will be useful to stress that there are also economic benefits to conservation, and (if

appropriate) that these benefits may be longer term, more local, more sustainable or more equitable. This may include benefits of providing safe food, water, and timber, and/or benefits associated with tourism and recreation. Alternatively, in some cases it may be useful to 'defuse' economic arguments against conservation by setting them in a broader context (i.e. explaining that the growth/jobs claimed are minor in the context of the economy of an industry or area).

4. **SOCIAL benefits**. These are often less tangible than other benefits, but can nevertheless be important and highly salient for people, especially local residents and particular interest groups.

It should be stressed that the above categories are intended as a guide and are not meant to be mutually exclusive – for example benefits related to carbon capture in natural systems could be framed under different categories. Again, double-counting is not a concern here, and multiple benefit framings could strengthen argument strategies overall.

Table 17: Revised two-tier classification of arguments showing main feasible combinations of benefits and beneficiaries to consider.

BENEFICIARIES LEVEL 1 →		NATURE			HUMANS				TIMESCALE
BENEFITS LEVEL 1 ↓	↓ LEVEL 2 →	General	Specific	Process	General population	Industry	Local community	Interest Group	Consider all, emphasise:
OBLIGATION	Responsibility				✓	✓	(✓)	(✓)	**Short to long term**
	Reputation					✓	(✓)	(✓)	
	Moral	✓	✓	(✓)					
SUSTAINABILITY	Balance	✓	(✓)	✓	(✓)				**Long term**
	Sustainability	✓	(✓)		✓	✓	✓	(✓)	
	Regulating			✓	✓	✓	✓	(✓)	
	Resilience	✓	(✓)	(✓)	✓	✓	✓		
	Options				✓	✓		✓	
ECONOMIC	Growth				✓	✓	✓		**Short to mid term**
	Jobs				✓	(✓)	✓	✓	
	Provisioning				✓	✓	✓	✓	
	Tourism					✓	✓	✓	
SOCIAL	Poverty				✓		✓	✓	**Mid term**
	Cultural				✓	(✓)	✓	✓	
	Health				✓	(✓)	✓	(✓)	
	Psychological				(✓)	(✓)	✓	(✓)	
	Aesthetic				(✓)	(✓)	✓	✓	
SPATIAL SCALE	Consider all, emphasise:	**Local, regional, national, global depending on context**			**National to global**	**Local to national**	**Local**	**Local to national**	**CONSIDER POSITIVE FRAMINGS**

Note: see explanation of categories in §5.2.2.

6. Conclusions

BESAFE recognised that there are a variety of opinions regarding the most effective ways to argue the case for biodiversity.

- On the one hand, there is the view that most decision makers and policy priorities in most sectors tend to be focused on relatively short-term objectives and on tangible improvements in indicators of material well-being, notably growth (GDP, gross value added) and jobs.
    - On this view, arguments for conservation should focus on contributions to these tangible objectives, ideally expressed in terms that are commensurate with other indicators, in particular through use of monetary valuations.
- On the other hand, there is a view that this approach does not fit with a moral and intrinsic reasoning framework that most people are supposed to apply to thinking about conservation. There is a concern too that focusing on utilitarian and economic reasoning can crowd out more noble motives and arguments.
    - On this view, arguments based on utilitarian gain, and in particular use of monetary valuation, should be avoided. It damages decision processes by distracting attention from what really matters, and skews decisions away from true conservation .
- Then again, there is a view that neither the utilitarian approach nor the non-utilitarian approach on its own can provide a solid basis for the conservation of biodiversity: the arguments are complementary and stronger together (Loreau 2014), and 'crowding out' of unselfish motives does not occur to any significant extent.
    - On this view, arguments from right across the spectrum should be selected and combined to build a stronger overall case for conservation.

This diversity of views prompted BESAFE to consider what combinations of arguments will be most effective for the conservation of nature. There may be a tendency to assume that decision-makers are forced to rely largely on financial arguments, and that monetary valuation of ecosystems is the only way of demonstrating their importance, but does this stack up against the evidence from

real argument processes (database analysis) or indeed against what decision makers and other stakeholders claim (in interviews, Q-studies)?

- Do decision-makers respond primarily to arguments based on the value of ecosystems to humans?
- Do arguments based on the productive values of nature 'crowd out' moral arguments?
- On the contrary, are both utilitarian and moral arguments essential to effective argumentation?

Dominance of 'economic' arguments?

Interviews and Q-studies in BESAFE provided information on views about the use of different argument strategies. Despite the belief that decision-makers are forced to rely largely on financial arguments, our data show that

(1) stakeholders from different backgrounds say they consider the intrinsic value of nature as very important, as well as cultural and aesthetic aspect of ecosystem services;

(2) stakeholders also believe that other stakeholders and decision-makers respond to arguments about intrinsic values;

(3) stakeholders do not believe that 'self-interested' arguments crowd out 'moral' arguments, and on the contrary do believe that these arguments are more effective together; and

(4) in practice, the arguments to tend to be used together.

More generally, the analysis suggests that it is unlikely that all decision-makers will respond in the same ways to the same arguments. Besides, the effectiveness of different arguments can be quite context-specific, and can vary through an argument process.

For example, broad concepts and complex reasoning can easily be replaced by arguments that refer to concrete benefits or duties. Arguments that people personally relate to, often replace scientific and inherent value arguments that

have to do with biodiversity in isolation from the society. Overall, the evidence suggests that adopting a wider range of arguments for the conservation of nature is preferable to focusing narrowly on a smaller number of specific arguments.

Use of ecosystem services arguments

On the specific issue of the use of ecosystem services argument framings, there is broad agreement that the concept is gaining ground in argument processes, with both advantages and risks:

- Seen as a good tool to broaden the appeal of biodiversity, and make it more approachable to a bigger public;
- Frames arguments in a positive way, by emphasising the benefits of ecosystems and nature for humans;
- However, their relation to biodiversity is often opaque;
- Some services can be difficult to convey and quite intangible;
- Monetisation of certain tangible services is broadly accepted, but there are substantial concerns about putting a value on biodiversity itself: for example, what happens to the "useless" species?

In fact, the evidence suggests that higher biodiversity is linked to better service (Harrison et al. 2014), but that more intensive use of services does not link to more biodiversity.

The ecosystems service concept introduces new arguments that can be effective as part of an overall argument strategy. The arguments are especially relevant at national and international scales, where ecosystem services language is widespread and relatively well-understood and accepted.

At local levels, however, this is still seen as a theoretical concept that is not well understood by a wide range of relevant actors. This does not necessarily mean that the same benefits are not discussed at these levels: it is rather a matter of framing. For example, project developers use arguments that could be framed under the ecosystem services concept, without being aware of or using ecosystem services language. Or, project developers may decide against using ecosystem services narratives because they see it as too technical and ineffective for their

stakeholder engagement (D2.3). At any rate, ecosystem services are not (yet) common at local levels, especially in tight or deadlock situations, where conventional intrinsic value arguments as well as moral and legal obligation arguments are more prevalent.

Combinations of arguments

The results of our study imply that there is a role for several lines of argument supporting the protection of biodiversity: for example, those based on the rights of species to exist, those based on the utilitarian value to humans, and those based on achieving sustainability and resilience for the future.

Perhaps the key to improving biodiversity protection is to ensure a better balance between these arguments, and wider dissemination of these arguments to all stakeholder groups, rather than assuming that, for example, decision-makers will only respond to financial arguments.

In particular, these results could be used to justify a continued emphasis on ethical and moral arguments for biodiversity conservation, as it seems that many decision-makers and other stakeholders respond to those arguments. However, there is clearly also a demand from policy-makers for better data to inform economic analysis about alternative biodiversity conservation strategies. In particular, evidence to support the analysis of the role of biodiversity conservation as an insurance policy is currently limited.

With this in mind, we propose a typology of arguments (Table 17) with two tiers of benefits and two tiers of beneficiaries, that can be used as a guide to constructing an argument strategy that combines different motives for conservation with a broad appeal to multiple stakes an interests.

Framing

An issue frame can significantly change what people think about an issue, and through that the policy support for particular courses of action. Stakeholder and public reactions to arguments depend on how a given issue is framed, but also on who presents the issue, as well as how the frames and arguments fit people's pre-existing beliefs.

There is a general presumption that positive framings are to be preferred. This does not mean ignoring costs or risks, which can be important considerations, but is rather a matter of how they are presented. Positive framings will focus on the ability to reduce these ("conserving wetlands can reduce flood frequency") rather than the costs of failure to act ("if we don't conserve, floods will be more frequent"). Positive framing also emphasises an alignment with relevant actors' goals and interests. This increases the salience of the argument to the actor, and this is what tends to enhance effectiveness. Our evidence suggests that emotionally neutral explanation of the benefits of conservation is if anything more effective than strategies appealing directly to emotions or to narrow self-interest.

Achieving effectiveness

Evidence suggests that the persistence of biodiversity conservation arguments through different policy processes and against counterarguments is a precondition for their effectiveness, while diffusion and accumulation of arguments originally used by a limited group of actors are also associated with effectiveness. However these are indicators that an argument is being effective, rather than features that can be selected in advance by arguers.

In terms of actions that arguers can take to enhance the chances of any given argument being effective, our evidence suggests:

- Clear logic is important - the argument has to make sense – but is not in itself sufficient for success.
- Robustness, in the sense of strong grounding in evidence, is somewhat less of an issue. More robust arguments are likely to be more effective, but arguments can still work if the evidence base is not fully assembled, provided they make sense.
- Timing is generally not a deal-breaker, though this depends on the specific decision process. But in general, the key thing is to make the argument, then carry on making it, rather than trying to find the perfect moment to speak up.
- Tailoring the argument to the interests and skills of the audience will increase its effectiveness. Often, this means using more general language

than might be used within the confines of a particular profession or group of experts.

- Trusted and credible sources increase the effectiveness of arguments. In some cases, this may suggest selecting messengers carefully, but more generally the implication is that spending time on building trust and engaging in communication and dialogue is important.
- Coupling ecosystem service arguments with biodiversity-related arguments can increase the effectiveness of conservation, including by allowing more dialogue between different types of actors.

6.1. Final recommendations for argument strategies

A key observation from our case studies and from working with a range of stakeholders is that the effectiveness of arguments depends on tailoring the choice of arguments, and the way in which they are used, to the situation and audiences. Arguments need to be both credible and relevant. But details of what works, where, and when, are context-dependent and cannot easily be generalised. A number of general conclusions can, however, be drawn concerning the process of finding the right arguments and the way to use them most effectively:

Understand the situation. Knowing the situation, the people involved and their interests is important for the choice of arguments. Argument mapping can be a useful tool to help simplify and understand complex argument threads, as visualised in the BESAFE EU-level study on the implementation of the Biodiversity Strategy. This can identify gaps or areas where arguments are weak and could be strengthened, although gaps can also arise because arguments are not relevant or effective in a particular context.

Tailor arguments to the audience. All stakeholders, not just decision-makers, can be targets to convince. This requires using language and terminology that can be easily understood, choosing arguments that match the goals and interests of the audience, and trying to identify common ground, as well as carefully listening to the arguments from all parties involved.

Use positive framing. Positively framed arguments (emphasising benefits of biodiversity) are often more effective than negatively framed ones (focusing on

threats, risks and losses). Ecosystem service arguments can be useful to emphasise the positive benefits of biodiversity for humans, provided that the terminology and concepts are clearly explained to the audience.

Use combinations of arguments. Combinations of arguments help broaden the appeal and facilitate dialogue, especially when combining arguments on the value of nature for its own sake with those on the benefits of biodiversity for local livelihoods and other specific groups. But *over*-emphasising economic arguments at the expense of other motives could alienate stakeholders who are motivated mainly by ethical and moral arguments. Arguments should therefore address all or most of the interests held by actors involved in biodiversity conservation, increasing understanding of the full range of consequences of actions and helping to reach more generally supported solutions.

Be persistent. Decision-making takes time, and the parties involved have to get to know one another and build trust. Arguments are more effective if they persist throughout a process, and repetition and reformulation of arguments can be important tools for learning and building acceptance.

Encourage constructive dialogue. Successful long-term solutions require all stakeholders to be involved in the decision-making process. It is important to encourage constructive dialogue and to avoid becoming trapped in a polarised debate where society divides along fault lines and it is hard to find common ground.

Think across policy levels. Effectiveness can be increased by using arguments and interests from multiple policy levels (e.g. local, regional, national). The bottom-up diffusion of local livelihood arguments to higher governance levels brings 'real' context to strategic debates, while local concerns can benefit from being set in a broader context.

Combine top-down and bottom-up perspectives. Successful conservation largely depends on convincing actors at all levels of the necessity and benefits of protecting and investing in biodiversity, and of the active role they themselves need to play in this process. This calls for processes that consider arguments from different governance levels and that take the interests of all parties into account.

In turn, this requires the active participation of all parties in the deliberation process, the building of trust and working towards balanced solutions. Authorities should invest initiating, facilitating and monitoring such bottom-up collaborative decision-making processes, and actively support an adaptive management approach (where environmental impacts are continually reassessed in the light of new evidence and decisions made through constructive stakeholder dialogue) wherever possible.

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Annex 1: The BESAFE Toolkit and final policy brief

The results from the research carried out in the project were used to produce a series of case study and thematic briefs. At both stakeholder workshops, stakeholder were asked for advice on the toolkit. Initial feedback focused on general reactions to the design, user-friendliness and accessibility, rather than details of content. Following this, examples of the 'briefs' were circulated in printed form, with varying formats, again with a focus more on design than on details of the information content.

The results of this consultation are discussed in some detail in the second workshop report. The main stakeholder suggestions included:

1) Stress the use the appropriate language and framing.
2) Stress the need to use combinations of different arguments, recognising that biodiversity interest is not homogeneous.
3) Be aware of possible limitations of the content of official documents.
4) Recognise that negotiation strategies include strategic elements.
5) Make a conceptual map of the relationships between ES and biodiversity.
6) Provide information on counter-arguments against biodiversity.
7) Be wary of using "intrinsic value" or "benefits" in framing arguments.
8) Explore further options for case study reporting and analyses.
9) Provide a clear outline of a strategy for the afterlife of the project results – the "bequeathing strategy".
10) Design the toolkit and the briefs within it to focus primarily on the arguments, and present the information in a style and format that will maximise knowledge transfer to a variety of audiences.

These recommendations were incorporated in developing a template and instructions for the writing of toolkit briefs. A list of case study and thematic brief subjects was drafted, discussed and accepted in the process of several general project meetings. The writing of the briefs was equally distributed across work packages and partners. Each brief aims to explain projects results in a certain case study or on a certain subject to an interested public not necessarily familiar with biodiversity policy and argumentation. The briefs are accessible separately through a content list on the website, http://tool.besafe-project.net/index.php/web-tool/list-of-briefs/. Together they form the BESAFE toolkit.

The entire toolkit, consisting of all briefs and the contents list is also downloadable as a single pdf volume. Below, we give a short overview of each brief.

I. **Case study briefs:** The case study briefs describe the results of each of the case studies (see Figure 3 and Table 2 in §3.1.2).

II. **Thematic briefs**

a) Briefs providing background knowledge

- **Biodiversity conservation using ideas and instruments of species protection.** Explains how ideas and instruments for species protection have evolved and contribute to an integrated biodiversity conservation strategy in Europe. The brief considers the roles of Red Lists of threatened species and the legal priority given to species listed in the Annexes of the European Commission Habitats and Birds Directives and the Appendices of the Bern Convention of the Council of Europe.
- **Biodiversity conservation using ideas and instruments of habitat and area protection networks.** Explains how ideas and instruments for habitat protection have evolved and contribute to an integrated biodiversity conservation strategy in Europe. The brief considers the protected areas designated and managed under the Habitats Directive of the European Commission and the Bern Convention of the Council of Europe, with reference to spatial networks and the conservation of biodiversity outside protected areas.
- **What is an argument?** Explains how an argument is constructed, and shows how much of an argument can be implied by the context in which it is used. To understand why an argument is effective or fails to convince, it is important to be aware that, to a large extent, its acceptance depends on factors such as stakeholder beliefs and interests and level of understanding of the issue.
- **Classification of values of biodiversity.** Provides an overview of and brief introduction to the wide range of values associated with biodiversity and ecosystems. It highlights that value is a multidimensional concept and has been classified according to economic as well as broader concepts of value. Furthermore, it shows how human values can be divided into economic and non-economic values, and emphasises that total economic value is by no means the same as total value, a common misconception often causing conflicts between economists, ecologists and other stakeholders.

- **Methods for assessing the economic values of biodiversity and ecosystem services.** Biodiversity and biodiversity related ecosystem services give rise to a wide range of different values of which some can be classified as economic while others are classified as non-economic. In this brief the focus is restricted to methods relevant for assessing the economic values of biodiversity and biodiversity related ecosystem services.
- **How biodiversity contributes to ecosystem services.** Summarises the evidence from a literature review on how biodiversity contributes to ecosystem services. It shows that conservation of biodiversity is essential if it is to continue to provide a range of services that humans need. It also underlines that careful management is needed to balance trade-offs between different services.

b) Briefs increasing general understanding of how argumentation works

- **Benefits of biodiversity.** Describes the many benefits associated with protecting biodiversity. These benefits can arise to people today and in the future, and to the natural world itself. Thinking about the benefits and the beneficiaries of biodiversity helps the construction of powerful arguments for conservation.
- **Argument as a process: dialogue, trust and credibility in biodiversity decision-making**. Explains how the argument process, involving multiple exchanges of views between actors along a timeline, creates a basis for human interactions that can be as influential on the effectiveness of the argument as its content. Particular aspects are illustrated by reference to some selected examples from the BESAFE case studies.
- **Bundling arguments**. Highlights some benefits of using combinations (bundles) of arguments to improve the effectiveness of argumentation for biodiversity conservation. Different stakeholders and actors often have different beliefs and interests and each may require more than one argument to be convinced. Using argument bundles also provides actors with a more nuanced picture, showing them new angles and increasing their knowledge.
- **Conditions for an effective argument**. Aims to help those arguing for biodiversity conservation to understand the most effective ways of communicating the importance of conservation under different circumstances. It summarises ten lessons learned in the BESAFE project about enhancing the effectiveness of arguments for conservation.

- **Governance of ecosystem services.** The need for conservation is increasingly justified using the concept of ecosystem services. For these ecosystem service arguments to be effective, they need to be understood and placed in the context where decisions are made. This brief outlines a broad classification of governance implementation mechanisms (referred to here as governance "modes") that was developed within BESAFE to aid understanding of decision-making regarding ecosystem services.
- **Recreation and biodiversity**. This brief explains how biodiversity can contribute in many ways to the service of recreation. The popularity and value of outdoor recreation can lead to powerful arguments for conservation. On the other hand, there can be conflict between the provision of recreational opportunities and conservation objectives.

c) Briefs providing direct practical advice

- **Communicating biodiversity arguments: strategies and techniques**. Provides basic guidelines on how to improve skills of communicating biodiversity and evidence-based information to wider audiences. Particularly, it highlights techniques relevant to biodiversity conservation argumentation aimed at policy/decision-makers and other stakeholder audiences, reflecting the insights gained from BESAFE.
- **Developing our capacity to build effective arguments**. Five key factors relevant to building effective arguments are identified and used to provide guidance to help develop capacity to argue successfully in different situations, involving different audiences.
- **Engaging stakeholders in biodiversity discussions: everything placed on the table.** Although the aim of working with stakeholders varies greatly according to the issue or project and why stakeholders are being involved in the first place, the work floor may best be described as a construction site where work is in progress. Working with stakeholders in a formal situation implies placing all the different arguments on the table, ensuring that the variety of their views is identified and also identifying and encouraging synergies. Construction sites tend to be there over a long time before being finished. This is also the case for working within stakeholder forums and events – the process demands time, management and follow-up.

- **How do we determine if an argument is effective**. BESAFE has empirically analysed the effectiveness of arguments for biodiversity conservation, by observing arguments at different policy stages, at different governance levels and among different stakeholder groups. The project has also considered potential effectiveness of arguments, drawing on informants' views on the effectiveness of arguments and by studying the logic of arguments. This brief summarises ways to analyse the effectiveness of arguments and lessons from our empirical analyses.
- **How to construct an argument? Tailor to audience**. The success of an argument for biodiversity conservation depends on how it is adjusted to different stakeholders' perceptions of the values of nature. This policy brief describes ways in which arguments can be tailored for the audience in order to increase their effectiveness in the biodiversity conservation process, based on the lessons learned in the 13 BESAFE case studies and through discussions with stakeholders.
- **Selecting arguments through the policy cycle**. It is important to understand that policy-making is an ongoing and open-ended process. This brief focuses on the policy cycle approach which is a useful way to divide policy processes into several stages. It defines the stages of the policy cycle and explains how different types of biodiversity arguments can be used at each stage.
- **Selecting the right frame for your goal.** It is crucial to understand that the way in which an issue is presented matters. This brief focuses on framing which is a central concept in understanding and interpreting actors' efforts to define and construct political issues. It defines the framing effect and explains how the effectiveness of arguments depends partly on how they are framed. In particular, positive framing (emphasising benefits) is often more effective than negative framing (focusing on threats and problems), especially when the framing is aligned to match the goals and interests of the target audience. The concept of ecosystem services is useful for framing arguments in a positive way, by emphasising the benefits of biodiversity conservation for humans.

III. The final policy brief

From our results, we produced a final policy brief brochure which is also the project's final brochure and executive summary. The brochure builds on the policy brief presented at the final conference and was extended to include a number of illustrations based on the case study findings following feedback from stakeholders. It is available from the policy user corner of the BESAFE website: http://www.besafe-project.net/page.php?P=45