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Final report synthesizing the analysis on effectiveness in case studies

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Main Authors:	Eeva Primmer, Pekka Jokinen, Malgorzata Blicharska
Reviewers:	Rob Bugter
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Summary

This report provides a synthesis of the analysis of the BESAFE case studies. Using a case study approach, BESAFE analyses the effectiveness of arguments for biodiversity conservation empirically by observing arguments at different policy stages, at different governance levels and among different stakeholder groups. The project also considers potential effectiveness, drawing on evaluations about the effectiveness of arguments and by studying the consistency of arguments. The report presents the theoretical approach of the studies undertaken within BESAFE, the methodologies applied and a synthesis of the case study findings.

Each case study has found distinct ways in which arguments are used and generate effects in a policy process. A synthesis across such a diversity of settings and findings can generalise only to a limited degree. With this constraint in mind, the lessons and generalisations drawn is this report rest on the evidence produced by the case studies together. Without the 13 case studies these generalisations could not be made.

Summarising the lessons about effectiveness, we find that a pre-condition for the effectiveness of biodiversity conservation arguments is their persistence through different policy processes and against counter-arguments.

Diffusion and accumulation of arguments originally used by a limited group of actors signals effectiveness. Livelihood arguments coupled with biodiversity related arguments can increase the effectiveness of conservation, by allowing more dialogue between different types of actors. Operational planning is an effective channel for scientific arguments to reach new audiences and take effect.

Appealing to high level legal arguments is effective in concrete tight argumentation at the local level, particularly in deadlock situations. Livelihood arguments originating at the local level can be effective at higher levels, by widening the scope of debate and engaging different actors. Deliberation across levels improves the effectiveness of arguments.

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 society.

We find that besides the arguments per se, also the context of the argument is crucial. Arguments change with time and move across governance levels, depending on context and different strategies. Actors may utilise different strategies to “promote” their arguments. The effectiveness of arguments depends also on the positive or negative framing of the argument. It is concluded that deliberation is necessary for reaching compromises and solutions. Finding compromises and solutions takes time; where consensus is not possible, legal arguments seem most effective.

1. Introduction

Protecting biodiversity is a societal goal associated with a large number of policy and decision-making challenges, stemming from the complex nature of biodiversity. Biodiversity can be described at different spatial and temporal scales, it is dependent on complex processes and it is governed by actors at several different governance levels. The actual creation and implementation of conservation policies and programmes is further challenged by the competing interests of different stakeholders, in particular through demand for natural resources or expectations for land-use. Which arguments are used in the policy framing and which of them effectively push through policies may depend on a number of contextual factors, on who participates in the process, and importantly on how the different arguments are presented relative to each other. In BESAFE we explore different argumentation processes to evaluate the use of arguments and to identify factors contributing to their effectiveness.

BESAFE analyses the effectiveness of arguments for biodiversity conservation empirically by observing arguments at different policy stages, at different governance levels and among different stakeholder groups. The project also considers potential effectiveness, drawing on views on the effectiveness of arguments and by studying the consistency of arguments. Most of the BESAFE cases analyse a policy process that has identifiable stages punctuated by plans, decisions or other types of events. The role that different arguments play at different stages allows the analysis of argument effectiveness.

Most cases encompass relatively large spatial scales. Even the cases that are in specific local sites or consider questions of small regions, address larger scales, as they relate to values and benefits important at large geographical scales. For example, in several cases social and cultural heritage benefits are commonly considered to be of national importance, or the value of particular species is considered at different levels, ranging from local to national or even European and global. This multi-level character of the case studies allows the analysis of effectiveness of arguments across levels.

Finally, many case studies identify key stakeholders who have a clear formal role in the decision-making process or other actors whose interests are expressed around the process. This allows an analysis of the effectiveness of arguments across stakeholder types or groups of stakeholders.

This report synthesises the findings from the BESAFE case studies with an aim to provide insights in the argumentation in the policy processes related to biodiversity conservation. The report demonstrates which arguments are used in particular contexts, how they are used, what is their meaning and which of them are most effective in particular situations.

1.1. Case study approach and the effectiveness of arguments

BESAFE has developed an empirically based framework and explored arguments for biodiversity protection in many different decision-making situations. They cover scales from international to local as well as different ecological, economic and social settings. The case study approach has been utilised in order to generate concrete, context-specific understanding of argumentation processes and the effectiveness of arguments. The main strength of this case study approach is that it allows paying attention to the interdependencies between actors and processes within their particular social settings.

In BESAFE we are studying two kinds of effectiveness: potential effectiveness and observed effectiveness. Exploring potential effectiveness is about making causal inferences about arguments' effectiveness. It can be studied empirically or applying just the methods of logic, as used by philosophy and linguistics. Logical inference is used e.g. in legal analyses and assessments of new laws or other normative argumentation, such as biodiversity policy. Empirically, potential effectiveness can be sought from people's evaluations of how different arguments might contribute to policy outcomes. The analysis of potential effectiveness relies on recording the sequence of inference by the analyst or informants' views on effectiveness.

Observed effectiveness is studied in concrete case studies, as the effects of arguments are easiest to observe within the context where they are used, and considering the interactions

between different arguments. This effectiveness can be analysed through empirical work; it requires observations of relations, between e.g. events, decision-making levels or stakeholders. Effects take place when the arguments in one event, at one level or by one stakeholder produce a change in behaviour or in arguments used in another event, level or by other stakeholders. Analysing policy processes, we observe effectiveness of arguments, across stages of policy cycle, across governance levels and across actor types.

1.2. Policy cycle

Policy processes are often illustrated as cyclic and iterative, indicating that policies are designed, negotiated, developed, implemented, and evaluated (Brewer and de Leon, 1983; Dovers, 2005). The policy cycle model implies considering policy process as ongoing and open-ended (Jenkins, 2007). As policies are constantly reformulated by actors, who draw on various knowledge sources, framings and interests, arguments play an important role at each of the policy stages and their interfaces, although they are often not in the focus when evaluating policy effectiveness.

The policy cycle model can be further broken into smaller fragments, paying attention to different phases of the process. BESAFE takes the policy process to consist of the following phases: 1) Problem framing, where the issues that the policy needs to address are identified; 2) Policy formulation, where policy options are developed; 3) Policy adoption, where a particular course of action is adopted; 4) Policy implementation where policies are put into effect; 5) Policy evaluation where results are monitored, and problems and solutions reconsidered (Fig. 1).

BESAFE has assumed that different types of biodiversity arguments are used at different stages of the policy cycle. The policy cycle model has facilitated identifying central factors influencing policy process as well as the diverse outcomes of the processes (c.f. Jann & Wegrich 2006). The model has also allowed utilising different methods of data collection and analysis in the single case studies.

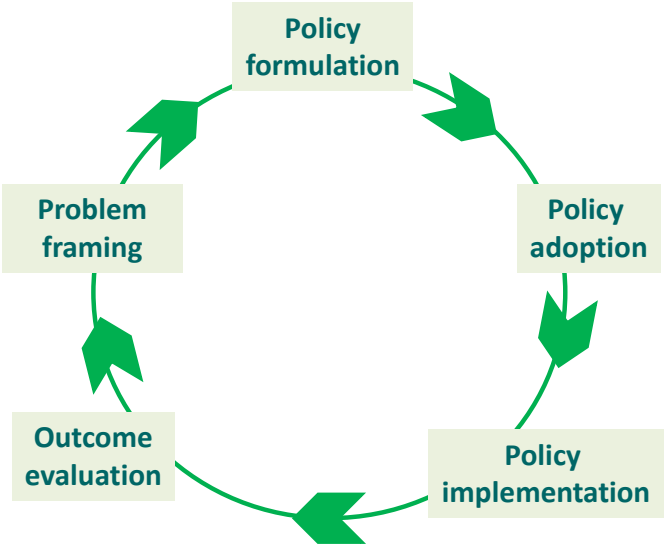

Figure 1. Policy cycle

2. Case selection

Case selection and analysis are strongly intertwined in case study research. The process of selecting 13 BESAFE deep case studies and two comparative case studies is detailed in D2.1. The process of selecting case studies consisted of six distinct stages:

1. Preliminary list of 27 case studies (Proposal, October 2010) – the partners compiled a list of candidate case studies based on preliminary selection criteria.
2. Agreement on selection procedure at kick-off meeting (November 2011) – the decision was taken to pre-scan the preliminary cases and collect more detailed information about them to be able to select the final set of cases.
3. Cases pre-scanning (December 2011) – a pre-scan questionnaire was distributed to all case study leaders to gather information about cases.
4. Detailed selection criteria (March 2012) – WP 2, 3 and 4 drafted case selection criteria (see below) and asked case study leader to provide information for the criteria for each individual case proposed.
5. Initial selection at the second project meeting in Wageningen (April 2012) – the information provided by case study leaders was analysed by WP 2. Based on the results of the analysis and the information from the pre-scan, initial 13 deep case studies were selected. Additionally two comparative studies, one for WP 3 and one for WP 4 were selected.
6. Final selection at the third project meeting in Osby, Sweden (September 2012) – after detailed discussions on the 13 selected deep case studies two of them were removed while one new was added. Finally, 12 deep case studies and two comparative studies were decided.
7. One of the recommendations resulting from the project's first period review was to include a case study with an on-going, developing debate. As a result we added synthetic biology as our 13th deep case study.

The cases were selected so that they would represent a wide array of different arguments and a variety of contexts (different governance levels and different time scales in particular).

Additionally, criteria relating to specific WP 3 and 4 research questions were added and included, for example, the requirement that the case would involve different stakeholders, deal with a current controversy, be rich in documentation, provide the opportunity to study linkages through which the controversy is transmitted to higher levels of governance or provides possibility to study conflicts and synergies between biodiversity conservation and ES provision (for full list of selection criteria, see BESAFE deliverable D2.1). Moreover, additional practical criteria were added, namely that the case should be essential to a specific partner or needs to be carried out by a specific partner and that a case could be conducted in co-operation with the BIOMOT[1] project. An additional criterion, the need for a case reflecting a current, on-going debate, was added after the 1st period review.

For details of the selection process, see BESAFE deliverable D2.1. In this report we are focusing on the 12 deep case studies of the BESAFE project which were originally selected (Table 1). As the 13th deep case study on synthetic biology was added at a much later date it is still in progress. Its results could therefore not be integrated in this deliverable and will be reported separately as part of the 2nd period report. A short progress report is however included as annex 13. More information about the two comparative studies investigated within BESAFE can be found in deliverables D3.1 and D4.1.

[1]A FP7 funded project "MOTivational strength of ecosystem services and alternative ways to express the value of BIOdiversity". BESAFE and BIOMOT aim to cooperate and gain synergy in their case study work.

Table 1. Short description of the deep 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. (for more details, see Annex 1)

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. (Annex 2)

3. Water company uses of valuation evidence in investment planning
This case study focused on how ecosystem services information can be used alongside customer preference surveys to justify the large scale of investment in water treatment technologies that protect the environment. The study explored whether the existing valuation evidence covered the full range of economic benefits, and whether water companies' resources were being used to manage the water cycle optimally. (Annex 3)

4. Nested Socio-Ecological Systems in the Romanian Lower Danube River Catchment
The case study was 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. (Annex 4)

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. (Annex 5)

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. (Annex 6)

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. (Annex 7)

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.(Annex 8)

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.(Annex 9)

10. Arguing for biodiversity in practice: A case study of 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. (Annex 10)

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. (Annex 11)

12. Implementing the Natura 2000 network, EU level, Europe
This case study analysed differences and commonalities of interpretation and argumentation in biodiversity conservation between the EU and national (or regional) governance levels. By analyzing LIFE projects across Europe (12a), and the Natura 2000 processes in the Netherlands (12b) and in Hungary (12c), 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. (Annex 12a, b, c)

13. Synthetic biology
This case study analysisanalyses 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 (Annex 13).

3. Methods

3.1. The case study approach

A case study approach is more a strategy than a method. The basic idea is that one case (or a small number of cases) is studied in detail, using appropriate methods. While there may be a variety of specific purposes and research questions, the general objective is to develop the fullest possible understanding of the case. The case study approach covering qualitative and quantitative studies is best suited to create concrete, context-dependent knowledge (Stake 1995; Yin 2003). Its main strength is in contributing to the understanding of the interdependencies between actors and processes within their particular social settings.

The case study approach has been chosen in BESAFE because it is particularly useful for responding to “how” and “why “questions about a set of events. The approach allows tailoring the design and data collection procedures to the research questions and being sensitive to the contextual specificities of the case.

“Methods” are the instruments of data collection such as questionnaires, interviews or observation. Additionally, methods refer to the tools used for analysing data, which might be statistical techniques or extracting themes from unstructured data; or the term might refer to aspects of the research process like sampling. There is a tendency to associate case studies with qualitative research, but such identification is not appropriate. Case studies are frequently sites for the employment of both quantitative and qualitative research.

Following the idea of the case study approach, each of the BESAFE case studies has applied *multiple methods* (for details see the section “Protocols”). To allow for comparability of the findings and to control for the research quality and the particular methods, as well as approaches to data collection and analysis were discussed, trained and crossed-checked (see the section “Triangulation”).

3.2. Generalization and comparison

Although many qualitative researchers reject generalizability as a goal or give it very low priority, also qualitative case studies are generalizable to theoretical propositions (Yin, 2009). The goal is to expand and generalize theories (analytic generalization) rather than to enumerate frequencies (statistical generalization). The BESAFE case studies have conducted qualitative analyses, which can be generalized to relative stages in the policy process and temporal scales, governance level and spatial scale, groups of actors, agency, conflicts, interests and benefits, as well as governance mechanism and access to the policy process. Additionally, BESAFE has sought to quantitatively analyse the frequency of observed phenomena, such as the participation of different actors, the use of certain types of arguments or a focus on particular benefits, and relate these to the analysed processes as well as the effectiveness of arguments.

Inclusion of numerous heterogeneous case study sites increases the generalizability of qualitative work, because this enables more similarities to occur across all the cases. For instance, knowledge on which arguments work in particular situations might provide policy makers ideas on specific types of arguments in specific activities.

Every single case study includes a theoretical dimension because cases, implicitly or explicitly, represent a more general level of phenomena beyond a single case. Therefore, the BESAFE cases have been analysed two-fold. First, each case was analysed as a unique meaningful whole with the aim to describe and interpret its particular characteristics, which are examined theoretically as examples of general categories and phenomena discussed in environmental social science.

Second, the different cases were compared, allowing generalisation and identification of theoretical connections between particular features of divergent cases. Because most of the phenomena investigated in the BESAFE cases are context-dependent, comparison must be done with care, which means the assessment of differences and considerations over the specific cultural, political and historical context of each case. A detailed description of each

of the cases in Annexes 1-12 allows for the recognition of the specificities of the knowledge practices and policy networks in different fields and levels of environmental policy making in particular contexts. It also enables the analysis of knowledge production as intermediary between different policy networks.

Even when we find recurrent empirical patterns, these cannot be assumed to be universal or determined by the same set of mechanisms in each case. Therefore, comparison allows only identifying differing empirical effects of a particular argumentation line, or in some cases, the differing processes leading to similar outcomes. BESAFE has applied the ideas of "actualist comparison", which involves comparing a series of events construed as conceptually commensurable – e.g. dividing the policy process into stages which allow finding "comparison points" even in very different cases.

Comparison is conducted also in the comparative case studies as a part of WP 3 (argument mapping) and WP4 (Q-analysis of value arguments). Finally, the observations from the case studies have been coded in a database, which will constitute the WP5 synthesis of arguments for improved biodiversity policy-making and governance.

3.3. Protocols

In order to coordinate the empirical work in case studies, BESAFE produced several written protocols (i.e. general rules) on data collection and data analysis. Data collection protocols were specifically focused on interviews, focus groups, and documents. Protocols on analysis methods covered a general protocol on document analysis as well as protocols for discourse analysis, and argumentation analysis. Additionally, a general protocol for analysing effectiveness was produced. A summary of each of the protocols can be found in table 2. The entire protocols are appended (Annexes 14-20).

Overall, the BESAFE case studies aimed to produce context-dependent knowledge and have therefore mostly applied a qualitative approach (see Table 3). All deep case studies (1-12) collected documentary material such as policy documents and newspapers. All except two (5,

11) case studies also interviewed individual stakeholders or carried out group interviews. This strategy of data collection has produced semi-structured and unstructured qualitative data and quantitative data focusing on policy processes and outcomes allows understanding the complexity of biodiversity argumentation.

When analysing their data, the deep case studies aimed at interpreting the given meanings in biodiversity argumentation in each policy setting. Utilising multiple sources of evidence, the case studies analysed data with qualitative methods covering primarily discourse analysis (1), argumentation analysis (5), (7), (9), (12), content analysis (4), (8).(11), or other approaches (2), (3), (6), (10). The analyses aimed at iterative and holistic approaches in order to find connections between arguments and their contexts and, further, to conclude on the effectiveness of biodiversity arguments. Besides qualitative analyses, some case studies (2), (9), (12a) utilised a quantitative approach by carrying out descriptive quantitative analyses such as Q-analysis and frequency analysis.

Table 2. A summary of BESAFE data collection and analysis protocols

Interviews Interview is a method of data collection, information or opinion gathering that specifically involves asking a series of questions. The protocol on conducting interviews (Annex 14) distinguishes semi-structured and structured interviews. It also describes different interview types based on different research interests. Further, the protocol addresses analytical and evaluative issues and provides practical advice for conducting and analysing interviews. **Focus groups** In data collection using focus groups, the researcher's interest provides the focus, whereas the data come from the group interaction. The protocol on focus groups (Annex 15) discusses a research technique yielding qualitative data through group interaction on a topic determined by the researcher. Focus groups typically involve 6-10 participants and they are conducted by a skilled moderator using an interview or topic guide. **Documentary data collection** Documents are data "ready and waiting" and easily accessible. The protocol on collecting documentary data (Annex 16) distinguishes four criteria for choosing documents which are authenticity, credibility, representativeness and meaning. The document types defined as useful for BESAFE refer to formal policy documents, political documents, media documents and operational documents. The protocol highlights screening document types and their content before making the final decision on data utilisation. **Document analysis** Besides data collection, the protocol on documentary data (Annex 17) identifies various strategies for the analysis of documents. They first include content analysis, a quantitative method counting certain expressions. Second, the analysis can aim to understand or establish categories of meanings. Further, the purpose of the narrative approach is to provide in-depth understanding of how issues are framed or dealt with and how arguments generate meanings. **Discourse analysis** Discourse analysis refers to the interpretation of texts and other phenomena which bear meanings in society. The analysis thus aims to explore the actual use of language and other symbols and emphasises that the use and interpretation of symbols is a social process. The protocol on discourse analysis (Annex 18) first notes that DA is rather a research paradigm than a method and presents then various types of discourse analyses (the linguistic and the critical discourse analyses, and frame analysis). **Argumentation analysis** An argument is defined as a social and verbal means of trying to resolve or at least to contend with a conflict or difference that has arisen or exists between two (or more) parties. By drawing from the approach by Toulmin, the protocol on argumentation analysis (Annex 19) demonstrates the structure of argument. Further, as an analytical unit, an argument is divided into Descriptive premise, Normative premise, and Conclusion. **Analysis of effectiveness**. The protocol (Annex 20) provides guidelines on how to analyse observed and potential effectiveness. Observed effectiveness can be analysed only through empirical work, and requires observations of relations, between e.g. events, decision-making levels or stakeholders. Effects take place when the arguments in one event, at one level or by one stakeholder produce a change in behavior or in arguments used in another event, level or by other stakeholders. Potential effectiveness can be studied empirically or applying just the methods of logic, as used by philosophy, semantics and linguistics. Empirically, this kind of logic can be sought from people's inferences about causal mechanisms between arguments and the policy outcomes.

3.4. Triangulation

The multidisciplinary approach of the project drew attention to quality in qualitative research. To reduce concerns about validity and reliability of the research process, and to increase transparency, the case studies conducted triangulation. Validity in qualitative research refers to whether the findings of a study are true (findings accurately reflect the

situation) and certain (the evidence supports the findings). Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions. Triangulation is a useful strategy (test) for improving the validity and reliability of research or evaluation of findings. To improve the analysis and understanding of construction of others, triangulation is a step taken by researchers to involve several investigators or peer researchers' interpretation of the data at different time or location.

Five types of triangulation are possible (Thurmond 2001):

- Data triangulation (different sources of information),
- Investigator triangulation (several investigators in the analysis process),
- Theory triangulation (multiple perspectives in interpreting a single set of data),
- Methodological triangulation (multiple qualitative and/or quantitative methods),
- Environmental triangulation (the use of different locations, settings, and other key factors related to the environment in which the study took place, such as the time, day, or season).

BESAFE utilised three types of triangulation across case studies by drawing from different sources of information and multiple methods. The project conducted a process of cross-checking findings and iterating on interpretations. Specifically, the meeting in Seville in October 2013 supported investigator triangulation by including a full day on the preliminary findings of the case studies and a discussion on each case study. Further, the draft case study reports were commented by WP2 coordinators in March 2014 and again in June. To further confirm the quality of data, the meeting in Gödöllő in March 2014 included a cross-checking exercise and the lessons were summarized. After this, all the database entries were checked in May and inconsistencies corrected by case study leaders in June-July. In each of the case studies, triangulation was carried out to fit the purpose and analyses of the cases, as summarized in Table 3.

Table 3. Case study triangulation.

Case study	Data triangulation	Investigator triangulation	Methodological triangulation
1. Invasive species	Policy documents; interviews	Interview guide, Codes checked by the researchers	Document analysis, interview analysis
2. Large mammals	Data gathered by Q-methodology; newspaper articles, information-, and discussion forums, blogs, peer-reviewed papers, reports		Both quantitative and qualitative analysis in the Q-method; document analysis
3. Water company	Using official documents, company documents, interviews, existing analysis by previous researchers. Comparison across different companies	Checking results with previous researchers familiar with case, as well as within project	Document analysis, interview analysis
4. Danube catchment	Literature review (scientific papers, reports, policy documents, official statements, etc), interviews, focus groups	Some members of the UniBuc team ensure the quality control of analysis in order to increase the value of our findings	Document analysis, interview analysis, focus groups (qualitative content analysis)
5. Fox and wild boar	We observed six events (3 for fox, 3 for boar) separately and then compared and integrated the findings. In every event we observed various forums: mass and social media, parliament, advisory reports, specialist magazines and websites.	Data were condensed and visually displayed in reasoning maps (using Rationale software) which were further analysed and discussed by two experienced social scientists.	Not applicable
6. Tidal turbine	Official documents, correspondence, interviews		Qualitative content analysis of documents and interviews Qualitative content analysis,
7. Białowieża Forest	Interviews, policy documents, media coverage, scientific publications, etc.		Document analysis, interview analysis, discourse analysis
8. Peatlands Strategy	Official documents, newspaper articles, interviews	Co-operation in field work and preliminary analysis with a university colleague (conducting interviews together)	Document analysis, interview analysis, qualitative content analysis
9. Andalusia NPs	policy an scientific documents, participant observation, semi-structured interviews, and questionnaire, Q-sampling	Different members of the social-ecological systems lab gave feedback to the data analysis and results interpretation.	Document analysis; statistical analysis of social preferences from surveys, Q-method
10. BD Action Plan	1. Semi structured interviews with arguers and receivers. 2. Relevant official documents (national and local policy documents, and for each events e,g funding applications and		Qualitative content analysis; Practical argument analysis Frame analysis

	reports).		
11. Urban green areas	Planning competition guidelines; Competition evaluation minutes; First published official planning documents (two), (interviews still to be carried out later), (draft master plan – was not available with green infrastructure allocation, , only some preliminary visions available)	Collaboration with the ecological expert of Sibbesborg planning competition - Professor of urban ecology at the University of Helsinki, and other researchers carrying out research on Sibbesborg. Discussions with planners and local stakeholders in participatory seminars, workshops and planning week related to Sibbesborg local master plan process. Discussions in Sibbesborg urban case study advisory board consisting of researchers, planners and local organisational stakeholders.	Document analysis, (interview analysis to be done later), (GIS analysis was planned but was not possible due to not having the draft master plan with green infrastructure allocation, only some preliminary visions available)
12a .Natura 2000, JRC	Data from Natura 2000 database; e-mail "interviews"; telephone interviews	Independent interpretation of theinterview transcripts and comparison of the results	Frequency analysis of the arguments; statistics on effectiveness; a qualitative content analysis of the interviews
12b Natura 2000 – NL	Data from official websites; e-mail "interviews"; (telephone) interviews, policy documents, reports of meetings, newspaper articles	Three researchers developed a common analytical framework and data interpreting method	Content analysis, discourse analysis Probably also comparative group analysis (between stakeholder groups and between cases);
12c Natura 2000 – HU	Interviews, policy documents, reports of stakeholder forums, participant observation of Hungarian events	Some members of ESSRG team participated in quality control of analysis Hungarian case data	Qualitative content analysis of the minutes of the stakeholder forums, textual analysis of discourses.

3.5. Argument classification

BESAFE has created a classification of arguments types in WP 1, based on a comprehensive literature review that was used in the case studies and in the synthesis work. In this classification, which is based on 31 different types premise statements, arguments are compressed into two main categories and four sub-categories. The details of the classification can be found in BESAFE Deliverable 1.1. (particularly tables 2.3 and 2.4).

4. Synthesis of case study findings

4.1. Introduction to cases

4.1.1. Issue and context

Most of the case studies dealt with a nationally significant conservation issue that had generated heated debate. Many cases addressed biodiversity conservation directly, e.g. through protection of particular habitats or species or establishment of protected areas. The Natura 2000 cases (12) were illustrative of these issues but also the case of large mammals in Norway (2) and the Białowieża Forest case (7) represented the biodiversity protection issue in a rather traditional fashion.

The case of fox and wild boar in Belgium (5) differed from the Norwegian large mammal case in that the animals were more spread in inhabited areas and therefore the conservation conflict was not only with natural resource users but also citizens more broadly. Also the invasive species case (1) touched upon widespread social concerns for and against different patterns of species occurrence, while it also considered the scientific debate around the issue.

The Andalucía national park plans in Spain (9), the lower Danube management plans (4) in Romania and the UK biodiversity Action plans (10) had emphasis on integration of conservation and use, while the Białowieża Forest in Poland (7) and Viurusuo peatland in Finland (8) illustrated long-term conflicting interests between use and protection of areas producing natural resources. The lower Danube case included restoration, which was comparable with the Water company case in the UK (3).

The cases of a tidal turbine in Northern Ireland (6) and urban development in Finland (11) dealt with radical ecosystem change that was at an advanced stage of planning, and in the case of the turbine already being implemented through a process of adaptive management. In these cases, conservation targets focused on identifying potential environmental impacts and minimizing harm.

All the case studies included many stakeholder types but they varied in the degree to which the different stakeholders and their arguments were in the focus of the analysis. Some case studies even defined the stakeholder view as the unit of analysis (e.g., 8) while others focused mainly on the policy processes and used such methods that individual stakeholder views were not the primary interest or could not be extracted (e.g., 5). The case studies considered different stages in the policy process, or policy process, which were coded in the database as events.

Most case studies identified general argumentation lines and observed the position of argumentation lines relative to each other (e.g. 5, 7). In some cases, the argumentation lines were polarised and either remained polarised or merged or softened (e.g., 8). New argumentation lines emerged and some previously existing faded out (7, 12b). In other cases the arguments were categorised and their appearance at different stages was the point of interest (6, 9, 11) or argumentation lines were analysed in detail, and the interest was in the meanings attached to the arguments (e.g. 1). For the database, each argument was coded relative to the benefit it was assumed to produce and the biodiversity conservation issue it related to,

4.2. Results

4.2.1. Policy cycle

The cases varied in the degree to which they addressed different stages of the policy cycle. Many case studies conducted detailed analysis of problem framing and goal setting. Particularly those cases where controversies regarding ways to protect species and habitats had stemmed from designing new policy were examples of the problem framing and policy formulation stage, e.g. the invasive species analysis (1) and the fox and wild boar in Belgium (5).

Some other cases looked at longer processes where multiple problem framings emerged and policies had been formulated as a result of complex policy processes. These long processes include also analyses of implementation stage argumentation. Examples of such cases

include the Lower Danube case in Romania (4), the Białowieża Forest in Poland (7) and the Natura 2000 case in Hungary (12c). Also the nature protection area analyses of Natura 2000 network (12), national park in Andalusia, Spain (9), and to some degree also the long-term analysis of the process of peat extraction that has resulted in a protected area establishment (8) in Finland include a mix of policy formulation and policy implementation analyses. Examples of a short-term process that address both policy formulation and policy implementation are the Finnish urban design case (11). Also, water company case in the UK (3) and the marine turbine Northern Ireland (6) covered agenda setting and then policy formulation, adoption and evaluation.

The Biodiversity Action plan (10), the large mammals in Norway (2) and the cross-European analysis of Natura 2000 Life projects (12a) are examples of cases that have focused on the implementation stage of the policy cycle. Some of the cases have considered the biodiversity conservation outcome evaluation as well. In particular, the invasive species analysis (1) has included all the policy stages.

4.2.2. Argument types and biodiversity

Inherent value of biodiversity is an important line of argumentation in all the case studies. Also the quantitative data on cases show that particular species and populations were associated with rights and value of nature itself (Fig. 1). Biodiversity conservation is justified with scientific (i.e. based on scientific data and knowledge) and natural heritage arguments appearing in all the cases in some form. The long term analyses of Natura 2000 (12), Lower Danube (4) and Białowieża Forest (7) show that these arguments have been recorded in the documents and have been used much over time. For example, the intrinsic value and moral arguments for biodiversity conservation were most common arguments in the Life plans analysed in the European level Natura 2000 case (12).

In many cases arguments relating to intrinsic value of nature and particularly, the unique nature and the exceptionally high biodiversity were highlighted in areas where area protection was at the core of the issue, e.g. in the Danube catchment (4), Białowieża Forest (7) and also in the Natura 2000 sites (12b, c). Likewise, in the urban development case (11), a

process of spatial development was based on the novel sustainable planning philosophy, the main argumentation lines focused on the preservation of natural features and securing local unique features and the valuable landscape. The arguments focusing on intrinsic values sometimes related to particular conservation principles such as the notions of ecosystem carrying capacity (7, 9) and precautionary principle (9), or underlined the potential impacts of management or developments on the unique biodiversity (4, 7, 8 and 9) or landscape (11). Further, strong arguments for the natural behaviour of the animal ("survival instincts") were identified in the case study on public debate on red fox in Flanders (5). Also in cases where biodiversity was contrasted with economic activity, intrinsic value arguments backed up with scientific arguments played an important role, like in the tidal turbine case in Northern Ireland (6) and the peatland case in Finland (8).

Considering the different benefit types identified in the arguments across all the case studies, the most typical arguments related to intrinsic value of nature (Figure 2). Arguments related to a balance in the functions of nature and livelihood arguments were also common. In line with this type of ecosystem service ideas, arguments related to the use of natural resources and cultural uses, such as recreation, tourism and aesthetic use were also important. Very few arguments related to poverty reduction, human health or option value for the future.

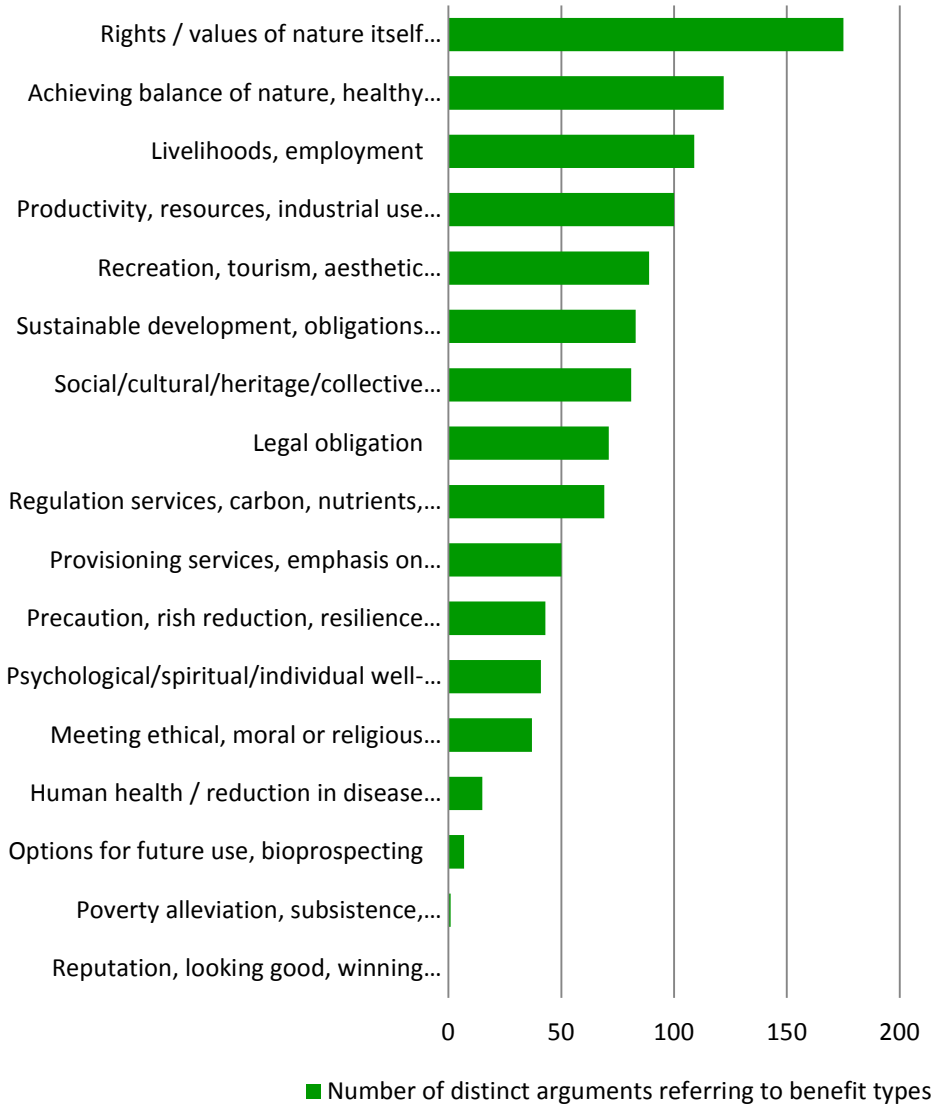

Figure 2. Number of distinct arguments referring to different benefit types in identified in case studies.

Instrumental values of biodiversity were often identified without clear connection to biodiversity. Rather, the cases displayed a broad range of arguments regarding ecosystem services without very obvious reference to biodiversity. Yet, in the Andalusian case (9) benefits were connected to agrobiodiversity. In the Danube case (4) the arguments indicated that the very complex ecosystem protected in the Danube catchment supported socio-economic activities. Interestingly in the Finnish case study on peatlands (8), biodiversity was referred to as an indicator of habitat or biotype, and reference was made to particular

charismatic species (e.g., swamp frog, crane). The quantitative analysis of benefit arguments also shows some association with biodiversity, but much of this argumentation is spread across different types of biodiversity issues. For example, recreation and tourism, as well as achieving healthy ecosystems were associated with all different types of biodiversity issues (Fig. 1). Regulating services were also associated with several biodiversity issues but they were not considered in association with spatial or landscape diversity. Except the invasive species analysis (1) and the Andalusian case (9), precaution or risk reduction type arguments were not identified in the cases.

Most cases considered local livelihood and employment aspects and some cases showed an evolution where a broader set of livelihood, employment and safety arguments had emerged over time or even been adopted by new groups of stakeholders (e.g. case 7). For instance, the case study on the UK Biodiversity Action Plan (10) provided evidence for the significance of framing discussion with arguments on local development and other implementation pathways. The quantitative analysis shows that sustainable development and livelihood arguments related to all nature or whole ecosystem, rather than being associated with more specific biodiversity issues. As an example of integration of economic and ecological goals being easier at a general level than in specific decisions, in the Finnish urban case (11) there was a strong attempt to integrate conservation and use at the early stages of the planning process, but later in the process there remained a clear distinction between conservation goals and other goals of more economic benefit character. The same was observed in the case study on the UK Biodiversity Action Plan (10).

The recent integration of conservation and use can also be found in the IAS case (1). This was even reflected in the definition of invasive alien species. According to the COP Decision VI/23 (UNEP 2002), “invasive alien species” means an alien species whose introduction and/or spread threaten biological diversity. However according to the proposal for an EU regulation on IAS (EC 2013), Article 3 lit. 1 an invasive alien species is an alien species whose introduction or spread has been found to threaten biodiversity and ecosystem services, and that may also have a negative impact on human health or the economy. This is to our

knowledge the first time that ecosystem services, human health and the economy are included in the definition of IAS. By integrating ecosystems services and the economy, the use of biodiversity is much more emphasized. It further reflects that IAS – as a cross-cutting issue – concern many social, economic and environmental interests, including trade, health, agriculture, forestry, water resource management, infrastructure development, horticulture, aquaculture, tourism and recreation (Genovesi & Shine 2003).

Arguments explicitly eliciting the concrete services that ecosystems deliver were used in several cases (Figure 2). In the urban development case (11), the ecosystem service concept was expected to ease the conflict between economic benefits and activities on the one hand and biodiversity protection on the other, by drawing attention to a broad range of benefits and also realizing benefits in the long-term. For example, ecosystem functions such as carbon sequestration and runoff water management, and the recreation and access to valuable landscapes were mentioned. In the European level Natura 2000 case (12) instrumental benefit arguments relating to ecosystem functions had increased over time and the general economic benefits were frequently used and they abounded among the commercial users of the Natura 2000 sites. Additionally, social values, or non-use intrinsic values, such as aesthetic values were important for non-commercial users of the sites as well as for the tourism industry. In the case study on the UK Biodiversity Action Plan (10), these arguments were found in relation to urban areas. Further, in the other two Natura 2000 cases (12b, c) the emphasis on the different benefits derived from ecosystems increased with time. Tourism was also mentioned as an important economic opportunity in many other cases, for example in Andalusia (9), Danube (4), water company (3), and Białowieża Forest case (7), but the arguments did not necessarily related to the concept of ecosystem services.

The cases coded the beneficiaries that each of the identified argument related to, which resulted in a relatively even distribution among the actors or entities that were to benefit (Figure 3).

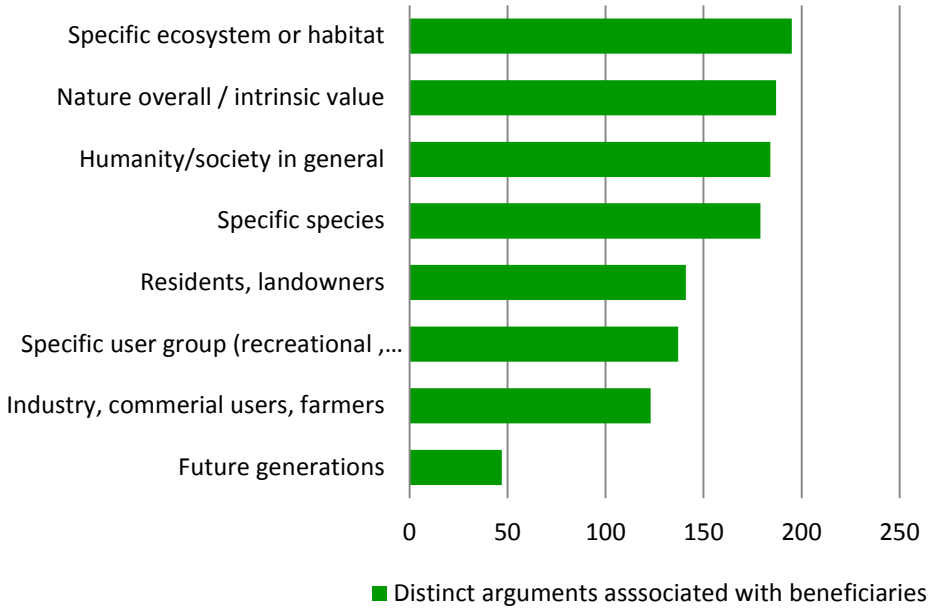

Figure 3. Number of distinct arguments associated with different beneficiaries identified in case studies.

In many cases protection of biodiversity was placed in opposition to economic activity and human interests and the signals of simultaneously striving for both conservation and concrete benefits to people were sometimes weak (12). For example, in case of the Białowieża Forest, conservation was framed as something that would impose high economic costs on local communities (7). In the Andalusian case (9), livestock keepers expressed many concerns about the economic and social impacts of protection measures, such as restrictions for animals to use some areas.

In the Finnish peatland case (8) biodiversity conservation arguments had been countered by the arguments relating to local traditional uses and recreational uses. Also the case studies exploring human – animal relations provide evidence on contrasting policy goals (2), (5). In the fox and wild boar CS protection of biodiversity was placed in opposition to the protection of foxes, and sometimes wild boar too (2). Although in the urban case (11), the housing area planning was based on the idea that the planning process would seek to

consider benefits broadly and maximize collective benefits, nature conservation was seen as a constraint for economic activity and something that would benefit “only nature”.

Heritage value and cultural value are used in argumentation in almost all cases. The Natura 2000 cases (12) as well as the lower Danube (4) and Białowieża (7) cases that have international significance, portray a supra-national argumentation. These cases had both moral and legal obligation arguments, highlighting the rights of nature. They argued for the maintenance of the European heritage and even appealed to a global conservation responsibility. At the same time these cases face the critique of ignoring local heritage value and the successful argumentation is mostly reported in cases where international and local heritage and cultural values are merged.

4.2.3. Time and spatial scale

Most of the cases analysed fairly long-term processes (usually at least a decade or two), where the argumentation changed with time. For example, in the Andalusian national parks case (9) arguments related with cultural (mainly in Doñana, such as traditional knowledge and practices) and economic (mainly in Sierra Nevada, such as its role in rural development) importance increased. Livestock practices and protected area management changed from an island model to a social-ecological one where ecosystem services play a significant role and are considered together with biodiversity intrinsic values.

Only in case of the urban planning (11), the development process was relatively short, starting in 2011. Also the case study on the UK Biodiversity Action Plan (10) addressed a relatively short time frame. The Norwegian case of large mammals (2) did not analyse any process, but instead focused on the arguments for or against large carnivores at a given point in time.

Most of the cases encompassed relatively large spatial scales. Even the local cases, i.e. cases considering questions of particular local areas or relatively small regions, in practice addressed larger scales, as they related to values and benefits important at large geographical scales. For example, in several cases social and cultural heritage benefits were

commonly considered to be of national importance (e.g., 3, 4, 6, 7, 12), or the value of particular species was considered at different geographical levels, ranging from local to national (2, 5, 6). Alternatively, in the case of three Natura 2000 cases (12) where the main focus was on the European level scale; however the local scale was also considered, in relation to particular Natura 2000 sites (e.g. Polder Zeevang and Oostelijke Vechtplassen sites in the Dutch case, 12b). The analysis of Natura 2000 LIFE plans addressed the European scale through numerous locations (Figure 2).

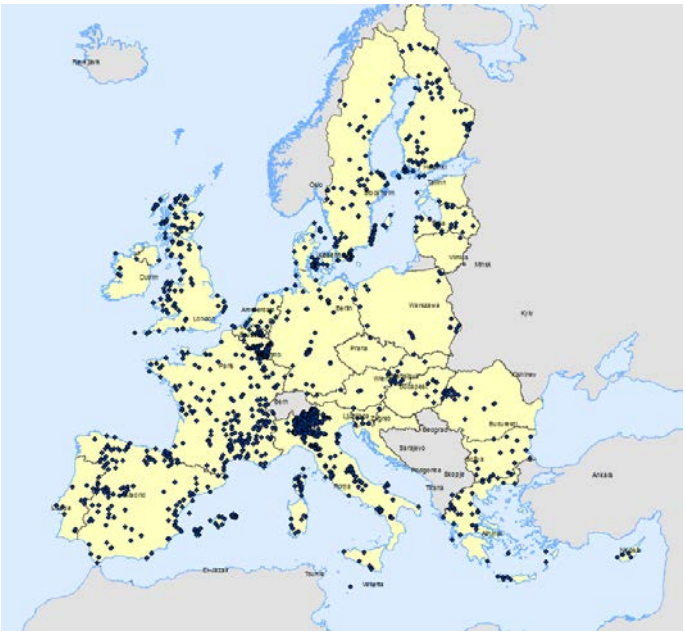

Figure 2. Spatial distribution of the screened LIFE projects in the European level Natura 2000 case (12a) (Source: Müller and Maes, Annex 12.

4.2.4. Arguments at different governance levels and across actor types & conflict)

The case studies varied in how they addressed governance levels and different actor types.

Arguments that related to governance and even the role of different actors in preserving ecosystems were expressed in some cases. Moral arguments were often related to intrinsic value and pointed to humans' duty to protect nature. These arguments were used particularly in cases where use and conservation were contrasted (4, 5, 6, 7) and in cases where protection was the main activity (12a, 12b). Sometimes also reputation was brought up in this connection (4, 7).

Legal arguments were frequently used in some of the cases, particularly in the cases that investigated long term conflict (Białowieża Forest case, 7; peatland case, 8) or a long term process of management planning where different interests competed (e.g. Danube case, 4, Andalusian case, 9, and Natura 2000 cases, 12). Legal arguments appealed to decisions made at higher governance levels and reflected the role of the areas with unique nature values in meeting their legal responsibilities (6, 7, 8, 12b). They were used in settings where the local administration needed to implement higher level decisions (10). Legal arguments were also used alongside moral and ethical duty arguments (1, 4, 6, 7, 12b).

An operational management approach was obvious in many case studies. This was highlighted particularly in those case studies that directly dealt with planning, like in the LIFE plans for Natura 2000 areas (12a), in the Biodiversity Action Plans in UK (10), in the marine turbine in Northern Ireland (6) and in the urban planning in Finland (11). However, argumentation about best information systems and ways to improve land-use planning abounded in other cases as well (4, 9). Scientific argumentation related to this approach: the arguments for biodiversity conservation produced by scientists were regarded highly, even to a degree that it was hard to evaluate their effectiveness among a range of different audiences (4, 6). In the Finnish case study on peatlands (8), it was found that the arguments by the regional actors often relied on science whereas the arguments by local environmentalists were actually similar to general concerns by local people.

Another interesting aspect associated with governing the ecosystems in the area was that some of the cases related economic benefit arguments largely to the compensation mechanisms for income losses that conservation would generate. In Hungary, this economic compensation for loss type rationale regarding the value of the Natura 2000 sites was an important argumentation line (12c).

Some cases distinguished between the analysed governance levels (e.g., 5, 7, 12b, 12c), others considered several levels but the analysis focused on mainly one (1, 8, 10, 11). The arguments represented by the cases occurred at different governance levels and were

sometimes transmitted from one level to another (see section on effectiveness). The local arguments were particularly related to local people's needs and concerns (2, 3, 5, 7, 8, 9) while the national or even international level arguments focused on the ecological importance and natural heritage, and appealed to national legislation, as well as European or international agreements and Directives (1, 4, 5, 6, 7, 12). Some case studies identified local level experiences being highlighted at the national level (5, 7). In some cases, the national level arguments also focused on the ecosystem services and other benefits from nature (e.g. 12b).

Most of the case studies identified some kind of conflict. The most common type of conflict was the discrepancy between conservation and economic development (4, 6, 7, 8, 9, 11, 12). In some cases, however, the conflict between conservation and development was not a simple dichotomy as the development was assumed to bring environmental benefits as well. This was illustrated by the case study on the tidal turbine (6) reporting the promise for producing renewable energy.

Although not all the cases involved open conflict, most of them identified argumentation pointing to conflicting interests with a long history. The Natura 2000 analysis of LIFE plans across Europe (12a) distinguished between commercial users (stock breeders, forestry, land-owners/farmers), non-commercial users (general public, visitors, schools), civil society (environmental NGOs, animal rights groups) and municipalities. The arguments differed between these groups, with commercial users appealing to economic values and others appealing to intrinsic and social values. Economic use of land for agriculture and forestry was in friction with conservation in almost all those cases that addressed land areas in some way (4, 7, 9, 11, 12). The Finnish case on peatlands (8) had a similar argumentation polarized between conservation and use but in this case the rural land-owners were for conservation, as the peat industry attempting to take the area for commercial use was considered an outsider with business interests only. Also the UK Biodiversity Action Plan implementation included one example with similar findings (10). Also the invasive species argumentation displayed polarization between commercial use and conservation of native species and

pristine nature (1) while in the fox and wild boar case (5), the conflict was between hunting and conservation.

In some cases, agriculture and forestry actors had a very strong role, and their argumentation against restrictions was the main obstacle for advancing conservation; in particular in the Białowieża Forest (7) and in the Hungarian Natura 2000 areas (12c).

Many case studies identified conflicting interests between sectors and accordingly differing argumentation. Conflicts arose also around specific species or groups of species and how they were perceived by humans, also in relation to overall biodiversity concept, and were connected to long term social debates (1, 2, 5). For example, in the fox and boar case (5), there was apparent conflict about nature and the role of different species in a natural ecosystem.

In some cases arguments are more effective when information and knowledge were available in time and if the stakeholders are organised. In this sense, in the Andalusian case (9) the establishment of a Livestock Commission in Doñana was a “catalyst” for their needs.

Many cases demonstrated positive development in integrating different land-use goals or deliberative planning approaches (4, 9, 10). For example, the UK Biodiversity Action Plan (10) did not involve any specific conflict but examined a range of implementation activities and the marine turbine case in Northern Ireland (6) did not identify any polarisation of arguments employed, which mainly involved environmental impact and conservation issues, although the case was potentially strongly polarised between differing interests of the renewable energy industry and Protected Area status. In some cases, however, the long-term deliberation did not manage to break the polarization between interests (7, 12c).

Scientists and professional managers were also considered as actors in several cases. Their argumentation was the starting point in the large-scale integrated planning efforts, such as the Danube catchment management planning (4), the UK Biodiversity Action Plan (10) and

the Finnish urban area development (11). These actors used the ecosystem service concept as a tool to integrate different uses of areas and the understanding of the interlinkages between different ecosystem functions and different benefits. The tidal marine turbine case in Northern Ireland (6) was relied on scientific expertise to provide the new environmental information that was required for the adaptive management and monitoring approach that was adopted in the project. Also the case studies related to particular species identified the relevance of science-based arguments. For instance, the case study on invasive species (1) revealed that some sectors such as forestry and horticulture have a great interest in using alien species and such sectors are also involved in the scientific endeavour and legislative procedure.

4.2.5. Stakeholders & agency

The case studies have been somewhat variant in exploring groups of actors and stakeholders. As mentioned, some have focused on processes or have utilised research methods not sensitive to agency (10), (11), and (12). On the other hand, many case studies have taken the stakeholder view as the unit of analysis and aimed to conclude on the relation between actors and argument types.

Three main results on the relation between actors and argument types emerged. Firstly, some studies reported that certain groups of stakeholders clearly favour certain arguments (2, 3, 4, 5, 7, 9). For instance, the Norwegian case study on large mammals found that conservationists tended to focus on intrinsic value arguments, farmers were concerned about the protection strategies, and hunters and foresters assumed a more utilitarian approach (2). In the Białowieża forest case (7) environmentalists focused on intrinsic value and legal arguments, while local people and foresters to a large extent utilised livelihood-related argument. On the contrary, in Danube catchment case (4) the legal arguments were more often used by the local and regional government agencies as well as local public land managers, then by other groups, while intellectual and knowledge and practice development arguments was only used by the academic stakeholders and policy makers. In the Andalusian case (9) a salient mismatch, where locals would be interested in promoting provisioning services, but the tourist population appreciate the protected area because of its cultural

(nature tourism, aesthetic values and tranquillity and relaxation) and regulating values (habitat for species and air quality). In particular, tourists consider Doñana as a sacred place where exploitative activities should take place only outside its borders.

Secondly, the different stakeholders were found to use the same types of arguments but interpret them differently (5, 7, 10). The framing of "balance in nature" is an illustrative example. In the Białowieża forest case (7), "balance in nature" meant for the foresters that the forest needs to be managed by humans, while for the environmentalists the same notion stood for leaving the forest without intervention. In the fox and wild boar case study (5), balance in nature was seen from various perspectives. From a managerial perspective (government administration, nature organisation, hunters' association) interventions were considered to be needed, although there were diverging interpretations of "balance". By contrast, there was the view (e.g. members of the public) that nature would always find its own balance. This kind of opposite framing of effects was apparent also in non-legal evaluations. In the UK Biodiversity Action Plan case (10) provides identified contradicting evaluations: threat of recreation vs. the opportunity from recreation, threat of reduced resources vs. an opportunity to use resources more efficiently.

Further, some case studies (5, 8), observed that the arguments were polarised between stakeholder groups and evolved only slowly over time. The Finnish peatland case study demonstrates that even a long policy process of tens of years may principally cover only two main lines of debate; in this study by the peat industry and by those for the protection of the potential peat production area. The fox and wild boar case study (5) highlights in particular the polarisation of debate. The arguments were (and remained) aggregated around a limited set of dichotomous evaluations (e.g. the belonging and not belonging of fox or boar in Flanders).

4.2.6. Effects of arguments

4.2.6.1. Potential effects

When reporting the biodiversity conservation issues, all cases revealed some logic in what would harm or protect biodiversity. In many cases the logic of arguments was also reinforced

by the robustness of underlying data (e.g. scientific support). However, the analysis of potential effects of arguments was systematic in only a couple of cases.

The invasive species case study (1) concentrated on the various scientific and political argumentation lines, illustrating how effects refer to the consistency of arguments. This study actually found no evidence of more consistent arguments receiving most attention. Further, only a small share of arguments on invasive alien species in scientific discussion is reflected in invasive alien species policies. Also the tidal turbine case study (6) considered the logic of the scientific argumentation and found that that most of the arguments used were coherent, constructed with clear internal logic. They were largely framed in a way that appealed to such logic and the state of the art, with the exception of an economic perspective in an argument of risks to shellfish and shellfish fisheries.

In other case studies, potential effects could be identified indirectly, without special focus on their evaluation. The case studies considered the assumptions that were made about policy being effective. In this way, they revealed the potential effectiveness of the arguments. The case studies analysing legal processes had access to argumentation displaying potential effects, as this is what the legal argumentation is about. Some cases using legal text as data illustrated interestingly, how the legal process included contradicting argumentation lines about potential effects. The Finnish peatland case (8) identified two opposite arguments about peat extraction: peat extraction would generate serious environmental impacts versus peat extraction would not generate serious environmental impacts. Similarly, the legal process of loosening hunting restrictions in the fox and wild boar case (5) identified opposite arguments: hunting is necessary to control the fox population versus the fox population is self-controlled, so hunting is unnecessary and has even an adverse effect.

The analysis that focused on the empirically observable effects showed that although logic of the argument was important, it needed to be backed up by arguments that related to responsibility or duty, such as moral nature value or legal obligation, or to benefits, such as local livelihood or recreation. For example, in the case of the Białowieża forest (7), the logical

argument supported by robust data on the detrimental impact of forestry on forest biodiversity was not very effective alone. Rather, only when supported by strong legal argumentation (international legal requirements, in particular).

Finally, potential effectiveness was analysed empirically in those case studies that addressed effectiveness by survey questions. In the Norwegian case study on large mammals (2), the potential effectiveness of arguments was explored in terms of consensus between different interest groups. The analysis showed that the large mammal issue is strongly under conflict. However, a few cultural arguments carrying the potential to promote consensus were identified. The Natura 2000 LIFE project interviews showed that different actor groups were sensitive to different argument types. For example, commercial users and public authorities would be sensitive to general economic arguments but not to inherent value arguments (12a). Recreation and precaution arguments were evaluated to appeal to recreationists, reputation arguments to farmers and inherent value arguments appealed to school children (12a). Detailed and scientific argumentation was not considered effective. Rather complex issues, such as ecosystem resilience, were better expressed in a general fashion, so that the audience could attach their own reasons to the issue (12a). The Andalusia national park survey addressed many complex issues, as the park planning was supported by research. It showed that those arguments that simultaneously considered cultural heritage and biodiversity conservation were the most effective: the notions of carrying capacity and a balance in the ecosystem where cattle herding took place were evaluated to be effective among the survey respondents (9).

- **Logic or sound scientific basis is not a sufficient condition for an argument to be effective; duty or benefit related arguments support their effectiveness.**
- **Linking several benefits and using general language can increase the effectiveness of an argument.**
- **Tailoring the argument to the audience increases its effectiveness.**

4.2.6.2. Observed effectiveness

Most of the case studies detected signals of effectiveness through empirical analysis. The effectiveness of arguments could be observed in their:

1. Persistence: 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;
2. Accumulation: sometimes the arguments accumulated with growing emphasis and importance in the process;
3. Diffusion: in several cases particular arguments diffused to broad use, various policy arenas and audiences; in particular, several cases witnessed livelihood arguments being taken up by advocates of conservation;
4. Level-crossing: arguments were taken up by stakeholders at lower or higher governance levels than where they originated;
5. Replacing: several case studies show situations where new arguments replaced old ways of expressing concern or placing importance on some phenomenon; for example, ecosystem service arguments replaced arguments focusing on rarity.

The different signals of effectiveness found in the cases are described in detail below.

Persistence

The cases that extended over long periods of time revealed arguments that were repeated at different stages over the years. The same stakeholders and stakeholder groups tended to repeat the arguments that express their relation to the area or natural resource. Persistence applied to both nature conservation and natural resource use arguments. In the long term analyses in Danube catchment (4), Białowieża forest (7), Viurusuo peatland (8) and Andalusian protected areas (9) environmental actors relied on arguments about the uniqueness and fragility of the area as well as balance of nature and recreation for decades. The very contexts specific resource use arguments also persisted: fish spawning, forest management and peat production. In the peatland case in Finland, the peat industry persistently argued for economic use and claimed that environmental impacts were not significant (8). Despite the persistence, some of these arguments seemed to lose their power due to societal change and did not thus appear very effective in that they would have changed final decisions or practices. For example, in the Natura 2000 case in Netherlands,

the legal obligation argument was used by the government in a persistence fashion but it did not appear to be decisive (12b). It appears that although the legal obligation can be a driver and a compelling argument; at the practical implementation level it still needs to be supported with other (often pre-existing) arguments.

The shorter term cases also evidenced persistence of arguments and also of arguments that were considered to pre-exist the case that was analysed. For example, in the urban planning case (11) biodiversity conservation in delineated areas had been an idea prior to the new urban planning approach that was taken in the case study area. It persisted in the planning process despite attempts to consider ecosystems and ecosystem services as interrelated phenomena and integrated targets of planning. This case differed from the long-term processes in that ecosystem service arguments were introduced right at the start, at the problem formulation stage. The case study found that the broad ecosystem service concept and integrated ecosystem ideas did not persist but the arguments related to individual services, such as recreation, food production and rainwater retention persisted to the implementation stage of the policy cycle (11). Another example on the pre-existence of arguments can be found from the Belgium case study on wildlife (5) comebacks as the return of the fox was interpreted as a completely "natural" phenomenon. Suppositions about the naturalness tended to strengthen the conservation arguments by diminishing the political space of the issue. Most of the arguments identified in the marine turbine case (6) persisted at some level throughout the duration of the project, covering all the different phases of construction, operation and monitoring. Here again, pre-existence of conservation protected area and species arguments was important.

Arguments referring to any level of biodiversity (impacts on species, intraspecific diversity and habitats) were most persistent in the invasive alien species case study. Impacts on land use, economy and human health were increasingly mentioned during the last 15 years. By this, in principle many ecosystem services are covered without citing the ecosystem service term. The ecosystem service term is still missing in the Communication "Towards an EU Strategy on Invasive Species" (EC 2008) and is even not explicitly mentioned in context of

Target 5 ("Combat invasive alien species") of the EU Biodiversity Strategy (EC 2011), although explicitly referred to in Target 2 ("Maintain and restore ecosystems and their services"). We assume that reference to ecosystem services in the IAS context parallels the percolation of the ecosystem service concept into EU environmental policy. The first document where the term ecosystem services appears is actually the proposal for a regulation on the prevention and management of the introduction and spread of invasive alien species in 2013.

- **Persistence of biodiversity conservation arguments through different policy processes and against counter-arguments is a precondition for their effectiveness.**

Diffusion and accumulation

Those cases where the policy process included different stakeholders who held differing positions allowed the evaluation of whether some arguments originating among a group of stakeholders were taken up by other stakeholders or became more mainstream. Many cases demonstrated this kind of diffusion or accumulation of arguments.

Most typically, livelihood arguments originally expressed by mostly farmers and local natural resource dependent users and managers were considered to have been taken up by other groups (4, 5, 7, 12). For example, the cultural values of livestock practices originally held by shepherds and keepers gradually entered mainstream thinking on protected areas management in the Andalusia case (9). In the case of wildlife comebacks in Belgium (5), the damage done by foxes and wild boar to farmers and local residents was further used as a main argument by political parties, the farmer union and even the hunting association to advocate for legislation change. Similarly, livelihoods concerns on the costs of potential park enlargement for local people in the Białowieża forest case (7), initially expressed by local communities were with time taken up by the environmentalists and national level decision makers. However, in this case, the arguments were "turned" to visualize – not the costs, but potential benefits of the part enlargement for the local people.

At the same time, inherent value of nature and scientific arguments spread from environmental administration, NGOs and conservationists to the mainstream and even the natural resource dependent farmers (4, 7, 8, 9). For example, rights of nature and balance in nature diffused from academic debates to the mainstream planning in the Danube catchment (4). Scientific arguments were taken up by the concrete planning processes and had apparent influence in these processes (6, 9, 10), with the exception of the urban planning process where the attempt to take up the ecosystem service concept was very ambitious at the start, but with time the concept decreased in importance. Yet, the case study on invasive species (1) importantly contrasted with these results since it concluded that scientific discussion on invasive species was hardly reflected in policies considering invasive alien species. The long-term analyses also showed the accumulation of recreation and cultural heritage arguments (7, 8).

- **Diffusion and accumulation of arguments originally used by a limited group of actors signals effectiveness.**
- **Livelihood arguments coupled with biodiversity related arguments can increase the effectiveness of conservation, by allowing more dialogue between different types of actors.**
- **Operational planning is an effective channel for scientific arguments to reach new audiences and take effect.**

Level-crossing

The cases that addressed policies designed at a high level and implemented at a lower level were in a position to address level crossing of arguments. In many cases, local arguments were taken up at higher governance levels. As a starting point, arguments at different levels appeared to differ. Specific livelihood or economic use arguments were common at the local level but also environmental impacts and risks were experienced at this level. Local environmental impacts and risks were highlighted in the tidal turbine case (6) and the peatland case (8), while the national level considerations were more general. In the fox and wild boar case (5), concerns of the damage caused by foxes and boars expressed at the local level were taken up at the national level.

In the invasive alien species case (1) national legislation on the prevention and management of invasive alien species has been established in most EU member states for a long time (Sonigo et al. 2011a, b). Also the arguments referring to detrimental effects of IAS are more or less the same in the EU and its member states. The reason why these arguments gained importance at the EU level were on the one hand that the spread of IAS is not restricted by political borders and on the other hand that coordinated action between member states is vital for an effective prevention and management of IAS.

Moral duty, cultural heritage and recreation arguments were used at several levels and they sometimes crossed levels. National level and supra-national level argumentation appealed to more general concepts, such as biodiversity, and inherent value of nature. Scientific and ethical arguments also played an important role a high levels. More specific natural resource use arguments regarding farming were evident in a large number of cases at the more local level, even in the urban development case.

Particularly the Natura 2000 cases (12) illustrated level-crossing of arguments: science-driven and ethical biodiversity conservation arguments, as well as a legal duty arguments trickled down the hierarchy, however often with a delay. Ramsar convention on wetlands, EU Birds and Habitats Directives and national legislation were eventually used effectively by local actors at later stages of the policy cycle. Interestingly, national legislation on species protection was used to protect the peatland in Finland, (8) and national and EU level legislation on protected species and habitats was used to constrain the construction and operation of the tidal turbine to minimize environmental impacts in Northern Ireland (6).

At the same time, these cases showed that livelihoods arguments originating at the local level were taken up by actors at high levels (12).The same pattern was evident in the Białowieża forest case (7) and the peatland case (8). In many cases, targeted efforts to deliberate across cases had eased the understanding of opposing arguments and finding some compromise across levels (4, 7, 9, 12b, 12c). The Netherlands Natura 2000 case (12b)

demonstrated how the regional governance level can play a crucial role in collecting and weighing the different arguments and balancing local and higher level goals.

- **Appealing to high level legal arguments is effective in concrete tight argumentation at the local level, particularly in deadlock situations.**
- **Livelihood arguments originating at the local level can be effective at higher levels, by widening the scope of debate and engaging different actors.**
- **Deliberation across levels improves the effectiveness of arguments.**

Replacing or overriding other arguments

As the policy cycle analysis demonstrates, some arguments are only used at early stages of introducing a new policy. Alternatively, the context of the policy might trigger changes as to which arguments are used in the process. In the Finnish urban planning case (11), the ecosystem service concept and 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.

Similarly, in the Andalusian case (9) the ecosystem service approach is an opportunity to promote conservation with social support, if it explicitly identifies ecosystem processes and biodiversity components underpinning services. Genetic diversity of domesticated animal species could deliver multiple services contributing to food production, but also to the maintenance of the gene pool, multiple cultural ecosystem services, and even some regulating ecosystem services (e.g. wild fire prevention, seed dispersion). In this way, arguments related to the benefits provided by livestock practices have increased over time.

Recreation arguments partly replaced inherent value arguments in areas with high land-use pressure but were still used in favour of conservation (11, 12b). Legal arguments replaced more rounded inherent value and balance of nature arguments where a concrete conflict of the area use was at stake (7, 8, 12b). The marine turbine case in Northern Ireland (6)

exhibited some notable changes in emphasis between the different environmental arguments as the project progressed. This reflects the important cumulative gain in scientific knowledge during the period, and also the strength given to particular combinations of arguments for biodiversity and its protection.

- **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 society.**

5. Discussion

5.1 Arguments in context

The analysis of arguments in the case studies demonstrates how scale and governance levels mix with different perceptions of rights. The right to use a site for farming, forestry, or delivery of particular provisioning services is embedded in local, user specific arguments, while the rights of nature coupled with balance of nature appear to be global and universal. In scientific arguments, rights can be sometimes quite hidden but they also assume rights by for example taking a particular status of nature as a reference point. Long-term case study analyses demonstrate diffusion of both human-centered livelihoods arguments and science-based arguments in favour of nature, which shows that neither of the groups of rights overrides the other at a general level. Both types of arguments are effective.

Many case studies indeed report balancing and integrating conservation and use arguments as success stories, although reaching a satisfactory outcome often takes a long time. Until the success or some type of compromise is reached the argumentation most evolves with time and transfers across different governance levels. At the same time, the context in which the arguments occur often changes, which also triggers new changes in the argumentation. For example, the legal status of a species or a habitat can change, triggering new arguments to. Likewise, new scientific knowledge can support and strengthen particular arguments.

Arguments regarding moral duty and legal duty appear in many of the case studies both in settings where there is a conflict between conservation and use and in cases where management and conservation are already integrated in a process. In the cases where there is a gridlock for a long time and the stakeholders cannot reach any consensus, legal arguments made at the higher (often national or international) level often have a decisive impact on the final outcome of the conflict. Legal arguments appear thus very effective and they are used in favour of conservation in contexts where other arguments have not led to biodiversity protection. Legal arguments are used, however, also as an institutional framing in planning processes. Interestingly, a main factor identified which contributes to the

credibility of the arguments used, and therefore the effectiveness of the argument is consistency. Specifically consistency refers to how well the argument aligns with the national or local policy framework.

5.2 Actors shape effects

Several of the case studies demonstrate that persistent contradictory argumentation and conflicting views and goals have best been solved with deliberating across stakeholder types and governance levels. This finding is not surprising, considering the vast and well reported experience of collaboration and communication supporting sustainable ecosystem governance (Newig and Fritsch, 2009). However, it can have a novel tune, when considered against the ecosystem service governance ideas, where the expectations are focused on knowledge and hence, arguments about facts (Primmer and Furman, 2012).

Deliberation requires not only time and engagement of the stakeholders, but also adjustment of arguments to different stakeholders' needs and expectations. The use of benefit arguments to support conservation goals has been found to be a strategy among conservationists (Sandbrook et al, 2013). Also the BESAFE case studies evidence particular stakeholder groups frequently starting to use arguments that they have previously not used, to be more effective when advocating their options for changes. For example, conservation of a particular area can be framed not only as a cost but also as opportunity for local development. Similarly, the arguments presented for particular stakeholders do not necessarily relate directly to biodiversity, even if implicitly the action is about biodiversity conservation.

The arguer may consciously choose to highlight concerns more relevant to the audience, which may not relate to the conservation of biodiversity. This kind of targeted framing of arguments appears in many BESAFE case studies. Particularly those situations where different services provided by ecosystems were at the core of argumentation and the underlying biodiversity was not directly addressed, framed the issues with benefits relevant for the stakeholders. .In some cases the argumentation focused on the economic benefits

through compensation instruments, rather than ecosystem services, let alone biodiversity. This is in line with findings on ecosystem service valuation and payments (Gometz-Baggethun et al., 2010; Lockie, 2013).

If the arguer knows that the receiver shares the concern to conserve biodiversity, the arguer can consciously add additional argumentation (e.g. on legal duty) to facilitate the final decision supporting conservation. Dewulf et al. (2009) distinguish this conscious approach as interactional framing involving verbal and non-verbal cues to indicate how a situation should be understood between two interests. Furthermore Schmidt (2011) describes policy agents as sentient agents emphasising the potential difference between thinking and speaking by agents within interactions. This lack of explicit emphasis about the concern to benefit biodiversity therefore highlights the importance of understanding not only the circumstances within which the interaction occurs, but more specifically the relationship between the receiver and arguer and perceived goals and interests.

Several cases also identified the trustworthiness of the arguer as an important factor in contributing to the credibility of argumentation and as such effectiveness of the arguments. For instance, past interactions seem to contribute to a willingness to accept the argument. Specifically this is related to the perceived level of expertise in biodiversity but also a shared understanding of similar but still different goals between the different actors. Probably that is why many of the arguments are often supported by scientific evidence. It is difficult to disentangle the importance of trust and understanding with the importance of aligning goals and interests as the receivers also had an interests in biodiversity. However, a better understanding of the receiver's goal(s) and interests may occur as a result of previous interactions between the arguer and receiver, thus potentially influencing the selection of arguments.

5.3 Issue framing shapes effects

An issue frame can significantly change what people think about an issue and it can also change the policy support for the issue (Dewulf et al., 2009). 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. The arguments can be framed in a negative way, as legal duties and obligations to protect some particular elements of biodiversity or as threats setting out problems to be overcome. However, presenting positively framed arguments which emphasize an alignment with some of the relevant actors' goals and interests can be a more effective strategy to persuade others to act. This type of framing emphasizes an alignment with the others' goals, thus increasing the salience of the argument, and, as a result, its effectiveness. For example, livelihood arguments coupled with biodiversity related arguments can increase the effectiveness of conservation, by allowing more dialogue between different types of actors

In many BESAFE cases there appears a strategy to link together different positive arguments, which may potentially make the argumentation stronger. However, as highlighted by Fairclough and Fairclough (2012) the actors may have a number of concerns and goals. Thus linking and presenting bundles of positively framed arguments can increase the likelihood of a claim being accepted. In BESFAE case studies, 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 similar facets 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 involved and bundling positively framed arguments together may result in a potentially a more effective argument.

5.4 Potential effectiveness of arguments

To judge the potential effectiveness of arguments, BESAFE has designed several criteria, such as the robustness of data and the coherence or framing of the argument. The case studies investigating the actual observed effectiveness confirm that these aspects are indeed

important for the effectiveness of argumentation. Yet, they also show that the logic of arguments alone is not sufficient to make the argumentation effective. Additionally, the scientific knowledge-based arguments need to be backed up by arguments supporting moral values, legal obligations or local livelihoods values. Moreover, the effectiveness of a the particular argument depends to a large extent on its audience, i.e. who it is addressed to. Different groups of stakeholders are potentially more or less responsive/sensitive to particular types of arguments. This implies that when arguing for a particular issue (such as biodiversity conservation) one should pay attention not only to the content of the argumentation, but also to the audience in question.

5.5 Lessons from effectiveness analysis

The analysis of persistence, accumulation and diffusion of arguments is useful if we consider arguments as cause and effect. Many of the case studies demonstrate that this is a legitimate approach, but only to a certain point. Persistence, in particular, can appear as repetition of an argument that does not generate an effect. On the other hand, giving up on the previously used arguments may signal inconsistent policy and opportunistic argumentation. In this sense, it is evident that inherent value of species and nature and rural livelihoods are repeated – and contrasted – time and again; however when they are with time considered not effective, new arguments are often being added. Persistence of biodiversity conservation arguments through different policy processes and against counter-arguments is a precondition for their effectiveness.

Particular arguments diffusing across stakeholder types and accumulating to become mainstream as well as new arguments replacing some earlier used arguments are perhaps the clearest cases of arguments generating some effect in the policy process.

Level-crossing has elements of diffusion. Actors at different levels take up arguments originally expressed at a different level. Legal arguments as very effective arguments actually leading to changes in decisions demonstrate how high level arguments take effect at lower governance levels. In the opposite direction, locally expressed livelihoods arguments are

shown to be effective by changing argumentation at higher levels in many case studies and leading to perception change, i.e. including local concerns into higher level actors' consideration. Deliberation across levels improves the effectiveness of arguments.

5.6 The concept of ecosystem services in argumentation

The ecosystem service argumentation is expected to solve some of the polarisation between conservation and use of ecosystems (De Groot et al, 2002). The concept has been framed as a bridge between ecosystem functions and human experienced benefits. However, there are multiple framings in use simultaneously, ranging from scientific understanding and problem solving, to human benefits materialising in market exchanges (Norgaard, 2010; Gomez-Baggethun et al., 2010).

Most case BESAFE studies identify arguments based on the utilitarian aspect of natural resources and biodiversity, or relating to economy, particularly relating to local livelihoods. In some cases particular actors also use arguments explicitly related to the concept of ecosystem services. Particularly cases where integrated planning takes place or scientific argumentation is an inherent part of the analysed policy process, are rich in the arguments derived directly from the ecosystem services concept. Still, the ecosystem services argumentation seems to be relatively unutilised, as in most of the cases this kind of arguments are used marginally or they have not persisted through a policy process. Economic arguments without reference to ecosystem services are frequent in the case studies and are effective in many cases.

6. Final conclusions

The BESFAE case studies represent different European contexts and a range of policy settings. Each case study has found distinct ways in which arguments are used and generate effects in a policy process. A synthesis across such a diversity of settings and findings can generalise only to a limited degree. With this constraint in mind, the lessons and generalisations drawn is this report rest on the evidence produced by the case studies together. Without the 13 case studies these generalisations could not be made.

Summarising the lessons about effectiveness, we find in particular that persistence of biodiversity conservation arguments through different policy processes and against counter-arguments is a precondition for their effectiveness.

Diffusion and accumulation of arguments originally used by a limited group of actors signals effectiveness. Livelihood arguments coupled with biodiversity related arguments can increase the effectiveness of conservation, by allowing more dialogue between different types of actors. Operational planning is an effective channel for scientific arguments to reach new audiences and take effect.

Appealing to high level legal arguments is effective in concrete tight argumentation at the local level, particularly in deadlock situations. Livelihood arguments originating at the local level can be effective at higher levels, by widening the scope of debate and engaging different actors. Deliberation across levels improves the effectiveness of arguments.

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 society.

Our general findings about the effectiveness of arguments can be summarised in the following points:

1. In addition to individual arguments, the context and the surrounding argumentation are important for the effectiveness of the arguments.
2. Argumentation changes with time and across governance levels, depending on context and different strategies
3. Actors may utilise different strategies to strengthen their arguments
4. Arguments framed positively are more effective than negative arguments.
5. Arguments targeted at the situation and the audience are more effective than general arguments.
6. Trust increases the effectiveness of arguments
7. The ecosystems service concept introduces new effective arguments but as an overall argument it is not effective.

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8. Annexes

Annex 1 – Case study report: Invasive species strategies in Europe

Ulrich Heink

Introduction

During the last 15 years policy towards invasive alien species (IAS) has been subject to an ongoing debate, both within international conservation science and in European policy. The scientific debate reached a temporary climax when Davis et al. (2011) published the Nature paper "Don´t judge species on their origins" which was subsequently countered by Simberloff et al. (2011) with a letter "Non-natives: 141 scientists object". While Davis et al. argue that being alien is a bad predictor for causing harmful effects, Simberloff et al. maintain that Davis et al. attack a straw man because only those non-native species are targeted by measures which in fact lead to harm. Beside evaluating geographic origin there are many other topics of scientific dispute (e.g., applying the precautionary principle towards IAS vs. adaptive management).

Already in 2003, the Standing Committee to the Berne (Council of Europe 2003) prepared a "European Strategy on Invasive Alien Species". The European 2020 Biodiversity Strategy (EC 2011) formulated six mutually supportive and inter-dependent targets that should help to halt biodiversity loss and the degradation of ecosystem services. Target V is directed against IAS: "By 2020, Invasive Alien Species and their pathways are identified and prioritised, priority species are controlled or eradicated, and pathways are managed to prevent the introduction and establishment of new IAS." (EC 2011: 15). This target will be implemented by a regulation on the prevention and management of the introduction and spread of invasive alien species, for which a proposal was made in 2013 (EC 2013). In our case study we analyse the arguments in the implementation of a strategy on invasive alien species into European law against the background of the discourse on invasive alien species and existing values for biodiversity.

For the case study the following research questions will be solved

1. In which various ways do different science and policy actors argue for the value of invasive and non-native species (and indirectly biodiversity)?

2. What is the significance of these various ways for decision-making towards the treatment of IAS?

Methods and Data Analysis

General and specific discourse on IAS

General discourse on IAS

The discourse on putting into effect the regulation on the prevention and management of the introduction and spread of invasive alien species is embedded in a general discourse on IAS which heavily influences decision making at the European level.

We will trace this general discourse on IAS within scientific ecology and nature conservation. The reason for choosing these domains is that mainly here IAS are discussed in the

biodiversity context while for example in agriculture, IAS are rather discussed in relation to plant protection and plant quarantine.

The specific discourse: The EU regulation on the prevention and management of the introduction and spread of IAS and its adoption in Belgium, Germany and Hungary

The process of enforcing a regulation on the prevention and management of the introduction and spread of invasive alien species is a suitable arena to examine arguments for or against IAS in the biodiversity and ecosystem services context. We analyse the case thoroughly by following both a diachronic or longitudinal approach (Rueschemeyer and Stephens, 1997, Yin, 2009) and a synchronic or systematic approach. In the diachronic approach we will trace the process of the development of the European Strategy on IAS over the last years until today and examine the role of arguments in this process. In the systematic approach we compile arguments from different actors involved in the implementation process on the European, national and local level and estimate their effectiveness. We would like to find out what is left of arguments from ecology and nature conservation on the policy arena of the European strategy for IAS.

The discourse in ecology and nature conservation

Data collection

a) Literature review

To tackle the discourse in ecology and nature conservation, we first review the literature reflecting the general discourse on IAS in ecology and nature conservation. We do this by summarizing the literature on the perception and evaluation of IAS. (e.g., Eser, 1999, Larson et al., 2005).

b) Analysis of disputes on evaluating IAS in peer-reviewed papers

To cover professional discussion in nature conservation and ecology we chose four disputes in scientific journals on the evaluation of IAS. These disputes resulted are constituted by journal articles and in part fervent repliques to these articles.

Data analysis

At the moment we are still in the data analysis phase. We analysed the scientific disputes on different levels (cf. Niehr and Bröke, 2003, Spitzmüller and Warnke, 2011): the argumentation level (argument patterns, topoi, presuppositions, implicatures etc.) and the transtextual level (frames, social and political context etc).

Specific discourse on the European regulation on IAS

Data collection

a) Analysis of key documents for the development and implementation of the European Strategy on IAS

In a first step we analysed crucial policy documents (preliminary documents for the regulation on IAS and documents commenting on these) which cover the process of developing/framing and implementing into law the European regulation on IAS.

b) Semi-structured interviews

For the elicitation of arguments we conducted 15 semi-structured interviews (3-4 interviews in each region, Europe, Belgium, Germany, Hungary, cf. Guest et al. 2006 for the number of interviews necessary). An interview guide was prepared for the interviews.

Data analysis

We analyse key policy documents and interviews with the same methods as the scientific disputes (see above). Further, we will analyse interview data according to the grounded theory approach (Corbin and Strauss, 2008), content analysis (Mayring, 1983, Miles and Huberman, 1994) and argumentation analysis (Klein, 1980, Wengeler, 2003)

Results

The evaluation of IAS in the discourse in ecology and nature conservation

Results from the literature review

We focus on two strands of arguments concerning the evaluation of IAS. First, we investigate arguments which focus on the property of being alien. The underlying question is if alien species are generally appreciated as part of the (valued) biodiversity. A sign for non-acceptance of alien species is for example the listing of "native species" or "native biodiversity" as a conservation resource in documents on the European Strategy on IAS, thus excluding non-native species or biodiversity as conservation resources. Second, we investigate arguments for evaluating impacts of IAS on biodiversity and ecosystem services. In other words, we analyse evaluations of IAS first in their property of being alien and second in their property of being invasive.

Arguments for a general acceptance of alien species and arguments for evaluating impacts of invasive alien species are closely interlinked. From our literature review we found that arguments for both groups address three conservation motives – naturalness, cultural value and "item conservation". These conservation motives determine the background against which the role of IAS is evaluated. We briefly explain the three conservation motives here.

Naturalness

In general, naturalness can be defined as the absence of human influence (McIsaac and Brün, 1999). The concept of naturalness is ambiguous, however, as different measures for the absence of human influence can be used. There are two main perspectives of naturalness:

- Pristineness: In this conservative naturalness concept, naturalness of present biodiversity is determined by a comparison to a former state of biodiversity considered not to be influenced by humans.
- Wildness: Process-oriented nature conservation wishes to enable a free development of nature without the influence of humans and does not address preserving the remnants of history. Naturalness in this sense is determined by the magnitude of effects of past and present human activities acting on biodiversity of a given site. The criterion which is encompassed by historical naturalness concepts is here called wildness.

These two concepts of naturalness take into account that both the outcome (a natural state of biodiversity) and the processes which lead to a certain biodiversity make natural objects valuable (O´Neill et al. 2008).

Cultural value

The importance of species and habitats for cultural history depends on two criteria: their connection to a bygone time period and their distinctiveness. The historical connection is given, when species or habitats appeared or developed under former socio-economic conditions which nowadays do not exist. Distinctiveness is a measure of the extent a species

or habitats contribute to the character, identity and uniqueness of a landscape (Heink, 2009). Loss of distinctiveness brings about a loss of identification with a formerly familiar surrounding and a deprivation of home.

Landscapes which balance economic, ecological, aesthetic and cultural features (cultural landscapes in a strict sense) can have cultural importance as well as devastated landscapes, which serve for the demonstration of either historical conditions or regeneration from previous impacts (landscapes of cultural heritage).

As for naturalness, criteria for cultural importance can be differentiated into state-oriented and process-oriented criteria.

- Cultural heritage: In this conservative cultural value concept, the state of biodiversity is measured against the reference of an "original" historical state. Biodiversity of a certain location is regarded as a cultural heritage site or a monument.
- Sustainability: This concept focuses on processes induced by humans. Not any human-induced process is regarded as valuable, but only those based on a balanced consideration of societal concerns. Sustainable use, i.e., socially acceptable, economically sound, environmentally compatible and historically sensitive treatment of ecosystems is therefore a good benchmark for the evaluation of the cultural process value of biodiversity. Ecosystem services are often attributed to the sustainable use of biodiversity resources (e.g., supporting services like soil formation, regulating services like erosion control or provisioning services like food production).

Item conservation

The "itemizing approach" (O'Neill et al., 2008: 167ff) is characterized by developing a list of items (e.g., species, habitats) which are worth protecting. Criteria used to operationalize the item conservation approach are for example rarity, threat and species richness. As threatened species or habitats are the first which might get lost, they are the ones which most probably can turn the list of items incomplete. Item conservation is probably the most prevalent biodiversity conservation motive.

Item conservation criteria (e.g., species richness, threat) are only applicable if the item (species, ecosystem) is accepted as a conservation resource in general. For example, genetically modified crops are probably not regarded as worthy of protection even if they become rare or if they contribute to species richness. Therefore, questions concerning the general acceptance of alien species focus on their importance in terms of naturalness and cultural value while impacts on biodiversity and ecosystem services also address the item conservation motive.

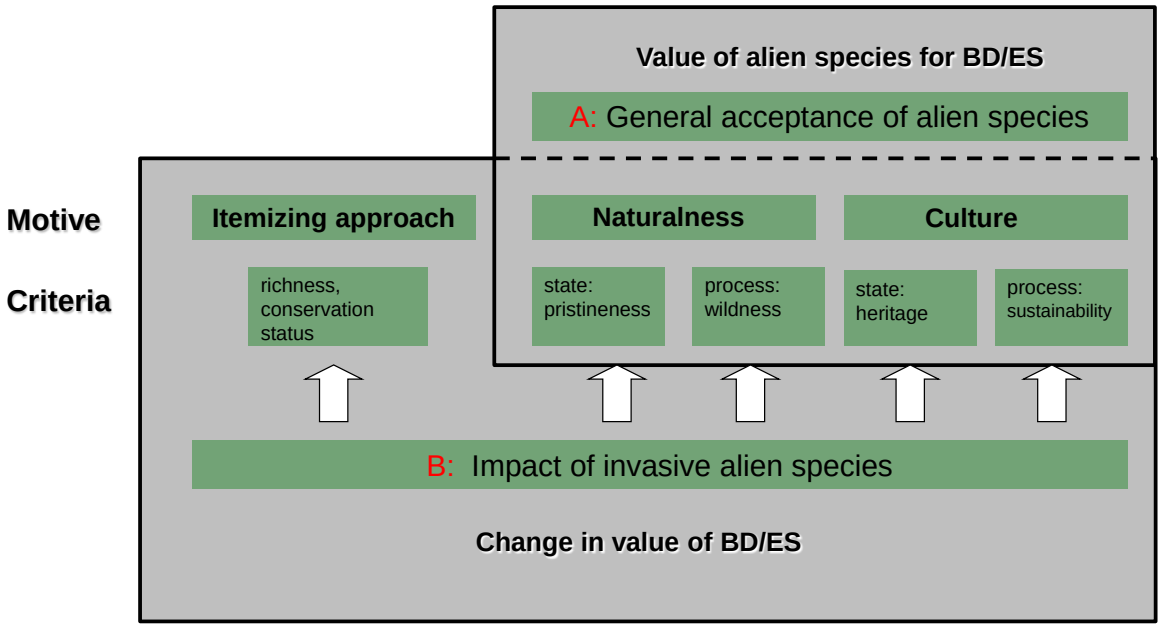

Figure 1: Motives and criteria for the evaluation of alien species and their impacts on ecosystem services. We assume that there are two main motives why alien species are valued in general (naturalness, cultural values). Concerning impacts on biodiversity and ecosystem services we assume that IAS can interfere both with naturalness and the cultural value, but also can have negative impacts by reducing the number of "items" in an ecosystem, e.g, by reducing species richness or by interfering with populations of rare or threatened species.

The acceptance of alien species depends heavily on the underlying conservation motive and derived evaluation criteria.

Alien species are in general not accepted, if the goal is to preserve an "original" pristine state, e.g., the natural state after species returned from their glacial refuges. All alien species are introduced after this point of time.

Wildness can be achieved with both alien and native species. In a conservation approach focusing on natural processes the composition and structure of ecosystem components are irrelevant. Therefore, alien species can be part of natural processes.

The acceptance of alien species depends on the reference point of time selected to evaluate the importance for cultural heritage. For example, most of the agricultural weeds introduced before 1500 A.D. are greatly appreciated in Europe in contrast to species introduced after that point of time (Kowarik, 2010). As long as alien species do not interfere with or support a sustainable use of biodiversity, they are also in line with the conservation of present human-induced processes. However, if they impede the use of benefits, e.g., from provisioning or regulating services, they are certainly regarded as detrimental. This applies for example for agricultural weeds which may lead to a loss in crop production or the dieback of the annual Himalayan Balsam (*Impatiens glandulifera*) in winter which leaves river banks bare and exposed to erosion.

The criteria "species richness" and "rarity and threat" derived from the itemizing approach can be applied both to native and alien species. However, trade-offs are necessary when an alien species causes threat to native species (or vice versa!). From this viewpoint, the presence of alien species enhance species richness. However, if they outcompete other species they

may also reduce species richness. Thus, the evaluation of alien species according to the itemizing approach depends on the species and the geographical scale of observation of richness, threat etc.

Results from disputes on evaluating IAS in scientific papers

In this section we will give an overview on the arguments which are given in scientific disputes. The detailed analysis of arguments from an argumentation theory perspective is not finished yet. We subsumed arguments in so-called "topoi". Topoi in the context of our analysis are content-related argument patterns, i.e., recurring subject matters and lines of argumentation within a discourse. Following Bornscheuer (1976) topoi in that sense share the following characteristics:

- Habituality, which is characterized by prevalence in a certain discourse and a collective use within one or several groups taking part in that discourse;
- Potentiality, which means applicability to a wide range of issues; for example the "precautionary principle" topos is not restricted to the invasive alien species debate but can be applied to any debate on risks.
- Intentionality, i.e., the topos seems to serve well for achieving the goal of somebody who argues, it can easily be specified for the issue at hand.
- Symbolic meaning, which means that the topos can easily be expressed by key words with a fascinating sound which can be used autonomously, i.e. which are meaningful without linking it to a certain context.

The topoi which we have explored are widespread in the scientific debate. That does not that they have been shared by everybody in the scientific community. They are accepted by a certain group within the scientific community and we assume that they are effective within such a group. However, at this stage we cannot judge on the effectiveness of these arguments outside of those who put forward a certain argument.

In the following, we present a preliminary list of topoi which we identified in the scientific papers analysed within BESAFE.

Pragmatism (Realism)

The pragmatist approach is well expressed by the statement "Like it or not, these species are here and they are not going back." (Davis & Thompson 2000: 228). Pragmatists argue that conservationists have to cope with IAS. They acknowledge that "economic drivers still push for further introductions" (Gozlan 2009: 109). As a consequence, they advocate the establishment of risk assessment systems, so that the most detrimental impacts can be avoided but IAS in general are admitted.

Novel ecosystems

IAS proponents frequently refer to novel ecosystems which develop under changing abiotic conditions (e.g. climate change) with the aid of IAS (cf. Seastedt et al. 2008). The emergence of such ecosystems is regarded as a (desired) adaptation to these conditions which provides for sustainable ecosystem functioning. The subtext for the acknowledgment of novel ecosystems is: although something old may pass by, we have to be aware that something new arises. This is just the universal course of things. Novel ecosystems should not be discriminated against extant ecosystems.

Precautionary principle

The precautionary principle is often cited to prevent the introduction of alien species: as one cannot judge on potential impacts of alien species yet, an introduction should be avoided. This is put very well by the "guilty until proven innocent"-phrase (Ruesink et al. 1995). The precautionary principle is a fundamental part of environmental legislation which, however, needs some clarification in specific laws. In its general form, the precautionary principle is quite vague and can broadly be outlined as follows (Sandin 1999: 891): "If there is (1) a threat, which is (2) uncertain, then (3) some kind of action (4) may be required". The restrictiveness of the precautionary principle depends on the severity of the possible damage, the nature and degree of uncertainty and also on the benefits lost by the preventive action. Interestingly, mainly the IAS opponents seem to use the precautionary principle for their cause ("we follow the precautionary principle"). Further, for them it has a narrower meaning than the one outlined by Sandin (1999). Precaution simply means to avoid a risk ("better safe than sorry") without balancing benefits from avoiding the risk with costs or missed benefits by preventive measures.

Xenophobia/ Nativism

Xenophobia is an attitude related to the motivation of IAS opponents. These are blamed for vilifying alien species because of a dislike against what is foreign or otherwise unfamiliar to them. Xenophobia is expressed by aesthetic preferences, a connection of the native with the "sense of place" or "belonging" and also ad-hoc theories of evolutionary adaptation within a region and harmonious integration into ecosystems (Gould 1998). The xenophobia accusation is frequently used to debase IAS opponents who in extreme cases are accused of racism and even to fascist ideology. This is sometimes criticized for lacking argumentative strength. Evans et al. (2008) called the fallacy of judging anything as morally wrong when accepted by Nazis as *reductio ad Nazium.*

Homogenization

If alien species spread different parts of the world are becoming more and more similar (all the more if this spread leads to the extinction of local biota). This process is sometimes referred to as "homogenization". Alien species can be evaluated negatively without contributing to a loss of species and habitats with the aid of this concept. "Homogenization" is connotated with boring uniformity and is often combined with a critique of globalization: "… the trend is toward a globalisation of flora and fauna that threatens to homogenise the world's ecological assemblages into one giant mongrel ecology" (Hettinger, 2001: 216). Lövei (1997: 627) calls to "stop this Macdonaldization" and warns that we "may well find that we need variety not just as the spice of life - but for life itself".

Adaptive management

Advocates of adaptive management regard biological invasions as a "wicked problem" (Rittel & Webber 1973). Different stakeholders cannot even agree on problem formulation because their interests cause them to characterize the problem differently. Thus, trying to force all values at issue into a single framework leads to an exclusion of interest groups which do not agree with such an evaluation framework while some interest groups try to gain control of public discourse (Norton & Noonan 2007). There is no immediate and no ultimate test of a solution to the problem and ostensible solutions raise new problems. Adaptive management is suggested as a means to cope with such problems (Evans et al. 2008). It emerges from recognition and integration of the following six concepts: "(1) variability, in that natural resources always change due to both human management actions and natural variation; (2) unpredictability, in that some of these changes will be quite surprising; (3) uncertainty, in that new management actions will always have to be initiated in the face of surprises and

imperfect information; (4) experimentation, in that all management interventions should be treated as provisional experiments from which new observations, hypotheses, and knowledge about the managed resource can be developed; (5) flexibility, in that all management policies should be continuously modified to reflect new discoveries about the managed resource; and (6) participatory, in the sense that local citizens should be intimately involved as partners with managers and scientists in building basic knowledge and future goals for better managing the resource" (ibid.: 527).

Arbitrariness and subjectivity in classifying and evaluating invasions (normative and conceptual uncertainty)

Critics of the vilification of IAS argue that the concept of IAS is based on arbitrary settings. Criticism refers to the alien/native distinction, to the determination of certain thresholds (between short-distance and saltation dispersal, reticency and dominance, impact on and integration into ecosystems). Subjectivity (probably as opposed to intersubjectivity) is frequently mentioned in criticism on the evaluation of IAS. Especially, "the concept the concept of `harm to the natural environment´ is nebulous and undefined" (Sagoff 2005). The line of argumentation is therefore that it is unclear that invasive alien species are harmful for the environment because there is no agreement on the normative level of potentially harmful effects and the value of resources at stake.

Drivers of change or passengers

There is a lively debate if IAS cause environmental change (drivers) or if they are symptoms of environmental change (passengers, e.g., Didham et al. 2005). IAS proponents maintain that they are passengers while opponents think they are drivers. This debate is closely related to the debate on the importance of invasions for the threat of biodiversity. For further investigation it will be important how different actors conceptualize "drivers" and "passengers".

Uniqueness of invasion

"Uniqueness of invasion" is a topos which is appropriated both by the IAS opponent (invasion is a unique phenomenon) and proponent side (invasion is not unique). Uniqueness has different aspects. First, dispersal by human agency can be regarded as unique because of unprecedented travel and trade and a large increase in species introductions. Hence the influence of human agency on long-distance dispersal has increased exponentially. Second, impacts are unique (or at least important) as biological invasions are suggested to pose the second most pressing threat to biodiversity after direct habitat transformation (Wilcove et al. 1998). But IAS proponents maintain that human agency is a phenomenon which has acted for a long time already, that it does not make a difference if long-distance dispersal is caused by humans or non-human mechanisms and that it is more than doubtful that IAS are a major threat to biodiversity.

Socio-cultural value

Socio-cultural values here include economic value, social values like social capital and cohesion (Forrest & Kearns 2001), employment, subsistence, and cultural values (heritage, recreation activity etc.). Beside economic values socio-cultural values are rarely mentioned in the papers. This gains some importance when IAS are regarded within the context of ecosystem services and sustainability.

Economic costs and benefits

"Economic costs and benefits" is a specific topos subordinate to "socio-cultural value". While IAS opponents frequently point to the costs IAS cause, proponents emphasize the benefits which accrue from mainly alien species, but also IAS. There is a debate which costs caused

by invasive alien species should be taken into account in an evaluation. IAS proponents criticize that costs mainly arise from IAS management and not from damages by IAS. Given that management is often not necessary and inefficient they argue that these costs simply could be saved.

Balancing (socio-cultural) costs and benefits

This topos is closely related to economic costs and benefits. However, the emphasis is here on the balancing part. While proponents of IAS frequently admonish that costs and benefits of IAS have to be weighed against each other in a broader socio-cultural context, opponents of IAS mainly argue within a biodiversity and sometimes economic context and mainly refer to costs.

Naturalness and nativeness

The concepts of naturalness and nativeness are closely related. Naturalness can be defined as the absence of human influence (McIsaac and Brün, 1999). Nativeness is the contrary to being alien. According to COP Decision VI/23 (UNEP 2002) "'Alien species' refers to a species, subspecies or lower taxon, introduced outside its natural past or present distribution; includes any part, gametes, seeds, eggs, or propagules of such species that might survive and subsequently reproduce". Thus native species are taxa which evolved in a certain area or which spread into that area by natural means (cf. Kowarik 2010). "Native species", "native ecosystems" or "natural habitats" are frequently mentioned as a conservation resource which is threatened by IAS. However, there are different concepts for naturalness, as outlined above.

Itemizing approach

The "itemizing approach", as outlined above, is widespread in arguments on the value of IAS. Whenever the analysed papers refer to "threat" (e.g. biodiversity threat) or the enhancement of biodiversity we interpret this as an application of the itemizing approach. Biofunctional arguments (e.g., invasive species as an important resource or habitat factor for other species or as an important component in ecosystem "functioning") can be subsumed under the itemizing approach or process-related approaches. If invasive species contribute to species or habitats of socio-cultural or naturalness value we refer the biofunctional argument to the topoi "naturalness/nativeness" or socio-cultural value, respectively.

Assessment of the specific discourse on the European regulation on IAS against the background of the discourse in ecology and nature conservation

The general value of alien species

In documents on the EU policy on IAS, alien species are conceded a biofunctional or instrumental value only. Alien species have a biofunctional (or "ecological" according to Sandler 2010) value if they serve as resources for native species or can take an important role in the functioning of native ecosystems. Instrumental value is the value that a species has by virtue of its usefulness to humans (Sandler 2010). Natural resource value, recreational value, medical value, and economic value are each a variety of instrumental value. The provisioning service of alien species is frequently highlighted. However, alien species are not assigned an intrinsic value in any of the documents relevant for EU policy. Interestingly, intrinsic value is also very rarely and often implicitly mentioned in the scientific discourse.

Framing impact on biodiversity and ecosystem services

In the following we juxtapose two idealized stances on invasive alien species which we could distill from the analysis of the scientific discourse on IAS. We call these the "Innocent until proven guilty" (IuG) and the "Guilty until proven innocent" (GuI) attitude. While the first

group argues that only those alien species should be managed which are probably harmful according to a risk assessment, the latter group advocates a precautionary approach in which all alien species should be regarded as a risk if not proven otherwise. We list the arguments which these groups employ and clarify the EU position between these two groups.
Both in the scientific and the EU policy discourse there are different stages in advocating a policy on IAS. We here distinguish between the stages of framing empirical evidence, evaluating IAS and taking action against IAS.

Empirical evidence is given in order to corroborate arguments on a certain policy. The framing of such evidence is not done in a value-free way. Although in many cases information is drawn from the same sources, findings are interpreted differently and certain aspects are emphasized while others are neglected. Further, empirical evidence is often given in a value laden language. Here, so called "thick concepts" play a major role. Where thick and thin concepts are commonly thought to differ is that thick concepts have some substantive non-evaluative satisfaction conditions, whereas thin concepts have little or no such content (Väyrynen 2009). For example, concepts commonly regarded as thick include honest, courageous, tolerant, cruel, greedy, and deceitful, those commonly regarded as thin include good and bad, right and wrong, and ought.

There are significant differences in framing empirical evidence (see Table 1). The IuG group interprets the effects of IAS as often insignificant, emphasizes the enhancement of biodiversity by alien species on a local and regional scale and regard ecosystems as constantly in flux due to natural and human change. In contrast the GuI group maintains that effects from IAS are considerable, emphasizes the global threat and homogenization of biodiversity by IAS and indicate that there are still pristine ecosystems that are nearly not modified by humans, but can be highly altered by IAS. Both groups use thick concepts in their argumentation. For example the word 'impact', usually harbors negative connotations and thus communicates a judgment that is not supported by scientific evidence (Larson et al. 2013). Also terms like "threat" which can be conceived neutrally as a decline in population size or reduction of habitats is certainly a value-laden term. This becomes clear when you use threat in unusual contexts, like "learning threatens stupidity" or "medication threatens illnesses". The EU largely adopts the GuP position. However, we have not found any EU documents which clarify a position taking into account change or pristine character of ecosystems.

Table 1: Framing of empirical evidence by two groups with a conflicting policy towards IAS and the EU position between these groups. In bold letters are so-called "thick" concepts (see text).

	Innocent until proven guilty	**Guilty until proven innocent**
Proportion of species becoming invasive	Tens rule[1]! (subtext: risk is negligible)	Tens rule is a conservative estimate; great **impact** by few invasives *In principle adopted by EU*
Importance of effects	Scant evidence for the extinction of species by IAS	IAS are second greatest **threat** to biodiversity world wide *adopted by EU*

Scale-dependence of effects	Local/ regional **biodiversity** is enhanced by IAS	Global **biodiversity** is reduced by IAS; biotic homogenization *Reduction of biodiversity adopted by EU, but homogenization not mentioned*
Perception of ecosystems	Ecosystems change **naturally** and (inevitably) because of human influence	There are still **pristine** ecosystems

[1]Williamson & Fitter 1996: 1661f explain the tens rule as follows: "For a variety of British groups of animals and plants, the statistical rule holds that 1 in 10 of those imported appear in the wild (introduced or casual), 1 in 10 of those introduced become established, and that 1 in 10 of those established become a pest".

Interestingly, both in the scientific discourse nor in the discourse on EU policy, underlying norms and values for evaluating IAS are rarely made explicit. This is exactly what the IuG group criticizes (most fervently Sagoff 2005; see Table 2). There is no systematic account of evaluation criteria. Evaluation takes place in a rather implicit manner by using thick concepts (see above). The IuG group frequently concedes that some non-native species have negative effects but then continues to highlight the (mainly instrumental) value of non-native species. Vice versa, the GuI group emphasizes negative effects of non-native species while admitting that there are also some positive effects. In this respect, the EU policy follows the GuI group. But also in the EU policy, there is no cogent rationale what the underlying values are which are affected by IAS.

Table 2: Differences in taking into account values as a background for evaluating IAS between two groups.

	Innocent until proven guilty	**Innocent until proven guilty**
Damage concept	Damage concept in terms of biodiversity value is "nebulous"	Damage concept is clear: public opinion, legislation, scientific evidence (!)
Framing effects of IAS as positive or negative	"Some non-native species have negative effects but…"	"Some non-native species have positive effects but…" *adopted by EU*

Two broad guiding principles for action against IAS can be distinguished: adaptive management and the precautionary principle. The basic ideas of these guiding principles are already outlined in the list of topoi above. Beside the content of these principles, it is interesting how those endorsing adaptive management or the precautionary principle frame their own strategy and the strategy of their opponents. Adaptive management advocates maintain that they have a realistic world view in that they acknowledge that ecosystems change (cf. perception of ecosystems) and invasions are inevitable. Further, if invasions have occurred, one has to be "realistic" about eradication success: in general, eradication fails. Thus they seek pragmatic solutions. They refer to their opponents as succumbing management pathology, i.e., the tendency of management institutions to inflexibly entrench particular policies in such a way that they end up undermining the values they were originally set up to protect (Evans et al. 2008). In contrast, those arguing for the precautionary principle frequently claim that prevention is much cheaper than control and eradication. They thus

suggest that they follow a cost-efficiency logic. They claim that there is no alternative to eradication and highlight the success of some eradication efforts. Hence, they reason that eradication is successful if one does not give up on it. They frequently downgrade their opponents as being ignorant of the true risks of invasive species.

The EU policy rather follows an adaptive management than a precautionary approach. The proposal for the regulation of IAS on the one hand includes prevention measures, early detection and rapid eradication. But it does so essentially for 50 species which have to be determined in a risk assessment. This approach is thus quite far from a precautionary approach against all non-native species as long as there is no risk assessment.
Table 3: Elements from arguments in documents favouring adaptive management and the precautionary principle

	Adaptive Management	**Precautionary principle**	**EU policy**
Principle in dealing with IAS	See what happens and interfere if necessary	Prevention of risks	Prevention and management of IAS (but focus on only 50 species)
Legitimacy principles	Balancing different interest groups	Following (moral) duties	Following the legislation procedure
Evaluation procedure	Cost-benefit analysis mandatory	Cost-benefit analysis impossible (due to complexity and uncertainty)	Cost-benefit analysis explicitly mentioned for control of widespread IAS.
Description of own character	Being „realistic“ and „pragmatic“	Rational thinkers in terms of cost-efficiency, committed to duties, not giving up	n.a.
Description of opponent	Subject to “management pathology”	Ignorants (downplaying risks)	n.a.

Discussion
It is remarkable that the EU policy rather follows the “guilty until proven innocent” arguments in framing empirical evidence and evaluating IAS but rather pursues an adaptive management approach when taking action. There can be several reasons for that.

First, in the analysed documents, the EU tries to justify its policy. Thus, the argumentation does not try to balance pros and cons for a certain policy but provides arguments for taking measures against IAS. Although the EU does not plead for a guilty until proven innocent judgment the arguments still support an innocent until proven guilty approach as a minimum requirement. This means that action should be taken against the "guilty ones" which is more action than there was before.

Second, there are some sectors which have a great interest in using alien species (e.g., forestry, gardening). These sectors were involved in the legislative procedure and they regard a precautionary approach as inappropriate.

Third, and closely related to the other two reasons, the arguments applied by the EU may be used for strategic purposes. Policy makers might be well aware that a strict interpretation of the precautionary principle cannot be enforced. But to achieve the most wide-ranging legislation which is possible, the arguments emphasize the most serious impacts of IAS which are assumed to be most effective.

As the EU tries to find arguments for the prevention and management of IAS it is not surprising that they do not resume arguments in favour of IAS. More interestingly, the EU does not take up all arguments which are raised against IAS by the scientific community. Notably, these are the topoi of homogenization and pristineness (as a specific understanding of naturalness). We can only speculate about the reasons why these arguments did not prove effective. Homogenization might be regarded as a cultural argument which might be regarded as weak in political debates. Further, homogenization is already partly covered in the context of general biodiversity threat. Pristineness is an idea which became popular in the American discourse on national parks. Further, it is mainly relevant in areas which are mainly untouched by humans. But there are only few of such areas within the boundary of the EU. For these reasons, pristineness might not be regarded as important in the EU biodiversity debate.

One should be aware of the fact that the scientific discourse and the political discourse on IAS have fundamentally different aims. The scientific discourse is a "persuasion dialogue" (Walton 2008). This means that initially there is a conflict of opinions and dialogue partners try to convince each other. In the end a solution or clarification of the issue is achieved. Contrary, the policy discourse is a "negotiation dialogue". At the beginning there is a conflict of interests and the aim of the partners is to get as many interests accepted as possible. There is no solution in this discourse, but rather a compromise or reasonable settlement of conflicts most parties can live with. While we think that all the topoi which are listed above are quite effective in terms of persistence. However, probably only few are effective in a policy discourse and in terms of diffusion and level-crossing. We hope to find out more on that after analyzing our interview data.

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Annex 2 – Case study report: Large Mammals in Norwegian wild-lands

Yennie Bredin, Henrik Linhjem, John Linnell, and Jiska van Djik

Introduction

-Context and issue

One of the most prominent conflicts in ecosystem service and biodiversity management in Norway is the conflict over large carnivore management. The conflict is mainly about wolf, Eurasian lynx, and brown bear. Lynx are relatively widespread, whereas bears and wolves are only found in low numbers along the border with Sweden. The source of conflict is the perceived and actual trade-offs related to use of carnivore habitats, mainly for recreational hunting or for agriculture (grazing). However, the conflict also involves other interests and uses of the Norwegian wild-lands such as recreation, food-, and timber production, nature conservation and the symbolic, cultural value of the Norwegian wild-lands that is associated with Norwegian nationalism and identity. Hence the Norwegian large carnivore management constitutes an interesting case study for argumentation over ecosystem services and biodiversity management.
To explore the Norwegian carnivore conflict within the context of BESAFE we conducted a Q study in South-Eastern Norway. In this area the main game species involved in the conflict are moose (*Alces alces*) and roe deer (*Capreolus capreolus*). Among the domesticated species, free-grazing sheep are most conspicuous. Thus we chose to focus the study on wolf, Eurasian lynx, brown bear, moose, roe deer, and sheep.

-Actors

The most important local stakeholders are various interest groups representing sheep farmers, farmers, landowners, and large herbivore hunters. Regionally and nationally, conservation groups and parts of the urban and rural populations who are generally positive, or negative, to the current carnivore conservation regimes, are relatively more important. The tourism sector is also an important stakeholder group as this group is affected by management of large herbivores and carnivores, e.g. through wildlife as an attraction. In addition, local and regional wildlife management offices are important stakeholders. While we aimed to include representatives at both national and local levels for the Hedmark and Oppland counties, South-Eastern Norway, we focused on the following eight stakeholder groups for our interviews;

1. carnivore NGO
2. conservation NGO
3. farmers
4. hunters and anglers
5. landowners
6. management
7. recreation and tourism
8. sheep farmers

-Arguments and argumentation lines

In addition to the initial review already conducted in WP1, we screened a variety of sources, including but not limited to newspaper articles, reports, scientific journals, expert opinions, and blogs, to distil a diversity of value statements related to the management of sheep, moose, roe deer, wolf, lynx and bear. We also used information gathered from informal conversations with people from key stakeholder groups. From the aggregated value statements we choose the 40 most representative statements, reflecting the range of different type arguments used in the debate. We used these value statements as a basis for our stakeholder interviews and the statements are listed as Q statements below.

1. Large carnivores in Norwegian wildlands may enable/provide the basis for profitable ecotourism.
2. Roe deer hunting provides many positive experiences.
3. It is a joy to know that there is lynx in Norwegian forests.
4. Sheep have long been a natural element in Norwegian wildlands.
5. Bear, wolf and lynx have a right to live in Norwegian nature.
6. Norway must ensure that Norwegian populations of wolf, lynx and bear be conserved for the future, because Norway has committed to do this through numerous international agreements.
7. Roe deer is a plague to many gardeners and therefore the populations must be diminished.
8. Lynx mostly depredate on sick and weak roe deer.
9. Norwegian lamb meat is an ecological product.
10. Wolf can kill people, even if that rarely happens.
11. To see a wild, Norwegian bear in nature is a positive experience for life.
12. Norwegian moose management is so intensive that the king of the forest has become like a domesticated animal.
13. Traditional Norwegian sheep farming incurs larger costs than benefits on the Norwegian society.
14. To eradicate free-living, large carnivores in Norway means that we deprive all future generations of the opportunity to experience these animals in Norwegian nature.
15. The wolf is central for restoring the ecological balance in Norwegian nature.
16. Moose hunting is economically important to Norwegian landowners.
17. It is important to facilitate traditional sheep grazing so that future generations may experience Norwegian sheep farming the way it is today.
18. The Norwegian population targets for lynx, wolf and bear are too low to secure viable populations in the long term and must therefore be increased.
19. Moose meat is an ecological product.
20. Sheep farming and viable carnivore populations cannot coexist.
21. Lynx fills an ecologically important function by keeping the roe deer populations down.
22. The chance of being attacked by a bear, when one is out in the forest, is so low that it can be ignored.

23. Norwegian wolf will be able to contribute to a stronger and healthier moose population, with larger and healthier animals.
24. Large roe deer populations increase the risks of contracting tick-borne diseases.
25. The lynx population ought to be kept low not to compete with hunters for roe deer.
26. Wolf and bear conservation is a threat to traditional farming and a living countryside.
27. Conflicting political guidance creates unnecessary tensions between sheep farming and carnivore management.
28. Bears kill more sheep than they eat, and they often make the kill in a brutal way.
29. The large Norwegian moose population cause many traffic collisions, which result in substantial personal- and material damages every year.
30. Knowledge about wolf, bear and lynx give people security and make them more apt to avoid unwanted encounters with large carnivores.
31. Today's sheep farming practices contribute to secure rare species and valuable cultural landscapes.
32. The wolf is more of a burden to the Norwegian society than it is of value.
33. Even without carnivores an unacceptable high amount of sheep die as a consequence of the traditional Norwegian sheep grazing practices.
34. A larger Norwegian wolf population, than the one we have today, would have large negative consequences for Norwegian moose hunting.
35. Moose hunting is an important constituent of our Norwegian cultural heritage.
36. That there is wolf in Norway contributes to human development towards a better understanding of nature, self-understanding, and an increased quality of life.
37. Increased bear hunting will generate greater safety for people and domestic animals that live in areas with carnivores.
38. The roe deer is an important prey for Norwegian carnivores.
39. Illegal hunting of lynx, wolf and bear are a threat to the government's current management of population trends for these animals.
40. A large moose population cause great problems and economic losses for forest owners through their selective grazing of the forest.

-Events

We defined the event in this study as the Q interviews made with relevant stakeholders. The respondents were selected from different interest groups at different geographical scales (typically "hunters", "conservationists", "farmers", "management" etc). The interviews were in accordance with the Q-methodology[2] and included an initial sorting exercise based on the 40 Q statements and a follow-up discussion where the subjects were asked to explain their logic in the sorts. The individual rankings (or viewpoints) given by the respondents were then subject to a factor analysis.

[2] The Q methodology provides a foundation for the systematic study of subjectivity, a person's viewpoint, opinion, beliefs, attitude, and the like (Brown 1993). Typically, in a Q methodological study people are presented with a sample of statements about some topic, called the Q-set. Respondents, called the P-set, are asked to rank-order the statements from their individual point of view, according to some preference, judgement or feeling about them. By Q sorting people give their subjective meaning to the statements, and by doing so reveal their subjective viewpoint (Smith 2001) or personal profile (Brouwer 1999).

Analysis

-Data, methods and quality control

1) To identify arguments and argumentation lines we made a literature review and accumulated different-type value statements from a variety of sources, see the section on arguments and argumentation lines. Through comparison we made a selection of the 40 most representative statements, which reflected the diversity of opinions and different type arguments present in the debate,

2) Q sorts and follow-up discussions

The 40 value statements, derived from the literature review, represented key arguments about the management of sheep, moose, roe deer, wolf, lynx and bear, in South-Eastern Norway and constituted the Q statements that we used for the Q sorts. The Q statements may be classed into the themes "Provisioning", "Regulation / Maintenance", or "Cultural" ecosystem services, using the CICES classification system. To secure a statistically sound analysis (e.g. less variation than observations) we used 26 informants selected from the eight key stakeholder groups (carnivore NGOs, conservation NGO, farmers, hunters and anglers, landowners, management, recreation and tourism and sheep farmers) with two to four informants from each group, from national and regional organizations. Informants were selected based on an interest-influence analysis and their relative importance within the organizations that they represent. They were contacted through e-mail primarily. The interviews were done face-to-face and informants were first asked to sort the 40 Q statements according to how well they represented their own thoughts. Next there was a follow-up discussion in which the informants were encouraged to explain their reasons for sorting the statements in their particular way, thus revealing their subjective views on the topics presented to them. The data was collected in the period May-July 2013.

3) Data analysis & description of narratives (discourse analysis through the Q methodology)

To analyse the Q sort data from the interviews we used the PQmethod software[3] to run a principle components analysis (PCA) followed by a factor analysis. To describe the narratives, the quantitative, statistical analysis was combined with a qualitative analysis of the follow-up discussions through so-called constant comparison. Narratives were then compared to identify more important value arguments within narratives and similarities and differences among narratives. To complete the narrative analysis, the groups of different key stakeholders that cluster into the different narratives, are also described to uncover patterns in affiliations among stakeholders and to typify groups.

4) Quality control of narratives.

[3] http://schmolck.userweb.mwn.de/qmethod/index.htm

By combining the quantitative analysis of the Q sorts with the qualitative analysis of the follow-up discussions it is possible to ensure a match between the individual accounts and the descriptions of the narratives. In addition the narratives are strengthened through complementing quotes and direct examples from the interviews. To ensure accuracy in the analysis and the descriptions of narratives the interviewees were also invited to see and comment on the resulting narratives and their individual placements within, or outside, the narratives. Their feedback was later considered for the final representation of the narratives.

Results

From the document analysis we extracted the most prominent value arguments used in the management debate about large mammals in South-Eastern Norway. From the Q sort analysis we identified three clusters of key stakeholders that grouped into different narratives (again linked with key ecosystem services). These narratives may be typified as narrative 1 (N1) “Pro large carnivores”, narrative 2 (N2) “Pro sheep”, and narrative 3 (N3) “Pro hunting, contra competition from large carnivores”. Two of the interviewees did not group into any narrative. Thus we could determine the relative importance of the 40 value arguments among the three groups of stakeholders, as well as we could explore the areas of agreement and disagreement among the associated narratives.

-Arguments - their types, occurrence, who makes the arguments, etc.

From the analysis we found that conservationists tended to focus on intrinsic value (N1), farmers were concerned about the protection strategies and focused on the notions that supported their point of view (N2), and hunters and foresters assumed a more utilitarian approach (N3).
The major points of contention in the Norwegian case study arose from questions about the kind of nature that we desire. For the wolf in particular, the question was if we want it in the Norwegian outfield or not. Furthermore, the interviewees reported that conflicting political guidance created tensions between sheep farming and carnivore management. However, all three groups agreed that bears, wolves and lynxes had a right to live in Norway.

The table below is taken from our manuscript and shows the Q statements, representing prominent value arguments used in the Norwegian carnivore debate. The Q statements are organized into the different ecosystem service types according to the CISES and shows how arguments were ranked, or valued, within the three narratives.

TABLE 1. Q Statements classified in accordance with the CICES classification system of ecosystem services. Each statement may be linked to more than one service but in the table statements are placed according to the service with which it is primarily associated. Narrative Q-sort values, z-scores, distinguishing statements and consensus (agreement) are shown for the three narratives. The narratives, N1; *Pro conservation; pro large carnivores*, N2; *Pro sheep* and N3; *Pro Hunting, contra competition from large predators*, comprise the opinions of institutional actors at national or county level for the Hedmark and Oppland counties in south-eastern Norway. The Q-sort values and z-scores describe the statements' relative importance within the narratives. Q-sort values run from "disagree most" (-5) to "agree most" (5). Z-scores have standardized mean and standard deviation values and allow for direct comparisons of scores for the same statements across narratives (Brown, 1980). More important topics within the narratives are indicated by higher or lower Q-sort values and z-scores. Also distinguishing statements, unique views, are indicated next to the particular z-scores for each of the narratives. Topics for which there were high levels of agreement among the narratives are shown in the right most column; *consensus (Non- significant differences)*

Theme	Service class	Q statement number	Q statement	Narrative Q-sort values and z-scores						Consensus (Non-significant difference)
				N1		N2		N3		
Provisioning	Nutrition	9	Norwegian lamb meat is an ecological product	-2	-0.859**	2	0.735**	0	-0.098**	
		13	Traditional Norwegian sheep farming incurs larger costs than benefits on the Norwegian society	-2	-0.517	-5	-2.100**	-2	-0.877	
		19	Moose meat is an ecological product	-1	-0.237**	3	0.907	1	0.,549	
Regulation / Maintenance	Maintenance of physical, chemical, biological conditions	7	Roe deer is a plague to many gardeners and therefore the populations must be diminished	-4	-1.511	-5	-1.538	-4	-1.460	^^
		8	Lynx mostly depredate on sick and weak roe deer	-1	-0.418	-2	-0.833	-5	-1.558**	
		15	The wolf is central for restoring the ecological balance in Norwegian nature	4	1.107**	-3	-1.269**	-5	-2.090**	
		18	The Norwegian population targets for lynx, wolf and bear are too low to secure viable populations in the long term and must therefore be increased	5	1.673**	-5	-1.691	-5	-1.591	
		21	Lynx fills an ecologically important function by keeping the roe deer populations down	3	0.818**	-3	-0.912	-3	-0.993	
		23	Norwegian wolf will be able to contribute to a stronger and healthier moose population, with larger and healthier animals	1	0.358**	-2	-0.562**	-3	-1.381**	
		24	Large roe deer populations increase the risks of contracting tick-borne diseases	0	-0.025	-2	-0.634	-2	-0.347	^
		25	The lynx population ought to be kept low not to compete with hunters for roe deer	-5	-1.740	-4	-1.336	-1	-0.220**	
		38	The roe deer is an important prey for Norwegian carnivores	2	0.731	2	0.509	3	0.864	^^
		40	A large moose population cause great problems and economic losses for forest owners through their selective grazing of the forest	1	0.449	2	0.783	0	-0.065*	
l t u r	Physical and	1	Large carnivores in Norwegian outland may	1	0.475**	-2	-0.399	-2	-0.677	

	intellectual interactions with biota, ecosystems, and land- / seascapes.		enable/provide the basis for profitable ecotourism							
		4	Sheep have long been a natural element in Norwegian outfield	-3	-0.927**	5	1.425	4	1.193	
		5	Bear, wolf and lynx have a right to live in Norwegian nature	5	1.569*	4	0.969	1	0.676	
		6	Norway must ensure that Norwegian populations of wolf, lynx and bear be conserved for the future, because Norway has committed to do this through numerous international agreements	5	1.672**	1	0.458**	-3	-1.209**	
		10	Wolf can kill people, even if that rarely happens	0	0.036	-1	-0.158	3	0.957**	
		14	To eradicate free-living, large carnivores in Norway means that we deprive all future generations of the opportunity to experience these animals in Norwegian nature	4	1.214**	0	0.270	1	0.569	
		16	Moose hunting is economically important to Norwegian landowners	-1	-0.096*	1	0.400	3	0.829	
		17	It is important to facilitate traditional sheep grazing so that future generations may experience Norwegian sheep farming the way it is today	-3	-1.005**	5	1.641**	0	0.248**	
		22	The chance of being attacked by a bear, when one is out in the forest, is so low that it can be ignored	0	0.264	-1	-0.096	1	0.482	^
		26	Wolf and bear conservation is a threat to traditional farming and a living countryside	-5	-1.613**	1	0.349	-1	-0.150	
		27	Conflicting political guidance creates unnecessary tensions between sheep farming and carnivore management	1	0.412	3	0.959	2	0.768	^
		28	Bears kill more sheep than they eat, and they often make the kill in a brutal way	-1	-0.169	0	0.303	-1	-0.180	^^
		29	The large Norwegian moose population cause many traffic collisions, which result in substantial personal- and material damages every year	2	0.714	4	1.095	2	0.746	^^
		30	Knowledge about wolf, bear and lynx give people security and make them more apt to avoid unwanted encounters with large carnivores	2	0.699	4	1.108	0	0.217	
		31	Today's sheep farming practices contribute to secure rare species and valuable cultural landscapes	-2	-0.713**	5	2.061**	0	0.387**	
		33	Even without carnivores an unacceptable high amount of sheep die as a consequence of the traditional Norwegian sheep grazing practices	3	1.081**	-4	-1.472**	-1	-0.200**	

		34	A larger Norwegian wolf population, than the one we have today, would have large negative consequences for Norwegian moose hunting	-4	-1.563**	0	0.156**	4	1.012**	
		35	Moose hunting is an important constituent of our Norwegian cultural heritage	0	-0.004**	3	0.941	5	1.432	
		37	Increased bear hunting will generate greater safety for people and domestic animals that live in areas with carnivores	-4	-1.432	-1	-0.155	0	0.256	
		39	Illegal hunting of lynx, wolf and bear are a threat to the government's current management of population trends for these animals	2	0.606	0	0.125	-4	-1.387**	
	Spiritual, symbolic and other interactions with biota, ecosystems, and land- / seascapes.	2	Roe deer hunting provides many positive experiences	0	0.037	0	-0.064	5	1.486**	
		3	It is a joy to know that there is lynx in Norwegian forests	3	0.905	1	0.399	2	0.687	^
		11	To see a wild, Norwegian bear in nature is a positive experience for life	4	1.351	2	0.607**	4	1.347	
		12	Norwegian moose management is so intensive that the king of the forest has become like a domesticated animal	-2	-0.567	-4	-1.447	-2	-0.976	
		20	Sheep farming and viable carnivore populations cannot coexist	-3	-1.130**	-1	-0.219**	2	0.727**	
		32	The wolf is more of a burden to the Norwegian society than it is of value	-5	-1.837**	0	-0.051**	5	1.454**	
		36	That there is wolf in Norway contributes to human development towards a better understanding of nature, self-understanding, and an increased quality of life	0	0.189**	-3	-1.263	-4	-1.427	

Asterisks indicate distinguishing statements for each of the narratives; one asterisk (*) indicate statements that were significantly different at P<.05, and two asterisks (**) indicate statements that were significantly different at P<.01. Circumflexes indicate consensus, statements for which there was agreement among the narratives; one circumflex (^) indicate statements for which there was Non-significant difference at P<.01, and two circumflexes (^^) indicate statements for which there was Non-significant difference at P<.05.

Discussion

The Q statements that people reacted to more strongly (e.g. valued more strongly in positive or negative terms), within each of the groups, are marked +/- 5 or +/- 4 in the table above. Presumably arguments along the lines of those Q statements might resonate more effectively with people that have similar interests to the stakeholders that clustered into each of the groups respectively. To achieve concordance across stakeholder groups or interests it might be more effectively to use arguments along the lines of those Q statements for which there was strong Non-significant differences (e.g. Q statements that are marked ^^, or ^).

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Annex 3 – Case study report: Water companies investment planning, UK

Laurence Mathieu, Rob Tinch

Introduction

-Context

In 1989, the ten water and sewage authorities that were until then owned by the government in England and Wales, were privatised and became limited companies[4]. The only two water companies that have not been privatised in the United Kingdom are Northern Ireland Water and Scottish Water. Following the privatisation, and in order to protect customers' interests as well as the environment, the functions associated to the regulation of the industry and the provision of water and sewerage services were separated into three distinct independent bodies, including the National Rivers Authority, which became part of the Environment Agency (as the environmental regulator), the Drinking Water Inspectorate (as the drinking water quality regulator), and Ofwat (as the economic regulator of the water and sewage industry).

Ofwat's remit is to protect consumers' interests. Every five years, Ofwat conducts a price review (PR), which aims at setting limits to the prices each water company can charge their customers. The charges are set so that they represent the best value for consumers and allow water companies to provide the required services in a sustainable way. Price reviews also establish the level of investments made by water companies in the environment; the attention given to environmental improvement within price reviews, driven by the UK government policy, has been gradually increasing over the years.

In 2003, the Water Framework Directive became part of the UK law and introduced the notion of river basin management. The notion of catchment management was referred to for the first time in a Price Review in 2004. Defra (2008) noted "the Government expects Ofwat to support companies who wish to adopt innovative approaches to improving water quality, including working with land managers to control diffuse water pollution at source, where this is to the benefit of water customers". Defra issued the guidance on river basin planning as part of the implementation of the Water Framework Directive in August 2006 (Defra, 2006).

As a regulated industry, large water companies in the UK must justify their expenditure and pricing plans. In order to justify large scale (€bns) investments in land management and water treatment technologies, they are required to produce clear evidence both on their customers' preferences, and on wider benefits to the environment. Over the last decade this sector's use of economic valuation evidence, including from stated preference studies, has been at the forefront of applications of these methods. Ecosystem services thinking is now driving further innovations in their approach.

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[4] http://www.ofwat.gov.uk/mediacentre/fastfacts/prs_web_timeline.pdf

-Issue

The case study presented in this section looks at water companies' investment approach in catchment management in the UK and explores the way arguments for biodiversity, and for its capacity to support or provide ecosystem services, influence water companies' decisions to invest in approaches aiming at protecting and enhancing the environment, such as catchment management programmes and similar projects.

A water catchment is defined in Ofwat (2011) as "an area of land through which water from any form of precipitation (such as rain, melting snow or ice) drains into a body of water (such as a river, lake or reservoir, or even into underground water supplies – 'groundwater')". The quality and quantity of water bodies within a particular catchment will be affected by both the management activities taking place in that catchment and the state of the natural environment. This will influence the ecosystem service potential for provision of clean water / water quality, but at the same time other ecosystem services will be affected in the process. For example, restoration of peat bogs will improve raw water quality and will also increase the environment's natural ability to store carbon, reduce fire risk and enhance protection of biodiversity.

Catchment management approaches offer potentially cost-effective solutions to water companies in terms of ensuring better raw water quality and therefore reducing the cost of water treatment, which in time will benefit the customers through lower prices. Customers buy services from water companies, which in turn supply them with water (or sewerage services) in their area of operation. In order to obtain good quality drinking water, water companies and their customers (via their water bill) have been paying for water treatment to remove pollutants from water taken in the environment. For the last 10 years, it has been suggested that catchment management schemes could be a more cost-effective way of tackling diffuse pollution at source and could consequently provide financial benefits to customers.

Ofwat's approach to these issues has evolved over time. The notion of catchment management was referred to for the first time in PR04; at PR09, Ofwat showed support towards water company plans to invest on catchment management initiatives and research programmes; and at PR14 the industry regulator Ofwat will be encouraging water companies to increase their investments in sustainable solutions such as catchment management schemes as part of the next investment period between 2015 and 2020. So there is likely to be a strong business case for water companies to increase investment in catchment management initiatives in relation to PR14.

-Actors

The provision of clean water is of interest to a large range of stakeholder groups. Water companies are the main initiators of catchment management schemes, both because they are major beneficiaries of water quality improvement via catchment management, and because they are in a position to influence catchment management due to direct ownership of land in some cases, and through their financial investing power. The stakeholders (or ecosystem service beneficiaries) involved in the water industry are presented in Table 1; they were

identified through information obtained in technical documents, policy documents, and relevant water industry related websites listed at the end of Table 1.

Table 1. Main stakeholders involved in the water industry in the UK

Stakeholders	England and Wales	Northern Ireland	Scotland
General	Consumers		
	Farmers (farm owners and tenants) / Land owners / Land managers		
	Recreational users		
	Water companies	Northern Ireland Water http://www.niwater.com Government Owned Company that provides the water and sewerage services in NI	Scottish water http://www.scottishwater.co.uk/ Government Owned Company that provides the water and sewerage services in Scotland
Water consumer representatives	Consumer Council for Water (CCWater) http://www.ccwater.org.uk/ Represent water and sewerage consumers in England and Wales	Consumer Council for Northern Ireland (CCNI) http://www.consumercouncil.org.uk/ Represent water consumers in Northern Ireland	Consumer Futures http://www.consumerfutures.org.uk/ Represent water consumers in Scotland
Environmental NGOs	Rivers Trusts (RT) http://www.theriverstrust.org The aims of RT are, "to co-ordinate, represent and develop the aims and interests of the member Trusts in the promotion of sustainable, holistic and integrated catchment management and sound environmental practices, recognising the wider economic benefits for local communities and the value of education."		Rivers and Fisheries Trusts of Scotland (RAFTS) http://www.rafts.org.uk/ A leading independent freshwater conservation charity representing Scotland's national network of rivers and fisheries Trusts and Foundations
	The Royal Society for the Protection of Birds (RSPB) http://www.rspb.org.uk The RSPB works for the conservation of biodiversity, especially wild birds and their habitats.		
Policy makers	Defra https://www.gov.uk/government/organisations/department-for-environment-food-rural-affairs Responsible for policy on all aspects of water in England and Wales Welsh Assembly Government http://www.assemblywales.org/ Responsible for regulation of drinking water quality, environmental water quality, water resource management and water industry regulation	Department for Regional Development - Water Policy Division http://www.drdni.gov.uk/index/water_policy.htm Responsible for policy on water and sewerage services and management of the Department's shareholder interest in Northern Ireland Water	The Scottish Government http://www.scotland.gov.uk/Topics/Business-Industry/waterindustryscot/who Manage the relationship with Scottish Water and its regulators within the statutory framework established by the Scottish Parliament; sets the objectives for the water industry and the principles that should underpin charges
Water quality regulators	Drinking Water Inspectorate http://dwi.defra.gov.uk/ Responsible for the regulation of drinking water quality in England and Wales	Drinking Water Inspectorate http://www.doeni.gov.uk/niea/water-home/drinking_water.htm Responsible for regulating drinking water quality in Northern Ireland	Drinking Water Quality Regulator for Scotland (DWQR) http://www.dwqr.org.uk/ Ensure that drinking water in Scotland is safe to drink
Non-departmental public body that Implements the policies of UK government departments	Environment Agency http://www.environment-agency.gov.uk/ Responsible for ensuring that water companies implement the National Environment Programme	Northern Ireland Environment Agency http://www.doeni.gov.uk/index/protect_the_environment/water.htm Regulate water quality, and the conservation of	Scottish Environment Protection Agency (SEPA) http://www.sepa.org.uk/water.aspx Regulate water quality, and the conservation of freshwater, and hydrological processes

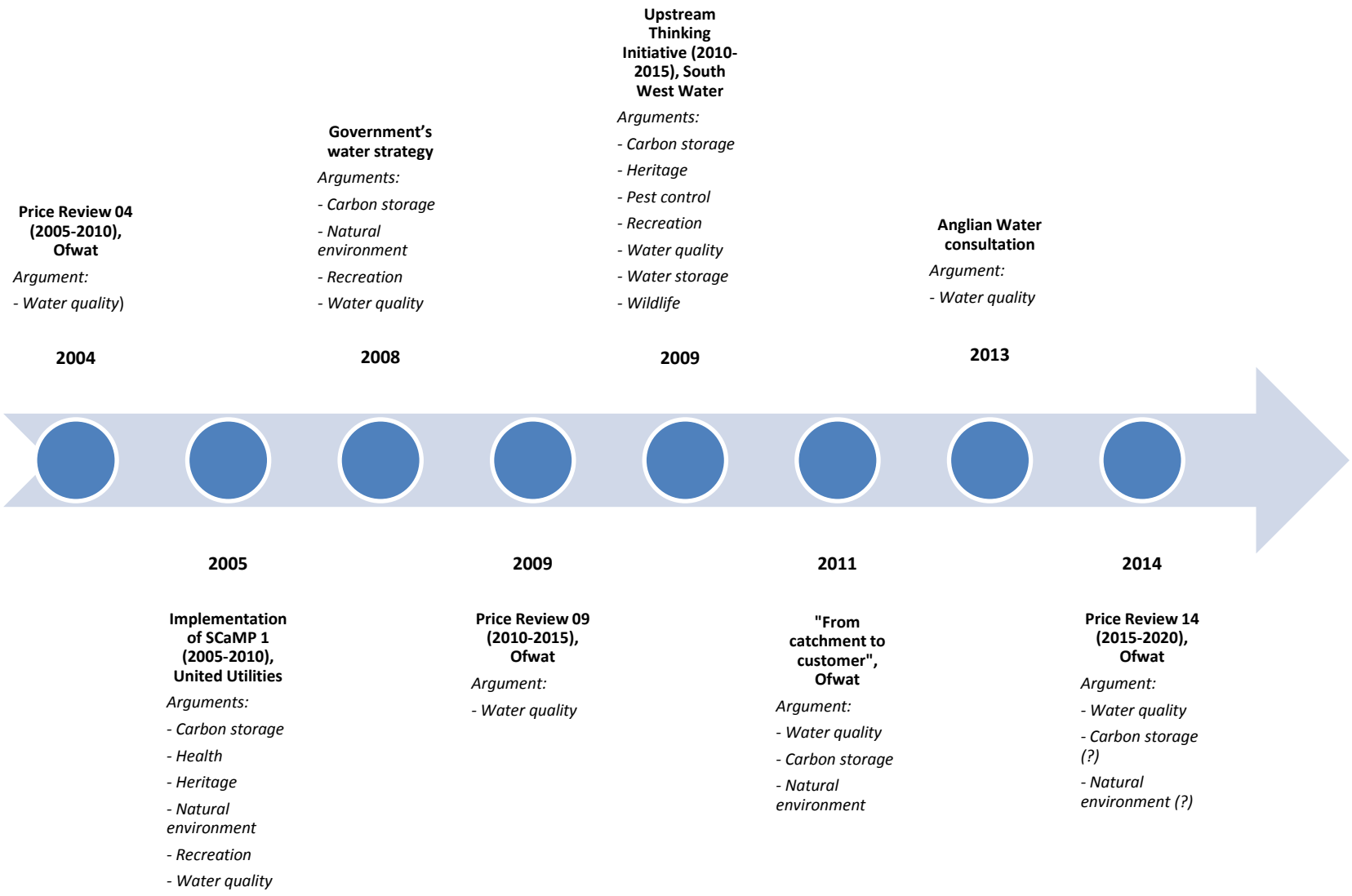
	and offers guidance on the content of Water Resource Management Plans – England and Wales	freshwater, and hydrological processes.	
Executive Non-departmental Public Body that provides practical advice to the government on how best to safeguard England's natural environment	Natural England / Natural Resources Wales http://www.naturalengland.org.uk/ http://naturalresourceswales.gov.uk/?lang=en Responsible for ensuring the conservation of the natural environment and sustainable development		
Economic regulator	Ofwat http://www.ofwat.gov.uk/ Economic regulator of the monopoly water and sewerage companies in England and Wales	Utility Regulator for water http://www.uregni.gov.uk/water/ Economic regulator of Northern Ireland Water; ensures that consumers receive value for money water and sewerage services	The Water Industry Commission for Scotland (WICS) http://www.watercommission.co.uk/ Determine price limits for Scottish Water based on the lowest reasonable cost of achieving Ministers' Objectives for the water industry
Water Industry research and data provision	UK Water Industry Research http://www.ukwir.org Provide a framework for the procurement of a common research programme for UK water operators on 'one voice' issues		
Water stakeholders' groups		Water Stakeholders' Steering Group http://www.drdni.gov.uk/water_stakeholder_partnership_agreement.pdf Comprises a senior representative from each NI organisation (mentioned in this table)	Outputs Monitoring Group (OMG) Ensures that Ministers' objectives are delivered; brings together all major stakeholders in the Scottish water industry; chaired by the Scottish Government and operates to its protocol and remit
Water ombudsman			Scottish Public Services Ombudsman (SPSO) http://www.spso.org.uk/ Final stage for complaints about water and sewage provider
Water service supplier representatives	Water UK http://www.water.org.uk Water UK represents all major UK water and wastewater service suppliers at national and European level. Water UK provides a positive framework for the water industry to engage with government, regulators, stakeholder organisations and the public.		
Independent conservation body	WWF UK		

Source: England/Wales/UK: http://en.wikipedia.org/wiki/United_Kingdom_water_companies; Northern Ireland : http://www.niwater.com/regulators.aspx and http://www.drdni.gov.uk/index/water_policy.htm; Scotland: http://customerforum.org.uk/our-stakeholders/ and http://www.scotland.gov.uk/Topics/Business-Industry/waterindustryscot/who

- Events

We consider this case study to be the whole process of argument over catchment management in the water industry; the events within the case study include the individual reports and stages associated with the catchment management approach. A timeline of the most important events related to the implementation of the catchment management approach is presented in Figure 1. Although many other events are associated with the catchment management approach, a selection of key events had to be made for the purpose of this study.

Figure 1. Timeline of events related to the implementation of the catchment management approach and associated arguments


Price Review 04 (2005-2010), Ofwat
Argument:
- Water quality)
2004
Government's water strategy
Arguments:
- Carbon storage
- Natural environment
- Recreation
- Water quality
2008
Upstream Thinking Initiative (2010-2015), South West Water
Arguments:
- Carbon storage
- Heritage
- Pest control
- Recreation
- Water quality
- Water storage
- Wildlife
2009
Anglian Water consultation
Argument:
- Water quality
2013
2005
Implementation of SCaMP 1 (2005-2010), United Utilities
Arguments:
- Carbon storage
- Health
- Heritage
- Natural environment
- Recreation
- Water quality
2009
Price Review 09 (2010-2015), Ofwat
Argument:
- Water quality
2011
"From catchment to customer", Ofwat
Argument:
- Water quality
- Carbon storage
- Natural environment
2014
Price Review 14 (2015-2020), Ofwat
Argument:
- Water quality
- Carbon storage (?)
- Natural environment (?)

-Arguments and argumentation lines

This case focuses in particular on the use of arguments in the evolution of policy, asking:

- How do water companies use arguments to justify large investments in catchment management?
- How do arguments influence the investment strategy of water companies and the industry regulator's decisions?
- How effective are arguments used in supporting the protection of biodiversity?

Table 2 shows the occurrence of arguments for each event used in this case study.

Table 2. Types of arguments as identified in the case study in relation to each event

Event / Argument	PR04[5] (2004)	SCaMP[6] (2005)	Water Strategy[7] (2008)	PR09[8] (2009)	Upstream Thinking[9] (2009)	From catchment to customer (2011)	AW consultation[10] (2013)	PR14[11] (2014)
Carbon storage		UU	Defra		SWW	Ofwat		*Ofwat*[b]
Health		UU						
Heritage		UU			SWW			
Natural environment		UU	Defra			Ofwat		*Ofwat*[b]
Pest control[a]					SWW			
Recreation		UU	Defra		SWW			
Water quality	Ofwat	UU	Defra	Ofwat	SWW	Ofwat	AW customers	Ofwat
Water storage					SWW			
Wildlife					SWW			

Notes: UU= United Utilities; SWW= South West Water; AW= Anglian Water. [a]Refers to a decrease in the presence of ticks and liver flukes in re-wetted areas. [b] Potential argument for PR14.

Analysis

-Data

[5] http://www.ofwat.gov.uk/pricereview/pr04/
[6] http://corporate.unitedutilities.com/scamp-index.aspx;
United Utilities (2011) United Utilities sustainable catchment management programme. Volume 1. Executive report.
[7] Defra (2008) Future Water - The Government's water strategy for England.
[8] http://www.ofwat.gov.uk/pricereview/pr09faqs/
[9] http://www.upstreamthinking.org/index.cfm?articleid=8692
[10] Dialogue by Design (2013) Discover, Discuss, Decide: Consultation - Summary of responses. Report prepared for Anglian Water.
[11] http://www.ofwat.gov.uk/pricereview/pr14/

Data were collected via a review of existing relevant literature, including Ofwat's Price Reviews, literature on catchment management schemes such as Payment for Ecosystem Services (PES) with regard to famers / land managers affected by the catchment management approach, results of surveys conducted with water companies' customers, and literature on recreational users' Willingness to Pay (WTP) for ecosystem services. Seven stakeholder's representatives considered as relevant for the purpose of our study were contacted in order to gain their views on the evolution of arguments in the context of the catchment management approach within the water industry. The stakeholders contacted included the Environment Agency, a policy adviser for the UK water industry, Natural England, and the following water companies, Anglian Water, South West Water, United Utilities, and Wessex Water; out of those, 4 showed an interest in the study and were interviewed by telephone (representatives from the Environment Agency, Anglian Water, United Utilities, and a policy adviser for the UK water industry) in order to explore their views on the evolution of the arguments for the protection of biodiversity in the context of catchment management approaches.

-Methods and quality control

Information obtained from documents has been analysed according to the way arguments related to ecosystem services were used by stakeholders, using the BESAFE database and following the guidance manual. Qualitative data obtained from interviews was compared to the findings from the literature review and used to verify those findings. Argument classifications were discussed within the research team and were subsequently further checked via the overall BESAFE database checking.

Results

-Arguments

As mentioned above, the benefits identified in this case study include: water quality, carbon storage, health benefits, heritage, natural environment, pest control, recreation, water storage and wildlife. These arguments were identified in the literature and / or mentioned by stakeholders during the interviews. Key stakeholders making the arguments included, Ofwat, Defra, the Environment Agency, and the following water companies, Anglian Water, South West Water and United Utilities.

The enhancement of water quality via changes to land management practices within catchment areas was identified as the main argument by the majority of the stakeholders. At PR04 and PR09, Ofwat only mentioned "water quality" as the main argument for the protection of biodiversity within catchment areas; this can be explained by the fact that Ofwat's main role is to protect consumers' interests. Ofwat is in favour of conservation of biodiversity if it favours water consumers or protects water consumers interests as the improvement of water quality is likely to result in lower water rates paid by water consumers. However, in addition to water quality, Ofwat now also mentions environment quality and climate regulation as arguments in support to catchment management approaches.

Water companies and other stakeholders such as the Environment agency and Defra also mentioned arguments such as carbon storage, health benefits, heritage, natural environment,

pest control (fewer ticks and no liver flukes in re-wetted areas), recreation, water storage or wildlife.

"Water quality" was also mentioned as being the most important benefit associated with the conservation of biodiversity in upland catchments by the Anglian Water representative and the United Utilities representative, and the second most important benefit by the Environment Agency interviewee, behind protection from flood risk.

The policy adviser interviewed mentioned non-use values, values around habitats provision in terms of individual species, and carbon storage and sequestration (depending on the land type) as the main benefits associated with the conservation of biodiversity in upland catchments, also stating that there would be benefits to water quality that would be treated separately from the ecological biodiversity habitat/species.

When prompted for any other important benefits such as intrinsic value, interviewees recognized their importance, but indicated that the priority was to achieve water quality targets cost-effectively. This appears to be influenced by the WFD requirement to achieve good quality status of water bodies[12], as well as by the need to meet Ofwat's requirements for demonstrating benefits to customers.

-Effects of arguments

Potential effects

The key argument used in this case study, based on the enhancement of water quality via changes to land management practices within catchment areas, takes the form of an appeal to knowledge and logic in the sense that upstream catchment management schemes tackle diffuse pollution at source before it reaches a water treatment works; the argument is also framed by many actors in economic terms, as resulting in a cost saving. This stands up in terms of its internal logic and coherence. The assumptions and evidence used in establishing the value claimed are however mainly based on qualitative observations, and are therefore considered as 'average' in terms of robustness. The potential for this argument to feed in to the decision process is nevertheless judged as 'high' (because logical, widely recognised and accepted), even though it is recognised that better data and understanding are needed in order to quantify the benefits in terms of raw water quality. These data will be generated over time as water companies measure the changes in raw water quality coming from catchments benefiting from new management initiatives. The main actors behind the argument are (1) the government, via the implementation of the WFD; (2) the water companies, with the aim to tackle diffuse pollution and save on water treatment costs; (3) AW customers as water quality improvement could lower their water bill; (4) Ofwat, which started as an audience and has now adopted the argument. Ofwat has gradually increased its support for catchment management as the approach has shown some evidence of water quality improvement and consequently potential benefits to customers in terms of lowering their bills.

[12] http://ec.europa.eu/environment/water/water-framework/

The improvement in water quality has already been observed in some areas (from qualitative data) as the result of catchment management, e.g. Wessex Water and United Utilities via SCaMP (Ofwat, 2011); therefore catchment management schemes could potentially also deliver better water quality across England and Wales.

Other arguments prevailing in this study include carbon storage and recreation. These arguments for catchment management take the form of an appeal to knowledge and logic in the sense that upstream catchment management schemes contribute to combating climate change through reduced emissions from rewetting blanket bog and support recreational activities, ecotourism, and interactions with the natural environment. These arguments both stand up in terms of their internal logic and coherence. For both arguments, the assumptions and evidence used in establishing the value claimed are considered as 'average' in terms of robustness. Although literature on recreational users' Willingness to Pay (WTP) for ecosystem services exists, none was mentioned in the context of the process under investigation, and there is no quantitative evidence on improvements to recreational experience or the number of trips due to catchment management schemes. The potential for these arguments to feed in to the decision process is judged as 'average'. The main actors behind these arguments are the government, the water companies, and Ofwat for the carbon storage argument from 2011.

Arguments such as natural environment and heritage were also mentioned by water companies, and Ofwat (for natural environment). These arguments are partly an appeal to knowledge and logic but also have some emotional framing. The implementation of habitat restoration treatments contributes to enhancing and protecting the natural environment, and large scale landscape works such as moorland restoration contributes to improving visitor's experience. These arguments both stand up in terms of their internal logic and coherence. The assumptions and evidence used in establishing the value claimed are considered as 'average' in terms of robustness for the argument on natural environment as based on qualitative observations, and 'low' for heritage. The potential for these arguments to feed in to the decision process is judged as 'low' because these issues are less salient for decision makers.

Observed effects

To understand the effectiveness of the arguments, their evolution over time has to be considered. The integration of environmental improvement within price reviews was initiated as early as the 1999 Price Review, though the notion of catchment management was not referred to at this stage.

The first major initiative was the Sustainable Catchment Management Programme (SCaMP), initiated in 2005 by United Utilities' (UU). The key argument used by United Utilities was that catchment management would improve water quality, via changes to land management practices that would also bring other benefits such as an improved natural environment and improved livelihoods for farmers.

United Utilities faced difficulties in persuading Ofwat to allow funding for such projects, in part due to the level of uncertainty related to their outcome, and to the need to demonstrate benefits to consumers in order to justify investments. However, Ofwat, as part of the 2004 Price Review, allowed UU to fund projects in two areas, following support expressed by UU customers for the land management project in United Utilities' area. SCaMP has been studied

by various authors, from different perspectives, including for example eftec (2009) "Overall, we conclude that it is likely that SCaMP provides net ecosystem service benefits, after accounting for scheme costs, suggesting that SCaMP is likely to be a sound investment for the UK as a whole", and Tinch (2009) "The main beneficiaries are UU and its customers … but secondary benefits for nature conservation, recreation and greenhouse gas regulation [mean] SCaMP is largely a win-win case." The observed positive outcomes of SCaMP1 influenced Ofwat with regard to supporting the second phase of the SCaMP project (Ofwat, 2011). We can therefore consider that efforts to demonstrate and measure benefits increase the effectiveness of arguments.

Wessex Water also implemented catchment management schemes in 2005 following PR04. Assessing the results, they estimated that following the implementation of the schemes, the money spent to solve water quality issues represented on average one-sixth of the amount of money they would have to spend if they had used water treatment alternatives. Overall, early results from several of the companies suggested that some of their catchment management schemes were beginning to deliver benefits – better water quality and lower treatment costs – for customers.

This observation has convinced Ofwat that the catchment management approach can deliver benefits to consumers. The improvement of raw water quality as part of catchment management schemes was referred to in the 2009 Price Review. Ofwat encouraged actions to improve the quality of raw water, such as catchment management schemes for drinking water quality, and supported schemes taking forward the polluter pays principle. Ofwat supported water companies' proposals to spend £60 million on more than 100 catchment management schemes and investigations.

As part of the 2009 Price Review (PR09), South West Water were given permission by Ofwat to invest £9.1 million in the Upstream Thinking Initiative. The work undertaken under the programme aimed at improving raw water quality and managing the quantity of water at its source through improved land management (CSERGE and WRT, 2013). According to South West Water, following such an approach (rather than investing in water pollution treatment downstream) has a benefit-cost ratio equivalent to 65 to 1; this ratio was calculated on the basis of the benefits from postponed investments in water treatment plant upgrades. In addition, South West Water is also expected to benefit from a twenty percent savings in its expenditure related to the running of existing water treatment plants, via the Upstream Thinking Initiative (OECD, 2013). The measures taken to improve water quality within this initiative will also be beneficial for conserving water supplies and mitigating flood risk, since both the quality and quantity of ground and surface waters are controlled by land uses for a specific climate and at a particular location. This also takes place in a context of adaptation to environmental change, where the variability of rainfall might increase and the frequency of extreme droughts or rainfall events might occur more regularly due to climate change (OECD, 2013). Throughout PR09, i.e. over the period 2010-2015, South West Water spending on moorland and farmland projects (£9m) and on catchment investigation projects (£1m) represented 1% of total capital expenditure. It was calculated that costs to the customer amounted to £0.60 per year per household for the duration of PR09 (Defra, 2013b).

The Ofwat report "From catchment to customer" (2011) was subtitled "Can upstream catchment management deliver a better deal for water customers and the environment?" and argued that "more work is needed to ensure that the benefits of this approach are

demonstrated clearly". Benefits are now understood in a broader sense than just financial benefits to customers through lower prices. In this document Ofwat also present a range of arguments beyond water quality, including the natural environment and carbon storage, stating that they "support the development of innovative approaches to meet drinking water quality and environmental standards; and respond to climate change".

As part of PR14, water companies must now use a framework designed to help quantify the benefits of catchment management schemes. The benefit assessment framework, which is based on guidance documents such as the Treasury's Green Book (HM Treasury, 2003), applies an ecosystem services framework, and is used to measure the environmental, economic and social benefits of catchment management initiatives as well as to assess the direct financial benefits of the initiatives to water companies (WRc plc., 2012). The framework that was designed to help water companies justify their investments in environmental enhancement initiatives, consists in five stages (UKWIR, 2012), which include (A) Scoping, i.e. problem identification, catchment characterisation and setting objectives for the catchment management intervention; (B) Planning, i.e. defining the spatial and temporal boundaries of the catchment management intervention, qualitative description of anticipated benefits and prioritisation of impacts for quantification, target setting to verify progress; (C) Measurement, i.e. identification of the information required for the valuation of the anticipated benefits, quantification of the impact of the intervention on the provision of ecosystem goods (a combination of literature sources, expert judgement, monitoring and modelling are used to conduct this quantification); (D) Valuation, i.e. monetary valuation of the impacts measured in the previous stage (C) (economic valuation techniques are used to value the impacts); (E) Reporting, i.e. clear recording of the entirety of the work undertaken to quantify the benefits of the catchment management intervention.

Under PR14, Ofwat will continue to encourage actions to improve the quality of raw water such as catchment management schemes for drinking water quality; Ofwat aslo expected water companies to carry on investing in catchment management initiatives and required companies to be clear on what worked and what didn't. In this context, Cost Benefit Analysis (CBA) is now required to assess the environmental, economic and social benefits of catchment management initiatives. "We are changing our regulatory approach to focus more on ensuring the companies deliver the broader outcomes that customers and society value" (Ofwat, 2011); as part of PR14, water companies are now asked to provide evidence including:

- cost-benefit analysis (including carbon) to assess the environmental, economic and social benefits of catchment management schemes;
- evidence of customer support for those schemes;
- approaches for dealing with risk and uncertainty in decision-making.

Discussion

This case study of the UK water industry reveals the increasing effectiveness of arguments associated with ecosystem service values in the context of enabling the industry regulator to support water industry investments in catchment-level conservation projects. The Upstream Thinking project in the Southwest of England has demonstrated that in addition to improving

the quality of raw water, the approach has delivered benefits such as an increase in biodiversity and carbon sequestration, and a reduction in flood risks; it has also contributed to the requirement of the Water Framework Directive. The Upstream Thinking initiative started in 2008 with two pilots which lead to an improvement in raw water quality; following the success of these pilots, Ofwat allowed (for the first time) a water company to invest on a land they did not own. "The project represents … a departure from strict economic regulation by the government's industry regulating body, which has for the first time allowed capital investment by a water company on third-party land" (OECD, 2013) – previous projects such as SCaMP were on land owned by water companies (and leased out to farmers). The project has been recognised as an example to be replicated at the national level and has obtained several awards.

The key argument used in this case study is based on the enhancement of water quality via changes to land management practices within catchment areas, and the ancillary benefits to the natural environment and various stakeholders.

The expression of arguments has evolved over time, from initial resistance to use of ecosystem service framings, to a requirement to produce cost-benefit analysis evidence on their value. Land management measures addressing the issue of diffuse pollution are expected to be evaluated since they are now considered as a sustainable alternative to water treatment. The results generated by CBA will inform decisions about where and when to invest in catchment management schemes in the future.

Part of the rationale for these changes lies with the Government's water strategy for England (2008)[13] which outlines a "strategic and integrated approach to the sustainable management of our water resources, for the public water supply as well as for the provision of healthy ecosystems and the services they provide" (Defra, 2008). The strategy called for "an ecosystem approach action plan where water companies are encouraged by the government, to work with farmers to tackle pollution at the source".

The shift in arguments in UK catchment management is in keeping with the broader shift at European and UK levels towards greater use of economic evidence and payment instruments for conservation. Evidence of this is seen, for example, in the TEEB process, various National Ecosystem Assessments, the EU Biodiversity Strategy entitled "Our life insurance, our natural capital" and the second Aichi target calling for "biodiversity values" to be integrated into planning and strategies, and "incorporated into national accounting…and reporting systems."

It is therefore difficult to tell if the arguments themselves have been *directly* effective in persuading Ofwat to accept catchment management expenditures, or if they have rather been effective *indirectly*, following a more general trend. Either way, arguments based on the economic value of ecosystem services now play a central role in UK water policy. In terms of actual impacts on biodiversity, initial arguments focusing on water quality and benefits to consumers opened the door to exploratory investments and pilot schemes, allowing some

[13] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69346/pb13562-future-water-080204.pdf

demonstration of these benefits and others, though quantitative data remain limited. The success of the initial schemes has in turn led to further plans, and, combined with broader trends in argumentation and policy, to a wider range of arguments and values being taken into consideration when planning catchment managment.

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Annex 4 – Case study report: Nested Socio-Ecological Systems in the Romanian Lower Danube River Catchment (NSES-RoLDC)

Nicoleta Adriana Geamănă, Georgia Lavinia Cosor, Magdalena Bucur

Introduction

Different policies and management plans developed and implemented over the years in the Romanian Lower Danube River Catchment (RoLDC) had a wide range of long term objectives including the development of waterway transport, flood control and power generation, irrigation, increased hydrological connectivity inside coastal delta, land reclamation for agriculture and nature conservation through conventional protection of particular endangered species/taxons at small scales (Vadineanu & all, 1998; Vadineanu & Cristofor, 2001; Vadineanu & all., 2003; Vadineanu & Preda, 2008).
The sustainable policy goals in the NSES-RoLDC were slowly changed during economic transition and EU accession towards:

- conservation of biological diversity, ecosystems and land-waterscapes;
- reduction of diffuse and point pollution and eutrophication;
- restoration of structural configuration of Lower Danube Wetland System as well the landscapes of RoLDC;
- sustainable use of ecosystem and landscape services;
- sustainable management of RoLDC according with international and European conventions, strategies and directives,

generating conflicts between objectives of sectoral policies (eg. agriculture, transport) and those aimed for biodiversity conservation and sustainable use of natural resources.

In our case study we investigate how different types of knowledge from multiple sources were included and with what efficiency in the process of development and implementation of strategies and plans for sustainable NSES-RoLDC management, by analyzing the arguments for conservation, restoration and sustainable use of biodiversity/natural capital.
Hereof the analysis focused on aspects regarding:

i) increasing the environmental protection legal status - focus on local level - Small Island of Braila (SIBr) area;
ii) sectoral development policies and those that focus on conservation of biodiversity and sustainable use of natural resources – focus on county (Braila) and regional level (South East Romania Region);
iii) Romanian contributions to the EU strategy for the Danube area – national level.

Evolving statutes of protected area

- Since 1968, part of SIBr wetland area is declared zoological reserve for bird protection (5336 ha/county recognition).
- In 1994, SIBr was declared mix botanical and zoological natural reserve (14682 ha/ county recognition) and in 2000, SIBr was declared Natural Park (17529 ha/national recognition).
- At the beginning of 1991 Romania joins the Ramsar Convention, since 2001, SIBr was declared Ramsar site.

- Since 2007, SIBr was included in Natura 2000 network through designation as Special Protection Area for birds and Site of Community Importance.

Following these issues, different events (see Annex 1) relevant for the past 20 years (starting with 1991) were analyzed, consisting in categories like (one event can include multiple categories):

- Discussion forum: meeting/ conference (in 2 events)
- Press release (in 1 event)
- Article in press (in 7 events)
- Written output: report/ document (in 9 events) / scientific paper (in 1 event)
- Opinion seeking: survey (in 2 events)/ interview (in 2 events)/ focus groups (in 2 events)

The identified actors that used the different arguments (see Annex 2) have a very wide range of distribution, being at primary, secondary or tertiary level:

- Primary stakeholders:
  - Local communities and different types of users: Landowners, livestock owners, farmers, fishermen of the Small Island of Braila area, Local communities (of Bertesti, Chiscani, Gropeni, Marasu, Stancuta, Tufesti localities), Commercial farmers
  - General public: Inhabitants of the Small Island of Braila
  - Small Island of Braila Natural Park Administration
- Secondary stakeholders:
  - County and municipal authorities: Braila County Council, Braila County Government, Braila Environmental Protection Agency, Romsilva Braila, Stancuta Local Council
  - Local NGOs: Al. Borza Foundation, ARIN (Asociaţia Română a Iubitorilor de Natură -Romanian Nature Admirers Association), Stancuta Fishermen Association, Braila County Association of Hunters and Anglers
- Tertiary stakeholders:
  - Central and regional authorities: Ministry of Environment, Romanian Water Administration, Romanian Environmental Agency, Ministry of Agriculture, South-East Regional Development Agency, National Company for Land Reclamation, Inter-ministerial working group for EU Strategy for the Danube
  - NGOs: Romanian Ornithological Society, WWF (World Wildlife Foundation) Romania
  - Scientists: Braila Research Institutes, Braila Educational Institutions, Romanian Academy, Gr. Antipa Natural History Museum, Braila Natural Science Museum, Galati Natural Science Museum, UB DSES/Research Center in Systems Ecology and Sustainability, Al. Ioan Cuza University of Iasi, Dunarea de Jos University of Galati, Forest Research and Management Institute, Danube Delta National Institute for Research and Development Tulcea, ICAS (Forest Research and Management Institute), National Institute of Hydrology, National

Research Institute of Soils and Agrochemistry Politicians: MER (Romanian Ecological Party), European Parliament

- Media: County media Braila

The identified arguments (see Annex 3) covered a wide range of instrumental (economic or social) or non-instrumental (inherent or regarding human happiness) aspects described through:

- Recognizing rights/ values of nature itself (26 arguments)
- Ethical, moral and religious obligations to nature (3 arguments)
- Provisioning services, emphasis on quality, naturalness, impacts on human well-being (1 argument)
- Achieving balance of nature, healthy systems, natural functions (8 arguments)
- Productivity, resources, industrial use of nature, market products, economic growth (6 arguments)
- Regulation services, carbon, nutrients, water-functions leading to indirect benefits (4 arguments)
- Specific regulating and supporting services (2 arguments)
- Social/cultural/heritage/ collective well being and welfare (6 arguments)
- Livelihoods, employment (1 argument)
- Psychological/ spiritual/ individual well being/ (also Biophilia and Scientific knowledge development/education beyond protection of biodiversity) (6 arguments)
- Recreation/ tourism (7 arguments)
- Aesthetic value (1 argument)
- Sustainable development, obligations or values for future generations (8 arguments)
- Options for future use, bioprospecting future generations (1argument)
- Reputation, looking good, winning customers/ staff/voters (2 arguments)
- Legal argument (13 arguments)

Methodology

The analysis was made based on *document analysis (i) semi-structurated interviews (ii),* interviews for *fuzzy cognitive mapping (FCM) (iii)* and *focus groups (iv).* The collected information by document analysis was tested and enhanced with that provided by interviews and focus groups. Also, added value was given by the interviews from FCM that focused on local people/primary and secondary stakeholder's views regarding biodiversity and ecosystem services, which define the identity/uniqueness of their area.

i) *Document analysis* began with a selection of relevant documents (issued between 1991-2012) regarding conservation, restoration and sustainable use of biodiversity/natural capital. The literature review was the first step of investigation, based on analysis of local or national press articles, reports, studies, scientific papers, official statements, policy documents (e.g. strategies and plans regarding conservation, restoration and sustainable use of biodiversity/natural

capital, local development strategies, land use plans, management plans for protected areas/ river basins, etc.).

ii) *Semi-structured interviews* with different actors (representatives from authorities, academic institutions and NGO's) pointed out the key biodiversity arguments used at local level. The responses from interviews served for identifying the role of arguments for biodiversity protection in framing and implementation of the processes regarding conservation and restoration of biodiversity/natural capital both at local and national level.

The semi-structured interviews (10) addressed to secondary and primary stakeholders, such as:

- Researchers from Braila Natural Science Museum and Braila Research-Development Center in Agriculture (2)
- Director of SIBr Natural Park Administration and former executive director of Danube Delta Biosphere Reservation Administration (2)
- Representatives from local NGO's (Borza Foundation and Romanian Nature Admire Association) and president of Stancuta Fisheries Association (3)
- Farmers, landowners and fishermen from Stancuta locality (3).

iii) *Fuzzy Cognitive Mapping* were conducted in order to highlight different types of stakeholders' perceptions regarding ecosystem services, biodiversity and their values; the analysis revealed what issues related to biodiversity and ecosystem services are the most important for the identity/uniqueness of the area in the opinion of local stakeholders (land owners, farmers, fishermen, Small Island of Braila Natural Park Administration, Braila Natural Museum, Agency/Inspectorate for Environmental Protection Braila, Brăila Research Stations).

iv) Two *focus groups* (in Stancuta and Braila) were carried out in order to provide the framework for analyzing the arguments used in the implementation phase of action plans for sustainable management in the area.

Data provided from document analysis, interviews and focus groups were analyzed using qualitative content analysis based on codes represented by those 31 arguments developed in BESAFE WP1: Building a framework of arguments for the value of biodiversity (Howard & all, 2013). The main argumentation lines used by representative stakeholder groups involved over time were analyzed, highlighting the different types of arguments according with specific stakeholder type and the context in which they were used, the scope and the outcomes of the events in which the arguments arose.

In order to improve the reliability of our findings, the triangulation of data (i), methods (ii) and investigator (iii) were assured as following:

i) Data triangulation: using different *sources* of information representing by data from the analysed document (press articles, reports, studies, scientific papers, official statements, policy documents) and information provided by primary and secondary stakeholders;

ii) Methodological triangulation: assured by document analysis, analysis of the information provided by interviews, focus groups and fuzzy cognitive mapping;

i) Investigator triangulation: involving members of our team as interviewers as well as data analysis in the study in order to provide their independent analysis for further comparison.

Results and Discussions

The argumentation lines were focused around events related to:

- Designation and recognition of the national and international protected area statutes;
- Elaboration and implementation of a specific management plan for the protected area;
- Implementation of the development policies according with those that focuses on conservation of biodiversity and sustainable use of natural resources.

The main argumentation lines can be assessed from the point of view of the content of the transmitted arguments, the following aspects being covered:

i) underlying the uniqueness of the areas to be protected, arising from the rich diversity from landscape point of view as well as from species richness one;

The Danube river and the floodplain area hold a high variety of ecosystems that are home ”for rare species of plants and animals”, “providing uniqueness and fragility of the area”. The Small Island of Braila is defined through “the existence of a unique and complex landscape diversity” that determined its protection both at a national and international level. Moreover, an important contribution for protection statute was determined by a ”high biological diversity” that consist in:

- “a vegetation structure that is currently dominated by 147 species, part of floodplain vegetation and reed and rush marshes”;
- ”49 higher taxa of terrestrial invertebrates, over 100 species of Gastropoda and Bivalvia, 12 higher taxa of benthic organisms with more than 60 species identified and about 112 species of Cladocera, Copepoda and Rotatoria”;
- ”65 species of which 10 are listed on the Annex of Habitats and Species EU-Directive”;
- ”136 bird species of which 47 species are listed on the Annex of EU-Bird Directive and 34 species on the Annex of Bern Convention, SIBr area presenting a “highest variety of steppe avifauna”;
- ”11 species of mammals and 13 species of amphibians and reptiles from which 4 (2 of mammals, 2 of amphibians) are included on the list of Habitats and Species EU-Directive”.

ii) emphasizing the historical importance of the areas as they are remnant wetlands from the large Lower Danube Wetland System (after 1960, for agricultural purposes RoLDC was deeply affected by changes in the natural functional regime) which still preserve the structural (habitats, taxonomical richness, communities and ecosystems) and functional characteristics of the former wetland system;

In the whole LDC, SIBr importance results from the fact that it is ”a part of the lost paradise that was once Braila Islands area”/ ”the last representative area of the former marshe of Ialomnita and Braila after their conversion into agricultural areas”, remaining ”the only unembanked area”.

iii) the importance of protected areas from LDC through resources and services provided for the benefit of local communities which are strictly dependent on them;

Development of the first version of the management plan for SIBr Natural Park created an opportunity for the academic stakeholders/UB_DSES/Research Center in Systems Ecology and Sustainability to assert that ”SIBr offers resources and services to the local population, but they need to use them in the traditional ways (eg. traditional fishing, farming) developed over time, ways that have no negative impact on the structure and functioning of ecological systems”.

In order to promote the desiderate for ecologic and economic resizing of Lower Danube Floodplain, an academic stakeholder/Danube Delta National Institute for Research and Development Tulcea emphasized the role that ”Danube river, by its course with its major riverbed”, ”a very complex ecosystem”, plays for the ”support of socio-economic activities”: transport route, fish and water resources.

South-East Regional Development Agency/ regional government agency (in context of the elaboration of Braila – Galati Counties fisheries development strategy), as well as national policy makers grouped in an Inter-ministerial working group for EU Strategy for the Danube (Elaboration of EU Strategy for the Danube - Romanian contributions) describes the Danube River ”as a very important international transport route and a major water resource of Romania”.

The elaboration of the EU Danube strategy allowed to the same agency to observe that the fishery sector offers many benefits for the local economies, ”contributing to the provision of essential products (fish) and economic benefits ”through resources and services, including tourism”.

During the elaboration of the above mention strategies, both local public land managers/ County Council (fisheries development strategy) and policy makers from the inter-ministerial EU working group (Danube Strategy) had the opportunity to affirm the ”touristic potential of the Danube region generated by a rich natural and human capital”.

iv) the need for compliance with national, European and international legislation for assuring the protection statute of SIBr;

The fact that SIBr area is designed as a natural reserve, natural park, Ramsar and Natura 2000 site, being protected at both national and international level, requires specific legislative/norms/rules. The argument related to the fact that ”it is illegal to practice overgrazing in protected areas” (argument issued by local public land managers/ RomSilva Braila in context of conflicts arising from overexploitation of natural resources in protected area or in events for sustaining the ecological reconstruction activities) determined, over time (1993 – 2008), a decreasing number of conflict situations in the SIBr area, along with the acceptation by the local population of the rules associated with a natural park. Different events (supporting national and international protected area statute for SIBr, elaborating SIBr Natural Park management plan - second version or developing the SIBr

touristic infrastructure plan) offered opportunity for national academic stakeholders, local public land managers/ SIBr NP Administration or public consulting firms to mention that ”environmental protective measures should be in place” in order to ensure a balanced nature conservation and the fulfillment of the local population needs.

In the beginning, arguments related to the preservation of the remnant Danube floodplain areas were issued by the academic sector. The information used for argumentation was mainly based on results from previous research about the role of the flooding areas (floodplain and delta) in biological productivity and the structure and functions of wetlands and their importance for human existence (eg. Antipa, 1910: ”The flooding region of the Danube”).
These arguments were transmitted further by NGOs especially as emotionally appeals, through the media, and sought to raise awareness among decision makers and general public on the need for protection of areas remaining under natural Danube flooding regime and/or impacted by human activities.

In the beginning of their activity (early ’90^{s}), the arguments taken from academic sector and transformed by NGOs were:

- descriptive, the ideas being expressed in a plastic manner (eg, "When a man dies, it's a pain, when a species disappear, is irretrievably gone and the world is smaller", the wetlands were presented as “the most beautiful Nature Festival Hall”, “birds paradise”, “birds sanctuaries”, having “a native, ravishing beauty, with a primitive life that stirs human nature etc.);
- mobilizing words (e.g. ”species survival is in our hands”).

To the scientific arguments transmitted through emotional and strictly informational pathways were added more and more those formulated and communicated in the academic contexts, in order to increase public awareness towards environmental issues (arguments transmitted by conservationists-supporters of Ecologysm): ”Biodiversity provides a genetic reservoir for future generations” or ”Conserving biodiversity and long-term use (sustainable) without surpassing the limits of ecosystems productive capacity (resources and services)”. Thus, a shift has been made, from phrases like "we must preserve biodiversity/nature", to phrases scientifically argumented, containing explanations about how the natural capital is structured, what are its functions, how human activities impact the dynamics of environment/natural systems and what are the impact and causes, which are the measures to be taken, and what are the tools for apply them.
Analyzing the frequency of different types of arguments issued by each stakeholder group (table 1), it can be observed that academic stakeholders formulated the highest variety of arguments, among which most used were those under the *Rights/values of nature* category.
Table 1: Argument frequency per stakeholder category

Argument type	**Academic**	**Consultancy**	**Government Agency**	**Media**	**NGO**	**Policy maker**	**Public land manager**
Rights/values of nature	25%	38%	22%	67%	45%	30%	18%
Sustainable development	17%	8%	-	-	-	-	5%
Achieving balance	12%	8%	-	-	18%	-	9%

of nature							
Psychological/ spiritual/also education	12%	-	-	-	-	10%	-
Legal obligations	8%	28%	33%	-	-	10%	27%
Regulation services	6%	-	-	-	-	-	5%
Meeting ethical, moral obligations	4%	-	-	-	5%	-	-
Social, cultural	4%	3%	-	-	9%	20%	9%
Recreation, tourism	2%	8%	11%	33%	5%	10%	18%
Productivity, resources	2%	3%	22%	-	5%	20%	-
Provisioning services	2%	-	-	-	-	-	-
Reputation, looking good	2%	-	-	-	-	-	5%
Options for future use	-	-	11%	-	-	-	-
Livelihoods, employment	-	-	-	-	-	-	5%
None specified	2%	-	-	-	-	-	-
Other (support services)	2%	8%	-	-	14%	-	-

From all types of arguments, those that reflect *Rights/ values of nature itself (intrinsic value, rightness of pristine/ natural state)* are most often used in selected events (Annex 4). These arguments were issued mainly by stakeholders from academic sector, but they were taken and retransmitted also by NGO's representants, local public land managers or government agencies. An example of such arguments is represented by those that refer to *high biological diversity* (either *ornithological, fish or vegetation diversity* as well as *invertebrate, mammals, amphibians and reptiles diversity*) issued by academic sector in order to highlight the rationale for granting the national and international protection status, as well as the need for specific management and action plan and for an institution to implement it. Taking on such arguments, NGOs have themselves become transmitters, supporting the steps for the development of the management plan for SIBr. At the same time, the transmission of such arguments via media channels helped raising awareness of policy makers on the importance of a specific management plan implementation.

Rights/ values of nature itself arguments were added those that demonstrate *Achieving balance of nature* issued by local and national academic stakeholders and retransmitted by local NGOs or public consulting firms in a wide range of events (e.g. promoting the national and international protected area statute for SIBr, establishing the biodiversity conservation needs for SIBr in local conferences, elaboration of local development plans, demonstrating the negative impact of human activities on the natural capital or sustaining the importance of activities for ecologic and economic resizing of Lower Danube Floodplain).

Instead, the arguments related to *legal obligation* were more often used by local/regional government agencies, local public land managers or international policy makers, than by the academic sector. These arguments were used, after receiving the national and international natural protected area statute (2000 – designation as natural park, 2001 – designation as Ramsar site, 2007- designation as SCI and SPA sites), for the implementation of biodiversity

conservation measures. Interviews with representants from local public land managers/ SIBr Natural Park Administration revealed that local people/communities can be considered as silent oposers, accepting only under legal pressure the rules for using resources and services provided by natural capital, although in the past, these legal regulations were ”unwritten rules” which must be respected in order to assure the continuity of future generation in the area.

The arguments that reflect the ecosystem services concept (*Regulation services, Support services, Provisioning services, Productivity, resources, Recreation, tourism*) are used by the academic sector, proving a more theoretic understanding of the concept. These types of arguments were used after receiving the statute of Natural Park (2000) and helped the local stakeholders to understand and support the implementation of the management plan. At the same time, arguments like these were used by local public land managers and government agencies (e.g. the SIBr Natural Park Administration, South-East Regional Development Agency) in order to highlight the potential direct or indirect economic benefits for local population if they support and imply in SIBr management; so, in this way, the local people could start to be active supporters for biodiversity conservation and ecological reconstruction in Lower Danube area. These arguments are supplemented by local people’s attitudes, beliefs and values that are in favor of biodiversity conservation. Results from previous surveys (events no 11 and 12), as well as focus group discussions (event no 7), showed the local people’s preferences for non-consumptive activities, like walking and exploring the wild life in nature, reflecting in spiritual individual well being arguments. Moreover, the arguments enriched with information on the benefits available to human society, generated by the resources and services provided by nature/natural capital/ biodiversity, were more accessible to be considered by the decision makers with utilitarian views.

Supporting the development of a specific management plan for SIBr (events no. 6 and 7) allowed the national academic stakeholders/UB_DSES to formulate *Sustainable development* arguments that were issued also by universities, local public land managers/ SIBr NP Administration and public consulting firms in other different contexts: need for ecologic and economic resizing of Lower Danube Floodplain, promoting of the second version of the integrated management plan for SIBr, elaborating different plans for development of SIBr and highlighting the importance of ecological reconstruction activities in the area.

The elaboration of local and regional development plans and strategies gave the opportunity for government agencies and public land managers to launch arguments related to *Options for future use*, respective regarding *Livelihoods, employment*.

Social/cultural/heritage/ collective well-being and welfare arguments were transmitted both by policy makers, local public land managers or NGOs and academic stakeholder or consulting firms in order to present “cultural diversity of the cultural heritage” from LDC area, ”an invaluable genetic and ecological treasure” of the SIBr or ”the conscience of a history” that represents the area. Only academic stakeholders and policy makers issued arguments related to *Knowledge and practice development/ Psychological/ spiritual individual well-being (also biophilla, intellectual, education)*. Also, arguments regarding *Reputation, looking good* were scarcely formulated and only by academic and public land managers, when referring to “specific identity that contribute greatly to increasing the attractiveness of this area for the population and for investors” or ”birds that are considered a real nobility symbol”.

Ethical/moral views were issued both by NGOs and academic sector, pointing out the fact that ”one species' extinction is irrecoverable”, or “*Birds belong to the whole world”*.

According with the described guidelines of *Protocol on evaluating the effectiveness of arguments*, as well as with the *Literature review on methods to assess the effectiveness of arguments for biodiversity protection* (Primmer 7 all, 2013; Jokinen 7 all., 2013), the analyses of the observed arguments effectiveness was made based on interpretation of data derived from document analysis and semi-structured interviews.

The following indicators were observed for each argument during the document analysis: persistence, accumulation, level crossing, diffusion, replacing of arguments and contribution to final effectiveness, and the aggregated values per types of arguments and per stakeholder group are presented in table 2.

Table 2: The observed effectiveness for different types of arguments and transmitter stakeholders

Argument type	Stakeholder	The observed effectiveness					
		Persistence	Accumulation	Level-crossing	Diffusion	Replacing of arguments	Contribution to final effectiveness
Rights / values of nature itself (intrinsic value, rightness of pristine/ natural state)	Academic	mid to very high	low to high	mid to high	mid to high	low to mid	low to high
	Consultancy	mid to very high	low to high	low to high	mid to high	low to mid	low to high
	Government Agency	mid to high	mid to high	mid to high	high	low to mid	mid to high
	Media	mid to high	mid to high	mid to high	high	low to mid	mid to high
	NGO	mid to very high	mid to high	mid to high	mid to high	low to mid	mid to high
	Policy makers	low to high	low to mid	low to mid	mid to high	mid	mid
	Public land managers	low to high	low to high	low to high	mid to high	low	low to high
Meeting ethical, moral or religious obligations to nature	Academic	high	high	high	high	low	high
	NGO	mid	low	low	mid	high	mid
Achieving balance of nature, healthy systems, natural functions	Academic	low to very high	low to high	low to high	low to high	very low to mid	low to high
	Consultancy	mid to very high	high	mid to high	mid to high	very low	mid to high
	NGO	high to very high	mid to high	mid to high	low to high	very low to low	low to high
	Public land managers	mid to high	high	mid to high	mid to high	very low to low	mid to high
Sustainable development, obligations or values for future generations	Academic	low to very high	mid to very high	mid to very high	mid to very high	very low to mid	mid to very high
	Consultancy	high to very high	low to very high	high to very high	very high	very low to low	high
	Public land managers	high	high	mid	mid	mid	mid
Social/cultural/ heritage/ collective well-being and welfare	Academic	mid	high	high	high	mid	high
	Consultancy	high	low	mid	mid	low	mid
	NGO	low to high	low	low to mid	mid	low to high	low to mid
	Policy makers	low to mid	low	mid	mid	low to mid	low to mid
	Public land managers	high to very high	low to high	mid to high	mid to high	low	mid to high
Psychological/ spiritual/ individual well-being (also biophilla, intellectual, education)	Academic	mid to very high	low to high	low to very high	mid to very high	low to mid	mid to very high
	Policy maker	mid	low	mid	mid	low	mid

Table 2: The observed effectiveness for different types of arguments and transmitter stakeholders (cont.)

Argument type	Stakeholder	The observed effectiveness

		Persistence	Accumulation	Level-crossing	Diffusion	Replacing of arguments	Contribution to final effectiveness
Recreation, tourism, aesthetic experience	Academic	high	high	high	high	low	high
	Consultancy	high to very high	mid to high	high	high	low	high
	Government Agency	mid	mid	high	high	mid	mid
	Media	mid to high	mid to high	mid to high	high	low to mid	mid to high
	NGO	mid	mid	mid	high	mid	mid
	Policy makers	high	mid	mid	mid	low	mid
	Public land managers	mid to very high	mid	mid to high	mid to high	low to mid	mid to high
Productivity, resources, industrial use of nature, market products, economic growth	Academic	high	mid	mid	high	low	mid
	Consultancy	mid	mid	high	high	low	mid
	Government Agency	high	mid	mid to high	high	low to high	high
	NGO	high	mid	high	high	mid	high
	Policy makers	mid to high	low to mid	mid	mid to high	mid to high	mid to high
Legal obligation	Academic	mid to very high	mid to high	mid to very high	mid to very high	very low to mid	mid to high
	Consultancy	low to very high	low to high	mid to very high	mid to very high	very low to mid	low to high
	Government Agency	mid to high	mid	mid to high	high	low to mid	mid to high
	Policy makers	high	low	mid	mid	low	mid
	Public land managers	mid to very high	low to high	mid to very high	mid to very high	very low to low	mid to high
Provisioning services, emphasis on quality, naturalness, impacts on human well-being	Academic	mid	mid	mid	high	mid	mid
Regulation services, carbon, nutrients, water-functions leading to indirect benefits	Academic	mid to very high	low to high	low to high	low to very high	low	mid to high
	Public land managers	low	low	mid	mid	mid	low
Livelihoods, employment	Public land managers	mid	mid	mid	high	mid	mid
Options for future use, bioprospecting	Government Agency	mid	mid	mid	mid	mid	mid
Reputation, looking good, winning customers/ voters	Academic	low	low	mid	mid	mid	low
	Public land managers	high	mid	mid	high	mid	mid
Other (support services)	Academic	high	high	high	high	low	high
	Consultancy	high	mid to high	high	high	low	high
	NGO	high	mid to high	high	high	low	high

Arguments like *Rights/values of nature* were used in many contexts with persistence over time that varied between low and very high index levels. Arguments presenting SiBr like an *important spawning site* or as *international important wetland* were used before and after recognizing the statute of protected area at national and international level (2000 – designation as natural park, 2001 – designation as Ramsar site); they had a very high persistence, being issued by the academic sector, retrieved and further transmitted by NGOs and private consulting firms. At the same time, these arguments, together with those referring to *High biological diversity, Ecosystem mosaic, Habitats for nesting, feeding and resting of bird species, Remnant wetlands, Forest conservation* registered low values of "replacing of arguments" index. A low persistency holds the *rare species* argument formulated by policy makers/ Inter-ministerial working group for EU Danube Strategy - Romanian contributions.

The contribution to "final effectiveness" varied between low to high, proving to be low in the case of *Habitats for nesting, feeding and resting of bird species* issued by the academic sector (in the context of development of first version of management plan of SIBr), and high in the case of arguments reflecting *Vegetation diversity* (issued by the academic sector) or *High ornithological diversity* (resulted from the presence of "136 species identified in SIBr area" – argument issued by the academic sector, retrieved by various private consulting firms), or the presentation of SIBr as the "last representative area of the former wetlands of Inland Danube Delta" (issued by the academic sector, adapted and retransmitted by NGOs and private consulting firms).

Arguments such as *Recreation, tourism, aesthetic experience* proved to have a mid and even high contribution to final effectiveness, based on the type of stakeholders that issued it or the aim it served for. *The emphasizes of touristic potential of Danube area by* local public land managers/County Council in the context of elaboration of the fisheries development strategy registered a mid contribution to final effectiveness; the same was the case for using this argument by politicians/Inter-ministerial working group for EU Danube Strategy. A mid contribution to final effectiveness had the argument related to the fact that SIBr induces *aesthetic emotions* to the visitors ("given the convoluted aspect of the trees"), argument used by county media in the context of reflecting ecological restoration activities in LDC.

Even if *Psychological/ spiritual/ individual well-being (also biophilla, intellectual, education)* arguments were rather rare and issued by the academic sector, they had a very high contribution in the "final effectiveness level" indicator. The presentation of SIBr as a *scientific study area* by scientists from Romanian Academy in the context of building the scientifc reasons for a national and an international protected area statute for SIBr had a very high contribution to final effectiveness; a high value for persistence, level crossing and diffusion was registered by this type of argument, the idea of *scientific study area* was found under different forms (e.g. "SIBr Natural Park represents an important resource for developing and promoting ecologic and scientific tourism" or "SIBr - an area for knowledge and practice development regarding socio-economic sustainable development") in arguments issued by different local or national stakeholders (linked with the presentation of the SIBr like a touristic area by local public land managers or related to the role of the SIBr in knowledge and practice development – sustained by the national academics).

Social/cultural/heritage/collective well-being and welfare arguments were used by NGOs and stakeholders from academic sector, policy makers or public land managers for raising awareness on the necessity of designation of the SIBr as a protected area as well as for supporting the development and implementation of the specific management plan. While the presentation of SIBr as a *historical conscience* of human society development by local NGOs had a low persistence and low contribution to final effectiveness, the fact that "SIBr area offers opportunities for walking and exploring the wild life in nature" – an argument related to spiritual wellbeing that was found under different forms in alliance with other types of

arguments, issued and/or transmitted by local public land managers, local or national agencies, local NGOs, media and consultancy sector, and even by politicians - had a high level of accumulation, diffusion and level crossing.
The concepts like economic development, social development and environmental protection that are included in *Sustainable development* arguments determined a very low to low replacing of arguments that were issued by consultancy, but had a very high persistence, being used in different contexts (from sustaining the need of a specific management plan for SIBr Natural Park to the development of the first version of that plan by academics or in the elaboration of the land and touristic infrastructure development plans for SIBr area by consultancy).
Argument type *Achieving balance of nature, healthy systems, natural functions,* issued by the academic sector in order to promote the national and international protected area recognition and the necessity of the management plan, had a wide range contribution to final effectiveness (from low to high) according with the transmitter stakeholder type. The presentation of SIBr as an area having "a fragile, dynamic ecological equilibrium" by local academics in the context of first version of the SIBr Natural Park management plan had a low persistence; on the contrary, the fact that in the entire LDC, "SIBr remains the only unembaked island/area" and for this reason it has to be protected and should have a management plan, represented an argument that had a very high persistence. Moreover, this argument was used with a very high persistence in context of elaborating plans for land, respective touristic infrastructure development for SIBr area by private consulting firms.

Public land managers emitted different argument types (*Rights/values of nature itself, Achieving balance of nature, Social/cultural/heritage/collective well-being and welfare, Recreation, tourism, aesthetic experience* and *Legal obligation*) and used them in different contexts, from supporting the establishing of a specialized institution that assures SIBr administration to supporting reasoning mitigation of conflicts arose from overexploitation of natural resources in protected area or for sustaining the ecological reconstruction works, their argument having low to high contribution to final effectiveness. "The slowly decreasing of willow forests and other species (such as Populus sp.)" of SIBr area that represent "a native aspect of forestry fund" had a low contribution to final effectiveness. A high contribution to final effectiveness had the arguments related to fact that "the SIBr Natural Park is a protected area of 21.074 ha covered with water, forests and luxuriant vegetation" (issued in the reasoning why RomSilva should became an administrator for this protected area). The same high contribution had the argument related to high biological diversity that defines the SIBr (issued in context of the elaboration of the second version of the management plan for this area).

In order to elaborate the second version of the management plan for SIBr natural park, local public land managers emitted arguments related to *Legal obligation* that had a high contribution to final effectiveness. So, presenting the SIBr area as natural reserve, Ramsar site and Natura 2000 site underlined the idea of the need for conservation. Interviews with experienced managers from SIBr NP Administration revealed that legal arguments were considered as being most efficient, with the highest impact both on the local people, as well as on institutions involved in biodiversity conservation.
The same interviews releved that, the lowest impact was generated by arguments such as *Regulation services, carbon, nutrients, water-functions leading to indirect benefits* or *Provisioning services, emphasis on quality, naturalness, impacts on human well-being* which

were viewed as idyllic by public land managers. These types of arguments, when formulated and transmitted by the academic sector, were much more considered and had a higher impact for local authorities and population, as the information was better explained, and the transmitters were perceived as more adequate for highlighting these types of benefits rising from biodiversity conservation.

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Annex 1: Events for case study -NSES-RoLDC

No	Event Name	Description	Time
1	RoLDC_SIBr_Meeting_1991	Need of national and international protected area statute for SIBr	1991-06-01/1991-06-01
2	RoLDC_SIBr_Grazing_Conflict	Grazing conflict	1993-07-14/2008-12-31
3	RoLDC_SIBr_Symposium_Braila_ 1995	National symposia regarding “Wetland protection and conservation in the LDC area”	1995-05-18/ 1995-05-20
4	RoLDC_SIBr_Land Development Braila County	Land development Braila County	2006-06-30/ 2012-09-30
5	RoLDC_SIBr_Land Development_SIBr	Land development of SIBr area	2009-09-15/ 2012-09-14
6	RoLDC_SIBr_Towards_a_management_plan	Need of a specific management plan for SIBr Natural Park	1998-06-15/ 2000-11-16
7	RoLDC_SIBr_Life99_NAT/RO/ 006400	Development of the management plan for SIBr Natural Park (first version)	1999-06-15/ 2002-06-30
8	RoLDC_SIBr_Proposal for tourism	Development of the touristic infrastructure for SIBr plan	2009-01-20/ 2011-11-20
9	RoLDC_SIBr_Natural_Park_ Administration_2004	Establishing of a specific institution for SIBr Natural Park management	2004-01-29/ 2004-06-15
10	RoLDC_SIBr_Life 06_NAT/RO/000172	Development of the management plan for SIBr Natural Park (second version)	2006-10-01/ 2011-04-30
11	RoLDC_SIBr_Survey_1	Survey for identification the general public perceptions about biodiversity change and related policy measures in SIBr area	2007-10-01/ 2009-06-30
12	RoLDC_SIBr_Survey_2	Survey for identification the general public perceptions and environmental attitudes related aquatic systems in LDC area	2007-09-01/ 2008-08-30
13	RoLDC_SIBr_Hidrological_ reconstruction_Fundu_Mare_Island	Hidrological Reconstruction of Fundu Mare Island	2007-06-15/ 2008-09-01
14	RoLDC_Ecological_Restoration	Ecological restoration activities in LDC	1993-01-01/ 2002-01-01
15	RoLDC_SIBr_Strategy_for_fisheries_ Braila_County	Strategy for development in the fisheries area of Braila – Galati Counties	2010-01-01/ 2012-06-30
16	RoLDC_Ecologic_and_Economic_ Resizing Lower_Danube_Floodplain	Ecologic and Economic resizing of Lower Danube Floodplain	2006-09-18/ 2010-09-18
17	RoLDC_Romanian_contributions_for_the _elaboration_of_EUstrategy_for_the_ Danube	Elaboration of EU Strategy for the Danube (Romanian contributions)	2008-06-01/ 2011-07-31

Annex 2: Stakeholders for case study -NSES-RoLDC

No.	Stakeholders	Stakeholder category
1.	Ministry of Agriculture	Policy makers
2.	Ministry of Environment	
3.	National Company for Land Reclamation	
4.	Inter-ministerial working group for EU Strategy for the Danube	
5.	European Parliament	Politicians
6.	MER (Romanian Ecological Party)	
7.	County government	Government agency
8.	Environmental Protection Agency – Braila	
9.	Romanian Waters Authority_Regional Water Branches	
10.	South-East Regional Development Agency	
11.	County Council	Public land managers
12.	Local councils	
13.	Local council Stancuta	
14.	Romsilva_Br	
15.	SIBr Natural Park Administration	
16.	General Users	Landowners and residents
17.	Local communities	
18.	Local communities_Bertesti	
19.	Local communities_Chiscani	
20.	Local communities_Gropeni	
21.	Local communities_Marasu	
22.	Local communities_Stancuta	
23.	Local communities_Tufesti	
24.	Commercial farmers	Commercial farmers
25.	County Academics Braila	Academic
26.	Danube Delta National Institute for Research and Development Tulcea	
27.	ICAS (Forest Research and Management Institute)	
28.	National Institute of Hydrology	
29.	National Research Institute of Soils and Agrochemistry	
30.	Natural Science Museums	
31.	Romanian Academy	
32.	UB_DSES/Research Center in Systems Ecology and Sustainability	
33.	Universities	
34.	County media Braila	Media
35.	Braila County Association of Hunters and Anglers	NGOs
36.	NGO_Al_Borza_Foundation	
37.	NGO_ARIN (Asociaţia Română a Iubitorilor de Natură - Romanian Nature Admirers Association)	
38.	Romanian Ornithological Society	
39.	Stancuta Fishermen Association	
40.	WWF (World Wildlife Foundation) Romania	
41.	Private consulting firms	Consultancy

Annex 3: Arguments for case study -NSES-RoLDC

No.	Argument			
	ID	**Name**	**Description**	**Type**
1.	A 9	Delta	Given its functioning, SIBr is an authentic micro delta located upstream from the Danube Delta Biosphere Reserve.	Rights / values of nature itself (intrinsic value, rightness of pristine/ natural state)
2.	A 21	Ecosystem mosaic	In the small area that is SIBr an ecosystem mosaic can be found and it needs to be protected.	
3.	A 23	Ecosystem mosaic_2	The Small Island of Braila Natural Park is a protected area of 21.074 ha covered with water, forests and luxuriant vegetation.	
4.	A 24	Ecosystem mosaic_3	Existence of an unique and complex landscape diversity in SIBr has determined its protection both at a national and international level.	
5.	A 31	Fish diversity	Fish associations are composed by 65 species of which 10 are listed on the Annex of Habitats and Species EU-Directive.	
6.	A 34	Forest conservation	The forest ecosystems are more important than tourism in SIBr, and these could be better protected if Romsilva would have the administrative rights for SIBr.	
7.	A 38	Habitats for nesting, feeding and resting of bird species	By providing 13 types of habitats for nesting, feeding and resting of many bird species, SIBr wetland system together with the coastal Danube Delta plays the role of major node in South-Eastern Europe along the bird migration routes.	
8.	A 41	High biological diversity	High biological diversity (eg. fish and bird species) defines the Small Island of Braila.	
9.	A 42	High biological diversity_1	SIBr is an Eden for migratory birds and diverse species of plants and other animals.	
10.	A 43	High biological diversity_2	Unique natural biodiversity in the whole Lower Danube Region.	
11.	A 44	High biological diversity_3	Danube Delta Biosphere Reserve comprises phisico-geographical units special from morphological, genetic and biological point of view; 1642 plant species, 3768 animal species.	
12.	A 45	High ornithological diversity	In SIBr area we can identify an impressive ornithological diversity.	
13.	A 46	High ornithological diversity 1	136 bird species were confirmed in the last years (1999-2001) for SIBr wetland system of which 47 species are listed on the Annex of EU-Bird Directive and 34 species on the Annex of Bern Convention.	
14.	A 47	High ornithological diversity_2	SIBr has over half of the Romanian avifauna (53%).	
15.	A 51	Important spawning site	SIBr is also important for fish spawn, as it is the best natural place for fish reproduction.	
16.	A 52	International important wetland	Small Island is an important wetland of the world.	
17.	A 54	Invertebrate diversity	Rich fauna of invertebrates consisting in: 49 higher taxa of terrestrial invertebrates, over 100 species of Gastropoda and Bivalvia, 12 higher taxa of benthic organisms with more than 60 species identified and about 112 species of Cladocera, Copepoda and Rotatoria.	
18.	A 65	Mammals, amphibians and reptiles diversity 1	Within the structure of biocenoses 11 species of mammals and 13 species of amphibians and reptiles have been identified from which 4 (2 of mammals, 2 of amphibians) are included on the list of Habitats and Species EU-Directive.	

No.	Argument			
	ID	**Name**	**Description**	**Type**
19.	A 73	Rare species	The uniqueness and fragility of the Danube and the Danube Delta rises from the variety of ecosystems sheltering rare species of plants and animals.	Rights / values of nature itself (intrinsic value, rightness of pristine/ natural state)
20.	A 74	Remnant wetlands	Among the remnant wetlands with natural flooding regime in the Inner Danube Delta, we may distinguish a compact and heterogeneous wetland system, better known as SIBr.	
21.	A 75	Remnant wetlands_1	SIBr importance is highly correlated with the fact that it is the last representative area of the former marshe of Ialomnita and Braila after their conversion into agricultural areas.	
22.	A 77	Remnant wetlands_3	Small Island of Braila is a part of the lost paradise that was once Braila Islands area.	
23.	A 78	Remnant wetlands_4	SIBr contains 10% of the former Inner Delta - 2.413 km^2.	
24.	A 79	Remnant wetlands_5	The existence of relict complex of natural ecosystems requires protection.	
25.	A 93	Vegetation diversity	The vegetation structure of SIBr wetland system is currently dominated by 147 species, part of floodplain vegetation and reed and rush marshes.	
26.	A 94	Vegetation diversity_1	Willow forests and other species (such as Populus sp.) of SIBr represent a native aspect of forestry fund, and these are slowly decreasing.	
27.	A 4	Birds belong to the whole world	Birds belong to the whole world- they are part of an international ecological channel.	Meeting ethical, moral or religious obligations to nature
28.	A 29	Ethical/moral views	It would be a crime to destroy the Small Island; if we did not embank it during the communism dictatorial regime, now we do not have the right to destroy it.	
29.	A 30	Ethical/moral views_1	A person's death is painful for us, but one species' extinction is irrecoverable.	
30.	A 11	Dynamic equilibrium	SIBr has a fragile, dynamic ecological equilibrium, that need to be protected.	Achieving balance of nature, healthy systems, natural functions
31.	A 12	Dynamic network or river arms and channels	The SIBr wetland system consists of 10 islands or ostroave established in dynamic network or river arms and channels.	
32.	A 22	Ecosystem mosaic_1	All types of wetland ecosystems identified in this heterogeneous land and waterscape play a key role in maintaining the structural and functional diversity of the Small Island of Braila and require protection.	
33.	A 37	Grazing affects biodiversity	Overgrazing produces high damages, affecting both vegetation and fauna in the island.	
34.	A 39	Habitats for nesting, feeding and resting of bird species_1	Biotope for many bird species, a place for nesting and resting.	
35.	A 68	Natural filtering function	In the past, the entire Braila marshes had an important role in functioning as a multiple natural filter.	
36.	A 76	Remnant wetlands_2	In the whole Lower Danube Catchment, SIBr remains the only unembanked island/area.	

No.	Argument			
	ID	**Name**	**Description**	**Type**
37.	A 55	Knowledge and practice development	SIBr area is an area for knowledge and practice development regarding socio-economic sustainable development.	Sustainable development, obligations or values for future generations
38.	A 58	Knowledge and practice development_2	SIBr is an area for developing managerial expertise, technologies, methods and instruments for adaptive management and sustainable use within the limits of the productive and carrying capacity of resources and services generated in the specific ecological systems of the Danube flooding areas.	
39.	A 80	Resources and services for local communities	SIBr offers resources and services to the local population, but they need to use them in the traditional ways (eg. traditional fishing, farming) developed over time and that have no negative impact on the structure and functioning of ecological systems.	
40.	A 84	Sustainable development	The land development plans are focused on balance between economic growth of the area and biodiversity protection.	
41.	A 85	Sustainable development 1	Biodiversity conservation and long-term use (sustainable) without surpassing the limits of ecosystems productive capacity (resources and services).	
42.	A 86	Sustainable development 2	The SIBr integrated management plan has to include the productive potential capacity (including services) by avoiding any structural damages or over-exploitation and promoting the sustainable use of resources for the socio-economic development.	
43.	A 87	Sustainable development 3	SIBrNP is a key area for sustainable use of resources and sustainable development of the cooperation area.	
44.	A 88	Sustainable development_4	The in-depth studies of ecological restoration in Lower Danube Floodplain are needed to sustainable use of resources by local communities, but also to aid biodiversity conservation in protected areas.	
45.	A 6	Cultural identity_1	Danube region has an unique cultural inheritance, cradle of civilization.	Social/ cultural/ heritage/ collective well-being and welfare
46.	A 7	Cultural identity_2	Cultural, linguistic diversity and variety of the cultural heritage in Danube region.	
47.	A 10	Delta_1	In aspects of biodiversity, the SIBr park is the last representative sample, with the least anthropic influence, from the former predeltaic delta.	
48.	A 35	Genetic treasure	Small Island of Braila is an invaluable genetic and ecological treasure.	
49.	A 50	Historical conscience	SIBr represents the conscience of a history (regarding human society/cultural heritage).	
50.	A 82	Spiritual individual well being	The Islands of Braila area offers opportunities for walking and exploring the wild life in nature.	

No.	Argument			
	ID	**Name**	**Description**	**Type**
51.	A 26	Education	The Information, Visiting and Education Center in Stancuta has the most important role in the transfer of knowledge to local population and them awareness concerning the value and sustainable use of resources in SIBr Natural Park.	Psychological/ spiritual/ individual well-being (also biophilla, intellectual, education)
52.	A 27	Education_1	The Romanian part of the Danube river has high potential for naval education.	
53.	A 56	Knowledge and practice development 4	Natural capital of Lower Danube Floodplain has a productive capacity to be known by its functional units in order to avoid degradation under human impact and promote sustainable use of its capacity.	
54.	A 57	Knowledge and practice development_1	SIBr area is an area for development of knowledge regarding productive and carrying capacities of the main ecological systems categories and insuring biodiversity conservation.	
55.	A 59	Knowledge and practice development_3	SIBr is an area for transfer of scientific and managerial expertise to other systems in the Lower Danube Wetlands System.	
56.	A 81	Scientific study area	The SIBr area offers an ornithological station for studies of the proposed conservation measures in this area.	
57.	A 1	Aesthetic emotions	SIBr induces aesthetic emotions to the visitors, given the convoluted aspect of the trees.	Recreation, tourism, aesthetic experience
58.	A 14	Economic value_1	SIBr has to be administrated as a Natural Park in order to obtain benefits that result from the touristic potential of the region.	
59.	A 17	Economic value_4	The fishery sector contributes to the provision of essential products (fish) and economic benefits through resources and services, including from tourism, contributing also to inland waters biodiversity conservation in Braila County.	
60.	A 25	Ecosystem mosaic_4	The natural capital of the area encompasses high touristic attractiveness zones that need to be protected both by local communities and tourists (Danube River and surrounding lakes, floodplain herbaceous and forest vegetation) especially in SIBr Natural Park where picturesque landscapes enrich the scenery.	
61.	A 89	Touristic area	In the SIBr the people can find many touristic places to visit and admire.	
62.	A 90	Touristic area_1	The existence of SIBr Natural Park favours numerous eco-tourism activities on park territory, such as bird watching, boat trips, guided tours, photo-safari. From a touristic point of view, Braila Small Island Natural Park represents an important resource for developing and promoting ecologic and scientific tourism.	
63.	A 91	Touristic area_2	The territorial development plan for Braila County recommends the implementation of different policies regarding the touristic development of the area; through Danube cruises we can promote scientific, eco-tourism, as well as angling and weekend tourism.	
64.	A 92	Touristic area_3	Authentic touristic potential of the Danube region results from the existence of a rich natural and human capital, with high value and touristic attractiveness.	

No.	Argument			
	ID	**Name**	**Description**	**Type**

65.	A 83	Support for life	Danube river, by its course with its major riverbed, represents a very complex ecosystem – support for wide rich flora and fauna and also support for socio-economic activities.	Provisioning services, emphasis on quality, naturalness, impacts on human well-being
66.	A 13	Economic value	The average value of 1706 USD/ha/year calculated for SIBr wetland system can be considered a first rough estimation of total economic value for this wetland (2001).	Productivity, resources, industrial use of nature, market products, economic growth
67.	A 15	Economic value_2	Fundu Mare Island - part of SIBr area has economic value resulting from natural fish productivity.	
68.	A 18	Economic value_5	The fishery sector contributes to the provision of essential products (fish) and economic benefits through resources and services, including from tourism, contributing also to inland waters biodiversity conservation in Braila County.	
69.	A 19	Economic value_6	Danube River is a very important international transport route and a major water resource of Romania.	
70.	A 20	Economic value_7	Danube River has a major potential for renewable energy.	
71.	A 32	Fish diversity_1	The development of touristic and fishing sectors is based on the high variety of natural resources existent in the area (Danube River, SIBr Natural Park), especially on the fish diversity, some of which are very valuable, in particular rare species.	
72.	A 16	Economic value_3	Some hydro-improving arrangements are needed for agriculture, but not without considering the high importance of wetland restoration in Lower Danube Floodplain.	Regulation services, carbon, nutrients, water-functions leading to indirect benefits
73.	A 33	Flood_control	The hydrological reconstruction activities proposed for Fundu Mare Island (part of SIBr) will improve the flood control regime.	
74.	A 69	Natural filtering function_1	Fundu Mare Island - part of SIBr had an important role in nutrient retention.	
75.	A 95	water purification	SIBr wetland has the role to filter the Danube river water before reaching the Danube Delta and the Black Sea.	
76.	A 28	Employment	Preserving and restoring fish stocks is accompanied by the improvement and professionalization of human resource, as well as the creation of alternative employment opportunities.	Livelihoods, employment
77.	A 36	Genetic treasure_1	Biodiversity provides a genetic reservoir for future generations.	Options for future use, bioprospecting
78.	A 5	Cultural identity	Identification, preservation and capitalization of the cultural heritage is paramount for the development of fisheries rural areas, helping to shape a specific identity that contribute greatly to increasing the attractiveness of this area for the population and for investors.	Reputation, looking good, winning customers/ staff/voters
79.	A 48	High ornithological diversity_3	A place filled with life and colors, where birds are the center of attention that is considered a real nobility symbol.	

No.	**Argument**			
	ID	**Name**	**Description**	**Type**
80.	A 40	Habitats in Annex of Habitats and Species EU-Directive	SIBr contains 13 types of habitats from which seven are on the Annex of Habitats and Species EU-Directive.	

81.	A 49	High ornithological diversity_4	In SIBr, there are measures that ensure protection and conservation of the highest variety of steppe avifauna.	Legal obligation
82.	A 53	International protection statute	Danube Delta Biosphere Reserve is: Ramsar site (September 1991); Biosphere reserve -UNESCO Committee/ Man and Biosphere Programme (1990); -Universal Natural Heritage site - UNESCO (1991).	
83.	A 60	Legal	It is illegal to practice overgrazing in forestry designated areas.	
84.	A 61	Legal 1	The current legislation provides new enhanced protection levels for natural heritage.	
85.	A 62	Legal 2	SIBr ensures the conservation of protected areas of national importance.	
86.	A 63	Legal _3	The existence of remarkable natural resources, including protected natural areas, requires the adoption of biodiversity protection and conservation measures.	
87.	A 64	Mammals, amphibians and reptiles diversity	Within the structure of biocenoses 11 species of mammals and 13 species of amphibians and reptiles have been identified from which 4 (2 of mammals, 2 of amphibians) are included on the list of Habitats and Species EU-Directive.	
88.	A 66	Natura 2000 site	Since 2007, the SIBr NP was designated as Natura 2000 site.	
89.	A 67	Natura 2000 site 1	SIBr Natural Park is part of the Natura 2000 Network, thus any construction that is incompatible with the conservation goals of SIBr will not be approved.	
90.	A 70	Natural reserve	Because the area is declared a natural reserve on 5336 ha, environmental protective measures should be in place.	
91.	A 71	Natural reserve 1	In a Natural Park everyone has to enforce the Administrative Regulation; bird species habitats have to be protected, any pollutant activities are strictly forbidden.	
92.	A 72	Ramsar site	Small Island Natural Park is an internationally recognized wetland (RAMSAR site).	
93.	A 8	Danube Basin	The Danube – the largest river that crosses the European Union (EU) and the second Europe's one in terms of length (2,857 km) and also of flow (around 5,600 m^3/sec when entering Romania) represents a real axis of Central Europe, connecting it with the Black Sea and the farthest regions of Central Asia. The Danube basin is the most „international" one in the world, crossing 19 countries and covering around 1 million square km.	None specified
94.	A 2	Bird migration areal	Small Island is an important bird migration areal.	Other (explain below: support service – habitat for birds)
95.	A 3	Bird migration areal_1	Small Island of Braila is an intersection of 5 important bird migration routes.	

Annex 4: Arguments, events and stakeholders for case study -NSES-RoLDC

Argument Type	Argument Name	Event	
Rights / values of nature itself (intrinsic value, rightness of pristine/natural state)	A9. Delta	E3	NGO: Al
		E5	Private co
		E8	Private co
		E9	UB DSES
	A21. Ecosystem mosaic	E6	NGO: Al
	A23. Ecosystem mosaic_2	E9	RomSilva
	A24. Ecosystem mosaic_3	E5	Private co
		E14	County m
	A31. Fish diversity	E7	UB DSES
	A34. Forest conservation	E9	Romsilva
	A38. Habitats for nesting, feeding and resting of bird species	E7	UB DSES
	A41. High biological diversity	E5	Private co
		E6	NGO:Al
		E9	EPA Brai
		E10	SIBr NP
		E13	Private co
	A42. High biological diversity_1	E14	County m
	A43. High biological diversity_2	E7	EPA Brai
	A44. High biological diversity_3	E17	Inter-mini
	A45. High ornithological diversity	E3	NGO:Al
		E6	NGO:Al
		E7	NGO:Al
		E8	Private co
	A46. High ornithological diversity 1	E7	UB DSES
		E8	Private co
	A47. High ornithological diversity_2	E8	Private co
	A51. Important spawning site	E3	NGO: Al
		E6	NGO AR
		E7	UB DSES
		E8	Private co
		E13	Universiti
	A52. International important wetland	E1	Romanian
		E13	Private co
	A54. Invertebrate diversity	E7	UB DSES
	A65. Mammals, amphibians and reptiles diversity 1	E7	UB DSES
	A73. Rare species	E17	Inter-mini
	A74. Remnant wetlands	E7	UB_DSE
	A75. Remnant wetlands_1	E3	NGO: Al
		E6	NGO: Al
		E7	UB DSES
		E8	Private co
	A77. Remnant wetlands_3	E5	Private co
		E9	County m
	A78. Remnant wetlands_4	E5	Private co
		E13	Private co
	A79. Remnant wetlands_5	E5	Private co
		E14	County m
		E17	Inter-mini
	A93. Vegetation diversity	E7	UB DSES
	A94. Vegetation diversity_1	E8	SIBr NP
Meeting ethical, moral or religious obligations to	A4. Birds belong to the whole world	E1	Romanian
	A29. Ethical/ moral views	E1	Romanian

Argument Type	Argument Name	Event	
nature	A30. Ethical/ moral views_1	E3	NGO: Al
Achieving balance of nature, healthy systems, natural functions	A11. Dynamic equilibrium	E7	Natural S
	A12. Dynamic network or river arms and channels	E7	UB DSES
	A22. Ecosystem mosaic_1	E7	UB DSES
	A37. Grazing affects biodiversity	E2	Romsilva
	A39. Habitats for nesting, feeding and resting of bird species_1	E1	Romanian
		E8	Private co
		E10	SIBr NP
	A68. Natural filtering function	E3	NGO: Al
		E6	NGO AR
		E16	UB DSES
	A76. Remnant wetlands_2	E3	NGO: Al
		E5	Private co
		E6	UB DSE
		E8	Private c
Sustainable development, obligations or values for future generations	A55. Knowledge and practice development	E7	UB DSES
	A58. Knowledge and practice development_2	E7	UB DSES
	A80. Resources and services for local communities	E7	UB DSES
		E10	SIBr NP
	A84. Sustainable development	E5	Private co
		E6	UB DSES
		E7	UB DSES
		E8	Private co
	A85. Sustainable development 1	E7	UB DSES
	A86. Sustainable development 2	E7	UB DSES
	A87. Sustainable development 3	E13	Private co
	A88. Sustainable development_4	E16	Universiti
Social/cultural/heritage/collective well-being and welfare	A6. Cultural identity_1	E17	Inter-mini
	A7. Cultural identity_2	E17	Inter-mini
	A10. Delta_1	E3	NGO: Al
		E8	Private co
		E10	SIBr NP
	A35. Genetic treasure	E10	SIBr NP
	A50. Historical conscience	E6	NGO: Al
	A82. Spiritual individual well being	E11	UB DSES
		E12	UB DSES
Psychological/spiritual/individual well-being (also biophilla, intellectual, education)	A26. Education	E7	UB DSES
	A27. Education_1	E17	Inter-mini
	A56. Knowledge and practice development 4	E16	DanubeD
	A57. Knowledge and practice development_1	E7	UB DSES
	A59. Knowledge and practice development_3	E7	UB DSES
	A81. Scientific study area	E1	Romanian
		E8	Universiti
Recreation, tourism, aesthetic experience	A1. Aesthetic emotions	E14	County m
	A14. Economic value_1	E9	County C
	A17. Economic value_4	E15	Braila Co
	A25. Ecosystem mosaic_4	E15	South-Eas
	A89. Touristic area	E1	County A
		E8	Private co
		E9	County m
	A90. Touristic area_1	E4	Private co
		E8	Private co
		E13	SIBr NP

Argument Type	Argument Name	Event	
	A91. Touristic area_2	E8	SIBr NP
	A92. Touristic area_3	E15	County C
		E17	Inter-mini
Provisioning services, emphasis on quality, naturalness, impacts on human well-being	A83. Support for life	E16	Danube D Tulcea
Productivity, resources, industrial use of nature, market products, economic growth	A13. Economic value	E7	UB DSES
	A15. Economic value_2	E13	Private co
	A18. Economic value_5	E15	South-Eas
	A19. Economic value_6	E15	South-Eas
		E17	Inter-mini
	A20. Economic value_7	E17	Inter-mini
	A32. Fish diversity_1	E15	Stancuta
Regulation services, carbon, nutrients, water-functions leading to indirect benefits	A16. Economic value_3	E16	National
	A33. Flood control	E13	County C
	A69. Natural filtering function_1	E13	UB DSES
	A95. water purification	E1	Romanian
Livelihoods, employment	A28. Employment	E15	County C
Options for future use, bioprospecting	A36. Genetic treasure_1	E15	South-Eas
Reputation, looking good, winning customers/staff/	A5. Cultural identity	E15	County C
	A48. High ornithological diversity_3	E7	Natural S
Legal obligation	A40. Habitats in Annex of Habitats andSpeciesEU-Directive	E7	EPA Brai
	A49. High ornithological diversity_4	E8	SIBr NP
	A53. International protection statute	E17	Inter-mini
	A60. Legal	E2	Romsilva
		E14	Romsilva
	A61. Legal 1	E5	Private co
		E8	Private co
	A62. Legal 2	E8	Private co
	A63. Legal _3	E15	South-Eas
		E16	County A
	A64. Mammals, amphibians and reptiles diversity	E7	UB DSES
	A66. Natura 2000 site	E4	Private co
		E5	Private co
		E13	Private co
	A67. Natura 2000 site 1	E9	EPA Brai
		E10	SIBr NP
	A70. Natural reserve	E1	Romanian
		E8	Private co
		E10	SIBr NP
	A71. Natural reserve 1	E7	EPA Brai
	A72. Ramsar site	E4	Private co
		E5	Private co
		E7	UB DSES
		E8	Private co
		E10	SIBr NP
		E13	Private co
None specified	A8. Danube Basin	E17	Romanian
Other (explain below	A2. Bird migration areal (support service – habitat for birds)	E1	Romanian
		E6	NGO: Al
		E8	Private co
	A3. Bird migration areal_1 (support service – habitat for birds)	E3	NGO: Al
		E5	Private co

Argument Type	Argument Name	Event	
		E6	NGO: Al
		E8	Private co

Annex 5 – Case study report: Public controversies surrounding the return of red fox and wild boar to Flanders *(work in progress)*

Ann Van Herzele, Noelle Aarts, Jim Casaer

1. Introduction

Issues related to nature have always been contentious, but they have become more prominent and increasingly politicised in recent times. We are bombarded almost daily by facts about species facing distinction and natural habitats in decline. Along with these are concurrent efforts to conserve and restore nature areas and biodiversity. Studies from across Europe show that such initiatives – whether in the form of policies, plans or projects - are confronted with many challenges, including the necessary but difficult balancing of diverging interests and perspectives (Reitan, 2004; Niemelä et al., 2005; Heydon et al., 2010; Blicharska et al., 2011) and the legitimacy of solutions being proposed (Paavola, 2004; Keulartz and Leistra, 2008, Arts et al., 2012). But meanwhile, there are also signs of recovery. Several bird and mammal species – beaver, white-tailed eagle, wild boar, moose, wolf, etc. - have made an impressive recovery as shown in the report "Wildlife Comeback in Europe" (Deinet et al, 2013). Whereas the reappearing animals help creating conservation success stories, they also bring new challenges because of conflicts that are associated with their presence and controversies about how they should be managed. Regarding large carnivores, another recent report (European Commission, 2013) suggests that conflicts are almost always most severe where animals are recovering after an absence of decades or even centuries. There is the hint that people are no longer accustomed to living alongside them, but it is also said that old conflicts become reactivated.

Apparently, whether nature is in decline or in recovery, the debate about it is more intense than ever. Notwithstanding current debates are obviously shaped by the specific socio-political and ecological contexts in which they occur, they seem to raise remarkably similar questions, such as what nature to protect, why this should be done, and how to do it. Disagreement and even controversy over questions of this sort are not merely matters of factual evidence or simple conflicts of interest (i.e. in the sense

of who gets what). The dispute is often as much about matters of content, that is, the essence of what "nature" is about and how we see our relationships with nature.

By now it is well documented that views on nature are entangled with highly diverse political responses to and engagements with nature (Eder, 1997; Macnaghten and Urry, 1998; Castree, 2001; Drenthen et al., 2009; Haila, 2012). Contrasting conceptions of nature may foster very different ideas regarding what should be done and how. And, conversely, such ideas can be made meaningful within mutually contradictory representations of nature. As a consequence, ambivalence is an unavoidable companion in "politics of nature" (Haila, 2012).

Views on nature have a role to play not only in support or against certain interventions. Several cases illustrate how contending parties in dispute propagate particular conceptions of nature to justify their respective positions in the debate (Harrison and Burgess, 1994; Buijs et al., 2011), to advance notions of expertise and to sustain professional identities and institutional competencies (Van Herzele, 2006). Any interpretation of nature tends to be concordant with an institution's or social group's self-preservation: its position as well as its ability to continue its operations in a certain direction (Van Herzele and Aarts, 2013). As Beck (2009) suggests, the essential content of nature and the threats to it become produced and defined within particular groups and institutions and in the conflicts between them, and they are "correlated with institutional power of action and organisation".

The presence of differing, at times competing conceptions of nature and their intermeshing with power and other social relations makes any debate about nature far more complex and intractable than is often portrayed. The challenge of making those debates better understandable is therefore considerable. Much empirical work has been done to identify different visions and concepts, representations and narratives about nature and – to a somewhat lesser degree – the strategic use and spread of these views in public and political spheres (Whatmore and Boucher, 1993; Harrison and Burgess, 1994; Van Herzele, 2006; Webb and Rafaelli, 2008; Buijs et al., 2011). However, such views and arguments have been studied only marginally in relation to their actual role in the development of conflict and prospects for resolution. It is this issue that we will address in the present research paper. Specifically, we use the

concept of *fault lines* from political science literature to examine how and why debate about nature is often so intractable or resistant to resolution. For that purpose we observe a series of events that followed wildlife comebacks (red fox and wild boar) in Flanders. Before turning to them, we shall introduce the concept of fault lines and articulate a three-layered approach to observation of debate.

2. The concept of fault lines

Political scientists have borrowed this term from geology, more specifically the phenomenon that a solidly appearing rock might cleave along nearly invisible lines (Lipset and Rokkan, 1967). Geologists have shown that rock molecules re-crystallise and align so as to minimize pressure, thus producing fault lines along which geological change occurs. The mechanism by which this occurs for rocks hints at a way that it might occur in societies. Similarly, fault lines in societies might have something to do with the accumulating social tensions of managing change and unforeseen events (Brady, 2011). In political science literature, fault lines have been defined as contradictions that for a long time determine the matter of political conflict and delineate the contending camps (Elchardus, 2007). The fault lines along which public opinion divides can be based on, among others, social class, occupation, cultural values. They have in common that they perpetuate contradicting responses to a particular topic or question, and so continue to rule the landscape of conflict or tension. Current conflicts may be rooted in old fault lines or they may indicate the growth of new ones (Berger, 1998).

Elchardus (2007) notes that a fault line is more likely to persist when it links up with organisations – e.g. political parties, leisure organisations, news papers, etc. - and when the contending parties succeed in translating new conflicts into the familiar fault line terms. Fault lines can provide a kind of interpretation or coding scheme for issues addressed by policy makers, in news stories and popular culture media, so influencing how the issue is defined. Important to say is that potential fault lines do not necessarily translate into conflicts, at least not immediately, they need to be activated (Brady, 2011), for instance, through a sudden event. Meanwhile, however, the contradicting viewpoints are being kept alive and nurtured in organisations' own media (magazine, blog, website, etc.). As such, fault lines may further drift apart or separate groups of people, and vice-versa, groups may play a role in the maintaining

of fault lines.

The fault line concept is particularly interesting as it primarily refers to forces of tension and pressure rather than groups of people in society. Since there is no need of making a priori distinctions between differentiated social groups - though polarisation of groups may be the ultimate result of fault lines - such an approach avoids the temptation to start detecting those who have obvious and firm opinions on the topic. In practice, the kind of issue spaces within which people locate themselves cannot always be linked with clear-cut groups. People are simultaneously members of various social groups (Bowker and Star, 2000) and they identify with different groups in different contexts (Young 1976, on situational identity). So, people form opinions in more than one group, sometimes in the same fashion, sometimes very differently. They are also confronted with other groups to which they are outsiders and adapt their arguments accordingly. In short, several of the conflicting pressures will remain invisible if we just focus on predefined groups.

3 A three-layered observation of debate

In this research we propose a three-layered observation approach in order to reveal the tensions and fault lines in the debate and to examine their role in the emergence and perpetuation of conflict. The distinction between three layers - products, transactions, networks – is inspired by Goodwin's (2000) levels of argument, whereas the step-back approach has a foundation in Luhmann's (1995) orders of observation.

Products

Arguments as products of communication are the first entry point and layer of observation. We look at the verbal content of the arguments, i.e. what they *"say"*. In particular, what is the claim and what reasons support it? For the purpose of our study, we focus on recurring contrasts, incompatibilities and other tensions in the views expressed, as well as the form in which these are presented. Tensions arise from contradicting responses to a particular topic or question (e.g. expressions of disagreement), incompatible pieces of evidence, and so on, but also from language itself. When arguing and thinking, people make constant use of contrasting terms. Common examples range from adding words with opposite meanings (antonyms, e.g. slow and fast; predator and prey) to splitting a concept into two mutually exclusive

parts, only one of which may be true (a dichotomy or binary opposition, e.g. dead/alive). However, formal rules of logic are not necessarily followed. Terms that in natural language are to be understood in a kind of spectrum way (i.e. involving degrees) are frequently presented as contradictory opposites in argumentation (Govier, 2009). For example, the terms urban and rural are contraries but not exclusive, as they allow middle terms between them such as suburban and semirural. Yet, the urban-rural divide is a persistent (but contested) dichotomy in various societal domains.

Transactions

To address the second layer we take a step back to observe the arguers who, in their turn, observe the debate and the arguments produced within it. We are no longer interested in what the reasons and evidence are, but simply that they are sought and employed by the arguers (Luhmann, 1995). The unit of observation is now transactions, that is, what parties *"do"* with the arguments - attempting to convince others, anticipating counter-arguments, allocating responsibilities, and so on - including how they react to the arguments of others. Here too we can observe contrasts and distinctions, such as between what parties in debate consider good and less good reasons and the argumentative moves they try to make. Categorisation and particularisation are such opposite moves: the former pulls towards the aggregation of things and the latter to the uniqueness of things (Billig, 1996). Furthermore, Dascal (2008) distinguishes between the strategies of dichotomisation (radicalising a polarity by emphasising the incompatibility of the poles) and de-dichotomisation (showing that the opposition between the poles is not a contradiction, thus allowing for intermediate alternatives). Whereas dichotomisation is likely to radicalise a debate through polarisation, thus rendering it difficult or even impossible to resolve, de-dichotomisation may open possibilities of reconciling the contenders' positions (Dascal, 2008).

Networks

At the third layer we take another step back to observe how the arguments and the situated (and recurring) transactions through which people exchange the arguments *"fit"* into broader configurations of social relations, or what we call networks of communication. Social groups, institutions and other such networks have their own

perspective or worldview and their own sets of rules, discourses and practices that place limits and conditions on the use of arguments. What is “reasonable” in clinical medicine is judged in terms different from what is “logical” in geometrical theory (Toulmin, 1990). Arguments are inevitably conditioned by the networks in which they operate, but conversely, arguments may have a role to play in a network’s operation: enabling an organisation’s efficient functioning (Luhmann, 1995), reproducing the dominance of its discourse, securing its identity, confirming shared values and commitments, and so on.

In politics and everyday argumentation, what are considered reasonable options will seldom be guided by facts and evidence alone. Equally important are the meanings that are used to interpret those facts. The arguments put forward are usually located within a meaningful context, a wider discourse that gives meaning to them (Simosi, 2003). All this can create understanding between parties but often conflict as well. Struggles about concepts and meaning are an essential part of the public management of natural resources (Feindt and Oels, 2005). Furthermore, the meaning-giving concepts and ideas in a discourse can be used strategically to further agendas and mobilise support, e.g. the story lines for urban woodland creation (Van Herzele, 2006) and animal reintroductions (Arts et al., 2012). However, when a sharable vision of the meaning of concepts and principles is lacking, agreement will be hard to reach (Pellizoni, 2011).

4 Empirical material

The material is based mainly upon observation of public debate following wildlife comebacks – in particular red fox and wild boar – in Flanders (northern Belgium). We observed the debate in various forums: mass and social media, parliament, advisory reports, specialist magazines and websites (Table 1 for an overview). To start with we used a database from the Research Institute for Nature and Forest (INBO), which is systematically recording the items of news on nature in Flanders. We then conducted additional Internet searches – no time limits were set - to complement the material and to access local news and social media sites. Nature and wildlife magazines were consulted in the INBO library. After acquiring a broad understanding of the issues under discussion we decided to organise observations around a number of controversial events, which together cover a great variety of forums, stakeholders

involved and issues discussed. In accordance with the fault line concept, events were chosen that provoked questions with contradictory responses. By first observing six events separately and then comparing and integrating the findings into a substantive discussion we sought to better understand the formation and role of fault lines in the debate.

Data collection and comparison were aided by the Rationale argument mapping software (http://www.austhink.com/) to visually display the reasoning or argument structure. In this manner we produced so-called "reasoning maps" – diagrams of reasons, objections and evidence in support or opposition to a claim - as compact distillations of lengthy pieces of text and speech. Overall, the diagrams helped us work out what the reasoning actually is (Van Gelder, 2007) in both authored texts (e.g. opinion piece in magazine) and strings of interaction (e.g. transcript of parliamentary discussion, public reactions posted on the Internet).

Table 1. Overview of empirical material

Events	**Forums observed**	**Time period**	**Contentious questions**
Foxes being spotted throughout Flanders	Websites of organisations dealing with nature conservation, animal rehabilitation, wildlife management; Social media (Facebook, personal blog); Presentations at seminar about fox; Scientific communications; Local newspapers.	1995-2013	Have foxes come spontaneously? Is it a natural phenomenon? Do foxes belong in Flanders? What are risks associated with foxes?
Incidents of livestock killed by foxes	Regional and local newspapers; Websites of organisations dealing with nature conservation, animal rehabilitation, agricultural information, construction information; Websites of municipalities.	2005 - 2013	How to best protect chickens from foxes? Is the fox-free chicken coop an affordable solution? Are chicken owners responsible? Can foxes also be useful?
Minister eases restrictions on fox hunting	Parliamentary documents: proposals, questions and answers, hearings, commissions; Organisations and political parties websites and press releases; Television reportage and debate; Expert advice reports.	2010 - 2013	Are there too many foxes? Should the fox population in Flanders be regulated? Can hunting reduce fox populations? Do foxes pose a threat to biodiversity
Growing numbers of wild boar on the loose	Websites of organisations dealing with nature conservation, animal rehabilitation, agricultural information, forestry.	2009-2013	Do wild boars belong in Flanders? How many wild boars are there and why so many? Are they true wild boars? Is the population controllable?
Hunters try to cull the wild boar population	Regional and local newspapers; Readers' reactions to news articles; Parliamentary documents.	2011-2013	Is there really overpopulation? Who is responsible? Do hunters have sufficient means to cull the boar population?
Wild boars attack jogger with dog	Readers' reactions to a news article	21/11/2011	Who should adapt, boars or humans? Who's forest/nature is it? Is nature decision-making undemocratic?

5 Observations of events

Foxes being spotted throughout Flanders

Over the last decade lots of sightings of foxes have been posted on Internet forums. Typically, surprise reactions are followed by curiosity, admiration and fascination: "Male or female?" "Beautiful orange eyes" "It turned and looked right through me" "A delightful moment", and so on. After initial surprise, worries are expressed as well: it might get killed by traffic or shot by hunters, it might carry diseases, etc. The following Facebook conversation is in reaction to a video that follows a fox walking through a pool:[14]

Rosette DR: "Nicely filmed!!!!!"

Li LL: "Indeed nicely filmed. Is that fox alone or part of a couple? To what extent is it a threat to the other animals in the Polder? I did not know that there is a fox. It's nice!"

Li LL: "Hopefully, the nearby residents let it alone..."

Natuurpunt HP [local nature group]: " … The fox belongs in our ecosystem, we have no problem with that. It will sometimes rob a coot nest, but that is Nature! The preservation of the ecological corridor through Petroleum South to the green areas along the Ring is also of vital importance for the fox."

Li LL: "Thus, it came by itself, not purposely placed like the cows and the horses?"

Natuurpunt HP: "The fox came very spontaneously. As we have also polecat and stone marten, even roe deer. It illustrates how important it is to preserve connections with other nature areas."

Rosette DR: "That's true Nature!!! Keep it that way!!!!!!"

Pascale B: "Beautiful creature!" I hope he/she stays away from busy roads".

This conversation shows a typical mixture of excitement and concern among the commentators, while the nature conservation group praises the merits of the ecological corridor. It also speaks of fox as a species, rather than an individual like the commentators do. Very interesting is the undoubted view of nature as good and spontaneous. This conception then underpins a kind of evaluative dichotomy that we call belonging/not belonging. According to the nature group a robbing fox in the Polder is not a problem as it belongs there,

[14] Facebook Natuurpunt Hobokense Polder, 19 June, 2011

it is the way of Nature. The commentators only start speaking of true Nature when it becomes clear that the fox had come on its own to the Polder. We further show that the evaluation mainly relies on an assessment of both its presence (or absence) and the process of coming (or going). "Naturalness" serves as a key marker in these assessments.

That the fox belongs in Flanders can be found in many introductions to informative texts about foxes. Historical and geographical references further support the return and the presence of the fox as being a completely natural phenomenon:
"Foxes belong to our native fauna and form an important link in the ecosystem"[15]
"After 150 years of absence in large parts of Flanders, in less than 10 years the fox filled up this unique gap in its distribution area since about half the eighties."[16]
"A phenomenon that occurred in almost all over Western Europa in a spontaneous way"[17]

The naturalness of the process is defined using terms like "reconquering its place", "re-colonisation of historical habitats" and "revival". In addition, the fact that the fox had vanished through human intervention is often emphasised:
"During the first half of the 19th century the fox became extinct in the Western part of Flanders through a combination of habitat loss such as deforestation and persistent eradication by fulltime hunters". [18]

Indeed, before one can speak of a return at all, the fox must previously have gone. Apparently, if the latter process is human induced, it adds to the naturalness of the return. Thus basically the evaluation of belonging rests on a limited set of dichotomous definitions (e.g. natural/unnatural) of dichotomous facts (e.g. presence/absence). This is aptly summarised in the following quote:
"Not the presence of the fox is unnatural, its absence for decades (and centuries) was

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[15] Bird Protection Flanders 2010
[16] in: Population dynamics of Red foxes (Vumpes vulpes) in Flanders. Research Institute for Nature and Forest: www.inbo.be
[17] Food ecology of the fox in Flanders. Presentation by Koen Van Den Berghe, Vlaams Vossensymposium, Brussels 27.04.2005
[18] Natuurpunt: http://www.natuurpunt.be/nl/biodiversiteit/dieren-in-nesten/de-vos_2957.aspx

unnatural”[19]

It is important to note that the way facts are selected and interpreted is largely in reaction to or anticipation of oppositional voices. An often-heard argument from opponents is that Flanders’ current urbanised environment is entirely different to the historical situation and doesn’t provide suitable habitat for fox:
“This species does not belong anymore to our modest-size Flemish biotopes and densely populated society”[20]
“The fox WAS gone from our region. Now it is completely built-up, they put the fox again, allegedly to keep natural balance…. Stupid move, if you ask me!”[21]

Fox opponents frequently stress the unnaturalness of the process, speculating about the possibility that foxes were released or escaped, which in turn has resulted in all kinds of disputes over facts. In response to that, a fox researcher made a great effort to refute such speculations one by one in a lengthy report, emphasising:
“… the fact that we are dealing with a spontaneous phenomenon, instead of an unnatural situation fixed by ecologists”[22]

Much is at stake in this struggle for “truth”. It is recognised, indeed, that if the fox does not belong in Flanders there is hardly a reason to protect it. For instance:
“Frustrated hunters began to spread lies in the press by telling that environmentalists had set out foxes. The purpose of these lies was to deny the natural resurgence of the fox in Flanders and in that way to consider the presence of the fox as unnatural. This would be the preferred explanation to gain public opinion for the intense killing of foxes” [23]

Also notable in this quote is the relationships – hunters versus environmentalists - referred to. Identities are stereotyped and contrasted by making insinuations and one side blaming the

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[19] Koen Van Den Berghe in “People should learn to live with foxes” Vlaams info-centrum land-en tuinbouw 25.11.2008
[20] Is there still a need for foxes. Wildlife Management Unit Flemish Ardennes 21.03.2013, http://www.wbe.be/vlaamseardennen
[21] Forum Bouwinfo 2006
[22] Van Den Berghe, 1995.
[23] The cunning old fox ?!? http://home.scarlet.be/webvos by Hans Schockaert

other. This often happens when findings of killed or injured animals are reported:
"A long time ago our greatest predator was as good as extinct but has made a huge revival … Nature conservationists welcome this, hunters do the opposite. They hate foxes because foxes are predators, and predators need meat. Meat like rabbits, pheasants, that is, animals they like to have on their own plate. No wonder why so often illegally shot foxes are found. The two foxes found today are a sad example."[24]

Incidents of livestock killed by foxes

Those encounters with foxes that get the most attention in the media are the ones with chickens and other small livestock. Newspapers provide quite detailed information about the bloody scenes, the number and type of chickens attacked, along with dismayed reactions from their owners:
Seven hens, a rooster and a dozen pigeons, that is the damage that an aggressive fox has done in the henhouse belonging to Jean DG. "The feathers were scattered around in the wide area … All I got left is one chicken, two chicks and some pigeons. Moreover, those chickens were very nice and expensive too... I have real heartache about this"[25]

In such news reports foxes are often portrayed as aggressive and bloodthirsty killers. The clear emphasis is on damage and despair. The personal testimonies on site suggest that damage is multi-faceted and not just a matter of money (the animals were cared for and maintained with pride). Fox attacks may even be considered as an attack on one's own aspirations in life, for instance, starting a hobby in view of retirement:
"I was happy like a king with my dozens of chickens and ducks", says the 59 years old hobby breeder. … "It turned out a big disappointment" he sighs. "I take a lot of measures to protect my animals. I lock them in their coop overnight, but when I leave for work in the morning I have to let them free range. A few days ago, the fox killed all my chickens… It' s not a pleasant sight when you come home and find your yard full of corpses... My grandchildren Arne and Brecht are fond of chickens and ducks but I'm afraid if they come looking. I dare not telling them the truth", he says despairingly. [26]

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[24] Nature Help Centre, news: "Foxes shot…" 01.03.2009 www.natuurhulpcentrum.be
[25] "Agressive fox on rampage at farm", De Standaard 06.05.2011; Nieuwsblad 26.05.2011
[26] "Poultry holder considers petition against protection of foxes", Agripress 26.07.2012.

Such personalised victim stories depict how foxes not only affect livestock, but social life and relationships too. Meanwhile those in favour of foxes voice concern that the accumulation of incidents is damaging the fox's "reputation". One strategy used to improve the image people have of foxes is praising the fox for its benefits:

"The fox belongs in our nature and fulfils an important role there. The fact is that foxes help to naturally regulate the populations of e.g. small rodents, rabbits and birds."[27]

"Have you seen many muskrats in recent years? That animal is almost completely reduced by fox, so that today we deploy hardly any rat catchers. A yearly saving of millions of Euros, thanks to the fox. [28]

In this respect, the fox is often classified as a "useful animal", definitely no vermin like the large amount of rats and mice it is supposedly eating. Some farmers confirm this and assert (in on-line forums) that the fox is their "ally" in keeping down rodents. Overall, this type of argument fits the classical dichotomy between costs and benefits in economical (and by extend, ecological) thinking. Furthermore, and in the same vein, the fox proof chicken coop - promoted in "Smarter than the Fox" campaigns – is often rejected as too expensive for the average person to afford. Also, the costs would not outweigh the value of a few eggs a day. And, some people say that they don't want to make a fortress out of their garden.

Another strategy for fox defence is condoning the killing of chickens (even without consuming them) as an evidently natural behaviour driven by survival instincts.[29] So nothing is wrong about this. Several texts – in particular by nature conservationists and animal help centres - take this line of argument a step further by saying that foxes are "food opportunists" and will therefore attack chickens when given the chance, for instance:

"When it comes to food the fox is a true opportunist. When a fox passes an unprotected henhouse it will not miss the opportunity for a quick snack".[30]

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[27] Nature Help Centre

[28] Jan Rodts (Bird Protection) in: Is de jacht weer open? De Morgen 29 May 2012

[29] *"prachtige dieren die enkel handelen uit overlevingsdrang" nature help centre*

[30] "Foxes and poultry". Bird Protection Flanders http://www.vogelbescherming.be

The conclusion is obvious: one should ensure that his chickens are protected properly to prevent foxes from getting at them. Thus, in a way, the responsibility is shifted onto the poultry keepers. And, chickens become victims of irresponsible owners rather than foxes. Furthermore, culinary terms like “free buffet”, “set table” and “fast food restaurant” invite one to look at the situation from a fox’s perspective. This is also happening sometimes when public comments in online forums place responsibility on hunters, because they shoot so many rabbits and partridges that there is little left over for the fox:
“What would you do for food when all you have left is a chicken coop?”[31]

By shifting perspective to the fox’s point of view the costs and benefits become also irrelevant. Still, important differences in viewpoints notwithstanding, the same sort of binary classification is underneath, that is, one that distinguishes between wild and tame or domesticated animals. Wild animals survive and provide for themselves, they live their own lives independently of humans. By contrast, the situation of domesticated animals is closely bound up with humans. They must be cared for and protected. While chickens and other livestock are clearly in the latter category, the situation of foxes is ambiguous. As noted before, it is argued that foxes belong in our nature and play an important role as our greatest wild predator. However, foxes’ behaviour to steal their food from people’s gardens (or forage for food waste in cities) makes for an uneasy fit within the category of wild animals. Moreover, the idea that foxes may not survive independently in nature provides a reason to doubt the claims about their natural presence and beneficial role in nature. Revealing in this respect, is a discussion among poultry keepers on a forum for construction and renovation [32]Along with the exchange of experiences, tips and tricks for chicken protection, the following criticisms are also raised:
“A frequently heard argument is that the fox keeps wild animal populations in check. While it does not even catch wild animals because there is an easier meal in people’s garden.”
“The fox will not tire itself out with controlling rat, rabbit and frog populations, but simply steal people’s chickens, ducks and bunnies. So the fox is a nuisance and nothing more.”

[31] Vossenstreken: Radio 1
[32] Discussion: “Slaughter in our henhouse”, 06.11.2011-08.08.2012. Bouwinfo forum: www.bouwinfo.be/forum/

Thus, the explanation of food opportunism is also working against the fox when it finds those opportunities outside nature. An interesting attempt to put the fox back into its natural habitat, at least symbolically, is including people's gardens into the foxes territory:
"Every henhouse is, in principle, in a foxes' territory… People must learn to live with the presence of foxes. Whereas formerly they could stay away from each other, there is today no area in Flanders where only humans or only foxes live" 33

When humans live within a foxes' territory, the latter don't cross any border. While such reasoning may serve to "naturalise" the presence of fox, it tends to emphasise the same fact - i.e. the urbanised and fragmented contemporary landscape – as those contesting the naturalness of fox populations. An alternative attempt is to value our contact with the "wildness" of the animal:
"It is a fantastic animal… which first shows us that wild animals are living in our immediate surroundings"[34]

Minister eases restrictions on fox hunting

With the continuous flow of headlines and news stories, opinions and some protest actions too, pressure was growing on politics to tackle the "problem of foxes". In their press releases and speeches in Parliament, some political parties and the Hubertus hunters association (HVV) point to the seriousness of the problem as evidenced by citizen complaints and local mayors ringing alarm bells. Apart from livestock, "the fox" is said to harm biodiversity and to pose possible risks to public health. For these reasons they called for fewer restrictions on fox hunting, such as permitting it out of season and even at night. Whereas facts of damage, loss and risk were cited at length, it appears that social acceptability rather than damage itself carries the most political weight. For instance, as one politician concludes:
"The social support base for the fox has been gradually exceeded in Flanders and measures to regulate the fox population are required."[35]

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[33] Van Den Berge K. VILT
[34] Geert Hoste in
[35] I. Sabbe in: "Fox population in Flanders should be regulated" Press release LDD 20/10/2010 www.ldd.be

There is a remarkable tendency - among those who want less restrictions on fox hunting - to broaden the issue base. Firstly, issues get magnified through multiplying single incidents (such as poultry killed by foxes) to form a problem on the scale of Flanders, so it becomes a "societal problem". Scaling up the issue is also facilitated with repetition of incidents in the mass media and through transfer of complaints from locals to the Minister. Furthermore, attention is shifted from the animal and the species to its population (also called the "fox plague"), which is said to be unnaturally high.

Secondly, the issues are extended to a much wider field. One example is fox predation on game animals, which issue becomes problematized as a threat to "biodiversity" and even further extended to its consequences for conservation policies, both in Flanders and in Europe:
"Game species aren't the only victims [of predation] but vulnerable species too, such as meadow birds, ground nesters … HVV wonders what impact the fox and other predators can have on the conservation objectives and Natura 2000."[36]

Thirdly, the issues are attached to social groups, institutions and relationships. There are on one hand those affected by foxes. People with poultry are frequently referred to as victims of the fox and municipalities may encourage them to fill in a complaint form in case of damage. On the other hand are those who wish to respond to the problem. Mayors – and aldermen alike – take up the role of spokesman for affected citizens, in particular by visiting, phoning or writing the Minister. Furthermore, HVV points to the fact that the fox in Flanders has no natural enemies except humans, which supports the importance of hunters to the balance of nature and the health of biodiversity. Specifically, the issue of predation is emphasised using the naturalness dichotomy:

"I repeat again my call to the whole Flemish nature sector: open your eyes to reality and stop entrenching yourself in the belief that predation is natural, because the level of predation

[36] J. Schrijvers (HVV), in Parliamentary Hearing 26.10.2010

occurring today in Flanders is not natural anymore!”[37]

Organisations dealing with nature protection and animal rights, some political parties and other opponents claim they are against the extension of fox hunting. They continue spreading the message that foxes are not to be killed but chickens to be protected (see the previous event). Complaint figures are also criticised because of the lack of systematic and controllable registration of damage[38]. Far more compelling is the assertion that the killing of foxes will have the adverse effect of that intended. The widely circulating explanation, coming from a fox specialist at INBO, focuses on population biology:
“The control of foxes results in a reproductive reaction: more females participate in reproduction and their litters increase”[39]
“Through subtle social and biological mechanism foxes regulate their own population pressure … Keep of the fox and its reproduction declines. That’s my scientific proposition”[40]

Thus, following the principle of fox’s self-regulation, the population issue is “naturalised”, it is turned into a non-problem. Likewise hunting becomes a non-solution: new foxes will quickly recolonize the emptied territories. Opponents also warn that hunting destabilises the fox population and tapeworm infected foxes from Wallonia will move into the territories. Furthermore, the issue of predation by fox can be de-problematized easily, for example, by explaining it away as only “one facet of the ecological system “or only “one of many factors regulating populations”[41]. Among these factors, human impacts are often emphasized, hence producing an unnatural situation, which is then considered the real problem:
“Today it’s very simple for the fox to skim the scarce, straight, open and poorly structured forest and field edges in search of a tasty snack. The problem is not so much the fox but the landscape impoverishment that offers little coverage”[42]
“[Studies] show that controlling foxes and crows is not the solution for meadow birds. Meadow birds naturally have a high mortality, also in nests, but they can get very old

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[37] Y. Sterverlynxk in “Preface”, De Vlaamse Jager, September 2012
[38] Natuurpunt: “Towards sound fox management: what came before”, 07.02.2012 http://zoogdierenwerkgroep.be
[39] K. Van Den Berghe in the television programme Panorama …
[40] K. Van Den Berghe in “The fox has done it again” De Standaard 21.06.2008., p. 48.
[41] P. Symens (Natuurpunt), in Parliamentary Hearing 26.10.2010
[42] Natuurpunt: “Towards sound fox management: what came before”, 07.02.2012 http://zoogdierenwerkgroep.be

according to bird's standards. The main problem is land use intensification. Therefore targeted measures should be taken to reduce the unnatural mortality"[43]

So the blame is shifted from the fox or the natural event to inappropriate land use practices and policies. It does not mean, however, that the fox needs no management. As Natuurpunt (Flanders' largest nature organisation) admits:
"There is no natural balance anymore in Flanders' nature. Management is therefore required… Hunting may be necessary in some areas, but a general loosening of hunting restrictions doesn't make sense"[44]

In sum, the arguments don't leave much of the problem of foxes intact: the population is "natural" and self-regulating, livestock damage is preventable and eventual predation of valuable species can be tackled locally on a nature conservation basis (the "species programmes"). But the debate doesn't stop here and starts focusing on the people engaged in the problem, their assumed interests and agendas. Hunters are by far the most targeted group. They are criticised for showing concern about vulnerable wildlife and backyard chickens, while their only motivation comes from "the hunting interest". Sometimes they are contrasted with "right minded conservationists" and even the people with poultry*:*
"Most distressing is the fact that this hunting interest (of wealthy citizens) is pursued at the expense of the poultry keepers (ordinary people)." [45]

Blame also goes to the Minister of Environment because of her decision to extend legislation allowing foxes to be controlled in certain circumstances. The minister speaks of "a very limited adjustment"[46], while opponents accuse her for having de facto outlawed the fox. But more frequent is the accusation that the minister is just bowing to the demands of the hunting lobby, colleague ministers and municipal mayors. Hints are made about relations, such as ministers probably having hunting family members and local politicians appealing to their electorate:

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[43] W. Van Gils (Natuurpunt), in Parliamentary Hearing 26.10.2010
[44] P. Symens (Natuurpunt), in Parliamentary Hearing, 26.10.2010
[45] J. Rodts, in: a reaction of Bird Protection Flanders to the proposals of resolution for the extension of fox hunting, 26.10.2010 www.vogelbescherming.be
[46] Minister J. Schauvliege in television reportage Panorama, VRT, .02.2011

"… angry mayors who think they score points by reacting to complaints from citizens about fox damage in an extremely emotional but totally irrelevant way." [47]

Another common accusation is the lack of scientific legitimacy of the decision. It led a group of science students to begin a campaign to accuse the minister of wilfully ignoring legitimate scientific findings, most notably her own institute's research. It was issued as a "symbol dossier of scientific and political dishonesty" [48]. The idea is not really new. Earlier on, HVV not only complained that Bird Protection Flanders was making the fox a cuddly political symbol, but also that scientific research from around the world (proving the negative ecological impact of fox) has been silenced.

Growing numbers of wild boar on the loose

In the near-decade since they arrived, sightings of wild boar have made the news multiple times. The common reactions reported are surprise, uncertainty and fear. Farmers are the most concerned. They say they have no idea of how to protect their crops against wild boar, and some believe that boar - being "a colossal and dangerous animal" - poses a threat to their calves. [49] But also professionals in nature management are not confident about the situation. One example is the Sonian Forest near Brussels:

"It is clear that Nature is again asserting itself. Which is good news for biodiversity. At the same time, we are closely monitoring the population, because wild boars reproduce very quickly. This entails risks for a forest at the edge of a large city."[50]

Much of the news coverage is setting an alarming tone and problematizes the presence and coming of wild boar at higher scales (the province, Flanders). On the one hand, estimates are provided about the number of wild boars already present and any prospects about the rapid spread and growth of populations. On the other, warnings (or events) of agricultural damage, road accidents and sometimes diseases are given. The two issues of population and damage – both including questions of tolerance and intolerance - are also at the centre of political

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[47] D. Draulans in "The fox has become an outlaw", Knack, 15.08.2013
[48] Open letter to Minister Joke Schauvliege : www.fierdatikeenvosben.be
[49] "Wild boar spotted in the Dyle valley" Het Nieuwsblad 08.03.2012
[50] G. Reinbold (Brussels Department of the Environment) in "Wild boar and roe deer populations remain stable" www.zonienwoud.be 27/06/2013

debate. No one has a clear idea how many animals are actually out there. The farmer union Boerenbond calls the estimates provided by INBO - a count of 1,300 boars in the province of Limburg - "a gross underestimate" and that it might be a multitude[51]. Furthermore, it is the government's plan (the Nature and Forest Agency) to delineate (non)-tolerance zones for boar, but Boerenbond finds it impracticable ("No boar reads a sign that says where it can go and where it can't go"[52]) and sets instead a clear vision based on the contention of not belonging:

"Agriculture and wild boar go not together here. We would have no problem with a smaller population. Those animals just reproduce very quickly. The stock is uncontrollable. Therefore, we advocate for making Flanders a no-go zone for wild boar"[53]

HVV also declares "zero-tolerance" for wild boar in Flanders. Complete eradication was initially the vision of the government, but it was later dismissed as impractical in view of uncontrollability of immigration from abroad. Less radical but moving in a similar direction is a vision expressed by Bird Protection Flanders. It is evidenced by a negative assessment of both the available habitat and the boar's coming:

"We advocate a zero tolerance in areas where there are no boars today … Wild boars need vast forests, which are rare here. Moreover, the majority of these pigs may have come here in an unnatural manner." [54]

The origin of the boar, where it is coming from, is frequently a topic of speculation. So it makes a big difference whether the animals are wild or domesticated. In this respect, samples for genetic screening were collected and it was found that the boars in Flanders are "true pure boar". [55] Yet there is still spoken of released or escaped animals, in particular when first sightings occur and animals show tame behaviour. These "facts" in turn are used either to disapprove the presence of boar, to blame the hunters or to make insinuations against them:

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[51] K. Vanheukelom (Boerenbond Limburg) in: "Population wild boar dangerously large in Limburg" Vilt (Flemisch information centre for agriculture and horticulture) 25.09.2012
[52] "Boars better stay in Wallonia" De Standaard 12.02.2012
[53] I. Deroo (Boerenbond) in: "The hunt is open again?" De Morgen 29.05.2012
[54] J. Rodts (Vogelbescherming Vlaanderen) in: "The hunt is open again?" De Morgen 29.05.2012
[55] "True wild boar in Flanders?" INBO Newsletter July 2009

better off for they can now go hunting in areas where they were never allowed before. They succeeded in their intent.”[56]

Wild boar are typically spoken of as animals on the loose. It is told that due to overpopulation in Wallonia and northern France, the boars are “swarming” or “marching” north. Or, otherwise, they might be on the run for hunts in neighbouring countries. Furthermore, increased maize production providing food and shelter, the absence of natural enemies and climate change bringing milder winters are common explanations for their rising numbers. All of this gives the implicit impression that - whereas it is often said that wild boar disappeared in Flanders through human agency (in particular over-hunting) - its return is not a completely spontaneous phenomenon. The latter is however not really discussed in public. More often these explanations are used (by nature conservationists) to emphasise the farmers’ share in the problem (abundance of maize) or to promote large predators (wolf and lynx) as part of the solution.

Lack of space or suitable habitat, namely that Flanders is too urban and most of its forests are too small is a common argument against boar. For Natuurpunt this is exactly the problem to which it calls attention. Its vision text “Space for the wild boar” [57] begins by saying that “wild boar belongs in Flanders, it is a part of our nature”, but then highlights even more the important role of boar in future nature development and the imaging of nature. Through the creation of large interconnected nature areas - a policy priority for Natuurpunt since long – space can be provided for large animal species such as wild boar. The issue of imaging is referred to in a newspaper opinion piece as an intense experience of contact with nature: “An encounter with a family of boars is really an encounter with the primal power of Nature” [58]

Hunters try to cull the wild boar population (to be polished)

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[56]Nature Help Centre, “New creatures in Nature”6.12.2011 http://www.natuurhelpcentrum.be
[57] www.natuurpunt.be 17.05.2011
[58] C. Steenwegen (Natuurpunt) “Make space for the primal power of Nature. The wild boars should stay” De Standaard

There is increasingly spoken of a "wild boars plague". Militaristic and other highly charged language. "Societal nuisance is too high. The battle against the wild pig is therefore opened on several fronts".[59]

Boerenbond, along with HVV and several municipalities urge the Minister to amend the obsolete legislation to allow hunters to keep the "explosion" of boar populations under control. They all refer to the dame damage and risks, notably destroyed fields, risk of swine fever, road accidents and safety for residents and hikers. Hunters also point to threats to biodiversity, for instance, ground nesters like the rare nightjar. Roe deer suffer from stress and their calves are in danger.

Boerenbond and hunters point an accusing finger to the nature areas where hunting is usually not allowed. Boar can hide there and cause damage in the surrounding fields. Such protection of boar is further contrasted with forests in neighbouring countries where hunts take place: "Those boars see the 130 ha nature area of Voeren as a safe haven opposite the war zone of the surrounding forests where they can be hunted"[60]*. However, Natuurpunt points at the farmers too: "Hunters do claim that the boars are in our areas and they regret that they are not allowed to hunt there, but those pigs are also in the maize fields of agriculture. They can easily hide there and find plenty of food. So it is a joint responsibility".*

In several places hunts were organised to cull the growing number of wild boar. Result often disappointing. Headlines in newspapers, such as: "Hundred hunters don't shoot one boar". Amused public reactions, but also the powerless hunters making jokes: "Those pigs are much smarter than we are"; "They roll in the mud of laughter with us"[61]*.*

Public reactions on the news articles typically began with discussing the facts, how it was possible that the hunters finished the day without one kill. In particular the population figures were questioned (e.g. "What is not there you cannot shoot!"). Personal experiences served as evidence for and against the estimates, e.g. "I walk a lot in the woods, but I've never encountered a wild boar", "Seven weeks ago I saw a boar in front of my car".[62]

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[59] "Limburg is full: there can be no more wild boar. Het Belang Van Limburg 2-3.02.2013.
[60] The mayor of Voeren in "Farmers demand action against overpopulation wild boar" Het Nieuwsblad 26.09.2012.
[61] "Wild boar and hunters play cat and mouse in Limburg" De Standaard 27-28.10.2012
[62] "110 hunters don't shoot one boar" Het Belang Van Limburg 15.04.2013

Commentators were quick to link the facts to the hunters involved and hunters in general (usually in a negative way). Frequent insinuations associated hunters supposedly exaggerating the problem with their striving to obtain permission. In addition, the responsibility for the problem remains a contentious issue. Frequent accusation: it is the fault of the hunters who have released the boar. Or: "the hunters don't want to solve the problem because they have still not achieved the ultimate: the right to hunt day and night in all kinds of areas"[63].

Furthermore, the supposedly released animals were sometimes equated with domesticated animals. The distinction (domesticated, not wild) was then used as an incriminating fact against the reported hunting event: one should not shoot on tame animals[64] *But also general criticism against the hunts (causing a bloodbath, disturbing breeding season). Hunters blamed (killing for pleasure).*

Counter-arguments said that hunters have no interest in boar but are rather at risk to pay the damage. Actually both farmers and hunters are complaining in general about the uncertain legal consequences resulting from the damage caused by boar. In the mass media the issue of compensation for damages tends to provoke strong reactions. Hunters in particular have been blamed for wanting the benefits gained from wild boar but not the costs, that they are "big money makers", etc. Furthermore there were insinuations of complaining farmers being member of HVV and the Minister supporting their cause.

Wild boar have remarkable few defenders. In reaction to the hunting events some defend the boar for being not responsible for the nuisance. The animals cannot help it. It is the fault of humans who have destroyed their shelters and food resources. Also shifting to the boar's perspective ("What would you do if they destroy your home…").

Besides the damage to crops, danger is a main argument for intervention. From municipal mayors to the Flemish parliament: the risk of deadly car accidents is used to call attention to

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64 "Jacht ingezet op dolende everzwijnen" News from Lede, in Het Nieuwsblad 31.01.2013.

the urgency of the situation. However, most important appears to be the risk that authorities will be held responsible. Interpellations: the Minister continues to emphasise the opportunities provided by current legislation to adequately tackle the wild boar and the proper interventions organised by the administration (Agency of Nature and Forest), so defending the image of a good functioning ministerial department: "……"

Wild boars attack jogger with dog (to be polished)

A small newspaper article about a jogger and his dog being stormed by a group of wild boar generated 210 published reactions.[65] *The discussion gradually developed. Early on the focus was on the facts of the incident, that is, what really happened. Had the boars really attacked the dog? Was the dog leached or un-leached? General statements were also made about the behaviour of dogs (and dog owners) or otherwise the behaviour of wild boars. Disagreements about whether boars are aggressive or fearful (dichotomy), e.g. "they may bite for no reason at all" versus "wild boars are very shy animals", and a middle position: they can behave aggressive in certain circumstances.*

Contrasting views on the phenomenon of wild boar in Flanders developed further in the discussion. Representing a wider problematisation and up-scaling of the issue. Several of the reasoning advanced the contention that overpopulation should be reduced ("it is the only viable solution"). This was based on practical considerations (e.g. it is impossible to avoid damage, you never know who's boar it is that caused the damage, they can travel 30 km a day and have no number plate), as well as the need of striving for balance of nature (e.g. "If we let nature go its course, many native fauna and flora will be lost"). Large part of the discussion, however, followed a very different logic. Principles or fundamentals about nature and human-nature relationships came to the fore, which were put in contrast with the managerial vision of above: "I trust that Nature recovers and a new type of balance will develop"; "Nature knows best and we should not interfere"; "To claim that we know how to master the natural evolution reflects huge arrogance"; Humans should not decide whether a species belongs here ("Who are we to judge whether or not a species belongs here?"). The latter also objecting the common dichotomy of belonging/not belonging.

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[65] "Wild boars attack jogger with dog" Het Belang Van Limburg 21.11.2011.

Principles about Nature not only served to disapprove human intervention but also to make acceptable the dangerous character of wild boar (i.e. counteracting the claim that wild boar should be culled because it is dangerous). "Learn to adapt to Nature and not the other way round" "Nature that is made following your wishes is no Nature but Plopsaland [an amusement park]" "Every animal has right to live and exist". It appears difficult to counteract such principles. Some attempts to bring the discussion back to the initial issue, e.g. "Have those pigs the right to overpopulate our forests?"

When referring to principles, it is remarkable that the evaluations often apply to humanity as a whole rather than individuals or groups. Example: "Man is still the most dangerous animal" because "we humans have injured, killed and even eradicated far more animals" so "the problem is that we always feel ourselves superior".

The further the discussion developed, the more it turned to the issue of decision-making over natural areas. Several commentators were complaining about the undemocratic character of nature conservation (also called "nature fascism"). In particular nature organisations were blamed for being the absolute and omnipotent ruler of vast natural areas. Various examples were given, such as nature areas closed off for recreation and hikers confronted with warnings. Others held the view that animals deserve quiet places in Nature and where they can be rulers. However, this was counteracted again by the view that man is part of Nature.

Nature conservationists (also called profit seeking nature destroyers) were further contrasted with "real nature lovers" and equated with elite status: "They cross through the woods with expensive 4x4, equipped with nature design clothing, hung with expensive binoculars, and chase away the real nature lover who is not coming to steal wood like they do"

6. Integrated findings and discussion (to be completed)

Annex 6 – Case study report: An underwater tidal electricity turbine; Northern Ireland

John R. Haslett

Introduction

The issue addressed and its context within environmental decision-making

In 2004, the industrial company Marine Current Turbines Ltd (MCT) identified the Narrows at the entrance of Strangford Lough, Northern Ireland, UK as their preferred location for the deployment of SeaGen, the world's first commercial scale open stream tidal turbine. Very strong tidal flow was a major factor (among a variety of criteria considered) in site choice for testing the new technology at this scale of operation over a 5 year period, but environmental impacts were unknown. The marine turbine is central to the Northern Ireland and UK Governments´ requirement to achieve "Green Energy" targets set by the EU. But at the same time, the impacts of siting, construction, operation and potentially also removal of the turbine were not clearly understood. Strangford Lough supports a recognised wealth of marine biodiversity. The area is very important for marine invertebrates, algae and saltmarsh plants as well as for fish, marine mammals and wintering and breeding wetland birds. The variety and richness of species and habitats has provided the strong grounds for the Lough receiving many different designations for nature conservation status, at national and EU levels. These include Special Protection Area (SPA), Special Area of Conservation (SAC) and Natura 2000 site status (http://www.jncc.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0016618). Also, the area is important for its landscape, recreational use, commercial fishing and a diversity of other ecosystem services. The spectrum of potential conflicts of policy interest that has arisen is new and complex.

Actors/stakeholders

There is a long list of over 50 interested parties that have been included in the dialogue of discussion and consultation during the 10 years and more of the turbine project. For the purposes of the BESAFE case study, this was reduced to focus mainly on a central group of individual persons that have been actors throughout the entire time of the turbine development: each person represents a major stakeholder group and each has been involved in the process from the start in 2004 to the present (end 2013). These groups cover Governmental Departments/Agencies, NGOs, academic and also local residents/cultural interests. Note here that regarding government, Northern Ireland has experienced a complex set of changes over the years. Issues of environmental policy and its governance within Northern Ireland have been the responsibility of a variety of governmental entities, mainly associated with the Department of the Environment, but under a range of different names, during the time course of the SeaGen turbine project. This includes some periods when the local Government, the Northern Ireland Assembly, was suspended, during which times responsibility was at the national level, handled directly from the UK Government in London. However, such internal changes do not appear to have interfered with the decision-making processes related to the development of the SeaGen turbine project.

Lines of argument

Many potential conflicts of interest may arise between various combinations of stakeholders and policy makers, mainly as a direct or indirect consequence of the dilemma of Protected Area designation and provision of cultural services against the socio-economic benefits of renewable "green" energy and cutting edge technological advances, but these may not be necessarily mutually exclusive. Arguments that relate directly to the potential negative effects of the turbine on existing biodiversity and its protection are central to the documents that were used to define the three "events" recognized along the timeline of the present case study (see below) and are the arguments included in the database of Deliverable 2.4. However, within the specific interests of WP4, it was decided that the turbine project could also be understood as a proposed and implemented change or development, with positive and negative impacts on not only the supply or inhibition of ecosystem services, but also on biodiversity itself, or components of human wellbeing. This approach enabled the present case study to encompass a wider variety of potential impacts (and hence arguments) of the marine turbine development. This work is reported under WP4.

Events

Three longer period, but pivotal events were chosen to reflect the timeline of the development of the marine turbine case study.
1. Independent Environmental Statement (EIA) April 2004 – 15 June 2005 (Royal Haskoning 2005)
2. Licensing variations and Habitats Directive Article 6 Report by the Department of the Environment (DOE) 15 December 2005 - 2 February 2008 (Department of the Environment (Northern Ireland) 2008)
3. Results of Environmental Monitoring Programme Final Report 16 January 2011 (Royal Haskoning 2011)

In addition, a 4th "event" of a future scenario (2013+) was investigated within WP4, extending the questions to the interviewed stakeholders to include their views on the potential impacts of future arrays of turbines at other coastal locations. This specific aspect is reported under WP4.

Methods and Analysis

Data were obtained from two sources:
(i) The official Report documents of the Environmental Impact Assessment, the Article 6 Report and the Monitoring Programme Final Report.
(ii) Meetings and interviews with a variety of the central stakeholders, culminating in a set of standardised interview questionnaires with the 5 persons each representing a major stakeholder group and each having been involved in the process from the start, as noted under Actors/Stakeholders section above.

The information given in the documents of (i), supplemented by further information and insights gained from the meetings with the informed stakeholders under (ii) provided the basis for populating the WP2 on-line database.

The information from the questionnaires of (ii) provides the quantitative data for the WP4 aspects of the case study. For this purpose, each of the 5 interviewees populated a questionnaire on perceived impacts of the turbine (2 parts - positive and negative impacts, each for the 3 events identified in the time line and the 4th future scenario). Details of this work are reported separately under WP4 and are not included here. Thus the remainder of the present report considers the insights gained from the results as entered into the WP2 database. The form of the database permits evaluation of particular aspects of arguments to be made by assigning levels of relative intensity, importance or other such relevant parameters. This provided the means for describing and interpreting the results as presented below

Results

Argument types and occurrence

At least 21 possible direct and indirect negative impacts of the marine turbine on the biodiversity present in the area were identified. The implication for the stakeholders was that each of these possible impacts was a potential point of argument to be considered throughout the negotiations and decision-making process surrounding the turbine development.

The impacts fall into a number of groups or "types" that mainly reflect the particular aspects of biodiversity under consideration and/or the policy involved. Thus, there are issues concerning the Protected Area status of Strangford Lough in general and then, more specifically in relation to the protection of particular habitats and particular species or wider taxonomic groups. Further, these may be (at least partially) separated into those that relate to the entire Lough, including the large interior lagoon, or only to the smaller area of the site of the turbine, at the entrance to the Lough.

Equally, there are impact types that are more specifically related to the direct provision of ecosystem services, including commercial fishing (mainly pot-fishing for shellfish), recreation and landscape character. Impacts defined by physical parameters, such as noise and vibration, hydrodynamics or water quality and sediment content, though physical by nature, considerably overlap with, but also complement the biological parameters addressed.

Many of the potential impacts identified may be mapped onto a set of 14 arguments that are each clearly defined and whose usage may be followed over the course of the case. An overview of the subjects addressed by the arguments is provided in the list below:

A1 Protected area status (general)
Strangford Lough, Northern Ireland, has National and European Protected Area designations to ensure protection of the marine and coastal biodiversity of the area. Siting the marine turbine in the PA may pose risks to the protected biodiversity.
A2 Benthic habitats risks
Reefs and other communities of marine animals and plants on the seabed may be destroyed or damaged by turbine positioning, construction and operation.
A3 Seals risks
Potential direct threats to common (harbour) seals and to grey seals from rotor collisions during turbine operation and/or acoustic disturbance during turbine construction or operation or from accidental release of poisonous contaminants.

A4 Cetaceans risks
Potential direct threats to whales and porpoises from rotor collisions during turbine operation and/or acoustic disturbance during turbine construction or operation or from accidental release of poisonous contaminants
A5 Elasmobranchs risks
Potential direct threats to basking sharks and other elasmobranchs from rotor collisions during turbine operation and/or acoustic disturbance during turbine construction or operation or from accidental release of poisonous contaminants
A6 Birds risks
Potential direct and indirect threats to bird species protected under Articles 4.1 or 4.2 of the EU Birds Directive or listed in the Annexes of the EU Habitats Directive. Additionally, potential direct threats to diving birds from rotor collisions during turbine operation
A7 Shellfish fisheries risks
Potential threats to fish and shellfish populations by reduction or changes in available habitat including feeding and spawning areas, and reduced access for fishing during construction and operation of the turbine.
A8 Acoustic vibration disturbances
Potential disturbance to marine mammals during construction and or operation of the turbine
A9 Turbine electromagnetic disturbances
Cable installation may create electro-magnetic field corridors over the seabed that could adversely affect elasmobranch behaviour, as these fish use electro-magnetic fields to detect prey.
A10 Collisions risks
Risk of collisions of animals (marine mammals, sharks, diving birds) with the turbine rotors during operation of the turbine, that may result in either immediate fatality or injury. Also collisions with vessels during construction.
A11 Hydrodynamics energy removal
The turbine may cause loss of tidal current velocity within the Strangford Narrows which could have wider effects on marine species and or whole ecological communities
A12 HD Annexes habitats
The construction and operation of the turbine may have negative impacts on marine and coastal habitats that are listed in the Annexes of the EU Habitats Directive.
A13 HD Annexes species
The construction and operation of the turbine may have negative impacts on marine and coastal species that are listed in the Annexes of the EU Habitats Directive, particularly the common seal, *Phoca vitulina* and a variety of regularly occurring bird species.
A14 Cable scraping seabed
Cables that trail across the seabed may move with the currents and scrape and damage the reef and other seabed biotopes.

Potential effectiveness of arguments

Considered over the entire case, all of the arguments listed above may be regarded as having a high level of potential effectiveness, from the variety of perspectives considered within the database. This is primarily because the arguments were all compiled and presented by experts and regulators, all of whom had a high level of underlying scientific expertise and knowledge of policy. Thus the arguments are all coherent and constructed with clear internal logic and framed to appeal to such logic and the state of knowledge (the only exception was the argument of risks to shellfish and fisheries, in which the framing had a strong economic element). Also, the arguments are all based on studies designed explicitly for the marine

turbine and the site under consideration and they all feed into the timeline of the decision-making processes so that the logical inferences of argumentation matched and tracked the levels of scientific understanding as the project developed.

Observed effectiveness of arguments

Argument persistence over time
Most of the listed arguments had high persistence, being repeated in the events over the entire time course of the turbine development. Those arguments that were less persistent, usually receiving less attention towards the end of the project (Monitoring Programme Report, Event 3) include those of shellfish and fisheries (A7), and the issues of cables scraping the seabed (A14) and creating electromagnetic fields(A9).

Argument accumulation over time
Many of the arguments exhibited increased and broadening use along the timeline of events. Particularly, the arguments of risks to seal populations (A3) with some focus on the Habitats Directive protected species status (A13) of the harbour seal and the risks of animal collisions with the turbine (A10) increased and gathered power during the course of the case. But arguments centred on Protected Area status, including benthic and HD listed habitats (A1, A2, A12) the argument of negative impacts of acoustic/vibration disturbance to animals (A8) also maintained and increased their profiles. At the other end of the spectrum, arguments of negative impacts on cetaceans (dolphins and whales, A4), sharks and other elasmobranchs, (A5), including risks from electromagnetic fields (A9) and cables scraping the seabed (A14) showed reducing profiles over the time line. Interestingly, despite their extremely high profile in conservation biology and protection effort, the argument of risks to birds (A6) was only of a medium level of accumulation. This point is returned to in the Discussion.

Crossing policy levels
Most of the arguments showed a spread to different policy levels during the development of the turbine project, from local to National government policy and to EU policy levels. This likely reflects the high international significance attached to the turbine project. The exceptions are almost identical to those listed above under accumulation: arguments of negative impacts on cetaceans (dolphins and whales, A4), sharks and other elasmobranchs, (A5), including risks from electromagnetic fields (A9) and cables scraping the seabed (A14) remained mostly within the local government policy level.

Argument diffusion to new audiences
Many of the listed arguments did spread widely to audiences during the course of the turbine development, extending to all the major stakeholder groups involved in biodiversity protection (government, NGOs, academic, local residents and cultural representatives). Particularly the arguments of risks to benthic habitats (A2), risks to marine animals from acoustic/vibration disturbances (A8) and from collisions with the turbine (A10) were widely dissipated across audiences. The arguments that spread less widely were those of risks to sharks/elasmobranchs (A5), shellfish and fisheries (A7) and the risks posed by electro-magnetic fields (A9), cable scraping (A14) and energy removal from the tidal flow (A11).

Replacement of arguments

A number of arguments were observed to become more dominant by overriding other arguments as the case progressed. The argument of risk to seal populations and the parallel but more widely applicable argument of risks of animal collisions (not only seals) became particularly dominating. Also, the arguments recognising the overall PA status of the site (A1), risks to HD listed habitats (A12) and HD listed species (A13), impacts on cetaceans (A4) and acoustic/vibration disturbance to animals (A8) showed a capacity to dominate at the expense of other arguments. These lesser arguments included the risks to sharks/elasmobranchs (A5), risks to shellfish and fisheries (A7), risks to birds (A6) and risks to biodiversity posed by electro-magnetic fields (A9), cable scraping (A14) and energy removal from the tidal flow (A11).

Discussion

The evidence obtained from the official reports and other documents examined and the further information obtained from the meetings with key stakeholder group representatives may, upon initial examination, appear to present a negative picture of the success of arguments in protecting biodiversity: Despite all discussions, the marine turbine was constructed and still continues to operate within the Protected Area of the Narrows of Strangford Lough. However, when viewed in the context of the influences on the decisions made during the course of the turbine project, the arguments for biodiversity protection listed in this study were, in general, highly effective – they clearly had strong influences on the decision processes that shaped the conditions under which the turbine development progressed. They changed peoples´ behaviour during the negotiations so that many modifications were made to the turbine design, its on-site construction and also its operation. Indeed, following the arguments along the time line of the three major events selected, it may be seen that the initial wider spectrum of arguments, all of which had a potential to be effective, was conflated into a much narrower focus of attention by the time the Final Monitoring Report was written in 2011.

Within the present context of arguments for biodiversity protection in the face of potential threats from the turbine, concerns about impacts on the seal populations in the Lough maintained a particularly high profile throughout the project. Seals may appear simply as charismatic species capable of attracting public attention. However, and most importantly, in addition to their aesthetic appeal, the seals are the subjects of a more complex set of arguments involving the logistics of combining environmental policy with changing levels of scientific knowledge, framed to appeal such logic. Particularly, the risks of collisions with the rotating blades of the turbine, together with the fact that the harbour seal is listed in the Annexes of the Habitats Directive and thus protection of the species is legally obligatory. This is in contrast to all the other organisms present. No other species or community or habitat type offered such a strong combination of arguments. For example, it might have been expected that the bird fauna and bird habitats, which have a strong public profile and are frequently used in biodiversity conservation matters, would play a pivotal role in discussions of the turbine development. However, despite the Habitats and Birds Directives listings of a few species and recognition that diving bird species (including some red-listed) could be potentially at risk of colliding with the turbine in operation, arguments involving birds remained at a low profile, becoming less important as the project progressed. This is because, as research and monitoring continued and the associated levels of scientific knowledge increased, it became clear that apart from some early concerns about disturbances to birds caused by the construction of the turbine, (mitigated by undertaking the work outside the breeding season), birds and bird habitats were at negligible risk from the turbine project.

Other, equivalent situations are evident during the time of the turbine project development, as referred to in the results above, with particular arguments declining or disappearing simply because the logic was accepted and practical adjustments were made so that there was negligible risk to biodiversity conservation. Or, accumulation of new scientific knowledge revealed that there would be negligible impacts.

Undoubtedly, the innovative "adaptive management approach" to the turbine development, agreed by all parties and adopted from the early stages, has played a crucial role in maintaining such a strong adherence to the precautionary principle of biodiversity protection while also permitting the turbine project to proceed. To create a stakeholder/decision-maker environment in which such effective discussion of environmental mitigation and monitoring could occur required an efficient infrastructure and platform for consultation. This was provided by the establishment of two formal, nested stakeholder bodies in 2006, that met on a regular basis. A small dedicated "Science Group" was set up to advise on the detailed management of the Environmental Management Programme, while a wider "Liason Group" was established to which the Science Group reported their progress and decisions (Royal Haskoning, 2011). All this was in addition to various *ad hoc* wider public consultations. The overall success of the activities of these groups is reflected in the present case study results. However, the argumentation could also be hard, to the extent that the European Commission instigated legal proceedings against the UK Government in 2007 in relation to the proposed turbine as a result of points raised by a local conservation NGO. Interestingly, this also included an argument appealing to logic that took the moral high ground: Renewable energy technologies may be supported, but biodiversity can mitigate against climate change, therefore it is contradictory to place renewable technologies in protected and diverse sites. The matter was settled between EC officials and the UK Department of the Environment.

In summary, the present report of the case study has demonstrated a generally successful and effective argumentation for biodiversity protection while at the same time promoting the tidal turbine as a form renewable energy technology. Particularly, this study has revealed that effective argumentation for biodiversity has benefitted from (i) strong stakeholder involvement with an efficient platform and infrastructure to facilitate regular consultations between the parties, (ii) strong scientific backup, incorporating recognition of the needs of research and monitoring and the cumulative gain of scientific knowledge over time, (iii) identification of combinations of arguments focussed on a single common target and a wide audience, which appears to be more effective than the same arguments spread over different targets (and thus more specific audiences).

The above points notwithstanding, it must be strongly emphasised that the context considered is a single marine turbine under test conditions involving the application of adaptive management to support the precautionary principle in biodiversity protection. This has included manning the turbine with an observer during all periods of operation throughout the development, enabling the device to be shut down if a large mammal or fish is seen to be approaching the rotor blades. Sonar technology to automate this is presently still under development (Royal Haskoning, 2011 and NI Environment Agency, pers comm). Also, although this single turbine may be generally regarded as having negligible effect on marine biodiversity or other ecosystem services, the results cannot be used to extrapolate to situations of arrays of many such turbines as envisaged at other coastal sites, where much larger areas of seabed are involved and the arguments for biodiversity protection and the provision of associated ecosystem services may encompass many new aspects requiring new research.

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Annex 7 – Case study report: Białowieża Forest conflict, Poland

Malgorzata Blicharska

Introduction

-Context

The Białowieża Forest (BF) is located in Eastern Europe, on the border between Poland and Belarus. It is considered the only remaining large patch of a near-natural lowland temperate forest in Europe. In the 14th century the Białowieża Forest was set aside as a royal forest exclusively used by ruling families for hunting. The monarchs hunted in specially designated core areas, equivalent to current strict nature reserves. In the 15th century almost 300 rangers were employed to guard the forest against poaching and illegal woodcutting. Similar systems of restrictions were in place for about 300 years. In the 18th century, some grazing and game-breeding activities took place, but in general the Białowieża Forest was left almost unmanaged. As a result of the restrictions, the Polish part of the Białowieża Forest was still not used for commercial forestry at the beginning of the 20th century. However, from World War I until the end of World War II massive logging operations in this area were conducted by consecutive occupants as well as by Polish state foresters. After the war, Polish foresters started management work towards with the aim of forest condition, and, in 1975, special rules of management were introduced. Already in 1921, a strict reserve core area of 4,700 ha was established in the Polish part of Białowieża Forest, and the Białowieża National Park (BNP) was created in 1932. In 1996 the BNP was enlarged to cover 10,517 ha. Presently about half of the BNP (core area) is a strictly protected reserve with no management, while the other half constitutes an active protection reserve, where management is aimed at maintenance and restoration of natural forest structures.

In general, only 16 % of the Polish part of BF is protected as BNP, while the rest is managed by three forest management districts, Białowieża, Browsk and Hajnówka. The districts constitute a so-called Promotional Forest Complex, created in 1994, the goal of which is to promote sustainable forest management. Within the borders of the complex, there are many nature reserves covering altogether about 12,500 ha. In 1977, the BNP was granted the status of UNESCO Biosphere Reserve (BR), and in 1979, UNESCO listed BNP as a Word Heritage site. In 2004, the Polish part of the Białowieża Forest became a NATURA 2000 area (EEC 1992), i.e., an EU Special Protection Area for birds.

During last two decades there has been a conflict about the management and protection of this whole area. According to environmentalists and scientists BF is losing its unique biodiversity due to forest management and thus all of it should be protected as national park. According to foresters and local communities BF is best protected under current management and park enlargement would cause unbearable costs to local people, including limited access to forest and its products, lost development opportunities and limited forest tax provided to the municipalities.

-Issue

The main issue is the potential enlargement of the BNP advocated by proponents of increased protection who believe that the present forest management is detrimental for unique biodiversity values of this area. The main controversy is about what is good for the BF's biodiversity – forest management or increased conservation. An additional problem centres

around the local people rights and needs, as the local people (supported by foresters) believe that national park enlargement would mean restrictions on their use of the forest resources and would lead to large costs for them (including opportunity costs).

-Actors

There were two main groups of actors:

1) Actors in favour of enlarging the national park (= increasing the protection status of the BF), i.e. Minister of Environment; environmentalists (NGOs activists and other environmentalists, not connected to any NGOs) and scientists (so called "ecologists"). The Minister of environment is the most powerful actor that makes the decisions concerning environmental matters at the national level. The environmentalists and scientists have not that much direct power, however in practice they have become increasingly important force in governance of natural resources in Poland lately.

2) Actors who would like to keep the status quo, namely the present forest management on most of the BF area, i.e. state foresters (at both local and regional levels) and some forestry-related scientists, local people (local communities) and local authorities. The foresters represent the State Forest organisation, a hierarchical organisation that manages ca. 82 % of the Polish forests and has relatively large power in matters concerning the forests in Poland. The local people and authorities have a powerful tool in hand to block conservation efforts, namely the legislation from 2001 that let them veto any potential national park enlargement.

-Arguments and argumentation lines

The analysis revealed three main argumentation lines:

1. What is forest and how to protect it?

The focus point of discussion was the nature of the BF which was described by the proponents of the national park enlargement with terms such as for example "natural", "primeval", "close-to-natural". As perceived by them, the BF was a unique treasure, a special place with the still lasting natural processes and extremely rich biodiversity that would be best protected if the forest management (particularly harvesting) was minimized, possibly through the national park enlargement.

According to their opponents, specifically foresters, the BF was special, however, not a "natural" or "primeval" forest, rather merely close to natural, where ecological processes were being supported by the forest management, as "the nature could not manage itself". In line with their understanding of the nature of the BF, the stakeholders had differing visions of how to protect its special values. In the foresters' vision of forest management and protection, in line with forestry science and experience, tree species should be planted to fit the habitat conditions, bark beetle infested trees should be removed and there was a need for cuttings to maintain "a proper sanitary state" of the forest. This discourse reflected the image the foresters had about their role as the "stewards" of forest whose "obligation" was to maintain the BF "for the whole society", to preserve its values, such as large trees.

The role of foresters was strongly supported by the existing legal regulations that obliged the State Forest organisation to manage forests in a sustainable way paying attention to their multiple functions, so that they could be maintained for the future generations.

The vision of environmentalists and scientists was different, as it placed the humans rather as observers than managers of the forest values. To them, nature could manage itself and the forests had existed long before the foresters started managing them. People should not intervene much in the natural processes, even if it would in some cases mean disappearance of a particular habitat for some time. According to proponents of this vision, natural forest was a forest where trees achieved ages in line with their physiology and not according to forestry cutting rules. This vision was strongly opposed by the local people who believed that forest that is not managed "is dying" and "looks like a graveyard" (local people).

The main argument types used in this argumentation line referred to the idea of the "balance in nature". "Balance in nature" was something that both groups of stakeholders claimed to be maintained with their individual vision of how the forest should be managed/protected. Thus, the opposing stakeholders interpreted the idea of "balance in nature" differently – either as a natural state (environmentalists and scientists) or as a man-made state (foresters). Additionally, the proponents of park enlargement used the arguments based on the intrinsic value of nature and its right to be protected, no matter the human benefits. They also used ethical and moral, as well as intellectual argumentation. On the other hand, the foresters and local people used some arguments relating to the provisioning role of the forest, as well as the obligations to future generations.

2. Who "owns" the forest, who decides about it and who benefits from it?

Second argumentation line concentrated around the needs of local people and the cost they would bear if the national park was enlarged. To local people, increased protection meant unbearable costs – lower tax obtained by the municipalities from forest, perceived limited access to the BF, its products and work opportunities, as well as obstacles to economic development. To environmentalists, scientists and politicians at the national level the BF was important for the whole Polish society or even internationally and represented a significant part of natural heritage that should be maintained for future generations. According to an environmentalist "Foresters are not owners of the forest, but should manage the forest for the whole society". According to the proponents of increased protection, the costs of increased protection could be balanced by the benefits the well-protected forest could provide, particularly income from tourism based on natural values. At the same time their opponents claimed that "Arguments about benefits from tourism is wishful thinking" (local authority representative).

The main conflicting issue was who really owns the forest and who has the right to decide over it. In practice, the BF is state-owned and managed by state representatives – the State Forest Organisation in the three forest districts and national park administration in the BNP. However, the ultimate answer given to this question in the BF conflict context was to a large extent dependent on the scale at which the BF was looked at. To the proponents of the park enlargement, the BF belonged to the whole Polish society and should be looked at from national and not only narrow local perspective. On the other hand, according to the local people, perceiving the forest from their own local perspective related to local needs, it was local people who should decide on the fate of the BF. Thus, even if it was the State (represented by the Minister of environment) that in reality owned the BF, in practice the "moral ownership" of either local people or the whole Polish society (or both) had to be considered when deciding over the fate of this forest.

A related issue was the question of justice and democracy. Local people used individual (however, not very common) argument on their democratic rights to the benefits from the BF. As one of the local people framed it: “In Poland we have democracy and if the citizens are deprived of some rights, they should get fair compensation for that”. At the same time, the environmentalists and scientists believed that “Veto of local governments, blocking the creation of national parks in areas of important natural value, belonging to the state – that is to all of us – is unjust and immoral”.

The main types of arguments used in this argumentation line were related to local livelihoods, employment and tourism, provisioning role of the forest and obligations towards future generations.

3. Why is it important to manage the forest right?

The remaining arguments constituted a line focused around ethical and legal questions. The advocates of increased protection referred to the duty to protect unique nature of the B, underlining that “lack of effective Bialowieza Forest protection is a shame for our country in the civilized world” (an environmentalists). According to them it should be moral norms in the Polish society that should prevent damage of the BF, and the reputation of the country depended on the conservation action. The BF was also seen as something Poland “can boast about” (an environmentalist)

On the other hand, the norms presented by the proponents of the increased protection of the BF were counteracted by the legal obligations represented by the 2001 legislation that gave the local communities power to prevent park enlargement. What is interesting is that the legislation at the national level that, in theory is supposed to support national level social norms got used as a tool for enforcing very local rights and interests.

However, the power given to the local people has been counteracted in 2004 when Poland entered the European Union (EU). The accession led to acceptance of many international agreements concerning biodiversity and thus provided a new strong tool for the proponents of better protection of the BF. The new situation was undeniably used by the environmentalists and scientists who, in their numerous appeals to the Ministry of Environment, underlined both the international-level legal obligations to better protect the BF (Natura 2000 site) and the question of the reputation of Poland in the eyes of international community.

Tables 1 and 2 summarise main arguments for (Table 19 and against (table 2) park enlargement (= increased protection).

Table 1. Arguments for the enlargement of the BNP (meant as increased protection of the BF) between 2001 and 2013.

Arguments used	Argument type	Stakeholders
1. The BF if a special place, treasure of exceptional importance both at national and international scale; it is a world heritage and the only in Poland UNESCO Reserve on the World Heritage list; it is the last forest of primeval character on the European lowland, the only such place in Europe. The BF has uniquely rich species diversity, including many rare and threatened species. It is the last, or at least, most important, habitat for many species threatened with extinction.	Nature itself	Ministry of Environment; scientists; environmentalists
2. Nature manages itself; forests existed long before foresters. But, current forest management causes decrease in rare species, such as threatened insects and White-	Balance in nature	Scientists; environmentalists

backed woodpecker (e.g. by removal of dead wood, necessary for these species). Management must be adjusted to enable continuity of the natural ecological processes. Moreover, protected area of BF is too small to maintain viable populations of important species in long term. Thus the NP needs to be enlarged. Disappearance of a particular habitat can be natural process.		
3. Park enlargement is important factor in economic and social stimulation for the local community. It would give more jobs, and increased tourism that in turn will increase local income. The region's welfare depends on the use of the BF brand. Locals lose money by not utilizing the potential of the BF conservation.	Livelihoods	Ministry of Environment; environmentalists
4. The BF provides an outstanding chance for the region's development through tourism. Enlarged park would support tourism development.	Tourism	Scientists; environmentalists
5. Social and economic development is a basis for good protection. The BF has to look for values that will enable the development of the future. The park will be open and friendly and give benefits to local people. Smart and ecological tourism is opportunity for locals for growth and profit. The recreational benefits of forest conservation are greater than the revenue from the sale of timber. Annual harvest of 47 000 m3 (set by the new management plan) should satisfy the needs for heating of local households.	Productivity, resources, economy	Ministry of Environment
6. Ethics of nature conservation obliges to protect natural processes. BF is a symbol of nature conservation of Poland, Europe and an important symbol on the world map. It is a duty of the state to protect the whole BF - both for ourselves and for our children and grandchildren. Foresters have no ethical right to transform any forest to artificial ecosystem. It is a duty of us all to protect the values of BF for future generations and future centuries.	Ethical and moral	Scientists; environmentalists; Ministry of Environment
7. It is a shame for our country in the civilized world that the BF, the only Biosphere Reserve in Poland, lacks effective protection. Nature is one of the greatest treasures, which our country can boast about. Stopping exploitation of BF old growth stands is a prerequisite to maintain a prestigious award BNP has presently: European Diploma of Protected Areas.	Reputation	Ministry of Environment; environmentalists
8. To protect BF is our obligation with regard to international policies. Forest management threatens values for which Natura 2000 site was designed (species from EU directives).	Legal obligation	Environmentalists; scientists
9. BF is a "window into the past", providing an indispensable model for the reconstruction of Europe's forests.	Intellectual	Scientists
10. Foresters are not owners of the forests, but should manage the forest for the whole society.	Future generations	Scientists

Notes: BF = Białowieża Forest; NP = national park; scientists = "ecologists" (scientists in favour of increased protection); argument types: Nature itself = rights and values of nature itself (intrinsic value, 'rightness' of pristine/natural state); Ethical and moral = Human ethical, or moral obligations to nature; Balance of nature = achieving balance in nature, healthy systems, natural functions; Future generations = sustainable development, obligations or values for future generations; Intellectual = intellectual values of nature/biodiversity; Tourism = recreation, tourism, aesthetic experience; Provisioning: well-being = provisioning function: emphasis on quality, naturalness, sustainability, human wellbeing; Productivity, resources, economy = Productivity, resources, industrial use of nature, market products, economic growth; Livelihoods = livelihoods support, employment; Reputation = reputation, looking good, e.g. international image; Legal obligation: legal obligation to protect nature.

Table 2. Arguments against the enlargement of the BNP (meant as increased protection of the BF) between 2001 and 2013. Notes: BF = Białowieża Forest; NP = national park; NWFPs = non-wood forest products

Arguments used	Arguments type	Stakeholders
1. The BF is a unique forest complex, the last natural forest in Europe, the last European lowland forest with primeval characteristics.	Nature itself	Local people; local authorities
2. The BF needs to be managed to maintain its values; without forester's intervention it will not grow well and some habitats will disappear. Nature will not manage pests itself, as it is already not "natural" but changed by humans. The BF exists in its present form as a result of long-term management of foresters. Its management fosters maintenance of biological and genetic diversity of trees and stands; it helps maintain stability, structure and function of forest ecosystems. Unmanaged forest will die.	Balance of nature	Foresters; scientists related to forestry; local authorities; local people
3. Increased protection means high costs for local communities, including decrease in forest tax coming to municipalities and impediment for development. Local people need to be compensated for the costs. The BF provides fire wood, work and other benefits to many local people. Enlargement of the NP would mean end of forestry, forest production and hunting, and more restrictions on investments, firewood and NWFPs gathering and moving in forest. An argument about	Livelihoods	Foresters; local authorities; local people

potential benefits from increased tourism is wishful thinking.		
4. Wood in the BF means millions of zlotys and forest management's role is to increase the forest resources.	Productivity, resources, economy	Foresters;
5. Forest management's role is to support role of the BF for human welfare.	Provisioning: well-being	Foresters;
6. The BF is our wealth, history, tradition and culture.	Ethical and moral	Local authorities
7. Managing the BF foresters comply with the rules concerning biodiversity derived from the Act on Forests.	Legal obligation	Foresters
8. The role of foresters and their management is to maintain BF with its multiple values and functions for the future.	Future generations	Foresters;

-Events

The main three stages of the conflict development are present in Table 1, together with the main arguments occurring in them. The case study has focused on the period 2001-2013, but the general background of the earlier stage of the conflict is also presented below.

1990-2000

The conflict started at the beginning of 1990s when a group of scientists and environmental activists publicly raised a question of insufficient protection of the BF. They claimed that the forestry activities conducted in the managed part of the forest negatively influenced the natural values of this area and led to decrease in populations of rare and threatened species and that the whole BF should be protected as a national park. The foresters opposed their view by claiming that they conducted good ecologically-sound forest management that supported biodiversity. The foresters were supported by the local communities who feared the potential park enlargement. After a few years of campaigning for the better protection of the forest (i.e. the national park enlargement), the environmentalists achieved partial success when the national park area was doubled in 1996 to cover about 16 % of the whole Polish part of the BF, despite the opposition from the local communities and foresters. Also in 1994 a so called Promotional Forest Complex (PFC) "Białowieża Forest" was created to cover the whole area of the three BF forest districts. The aim of the PFCs is to promote sustainable forest management in Poland, both by testing new management solutions and introducing them in other Polish forests, and by educating the Polish society about forestry.

Still, the creation of PFC and the enlargement of the BNP did not satisfy the environmentalists and scientists. They continued their campaign, presenting scientific evidence for the detrimental influence of forestry activities on the ecological values of the BF. In 2000, the Minister of Environment decided to cover the whole BF with the national park protection. However, after visiting the Bialowieza village in the centre of the BF, where he met with a large hostility from the local citizens, fiercely protesting against the park enlargement (including throwing eggs on the Minister), he resigned from this project (in 2001).

2001-2013

Three main stages of development of the BF conflict can be distinguished between 2001 and 2013 (Figure 1). The decision in 2001 to not enlarge the BNP was taken because of the protests of the local communities against this plan. At the same time, the Polish nature

conservation legislation changed in 2000, enabling the local authorities to formally veto any national proposals about national parks creation or enlargement. This change was a direct result of the conflict in the BF. The legislation change gave local communities a strong tool supporting their protests and actually blocked any additional conservation action in the BF for the next 12 years.

Between 2002 and 2006 a continuous campaign for the better protection of the BF was organised by the environmentalists and supporting them scientists. This included different protest actions, discussions in media, appeals to the Minister of Environment and publication of scientific data showing the negative effects of the forest management on the biodiversity of the BF. In 2003 a new management plan for the three BF forest districts was established. The plan was criticised by the proponents of increased protection of the BF as not being adjusted to the unique features of the BF.

Figure 1. The stages of the conflict in the Białowieża forest between 2001 and 2013, the period analysed in this study.

Due to continuous pressure from the environmentalist and scientists the Minister of Environment launched an idea of Białowieża Development Programme (BDP) in 2007. The main point of the BDP was to both ensure the sufficient protection of the BF through enlarging the national park, and to support local communities, so that they did not have to bear the costs of the increased protection. However, after a three-year long negotiation process, after going through different give-and-take options (less area of the BF covered with national park and more benefits for the local communities) the idea of the BDP was abandoned by the Minister in 2010, due to the constant opposition from the local communities.

Together with the failure of the Ministry's attempts to enlarge the BNP, environmentalists initiated a large scale action to gather signatures from Polish citizens to change the conservation legislation, i.e. the Nature Protection Act. The proposed adjustments, if accepted, would change the power situation of the local communities – as they would remove the possibility "veto" against establishment of new or enlargement of existing national parks in exchange of a comprehensive consultation process with the locals. The legislative project led to an intensive debate about the fate of national parks in Poland, particularly focused on the question of the BF. During the initiative, 225 000 signatures of Polish citizens were gathered.

At the same time, new management plans were developed for the three BF forest districts and a consultation process for that took place in 2011. In the meantime the environmentalist continued their campaign for increased BF protection, sending appeals to the Ministry. During the plan preparation phase, the Ministry of Environment made it clear that special management was foreseen for the BF to safeguard its unique values and launched a 3-year project to define strategic, long-term action for the BF. The new management plans were accepted in late spring 2012 and constituted an enormous change in the BF's situation. The harvesting levels were significantly decreased (from ca. 140 000 to 48 000 m^3 per year) and the harvested wood was supposed to mostly be distributed to the local people, however it was not defined how exactly it would be done. A new definition of 100-year old forest was introduced and included stands with at least 10% of trees over 100 years old and these stands were to be protected, with no cuttings possible (previously a cutting ban on 100 years old trees encompassed only the individual old trees not the whole stands). Initially, the new plans led to protests from the local communities, particularly in 2013. To address dissatisfaction of the local communities, in autumn 2013 the Ministry launched a Centrum for Project Implementation for the Białowieża Region located in the BNP with an aim to aid local communities in organizing financial support for the local development.

Analysis

-Data

I used a variety of sources from which the material for analysis was gathered. First of all, publicly available documents such as official statements, appeals, discussion or protest papers, media coverage (articles, radio and TV programmes), legal documents, etc. from the period between 2000 and 2013 were analysed in detail. Review of scientific literature concerning the Białowieża Forest was conducted, as a complementary source of information. Additionally, the data from interviews with key stakeholders conducted in 2006 (14 interviews), 2008 (2 interviews) and 2013 (2 interviews) were used.

-Methods and quality control

I traced back the development of the Białowieża Forest case discourse over time. The starting point of the analysis was the different arguments used by particular groups of stakeholders. I looked at the main meaning giving elements in the arguments, such as particular concepts linked to objects (e.g. forest) and practices (forest management and conservation), in the debate over the management of the Białowieża Forest. To bring order in the rich research material, I first classified the occurring arguments into particular types using classification from the literature review by WP 1 (Howard et al.) and grouped them in distinctive argumentation lines. After grouping the arguments and revealing the main argumentation lines, I searched for particular concepts presented by particular stakeholders in the Białowieża Forest debate and scrutinised the context in which they gained meaning for others. The aim was to reveal which arguments occurred at different stages of the conflict development, what were the main organising concepts behind them and which of them finally had power to influence actual policy outcomes.

Then I also, mostly for the needs of this report, looked at the effectiveness of particular arguments in the conflict. I used the criteria set in BESAFE discussions on effectiveness and used in BESAFE database, i.e.:
- 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 quality control was assured by employing triangulation methods:

1) Data triangulation – use of different sources of information (see "Data" section above);
2) Methodological triangulation – document analysis, interview analysis, discourse analysis;
3) Investigator triangulation – training of the investigators at the workshop in Ispra (April 2013); cross-checking at the deep case study session at the project meeting in Hungary (April 2014);

Results

-Arguments - their types, occurrence, who makes the arguments, etc.
Main arguments and their types are listed in tables 1 and 2.

-Effects of arguments:
The conflict in the Bialowieza Forest was characterised by a long-term impasse, where two opposing groups of stakeholders opposed and blocked each other's proposals and suggestions. Different arguments were used, they shifted, changed levels, etc. The persistence, accumulation and level crossing of particular arguments can be seen on Figure 2, while the summary of all effectiveness measures for particular types of arguments is presented in tables 2 and 3.

The most persistent arguments were the ones that focused on the balance in nature (from both groups of stakeholders), nature itself and legal requirements (proponents of park enlargement), and livelihoods (opponents of park enlargement). However, high persistence itself did not mean that the argument was in general effective. Only the legal arguments presented by the advocates of increased protection were not only persistent but also accumulated, replaced other arguments (both on livelihoods and intrinsic value arguments) and lead to changed behaviour (particularly to the strict Minister's decision in 2013, after a long process of careful negotiations). The arguments highlighting the intrinsic value of nature were, on the other hand, not so effective, even if they to some extent were able to cross the governance level from the national and regional to local, when the locals started increasingly using this type of arguments with time.

The argumentation relating to local livelihoods, presented by the opponents of park enlargement was also relatively effective. These arguments were mainly linked to the second argumentation line and have undergone an interesting dynamic process of transfer from local to national governance levels (Figure 2). While used merely by the local people at the beginning of 2000s, livelihoods-related argument successively made their way up to the environmentalists and scientists acting at higher governance levels, and even to the

Ministerial level. The Ministry of Environment, from the beginning interested in the increased BF protection, after initial focus on intrinsic value of the BF, included considerations for local people's economy in their advocacy towards increased protection. The minister started then claiming that "local development should be based on Bialowieza Forest's fame and its brand recognition" and that "smart and ecological tourism is opportunity for locals for growth and profit".

The "promotion" of "livelihoods and economy" argumentation seems to be an effect of the local people's strong position of power in the BF case from the year 2000 related to a changed legislation (see section "Events: *2001-2013"*). The increasing democratisation of Poland that was taking place at the same time also contributed to the strong position of the local people who believed that in a democratic society they have some rights to decide about matters influencing their livelihoods.

Potential effects

I do not look at potential effects in my study.

Observed effects

Summary of observed effectiveness of different types of arguments can be seen in tables 3 and 4.

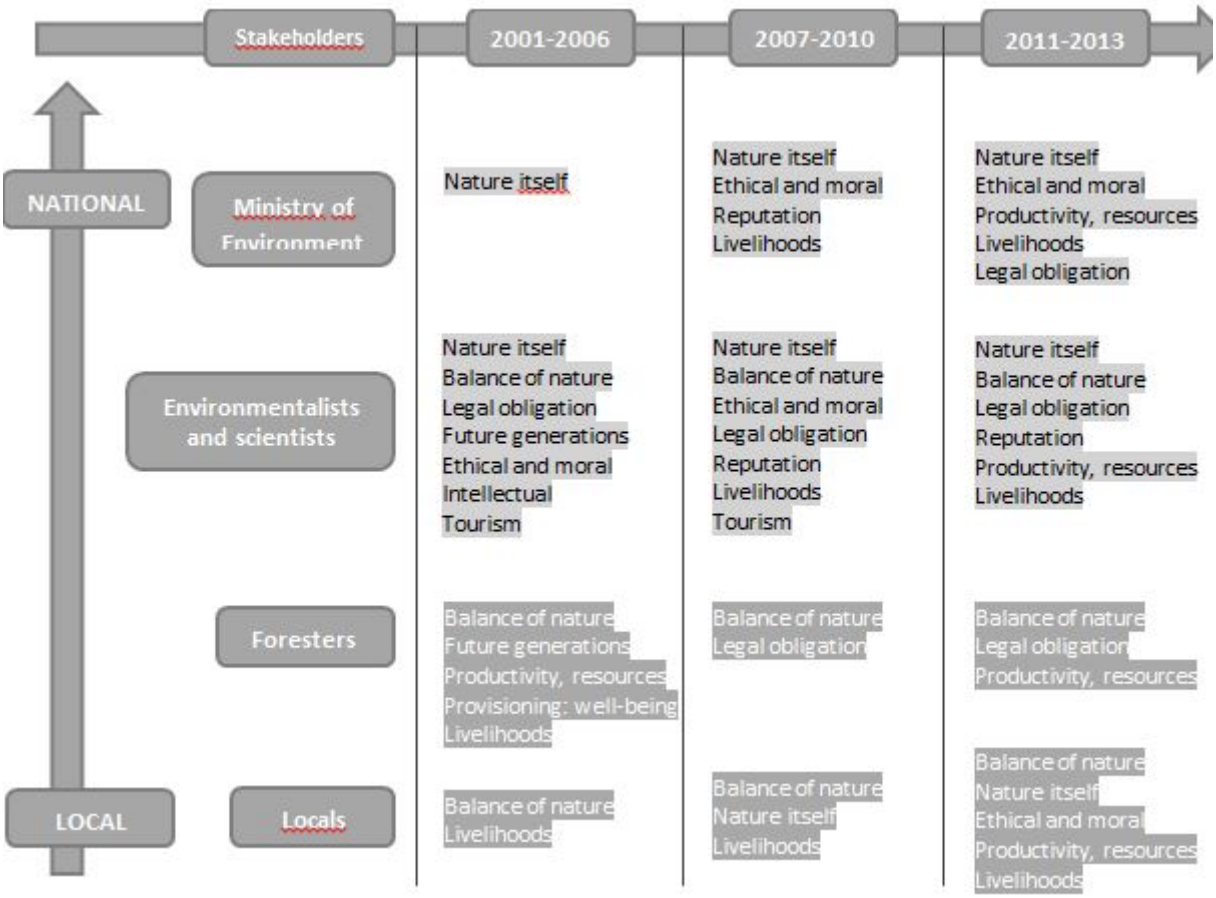

Figure 2. Different types of argumentation used by particular stakeholders in three main phases of the BF conflict between 2001 and 2013. Arguments for and against national park enlargement (meaning increased protection of the BF).

Table 2. Overall effectiveness of main types of arguments by stakeholder group (for or against park enlargement) (for details see appendix – excel file).

	Overall effectiveness	
Argument type	**Stakeholders for**	**Stakeholders against**
Balance in nature	Low	Low
Ethical, moral	Low	-
Legal obligation	High	
Livelihoods	Low	Mid
Nature itself	Low	-
Reputation	Low	-
Tourism	Low	-
Intellectual*	Low	-
Future generations*	-	Low
Productivity, resources*	-	Low

*not commonly used arguments

Table 3. Particular measures of effectiveness evaluation for different argument types; by stakeholder group (for or against park enlargement)

	Stakeholders for park enlargement						**Stakeholders against park enlargement**					
Argument type	**Persistence**	**Accumulation**	**Level-crossing**	**Diffusion**	**Replacing arguments**	**Behaviour changing**	**Persistence**	**Accumulation**	**Level-crossing**	**Diffusion**	**Replacing arguments**	**Behaviour changing**
Balance in nature	High	Mid	Low	Low	Low	Low	High	Low	Low	Mid	Low	Low
Ethical, moral	Low	Low	Low	Low	Low	Low	-	-	-	-	-	-
Legal obligation	High	Very high	Mid	Mid	High	High	Mid	Low	Low	Low	Low	Low
Livelihoods	Mid	Low	Mid	Low	Low	Low	High	Mid	Mid	Mid	Mid	Mid
Nature itself	High	Low	Mid	Low	Low	Low	-	-	-	-	-	-
Reputation	Low	Low	Low	Low	Low	Low	-	-	-	-	-	-
Tourism	Mid	Low	Low	Low	Low	Low	-	-	-	-	-	-
Intellectual*	Low	Low	Low	Low	Low	Low	-	-	-	-	-	-
Future generations*	-	-	-	-	-	-	Low	Low	Low	Low	Low	Low
Productivity, resources*	-	-	-	-	-	-	Mid	Low	Low	Low	Low	Low

*not commonly used arguments

Discussion

The opposing groups of actors presented different concepts in very different way. Particularly the concepts of forest and of conservation were framed differently. To foresters and their supporters forest was an anthropogenic entity – something shaped by humans and useful for them. This view was strongly related to the long-term tradition of forestry science describing forest as something shaped by human management with an aim to make nature "serve" people, and foresters as being "guardians" or "stewards" if the forest.

On the other hand, scientists and environmentalists presented a vision of forest that persists without human intervention and is important no matter human needs. The foresters' vision seem to be deeply embedded in the traditional forestry practice, based on traditional forestry science, placing humans as managers of natural resources. From the socialist period Poland has inherited rigid regulations concerning the forest management, in line with the so called "German model" of forestry with its cornerstone theory of "normal forest" that aims at continuous flow of timber from forest, and has clear management rule son how to achieve that. Managing the forest according to the precise management guidelines with an aim to achieve expected planned outcomes (not only wood production, but also proper state of the forest) have with time become a norm in Polish forestry.

The two diverging visions of forest and the consequent views on how to manage it were embedded in the traditional division between more active and more passive protection. The first one was rooted in traditional forestry practice and backed up by a range of forestry legal documents and guidelines. The second one rather referred to ecological science framing nature as a dynamic system with natural processes and many links operating on large areas and in a long-term perspective. This view also presented a forest as something developing in its own way no matter what was desirable by people, and thus was in opposition to the view of forester's, a human-oriented perspective of forest management, where it was people who decided over the shape of nature.

The narrative presented by the foresters was very attractive to the local people, bearing important meaning for them. This was related to both close relation of the locals to the BF (and particularly their use of the forest) and the social and personal links between the local people and foresters. In addition, it was very much linked to the local people livelihoods (goods and benefits from forest to local people) and thus supported the livelihood-related arguments presented by the locals.

However, it was the legal situation that occurred to be most important contextual factor; it conditioned the effectiveness the arguments. In a situation where two opposing groups were extremely polarised and used similar arguments (or the same types of arguments, but interpreted differently) to support different views of how the Bialowieza Forest should be protected and/or managed; legal arguments were the "objective" arguments that could not be downplayed by the opponents.

First, the legal context was against increased conservation – as local people for over twelve years blocked the attempts to enlarge the national park, supported by national legislation giving them this possibility. However, this national legislation got overcame by the international (EU) legal obligations, particularly Habitat and Bird Directives requirements that were treated very seriously by the Minister of Environment and thus enabled him to take the (particularly the legal and reputational) arguments provided by the proponents of increased protection very seriously.

The importance of the international legislation finally pushed the Minister towards the strict, top-down decision introducing new rules in 2013 which turned the forest management to a protection-oriented regime with very low harvest levels. At the same time, because of the long-term protest of local communities and their livelihoods-related argumentation (relatively effective!), both the Ministry and the environmentalists were forced to consider the local people's needs as well. Still, the question of the BF protection/management is not fully solved yet, as there have been new discussions on the possibilities of adjusting the new management plans in line with forestry-oriented thinking (end of 2013).

The question of the forest ownership and who has the right to decide over the forest's fate is an important one in the BF case. Here we could relate to two types of ownership – the actual one (legal ownership by the State) and the "moral" one (taking into account local people moral and democratic right to decide about the forest that is strictly related to their livelihoods). Because of the moral rights of the local people (also reinforced by the legal rights from 2001 legislation, supporting the local communities rights), the process of taking decision concerning the BF forests future was a very long one negotiation process. Still, the "overall good" of the whole Polish society, supported by the international legislation finally occurred to be more important in the BF case. Nevertheless, the local people needs have been made heard during the process and have not been totally ignored, but rather taken into account in the plans for the BF future.

Annex 8 – Case study report: National Strategy for Mires and Peatlands; Finland

Outi Ratamäki

Introduction

This report presents the results form a Viurusuo case study. Viurusuo mire locates in Outokumpu town in Eastern Finland. In 1978, the Ministry of Trade and Industry and the Ministry of Forestry and Agriculture agreed that Viurusuo mire was to be used for peat mining though already then its biodiversity values were assessed to be high. In 1995, VAPO company submitted an application to start peat extraction from Viurusuo. This application started a process of consecutive appeals through many levels of court. Appeals were mostly made by local residents and nature conservation agencies. Finally, after 17 years of uncertainty, in September 2012, the Finnish government bought the wetland area of Viurusuo from VAPO Ltd in order to protect it.

This report is based on stakeholder interviews as well as policy and legal documents of the Viurusuo case. This data will reveal the main arguments for and against the protection of Viurusuo. It will also reveal the discordances between public and private stakeholders and institutions. Due to the long time-scale of the dispute it is possible to identify how and if the arguments have evolved in time, how the arguments worked in different phases of the process and institutional settings, and which arguments ultimately made a difference in the final outcome. The changes not only reflect the case itself but also the more general changes within society.

Analysis

Data

The data for the Viurusuo case consist of stakeholder interviews (8 people in total, see table 1) and documents. Documents, in this case, refer to the written outputs originating from the 1) applications made by the VAPO Ltd, 2) appeals, reclamations and responses made by the different stakeholders and, 3) the court rulings and decisions by authorities. There are over one hundred individual documents in the data but some of them are grouped together for the analysis (e.g. appeals by the local people). The document analysis is based on 20 different kinds of events (see table 2).

Table 1. Interviews and the informants' affiliation.

Affiliation	**Place and date**
Land owners/residents near Viuruso - four people in three different interviews	Outokumpu 6. and 8.3.2013
A concerned citizen (former resident) - one person	Outokumpu 6.3.2013
Representative of the local nature conservation group - one person	Outokumpu 7.3.2013
Representative of the city of Outokumpu	Outokumpu 6.3.2013

- one person	
Representative of the peat industry (Environmental director of VAPO Ltd.) - one person	Jyväskylä 5.4.2013

Table 2. Events in chronological order.

Stakeholder	**Document type**	**Date**
VAPO Ltd	An application for a water permit (to extract peat from Viurusuo)	13.3.1995
VAPO Ltd	Environmental impact assessment	1997
Water rights court of Eastern Finland	VAPO Ltd receives a positive water permit	10.1.2000
Local people and NGOs	A joint appeal to the Vaasa administrative court by the local people and nature conservation group	10.3.2000
Vaasa administrative court	Ruling, which remits the permit to the environmental permit office of Eastern Finland	11.6.2001
VAPO Ltd	A new application for a permit with amending information	10.12.2001
Local people and NGOs	Several reclamations to the environmental permit office of Eastern Finland (ca 40 individual documents)	2002
Environmental permit office of Eastern Finland	Negative permit resolution	18.3.2003
VAPO Ltd	An appeal to the Vaasa administrative court	17.4.2003
Local people and NGOs	Several responses to the Vaasa administrative court (ca 10 individual documents)	2003
Vaasa administrative	Negative resolution	17.6.2005

court		
VAPO Ltd	An appeal to the Highest administrative court of Finland	18.7.2005
The Highest administrative court of Finland	Ruling, which overrules earlier court orders and returns the issue back to the environmental permit office of Eastern Finland	14.2.2006
Environmental permit office of Eastern Finland	Environmental permit	16.11.2007
Local residents	Several appeals to the Vaasa administrative court (ca 10 individual documents)	2007
Vaasa administrative court	Positive resolution	4.3.2009
Local people	Several appeals to the Highest administrative court of Finland (ca 25 individual documents)	2009
The Highest administrative court of Finland	Ruling, which overrules earlier court orders and returns the issue back to the environmental permit office of Eastern Finland	8.3.2011
VAPO Ltd	VAPO Ltd pulls out its application for the permit	29.6.2012
Finnish government	Finnish government buys Viurusuo from VAPO Ltd	27.9.2012

Methods and quality control

The collection of the data was started by collecting the documents. This effort was greatly aided by a website, which was created by one the local people active in the campaign (http://www.kuikka.org/oikea(vs).htm). Some of the newest documents were not available through the website and these were then ordered directly from the authorities. Based on the documents it was possible to identify the most active stakeholders at different societal levels. This is how we were able to contact the local people with an interview request. Some of them felt tired of the long dispute but the people who had

been most active were still willing to discuss the case. Two researchers made a two day interview trip to Outokumpu interviewing the stakeholders. Interviews were recorded and later transcribed.

This data gives a full review of the main stakeholders, events and arguments in the Viurusuo case. The interview questions and methods of analysis have been discussed with the BESAFE case study group leaders at different stages of data collection and analysis.

It is noteworthy that the interview data only supplements the document data. Not all the stakeholders were interviewed; only the local people and the representative of VAPO Ltd. Reasons for the interviews were first, to see if the arguments presented during the Viurusuo case still hold value and second, to have an idea about how the local people feel after the Viurusuo battle is over.

Both the interview and document data has been analyzed with qualitative content analysis. Since the objective was to find arguments, the data was thematized accordingly. Different arguments were identified and then categorized under each stakeholder type. Any changes in the argumentation over time were considered to be important information.

Many of the individual arguments cannot be pinpointed to a single sentence in the data. Arguments listed in this report are general descriptions of the concerns or aims of the stakeholders. These concerns and aims have been stated at different phases and by many individual people in different ways. One argument may be a combination of concerns stated both in the documents and interviews and thus the arguments stated in the interviews get blurred together with the arguments found in the documents; especially in the case of local people. However, notes were made by any noticeable differences between the interview and document data and these observations are recorded in the following analysis. Also the complete list of arguments presented in the appendix 1 shows those arguments which were identified only in the documents. Beyond this, the source of arguments (interviews or documents) does not hold any significant value for the analysis of the arguments in the Viurusuo case.

After identifying the arguments and connecting them with stakeholder groups and different events and their outcomes, it was possible to start analyzing the effectiveness of the arguments. The results will be presented in the following chapters.

Results

Arguments

There are over 60 individual arguments in the data either on behalf of the conservation of Viurusuo or the peat extraction. These arguments are listed in the appendix 1. Instead of describing individual arguments in detail, a more general thematization with connections to the stakeholders will be presented here.

Local residents and land owners

The local people presented the richest amount of arguments in the case. Other stakeholders, as will become evident later, presented fewer arguments. All the local residents' and land owners' arguments were targeted against peat extraction and they can be divided into 16 themes. These are: 1) Economic arguments, 2) Public

interest, 3) Uncertainties, risks, mistrust in technology and expertise, 4) Natural water areas (lakes, ponds and springs), 5) Dust, 6) Drinking water / wells, 7) Landscape, soundscape, and scentscape, 8) Biodiversity (biotype, species), 9) Climate change, 10) Recreation, 11) Timescales, 12) Spatial scales, 13) Mental and health values, 14) Virginity, 15) Educational and historical values, and 16) Abstract nature values.

Arguments posed by these stakeholders were very similar, almost identical, in the interview data and documents. The main difference was that references to constitutional law were made in the appeals, but nobody mentioned constitutional rights in the interviews. Also, the ponds in the middle of Viurusuo got a lot more attention in the documents created during the judicial process than in the interviews. In the following the arguments under every theme are listed (see table 3).

Table 3. Arguments presented by the local people.

Economic arguments:
Benefits of extracting peat from Viurusuo do not override the damages.
We should take care of our economic capital for future generations (peat industry does not do this).
Employment opportunities are always good but in this case they will not be provided to local people.
Job opportunities would be seasonal.
This landscape (peat industrial landscape) will not lure new residents to the area or old residents coming back (=regional development point).
Someone needs to compensate the reduction of our property value.
Public interest:
The Constitution of Finland states that "the environment and the national heritage are the responsibility of everyone".
The constitution of Finland states that “The public authorities shall endeavour to guarantee for everyone the right to a healthy environment and for everyone the possibility to influence the decisions that concern their own living environment.”
Uncertainties, risks, mistrust in technology and expertise:
It is impossible to control the risks this close to housing, risks are too high.
Mining, compared to peat industry, is strongly monitored and under surveillance, we would be willing to accept mining in Viurusuo but not peat industry.
Floods provide unpredictable risks.
No one will take responsibility of damages if everything has been done according to the directives.
Planners cannot control all the risks.
They will never get it clean enough, there will always be solids going to the lake.
They could not guarantee that my laundry would stay clean outside.
We live so close in case of fire.
Peat companies have usually spoiled all the environments and water systems with long term peat industry.
VAPO Ltd has not succeeded before, they will not succeed now (in keeping the environment clean).
It is unclear how far the negative effects to the water systems will reach.

Natural water areas (lakes, ponds and springs):
Everyone wants to protect the lake.
People retrieve house-hold water from the lake (also drinking water).
We were afraid of the contamination of the lake.
I believe it (peat industry) would ruin the local waters.
Draining will destroy the ponds.
Springs will be destroyed if the water table is lowered.
Dust:
We were afraid of not being able to open the windows or dry our cloths outdoors during the summer.
Dust will cover our plants and berries, also crop.
Dust will spoil our irrigation water we retrieve from the drainpipes.
The wind will blow the dust directly here (=home).
Dust will reduce the habitability of this area.
Drinking water / wells:
We are afraid it will affect the water level of our well.
Landscape, soundscape, and scentscape:
Viurusuo offers a special kind of landscape, almost like in Lapland.
The sense of spaciousness offers a unique landscape.
One of the first ideas was to build a dam to one of the ponds and have the other side serve as a sedimentation basin. This is right at my house yard. How can anyone spoil one's landscape like that? We have our outdoor sauna there, we play and swim there.
Landscape would be changed.
New roads would have been built.
New ditches would have been dug.
Every morning we can hear the father crane giving orders to the mother crane with nestlings.
Hearing the black grouse having their displays there every spring has been an strong experience (you can't hear this in Lapland).
Noise, especially if they work three shifts per day. Noise all day and night.
Traffic would have increased.
Mires have a special scent (a very Finnish scent).
Biodiversity (biotype, species):
Viurusuo is ombrotrophic raised bog (keidassuo).
A hazard to cranes'(Grus grus), swans' (Cygnus) and northern goshawks' (Accipiter gentilis) nesting sites.
Personally I cannot place any value to the 'bugs' and others.
Black grouse (Tetrao tetrix) have their displays there. Black grouse must have used this location for hundreds of years.
Viurusuo holds a very special combination of plant and animal species.
Cranberries and cloudberries.
Animals and plants would have disappeared.

Climate change:
It (=benefits of mires in general) must have something to do with the climate change.
I guess it (mires in general) affects pollution.
Recreation:
We see visitors walking and hiking there (this is considered positive, not only locals use the Viurusuo area).
We and others pick berries (cloudberry).
We ski, especially with outside tracks.
Goshawk's nestlings were so ugly that they were beautiful.
Fishing is important, nets may be full of peat sludge.
Peat industry would put an end to the recreational use of the area.
Peat industry would be a total destruction.
Timescales:
Goshawks nest at the same location annually.
People living here after hundred years need to be considered.
People in the future might be more interested in nature than they are now.
We live in the same place in ninth generation.
We need to reserve these pristine places and memories related to them to the future generations.
World changes so quickly, mires offer a place for keeping your feet on the ground, it is unchangeable.
Good places for berry picking have been taught to the younger generation.
Spatial scales and location:
Economic benefits to the region are too low.
There are benefits to Finland but negative effects to the local region.
It is ok to have peat industry somewhere where there aren't any residents. Viurusuo is too close to housing.
If this would take place in the remote areas of Finland it would be OK.
Viurusuo is the only swamp area in Outokumpu.
Mental and health values:
It is my childhood place, it was my home.
I would feel sad and disappointed if we lost Viurusuo.
Mires are places for revitalization; soul and spirit rest there.
Do we know how the dust will effect human health directly through respiration or indirectly through food?
I have good memories from Viurusuo.
Virginity:
I would like to reserve its natural state.
Viurusuo is pristine, undisturbed.
A swamp should be able to remain a swamp.

It is a fine swamp as such.
Educational and historical values:
Historical values will be destroyed.
Abstract nature values:
Viurusuo holds great nature values.
It is great during the summer.

Representatives of the nature conservation groups and the city of Outokumpu

Representatives of the local and regional nature conservation groups had many similar concerns than the local people. All the 16 themes exist also in the nature conservation groups' list of arguments. Only the exact contents differ a bit. The regional group put more emphasis on the water areas from the ecological point of view rather than from recreational perspectives. They also raised the concern for climate change, but only after during the latter part of the process.

The difference between the local and regional group was the fact that regional group members were more often experts/scientists whereas the local group felt that they themselves lacked scientific evidence and expertise. This is reflected in the data since the arguments made by the regional group were very scientific compared to the local group's ideas which resembled the local people's general concerns. The regional group was also able to evaluate the quality of scientific information and evidence presented during the case study. This expertise resulted to arguments such as: 1) Decision is based on flawed information, 2) Decision making has been based on insufficient evaluation and justification, 3) Viurusuo holds special values for research. It is noteworthy that only the representative of the local group was interviewed. The arguments made by the regional group were identified from the documents only.

Also the representative of city of Outokumpu (from the environmental department) raised many of the same concerns than the local people in the interview. Rather, it could be said that he echoed other people's concerns rather than presenting his personal concerns.

Representatives of VAPO Ltd

The 'echoing effect' took place also in the interview of the representative of the peat industry. Here, the interviewee commented on people's general concerns rather than making arguments over the Viursuo case. The informant identified five different categories for concern over peat industry: water issues, climate change, biodiversity, and recreational values. Reasons for objecting peat industry were according to the interviewee: 1) ideological reasons (these people will resist no matter what), 2) old "sins" (trust has gone because in the old days there were bad outcomes), 3) people blame peat industry from the effects of other practices (Farming for example. Only 5 % of the stress to a lake is caused by peat industry).

The interviewee from VAPO Ltd may have been cautious about stating her opinions about Viurusuo case since she was not working at VAPO during the debate. However, VAPO's arguments related to the Viurusuo case can be found in the document data. These arguments are counter arguments to the ones

presented by other stakeholders: 1) We need to extract peat because Viurusuo is economically important to VAPO Ltd (it has a suitable geographical location) 2) It is OK to extract peat from Viurusuo 3) It is questionable that Viurusuo holds specific nature values, 3) Project will not considerably harm the ponds, 4) Project will not harm water areas, 5) There are no endangered species in Viurusuo, 5) Viurusuo is too small to be protected, 6) Viurusuo does not offer anything special for research, and 7) Viurusuo is not a special habitat for birds.

These arguments illustrate how important and unique the Viurusuo was for VAPO Ltd for peat extraction purposes. Just the same way as the Viurusuo is unique to the local people for other reasons. VAPO's claims that Viurusuo is too small or does not hold any unique values, were reasoned with the argument that there are other similar mires in Finland and the values that Viurusuo holds could be protected somewhere else. In the interview the representative of VAPO adds that species typical to mires have already been protected at the national level but there is still work to be done with protecting certain mire biotopes.

Authorities' arguments

In addition to the arguments presented so far, a few more need to be listed (the following is based on the document data only). The regional environment centre held the opinion that the evaluations of the nature values in Viurusuo weren't sufficient and for this reason VAPO's claims were not valid or justified. The centre was also very negative towards the fact that alternatives to peat industry had not been considered as they should have been according to the ideas of environmental impact assessment.

Some of the arguments made by the court at different levels did not much help to solve the differences between arguments. To elaborate the 'bouncing' of the arguments in the legislative process, the arguments are attached to the judicial events in a table below (see table 4).

While the judges must have seen the dispute in its entirety it is their job to evaluate the case from the legislative point of view. The highest administrative court stated that "there is confusion about purview of legislation" and at another occasion that "they had no authoritative power in this issue". In 2005 Vaasa administrative court stated that 1) draining will destroy ponds, 2) protecting Viurusuo is part of general conservation objectives of mires, 3) Viurusuo is part of a larger water system, 4) Viurusuo provides an ensemble of nature values, and 5) Viurusuo is big enough area for nature conservation purposes. In 2009 the Vaasa administrative court hold the opinion that 1) the project will not considerably harm the ponds, 2) project will not harm water areas, and 3) project should be evaluated only on the basis of emissions.

Table 4. Arguments presented in the different phases of the judicial process (for clarity the appeals are not shown in this table).

The argument(s)	**Who made the argument**	**The event/date**
We need to extract peat.	VAPO Ltd	An application for a water permit, 13.3.1995
It is OK to extract peat from	Water rights court of	VAPO Ltd receives a positive

Viurusuo.	Eastern Finland	water permit, 10.1.2000
Application is based on insufficient evaluation and justification.	Vaasa administrative court	Ruling, which remits the permit to the environmental permit office of Eastern Finland, 11.6.2001
The project will not harm the ponds.	VAPO Ltd	A new permit application with amending information, 10.12.2001
Draining will harm the ponds.	Environmental permit office of Eastern Finland	Negative permit resolution, 18.3.2003
We need to extract peat. It is OK to extract peat from Viurusuo. Project will not considerably harm the ponds. Project will not harm water areas. It is questionable that Viurusuo holds specific nature values. There are no endangered species in Viurusuo. Viurusuo is not a special habitat for birds. Viurusuo does not offer anything special for research. Viurusuo peat is economically important to VAPO. Viurusuo is too small to be protected.	VAPO Ltd	An appeal to the Vaasa administrative court, 17.4.2003
Draining will destroy ponds. Protecting Viurusuo is part of general conservation objectives of mires. Viurusuo is part of a larger water system. Viurusuo provides an ensemble of nature values. Viurusuo is big enough area for nature conservation purposes.	Vaasa administrative court	Negative resolution, 17.6.2005
The same arguments as in 2003 appeal + Decision is based on flawed information.	VAPO Ltd	An appeal to the highest administrative court of Finland, 18.7.2005

There is confusion about purview of legislation.	Highest administrative court of Finland	Ruling, which overrules earlier court orders and returns the issue back to the environmental permit office of Eastern Finland, 14.2.2006
Project will not considerably harm the ponds. Project will not harm water areas.	Environmental permit office of Eastern Finland	Environmental permit, 16.11.2007
Project will not considerably harm the ponds. Project will not harm water areas. Project should be evaluated only on the basis of emissions.	Vaasa administrative court	Positive resolution, 4.3.2009
Highest administrative court does not hold authoritative power in this issue.	Highest administrative court of Finland	Ruling, which overrules earlier court orders and returns the issue back to the environmental permit office of Eastern Finland, 8.3.2011

Effects of arguments

In analyzing the effectiveness of the arguments, the interview data provides good analytical elements to be used on the side of the document analysis. The interviewees gave plenty of information about their opinions on how the process of protecting the Viurusuo went. Another source for evaluation is the process itself (the documents) and especially a comparison of the arguments in different stages of the process. By comparing the arguments at different stages it is possible to identify those arguments that persisted over time but also the arguments that changed or needed to be changed.

No matter how vague the court rulings and their logic may have been, at least in the eyes of the local people, they were powerful. Courts' interpretation of the case and the purview of legislation in relation to it determine the rules of the game. For example, if the Viurusuo case really was only about the emissions caused by the peat extraction, as the Vaasa administrative court stated in 2009, the majority of local people's arguments would fail in effectiveness.

As an overall assessment it can be said that the court decisions rolled around the water areas and were especially targeted at ecological values (see table 4). Ponds in the middle of the Viurusuo were strongly at the focus throughout the process. Also the biodiversity and especially the potential existence of endangered species was discussed and evaluated in the judicial process. In this sense the local people's arguments about recreation and mental values hold no significance. But on the other hand, although they may have not been effective for the evaluation or the outcomes during the process they were definitely effective in keeping the

process going. Local people and NGOs were very resilient in making appeals, responses and reclamations for over ten years. What is interesting is that their arguments did not change much during the process.

VAPO's arguments cannot be evaluated as successful because the process took so much time without them getting a final permit and because the Viurusuo was finally protected. Their arguments didn't change much either during the process. Rather the strategy was to make changes in the application, e.g. by demarcating the ponds from the peat extraction area.

As already explained, the legislative framing of the Viurusuo case changed a lot during the appealing process. However, it was not the highest administrative court that decided to protect Viurusuo. VAPO Ltd itself decided to pull out the application. What finally made the difference?

The interviewees were asked the question. The representative of the city of Outokumpu thinks that it was the endangered species, birds or plants, or maybe it was the ponds. In his opinion recreational values made no difference and common interests of people aren't enough in the face of law. You need hard core values. Yet, according to him, the general pressure helped the process. The representative of the local conservation group thinks that even if they used nature values as arguments, the evaluation of the permit application was about water conservation, and in the end becoming about the two ponds. He states that the nature values of the swamp were never taken into account.

Local people see the outside experts being very important for the process: "*Boys and girls from the city came to investigate the area. They found something; ponds and springs. They should get the credit for the success*". Interviewees also stated that "*the locals did not raise similar concerns (such as the wise people from the city of Joensuu)*". In their opinion local concerns just supported the decision making but would never have been enough to conserve the Viurusuo. The interviewees had noticed that "*there must be some nature values that need protecting these days, reasons are unclear to us*" and that "*More value is put on some frog, than local concerns*". "*If the frog (or something else) is not found, then they say: you can pick your berries a little further away…*" and "*It is difficult to assess how one can effect, you should know the legislation*". One of the interviewees said that "*the policies kept changing, but it seems to me, vegetation was not valued, it was all about the water conservation. We got the feeling nature values do not count*".

However, when investigating the final statements of VAPO Ltd and the government of Finland when Viurusuo was sold, it seems it was exactly the nature values that were finally regarded as important. Nine different reasons can be identified from the press release telling about the event: 1) Project is against public interest, 2) project will risk biodiversity, 3) project will destroy habitats, 4) virginity of nature will be destroyed, 5) Viurusuo holds endangered species, 6) Viurusuo holds endangered biotopes, 7) project would destroy the landscape, 8) protecting Viurusuo is part of general conservation objectives of mires, and 9) Viurusuo provides an ensemble of nature values.

Similar arguments were made already in 2005 by the Vaasa administrative court, but the ruling of the Highest administrative court changed the rules of the game at turned the Viurusuo case into a case of water protection (see table 4).

Discussion

As a conclusion it can be said that it wasn't a particular species, e.g the swamp frog that saved Viurusuo, even if the swamp frog, or other endangered species, may have had a significant role at one point of time. And it wasn't the ponds either or the threat of eutrophication. The statement made by VAPO Ltd and the government of Finland show that overall nature values were considered important reasons for the protection of Viurusuo. These kinds of nature values were identified in early stages of the Viurusuo case by all the stakeholders, but the legal institutions were not able to process these values since the legislation, mainly nature conservation act, recognizes individual species or biotypes as targets for protection. This is about to change. The concept of nature values is being integrated in to the nature conservation act in Finland. Specific meaning or determination is not yet clear. According to the representative of VAPO Ltd the concept is "very complex".

In the future, the Viurusuo case study material will be supplemented by two different kinds of data. First, a national strategy proposal called "The Proposal for a national strategy for the sustainable and responsible use of mires and peatlands" will be analysed to see how the arguments presented in the proposal reflect the argument made in the Viurusuo case. Since the strategy proposal was published in 2011 and the Viurusuo was bought by the government in 2012, it is assumable that the arguments in the proposal are similar to those in the final stages of the Viurusuo case. Second, since the strategy proposal presents a particular point in time, or at least no longer than a period of two years (work was launched in 2009), literary material which will present the changes in general biodiversity conservation from 1980s up to date will be collected. This analysis is important because it will help in explaining the results of the Viurusuo case study. Main question for the new data will be: Where and how did the final successful arguments of Viursuo case develop? The results of the analysis from the supplementing data will be presented later in the form of an article.

Appendix 1. List of arguments

Arguments presented only in the documents (either because they were not mentioned in the interviews or because the stakeholder presenting the argument was not interviewed) are underlined.

1. Alternatives to peat industry have not been considered
2. Benefits do not override the damages
3. Complete destruction
4. Decision is based on flawed information
5. Draining will destroy ponds
6. Dust will lead to allergies
7. Dust will spoil crop
8. Dust will spoil downstream water areas
9. Eutrophication
10. Floods
11. Health revitalization
12. Highest administrative court does not hold authoritative power in this issue
13. Historical values will be destroyed
14. Insufficient evaluation and justification
15. It is OK to extract peat from Viurusuo
16. It is questionable that Viurusuo holds specific nature values
17. Lack of trust
18. Landscape will be destroyed
19. Location too close
20. Lowering water table will destroy springs
21. Lowering water table will risk household water
22. Memories
23. Natural capital
24. Natural state
25. Nice scentscape
26. Nice soundscape
27. Noise
28. Project is against public interest
29. Project must not harm water areas
30. Project should be evaluated only on the basis of emissions
31. Project will destroy habitats
32. Project will have negative impacts to climate change
33. Project will not considerably harm the ponds
34. Project will not harm water areas
35. Project will not offer significant employment opportunities
36. Project will risk biodiversity
37. Protecting Viurusuo is part of general conservation objectives of mires
38. Reduction of habitability
39. Reduction of property value

40. Reduction of recreational value
41. Regional planning
42. Risk of fires
43. Sadness
44. Short lifecycle of peat extraction
45. Special regional value
46. Spiritual losses
47. There are no endangered species in Viurusuo
48. There is confusion about purview of legislation
49. The right to healthy environment
50. Unpredictable and uncontrollable risks
51. Virginity of nature will be destroyed
52. Viurusuo is too small to be protected
53. Viurusuo does not offer anything special for research
54. Viurusuo holds endangered biotopes
55. Viurusuo holds endangered species
56. Viurusuo holds special values for research
57. Viurusuo is big enough area for nature conservation purposes
58. Viurusuo is not a special habitat for birds
59. Viurusuo is part of a larger water system
60. Viurusuo peat is economically important to VAPO
61. Viurusuo provides an ensemble of nature values
62. We need to extract peat

Annex 9 – Case study report: Management plans for the Andalusia national parks; Spain

Marina Garcia Llorente

Introduction

Context

Protected areas are considered to be the key instrument for conserving biodiversity; however their purpose and management need to be reconsidered to overcome several problems, such as isolation, lack of local population support, conservation *vs.* development issues and land abandonment beyond their limits (Rands et al. 2010[66]). Over many decades, protected areas have been established under an "island model" paradigm, where some areas are set apart from land-use transformation, to preserve great values of nature from human interventions. Nowadays there is a call for using a social-ecological approach to address protected areas. Under this model, biophysical and human components are linked and protected areas are integrated into the spatial planning of the landscape (Palomo et al. 2014[67]). In addition, under this premise, the ecosystem service approach is integrated within conservation programs and then intrinsic and instrumental values are considered.

In this context, the case study presented here is located in the Mediterranean Basin, involving the only two national parks of Andalusia: Doñana (a coastal wetland; south-west Spain) and Sierra Nevada (a mountain system; south-east Spain). Both share important ecological and cultural values associated with unique ecosystems, endemic species, Mediterranean cultural practices and ecosystem services. Our case study focuses on livestock practises which have been conducted since ancient times and are responsible for a rich heritage in terms of agrobiodiversity, ethnological values and traditions. They are also a source of income because the products produced and are attractive for tourism. Management of livestock which is not balanced could result in negative impacts related with overgrazing in vulnerable ecosystems, harm to other species or health problems.

Under this context, the integration of livestock practises finds supporters and detractors, with different views and perspectives around how to achieve conservation goals, and how far those goals should also promote local development; or even how far livestock practices contribute to conservation policies. The major challenge in this study is to analyse in depth the case of livestock practices as an example of how traditional practices are considered and managed within national parks. Our approach focuses on the importance of livestock breeds in protected areas, providing useful information on the links between biodiversity and ecosystem services, how domesticated biodiversity is included in conservation plans and which arguments are used.

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[66] Rands, M.R.W., Adams, W.M., Bennun, L., Butchart, S.H.M., Clements, A., Coomes, D., Entwistle, A., Hodge, I., Kapos, V., Scharlemann, J.P.W., Sutherland, W.J., Vira, B. 2010. Biodiversity Conservation: Challenges Beyond 2010. Science 239:1298-1303.

[67] Palomo, I., Montes, C., Martín-López, B., González, J.A., García-Llorente, M., Alcorlo, P., García, C. 2014. Incorporating the social-ecological approach in protected areas in the Anthropocene. *BioScience*. DOI: 10.1093/biosci/bit033

Issue

The main issue is how to integrate livestock practices in conservation plans of protected areas. For some parties this is a fundamental use which has been conducted over centuries with the potential to promote local development and conservation. However, others consider that they should be restricted in national parks, where biodiversity conservation should be the priority.

Actors

There are different parties with different views, even between the Doñana and Sierra Nevada protected areas. They are:

- Livestock keepers
- Local politicians
- National-Regional politicians
- Protected area managers
- Researchers

Indirectly, the tourist population, environmentalists, residents in general or regional authorities are also involved.

Arguments and argumentation lines

The different arguments are related with: 1) how to create a suitable management plan which includes some limitations to livestock activities), 2) supporting livestock practices because of the benefits of conducting this activity (benefits related with ecological, economic and cultural aspects), and 3) livestock sector needs, complaints or concerns.

The following arguments were found:

Management requirements in the protected area:

CONSERVATION PRINCIPLES

1. Conservation beyond economic profit
2. More research is needed
3. Precautionary principle
4. Taking carrying capacity into account

LIMITATIONS

5. Illegal livestock limited
6. Land expropriations done
7. Aggressive practices should be limited
8. Local breeds with lower impact
9. Health requirements are needed
10. Impact on biodiversity preservation

SUSTAINABLE USE

11. Local breeds preservation
12. Livestock should be integrated into conservation

13. Alternatives to livestock keepers needs (grasslands outside the park)
14. Civic agreement

Benefits from conducting livestock activities:
CULTURAL
15. Traditional knowledge and practices
16. Ethnological heritage
17. Cultural value (more than economic)
ECOLOGICAL
18. Habitat for other species
19. Communities and ecosystems
20. Ecological processes
ECONOMIC
21. Economic benefit in unproductive lands
22. Good quality products
23. Rural development
24. Tourism

Livestock sector needs/concerns:
ECONOMIC/MARKETS
25. Economic need (feeding the animals)
26. Organic food
27. Quality products
28. Market profitability
29. Subsidies
SOCIAL ASPECTS
30. Social recognition
31. Training
32. Opposition to protected area measures
33. Innovation and technology
34. Communication: coordination and collaboration

These arguments are explained in more detail in the results section.

Events

The circumstances in each park are very different because of the different ecosystems represented and their different stages of development. Sierra Nevada has a much shorter existence as a National Park. The Doñana National and Natural Parks were declared in 1969 and 1989, respectively, whilst the Sierra Nevada National and Natural Parks were declared in 1999 and 1989, respectively. Regulation of the exploitation of provisioning services has been an important issue, in particular livestock activities have constituted an important matter in both areas. It is important to highlight the differences between both in terms of its vocation; in Doñana its benefits are related with cultural aspects (economic profitability is low and is not the

priority), while in Sierra Nevada the main concern is to promote profitably. Regarding conflicts, in Doñana, conflicts have been present throughout the process. However, in Sierra Nevada the key issue is to revitalize the area and a coalition has been formed among the different stakeholder groups to do this. Probably, the conflicts occurred in Doñana have also constituted lessons learnt to Sierra Nevada.

The main events can be summarized in three stages in Doñana:

1. Conflicts since the protected area was declared until the development of a sectoral plan for livestock (during the 1990s)
2. The process of developing (adoption and implementation) a sectoral plan for livestock itself (2002-2003)
3. Situation after the plan implementation (after 2003)

The main events in Sierra Nevada are:

1. How livestock was considered in general plans (2011) and the need to develop a sectoral plan (policy formulation)
2. The process of developing (adoption and implementation) a sectoral plan (2014)

Analysis

Data

Data has been sourced from analysis of policy documents such as the Steering Plan for Use and Management (PRUG) of Sierra Nevada and Doñana, approved in 2011 (Royal Decree 238/2011) and 2004 (Royal Decree 48/2004), respectively. As well as Sustainable Development Plans and Livestock sectoral plans. In addition, other available documents such as media coverage (newspapers), and official documents (e.g. Congress of Deputies notes) have been reviewed. We have also undertaken face-to-face interviews with the protected area managers of Sierra Nevada (in 2013) and information was exchanged with Doñana managers by email to identify the most important documents to be reviewed.

A Q-methodology study was undertaken in April 2014 (as part of WP4) to explore patterns in stakeholders' awareness regarding the role of livestock practices under conservation policies. This involved interviews with researchers, managers and livestock keepers and shepherds. During the interviews, we also introduced some questions regarding: what are the main problems in livestock practices and how far do livestock practices support or limit conservation goals.

Methods and quality control

We identified the main argumentation lines used by key stakeholders involved over time in both parks. We have triangulated the information using different sources (from official documents, to discourses in workshops, newspapers and interviews). Also, and in relation with WP4, information obtained from the policy documents has been analysed using argument classifications in terms of their interaction with ecosystem services, biodiversity values or human well-being and a lexical analysis based on counts of keyword/argument frequencies. The argument frequencies have then been compared with the arguments towards biodiversity conservation identified in WP1 (reference to deliverable) and with the Q-study (within WP4).

More specifically, the following was undertaken to improve the validity and reliability of the study:

- Data triangulation: policy and scientific documents, participant observation, semi-structured interviews, questionnaire, Q-sampling.

- Investigator triangulation: Different members of the social-ecological systems lab (www.uam.es/socioecosistemas) gave feedback on the data analysis and results interpretation.
- Methodological triangulation: Document analysis; statistical analysis of social preferences from surveys, Q-method.

Results

Here we present in more detail the different arguments which were sustained. Figures 1 and 2 summarise the main arguments taken in both parks per event.

Management requirement in the protected area:

CONSERVATION PRINCIPLES

1. *Conservation beyond economic profit*

Under this argument protected area managers assume that livestock practices should be integrated in some way into management programs, but they always have in mind that conservation goals go beyond economic profit. This argument is more salient in Doñana, where the economy is based on other uses (i.e. fishing and intensive agriculture). In this sense, livestock practices should be carefully regulated to avoid potential damages to biodiversity conservation. This is an argument accepted since the areas have been "protected" because of its ecological values. It has a high persistence and diffusion in the media and as a consequence it has the capacity to convince the general public, in particular general tourists.

Persistence: high; Accumulation: high Diffusion: high; Final effectiveness: high.

2. *Impact on biodiversity preservation*

Biodiversity should be conserved in a national park, however, livestock activities destroy vegetation and fauna in very sensitive areas; particularly vegetation and the Iberian imperial eagle should be protected from livestock impacts. This is a message which has been conveyed both nationally and internationally: "Doñana" is one of the most emblematic areas in Europe because of its conservation values and emblematic species. This argument is used to support intrinsic conservation of particular species and ecosystems because of the right of nature itself to be preserved without human intervention. This is one of the most classical arguments related with charismatic species in Doñana, where conservation efforts are targeted towards the conservation of vertebrates (emblematic species such as the Iberian lynx (*Lynx pardinus*) and the Iberian Imperial eagle (*Aquila adalberti*). It is an argument used by environmentalists and some nature researchers and managers.

Persistence: high; Accumulation: mid, Diffusion: very High; Final effectiveness: mid.

3. *More research is needed*

Before completely deciding how far livestock practices could be integrated, politicians and managers appealed for more studies to assess the carrying capacity of ecosystems to avoid negative consequences and ensure its compatibility with conservation policies. Studies are supposed to finish in the next 2 to 4 years in Doñana.

Persistence: mid; Accumulation: mid, Diffusion: mid; Final effectiveness: mid.

4. *Precautionary principle*

This argument suggests that while studies are conducted and a sectoral plan is designed and approved, the number of livestock should decrease inside the park. This measure is advocated while waiting for the official plan. The tendency in a national park is always to use the precautionary principle.

Persistence: mid; Accumulation: mid, Diffusion: mid; final effectiveness: mid.

5. *Taking carrying capacity into account*

The density of livestock should respect the carrying capacity of ecosystems inside the park implemented through zonal planning. This will provide a balance with vegetation and their biological cycle (protecting it from, for example, erosion problems). Carrying capacity is the key determinant in planning areas for livestock. Multiple academic studies have been conducted.

Persistence: very high; Accumulation: high, Diffusion: mid, Final effectiveness: high.

LIMITATIONS

6. *Illegal livestock limited*

In Sierra Nevada, there are illegal animals in the mountains. The banning of using closed parcels in public areas makes it difficult to raise local breeds.

Persistence: low; Accumulation: low, Diffusion: low; Final effectiveness: low.

7. *Land expropriations*

Land expropriations and the expulsion of animals have taken place without sufficient studies about livestock impacts in the area.

Persistence: very low; Accumulation: very low, Diffusion: very low, Final effectiveness: very low.

8. *Aggressive practices should be limited*

More aggressive practices are removed to ensure conservation.

Persistence: mid; Accumulation: mid, Diffusion: low; Final effectiveness: low.

9. *Local breeds with lower impact*

In Sierra Nevada, local breeds are scarce and should be used as they have a lower negative impact on soils and vegetation. Local breeds are better adapted to the territory conditions, but usually they are less profitable in terms of the meat produced. As livestock production in Sierra Nevada livestock is high economic in character, it is not a priority for producers to promote local breeds.

Persistence: mid; Accumulation: mid; Diffusion: low; Final effectiveness: low.

10. *Health requirements are needed*

When establishing health regulations, it should be understood that it is not possible to conduct an intense control as in many cases captures are very complex (stray animals).

Persistence: mid; Accumulation: mid, Diffusion: low; Final effectiveness: low.

SUSTAINABLE USE

11. *Extensive regime*

Livestock activities should be conducted in an extensive regime where animals should use available grasslands without external and additional outputs. This argument also implies that livestock reproduction take places in a natural way.

Persistence: mid; Accumulation: mid, Diffusion: low; Final effectiveness: mid.

12. *Local breeds preservation*

Management needs to take into account the preservation of local breeds (such as the Andalusia feral marsh horse, mostrenca cattle, churra lebrijana sheep, and pajuna sheep). Native livestock breeds, sub varieties and ecotypes (agro-biodiversity) constitutes an important genetic heritage to be conserved. It seems that agrobiodiversity has been recently recognized as important, deserving conservation actions. However, in Sierra Nevada shepherds prefer other breeds which are more profitable.

Persistence: high; Accumulation: high, Diffusion: high; Final effectiveness: high.

13. *Livestock should be integrated into conservation*

Traditional livestock activities are compatible with conservation goals. Previously, environmentalists and some nature researchers and managers used the “island model” where protected areas are set apart from land-use transformation, to preserve nature from human interventions. This has been a very recurrent argument over some decades. However, this tendency is now changing as it has been stated that in Mediterranean ecosystems multifunctional landscapes should be promoted.

Persistence: high; Accumulation: high; Diffusion: high; Final effectiveness: high.

14. *Alternatives to livestock keepers needs (grasslands outside the park)*

To satisfy livestock keepers some parcels outside the protected area are offered to ensure conservation inside the park. Livestock keepers don't accept this alternative; they think that they have rights to use land inside the park.

Persistence: mid; Accumulation: low; Diffusion: low; final effectiveness: low.

15. *Civic agreement*

A civic agreement is proposed between managers and livestock keepers (after the conflict) to preserve the international reputation of Doñana so that local development of the area will not be affected (in terms of receiving budget for conservation policies and social development). Conflicts were not disseminated to safeguard the reputation of Doñana (and as a consequence the budget received by national and international organisations).

Persistence: mid; Accumulation: low, Diffusion: mid; Final effectiveness: mid.

Benefits from conducting livestock activities:

CULTURAL

16. *Traditional knowledge and practices*

Livestock has grazed for centuries inside the park in a traditional way (such as local breeds) without any problems which has left the area in a perfect state for present generations. This traditional knowledge is key for designing sustainable management and conservation of protected areas.

Persistence: high; Accumulation: high, Diffusion: high; final effectiveness: high.

17. *Ethnological heritage*

Traditional livestock activity and breeds are an identifying feature associated with local culture in the area. Livestock activities have taken place from ancient times. Livestock has maintained practices from the Arab period, specially related with hydrological knowledge and constructions (e.g. water cisterns). Livestock breeds are a central element of the local culture.

Persistence: high; Accumulation: high, Diffusion: mid; Final effectiveness: mid.

18. *Cultural value (more than economic)*

In Doñana, livestock production is not a primary economic activity. It is more an activity related with the local identity and culture. All parties agree with this, considering livestock because of its cultural value much more than because of its profitability, particularly for marsh horses.

Persistence: high; Accumulation: mid, Diffusion: High; Final effectiveness: mid.

ECOLOGICAL

19. *Habitat for other species*

Livestock practices and breeds promote the existence of other species. In particular, they provide habitat for important wild species (for example, wet grasslands (borreguiles communities) on Sierra Nevada summits).

Persistence: mid; Accumulation: mid, Diffusion: mid; Final effectiveness: mid.

20. *Communities and ecosystems*

It is recognised that some livestock activity is not just affordable, but also has an indissoluble bond with landscape design, ecosystems and biodiversity.

Persistence: mid; Accumulation: mid, Diffusion: mid; Final effectiveness: mid.

21. *Ecological processes*

Cattle grazing contributes to seed dispersion, decreases biomass and accumulation, thus, preventing wildfires.

Persistence: mid; Accumulation: mid, Diffusion: mid; Final effectiveness: mid.

ECONOMIC

22. *Economic benefit in unproductive lands*

Steep mountainous areas in Sierra Nevada would be unproductive areas for other activities because of their low accessibility. Livestock practices allow their use, avoiding cost in using processed food. For example, the Pajuna bovine breed is adapted to the limited resource conditions in the Andalusian mountains.

Persistence: mid; Accumulation: mid, Diffusion: low; Final effectiveness: mid.

23. *Good quality products*

Native breeds provide good quality products (e.g. meat, milk or cheese).

Persistence: low; Accumulation: mid, Diffusion: mid; Final effectiveness: low.

24. *Rural development*

Livestock practices constitute a source of employment and a way to maintain population in the rural areas of the Sierra Nevada mountains.

Persistence: high; Accumulation: high, Diffusion: mid; Final effectiveness: high.

25. *Tourism*

Cattle breeding is a tourist resource.

Persistence: low; Accumulation: low, Diffusion: mid; Final effectiveness: low.

Livestock sector needs/concerns:

ECONOMIC/MARKETS

26. *Economic need (feeding the animals)*

After a severe drought grasslands for livestock are compromised and there is a need to increase the available parcels inside the park. Livestock keepers wish to feed their animals on public parcels inside the park, as it is very costly to do it on private parcels. This argument has been supported by livestock keepers, but it is highly controversial. In fact, conflicts related with this issue occur frequently in drought years. Each time livestock keepers ask for more lands inside the park, but the protected area staff propose alternative areas outside the park that are not acceptable to the livestock keepers.

Persistence: mid; Accumulation: mid, Diffusion: low; Final effectiveness: mid.

27. *Organic food*

It is required to promote organic livestock practices to support better marketing and commercialization.

Persistence: mid; Accumulation: low, Diffusion: low; Final effectiveness: low.

28. *Quality products*

Measures should be taken to promote the concept and reputation of the area through the commercialization of livestock products.

Persistence: mid; Accumulation: mid, Diffusion: low; Final effectiveness: low.

29. *Market profitability*

One of the first steps to promote livestock is to make the activity profitable for producers.

Persistence: high; Accumulation: high, Diffusion: mid; Final effectiveness: mid.

30. *Subsidies*

In Sierra Nevada, the payment for fires prevention is an incentive for shepherds.

Persistence: mid; Accumulation: high, Diffusion: mid; Final effectiveness: mid.

SOCIAL ASPECTS

31. *Social recognition*

It is important to disseminate the role of shepherds in biodiversity conservation. This recognition probably helped initiate payments for fire prevention.

Persistence: low; Accumulation: high, Diffusion: mid; Final effectiveness: mid.

32. *Training*

In Sierra Nevada measures promote formal education, training and new opportunities for shepherds.

Persistence: mid; Accumulation: mid, Diffusion: mid; Final effectiveness: low.

33. *Opposition to protected area measures*

In Doñana, livestock keepers think that animals could go through four or five parcels each term. This would allow enough time for the grasslands to recover and avoid impacts on vegetation.

Persistence: low; Accumulation: low, Diffusion: low; Final effectiveness: low.

34. *Innovation and technology*

In order to support livestock activities adequate infrastructure needs to be promoted and efforts made to integrate them in the landscape (mainly in Sierra Nevada).

Persistence: mid; Accumulation: mid, Diffusion: low; Final effectiveness: low.

35. *Communication: coordination and collaboration*

Coordination and collaboration between managers needs to be increased. This is also the case for associations between shepherds as they are important elements for promoting conservation and management (mainly in Sierra Nevada). This is still a goal to achieve.

Persistence: mid; Accumulation: mid, Diffusion: low, Final effectiveness: low.

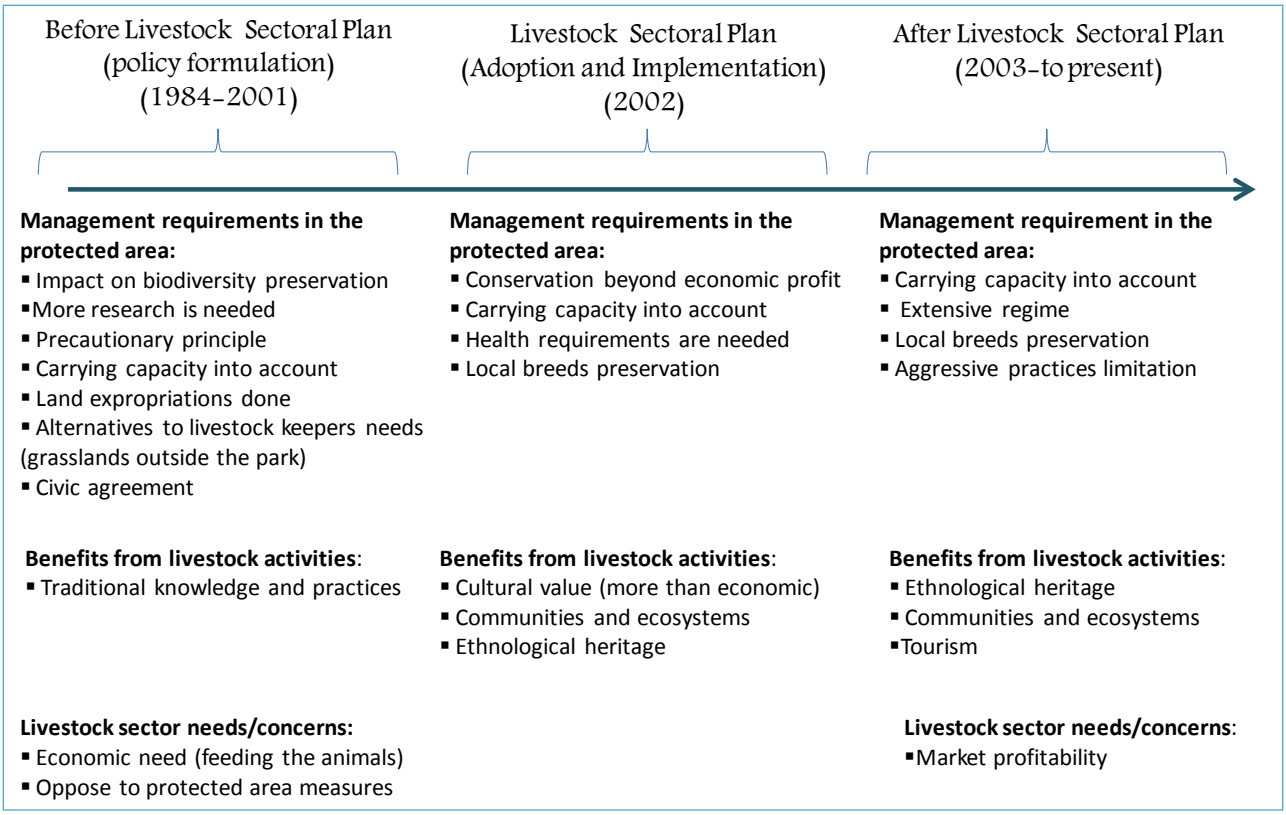


Figure 1. Summary of the arguments in Doñana protected area.

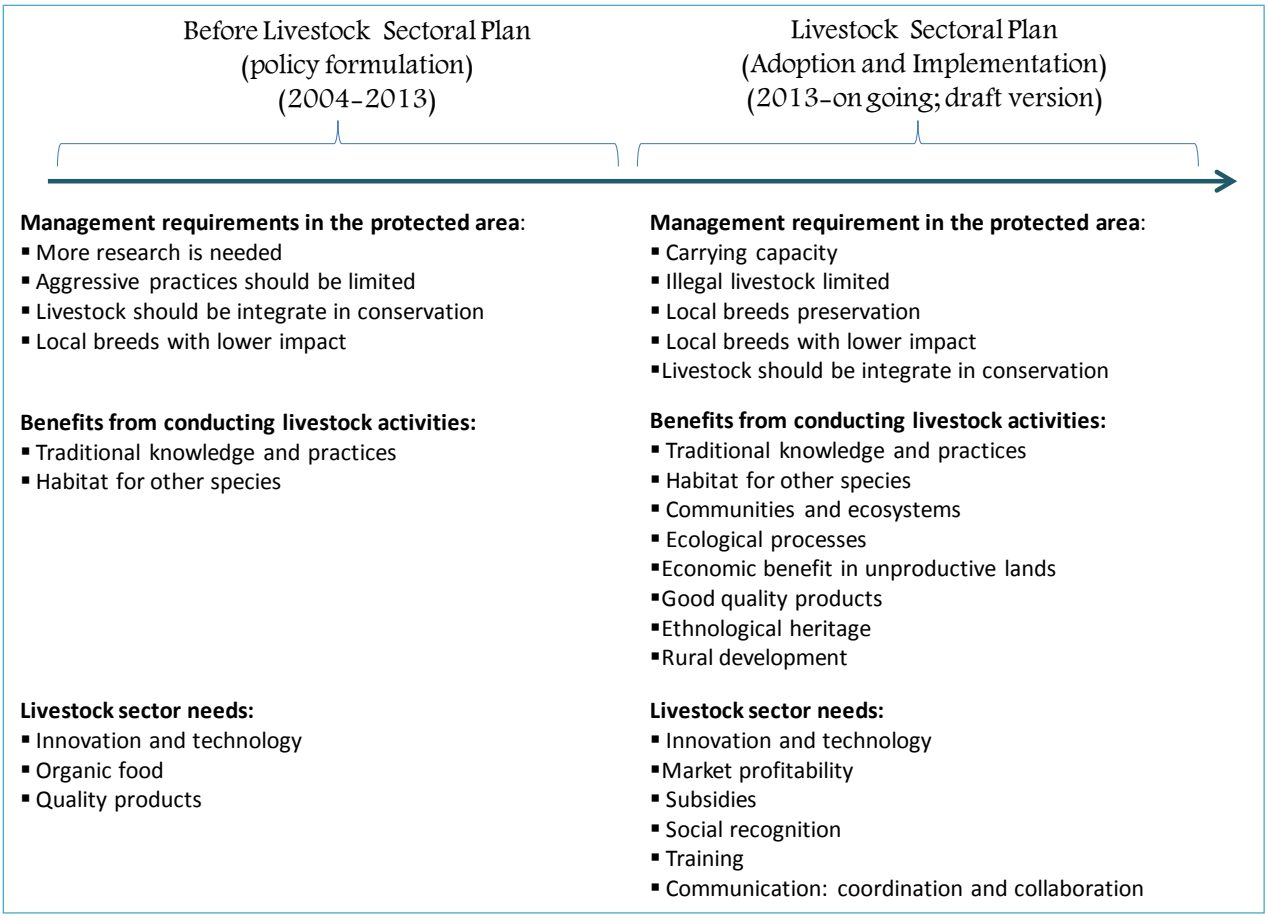


Figure 2. Summary of the arguments in Sierra Nevada protected area.

Discussion and conclusions

- Ecological principles persist over time which is coherent with the protection status of both areas. In this sense, respecting the carrying capacity is one of the main arguments maintained by protected area managers, together with fostering conservation beyond economic profit, or avoiding negative impacts on biodiversity.
- The precautionary principle has been sustained by protected area managers and scientists due to a lack of information.
- 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 sense, arguments related with cultural (mainly in Doñana, such as traditional knowledge and practices) and economic (mainly in Sierra Nevada, such as its role in rural development) importance have increased.
- Traditional livestock practices contribute to food production, but also to the maintenance of the gene pool, multiple cultural ecosystem services, and even some regulating ecosystem services (e.g. wild fire prevention, seed dispersion). Livestock practices and protected area management is changing from an island model to a social-ecological one where ecosystem services play a significant role and are considered together with biodiversity intrinsic values.

- Domesticated animal species are an important component of biological and cultural diversity which should be preserved together with wild biodiversity. Both areas consider that livestock practices should be integrated into conservation.
- In Sierra Nevada more arguments are found which support livestock activities. In fact, many of the arguments are related with the socio-economic needs of the sector in terms of how to be more profitable, and how to improve resources in terms of knowledge, innovation, etc. All parties agree with these arguments.
- Some lessons learned emerge from the conflicts in Doñana. These include the need for more participation and communication, as well as social recognition of the role of shepherds in conserving biodiversity. In fact, payment of ecosystem services (for fire prevention) has been implemented.
- Arguments are more effective when information and knowledge are available in time and if the stakeholders are organised. In this sense, the establishment of a Livestock Commission in Doñana has been a "catalyst" for their needs. In Sierra Nevada some challenges remain to promote collaboration.
- Regarding the different parties positions, in Doñana the situation started from very opposed views that gradually concurred, particularly since implementation of the Sectoral Plan. In Sierra Nevada, different parties have supported common arguments from the beginning. This could be understood in terms of the interdependency between conservation and rural development in Mediterranean mountains. In this context, protected area managers understand that shepherds play a key role in conservation, while shepherds consider the protected area to help them promote or improve their economic activity. The unique point of disagreement in Sierra Nevada is related with the conservation of local breeds as conservationists want to preserve them, but shepherds are concerned that these breeds will not be competitive.

Annex 10 – Case study report: Arguing for biodiversity in practice: A case study of a local biodiversity action plan area; UK

Esther Carmen

Introduction

The continued decline in biodiversity has led to a growing recognition of the need for better knowledge and understanding on the social interactions which help shape biodiversity conservation outcomes (Fox et al., 2006). This includes tackling the underlying causes and indirect drivers of that loss through better decision making at all levels and scales (GBO3, 2010). Not easily defined, the policy process is an interactive, continuous process consisting of a web of interrelated decisions (Keeley and Scoones, 1999). One component of this is the development of policy documents that frame issues and outline priorities, but also the operationalization of these policies into action, which relies on a web of different actors (Schofield, 2004). Turning policy into practice is inherently goal driven and argumentative, involving communication, bargaining, negotiation and conflict (Arts et al., 2012). Influenced by social, political and institutional factors this process entails the selection and use of language as a communication tool to exchange information (Sutton, 1999). However, the use of language is not neutral, in practice it is selected to ascribe meaning and shape how issues are viewed and actions selected (Hajer and Versteeg, 2005).
Through argumentation local level policy actors advance their goals and objectives by reaching and justifying mutually acceptable decisions with others (Fischer and Gottweise, 2012). This involves the selection and use of arguments, which are sets of statements including a proposed action (claim) whilst the others provide reasons for that action (premises) (Simosi, 2003, Fairclough and Fairclough 2012). Analysing arguments can increases our understanding of how actors represent their position in the process of negotiation. An effective argument withstands challenges within the process of argumentation (Dryzek, 2005). In this respect an argument has the potential to be effective if the different components of the argument are true and connect with each other (Fairclough and Fairclough, 2012).

Scholars of policy and communicative action recognise the need to understand the link between collective ideas, concepts and categories which give meaning to physical and social reality, with arguments in use (Fischer and Gottweise, 2012, Hajer, 1997). Recognising the role of this wider discursive realm in argumentation highlights the need to focus on how issues and actions are presented by arguers and how arguments are received in the argumentation process to understand effective arguments (Fischer and Gottweise, 2012, Fairclough and Fairclough, 2012, Best, 2001, Hannigan, 1995, Henkemans, 2000). The analysis of frames is widely used to better understand links between ideas and action, particularly in the study of social movements and collective action (Benford and Snow, 2000). Frames are used to signal what is important and how to respond to a problem (Dewulf et al., 2009). This can influence the type and quality of the negotiated outcome by emphasising different attributes (framing attributes) of objects or positive or negative aspects of choices and actions (framing actions) (Hallahan, 1999, Dewulf et al., 2009). Frames are necessary for persuasive communicators to effectively achieve compliance with a desired goal (Hallahan, 1999) and thus exploring framing of arguments in use can increase our understanding of how others are mobilised to act (Steinberg, 1998). Credibility, which refers to the perceived quality, validity and adequacy of the argument and arguer and salience, which refers to the relevance of the claim with the concerns and goals of receiver are both useful criteria begin to disentangle the different factors which may influence the effectiveness of arguments in use (Benford and Snow, 2000, Fairclough and Fairclough, 2012, Sarkki et al.,

2013). This can help understand not only if an argument is effective in triggering decisions to act or action itself, but also why.

Context

The UK Government first developed the UK Biodiversity Action Plan (UKBAP) in 1994 to identify priority species and habitats for conservation action across the UK as a response to the Convention of Biological Diversity (CBD) (Francis and Goodman, 2010). Following devolution across the UK and the first World Summit on Sustainable Development in Johannesburg, the first Biodiversity Strategy for England was developed to set out the need not only for action in the conservation sector but also the need to shift policy and behaviour more widely (DEFRA, 2002). Although the importance of biodiversity from economic and non-economic perspectives had been discussed as far back as the 1970's (Ehrenfeld, 1976) this way of viewing the natural environment is now becoming increasingly influential in the national approach to wildlife conservation, particularly in England (DEFRA, 2011; Lawton, Brotherton et al. 2010). Momentum for this shift was achieved through the publication of the UK National Ecosystem Assessment in 2011 and the subsequent White Paper reviewing England's wildlife and ecological networks which recognised that action needed to focus much more at a larger, landscape scale to conserve biodiversity (Lawton, Brotherton et al., 2010). As a direct result a new strategy for England's wildlife and ecosystem services was produced in 2011. Thus at a national level there has been a shift away from prescriptive targets for species and habitats to more high level goals (DEFRA, 2013).

Issue

From the start local action was recognised as vital to turn conservation objectives for biodiversity into practical action on the ground. Initiated through the establishment of local multi-stakeholder biodiversity partnership groups, local biodiversity action plans (LBAP) were developed to reflect local conditions and values and coordinate tangible action towards the national priority species and habitats (UK BAP Steering group, 1995; DEFRA, 2002). As a result over 100 local biodiversity action plan partnerships were established across England and Wales (Natural England website, 2014) in both urban and rural areas. The new Biodiversity Strategy however also introduced new local delivery arrangements involving a broader range of actors encompassing other sectors beyond conservation interests with the aim of developing landscape level initiatives and better integrate biodiversity with other local priorities (DEFRA, 2013). Although the priority habitats and species have remained unchanged at a local level specific contexts vary as does the way action for biodiversity conservation is conceptualised and interpreted within interactions to influence the decisions of others (Shmueli, 2008). Particularly in urban areas a wider range of perspectives exist. This increases the likelihood of disputes between biodiversity conservation and other policy goals relative to more rural areas (Rydin and Greig, 1995, Puppim de Oliveira et al., 2011). The peri-urban interface is the transition between city and countryside involving a mosaic of more natural ecosystems with agriculture and urban land uses and the converging of different institutions and social groups (Allen, 2003). As such urban governance is increasingly recognised as an important factor in biodiversity conservation.

Methods and materials

This study used a qualitative case study strategy which involved the investigation of real life contexts thus maintaining the holistic characteristics to better understand complex social processes (Yin, 2003). As a result of the interplay between context and process a theoretical framework was developed (see figure 1 and 2 below) to guide data collection from multiple sources and data analysis (Yin 2003) to capture different perspectives and explore issue in depth (Gerring, 2004) to investigate the following research questions.

1. What arguments are used to implement activities to conserve biodiversity at a local level?
2. Are these arguments effective in influencing the action of others?
3. How do the arguments used link to the arguments used in the local biodiversity action plan?
4. Why are arguments effective?

The Greater Manchester was selected for this case study as it is one of the largest metropolitan countries in England which encompasses 10 boroughs with a total population of 2,682,528 in 2011 (an increase by 14% since 2001) (UK Office for National Statistics, 2011). Its industrial heritage resulted in rapid urban expansion, great economic wealth but also social and environmental problems. With massive reinvestment in infrastructure since the 1970s Greater Manchester is now experiencing an economic regeneration involving expansion of the suburbs, infill of spaces within the urban mosaic and redevelopment of industrial sites (Douglas et al., 2002). In 2003 the first Greater Manchester Biodiversity Action Plan was developed and later updated in 2009 by bringing together a range of individuals and organisations to decide on the species and habitats to be included and to write the individual species and habitats plans (Greater Manchester biodiversity project, 2009).

The data sources involved qualitative semi structured interviewing supplemented by relevant documentary evidence. A major strength of the case study approach is the opportunity to use different sources of data which reveals converging and diverging lines of enquiry, hence increasing validity and reliability of the case study findings whilst also highlighting new lines of inquiry (Yin, 2003). Interviewees were selected through a snowballing sampling strategy (Bryman, 2004) to identify conservation practitioners in the study area. To begin core members of the local biodiversity partnership group were contacted and asked to identify other key biodiversity practitioners across the Greater Manchester area. As such, biodiversity practitioners involved in the original local biodiversity partnership were invited to participate in this study, but this was not the defining criteria for participation.

This case study investigates the arguments and argumentation used in implementing biodiversity conservation actions from the perspective of the local biodiversity action plan process. As such the arguments for selecting aspects of biodiversity as locally important and as well as the arguments within the document for conservation within the local BAP document were investigated. Within this context multiple embedded events (Yin, 2003) from actors working in biodiversity conservation at different spatial scales are used to develop an understanding of the effective use of arguments for biodiversity in practice. As such from the 12 practitioners identified, 10 face to face interviews were carried out during which interviewees identified and explained a recent example of their work involving the need to influence others (see table 1 below).

Interviewees were asked to explain their involvement in the development of the Local BAP for Greater Manchester, any reference to the need to conserve important species and habitats as identified in the LBAP in their argumentation and their use of the LBAP in their everyday work. To capture different perspectives interviewees identified relevant documents and one receiver involved in the argumentation process. This receiver was also invited to be interviewed for the study. Using a pre-prepared interview guide (see appendix 1 and 2) the interviewer was able to probe the responses to uncover a more nuanced picture of the argumentation process being described (Mason, 2002) and explore the interviewees perspectives and views on issues which were important (Arksey and Knight, 1999). Thus, follow up questioning sometimes revealed greater importance of an issue in the process than initially expressed by the interviewee backed up with clear evidence (Ruben and Ruben, 2005). Interviewees were invited to participate in the study initially by email which outlined the parameters of the research and to gain

consent to audio record the interviews to enable the interviewer to gain better understanding of the issues in the interview and to ensure accuracy in the data analysis process. Consent was also gained at the start of each interview and specifically it was highlighted that interviews were confidential and data on individuals and examples would be anonymized in transcribing, analysing and presenting the data to encourage interviewees to share their views openly with the interviewer. Documents as sources of data can reveal a great deal about how events were constructed and the reasons employed (May, 2001). As such formal documents which were used in the argumentation processes or formal records of these interactions were also included as data sources in the analysis. In total 14 interviews were undertaken, from which 9 embedded interactional examples were selected. Selection was made on the basis of an identified receiver, evidence on the receiver's response either from interviews with the receivers, documents detailing the interaction or both.

Table 1: Actors and events - Embedded units in case study and data sources

A. Interviewee (arguing for biodiversity)	Interaction event type	B. Receiver(s)	Evidence: Receiver interviewed	Evidence: Documentation
Stakeholder 01 (Local authority ecologist)	1. Brownfield site development	**Stakeholder 11** (Local authority planner)	Non response	Yes (Planning consultation documents)
Stakeholder 02 (Community Forest Trust officer)	2. Funding application to procure land for conservation	**Stakeholder 12** (Funding organisation case officer)	Non response	Yes (Funding application)
Stakeholder 03 (Wildlife Trust Manager)	3. Peri urban green space management	**Stakeholder 13** (Community Forest Trust Manager)	Yes	Yes (Management proposal)
Stakeholder 04 Local authority strategic planner	4. Landscape scale public engagement	**Stakeholder 14** (Local authority countryside ranger)	Yes	No
Stakeholder 07 (Local authority ecologist)	5. Modification to residential property	**Stakeholder 18** (Property owner)	Yes	No

Stakeholder 08 (Local authority planner)	6. Resource extraction restoration	**Stakeholder 15** (Site owner)	Non response	Yes (Planning appeal documents)
Stakeholder 05 (Local authority countryside and parks manager)	7. Management of urban green spaces (1)	**Stakeholder 16** (Local authority parks coordinator)	Yes	No
Stakeholder 06 (Local authority countryside and parks officer)	8. Management of urban green spaces (2)	**Stakeholder 20** (Local authority countryside and parks manager)	Yes	Yes (Business case documents)
Stakeholder 21 (Local authority regeneration officer)	9. Local development policy	**Stakeholder 19** (Local authority planning policy officer)	Non response	Yes (Policy proposal documents)
Number of arguers interviews: 9	Number of examples: 9	Number of receivers: 9	Number of receivers interviewed: 5	Number of interactions with no evidence on receivers response: 0

Arguments and argumentation lines

To identify and analysis the effectiveness of arguments a theoretical framework was developed which recognised that arguments do not exist in a vacuum, but are selected by arguers to influence a range of different receiver's in different situations. The theoretical framework enables different components of arguments to be analysed and the link between them (figure 1) to assess if an argument could potentially be effective. This is adapted from Fairclough and Fairclough (2012) who also highlight the potential to combine argument analysis and linking this with the analysis of wider social processes. The second part of the theoretical framework (figure 2) links Fairclough and Fairclough (2012) framework for analysing arguments with frame analysis (Benford and Snow, 2000). This provides a theoretical and practical structure to gain an understanding of not only if an argument is potentially effective, but when used by arguers why it may or may not be effective in practice.

Figure 1: Theoretical framework to analysis arguments (adapted from Fairclough and Fairclough, 2012)

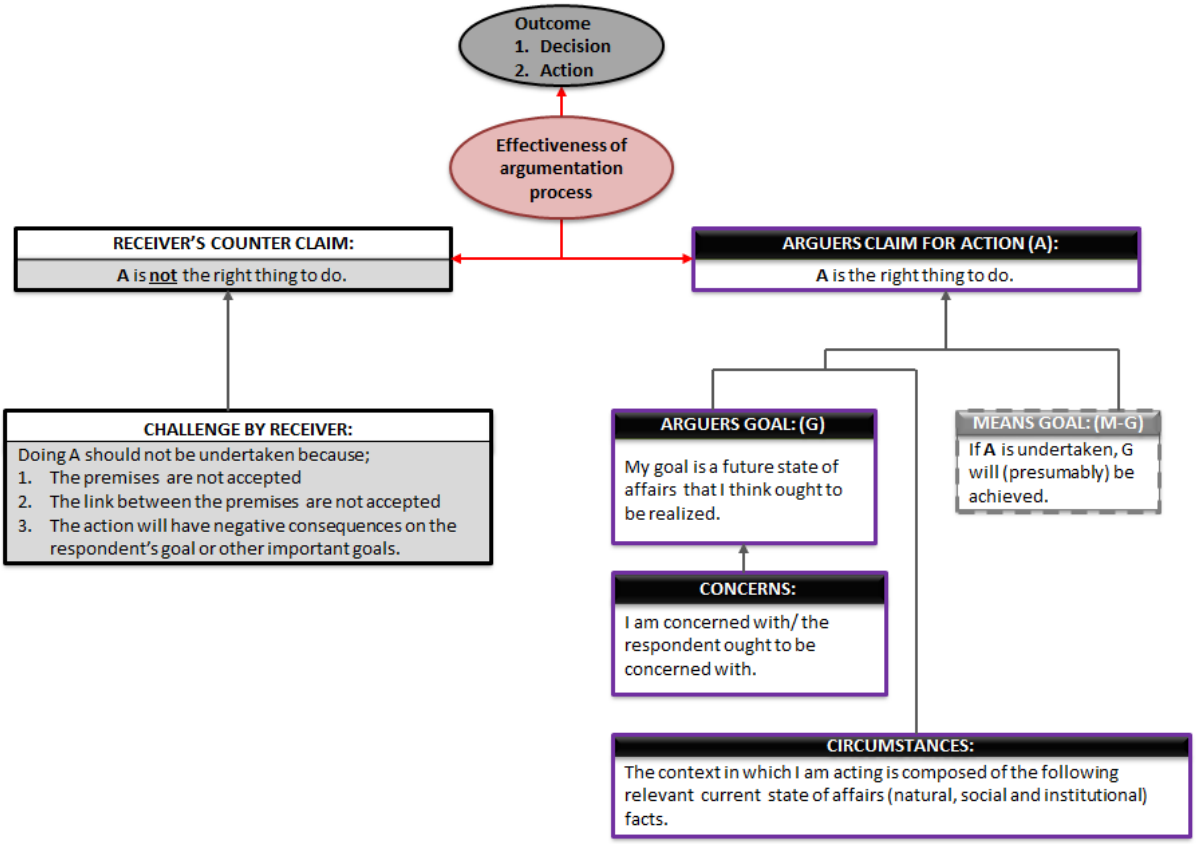
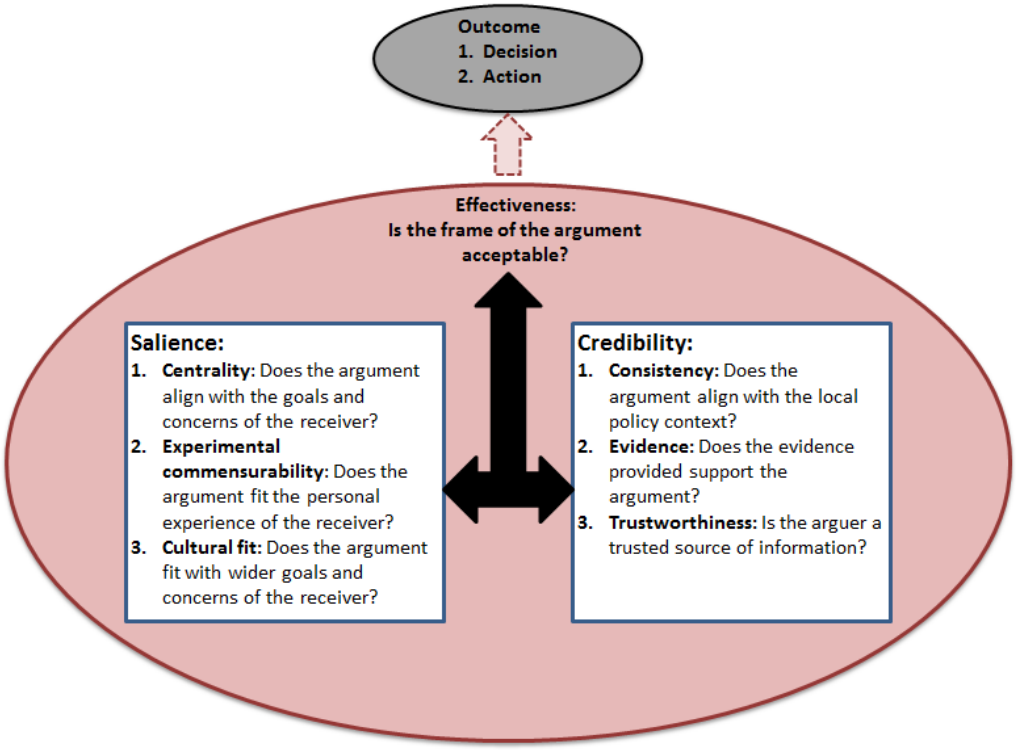


Figure 2: Theoretical framework to analysis the effectiveness of argumentation processes (adapted from Benford and Snow, 2000)



Analysis

As described by Ryan and Bernard (2003) a thematic approach was used to undertake this analysis, where prior theoretical understanding (see figures 1 and 2) was used alongside a more inductive approach to avoid the problem of forcing the data to fit the theory. As such, sub themes within and themes alongside were also considered. This blended approach reduces the disadvantage with a deductive approach in closing off alternative meanings and understanding in the analytical process which Lewins (2008) describes as maintaining 'theoretical openness'. This blended approach is advantageous in so far as it recognises the interplay with data management and developing descriptive and explanatory accounts during data analysis (Spencer et al., 2003).

The decision on how to transcribe raw data is important as it is a process of reduction, and can thus limit the type of analysis undertaken further on (Lapadat and Lindsay, 1999). It is therefore essential to select a level of data transcription that compliments the level of analysis required (McLellan et al., 2003). Transcription was carried out by the same researcher who collected the data, which resulted in a better level of familiarisation with the data. This is a crucial stage of the analytical process as it forms the foundation of further analytical stages (Ritchie et al., 2003). Crucially this reduces the likelihood of errors creeping into the text and reduces the time required for the researcher to fully connect with the data (Lapadat and Lindsay, 1999). All text was transcribed verbatim however non linguistic aspects of the raw data were not routinely recorded (Ross, 2010). Computer assisted qualitative data analysis (CAQDA) and word processor software aided the analytical process to organise the data into sub units and codes. This was advantageous as it provided flexibility, enabled the analytical process to be set out in a transparent way whilst not straying too far from the focus of the research (Fielding and Lee, 1993). Thus, pragmatic decisions were made during data analysis to maintain context, understanding and connection with the raw data but to cut out aspects very

clearly outside the remit of the research topic in the process of bringing out key theoretical concepts (Spencer et al., 2003). Constant cross checking was undertaken within and across codes to ensure segments were being allocated consistently, looking for explicit similarities and differences (Ryan and Bernard, 2003, Spencer et al., 2003). Initially small segments consisting of three or four words were used to label the codes to enable the research to remain grounded in the data (Spencer et al., 2003). Concurrently, more general categories were identifiable, often linking with theoretical concepts to group sub themes into themes. However to increase internal validity of the case study any potential discrepancies between the data and theory were examined to maintain an openness to alternative explanations than those outlined in the theoretical framework (Yin, 2003).

Results

This section presents the results of the case study. Firstly, the arguments to select the locally important (or priority) aspects of biodiversity for the LBAP are presented. Secondly, the arguments within the LBAP, which is made up of an action plan for each local biodiversity priority are presented. Lastly, the findings from each of the specific examples in the case study are presented. The findings are presented according to the relevant structural components of an argument as identified in figure 1, following which the findings relating to the effectiveness of arguments used in each specific argumentation process are presented using the criteria of credibility and salience as set out in figure 2.

The Greater Manchester local BAP

Circumstances

Prior to the inception of the BAP process local actors with an interest in conservation formed a group called the Greater Manchester advisory group including local authority ecologists, voluntary recorders and the local Wildlife Trust to discuss and plan conservation work across the Greater Manchester area. Following the shift in national policy towards the development of Biodiversity Action Plans this local advisory group developed into the Greater Manchester biodiversity project group to develop the Greater Manchester Local Biodiversity Plan in 2003. Preceding this an audit was undertaken in 2000 to highlight all the recordings in the Greater Manchester area of the species and habitats identified at a national level as being important for conservation.

Actions

The local steering group from the biodiversity group selected local priorities for conservation across Greater Manchester which "*basically involved going through all the data that was available and comparing those with the national list that had been produced at the time and then taking it to the group and saying these are the records, what do you think*?" (stakeholder 01). Following a review of the list of the national priority species and habitats the Greater Manchester LBAP was also reviewed to reflect that locally "*the thinking was starting to change, not landscape scale but more combining, like more habitat focus in a way, so it became more urban, more countryside, farmland, although we still did species ones, they were tied much more to habitats*" (stakeholder 01). Further updates have however have not occurred with the transition towards a more integrated local nature partnership, although a joint geodiversity and biodiversity action plan for quarries has since been developed.

Goals

The overall aim of the development of local biodiversity actions plans was "*to provide a conservation tool*" (Stakeholder 01) to protect nationally and locally important biodiversity (England Biodiversity Group 2003, Greater Manchester Biodiversity Project, 2009).

Concerns

The biodiversity audit identified records from as far back as the 1800's of nationally important species and habitats. However, only records from the 1970's onwards were considered for inclusion as a locally important species or habitat. The next key factor in the selection of locally important species was the availability of local support and ecological expertise as one interviewee commented that "*in part it might have been influenced by the make-up of the group in terms of what people's area of interest were*" (stakeholder 02). Similarly another interviewee commented that "*the only reason things didn't get included was because...we couldn't get anyone to write them*" (stakeholder 01). In addition concerns involved in the selection process (table 2 below) also relate to political support "*because its ten districts and its political, then it was which occurs in which districts?"* (stakeholder 01). More directly however concerns also related to maintaining and developing support not just for biodiversity action but more widely for specific bodies as one interviewee revealed "*my line manager [...] was very keen on it [...] and our local authority partners were very interested because they own a lot of land with [this species] on it so it was a sort of interest to them [..] because you know some of our funding came through the local authority so [...] we were interested in it anyway but obviously because it was something they wanted to see, it was current and important to them*" (Stakeholder 02).

Table 2: Concerns in the process of selecting locally important biodiversity in Greater Manchester

Concerns
1. Distribution across all political areas to gain political support
2. Time since last local recording (1970 onwards)
3. Availability of local expertise
4. Support for partners and to reinforce relationships

Currently each specific action plan explains the ecology of each species or habitat, its known status, factors leading to its decline and specific actions to contribute to its protection and enhancement across Greater Manchester. Within the Local biodiversity action 25 different concerns are highlighted which provide reasons for the need to act to conserve biodiversity locally (see table 3 below). This involves a particular emphasis throughout the text on the institutional framework in place to conserve biodiversity including European and national legislation. These attempt to structure aspects of social organisation by delineating acceptable action and thus can potentially restrict the type of actions available. Similarly, the text also highlights reason why biodiversity is threatened and therefore the need for concerted action. To move away from "*viewing each habitat and species in isolation of each other, consideration [...was] given to the surrounding areas to promote linking of habitats and populations to provide a more integrated approach*" (Greater Manchester Biodiversity Project, 2009). AS such specific action plans have been developed for managed urban green spaces, grasslands, lowland mosslands, native woodlands, hedgerows and quarries. Thus diversifying away from ecological classifications based on habitats and species.

These plans often include more of an emphasis on positively framed concerns alongside negatively framed concerns relating to threats for biodiversity. This is highlighted using frame analysis of the Local

Biodiversity Action Plan document. This positive framing involves benefits people get from biodiversity and benefits to biodiversity from people. For example urban green spaces "*provide green breaks in development and contribute to the health and wellbeing of local people. Their proximity to schools and housing make them an ideal resource for learning about the natural world*" (Greater Manchester biodiversity project, 2003). Some issues are framed both positively and negatively. For example, climate change as a threat to biodiversity and biodiversity benefits to help society mitigate the effects of climate change. Additionally, "*it is important to address provisions of access [for the conservation of geodiversity and biodiversity in quarries] which will enable features to be studied or otherwise appreciated as part of our heritage. If access is not possible or limited, the usefulness of some features to science and society at large is substantially reduced*" (Greater Manchester biodiversity project, 2011). However, concerns relating to the loss of woodland include "*recreational activities including motorcycling, scrambling and dog walking"* (Greater Manchester biodiversity project, 2009). Conversely the action plans with a focus on the species scale do not include any positively framed concerns. This different positive and negative framing of concerns is shown in table 3 below.

Table 3: Concerns identified in the LBAP for conserving locally important species and habitats

Concerns	Action frame
1. Duty to protect internationally important species and habitats	Negative - restriction
2. Obligation to protect nationally important species and habitats	Negative - restriction
3. Duty to protect nationally designated sites important for biodiversity	Negative - restriction
4. Duty to protect nationally important species and habitats	Negative - restriction
5. Obligation to locally designated sites important for biodiversity	Negative - restriction
6. Climate change	Negative - threat
7. Human activities (development, agricultural)	Negative - threat
8. Inappropriate management (especially for specialised species and habitats)	Negative - threat
9. Recreation pressure	Negative - threat
10. Socially undervalued habitats require special action	Negative - threat
11. Low genetic diversity and disease	Negative - threat
12. Invasive species	Negative - threat
13. Low awareness (results in aspects of biodiversity being overlooked)	Negative - threat
14. Vandalism and anti-social behaviour such as fires and fly tipping	Negative - threat
15. Cultural and natural heritage are linked	Positive - opportunity
16. Contribution to local character distinctiveness	Positive - opportunity
17. Contribution to other goals such as flood prevention	Positive - opportunity
18. Contribution to other goals such as water quality	Positive - opportunity
19. Contribution to other goals such as climate change mitigation	Positive - opportunity
20. Enhancing people's lives in urban areas	Positive - opportunity
21. Visual attractiveness in urban areas	Positive - opportunity
22. Reducing costs	Positive - opportunity
23. Resource efficiency of restoration and management	Positive - opportunity
24. Increasing social value of biodiversity through public access	Positive - opportunity

Source: Frame analysis of Greater Manchester Local Biodiversity Action

Outcomes

Interviewees also explained how useful the LBAP was for their work in general. This led one interviewee to comment that the LBAP "*basically highlights important priority species and habitats, well you tend to know what those are anyway, because the section 40 species and habitats in the Natural Environment and Rural*

Communities Act [2006] anyway, so [the LBAP] sort of doubles up on that[.....] but again there are others that we feel should have been in that aren't " (stakeholder 06). Indeed, interviewees highlighted blue bell woods, wet woodland, tree sparrow *(Passer montanus)* and red squirrel *(Sciurus vulgaris)* which could have also been included in the LBAP list of important biodiversity. Furthermore interviewees held different views on the usefulness of grouping species and habitats together and more generic categories such as woodland and urban green spaces, although all interviewees acknowledged that the main concern was the availability of resources as "*they tried to catch all because, you know, the process of writing these damn things isn't easy, it takes time*" (stakeholder 03). Some interviewees felt that this new, hybrid categorisation was useful because it provided "*a wider kind of catch all [.....] by broadening it out it means that we can tie in with a lot more [of our activities]"* (stakeholder 02). In contrast however other interviewees commented that "*there isn't anything I would take off, well perhaps except urban green spaces, but that was [an organisation] justifying their existence, which is kind of what they do*" (stakeholder 03). Even in the process of developing the LBAP "*I think we had some arguments about birds and how to group them [....] it was a bit more about how valuable it is if you group things together [....] do you lose the value of that [species] if you are doing a joint one*" (stakeholder 01). Similarly, other interviewees recognised the potential problems with the grouping process as one commented "*when you read it, it's all about trees, you know we got nice trees and we need to keep trees and it's nice to have trees but [....] a nice woodland has got to have vertical structure, not just trees, it's got to have an under storey, it's got to have ground flora, it's no good just having a canopy, it's not really a woodland, it's a clump of trees and I am not sure [the LBAP] picks up on that*" (stakeholder 06). A number of specific activities were mentioned by interviewees where the LBAP is specifically used (see table 4 below). This included "*using the document as justification for things in terms of my [....funding] applications"* (stakeholder 02). Specifically interviewees commented that, this "*shows that somebody has considered the local context*" (stakeholder 03) in funding applications. Furthermore interviewees highlighted the usefulness of the local important species and habitats LBAP in the planning process as "*the LBAP is mentioned as part of the guidance for planning and development so it is important in that respect [.....] and [the LBAP] adds a layer of protection [...] it gives you more leverage, you know, to justify why you are asking for these [planning] conditions "* (stakeholder 06). Although one interviewee commented that "*I'm not sure what is the benefit of the local BAP because the local BAP merely says that in effect there's a national BAP [....] I'm not sure there is a lot of benefit to a local one when there is a national one because you tend to work to the national criteria*" (stakeholder 03). Lastly, interviewees also highlighted that the LBAP helps to guide their own conservation activities, by acting as a sort of check list for management plans and internally securing funds. Indeed the usefulness of the LBAP to biodiversity practitioners led one interviewee to comment that the LBAP "*is still used in the ecology/ conservation field but I'm just not sure that it's sort of translating to the sort of [wider context*]" (stakeholder 01). However, interviewees recognised the important role of the biodiversity practitioner in transmitting and translating why it is important to conserve the locally important biodiversity. As one interviewee commented "*you see the people you are arguing with are often the planners, developers and land owners, so I think providing you've got something that say's this is important, worthy of protection, you can explain to them why, in your own words that they will understand depending on who you are talking to, so I don't think it is necessary [...to have] all the arguments set out in a list [...] you use different language [with different audiences]"* (stakeholder 06).

Table 4: Identified uses of the Local Biodiversity Action Plan (LBAP) in conservation activities undertaken by interviewees

Outcomes - use of the LBAP
• To guide and inform management planning for locally designated conservation sites

- To provide leverage to arguments for conservation to influence planning application decisions
- To demonstrate consideration for the local context in funding applications

Following interviewees sharing their views on the process for selecting locally important biodiversity and the use of the LBAP in their general activities, interviewees were then asked to describe a specific example of recent interaction they have been involved in which involved activities to conserve biodiversity. The findings relating to these specific examples are presented below.

Arguments used during interactions to achieve actions to conserve biodiversity

Example 1: Brownfield site development

Circumstances

The site which cannot be identified due to potential issues in compliance with the EU Habitats Directive, falls within three local district boundaries and was previously worked to extract natural resources. Previous planning approvals included conditions that following extraction the site would be restored to a country park, involving the creation of woodland and grassland habitats, and a business park. Great crested newts (*Triturus cristatus)* had colonised wetland habitat on the site and as a result this central area had been locally designated as an important site for biodiversity which are cited in the local plan for protection. This designated area retained more biodiversity value during extraction on the site compared to other areas which were "*sort of just decimated*" (stakeholder 01) although the boundary "*has been regarded as 'suspended' [...] for some years during the [resource extraction] and subsequent restoration of the site [...although there has been] efforts to conserve nature conservation interests on the site*" (Planning application consultation response, 2013). Furthermore, "*there had been large areas of open land and the site had become very good for farmland birds and brown hares and the bits that weren't being [extracted] there were water voles coming in and the farm buildings had barn owls and bats roosting in them*" (stakeholder 01). As a result the arguer, a local authority ecologist, worked with an ecological consultant representing the site developers (the receiver in this case) to alter the original restoration plan because "*it was produced [...] with not necessarily much thought with what was actually on the site and what the site was good for, because at the time it was all about planting trees and there was a community forest initiative going on so it was a huge woodland area [...] and it wasn't actually going to benefit the newts or farm landscape that the site was really valuable for [.....]. The outcome was that it was [then] all going to be restored to a country park, a farm landscape with biodiversity enhancements [and the] ponds restored" (stakeholder 01)* thus gaining greater benefits for biodiversity. Although "*part of the [site] was always going to be a business park but then the landowners [...] decided they wanted to restore more of it to a business park so they were taking large chunks of what was going to be a country park and putting it in [as part of the business park]*" (stakeholder 01). As a result, there has been discussion over several years between the arguer and the receiver in anticipation of a formal planning application for the development of the site. Due to "*the current economic climate, anything that creates jobs for people*" (stakeholder 01) is currently considered of high importance. Indeed, recently the site, which is very close to a motorway junction, "*is going through the local plan process to identify it as an economic development site*" (stakeholder 01).

Claim for Action

The arguer claimed that the ponds in the centre of the site should be maintained and enhanced by connecting this habitat with other pond habitats containing great crested newts in other parts of the site.

Goal
The goal of the arguer in this interaction was to maintain and enhance the current biodiversity (species and habitats) value of the site.

Concerns/ reasons to conserve biodiversity
During the process of discussions prior to formal submission of the planning application in arguing to achieve the desired goal the arguer commented that "*I don't think we ever used carrots, I think it was more sticks [...] it was legislation, local wildlife sites, BAP species, European legislation, the local plan*" (stakeholder 01). These concerns and the different framing of these concerns which form premises in the argument are shown in table 5 below.

Table 5: Argument use to conserve biodiversity in example 1

Circumstances of site:	**Social:** 1. Past natural resource extraction 2. Past agreement to restore the site to provide net gain in biodiversity in the development of a business park and country park. 3. Site located close to motorway junction 4. Wider economic crisis **Natural:** 5. Wetland and grassland habitats 6. Colonisation of site by a range of species **Institutional:** 7. Locally designated site for conservation in centre of site but boundary suspended during natural resource extraction on the rest of the site 8. Local development plan policies to protect important species, habitats and sites 9. Local development plan being updated to allocate site as an economic development site
Concerns/ reasons to act:	**Negative framing - restriction** 1. Duty to protect internationally (EU) important species 2. Duty to protect national priority species and habitats 3. Obligation to protect local priority habitats and species 4. Obligation to protected locally designated for biodiversity
Goals:	Maintain and enhance the current conservation value of species and habitats on the site.
Claims for Action:	Maintain and enhance pond habitat in the centre of the site and connect this with other pond habitats at the edge of the site.
Outcomes:	1. Planning permission granted including the creation of new habitat within the country park to compensate for the pond habitats lost in the business park footprint. 2. Important conservation species which will be directly impacted will be translocated to other parts of the site. 3. Habitat creation designed to achieve other goals within the

	business park area.
Effectiveness of argument	**Ineffective argumentation** **<u>Salience</u>** **Centrality** • Negative consequences for the economic goals of the receiver and decision maker **<u>Credibility</u>** **Consistency** • Identification of site as an economic development site in Local planning policy • Suspension of the locally designated site boundary **Evidence** • Ecological survey concluded great crested newts had moved from the centre of the site

Outcome

The site developers submitted a formal application which involved the footprint of the business park in the centre of the site where the pond habitats were located. As the arguer interviewed commented "*the conservation area in the middle of the site they basically want to get rid of and put everything around the edges*" (Stakeholder 01). Although an ecological survey showed "*that this species is still present on the site*" (Planning application consultation response, 2013), a licence to "*derogate from the terms of the legislation protecting newts*" (planning application consultation response, 2013) could be granted to enable the development to proceed and the developers "*argument are that the [biodiversity] interests in the centre of the site has migrated away [...] and also because on the east side of the site there is a lot of anti social behaviour that causes damage so that they can't provide compensation that is going to last [...] so it's better to put it on the [west] side of the site*" (stakeholder 01). As a result the east side would include "*fishing ponds and sort of habitat barriers so making it marshy so people can't get in and planting thorny hedges*" (stakeholder 01). Compensatory habitat is being created within the new country park area including new ponds and wetland areas and following submission of formal applications planning permission was granted with no objection from the local authority ecology team although conditions were attached. As the arguer commented "*it's not going to be ideal, and it's not going to be what we wanted, but it's the best we could get, and unfortunately the planning system, that's the way it is a lot of the time [...] it's a negation [...] and then we work with whatever decision [the council] have made to get the best for ecology and biodiversity [...] they did have a two for one policy [to compensate for the loss of ponds] but they haven't got that now [...] it's more a landscape barrier to the business park*" (stakeholder 01).

Effectiveness of arguments in use

The argument for the need to protect and enhance the conservation value of the species and habitats which existed on the site by retaining the wetland habitat in the centre of the site (see table 5 above) was unsuccessful. As one interviewee explained this decision was undertaken because "*the economic argument in their view outweigh the ecology arguments because it's the, you know, because of the employment [potential]*" (stakeholder 01). The counter claim was accepted by the decision maker. This involved the habitat creation in the country park, moving species and creating multi functional natural features to meet other goals, for example vistas, flood storage, to control access and provide recreation facilities. As such the

habitat loss on the site may not be considered "*significant in the medium to long term; in fact there ought to be a significant local habitat gain*" (planning application consultation response, 2013). The argument put forward by the arguer involved institutional concerns relating to an obligation to comply with national and local biodiversity and local development policy and duties to comply with national and European legislation. However, a number of factors potentially weaken this argument. Firstly, although local development policies included the protection of locally important sites, species and habitats the credibility of this argument was reduced by the previous suspension of the site boundary by weakening its alignment or consistency with local policies. Secondly the credibility of the argument was also weakened by the evidence provided by "*their own ecologist who has been doing surveys on the site for years [...] they never sent us the data, they were always telling us, oh the newts have moved over, but actually when you look at the data they presented it's a bit of an iffy argument, because there are still newts in the middle of the site*" (stakeholder 01). Ultimately the argument put forward was not salient in so far as it had negative consequences and therefore was not central to the goals of the receiver which related to the perceived economic value of the site.

Example 2: Funding application to procure land for conservation

Circumstances

The site consists of wetland habitats created as a direct result of subsidence due to past natural resource extraction. The site was previously owned by a local farmer who "*had sheep on there, so primarily they were farming it and they were farming it in what they thought was a wildlife friendly manner as best they could*" (Stakeholder 02). Part of the site is nationally designated as a Site of Special Scientific Interest (SSSI) interspersed by farmland. However "*farming practices at [the site] over the last few decades have not benefited the wet grassland and as such the SSSI has deteriorated into unfavourable condition*" (Heritage Lottery fund application, 2010) although "*the landowner and his wife in their eyes were keen on wildlife, they didn't know a huge amount about it but they liked the idea of wildlife [....] liked the idea of selling it to a wildlife organisation"* (stakeholder 02). Nearby are a number of other sites which are managed by organisations for conservation, for example the arguer interviewed commented that there one site "*is a stones through [away] about 50 metres away along a hedgerow [...] I think people did sneakily cross the land and upset the farmer*" (stakeholder 02) and the area is used not only by walkers along a network of formal footpaths but also by bird watchers.

Claim for Action

Working in partnership with a manager from the local wildlife trust a funding application was written and submitted to gain the funds for buying the SSSI and adjacent farmland "*to secure the site [...] and make management access easier "* (stakeholder 02).

Goal

The goal of the arguer was to benefit biodiversity through "*well managed habitats*" (Heritage Lottery Fund application 2010) "*but also part of our remit is to plant more trees and engage people in doing that*" (stakeholder 02). Furthermore the arguer also had an "*objective in terms of [directly] linking two big sister sites together*"(stakeholder 02) within a wider landscape encompassing "*parks, woodlands, wetlands, canals and green spaces*" (Wigan Metropolitan Borough council website, 2014).

Concerns/ reasons to act

One of the main reasons put forward by the arguer to apply for funding from the Heritage Lottery fund (the receiver) was the site's "*biological heritage [...] making the link with the site and [industrial] heritage"* (stakeholder 02). Specifically, the "*very special biodiversity and landscape heritage of [the site] has been created by the industrial heritage of the area*" (Heritage Lottery fund application, 2010) and securing funding for the site would "*maximise the benefits of the industrial heritage of the area*" (Heritage Lottery fund application, 2010). Furthermore concerns included climate change mitigation as "*now these places themselves in terms of absorbing carbon and water and these kind of positive impacts on climate [….because] the legacy of the industrial works has led to this fantastic wildlife resource [...which] can help mitigate the negative effects of that original [natural resource extraction] in terms of climate change*" (stakeholder 02). The benefits from the strategic location of the site within the wider landscape was also emphasised "*as it will form a key feature within the Wigan Flashes area and help increase connections for both wildlife and people*" (Heritage Lottery fund application, 2010). Similarly a range of other benefits to people were also provided as reasons to secure funding for this site. These included benefits to the wider community as "*the tranquil, green, attractive local environments created by these conservation areas help to improve mental wellbeing whilst opportunities for outdoor physical exercise also offer physical and health benefits*" (Heritage Lottery fund application, 2010). Furthermore "*the protection of these habitats is vitally important […as] it provides an area where people can get away from the bustle of urban life*" (Heritage Lottery fund application, 2010). Specifically children were emphasised as beneficiaries through organised events in partnership with local schools where "*each participant has an opportunity to develop intrinsic motivation and sound emotional and social skills*" (Heritage Lottery fund application, 2010). However the arguer also highlighted the benefit of engaging people could have in raising awareness and support for the protection of both the natural and cultural heritage on the site as currently "*there is little information in the area about the industrial heritage and the way in which it has caused this wonderful opportunity for nature to flourish*" (Heritage Lottery fund application, 2010). Other concerns highlighted by the arguer related to clean air, clean water and flood protection as biodiversity can "*help to clean air and water courses for the benefit of the wider community [….] This wet grassland site will also provide an important flood alleviation resource for the local area which will benefit local people and businesses*" (Heritage Lottery fund application 2010). The arguer also emphasised the current recreational use of the site by local people who "*take advantage of the site either from the canal towpath looking over the site using binoculars to view bird life or alongside the periphery taking advantage of the public rights of way, tow paths and other nearby walking trails*" (Heritage Lottery fund application, 2010). However, although a strong emphasis was placed on increasing public access as a reason in the funding application, public access was also highlighted as a threat to the conservation value on part of the site. This was highlighted in discussions with other partners in preparation of the bid that access across the whole site "*was not the best thing to do*" (stakeholder 02) and as such "during *the breeding season much of [this area] will be closed off*" (Heritage Lottery fund application 2010). However the "*interest in [the farmland part of the site] wasn't as great because there wasn't any interesting bird life on it*" (stakeholder 02).

A second key reason for the need to purchase this site was that part of it was designated as a nationally important site (site of special scientific interest or SSSI). Furthermore the presence of nationally important species and habitats on the site was also highlighted and both these priority species, habitats and SSSIs are protected within national legislation. Locally important species and habitats and the presence of a locally designated site was also emphasised in the funding application although the emphasis on this lower level was more of an obligation to consider local policies as the arguer explained "*being a site of biological*

importance which is Greater Manchester, it's lower level, it's locally designated so in some ways SSSI trumps it because it is England wide" (stakeholder 02). These concerns and the different framing of these concerns which form premises in the argument are shown in table 6 below.

Table 6: Argument use to conserve biodiversity in example 2

Circumstances of site:	**Social:** 1. Past natural resource extraction 2. Land managed for farming 3. Landowner keen on wildlife 4. Informal access across privately owned land between this site and a nearby site 5. Surrounding formal network of a footpaths used by local walkers 6. SSSI site used by bird watchers **Natural:** 7. Breeding wetland birds 8. Wet grassland 9. Farmland 10. Surrounded by a network of wetland and woodland habitats **Institutional:** 11. Part of the site designated as SSSI but classified as in unfavourable condition
Concerns/ reasons to act:	**Negative framing** 1. Duty to protect national priority species and habitats 2. Duty to protect nationally designated sites for conservation 3. Obligation to protect local priority species and habitats 4. Obligation to protect a locally designated site for conservation 5. Natural resources extracted from the site have contributed to climate change 6. Uncontrolled access to can damage conservation value by disturbing breeding birds **Positive framing** 7. Cultural heritage and natural heritage are linked and can be conserved together 8. Biodiversity conservation can contribute to climate change adaptation and mitigation 9. Ecological networks provide benefits to people 10. Ecological networks provide benefits to wildlife 11. Biodiversity contributes to physical health 12. Biodiversity contributes to mental wellbeing (hustle and bustle) 13. Engaging children with biodiversity can benefit child development 14. Engaging people with the natural and cultural heritage on the site increases support and awareness for these goals 15. Biodiversity contributes to clean air and water

	16. Biodiversity can benefit local people and businesses by providing natural flood storage areas 17. Biodiversity provides recreation opportunities for local people
Goals:	To improve the biodiversity value of the SSSI, create woodland habitat on adjacent farmland, engage local people and integrate the site into a wider network of sites managed for biodiversity.
Claims for Action:	To gain funding to purchase the SSSI and adjacent farmland and improve the management access to the site.
Outcomes:	1. Application for funding successful 2. Further applications invited by funder
Effectiveness of argument	**Effective argumentation** **<u>Salience</u>** **Centrality** • Central to the receivers goal to conserve natural and cultural heritage • Central to the goals of local user groups • Central to the receivers goal to engage people **<u>Credibility</u>** **Evidence** • Evidence of considering the local context and consultation local user groups (letters of support)

Outcome

The outcome of the funding application was successful in securing the funding to purchase the site. Indeed the arguer explained that afterwards the funders hinted that "*if we wanted to put another application in, you know, it would be looked on favourably because they liked our [bid] and the scheme itself was nominated for, they have annual awards […] we didn't get it, we had a bit of Perspex saying we were finalist to pin on the wall*" (stakeholder 02).

Effectiveness of arguments in use

The argument for the need to secure funding to purchase this site (see table 6) was effective. As the arguer explained "*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*" (stakeholder 02). Furthermore the arguer explained that "*it would have been very difficult if it was strictly just the SSSI boundary we had purchased*" (stakeholder 02). Specifically, including not only the SSSI land for conservation activities but also local farmland for woodland habitat creation and access on to the site in the funding application increased the salience of the argument to the funder. As such the argument used highlighted the centrality of the argument with the goals of the receiver. These focus on the need to sustain and transform "*a wide range of heritage [and to] advocate for the value of heritage to modern life. From museums, parks and historic places to archaeology, natural environment and cultural traditions, [the funders] invest in every part of our heritage*" (Heritage Lottery Fund website, 2014). To increase the credibility of the argument the arguer commented "*we were looking for letters of support [from local people]"* (stakeholder 02). This included the local bird group "*and there were some fears […but] we got round them and proved that what we were planning to do wasn't going to adversely affect the bird*

population […] the big issue was we are not going to plant up the SSSI" (stakeholder 02). This highlights that the arguer increased the credibility of the argument by providing evidence that the argument was also salient with the goals of the receiver by having no negative consequences for local user group interests.

Example 3: Peri urban green space management

Circumstances

This complex of interconnected sites has "*got quite a lot of trees and around it*" (stakeholder 03) and "*is predominantly located within greenbelt [land] and floodplain [....] close to densely populated areas [...] which has not had a significant level of management for many years"* (Mersey Valley Joint Committee, 2013). Recognising the potential liabilities and increased costs relating to this "*failure to manage*" (Mersey Valley Joint Committee, 2013) the site owners established a partnership involving a local community forest trust to coordinate fundraising and delivery of access and habitat management and community engagement requirements across the sites. The local wildlife trust manager (the arguer) has a strong interest in willow tits (*Poecile montanus*) specifically this has involved attending national technical meetings and as a post graduate student in his spare time has "*done some research into willow tit and what it is they like to do*" (stakeholder 03). The arguer commented that "*part of the problem is for a species like that that nobody really knows what the conservation habitats requirements is until like the last couple of years literally [...] it's very specific and that seems to be what is causing the decline*" (stakeholder 03). Specifically, the "*problem is they don't move or migrate very far in their lifetime, so if you block corridors [...] you can severely screw them up*" (stakeholder 03). The willow tit "*is a species that especially likes damp willow woodland and at the point where it is starting to collapse in on itself [....which is] exactly the opposite of a charismatic habitats [...], nobody loves crappy scrub*" (stakeholder 03). Indeed, "*willow tit [...] needs a whole landscape, it needs essentially crap habitats [...] it likes impeded drainage, brown field sites, secondary willow growth[....] although it's is a woodland species it doesn't like pucker woodland [....and they] plant oak trees and ash trees and see areas of scrub as being halfway to their outputs [...] so you've got the builders of [superstores] at one end but people who are essentially on your side also mucking up their day*" (stakeholder 03). The Manager (receiver) coordinating the management of these sites "*was aware that [the willow tit] is a species of interest and one that we have a particular concentration of in wester Greater Manchester*" (stakeholder 13) and on the site he "*had heard willow tits and had been equally asked [...] to come up with a project to plant ash and oak [on the site*]" (stakeholder 03).

Claim for Action

The claim for action put forward by the arguer was for the community forest trust in its management of this complex of sites to "*stop planting canopy trees throughout willow tit woodland*" (stakeholder 03) by leaving the scrub habitat in "*bits the size of small buildings [...] close together*" (stakeholder 13).

Goals

The goals of the arguer relates to "*broader ecology [...] based around ecological conservation outputs and in conservation I would actually look at what we already, what we have got there, how can we enhance the existing biodiversity of the landscape, so slightly [...] traditional, but with a public focus*" (stakeholder 03). However, linked to the arguers interest in willow tits he commented that "*it's an ongoing campaign that I have got going*" (stakeholder 03) to raise awareness about the habitat requirements of willow tits.

Concerns/ reasons to act

The argument used in this interaction related to a concern for fairness in conservation activities. Specifically this involved some species getting a disproportionate amount of conservation resources relative to their conservation status. As the arguer commented "*willow tits don't get a look in [...] and they are as rare as giant pandas and look at the money that has been spent on giant panda [....] and black and white birds [..] get ignored [...] we should be caring about this [...] and possibly we should be asking the question is crappy scrub good?"* (stakeholder 03). The arguer also commented that "*it isn't long since [National conservation organisations] got together and cut down scrub [at a site] which was for natter jack toads and there is like 40,000 natter jack toads in Britain versus 3,500 willow tits, how does that equate?"* (stakeholder 03). Furthermore "*trees are seen to be good [...] people understand woodland [...] you go for a walk in the Lake District up the hills but when was the last time you walked around an ex power station site?*" (stakeholder 03). These concerns and the different framing of these concerns which form premises in the argument are shown in table 7 below.

Table 7: Argument use to conserve biodiversity in example 3

Circumstances of site:	**Social:** 1. Situated on the urban fringe 2. Lack of past management 3. New management partnership involving local community forest trust 4. Receiver aware of the local importance of the species 5. Arguer with specific expertise on species 6. Increase in knowledge about habitat requirements of species 7. Uncharismatic/ unsightly habitat type **Natural:** 8. Situated in floodplain 9. Damp woodland/ scrub habitat 10. Willow tit present on site **Institutional:** 11. Site designated as green belt leading restrictions about future use
Concerns/ reasons to act:	**Negative framing** The use of resources is unfair and should be proportionate to the conservation status of species and habitats.
Goals:	1. To conserve biodiversity 2. To raise awareness of the habitat requirements of willow tit
Claims for Action:	Management of the site to provide suitable willow tit habitat
Outcomes:	1. Small areas of suitable habitat for willow tit on site retained which are close together 2. Increased awareness of willow tit in the Community Forest Trust work 3. Scaling up being planned for habitat conservation and creation across a landscape
Effectiveness of argument	**Effective argumentation** **<u>Salience</u>** **Centrality**

	• Only small scrub needed so other land can be managed to meet other goals on sites • Potential for up scaling for a network of sites at the landscape level • Potential salience for funders and businesses as a tangible output **Experimental commensurability** • Receiver had heard species on the site **Credibility** **Consistency** • Receiver aware that species is locally and nationally important **Trustworthiness** • Existing professional relationship • Arguers expertise in ecology • Arguers research and knowledge of species

Outcome

The arguer was successful in arguing for more appropriate management for willow tit across the complex of sites. The receiver explained that "*as a result of this some of my colleagues were out doing a bit of site surveying and came back and said I think we have spotted a potential willow tit nest [...so] people are actually out there looking, we are identifying sites to be managed for willow tit all the time now*" (stakeholder 13). In the management of sites the community forest trust is now "*starting to think yes, we need these little bands of suitable habitat not too far from each other so the idea will be once we have done this and we spot gaps, you know, it is to map all of this onto GIS and we can spot gaps where we can create new willow tit habitat within this*" (stakeholder 13).

Effectiveness of arguments in use

The argument to manage this site was effective in so far as the claim was accepted and management on the site was altered to benefit willow tits. The receiver explained that "*we don't need a lot of land for this [..] if we have got our existing woodland [...we can manage] quite narrow, small strips around those [...] what it seemed to need was actually much more deliverable in lots of ways, we don't have to massively change what we do*" (stakeholder 13). Thus, the argument put forward by the arguer was salient to the goals of the receiver who was able to incorporate the goals of the arguer alongside other goals. Indeed, the goals of the arguer and the receiver may have already been similar as the arguer explained "*we were essentially singing from the same hymn sheet, so we have got similar goals [although we work for] different organisations [because] I know that he is kind of interested in those sort of things*" (stakeholder 03). In addition to the centrality to the receiver's goals and interests the argument also resonated with the receiver as it aligned with the receiver's personal experience, thus also contributing to the salience of the argument as the arguer commented that the receiver had "*heard willow tits [so he knew about it*"(stakeholder 03). Indeed the receiver confirmed this by explaining that "*I was very interested in it because I was aware that it's a species of interest and one that we have a particular concentration in wester Greater Manchester*" (stakeholder 13). Furthermore, this species "*doesn't mind people unlike some other species, we can actually encourage this species in bits of land that will be fairly busy [...] so the sogginess of the habitat and the tattiness [of the habitat] for want of a better word, will need to be sold and thought about but I don't see it as being a major problem*" (stakeholder 13). In addition the salience of the argument not only aligned with the site conditions

(see table 7 above) and the goals of the receiver for the management of the site, but was also salient to the wider goals of the receiver. As the receiver explained "*we are still working at the site scale [...] but this is the second idea that we have got at a landscape scale [...] I can see this being another project [....] across the Mersey Valley so we can work with [other organisations] and so on and you know I am not being widely optimistic but it's the kind of thing that could attract some media interest and potentially a bit of sponsorship as well as grants because it is quite specific [...] the right business might be interested in this one [as] it's easy for people outside the ecology sphere to get their heads round*" (stakeholder 13).
The wider salience of this argument was also highlighted by the receiver taking on the role of an arguer to help raise awareness about willow tit conservation and pass on the argument to potentially new audiences. This involved the receiver producing "*a two page summary of the main points [about willow tit conservation.....] and forwarded it on to at least half a dozen people involved [...] and what I am looking to do is develop a project in the Mersey valley about managing for willow tit*" (stakeholder 13). This involves the use of some of the original arguments, as the community forest trust manager explained "*I know it was a bit of a joke but he was pointing out they were rarer than giant pandas and that's something that you know I use when I am talking to people*" (stakeholder 13). However, this diffusion process also involved other concerns, for example the receiver commented that the "*panda I use less than actually pointing out that we actually have 10% of the national population [...] because [...] a lot of people are thinking our nature in Greater Manchester is second rate and get people to understand that we actually have something that is quite important here that we need to think about*" (stakeholder 03). Thus, the receiver adapted the argument to make it resonate with a different audience.
The credibility of the arguer may also have increased the effectiveness of this argumentation process due to an existing relationship and trust between the arguer and receiver. As the arguer explained "*for 15 years I've worked here [and] we do quite a few joint meetings [....] I think it does add some weight*" (stakeholder 03). This was confirmed by the receiver who commented that "*I know [the arguer] does various bits of research [...] and there was just the shear experience of what works [...] some of it was quite surprising to me [...]what they don't like was quite persuasive [...but] you know if somebody else had come and given the same presentation [...] maybe I would have taken it with a bit more of a pinch of salt [...] but because [the arguer] knows his nature and knows his birds, I have confidence in that. I also have confidence in his reasonableness [...] he wasn't somebody coming to tell me to change what I am doing who doesn't see the bigger picture, he knows what we are trying to achieve, he knows we do things for good reason*" (stakeholder 13). Thus, the centrality of the argument to the specific but also wider goals and interests of the receiver contributed to the effectiveness of this argumentation process, but this was also connected to the credibility of the arguer and argument.

Example 4: Landscape scale public engagement

Circumstances

This example focuses on the management of a local authority countryside service "*which is under extreme pressure [and] they have lost lots of staff due to budget cuts [....] as it is not a statutory service*" (stakeholder 04). Although the service covers the whole district, there is a visitor's centre which is "*an absolute classic strategic gateway, well known [and] well supported by the public*" (stakeholder 04). In addition "*there was a perceive problem which was people would just come to the visitors centre [....] and*

they weren't going out into the wider landscape" (stakeholder 14). Despite this "*it's one of the most visited free to visit venues for the outdoors in the north of England, its well located for public transport, its right on the edge of [a national trail] and the special protected area (SPA), special area for conservation (SAC) and the canal SAC are three golf clubs away*" (stakeholder 04).

Claim for Action

Engaging with this strategic partnership to implement this project the aim was for the countryside service to provide a "*quality resource that they can use which helps them justify keeping open at the very basic level and providing a quality service to a wide range of users*" (stakeholder 04). For example to deliver interactive "*web based materials, [mobile] technology, events [and] activities [....] footpath improvements which would make it easier for people to get up there and access the area [...]. So it was kind of a multi strand thing [...] to disperse people out and get them to appreciate what is on their door step [...to] increase awareness [...and] then having some sort of extra care about it*" (stakeholder 14).

Goals

The arguer explained that the aim involved delivering "*some good green infrastructure [...] by taking something at a landscape scale [....and] making sure the jewels in the crown work [...] and continue to improve against the odds"* (stakeholder 04). Specifically the arguer commented that "*one thing about biodiversity which underpins it is treating it in isolation won't work [.....] it's embedded within and can be delivered through a whole range of vehicles, not just somebody saying with a sweat shirt, hello, I'm going to deliver biodiversity, that tends to get a fairly short shrift*" (stakeholder 04).

Concerns/ reasons to act

The key concern highlighted by the arguer is the need for smarter use of countryside resources and "*actually focus a better if smaller or more focused resource on [a specific] activity [...] which will allow us to use scarce resources more productively, more effectively*" (stakeholder 04). Engaging with a strategic partnership provides "*the opportunity to bring in new resources" (stakeholder 04).* However "*if you look at biodiversity on its own, the resource opportunities are very limited and therefore you have to be smarter in order to make that work*" (stakeholder 04). This can be overcome by "*recognising the natural environment is part and parcel of the wider cultural heritage*" (stakeholder 04). Furthermore, the conservation value associated with the international site designations across some parts of the landscape (Special Area for Conservation and Specially Protected Areas) was also included as a concern to emphasize the importance of the area for biodiversity. These concerns and the different framing of these concerns which form premises in the argument are shown in table 8 below.

Table 8: Argument use to conserve biodiversity in example 4

Circumstances of site:	**Social:** 1. Wider economic crisis 2. Cuts to Local authority budgets 3. Disproportionate cuts to countryside service budget 4. Popular visitors centre managed by countryside service 5. Perceived lack of engagement of visitors beyond the centre 6. Good access to visitors centre
Concerns/ reasons to act:	**Positive framing:** 1. Scarce resources can used better to be more productive and effective in delivering a countryside service 2. Resource opportunities exist by integrating biodiversity

	with cultural heritage goals 3. Resource opportunities exist by working in partnership with other organisations 4. The internationally designated sites within the landscape highlight its biodiversity value
Goals:	To take an integrated, landscape scale approach to deliver countryside services and protect a key asset.
Claims for Action:	1. To deliver a quality countryside service through the visitor centre. 2. Engage visitors in the wider countryside for increased awareness and care of the countryside.
Outcomes:	1. Range of interactive tools to raise awareness of the natural and cultural heritage developed but more focus on cultural than natural heritage. 2. Countryside service more connected with neighbouring local authorities
Effectiveness of argument	**Effective argumentation** **<u>Salience</u>** **Centrality** • Central to the goals of the receiver to conserve biodiversity • Central to the concerns of the receiver relating to reduced resources • Central to the goals of the receiver to engage people in the landscape

Outcome

The arguer commented that "*I would call it a success in process, it's been delivered successfully as a project which is actually been put in [for funding] and the initial phase has been completed but it's like anything, a project is only as successful as how you continue to manage it into the future so [...] yes, we have some good resources in place [...] we are getting good feedback*" (stakeholder 04). The receiver, one of the countryside service officers, worked alongside other partners to deliver a range of different resources, from interpretation boards, to booklets, interactive web tools linked to satellite imagery and GPS. Explaining the outcomes of this the receiver commented that involvement in this project has "*filled a big gap actually having access to some money to actually run some events, do some engagement*" (stakeholder 14). Furthermore, "*it was definitely good to work with people from different organisations and see how they approach things [...] now I have got really good contacts with people [in neighbouring] countryside service so we can sort of work together [...] if you stick to your own area it doesn't make sense in terms of what the public might want [....] I feel it has plugged us in as a small little service [...] into the bigger level*" (stakeholder 14). During the implementation of this project the arguer and the receiver worked closely on some aspects as "*there was some disagreement [with other partners....] and we had to push to get more wildlife stuff on there, I suppose some of the people may have been more the heritage side [...] so it was more community based than countryside based [....]if it is one thing I would like to have seen more of it would have been more on the wildlife but there was enough of it to sort of tick the box*" (stakeholder 14). Within this push to include wildlife more centrally in the project the receiver took one element of the previous argument regarding the positive message of international designations and also used it to emphasise the importance of the area for biodiversity. Indeed, the receiver commented that "*some people I think thought that people would find it irrelevant about what designation [for conservation the land] was,*

and whilst we agree with that, there is a story there about why that was done and why that's important" (stakeholder 14).

Effectiveness of arguments in use

This interaction was described by the arguer as an enabling process not argumentation as "*argument suggests that there is an adversarial approach [whereas] enable means that I can't see how you can do it but, you know, possibly you can convince me*" (stakeholder 04). Indeed the arguer set up the project and convinced the receiver to implement the project by negotiating the detail of activities with partners. As such this example is part of a larger process. However, the argument used to enable this project to be delivered through the countryside service focused on the cut in funding in the past and continued pressure on resources. Indeed, this argument was central to the concerns of the receiver, who commented that "*it's come at a really good time, without that we would have been really, really struggling [...] it definitely filled a void*" (stakeholder 14).

Example 5: Modification to residential property

Circumstances

This site relates to a planning application for work on a detached residential property "*close to a woodland [...which] had had records of bat roosts [and] suitable habitat was available in the surrounding area, like good woodland, there was already quite a lot of suitable habitat, the house next door [...] was suitable for bats*" (stakeholder 07). Within the planning system if there is good potential for bats the local authority will "*normally [...] ask for a survey and then once you find out what [is there]. Sometimes there aren't bats and sometimes it's not clear so you might ask for further survey work, so once you find there are bats there if they can provide enough information, like the nature of the roost and what species it is, then we make a decisions as to whether a Natural England licence might be required and [then] the council has to consider [...] the habitats regulations but if work can be done without the need for a licence then you don't need to consider [it*]" (stakeholder 07). This "*legislation has been in place for a long time but there was a judicial review in 2009 and Cheshire East [council] were actually prosecuted for not having regard for this legislation*" (stakeholder 07). The arguer explained "*basically the licence allows you to sort of break the law, so it would allow you to destroy some habitat of a protected species but [...the applicant has] to submit a method statement which says how you are going to do it without harming the individuals and then reinstate the habitat after*" (stakeholder 07).

Claim for Action

The arguer claimed a bat survey needed to be undertaken before the planning application could be granted, as the arguer explained "*I'd visited the site and thought it had good potential for bats and then through the planning officer we asked for a bat survey [.... which] you can't condition [to be undertaken after planning permission is granted]"* (stakeholder 07).

Goal

The aim of the arguer was to comply with the Habitats Regulations (2010) because "*if the council get it wrong then there's legal implications, so it's kind of the priority [...] my role is to make sure the council complies with the legislation [....which aims to] maintain favourable conservation status of [...] species*" (stakeholder 07) which are protected under the EU Habitats Directive.

Concerns/ reasons to act

The argument put forward by the arguer focused on the need for the local authority "*in exercising its functions have regard for these three tests [under the Conservation of Habitats and Species Regulations, 2010] so you need documents upfront basically, otherwise [the council] can't have considered them [in the planning decision]"* (stakeholder 07). However, the arguer explained that "*there are two layers [to the legislative framework, the Habitats Regulations is] more of a process [...] and then there is the other legislation that protects bats no matter [...] the only thing to tell [the applicant] is the councils legal obligation*"(stakeholder 07). Thus the arguer referred to duties set out by two different but linked pieces of legislation, one at the European level and the second at the national level. These concerns and the different framing of these concerns which form premises in the argument are shown in table 9 below.

Table 9: Argument use to conserve biodiversity in example 5

Circumstances of site:	**Social** 1. Residential property 2. Proprietor submitted an application to extent the property **Natural** 3. Mature woodland habitat **Institutional** 4. A case of a local authority having been prosecuted for failure to comply with legislation protecting species
Concerns/ reasons to act:	**Negative framing** 1. Duty to comply with National legislation (The Conservation of Habitats and Species Regulations, 2010) 2. Duty to comply with international legislation (The EU Habitats Directive)
Goals:	To ensure the Local Authority complies with its duties in exercising its functions
Claims for Action:	To undertake a bat survey as part of the planning application
Outcomes:	1. Bat survey undertaken in winter 2. Use of roof as maternity area, not winter roosting 3. Application approved with conditions for time of work and reinstating access points
Effectiveness in use	**Effective argumentation** **<u>Salience</u>** **Centrality** • Potential negative consequences **Experimental commensurability** • Receiver had seen species on the site **<u>Credibility</u>** **Evidence** • Species survey resulted in negative consequences not being realised

Outcome

The receiver organised a bat survey for the roof space which concluded that this work "*would have very minimal impact on the bats, it's a maternity wing rather than a winter roosting area and [...] most of the [access points] were on the south facing slope of the roof whereas any work [...] would impact on the north*

[...] so it was good news that the consultant could submit and a complete and adequate survey without waiting until the bats waking up from hibernation" (stakeholder 18). Indeed the arguer explained that following discussions with the applicant (the receiver) "*we were able to solve it [...] because [the survey highlighted that] the nature of the roost meant that they could do the work, it wasn't a winter hibernating roost [and] we were able to agree times when the work could be done [without disturbing the bats] so it hasn't delayed his planning decision much, we were able to condition certain measures [instead and] the planning permission has been granted*" (stakeholder 07).

Effectiveness of arguments in use

This argument was successful. It led to the applicant (the receiver) including a bat survey in the planning application and thus the local authority ecologist (the arguer) was able to recommend that planning permission was granted with a number of conditions. At first the receiver "*was quite resistant [...] he kept saying bats are protected by law anyway, he didn't want to have a survey because it would delay the application, he was saying we can condition a survey [instead]*" (stakeholder 07). Thus the receiver questioned the credibility of the argument in not being consistent with legislation. Indeed, the receiver responded by "*saying well I could remove my roof tomorrow without planning permission and destroy that bat roost*" (stakeholder 07). However, the arguer explained that then the receiver "*would commit the offence, but the council [also has a duty] when it makes its decisions [...] so [the receiver] understood why he had to do it*" (stakeholder 07).

The receiver commented that the arguer "*was very helpful in that she suggested that we get a bat consultant in because the bat consultant would not necessarily come to the conclusion that a movement survey was required, [the arguer] said that normally a movement survey would be required so prepare ourselves for a possible delay*" (stakeholder 18). Therefore there were challenges to the credibility of the argument which were overcome and although there was potential for negative consequences for the receiver in practice these did not occur.

Example 6: Resource extraction restoration

Circumstances

This site has a long history of peat extraction. The arguer explained "*in the 1990s [....] the method of extraction [on the site switched] to milling [...] which creates a moonscape [....with] large areas of bare peat*" (stakeholder 08). This change of method was approved but the applicant had to "*leave a bit at the side of the site [...] to be vegetated and that [has been] designated locally as a site of biological importance*" (stakeholder 08). The planning permission to extract peat from the site included planning conditions to cease extraction in 2010 and to restore the site "*to an amenity after use*" (stakeholder 08). The peat was being extracted for commercial use in the horticulture industry but the arguer commented "*they aren't the landowners [...] the landowners are a big land owning company who have a reputation for extracting every bit of economic value from the land as possible*" (stakeholder 08).

In 1989 "*a Mosslands Strategy [was developed.....and] in 2007 a [...] vision document was developed for that area looking at competing land uses [...with] the aspiration to see those peat extraction sites restored*" (stakeholder 08). In addition within the local authority draft core strategy this site and the surrounding area was designated as "*a larger biodiversity heartland*" (stakeholder 08). The local biodiversity action plan for low land moss lands sets out targets and aspirations and this is "*reflected in a number of other strategies as well*" (stakeholder 08).

At a national level "*a lot of lowland raised bog [....] has been lost to agriculture and development [....and] peat extraction has been withdrawn from [nationally] designated sites over the last 20 years*" (stakeholder 08). More recently, the national policy framework for peat extraction has been strengthened "*about peat extraction [...] and [...] that peat extraction wasn't a good thing*" (stakeholder 08). Furthermore, the value of taking a landscape approach in the conservation sectors was being widely supported in government White Papers.

To re-create lowland raised bog a number of factors are critical. Firstly "*you need peat bog specifically and you need a certain depth of it [but] ecologists would argue [....] how much was enough*" (stakeholder 08). Secondly, "*the hydrology is so important to bogs [...so] the larger the area you have the easier it is to retain the water [...] to have an effective restoration*" (stakeholder 08). However, the arguer explained "*naturally when you have a lowland raised bog, you kind of get a bit of a dome shape as the peat accumulates and builds up overtime [with other types] of habitat [developing on the edge*]" (stakeholder 08).

This site "*is a former lowland raised bog so [the peat] is really quite deep in places, down to four metres or so in places*" (stakeholder 08). In 2010 the peat extraction was due to finish and "*they came in with an application for a time extension [.....] and the information wasn't good enough, we didn't have confidence that it was going to do what it said it was going to do*" (stakeholder 08) and the application was refused. Extraction began again however in 2011 and the local authority "*took enforcement action and took them to court and got them a criminal penalty and after that point it was a criminal action for them to keep extracting*" as a consequence the extraction on the site stopped. However in 2012 the extractor (the receiver) launched a planning appeal, challenging the local authority's decision to refuse the time extension. The arguer, a local authority planning officer based an environment focused team, commented "*I had been involved [with this site] the whole way through and I had amassed fairly technical knowledge, so I was quite closely involved*" (stakeholder 08).

Claim for Action

The arguer explained that the proposal was that "*we wanted the extraction to stop to leave the peat that was still there in situ because once the peat was left in situ there is more chance of being able to restore it at some point in the future*" (stakeholder 08).

Goal

The arguer explained "*restoration to [lowland raised] bog was the ultimate aim*" (stakeholder 08).

Concerns/ reasons to act

The concerns in this argument related to the principle of sustainable development and the "*prospect of developing active lowland raised bog is greater where a depth of bog peat is retained*" (planning inquiry document 2012). Linked with this the arguer commented "*we feel [lowland raised bog] is one of our most precious resources in this area because it is quite rare [...] the fact that it definitely was a priority habitat locally definitely helped with our argument and the fact that we could draw on the biodiversity action plan*" (stakeholder 08). However, the local BAP was not a central part of the argument about the conservation value of the site and surrounding area put forward by the local authority. As the arguer commented the local policy framework "*is taking the local BAP and putting it into a planning context, so rather than the appeal using the BAP as such we mainly relied on the other planning documents [such as the Mosslands Vision strategic plan], but said these were informed by the BAP*" (stakeholder 08). Indeed, the argument centred

more on lowland raised bog being defined as an Annex 1 habitat as set out in the EU Habitats Directive, even if in a degraded state but with the possibly to be "*restored within 30 years*" (planning inquiry document, 2012) through natural regeneration. Furthermore, "*there was a small area of the extraction site designated [as a locally important site]"* (stakeholder 08) "*and must therefore be regarded as of significant conservation value*" (planning inquiry document, 2012). However, there was concern that the extraction on the site was having a negative impact on this designated site by "*lowering groundwater*" (planning inquiry document, 2012) despite the mitigation measures in place to prevent this. The need to assess the application at a wider landscape level was also emphasised and this was linked to the government White Papers which identify this as important for the conservation of biodiversity. As the arguer commented "*their argument that we can just ignore the context of where [the site] sits was just nonsense*" (stakeholder 08). Concerns about climate change were also components of this argument. Specifically this involved understanding "*peatlands as natural carbon reservoirs [...] this means peatlands are a vital irreplaceable part of regulating the climate*" (planning inquiry document, 2012). As such "*the long term aim [for the Government] is for peat use to be reduced to zero*" (planning inquiry document, 2012). Furthermore, a restored site would sequester carbon for the atmosphere, thus acting also as a sink as well as a carbon store.

All of these concerns were linked to the national policy context, for example "*the national policy framework [to reduce peat extraction which] was just emerging at the time*" (stakeholder 08). However the main focus was at the local and regional level as a locally important resource outlined in the Mossland Visions and the "*core strategy [for] a larger biodiversity heartland [for the site and surrounding area]"* (stakeholder 08). These concerns and the different framing of these concerns which form premises in the argument are shown in table 10 below.

Table 10: Argument use to conserve biodiversity in example 6

Circumstances of site:	**Social** 1. History of peat extraction on the site 2. Commercial extraction company 3. Landowner with reputation for a narrow focus on economic gain 4. Milling extraction method in use on site **Natural** 5. Degraded lowland raised bog 6. Surrounding area also peatland 7. Depth of substrate important to restore lowland raised bog habitat quality 8. Hydrological regime important to restore lowland raised bog habitat quality 9. Large areas of bare peat 10. Varying depth of peat in situ including 4 meters in places **Institutional** 11. Planning consent for extraction to end in 2010 12. Planning consent with condition to restore site to amenity after use 13. Criminal prosecution for peat extraction in 2011 14. Application to extend extraction with insufficient information resulting in refusal 15. Locally designated site for conservation within site

	16. Local Mosslands Strategy identifying area for restoring peat extraction sites 17. Local core strategy identify area as a biodiversity heartland for restoration 18. National precedence for no extraction on sites nationally designated for conservation 19. Emerging national policy framework to reduce the use of peat
Concerns/ reasons to act:	**Negative framing:** 1. Locally important habitat (lowland mosslands LBAP) 2. Internationally important habitat (EU habitats Directive Annex 1 habitat) 3. Locally designated site for conservation within site negatively impacted by extraction 4. Obligation to comply with local policies which identify area for habitat restoration 5. Obligation to comply with national policy to reduce the use of peat **Positive framing** 6. The site is a store of carbon and can contribute to mitigating climate change 7. Potential to restore the site to sequester carbon and can contribute to mitigating climate change 8. Ecological networks benefit biodiversity - Activity on site should be assessed in the context of the surrounding landscape
Goals:	To restore the site to lowland raised bog
Claims for Action:	To not continue to extract peat from the site to retain a depth of bog peat
Outcomes:	1. Appeal dismissed and extraction on site has stopped 2. Condition for restoration to a mosaic of habitats 3. Discussions on restoration delayed 4. Economic viability of site for extractors has reduced 5. Local conservation organisation interested in acquiring site for conservation
Effectiveness in use	**Effective argumentation** **Credibility** **Consistency** • Consistent with national and local policy framework

Outcome

"*The appeal was dismissed, that means it went in our favour*" (stakeholder 08). As such the arguer commented "*we've won the battle if not the war, so stopping the extraction and keeping peat on site [...] the extraction has stopped*" (stakeholder 08). However, the planning inspector's decision involved the restoration of the site to "*a sort of mosaic of habitats*" (stakeholder 08). Furthermore "*I think [the company] aren't going to make money out of the site now [...] they want to do the minimum that is possible and we want to get the maximum we can get [through the discharge of planning conditions for restoration]*"

(stakeholder 08). "*We have been in discussions with the applicant [...] in terms of trying to get restoration for the site [.....] but when the restoration plan came to us [it lacked the necessary detail] so that has held up discussions*" (stakeholder 08). As a result "*the site is currently just sat there, sort of not doing anything*" (stakeholder 08). With minimum work "*you'll get a mosaic because of the different levels and different depths on the site, some would be bog and some would be fen*" (stakeholder 08) however a local conservation organisation has expressed an interest in acquiring the site for more active restoration.

Effectiveness of arguments in use

The appeal was taken against the original planning decision as the argument put forward by the local authority had negative consequences on the goal of the receiver, which related to commercial interests. As such the argument was not salient for the receiver. During the appeal the credibility of the argument was challenged, with evidence closely examined for each concern that constituted the argument as a whole. This involved counter arguments relating to the conclusions being drawn by each party. However, in the end the inspector ruled in favour of the local authority and accepted their claim. A key factor in the success of the argument however relates to the emerging national policy framework to reduce the extraction and use of peat nationally, which at the time was emerging from discussions between the Government, the wider peat industry and other interests.

Example 7: Management of urban green spaces (1)

Circumstances

This example relates to urban green space management across one of the ten local authority boroughs in Greater Manchester. The arguer manages both parks and countryside sites owned by the local authority and has "*an ecological, biodiversity background [which is applied to] thinking about green space management [across] the whole [area]"* (stakeholder 05). This involves "*actually having to look at changing work practices of the work force"* (stakeholder 05). This work force consists of 86 staff, including 5 team coordinators. Due to "*an ever reducing budge"* this workforce has reduced by *"half of the staff [...] that it was five years ago*" (stakeholder 05). Predominantly this workforce comes from "*a horticulturalist*" (stakeholder 16) background so "*they want nice well maintained, managed parks*" (stakeholder 05). Furthermore the arguer commented that "*a few years ago we proposed [...] a diversified, differential mowing [in one green space] but actually the local perception of what we were going to do was all a budget cutting exercise and actually it was horrendous that the council was doing that so we had a big public outcry*" (stakeholder 05).

Claim for Action

The arguer explained that the proposals to alter the management of urban green spaces involved "*using native species, meadow development and about diversification of grassland areas*" (stakeholder 05). Specifically undertake alternative management at "*a couple of small areas first [....] with the hope that we can actually extend that to a much larger area*" (stakeholder 05).

Goal

The goal of the arguer is to "*integrate more effectively [...] on a wider scale from a biodiversity point of view into the practice that we actually do in terms of a service*" (stakeholder 05). This requires "*changing the way staff work [...] in terms of thinking slightly differently [and say] actually there is a different aesthetic to spaces, raising the value of things like hedges, natural shrubs [...] rather than thinking well if we take them out it is easier to maintain" (*stakeholder 05).

Concerns/ reasons to act

The arguer highlighted that there is a need to "*balance budget with practice [but] we don't have to maintain it the same way we have always done, there are opportunities to manage [urban green spaces] differently*". Alternative management can increase the "*ecological value [but this can be] aligned with keeping that visual interest*" (stakeholder 05). This concern about aesthetic value is connected to a concern within the local authority about public perception, however the arguer emphasized that "*we can manage public perception, we just have to do it very clearly and do good consultation about what we are doing and why [...and] we have to identify that the actual aesthetics is going to be different*" (stakeholder 05). Furthermore, the argument also involved looking "*at the whole spaces and [...] if it's got connectiveness it can add to it as a whole space [...] you need to look at biodiversity as a whole, rather than necessarily saying we do biodiversity in the corner*" (stakeholder 05). Indeed, the receiver explained that the argument presented involved two key elements "*there are positives because for one you can bring something totally new into a green space [...] there is also a positive in some situations you can be more efficient*" (stakeholder 16). These concerns and the different framing of these concerns which form premises in the argument are shown in table 11 below.

Table 11: Argument use to conserve biodiversity in example 7

Circumstances of site:	**Social** 1. Sustained budget cuts and reduction in staff numbers 2. Manager of the parks service has a background in biodiversity 3. Team coordinators often have a horticulturalist background 4. Changes in management have resulted in public linking this to budget cuts
Concerns/ reasons to act:	**Negative framing** 1. Managing public perception 2. Budget constraints **Positive framing:** 3. Efficient use of resources 4. Benefits biodiversity 5. Maintain and enhance aesthetic value
Goals:	1. To introduce alternative management to integrate more biodiversity value into urban green spaces 2. To change the way staff think about and undertake management
Claims for Action:	1. To introduce more biodiversity into urban green spaces 2. To introduce this alternative management gradually at appropriate sites
Outcomes:	1. Alternative management introduced to a range of green spaces across the borough 2. Easier management on some sites
Effectiveness in use	**Effective argumentation** **<u>Salience</u>** **Centrality** • Concerns central to the reduction in resources concern of the receiver • Concerns central to the public perception concern of

[redacted]	receiver **Experimental commensurability** • Arguer valued the local knowledge of the receiver **<u>Credibility</u>** **Evidence** • Appropriate sites trialled to demonstrate benefits

Outcomes

This is an ongoing process however the arguer commented that "*I suppose it has become part of the mindset as opposed to not something [the workforce] have thought about but actually implementation may not be as easy as we would like it to be [...] it's been more of a subtle change in terms of a way we have opportunities that we want to think about*" (stakeholder 05). Indeed the receiver commented "*I can name quite a few sites where we have actually successfully 'biodiversified' [.....] you select a site [...] the benefits are it looks better, the people will obviously take ownership of it a little bit more than they perhaps did before, so you get less fly tipping [...] it easy to deal with as a management task*" (stakeholder 16) and at some sites the people are "*loving it, we've had some good feedback*" (stakeholder 16).

Effectiveness of arguments in use

The argument for alternative management involved different "*factors: do the public want it, can we manage it, can we maintain it and once they are all in place it's a goer*" (stakeholder 16). This highlights that the concerns relating to resource efficiency are central components to this argument as "*there are some pressures on our service [and] those are the kinds of overriding issues [...] that they are more concerned about*" (stakeholder 05). Indeed the receiver (one of the team coordinators) commented "*we have lost a lot of staff and we have been trying to maintain things as we had done when we had all the staff and they just don't work [...] we try to identify sites to take the pressure off the lads that are mowing*" (stakeholder 16). Furthermore the arguer conceded that "*I had to compromise to a certain extent because there are some things that I have gone actually, if I had more resources I'd manage it differently [when] your costs suddenly escalate quite significantly [...] that is something I am struggling with at the moment [...] because of the finances of the time then we do come down to the easiest and cheapest way to do it*" (stakeholder 05). This indicates that the constraint of resources and opportunities to use resources more efficiently is a more central component of this argument than increasing the ecological value. However, trade-offs can be avoided for example by "*avoiding the butterfly and flower season [when cutting]"* (stakeholder 05).

In this argumentation process the arguer not only recognised that not all sites would be appropriate for more biodiversity sensitive management but also recognised the knowledge and experience of the work force in selecting sites. Indeed the arguer asked the receiver and other members of the workforce "*to review everything we do*" (stakeholder 05) and identify "*sites which could be managed in a different way but each site is looked at quite specifically [by the team] because sometimes it's not that simple*" (stakeholder 16). Including the workforce in the decisions making may increase the salience of the argument by increasing its experimental commensurability as the receiver commented "*I have been working on the parks for 22 years, I know where this type of management could be achieved and where perhaps it couldn't because you have to be comfortable with it don't you?"* (stakeholder 16).

In addition identifying a small number of appropriate sites also provided evidence to back up the claim thus increasing the arguments credibility in the process. For example the receiver commented "*there is always caution on certain sites, but certain sites have worked and perhaps at the time I thought it wouldn't have*

happen but it has" (stakeholder 16). Indeed this has increased the effectiveness of the argument as now the receiver commented "*sometimes we just push through because we know it is the right thing*" (stakeholder 16). Furthermore positive feedback from the public and evidence of alternative management in nearby boroughs may also add to the credibility of the argument. For example the receiver commented "*the next town are managing their highways totally different [...] and people come up and say why can't we have that?*" (stakeholder 16).

Example 8: Management of urban green spaces (2)

Circumstances

This example also involves alternative management in urban green spaces across a borough area but with a focus on roadside verges and roundabouts. The wider circumstances of this example also involve "*limited resources*" (stakeholder 06) "*in the current economic climate*" (stakeholder 20). In 2010 there was a major review of the council services following substantial council budget cuts. Furthermore "*there has for sometime been a recognition that the quality of landscape on arterial routeways can be a contribution to economic development*" and as a result there has been pressure in the Borough "*to do something on a key roundabouts and junctions [however] it is the wrong time to be looking for that sort of big style commercial sponsorship*" which may have been the solution in the past to promote economic development. Additionally, "*in terms of health and safety relating to maintenance of green spaces alongside high speed roads as defined by the Highways Act [1980...] meant that carrying out maintenance was sometimes difficult [.....] because we were starting to look at issues such as land closures [following] heightened awareness following a couple of incidents nationally*" (stakeholder 20). The arguer, a local authority ranger, also explained "*we have got all the trees and forests now [and] we have got problems with the decline in bumble bees and butterflies*" (stakeholder 06).

Claim for Action

The arguer proposed alternative management of roadside verges and open areas "*strategically located on the main entrances to the borough*" (stakeholder 06) with a wildflower seed mix to "*bring some colour in [to the borough]*" (stakeholder 06).

Goal

The goal of the arguer is "*to diversify a bit more on the wildlife side [in the ranger service]*" (stakeholder 06).

Concerns/ reasons to act

This argument included a number of concerns and reasons to alter the management of some of the roadside green spaces across the Borough. The main concern in the argument focused on the need to enhance the "*visual appeal*" (Borough council unpublished report) by creating "*pictorial meadow [...] by sowing of the meadows [which] aren't totally wildflowers but they are chosen to give a long flowering display*" (stakeholder 06). Additional concerns relate in the argument refer to cost, as "*it saves us having to mow [...] so it saves costs in that respect*" (stakeholder 06) through the "*reduction of high input maintenance*" (Borough council unpublished report). The opportunity for reduced inputs was also linked to a concern about "*sustainability [....] and the development of more natural ecological systems*" (Borough council unpublished report). Other concerns related to "*community benefits [and] social benefits*" (stakeholder 06). This included "*facilitating adventurous, imaginative play, more complex experiences for young people, the chance for contact with the natural environment and various benefits to health [.....providing] the opportunity for people [within communities] to become involved through volunteer work of friends groups*

[and providing a] sense of place [through] the opportunity to reflect the character of the [...] area" (unpublished report, 2009?). The benefit to wildlife was also included as an "*increase of wildlife habitat to the area [.... will] help to retain surviving populations and encourage regeneration of both locally abundant and rare species [...by providing] wildlife sanctuaries where wildlife can 'escape' the pressures from humans [....] as well as providing links with other wildlife zones [....] to retain the value we already have and [...] enhance our natural assets*" (Borough council unpublished report) through the development of "*green infrastructure and green space*" (Borough council unpublished report). These concerns and the different framing of these concerns which form premises in the argument are shown in table 12 below.

Table 12: Argument use to conserve biodiversity in example 8

Circumstances of site:	**Social** 1. Wide spread economic crisis 2. Reduction in local authority funding 3. Economic development a local authority priority 4. Increased awareness of health and safety issues working alongside high speed roads 5. Strong focus on tree planting in the borough **Natural** 6. National decline in wildflower habitats for bees and butterflies
Concerns/ reasons to act:	**Negative framing:** 1. Pressures to wildlife from human activities **Positive framing:** 2. Increase aesthetic value 3. Cost saving and low resource input 4. Contribution to sustainability goals 5. Benefit young people's health 6. Opportunities for community involvement 7. Opportunity to reflect the local character of different areas 8. Wildlife sanctuaries 9. Developing ecological networks to maintain and develop existing ecological value
Goals:	To expand and diversify the wildlife areas across the borough
Claims for Action:	To visually enhance strategic entry points into the borough
Outcomes:	1. Positive feedback from local people 2. Political support from councillors 3. Expansion to new sites 4. Funding support from other sources, such as housing association organisations 5. Links with Buglife organisation to provide wildflower habitats for pollinators
Effectiveness in use	**Effective argumentation** **<u>Salience</u>** **Centrality** • Central to the biodiversity concerns of the receiver • Central to the concerns of the receiver to use resource

	efficiently • Central to the concerns of the receiver to save resources • Central to the goals of the receiver to demonstrate more than cost saving to the public • Strategic economic development locations selected • Central to other local authority goals, such as public support **<u>Credibility</u>** **Evidence** • Visual imagery • Cost analysis • Case study examples from other locations • Trial of a small number of sites **Trustworthiness** • Professional relationship between arguer and receiver • Wider reputation of department from previous projects

Outcome

This has been a initiative perceived as very successful which is now in its third year. The arguer explained "*the first year we did 8 sites which were at key points where you enter the borough [...] we got a lot of positive feedback quite often from people travelling on buses [...] a lot of that positive feedback went via the councillors so they had a heightened awareness of it [...] the second year [..] we did [some social housing sites.....and] last year we expanded [and] this year is a similar story [with] more sites*" (stakeholder 06). Indeed the sites in "*more deprived communities*" (stakeholder 20) have been particularly successful as previously there were "*issues with [...] horticultural things being damaged and [the pictorial meadows] weren't [...] and this is now being funded directly [by others]*" (stakeholder 20). This year the arguer explained that "*with the World War I [...] commemorations we are doing a lot with poppies, a special mix that has sort of white umbelliferae [species] with poppies coming through*". Furthermore, this initiative is now linking with similar wider projects aimed at wildlife for example linking with "*the national Buglife[organisation] as well, the B-Line [...] project*" (stakeholder 06).

Effectiveness of arguments in use

The argument put forward by the arguer was salient to the receiver's interest who was head of the service that includes parks and green spaces and has a "*geography and ecology background*" (stakeholder 20). As a result the arguer did not make the ecological concern a central part of the argument but emphasised other benefits instead, as the receiver commented "*the ecological benefits [the arguer] didn't really need to sell to me [because] of my background I understood it [...] he was pushing at an open door*" (stakeholder 20). Furthermore the proposed action in the argument related to "*something new on what is basically a piece of mown grass so didn't have any significant biodiversity [value*]" (stakeholder 20). The receiver also commented that "*when you are talking about an existing landscape then very much I would focus on the biodiversity*" (stakeholder 20). Furthermore arguments with a main focus on biodiversity benefits were seen as not being as effective by the receiver. The reason for this is that "*biodiversity for biodiversity sake in certainly a [...] public sector context is very difficult [....] particularly in the context of reduced resources [...] it can no longer be the nice fluffy bits around the outside, whatever we as ecologists might feel in terms of the importance of it and the bigger picture, it comes down to hard nuts and bolts which is usually economics and finances*" (stakeholder 20). As such the receiver's first response to the argument was "*what's*

it going to cost?" (stakeholder 20). This concern highlighting the benefits relating to cost increased the salience of the argument during a review the local authority spending in 2010 which involved "*reviewing all our landholdings [to highlight where] we can save money by reducing [...] the frequency of [grass cutting]*" (stakeholder 20). However, the arguer commented that "*it was never meant to be about saving money*" (stakeholder 06). Although this concern became more central to the argument "*simply saying we are not cutting the grass as often to save money isn't going to go down that well, whereas if you can show the peripheral benefits [it is better*]" (stakeholder 20). For example "*health benefits both physical and mental and the community cohesion, you know all the big agendas [....] the more boxes you can tick [...] the better*" (stakeholder 20). The selection of strategic gateway locations for the first year however also increased the salience of the argument as these sites were recognised as being central to the local authority's economic development objective. Additionally, the positive feedback received following the first year of this initiative increased the political support resulting in an expansion to new sites, as the receiver explained if "*you can generate local community support and if you can demonstrate [that] to politicians [there is more support]"* (stakeholder 20), thus increasing the salience of the argument further for local decision makers.

Credibility was also a factor which contributed to the success of this argument. One component is the relationship and trust between the arguer and receiver in this example and other stakeholders. As the receiver commented "*we have had a number of projects over the years [...so] there is a degree of understanding of where we are all coming from [...] over time you build up that reputation that actually yeah, these people know what they are talking about and they deliver stuff that makes sense and solves other issues*" (stakeholder 20). Furthermore, the credibility of the argument was enhanced by using evidence to demonstrate the benefits by showing "*other people had done it [...] it's tried and tested"* (stakeholder 06). This included using "*a couple of examples on similar lines of other people doing wildflower meadows*" (stakeholder 06) and cost analysis and some photographs showing the outcome from other projects. The use of examples from other areas also helped overcome initial concerns about the perceived negative consequences of the initiative, which could reduce the salience of the argument. As the arguer commented "*there were some doubts [...] whether it would get trashed but overall there was enough of an argument there as well as previous demonstrations*" (stakeholder 06). However, the receiver commented that "*it was the imagery of the visual impact that was probably the main thing [....] we could see the potential for significant PR*" (stakeholder 20). Indeed, there was a "*front page photograph in the local newspaper, and you know it was virtually the whole front page with [the headline] 'blooming marvellous'*" helped to increase the support for the initiative further. In addition the receiver explained that "*what we actually did in the first year was do it as a one off, a trial which worked very well"* (stakeholder 20). This provided further evidence about the benefits which increased the credibility of the argument for the initiative to expand in later years.

Example 9: Local development policy

Circumstances

This example focuses on a town centre which is "*pretty hard [...] it's [...] built over the river [...] and the whole shopping centre is built on a culvert" (*stakeholder 07). There are some areas where the river channel has not been enclosed although this is "*quite hard surfacing, all closed off [and] a lot of invasive species*" (stakeholder 07). However *"the river corridor [...] was once central to the economic prosperity of the town providing a source of power and water which enabled the development of [the town] as an industrial town [however] post industrial neglect and more recent intrusive development [has occurred]"* (Borough council

report 2010). Local authorities in the past used Unitary Development Plans (UDP) to plan and implement strategic planning and development. However as the arguer explained "*all councils have had to change to a LDF [Local Development Framework] and then a core strategy [is] the main document [within this] that shapes where the council wants to go with different aspects [...] guiding what the council will and won't support*" (stakeholder 07). Alongside the core strategy an allocations plan is being developed to identify specific development sites and relevant policies. Due to "*the financial situation there is not a lot of people wanting to develop areas [and] there is a sort of queue of people wanting money from developers because whenever an application comes in there are certain things they have to put money towards*" (stakeholder 07). This is administered through section 106 agreements which are "*normally guided by the councils policy and I think in [this town...] was quite strict with it, so if you are doing something they have to contribute to new play equipment or new transport [infrastructure] and these are already embedded policies [...] already in the core strategy [...] so trying to get new things in is more difficult*" (stakeholder 07). Currently "*there is a [biodiversity] policy that says it will encourage it [...] where possible*" (stakeholder 07). However, there is no policy that specifies what type of enhancements are required and where.

Claim for Action

The proposal involved a new riverside development policy for the town centre so that "*wherever a development comes up along the river bank they have to make a [financial] contribution to some of these [enhancement] projects*" (stakeholder 07). Specifically within the open sections of river corridor the proposal involved improving its "*value, so treating the invasive species, tree work where it is really over shaded and there was some small pockets of tree planting [proposed], trying to retrofit mammal passes under bridges, things like that [and] bat boxes*" (stakeholder 07). Furthermore, "*open up the river corridor in order to improve public access and maintenance arrangements*" (Borough council report, 2014).

Goal

The arguer's aim was to move towards a net gain of biodiversity through enhancement projects, instead of the principle of no net loss of biodiversity.

Concerns/ reasons to act

This argument was put forward by the local authority ecologist working alongside a local authority regeneration officer. As such a key component in the argument revolved around the concern that within this recognised "*regeneration area* [...] the *full potential [of the river to the economic development of the town is] not being realised"* (Borough council report, 2010). Specific concerns included in the argument were "*the riverside within the [...] Regeneration Area should provide an attractive river frontage that increases activity on the riverbank and over looks any public space in order to provide security via natural surveillance*" (Borough council report, 2010) thus discouraging "*crime and anti social behaviour*" (Borough council report, 2010). In turn this will contribute to "*the recovery of the property market [....] improve leisure and tourism and make [the town centre] a more attractive business location*" (Borough council report, 2010). Indeed, the arguer explained "*we used the arguments the value of biodiversity brings to an area [...] like aesthetic benefits [...] because along the river front in [the town] some of it is not very attractive*" (stakeholder 07). This would "*attract more business down there if it was cleaned up. At the moment all the businesses face away from the river when it should be an asset*" (stakeholder 07). In addition to the economic benefits, benefits to the local community were also emphasised. For example "*managing the river and riverside environment is a key factor in establishing the river as an amenity and source of pride for local people*" (Borough council report, 2010) providing "*free recreation and leisure opportunities for all citizens [.....] and sustainable transport [...] routes"* (Borough council report, 2010). Furthermore,

enhancing the river corridor would "*complement the remaining historic buildings along the river corridor*" (Borough council report, 2010) and "*such a corridor would form an oasis in an urban area [which is] particularly important in times of climate change*" (Borough council report, 2010). These benefits to people are linked to other local authority policies, for example the tourism, the economic development and conservation and heritage strategies. Finally the benefit to wildlife is also emphasised by improving "*wildlife habitat*" (Borough council report, 2014) "*for fish, birds, mammals, insects and plants [....] and target species [as listed in the Boroughs] Action Plan for Nature*" (unpublished report, 2010). Specifically this will benefit important species already within the river system "*such as salmon [...and] otters*" (Borough council report, 2010). These concerns and the different framing of these concerns which form premises in the argument are shown in table 13 below.

Table 13: Argument use to conserve biodiversity in example 9

Circumstances of site:	**Social** 1. River in the past contributed to economic prosperity of the town 2. Intrusive development over or close to river front 3. Historic buildings long river front 4. Economic crisis **Natural** 5. Invasive species established along river corridor **Institutional** 6. Previous planning framework based on Unitary Development Plan (UDP) 7. Established, existing policies from UDP 8. General policy to encourage biodiversity in UDP 9. Development of Local Development Framework (LDF), involving a core strategy and an allocations plan 10. Private investment to deliver benefits to town guided previously by the UDP and to be guided by the new core strategy in the LDF through section 106 agreements
Concerns/ reasons to act:	**Positive framing** 1. Opportunity to increase the aesthetic value of the river frontage 2. Contribute to the economic development of the town 3. Reduce anti social behaviour 4. Provide amenity space and free recreation opportunities 5. Create sustainable transport routes 6. Increase local ownership and pride 7. Contribute to climate change adaptation 8. Complement cultural heritage 9. Provide habitat for wildlife in general 10. Encourage the return of important species such as salmon and otter
Goals:	To move from the principle of no net loss of biodiversity to a principle of net gain
Claims for Action:	To secure private investment from enhancing the river corridor

	through the planning system to benefit wildlife and people
Outcomes:	1. The core strategy policies for biodiversity remained unchanged 2. The decision to include a more specific policy in the allocations plan is as yet undecided 3. Consultation responses included support from organisations with a conservation remit and concerns about the impact on development from a development company 4. A similar argument will be used to influence the development of a new green infrastructure strategy for the borough
Effectiveness in use	**Ineffective argumentation** **Salience** **Centrality** • Negative consequences for immediate goal of economic development **Credibility** **Evidence** • Supermarket chain recently withdrew plans to develop in this area citing negative consequence of their goal of economic viability

Outcome

"*The actual policy within the LDF/Core Strategy has remained unchanged with general principles to protect and where possible enhance biodiversity*" (stakeholder 07). The allocations plan to identify specific sites is still being finalised. The consultation on whether the allocations plan should include specific criteria to enhance the river front within the town centre area elicited two responses. The first from an organisation with a biodiversity conservation remit supported the proposal emphasising that this "*should be fully integrated into core policies rather than be referred to via wider relevant strategic documents e.g the rivers development plan*" (Borough council allocations plan consultation response, 2014) on which the proposal is based. However, a second response from a development company raised the concern that "*if a policy is included it would have to respect the fact that each site adjacent to the river is different and will have different opportunities. I expect that it would be hard to set criteria that would be appropriate along the whole stretch of the river. Some places along the river are less visible than others and some places are more important than others*" (Borough council allocations plan consultation response, 2014). This argument will also be used to influence the development of a new strategy for green infrastructure in the Borough.

Effectiveness of arguments in use

The argument included evidence from a river survey which may have added to the credibility of the argument. In addition the arguer has worked with the receiver for a few years and commented "*a couple of the policy officers are quite into environmental things"* (stakeholder 07). However despite the credibility of the argument, it's salience to other more immediate goals may reduce its effectiveness in this example. As the arguer explained "*I think to be fair to [the receiver] he is quite supportive of the principle [but] it is whether he is able*" (stakeholder 07).

The argument was salient in so far as it was central to other goals of the local authority, such as sustainable transport, providing recreation opportunities and complementing the cultural heritage along the river front. However, at the moment the arguer commented "*because of the financial situation there is not a lot of people wanting to develop in areas*" (stakeholder 07). Furthermore, the arguer explained that a supermarket

chain had recently "*put in a big application down by the river but apparently they have withdrawn it because there was too many demands on its resources, because [...] if an application comes in everybody wants a bit, [...] everybody thinks it is [a supermarket chain] they can afford it, so in the end they have just pulled out, which ends up benefiting nobody*" (stakeholder 07). Therefore the wider circumstances of the financial crisis and the focus on economic development may outweigh the arguments for biodiversity.

In summary there are many different types of arguments being used in the examples. These include both negative framed concerns which involve restrictions based on legal duties and obligations to deliver policies but also threats to biodiversity. These are summaries in table 14 below. Conversely positively framed concerns are also included in the arguments across the examples in this case. These refer to opportunities and benefits of accepting the proposed action. These include benefits to economic, social, environmental and political goals across different scales, for example from specific groups such as children and young people, to local communities and society as a whole. These are summarised in table 15 below.

Table 14: Arguments in use with a negative frame

Negative framing	
Restrictions	
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 locally designated sites important for biodiversity
6.	Obligation to protect local priority species and habitats
Specific threats to biodiversity	
7.	Climate change
8.	Actions on site contributed to climate change
9.	Human activities (development, agricultural) cause 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

Table 15: Arguments in use with a positive frame

Positive Framing – benefits and opportunities	
1.	Reduce costs
2.	Resource efficiency
3.	Increase resources
4.	Conservation of cultural heritage
5.	Local character, distinctiveness and pride
6.	Flood prevention

7. Water and air quality
8. Climate change mitigation
9. People's lives in urban areas
10. Visual attractiveness in 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

Although similar arguments were used in a number of the examples, the effectiveness in use also varied. Seven of the nine example resulted in the proposal put forward by the arguer being accepted. This led to either a decision to act or in some examples the action itself depending on the nature of the example. Table 16 below includes the effective examples with key factors for each one which contributed to the effectiveness of the argument and arguer in the interaction. Conversely, table 17 below presents the ineffective arguments from the remaining two example, also with factors which may have hindered the effectiveness of the arguers use of the argument in that situation.

Table 16: Effective argumentation

Example 2 Ecological network	**Salience** **Centrality** • Central to the receivers goal to conserve natural and cultural heritage • Central to the goals of local user groups • Central to the receivers goal to engage people **Credibility** **Evidence** • Evidence of considering the local context and consultation local user groups (letters of support)
Example 3 Species conservation	**Salience** **Centrality** • Only small scrub needed so other land can be managed to meet other goals on sites • Potential for up scaling for a network of sites at the landscape level • Potential salience for funders and businesses as a tangible output **Experimental commensurability** • Receiver had heard species on the site **Credibility** **Consistency** • Receiver aware that species is locally and nationally

	important **Trustworthiness** • Existing professional relationship • Arguers expertise in ecology • Arguers research and knowledge of species
Example 4 Landscape	**Salience** **Centrality** • Central to the goals of the receiver to conserve biodiversity • Central to the concerns of the receiver relating to reduced resources • Central to the goals of the receiver to engage people in the landscape
Example 5 Species conservation	**Salience** **Centrality** • Potential negative consequences **Experimental commensurability** • Receiver had seen species on the site **Credibility** **Evidence** • Species survey resulted in negative consequences not being realised
Example 6 Habitat restoration	**Credibility** **Consistency** • Consistent with national and local policy framework
Example 7 Habitat creation	**Salience** **Centrality** • Concerns central to the reduction in resources concern of the receiver • Concerns central to the public perception concern of receiver **Experimental commensurability** • Arguer valued the local knowledge of the receiver **Credibility** **Evidence** • Appropriate sites trialled to demonstrate benefits
Example 8 Habitat creation	**Salience** **Centrality** • Central to the biodiversity concerns of the receiver • Central to the concerns of the receiver to use resource efficiently • Central to the concerns of the receiver to save resources • Central to the goals of the receiver to demonstrate more than cost saving to the public • Strategic economic development locations selected • Central to other local authority goals, such as public

	support **Credibility** **Evidence** • Visual imagery • Cost analysis • Case study examples from other locations • Trial of a small number of sites **Trustworthiness** • Professional relationship between arguer and receiver • Wider reputation of department from previous projects

Table 17: Ineffective argumentation

Example 1 Species conservation	**Salience** **Centrality** • Negative consequences for the economic goals of the receiver and decision maker **Credibility** **Consistency** • Identification of site as an economic development site in Local planning policy • Suspension of the locally designated site boundary **Evidence** • Ecological survey concluded great crested newts had moved from the centre of the site
Example 9 Habitat enhancement	**Salience** **Centrality** • Negative consequences for immediate goal of economic development **Credibility** **Evidence** • Supermarket chain recently withdrew plans to develop in this area citing negative consequence of their goal of economic viability

Discussion

This case study analyzed the effectiveness of arguments in the implementation of local biodiversity actions within the broader policy framework of the UK's Biodiversity Action Plan. This analysis was guided by a theoretical framework (Fairclough and Fairclough 2012, Benford and Snow 2000) linking argument analysis with frame analysis by focusing on nine interactions between an arguer and a receiver with the aim of conserving biodiversity. Within this framework the claim for action is linked to three types of premise. The first is circumstantial premise, which presents the current state or context within which the interaction example occurred. The second premise type relates to the concerns that the arguer considers as important to provide reasons to act. The third premise type is the goal premise which is the desired state that the arguer is trying to ultimately achieve which the proposed action will help to meet (Fairclough and Fairclough, 2012).

The frame analysis applied in this case firstly distinguishes between negative and positive framing of the concerns highlighted in the argument. Secondly frame analysis is applied to examine the argumentation process relating to the salience of the argument put forward and the credibility of the argument. Salience relates to how well the argument fits with the goals and experience of the receiver and credibility relates to how well the concerns links with the policy context, the relationship between the arguer and the receiver and the evidence used in the interaction (Benford and Snow, 2000).

Local biodiversity action plans were developed as a tool to guide the implementation of conservation actions locally and as such this case study examines the arguments used to develop the Local Biodiversity Action Plan (LBAP), the arguments within the LBAP and the arguments used in conservation action on the ground and the link between these. Examples of interactions were identified and data collected on each through nine face to face interviews with biodiversity practitioners from across the case study area. Following this, a further five interviews were undertaken with argument receivers and relevant documents analyzed to identify what arguments where used to argue for actions to conserve biodiversity and how. Argument analysis was combined with frame analysis to understand not only the arguments selected by the arguers, but also how these arguments were received in the argumentation process, thus enabling an understanding of not only if the arguments used were effective but also the factors that contributed to effectiveness in each example (Fischer and Gottweise, 2012, Fairclough and Fairclough, 2012, Best, 2001, Henkemans, 2000, Hannigan, 1995).

There were a variety of different arguments used to implement biodiversity conservation in the case study area. These however can be divided into three main categories:

- negative framing as restrictions
- negative framing as threats and
- positive framing to present opportunities and highlight benefits.

The arguments identified as negative framing as restrictions involve concerns relating to the legal duties to comply with national and EU conservation legislation and obligations to implement policies at a national and local level which specify the need to conserve biodiversity. This relates to the obligation to protect nationally important (Sites of Special Scientific Interest) and locally important sites (Sites of Biological Importance). In addition, obligations also refer to the UK Biodiversity Action Plan priority species and habitats and the Local Biodiversity Action Plan. The main argument in developing the list of locally important species was the presence of UK BAP priority species and habitats locally. Once these had been identified the list was reduced and attributes grouped by using arguments relating to resource availability and to increase support for conservation activities. Due to the close link between the nationally important and locally important species and habitats the obligation to conserve locally important species and habitats is always included alongside the obligation to protect nationally important species and habitats. This category of concerns is applied in arguments where the proposal is linked to action to protect existing biodiversity value as perceived by the arguer at a species and habitat scale.

Negative framing in arguments is also used to outline the threats to biodiversity as reasons to take action (Hallahan, 1999). This issue framing is particularly prominent within the local BAP document. Developed by a group of biodiversity practitioners in 2003 and updated in 2009, one of the main uses of this document identified in this case study was to guide the activities of biodiversity practitioners. Negative framing helps to set out the problems to be overcome. For example, a lack of conservation action for a particular species and uncharismatic habitat type, the problem of public perceptions about changing management in urban parks, the problem of budget cuts limiting the type of actions which can be undertaken to conserve

biodiversity and uncontrolled access disturbing breeding birds. Indeed, similar facets such as recreation activities and resource availability, are framed both negatively as problems but also framed positively as benefits and opportunities within the arguments used. Only in example 2 is positive and negative framing used for the same concern, in this case climate change as a result of past human activities and positive framing for the action proposed to contribute to climate change mitigation.

Within this case study 20 positively framed concerns are highlighted within the arguments used (see table 15 above). This includes concerns relating to the economy, which reflect the circumstantial premises (the context of action) highlighted in many of the case studies relating to the current economic crisis more widely and more specifically the impact on Local authority budgets. These concerns relate to actions being cost neutral, cost saving, attracting resources and more widely to help stimulate economic development in urban areas. This is highlighted in example 4, 7, 8 and 9. Social benefits are also highlighted in the arguments used. These include physical health, mental wellbeing benefits, improved public access, involvement and recreation (example 2) within the context of a network of footpaths in the surrounding area. The benefit to children's development by providing a more natural environment for play is also included within the arguments used. This is highlighted in example 2 and 8. A number of concerns in the arguments include benefits in relation to urban areas, particularly in relation to examples involving urban green spaces. This includes increasing the visual appeal of sites (examples 7, 8 and 9) but also fostering a sense of pride, ownership and reflecting local character and increasing the public support for decision makers as a result. One argument also specifies the opportunities to develop sustainable transport routes (see example 9). Furthermore, increasing public access alongside biodiversity conservation activities is identified as a goal and activity in a number of examples with one specifying the concern about reducing anti social behaviour by attracting more people to an area. This is also highlighted in example 9. Making a link to the industrial heritage of the case study area the concern for the preservation of cultural heritage is the most common concern across the examples examined, reflecting the areas industrial past. This concern is highlighted in examples 2, 4 and 9. Environmental concerns were also identified. As well as increasing biodiversity value concerns also involved a desire for clean air and water, flood prevention (example 2) and reduction of atmospheric carbon as a greenhouse gas (example 2, 6 and 9). These positively framed concerns were not only more prominent in urban contexts but also within interactions focusing on developing ecological networks at a landscape scale (examples 2 and 4). Although all of these examples involved proposed actions to conserve biodiversity the benefit to biodiversity was not always explicitly included within arguments. Indeed examples 1, 3, 4 and 5 do not explicitly highlight the concern to conserve biodiversity. This may reflect an understanding of the interaction and its context by the arguer. This may involve two opposing dimensions. The first being that the arguer knows the receiver shares the concern to conserve biodiversity but to enable this to take place other concerns are relevant, for example legal duties (example 1 and 5). The second dimension involves the arguer consciously deciding to highlight concerns more relevant to the receiver, which may not relate to the conservation of biodiversity (examples 3 and 4). Indeed Dewulf et al. (2009) distinguish this conscious approach as interactional framing involving verbal and non verbal cues to indicate how a situation should be understood and Schmidt (2011) describe policy agents as sentient agents emphasising the potential difference between thinking and speaking by agents within interactions to stimulate change. This lack of explicit emphasis about the concern to benefit biodiversity therefore highlights the importance of understanding not only the circumstances within which the interaction occurs, but more specifically the relationship between the receiver and arguer and perceived goals and interests.

In this case study an effective argumentation process is one which involves the receiver accepting the arguer's claim, indicated by a decision to act or, further into the implementation process, the action itself being undertaken by the receiver. In all but two examples the arguers claim was accepted. However it is important to understand why this may have occurred and delve deeper into some of the factors which may influence the outcome of these interactions. The criteria of salience and credibility provide a useful frame to examine what makes an effective argument (Benford and Snow, 2000).

The first key factor important in influencing the effectiveness of an argument is the centrality of the argument. Specifically this relates to the positively framed concerns included within arguments and whether these align with the receiver's goals and interests. A clear example of this relates to linking the conservation biodiversity with the conservation of cultural heritage, which is identified in three of the examples (examples 2, 4 and 9). Two of these examples (examples 2 and 4) involved the goal of the receivers relating to the cultural heritage. Another example of this is the positive framing of economic concerns, particularly relating to the efficient use of financial resources also increased the salience of the arguments used in three of the examples examined (examples 4, 7 and 8). Similarly, the positive frame used relating to the potential to attract funding within the context of wide spread budget cuts also aligned with the receivers goal in two other examples (examples 3 and 4). With the onset of deeper budget cuts, the opportunity to reduce costs, for example by reducing the amount of maintenance in urban green spaces, increased the salience and therefore effectiveness of arguments positively framed around economic concerns further. This is highlighted in examples 4, 7 and 8. Furthermore, including public engagement and social benefits also aligned in the effective argumentation processes with the receiver's goals. The opportunity to increase political support for decision makers also highlights the importance of understanding and highlighting less immediate and indirect goals of the receivers. For example the public may not be the target of the argument but their support may be central to the receiver's goal nonetheless. This is highlighted within example 8. In this example the claim for action was to visually enhance urban green spaces, however it was also recognized by the receiver that this would increase the profile of sites. Indeed, public feedback was so positive that politicians and local organizations contributed funding in the following year to expand the initiative. However, this example also highlights that the concern for cost saving is not perceived as salient for the wider public. This emphasizes the importance of linking economic concerns with other more salient concerns for the public, therefore increasing the salience of the argument for different groups involved in influencing decisions.

Although the examples in the case study focus on interactions between an arguer and a receiver, usually a range of different actors and interests need to be considered. With so many positively framed concerns within many of the arguments used a simplistic impression may be that more is better. However, as highlighted by Fairclough and Fairclough (2012) there may be a number of concerns and goals but these usually fall within a hierarchy. The concern towards biodiversity value may be linked to the efficient use of resources in an effective argument however if action for biodiversity can only occur if resources are used efficiently this indicates that the economic concern is more central and therefore salient to the receiver than the concern for increasing biodiversity value. This is highlighted in example 7, which involved ensuring public perception and resources were managed to implement biodiversity actions in urban green spaces. Furthermore, the selection of strategic economic locations to plant 'pictorial meadows' in example 8 also highlights the importance of not only the concerns but also where the action is proposed to increase the centrality of the argument. In this example road side green spaces had been identified for visual improvement for some time to help improve economic development of the town. Therefore, proposing

‘pictoral meadows’ at these locations was more central to the goal of economic development compared to other, less prominent sites.

Indeed the importance of presenting an argument that aligns with the goals of the receiver is also highlighted in the two examples where the arguments used were ineffective (examples 1 and 9). These two examples highlight negative consequences for the goals of the receivers, in this case both relating to the need for economic development, specifically to increase employment opportunities in the local area. However, the centrality of the time frames involved may also be important. For example, example 9 includes a positive frame involving economic benefits of enhancing sites along a river corridor through the planning system. However the receiver’s immediate concern related to economic development and a large supermarket had recently withdrawn an application for development in the town due to increasing costs as a result of similar planning demands. In addition to centrality another factor identified as important in contributing to an argument’s salience, and therefore effectiveness, is experimental commensurability. This is the link between what is included in the argument and how much this aligns with the receiver’s personal experience. For example, two arguments focused on the protection of species and the receiver had first-hand knowledge that these species were present on the site. This is highlighted in example 3 and 5. Furthermore, recognizing and including the experiences and more specifically the local knowledge of the receiver in the implementation of actions may increase the salience of the argument further by helping to align actions taken with local circumstances (see example 7).

Credibility refers to the perceived quality and adequacy of the knowledge exchanged in the argumentation process (Sarkki et al., 2013). The main factor identified in this study which contributed to the credibility of the argumentation process, and therefore the effectiveness of the argument is consistency. Specifically consistency refers to how well the argument aligns with the policy framework. This may become increasingly important if an argument is not salient, for example with the goals of the arguer and the receiver not being aligned. Indeed, this is highlighted in example 6, which involved an effective argument with a key factor in this success involving the emergence of a strong national policy framework which aligned with the claim in the argument being proposed. Furthermore, the ineffective argument in example 1 was also not central to the receiver’s goals. However during the argumentation process the local policy framework was strengthened in favor of the receiver’s goal, thus reducing the credibility of the argument which relied on negative framing relating to national and local policy obligations as well as legal duties.

A second factor contributing to credibility in the argumentation process is the use of evidence. The use of evidence was identified as contributing to the argument’s effectiveness in three of the examples examined. This included letters of support which demonstrated the actual salience of the argument to the receiver’s goal in example 2. Also biodiversity surveys in example 5 revealed that potential negative consequences would not in this case be realized. Furthermore, the use of visual imagery, case studies from other sites and producing a cost analysis of the proposed action also increased the credibility of the argument by providing evidence that the benefits included in the argument were likely to be realized. This is highlighted in example 8. Conversely, the evidence may add weight to perceived negative consequences of the argument, as the example of the supermarket chain withdrawing a development application in example 9 demonstrates. Similarly, the evidence may add weight to the receivers counter claim and therefore weaken the arguers proposed action, as occurred in example 1 which involved an ineffective argument. In two examples (examples 7 and 8) the claim involved undertaking the action on a small number of sites. The success of the biodiversity conservation action on these sites provided evidence that the benefits in the argument could be

delivered. Thus this resulted in the action being expanded to other locations. This highlights the connection between credibility and salience, particularly important in a more lengthy process of implementation.

Lastly, the trustworthiness of the arguer was identified as an important factor in contributing to the effectiveness of the arguments in this case. Indeed past interactions between the arguer and the receiver were shown to contribute to the receiver's willingness to accept the proposed claim, as highlighted in examples 3 and 8. Specifically this related to the perceived expertise in biodiversity of the arguer but also the shared understanding of similar but still different goals. However, both these examples involved receivers who also had biodiversity interests and therefore in this case it is difficult to disentangle the importance of trust with the importance of salient goals and interests in these examples. Notwithstanding this, this case study highlights the importance of salience in presenting an effective argument. Indeed a focus on the receiver's goal is key, but it is not the only influencing factor. A better understanding of the receiver's goal(s) may occur as a result of previous interactions between the arguer and receiver. Thus, the credibility of the arguer and the ability to present a salient argument may be closely connected. The credibility of the argument also influences the effectiveness of arguments used within the process of argumentation. Specifically evidence or a change in the policy context can strengthen or weaken an argument, the latter being particularly pertinent in the planning process which involves long time scales.

Further research on framing in the argumentation process could add further insights, specifically the effects of framing as a conscious goal in interactions to achieve aims alongside the influence of cognitive frames in this process and trade-offs in the hierarchy of concerns and goals within arguments and how this influences effectiveness. This would contribute to a deeper understanding of how to select and present arguments which effectively achieve desired outcomes for biodiversity conservation.

References

Reference to official documents has been made in the text as sources of data identified by the interviewees and for background information. Where possible the details of these documents have been provided below. However, some examples in this case study involved sensitive information and as such some documents have been kept anonymous along with interviewee names and specific site locations.

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Appendices

Appendix 1 – Arguer Interview guide

Background:

- Name/ organisation/ position?
- What would you say is your primary area of work is?

Identifying activities where arguments are used:

- Does this involve influencing other people to conserve biodiversity?
- Can you give me an example from the last year when you needed to influenced someone's decision making to conserve biodiversity?

Context:

- Tell me about this example. What was the situation? Why were you involved? What was your specific role? (see guide 2)
- Who exactly were you targeting? Why? What are their contact details? Was there anyone else involved (were you working in a group)? (**Social, natural and institutional circumstances**)
- What did you suggest the other person should do? (**Claim for action**)
- How does this link with Local biodiversity priorities? (see guide 3)
- How did you go about influencing the other person to conserve biodiversity? What did you say? What did you not say? Why? How did you say it?
- Did you have a 'strategy'/ approach? What was it? Did you use any tools to help you? What did you use to help influence them (legislation, reports, surveys)?

Detail of argument used:

- What ultimately did you want to achieve? (**Goal**)

- Did you achieve this;
- Completely
- Partially
- Not at all
- Why?
- Why is this goal important? (**Values**)
- How would the action you suggested meet your goal? (**Means goal**)
- What do you think was the other person's individual goal in this situation? (**Goal**)
- Why were they trying to achieve this goal? Why is this goal important to them? (**Values**)
- How did they initially respond to your suggested action? Did they agree? If not, why?
- What was the outcome? What did you agree should be done in the end? How did you arrive at this agreement (what was the process)?
- Do you have any written record of this situation that I can see to help with this?
- Are there any other important aspects of this example that we haven't discussed?

Appendix 2 - Receiver Interview guide

- Tell me about yourself?
- I discussed the example of .....
- I understand you were a key person in making this happen.
- How was the idea initially presented? What were your first thoughts?
- What were presented as the reasons for doing this? (difference between said and understood)
- What was the most effective reason? What hooks convinced you to take action?
- At the time did you agree? Why?
- Did you disagree with any aspects at all – either with the reasons or the actions? Why? Did some make more sense to you than others?
- Overall were you convinced? How and why? What factors contributed to this? (evidence, relationship with person)
- What were you trying to achieve? Why?
- What happened in the end? Outcome or conclusion?

Annex 11 – Case study report: Long-term management of urban green areas, Finland

Leena Kopperoinen

1. Introduction

Integration of the concept of ecosystem services (ES) into spatial planning processes is presumed to advance new holistic understanding of benefits provided by nature, consider the ecological functions and protect biodiversity (BD). To understand how the arguments relying on ES approaches make their way to practice, it is useful to analyse a real-world planning process where integrated and participatory planning is applied in practice. This paper contributes to the analysis of the effectiveness of BD and ES related arguments by presenting a case from the municipality of Sipoo, located in the Helsinki Metropolitan Area in Finland. A significant housing planning process for 100,000 inhabitants in this area wants to stand out with a novel sustainable planning philosophy, developing methods for converting all aspects of sustainable community development into practical solutions.

I have empirically examined the arguments about BD and ES put forward at the goal setting stage of the local master plan development process of Sibbesborg when the prerequisites for planning were defined, and reflected them against the first official documents related to the planning process. I have analysed the degree and the ways in which the arguments have been taken into account by planning professionals and how they have materialized in planning documents. By assessing how the arguments persist in the process and how they are realized in planning decisions allows assessing the effectiveness of the arguments.

2. Analysis

Issue

The BESAFE case study on Sibbesborg local master plan process in Finland examined which arguments related to BD and ES were selected to present the sustainable community goals and how they persisted in the land use planning process.

Context

Sustainable land use planning bases on the idea of achieving economic, social, ecological and cultural sustainability through decisions made on allocation of land to various purposes (Söderman et al. 2012). Ecological sustainability has consisted of ensuring BD values of an area and environmentally friendly solutions which aim to low emissions of human activities and minimum impact on the quality of environment. Safeguarding BD and valuable natural environment has traditionally implicated exclusionary land use decisions which often are in contradiction with economic interests of local land use owners or business. Environmental protection, on the other hand, might have been seen as benefiting “only nature” exclusive of humans, despite the actual benefit to people in the form of cleaner and healthier air, water and land, for example.

The concept of ES has brought up a new and potentially more effective group of arguments which supplement the ethically motivated non-instrumental arguments based on protection of BD and valuable nature areas. ES form a basis for a wide spectrum of instrumental arguments which can be presented as benefits and the economic and other values following from them to the community. Many traditional themes, such as outdoor recreation, taken into account or at least brought up in land use planning are included in the concept of ES but now they can be put into this new framework. The framework has been

increasingly adopted in land use planning processes in all scales from regional to local in Finland in the recent years (e.g. the Helsinki-Uusimaa regional plan and in the City of Lahti from detailed plans to local master plan).

The purpose of this case study was to analyse:

- Which BD and ES related arguments were selected as a baseline for sustainable community development in Sibbesborg?
- How did these arguments persist through the initial stages of the local master planning process?
- What conclusions can be drawn of the observed effectiveness of the used arguments?

Methodology

The research question of this study was effect-oriented in terms of persistence of BD and ES related arguments through the phases of local master planning process. The analysis followed the criteria developed by Primmer et al. (2013) building on the analyses of policy processes and instruments (Hoogerwerf 1990; Mickwitz 2003). The policy process analysed allowed identifying particularly signals of persistence of the arguments (see Primmer et al. 2013). In this case I examined which alternative arguments were used and how in official land use planning documents published so far.

To investigate the persistence of BD and ES related arguments a single case study of Sibbesborg local master plan process in the Municipality of Sipoo in Southern Finland was carried out. The baseline arguments were collected from the target setting documents of an international planning competition with which the local master planning process was launched. The persistence of arguments was analysed by carrying out qualitative content analysis of the evaluation of competition submissions and official planning documents produced and released after the competition.

In this case study the objective was to concentrate on analysing the phases of planning process and not the views of different parties and possible conflicts between them with regard to planning decisions. Therefore, the focus is on used arguments in different phases and not by different stakeholders.

Case study description

Sibbesborg is located in southern Sipoo about 30 km east of Helsinki, the capital of Finland. In 2011, the municipality of Sipoo hosted an open international planning competition for a sustainable community in Sibbesborg. The aim of the competition was to submit a plan for a community of up to 100,000 residents and workplaces in accordance with both locally and globally sustainable objectives, now and in the future. The current population of the mainly agricultural landscape with a few more densely populated villages is about 3,000. The competition and its scope were based on the Sipoo 2025 Master Plan and the municipality's expansion strategy, which is a response to the overall development objectives for the Helsinki region, which is one of the fastest growing urban regions within the European Union. The municipality of Sipoo changed its direction of development decisively after the Finnish Government passed a motion to annex an area of 30 km^2 in Sipoo to Helsinki at the beginning of 2009. The strong local culture of spacious living amid fields and forests had to give way to more urbanised forms of development linking Sipoo to the overall metropolitan structure.

The planning area of Sibbesborg covers about 26 km^2. The strengths of Sibbesborg are the scenery and nature forming a unique entity. The area has a varying topography, bordering the sea and archipelago in the

south, large forest areas in the west and north and old cultural landscape in the east and northwest. The Sipoonjoki River, preserved as a Natura 2000 site, crosses Sibbesborg forming a valley with many historical relics. There are also other valuable nature areas inside the borders of Sibbesborg planning area as well as the Sipoonkorpi National Park in the vicinity to the north.

At the beginning of the planning process, a panel of expert was formed to formulate and set the planning targets representing different pillars of sustainability and to ensure the quality of successive planning in terms of sustainability. One of the five themes of uniqueness, "Unique Environment and Landscape", was entirely related to BD and ES, while some specific ES were dealt with under "Unique Eco- and Energy-Efficiency" and "Unique Ways of Living and Unique Lifestyles".

Actors

The actors in the Sibbesborg urban land use planning case were as follows:

a) *The land use planning team of the Municipality of Sipoo.* The composition of this group has changed during the course of planning. In the beginning it consisted of the Development Director of Sipoo and the Area Development Architect both of whom have got new posts outside of Sipoo during the initial phases of the planning process and been replaced by new team members. In addition, after the international planning competition for a sustainable community in Sibbesborg, the land use planning team has been supplemented by planners from the private consultancy, WSP Finland Ltd that won the first prize in the competition.
b) *Experts of the three themes of uniqueness for Sibbesborg planning*: a researcher of urban ecology, a researcher of eco- and energy-efficiency and a researcher of environmental psychology. There were altogether five themes of uniqueness giving basis for visioning the future Sibbesborg. The contents of each theme were developed with the help of a renowned expert in the field. The experts participated both in the target-setting stage and the evaluation of competition entries. Only three of the experts have made BD and ES related comments.
c) *Jury of the planning competition.* The jury consisted of six members from the Municipality of Sipoo, one from the Ministry of Environment, two international professors (from Germany and Canada) and three members appointed by the Association of Finnish Architects. The jury also consulted the group of experts representing the five themes of uniqueness.
d) *Policy-makers and municipal officials.* Working for Development policy started by drafting an 'Officials' Dream Town' in a workshop for officials. The draft was assessed in a workshop for local politicians thereafter. The best emerged ideas for further development were collected and used as a supplement in addition to the five award-winning competition entries.

In this study, however, the actors' role is note as important as in some actual conflicting case studies. The Sibbesborg case study focuses more on the persistence of arguments in the course of the planning process than on conflicting points of view and arguments reflecting them. Nevertheless, the knowledge of the actors that were behind the arguments in each phase is important.

Events and data

Three phases of the planning process were assessed and are used as events in the case study:

- Phase 1
    - Target setting stage of an international planning competition
        - ➔ Which BD and ES related arguments were selected when formulating the objectives for land use plan proposals in interaction between different stakeholders and with the help of scientific experts

- Phase2
    - Competition submissions
        - ➔ Which arguments were taken into account
- Phase 3
    - First development phases of the local master plan in Sibbesborg
        - ➔ How were arguments realized in planning documents so far

Documents that were analysed comprised (see Attachment 1):

a) Guidelines for the competition participants. These included a competition programme document along with a set of maps and research and background materials (illustrating terrain properties, developed areas, water balance and climate, valuable natural and cultural sites, among others), plans and programmes related to the area and a wealth of other interesting material (e.g. local residents' responses to questionnaires).

b) An evaluation of submitted competition entries, in which the pros and cons of each plan related to sustainability were summed up. The evaluation was carried out by the jury with the help of experts of the five themes of uniqueness. A special focus was given to the winner plan in the analysis.

c) First official planning documents published during the initial planning phases. These included two planning guideline documents: "Sibbesborg development policy – A descriptive vision of unique Sibbesborg: main targets and preliminary means to reach them" and "The sustainability criteria of Sibbesborg – for monitoring the realisation of the vision". In addition, I analysed "The participation and assessment scheme of the Sibbesborg local master plan", the production of which is compulsory according to the Finnish Land Use and Building Act (Chapter 8, Section 63) (1999). However, it did not include any added value to the two other documents but was rather repeating what was presented in them and therefore I finally did not include it in the analysis.

Table 1 presents which groups of actors were responsible for the presented arguments in different phases of planning, i.e. in the events.

Table 1. The phases of planning and related documents, on the development of which the pinpointed actors have specifically influenced.

	Actor			
Event	**Land use planning team**	**Three experts of themes of uniqueness**	**Jury of the planning competition**	**Policy-makers**
Phase 1: Competition programme	x	x	x	
Phase 2: Evaluation minutes 16.1.2012	x	x	x	
Phase 3:				

The sustainability criteria of Sibbesborg	x			
Sibbesborg development policy	x			x

Quality control
The quality control was planned to come along with methodological triangulation by analysing in a geographical information system (GIS) the draft local master plan of Sibbesborg against the current land use and land cover using a wealth of datasets on valuable natural, cultural and historical features in the area. The latter could be carried out but a draft local master plan was not available by the end of the case study research period. Parts of the plan have been drafted but, for example, a crucial issue, the allocation of green areas, has not been done so far. Therefore, it is not possible to analyse how green infrastructure will materialise in the plan.

I am going to control the findings of document analysis by interviewing the planning team of the Municipality of Sipoo and the planners of the consultancy. This will also help to assess which are the main impediments to the persistence of certain BD and ES related arguments in the process.

However, close collaboration with the planners of both the municipality and the consultancy in the shape of several participatory seminars, workshops and a planning week during the last couple of years have provided lots of opportunities to listen to the planners and the interaction between the planners and local stakeholders. In addition, there is an operating Sibbesborg case study advisory board (CAB) in which researchers of Sibbesborg, planners and certain local organisational stakeholders have discussed the planning process since the end of year 2012. I have reflected the results of the document analysis with what I have heard in all the discussions which serves as a quality control. Close collaboration and the discussions with the ecological expert of the Sibbesborg planning competition, Professor of urban ecology at the University of Helsinki, has also provided confirmation of the results.

3. Results

Phase 1
The objective of the Sibbesborg case study was to analyse how different arguments on BD and ES persist in the planning process. The baseline arguments, the persistence of which was followed, were identified in Phase 1 which was the target setting stage of the planning competition. I grouped the arguments according to whether they relate to BD or one of the main sections of ES according to the Common Classification of Ecosystem Services, CICES v. 4.3 (http://cices.eu/; Haines-Young and Potschin 2013) (see Attachment 2). The arguments are presented below in Table 2. As can be seen, the arguments covered preservation of BD and enhancement of ES quite extensively covering some classes of ES from all main sections.

Table 2. Baseline arguments the persistence of which was followed in the Sibbesborg local master plan process. (Author's clarifying inserts in the text in square brackets.) Colour coding refers to argument groups.

Argument group	Arguments
Preservation of	Planning shall target for:

biodiversity	* preservation of valuable natural ... features, * the preservation and development of biodiversity, * ecological corridors to remain undisturbed whenever possible, * preservation of valuable natural ... sites, * preservation of extensive, uniform natural areas ...
Safeguarding of provisioning ES	Planning shall target for: * the possibility for residents to cultivate plants and vegetables for their own use (gardens or allotments)[this is mentioned in the targets]. * commercial production of local food [mentioned in the main text but not in the targets list]
Safeguarding of regulating and maintenance ES	Planning shall target for: * natural air purification (green areas), * natural carbon storage (forests, marsh areas) , * noise reduction [by natural features], * dispose of run-off water by absorption rather than along with other sewage [water flow regulation and storm water retention].
Safeguarding of cultural ES	Planning shall target for: * preservation of valuable ... landscape features, * utilisation of the landscape and topography in planning, * preservation of valuable ... cultural sites, * preservation of ... cultural landscape areas, * suitably large, diverse and accessible recreation areas, * the possibility for residents to cultivate plants and vegetables for their own use (gardens or allotments) [recreational side of this activity as cultural ES], * waterfront areas open to everyone, * quiet areas

Phase 2

Based on the evaluation of competition submissions there was great diversity in treating the targets for BD and ES. Many of the BD and especially ES related targets set in Phase 1 were not taken into account or addressed in the competition submissions, not even in the winner submission. A collection of most relevant arguments presented in Phase 2 are shown in Table 3.

Arguments about BD

Preservation of valuable natural and landscape features were generally taken into account fairly well. However, there was variation in how much natural areas were left undeveloped and where these were located, which means that the degree of preservation of local BD and ecosystems varied greatly among the submissions, as well as to which degree larger green spaces were connected to each other and to green spaces outside the competition area to form ecological networks.

The topography of the area was often used as a basis for urban development but it was done in many different ways. In some submissions development was directed to the highest points in the landscape while in others the silhouette seen from far away was kept more natural. On the other hand, when avoiding development in the large forest areas and culturally valuable areas under cultivation, submissions focused development in one of the most prominent and valuable landscapes of the competition area, the Sipoonjoki valley and the fjord-like bay. In fact, this was even seen desirable and inevitable by the competition jury when targeting for an attractive new town.

> "Cultural landscape of the river valley has clear values, while the river itself is protected as Natura 2000 site. There is, thus, a strong argument to leave this zone completely untouched, and to direct the new construction to forests and farmlands, keeping distance from the central landscape feature. This solution, however, has significant draw-backs. ... Secondly, the best natural asset will be left rather lightly used, which would be a pity both in the social and economic sense." (Evaluation minutes 16.1.2012, page 15.)

Arguments about ES
Very few competition submissions explicitly included the concept of ES. In most of the submissions that used the concept, ES were treated very briefly or vaguely giving an impression that the concept was not familiar to the planners. Many ES related issues, such as maintaining green spaces for recreation (cultural ES), storm water management (regulating ES), carbon sequestration (regulating ES), and local farming and gardening (a cultural and a provisioning ES), however, were dealt with in most of the submissions although not put into the context of ES.

The utilization of and adaptation to landscape of Sibbesborg appeared as critical arguments by evaluators in the documents. This seems to relate more to the identity value than to preservation of BD or safeguarding and benefiting from ES - especially regulating and maintenance ES were rarely mentioned. Local food production was appreciated through the value of provisioning ES supporting economic activity in the area and through the cultural ES value of sense of place formed by tradition, heritage, history and scenery. All in all, arguments representing targets set in Phase 1 have persisted quite well into Phase 2. BD and other natural values of Sibbesborg were repeatedly referred to. Only regulating and maintenance ES of air purification and noise reduction received no mentions at all. The winner plan called 'Nourish' takes into account most of the initial targets quite evenly although the mentioned ES network appeared in a way which suggests that the concept of ES had not been entirely comprehended.

Table 3. Arguments for BD and ES as presented in the Phase 2 document. (Author's clarifying inserts in the text in square brackets.) Colour coding refers to arguments related to 1) BD = green, 2) provisioning ES = yellow, 3) regulating and maintenance ES = red, 4) cultural ES = blue and 5) ES in general = white.

Comments grouped by their type	**Arguments**
General comments, BD	The best entries combine comprehensive preservation of the most valuable forest, seaside, river and agricultural landscapes with creative urban design and process that help to reach higher built densities than currently typical in the Helsinki region, without compromising experienced quality.
	They also suggest completely new built environment that simultaneously drive dense and diverse urbanism and provide social, cultural and economic facilitation for a long-term preservation of non-built landscapes.
	The fjord-like bay surrounded by forested rocks is a nationally unique formation.
	Cultural landscape of the river valley has clear values, while the river itself is protected as Natura 2000 site. There is, thus, a strong argument to leave this zone completely untouched, and to direct the new construction to forests and farmlands, keeping distance from the central landscape feature. This solution, however, has significant draw-backs. ... Secondly, the best natural asset will be left rather lightly used, which would be a pity both in the social and economic sense.
	It is indeed possible to find regenerative spatial and programmatic solutions that ensure the preservation and even improvement of natural and cultural landscape values, while simultaneously providing for public spaces and urban uses.
	Taken together, the awarded and mentioned entries provide an excellent palette of process tools. ....; transfer of development rights (TDR) helps to preserve valuable areas through monetary compensations and incentives to land-owners;...
	The boundaries of the competition area were sited and entrants were asked to consider the urban form to be established across an extraordinary setting of fjord, forest, river, seaside and agricultural land. The entrants were asked to consider a plan for the area that would build a sustainable community according to five themes of uniqueness.
	Some proposals envisioned continuous built-up form on both sides of the fjord, others designated rings of urban villages across the entire site while others concentrated settlements and opted to preserve large tracts of forest and waterfront.

	At this point, where the main concern is new city planning in extremely sensitive environments, the differing planning proposals allow for an intense discussion, supported by various perspectives. In this not so easy task, a space allocation plan for scenic and very sensitive areas should be inserted.
	There must be an essential basis for the new conception that must adhere to the following:.... * Conservation and the responsible handling of 'natural resources' along with the incorporation of an inner and outer green concept that has an identifiable orientation. Additionally, the preservation of essential distinct landmarks must also be present (fjord, river, shore environment, wooded areas).
	Twin core & stripes -type of urban structure: This type facilitates preservation of most valuable landscapes while aiming at coherent urban form.
General comments, ES	New hybrid and integral city-nature combinations show paths also towards contemporary urban production and economic value-adding through local food, education, experiences and experiments.
	The best entries show elegant ways to create distinguishable neighbourhoods through variations and gradients in accessibility, built density and programmes, as well as utilisation of historical and natural features.
	Organic and diverse neighbourhoods do not need big green belts as their boundary, nor simply defined centre points. Rather they consist of unique articulation of many elements of the urban realm.
	Considering the unique natural and cultural landscape values of the site, especially the Sipoonlahti fjord and the river valley, a clear presence of landscape and easy access to large open park and natural areas was valued.
	The entries show that an optimum between compactness and access to nature can be achieved through linear compositions, even though many other morphologies can also provide rather balanced results.
	The built areas should not be considered as islands, but the surrounding landscape should be seen as an integral component of the system of public space. In the best entries, the border between built and non-built was thematized as a key asset and public face of the new Sibbesborg.
	In best entries this location [all relevant rail options go through or to the area between existing Söderkulla and the motorway] is developed in such a way that the river and fjord landscape becomes the main environmental, public space and image asset - 'heart' - of the new town.
	Cultural landscape of the river valley has clear values,...
	The best entries suggested solutions that overcome the duality of completely natural vs. a completely built waterfront.
	The conclusion is, thus, that if carefully planned and managed, Sibbesborg's centre can take advantage of the great setting at the river and fjord, but a total urbanization of the waterfronts is not a desirable option.
	The city-nature relation is a relevant question also in the Southern seaside of Sibbesborg and Hitå forest, as well as in the Eastern agricultural milieu.
	Future Sibbesborg should be seen as an opportunity to develop cultural values and local interests in an organic way, not as a threat of something alien.
	As Helsinki grows and expands spatially outwards along its eastern corridor, the Municipality of Sipoo, still distant enough to not yet feel the pressures of this growth, has time to consider its place and identity in this urbanising region, to establish its own unique spatial form in advance of this growth, and to engender the essential quality of life of its current and future citizens in relation to an outstanding natural environment on the shores of the Gulf of Finland.
	The jury's discussions on these issues were significant and while physical details across all of the entries were attended to, the bigger picture was seldom lost sight of, that is, the vision for a sustainable community in the outstanding landscape of Sibbesborg. Hence the discussion often moved to the broadest of questions on the relationship of urban citizens to nature, and alternative visions for future generations to embrace a quality of life that may not involve patterns of living and mobility…
	In the end, the jury agreed to recognise the winning entry that most embodied a vision for Sibbesborg that treats the landscape with care, that offered a view into the lives of residents embracing an urban quality of life that will be part of this landscape along the river, fjord and seaside, and that embraced a bold vision for urban lifestyles in the future....
	The decision on the award for first place reflects an acute knowledge that 'Helsinki is coming' and Sibbesborg will not accept a model of 'business as usual' but instead will be proactive in creating a new model for metropolitan urban living that builds identity and community and

	informs a lifestyle that deeply connects social and cultural values with nature, landscape and sustainability.
	Circular chain of villages -type of urban structure: A popular principal solution, allowing for flexible phasing, simple public transport system, manageable community size, and adaptation to landscape.
	Unified, new town -type of urban structure: While clear and strong, the entries based on this approach tend to appear somewhat monotonous, failing to take best advantage of the varied landscapes or the historic features of the site.
	Twin core & stripes -type of urban structure: Linear form of the built areas is able to combine urbanity and access to nature, maximizing the attractive edge of the built area.
	Scattered structures, based on place-based development: Some entries chose a place-based approach, developing independent urban fragments that utilise the most attractive landscape values.
Expert comment, eco- and energy-efficiency, BD and ES	...those competition entries covering almost the whole area with new low-density development were not regarded as sufficiently eco-efficient, not only because... but also because much of the virgin nature areas were being taken for new development, leaving very few large natural areas for promoting biodiversity and recreation.
Expert comment, urban ecology, BD	However, there was variation in how much natural areas were left undeveloped and where they were located. Thus, the degree of preservation of local biodiversity and ecosystems varied greatly among the submissions.
	Also, the degree to which larger green spaces were connected to each other and to green spaces outside the competition area (e.g. Sipoonkorpi National Park in the north) to form ecological networks varied considerably.
	There was also variation in how much development was focused in the Sipoonjoki valley and the fjord-like bay, which together form one of the most prominent and valuable landscapes of the competition area.
Expert comment, urban ecology, ES	Issues such as maintaining green spaces for recreation (a cultural ecosystem service), storm water management, carbon sequestration (to combat climate change) and local farming/gardening (a cultural and production service) were discussed to varying degrees in most of the submissions but in many cases they were not elaborated or put into the context of ecosystem services.
Expert comment, environmental psychology, ES	Most of the proposals were also very idealistic about the ecological everyday practices and lifestyles of the would-be inhabitants. I kept asking myself: why would the inhabitants in these settlements start to walk everywhere, grow their own food, slow down their living rhythm, and become active in their neighbourhood.
	Many of the proposals invested in the creation of densely built, urban villages in close vicinity to forest but no proposal considered the social acceptance of this solution or elaborated on the question of how these villages differ from traditional Finnish suburbs.
Comments on winner plan, BD	'Nourish!' is the only proposal leaving the most beautiful landscape in the Hitå area untouched. A lot of green areas can be preserved because of the well thought-out land use. Eriksnäs area provides connection to the sea shore.
	Through its relatively dense urban structure, large green spaces remain as well as a green structure inside the urban fabric.
	Urban ecosystems, consisting of parks, gardens, green roofs and urban farming, add to the 'natural biodiversity'. The integration of 'natural' and 'urban' biodiversity is an innovative approach but unfortunately it is not elaborated on further in the submission.
	An urban green network provides ecological corridors between larger rural habitats and the urban green spaces.
Comments on winner plan, ES	The most valuable natural and cultural landscapes are excluded from intensive urban construction as unbroken units, an 'ecosystem services network', which would need a more precise definition.
	Wood and other local building materials have been utilised.
	The presentation of the theme environment and landscape is relatively detailed and well-structured, with ideas of locally produced food, a zero-carbon lifestyle and urban lungs.
	Also, the proposed 'Sibbesborg brand' as the Finnish capital of local food highlights issues related to ecology and landscape: the lifestyle is connected to nature in a sustainable way.
	This entry really nourishes local natural resources when it comes to food production, the preservation of the most valuable natural areas and the respect for local history and traditions.
	Food production is also a crucial element of local identity formation, from children to the elderly. It should also draw visitors to Sibbesborg.

	The [urban green] network consists of visually, spatially and ecologically diverse green areas providing, for instance, sustainable storm water management and activity zones for citizens.
	The large green areas also store carbon.
	The centre is located in a natural setting near the existing Söderkulla housing development and it has a connection to the river estuary.
	The carefully designed network of trails and paths that are located in the most beautiful areas along the fjord and coastline promote a healthy lifestyle.
	The connection between city and nature is re-thought with highly valuable new tools to manage open green space as part of urban realm and sustain the boundary between built and non-built.

Phase 3

When coming to Phase 3 documents the variety of arguments presented in Phases 1 and 2 reduces (Table 4). The brands of future Sibbesborg were confirmed to be local food production and green care and especially local food started to dominate the arguments. Apart from these brands, other arguments started to reflect a return to more traditional way of dealing with nature and environment in planning.

Arguments about BD

BD as a concept was not used once in the documents in Phase 3. Valuable natural areas came up a couple of times but as vague arguments related to large untouched areas outside of built-up areas. The arguments did not give any more detailed characteristics of these areas nor locate them. Based on ES related arguments it becomes obvious, however, that large forests and agricultural fields were the areas to be preserved. The most valuable nature area, the Sipoonjoki River and the fjord-like Sipoonlahti Bay, were "sacrificed" to the most intensive urban development due to their value in terms of giving an attractive image of the area to lure people to move in or visit the area as recreationists or tourists, as well as to draw enterprises which would boost economic activity. This impression of seeing valuable nature more as a resource than as something to preserve is very clear based on the following extracts, for example:

> "An attractive and natural place for new urban development in South Sipoo is along the shores of the Sipoonlahti bay. The decision to develop the area as a new urban settlement of up to 100,000 inhabitants and 35,000 jobs creates an exceptional opportunity to benefit from the proximity of the sea and the coastal zone." (Development Policy, page 3.)
>
> "Areas around Sipoonlahti bay and the Sipoonjoki river valley are used to the full, because they offer an exceptional opportunity to create an urban settlement close to the sea and countryside." (Development Policy, page 11.)
>
> "Sibbesborg provides affordable housing near services in a great location, a place to make dreams come true. The sea, the coastline and open landscapes are accessible to all, offering excitement and recreation." (Development Policy, page 14.)
>
> "A good brand and image for housing is established at the start. Implementation must begin with a particularly impressive and attractive area, thus establishing a positive image for the whole area. This can be done in Eriksnäs, which can be developed in the near future and which is particularly attractive." (Development Policy, page 22.)

Landscape was neither connected with preservation of BD nor valuable nature areas in Phase 3 documents but rather depicted the potential of the landscape to create a desired new residential area which attracts good tax-payers. This can be seen as a consequence of the current economic and political situation which the municipalities are facing in Finland. Success in the development of the new town in Sibbesborg would improve the odds on the Municipality of Sipoo retaining its independence in the Helsinki Metropolitan Area.

Arguments about ES

ES related arguments focused strongly on the cultural ES. Local food production mainly as a provisioning ES but also as a cultural ES providing recreation, identity, safeguarding of cultural heritage values, aesthetics and source of well-being (through green care) came up clearly and these arguments had also intensified since Phase 2. Arguments on regulating and maintenance ES concentrate on sustaining the quality of both surface and groundwater while other ES are nearly forgotten. The documents strengthen the impression of the lack of comprehension of the ES concept based on the arguments used in the Sustainability Criteria:

> "* Ecosystem services for the residents." (Sustainability Criteria, page 9.)
>
> "* Enabling of ecosystem services of sustainable development." (Sustainability Criteria, page 9.)

It remained very unclear how to use these criteria and how to measure them. These were also the only explicit mentions of the term ES and they were not used in a context in which the term would represent an upper level concept. In contrast, ES was seen something separate from, for example, provisioning ES (food production and local wood as a construction material), recreation opportunities or maintenance of functional water cycle and infiltration.

Several contradictory arguments could be found in Phase 3 documents, the most significant of which is the concentration of the most intensive development in the ecologically, scenically, culturally and historically valuable Sipoonjoki River Valley (River Sipoonjoki is a Natura 2000 site) and Sipoonlahti Bay which form the most sensitive and valuable natural area in Sibbesborg. Secondly, in one hand it is mentioned that there is no need in Sibbesborg to build on water or in flood areas while in the other hand by planning to build the town on the shores of the Sipoonjoki River the flood areas are partly used as the main construction areas. In addition, it is also mentioned as a weakness of the vision for Sibbesborg that there are challenging conditions for development in terms of topography, flood areas and soil which mean higher costs, as well. Intensive development of the river shoreline is also against another presented argument, according to which the interaction between green and blue networks should be identified and changes in it must be minimized and justified. Thirdly, arguments on green corridors provide quite the opposite visions for development:

> "No extensive natural areas or green corridors are preserved within the town, open nature and cultural landscapes spread out in unbroken swathes outside the structure of blocks." (Development Policy, page 24.)
>
> "The river valley and the shoreline are key green areas inside the urban fabric. The major green areas are interconnected by green corridors that lead to Taasjärvi and to the north along the river valley to Nikkilä and Sipoonkorpi." (Development Policy, page 17.)
>
> "Parks and green corridors within the urban structure are scaled to fit the block pattern and create no obstructions between different neighbourhoods." (Development Policy, page 24.)

The notion of multifunctional areas providing various ES within the urban structure was not present in the Phase 3 documents but rather the traditional viewpoint of separating the city and the nature. This became evident through several arguments emphasising a vision of a compact town with large untouched natural areas outside it.

Table 4. Arguments for BD and ES as presented in Phase 3 documents. (Author's clarifying inserts in the text in square brackets.) Colour coding refers to argument groups.

Comments grouped by document and type	Arguments
Development Policy, BD	Sustainable community structure in Sibbesborg: .... Every resident, employee and visitor in Sibbesborg is able to behave in a way that protects the social, cultural and natural environment.
	A vibrant agriculture ensures the preservation of the cultural landscape typical to Sipoo, and local food production also has impacts on landscape management.
	The new town settles along the shores of Sipoonlahti bay in a dense and clearly demarcated area, thus enabling the preservation of large rural areas around the urban centre. Valuable natural areas are preserved as extensive entities in development-free zones.
	Fairly dense areas are located along the shoreline axis running from the centre of Sibbesborg to Eriksnäs, and also in the extensions of the centre on the west side of the river. The most important open landscape space in Sibbesborg is Sipoonjoki. It should be used and preserved.
	No extensive natural areas or green corridors are preserved within the town, open nature and cultural landscapes spread out in unbroken swathes outside the structure of blocks.
	Threats [of the vision for Sibbesborg] ..... * Loss of community, traditions, local identity and natural values.
	Local Living! - Themes and key points of the development policy 2. Attractive living near the countryside and the sea ... Valuable natural areas and rural culture are preserved as extensive entities beyond urban development.
Development Policy, ES	* Ecosystems of the environment remain functional and produce ecosystem services.
	Local Living! - Themes and key points of the development policy 1. Number one in Finland for local food, with employment self-sufficiency ... Local food and green care services are key livelihoods.
	Local food and urban agriculture are inclusive themes that bring new kind of content and perspectives to bear equally on modern food production as a business and on the provision of basic services, and even housing solutions.
	Planning goals and the means for their attainment .... Sibbesborg has the potential of becoming number one in Finland for local food and self-sufficient for jobs.
	The local food / Green Care brand of Sibbesborg is distinctive and its construction can be initiated immediately.
	Opportunities for the production of local food in Sipoo are created when communities are dense, agricultural land is left for agricultural use, and as much of arable land as possible is retained under cultivation. The needs of agriculture for space and expansion are taken into consideration in local master planning. Whenever possible, farms are linked to the urban structure both spatially and functionally so as to allow farms and residents to feel they benefit mutually from the arrangement.
	The farms themselves, their other points of operation, as well as extensive open field landscapes near the community are all factors that contribute to the attractiveness of the area.
	Threats [of the vision for Sibbesborg] ..... * Excessive greed in development is a threat to the arable landscape and horse farms.
	Some critical resources are necessary for survival, such as clean water and liveable climate conditions, and the preservation of these resources are the object of special care.
	..., the new community structure makes use only of areas particularly suited for construction and relies initially on existing infrastructure. For instance, there is no need in Sibbesborg to build on water, in flood areas or on deep clayey soils,...
	* Preservation of the quality of groundwater and surface water and ecological processing of runoff water
	Weaknesses [of the vision for Sibbesborg]

	..... * Challenging conditions for development (topography, flood areas, soil) mean higher costs.
	An attractive and natural place for new urban development in South Sipoo is along the shores of the Sipoonlahti bay. The decision to develop the area as a new urban settlement of up to 100,000 inhabitants and 35,000 jobs creates an exceptional opportunity to benefit from the proximity of the sea and the coastal zone.
	Given sufficiently attractive conditions, people will in the future work and find recreation within one and the same region. It must be decided what kinds of services for work, housing and recreation are needed to make the population of Sibbesborg stay in the area as long as possible, and what are the factors for creating a strong cultural identity.
	Sustainable community structure in Sibbesborg: A dense and efficient urban structure with clear boundaries that provides a pleasant environment for habitation, work and recreation without wasting natural resources or space.
	Sustainable community structure in Sibbesborg: .... A strong bond between the past and the future: to the river valley, the sea, agriculture and the cultural landscape.
	In terms of their landscape values, transport connections and logistics, the locations for housing and entrepreneurship offered in Sibbesborg are rare in the metropolitan region. Areas around Sipoonlahti bay and the Sipoonjoki river valley are used to the full, because they offer an exceptional opportunity to create an urban settlement close to the sea and countryside.
	Other businesses associated with the brand are teaching and Green Care, which encompass tourism, recreational and wellness services, and the care sector.
	Within the community structure there are allotments, orchards, plant nurseries and greenhouses. They play an important role in providing recreational opportunities for the residents of Sipoo and also for the formation of the identity of the area.
	The most beautiful and attractive areas of the Sipoonkorpi National Park are within easy reach from Sibbesborg. Trekking routes, riding stables, safaris and nature schools, these are all part of the recreational services of the community. Stables are already typical to the area, and will be a growing business in the future in the metropolitan region. There is a lot of room for riding centres around Sibbesborg, and horseback riding paths are gathered into a network.
	Sibbesborg is also an attractive destination for day-trippers from elsewhere in the greater Helsinki region, and people driving past are attracted to visit Sibbesborg.
	The marine milieu, recreational potential of the coastline and the islands, and the open Sipoonjoki valley are among the strengths of the area. Sibbesborg profiles itself as an urban centre close to the sea. There are marinas for sailboats along the shoreline in Eriksnäs and for motorboats north of the motorway bridge.
	* Utilisation of urban and rural agriculture in business, tourism, education and municipal services (Green Care)
	Sibbesborg provides affordable housing near services in a great location, a place to make dreams come true. The sea, the coastline and open landscapes are accessible to all, offering excitement and recreation. The goal is an urban, dense and efficient town built on a human scale, cosy and with garden-like features.
	As many residents as possible have a close and direct relation to the sea, the shores and the open cultural landscapes.
	The cultural landscape around Sipoonjoki, the fjord-like space and manorial settings are characteristic features of Sibbesborg, and are integrated into the functions and structures of the town.
	The river valley serves as a central urban park. The shores are in public use and in many places protected as green areas. The shore areas are used in many ways: shore meadows as pastures, the fine cliffs for recreational use, along with beaches, piers and waterfront routes. The routes follow the shoreline, building up into a continuous network and crossing the bay and the river over new bridges.
	The centre is characterised by parks, plazas and an urban lifestyle.
	Agriculture in an urban setting embodies both a symbolic and an identity value. Local food features prominently in the planning of dwellings and residential blocks.
	* Accessibility of parks, public shore areas and nature areas * Diversity of green and recreational areas
	* The coastline is a place for hanging out where people can also engage in cultivation, let animals out to pasture, engage in boating, trading and physical excercise.
	The river valley and the shoreline are key green areas inside the urban fabric. The major green areas are interconnected by green corridors that lead to Taasjärvi and to the north along the river valley to Nikkilä and Sipoonkorpi.

	A ferry runs from Sibbesborg to the islands. ... Ferry traffic is absolutely vital for the development of recreational services in the islands in summer. Transport connections to the islands are maintained also in winter (ice roads) and in freeze/thaw periods.
	A good brand and image for housing is established at the start. Implementation must begin with a particularly impressive and attractive area, thus establishing a positive image for the whole area. This can be done in Eriksnäs, which can be developed in the near future and which is particularly attractive.
	Green Care is a form of activity that arises from nature and the rural environment. It comprises care services designed to promote wellness and quality of life. Green Care methods are used in social work, health care, education and rehabilitation. The production of Green Care services in Sibbesborg is modelled on Green Care operations implemented on the biodynamic farm of Majvik.
	Parks and green corridors within the urban structure are scaled to fit the block pattern and create no obstructions between different neighbourhoods.
	Main streets, plazas, a market square, parks, a waterfront route, bridges, landmark buildings and views, all articulate the urban space and contribute to the formation of easily recognisable sites.
Sustainability Criteria, BD	Main criterion [to assess the sustainability of the evolving local master plan of Sibbesborg] [for the theme of uniqueness: Unique ways of living and unique lifestyles] .... * Natural ecosystems
	Main criterion [to assess the sustainability of the evolving local master plan of Sibbesborg] [the theme of uniqueness: Unique environment and landscape * Safeguarding of natural and landscape values.
	Criterion / indicator for physical environment * Green infrastructure and soil that support ecological diversity. Preserving the functionality of ecosystems belonging to green infrastructure and soil is the prerequisite to the materialisation of sustainability.
	Criterion / indicator for physical environment * Valuable large forest areas remain uniform.
	Criterion / indicator for physical environment * Core nature areas and ecological corridors remain
	Criterion / indicator for physical environment * Ecological connections remain
	Criterion / indicator for physical environment * The interaction between green and blue networks is identified and changes have to be minimized and justified.
Sustainability Criteria, ES	Main criterion [to assess the sustainability of the evolving local master plan of Sibbesborg] [the theme of uniqueness: Unique environment and landscape] * Ecosystem services for the residents.
	Main criterion [to assess the sustainability of the evolving local master plan of Sibbesborg] [the theme of uniqueness: Unique environment and landscape] * Enabling of ecosystem services of sustainable development [??]
	Criterion / indicator for physical environment * Decreasing of area under cultivation, Number of operational farms, urban agriculture in central areas
	Criterion / indicator for physical environment * Safeguarding of the good quality of water is the lifeblood of a community due to, for example, provision of water. Cherishing the water ecosystems enhances biodiversity and recreational use of waters.
	Criterion / indicator for physical environment * Local building materials are used. [wood was specifically mentioned elsewhere in the documents]
	Criterion / indicator for functional environment * Area under cultivation / resident
	Main criterion [to assess the sustainability of the evolving local master plan of Sibbesborg] [the theme of uniqueness: Unique eco- and energy-efficiency] * Ecological water systems
	Criterion / indicator for physical environment * Sealing of the land surface has to be minimized.
	Criterion / indicator for physical environment * No new groundwater areas shall become under risk.
	Criterion / indicator for physical environment * The sealing of land surface in groundwater areas must be minimized.
	Main criterion [to assess the sustainability of the evolving local master plan of Sibbesborg] ....

	* The aesthetics and cosiness of the townscape.
	Main criterion [to assess the sustainability of the evolving local master plan of Sibbesborg] [for the theme of uniqueness: Unique ways of living and unique lifestyles] .... * Ability to regenerate & healthiness & security
	Criterion / indicator for functional environment - High quality housing .... * Good accessibility to parks, public shoreline and natural areas * The diversity of green and recreation areas * Shores provide an opportunity to pass the time, cultivate, for pasture farming, boating, trade and mobility.
	Criterion / indicator for functional environment * Close-to-home recreation areas (close-to-home parks, shores, hiking areas) shall be accessible
	Criterion / indicator for functional environment * Urban agriculture shall be part of urban nature and recreation
	Criterion / indicator for functional environment * The shoreline shall be open to all, public and active.
	Criterion / indicator for functional environment * The extent of green care activities
	Criterion / indicator for functional environment * Number and significance of utilised / declined / vanished cultural heritage sites.
	Criterion / indicator for functional environment * Number, accessibility, year-round availability and quality of new cultural, gathering, sport and recreation sites.
	Criterion / indicator for functional environment * Urban cultivation as an action enhancing social activity, physical excercise and communal atmosphere, 'community gardening'.

Effects of arguments

The *potential effectiveness* of arguments refer to the logical inference of how the arguments prevailing in the study could potentially generate effects (Primmer et al. 2013).These were not assessed in this case study.

I analysed the arguments of the Sibbesborg urban planning case according to their observed effectiveness. Following criteria have been presented as measures for *observed effectiveness* (Primmer et al. 2013): Effective arguments

- persist over time,
- accumulate or increase over time,
- cross levels: actors at a new level start using arguments previously used only at a lower or higher level,
- diffuse or spread to new actors' discourse,
- replace or take over previously dominating arguments.

The variation in arguments presented by different stakeholders was not the focus of this case study but how the arguments formed as targets for planning in Sibbesborg remain and change in the course of the planning process. Cross-levelling or diffusion to new actors' discourse were not applicable in this case. Therefore, I have analysed the arguments using only three of the measures mentioned above: persistence, accumulation / increase, and replacement. The results of the analysis are presented in Table 5.

Table 5. Baseline arguments (set as targets in Phase 1), the persistence of which was followed in the Sibbesborg local master plan process. (Author's clarifying inserts in the text in square brackets.) Grey shade coding refers to different argument groups.

Argument group	Arguments set as targets in Phase 1	Observed effectiveness					
		Phase 2			Phase 3		
		Persistence*	Accumulation / Increase**	Replacement	Persistence*	Accumulation / Increase**	Replacement
Preservation of biodiversity	Planning shall target for:						
	* preservation of valuable natural ... features	±		replaced partly by utilisation	↓		replaced by acceptance of utilisation
	* the preservation and development of biodiversity	±		connected with new urban BD	↓		completely absent
	* ecological corridors to remain undisturbed whenever possible	±		replaced partly by recreational networks	↓		ecological corridors ruled out of urban structure and mainly replaced by green corridors for people
	* preservation of valuable natural ... sites	±		replaced partly by utilisation	↓		replaced by acceptance of utilisation
	* preservation of extensive, uniform natural areas ...	±	↑		↑	↑	
Safeguarding of provisioning ES	Planning shall target for:						
	* the possibility for residents to cultivate plants and vegetables for their own use (gardens or allotments)[food production side of this activity]	↑	↑	partly replaced by identity formation side of own food production	↑	↑	
	* commercial production of local food [mentioned in the main text but not in the targets list]	↑	↑		↑	↑	
Safeguarding of regulating and maintenance ES	Planning shall target for:						
	* natural air purification (green areas)	↓		completely absent	↓		completely absent
	* natural carbon storage (forests, marsh areas)	±			↓		replaced by surface and groundwater quality issues
	* noise reduction [by natural features]	↓		completely absent	↓		completely absent
	* dispose of run-off water by absorption rather than along with other sewage [water flow regulation and storm water retention]	±			±		
Safeguarding of cultural ES	Planning shall target for:						
	* preservation of valuable ... landscape features [due to e.g. aesthetics]	↓			↑		
	* utilisation of the landscape and topography in planning	↑	↑		↑	↑	
	* preservation of valuable ... cultural sites	↓		not really mentioned	↓		
	* preservation of ... cultural landscape areas	±		keeping land under cultivation as it is now as preservation	↑	↑	
	* suitably large, diverse and accessible recreation areas	↑	↑		↑	↑	recreation along with tourism opportunities has replaced BD related arguments
	* the possibility for residents to cultivate plants and vegetables for their own use (gardens or allotments) [recreational side of this activity as cultural ES]	↑	↑		↑	↑	
	* waterfront areas open to everyone	±			↑	↑	utilisation of waterfront areas has replaced BD related arguments
	* quiet areas	↓		completely absent	↓		completely absent

↑ = strong persistence* / accumulating use**

± = argument persists in about same level as set in targets

↓ = weak persistence or even disappearance

1.

4. Discussion

In Sibbesborg local master plan development process, prioritization of BD and ES related arguments was quite clearly formulated and justified in the target setting stage of the planning competition. When analysing the following next two phases of development, BD related arguments tended to be weaker than the ones for urban development and, therefore, did not always persist in the process. There were signs of partly moving from preservation of BD to utilisation of BD.

Individual ES persisted quite well in the planning process – although not named as ES. Based on the competition submissions, the concept of ES had not yet been thoroughly taken up by the planners. Analysis of the first official planning guideline documents (Sustainability criteria and Development policy) revealed that the concept of ES was not clearly understood even by the municipal planners of Sipoo leading the process. Rather a shift towards a traditional way of dealing with environment could be observed leading to loss of innovativeness and opportunities provided by the holistic concept of ES. As a result, while acknowledging the usage of the ES concept as the first step towards applying ES approach it is clear that comprehension of the multifaceted concept is necessary to actually apply it. Otherwise the result will be, as the Sibbesborg case study showed, that the concept of ES becomes gradually more and more indistinct during the planning process and is not understood as a comprehensive, over-arching theme including all kinds of services that can be achieved through multi-functional green and blue infrastructure both under and over the land and water surfaces.

Finally, there is a call for easily applicable tools to include the ES approach in practical land use planning. The tool should include background information on BD and ES as well as on green infrastructure, advice on which municipal offices and various stakeholders need to be involved, what data is needed, what kind of analyses would help assessing relevant areas for safeguarding BD and ES, what are the benefits and who are the beneficiaries of ES, to mention a few. What seems to be the most important prerequisite for taking into account especially the ES approach is a true willingness and courage to do something new and deliberately move on to an uncomfortable mental zone where the learnt architectural or landscape architectural principles need to come only second and not first.

5. Conclusions

The Sibbesborg local master planning was opened for international competition and was based on a new transparent concept: the competition format was designed to be highly interactive with the public which had an opportunity to evaluate and comment on the entries that were put on show in the Sibbesborg web page. In addition, renowned experts of different fields were invited to join the planning process and had the possibility to influence the objectives, the agenda and the principles of evaluation from the very beginning. All interested parties have had the opportunity to participate in the process in several workshops and through a web application – in real time and even in English to allow international audience.

The development of former agricultural and forested land that has naturally and culturally valuable sites generates a dilemma and potential conflicts between nature conservation and urban development. Sacrifices related to valuable areas are done due to wanting to attract both new residents and enterprises by selecting the most impressive – and at the same time the most sensitive – area for development. The target is an economically viable area but the question remains: could this not be achieved by using new innovative BD and ES based approaches?

Although the Sibbesborg local master plan process is still not very far, there are already contradictions between the planning targets and planning solutions on the horizon. In addition to lack of deep comprehension of the ES concept there seems to be also lack of comprehension of multifunctional areas. Storm water infiltration areas can serve as recreational places, even out temperature extremes, add aesthetic features to built environment, to mention a few. This requires change of attitude to current normative view of urban green spaces in land use planning. The concept of green infrastructure as suggested by the European Commission lately could be a bridge that joins BD and ES with the built environment.

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Hoogerwerf A (1990) Reconstructing Policy Theory. Evaluation and Program Planning 13:285-291

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Söderman T, Kopperoinen L, Shemeikka P, Yli-Pelkonen V (2012) Ecosystem services criteria for sustainable development in urban regions. Journal of Environmental Assessment Policy and Management 14(02)

Attachment 1. List of documents analysed in the Sibbesborg urban case study

Phase 1
Competition programme. Sibbesborg: competition for sustainable community development. 2011. http://www.sipoo.fi/easydata/customers/sipoo/sibbesborg/kilpailu/.

Phase 2
Evaluation minutes 16.1.2012. Sibbesborg: competition for sustainable community development. 2012. http://www.sipoo.fi/easydata/customers/sipoo/sibbesborg/kilpailu/.

Phase 3
Sibbesborgin kestävyyskriteeristö. 2013. http://www.sipoo.fi/en/sibbesborg/sibbesborg_frontpage. [The sustainability criteria of Sibbesborg]

Sibbesborg development policy. Towards Sustainable Community and Balanced Regional Development 2013–2065 (translation). 2013. http://www.sipoo.fi/en/sibbesborg/sibbesborg_frontpage.

Analysed but not included in the final analysis due to no added value with regard to arguments:
Osallistumis- ja arviointisuunnitelma. Päivitetty 5.9.2013. 2013. http://www.sipoo.fi/en/sibbesborg/sibbesborg_frontpage. [Participation and evaluation plan. Updated 5 September 2014]

Attachment 2. The CICES v4.3 classification (Haines-Young and Potschin 2013).

CICES v4.3 (January 2013) for ecosystem accounting			
Section	Division	Group	Class
Provisioning	Nutrition	Biomass	Cultivated crops
			Reared animals and their outputs
			Wild plants, algae and their outputs
			Wild animals and their outputs
			Plants and algae from in-situ aquaculture
			Animals from in-situ aquaculture
		Water	Surface water for drinking
			Ground water for drinking
	Materials	Biomass	Fibres and other materials from plants, algae and animals for direct use or processing
			Materials from plants, algae and animals for agricultural use
			Genetic materials from all biota
		Water	Surface water for non-drinking purposes
			Ground water for non-drinking purposes
	Energy	Biomass-based energy sources	Plant-based resources
			Animal-based resources
		Mechanical energy	Animal-based energy
Regulation & Maintenance	Mediation of waste, toxics and other nuisances	Mediation by biota	Bio-remediation by micro-organisms, algae, plants, and animals
			Filtration/sequestration/storage/accumulation by micro-organisms, algae, plants, and animals
		Mediation by ecosystems	Filtration/sequestration/storage/accumulation by ecosystems
			Dilution by atmosphere, freshwater and marine ecosystems
			Mediation of smell/noise/visual impacts
	Mediation of flows	Mass flows	Mass stabilisation and control of erosion rates
			Buffering and attenuation of mass flows
		Liquid flows	Hydrological cycle and water flow maintenance
			Flood protection
		Gaseous / air flows	Storm protection
			Ventilation and transpiration
	Maintenance of physical, chemical, biological conditions	Lifecycle maintenance, habitat and gene pool protection	Pollination and seed dispersal
			Maintaining nursery populations and habitats
		Pest and disease control	Pest control
			Disease control
		Soil formation and composition	Weathering processes
			Decomposition and fixing processes
		Water conditions	Chemical condition of freshwaters
			Chemical condition of salt waters
		Atmospheric composition and climate regulation	Global climate regulation by reduction of greenhouse gas concentrations
			Micro and regional climate regulation
Cultural	Physical and intellectual interactions with biota, ecosystems, and land-/seascapes [environmental settings]	Physical and experiential interactions	Experiential use of plants, animals and land-/seascapes in different environmental settings
			Physical use of land-/seascapes in different environmental settings
		Intellectual and representative interactions	Scientific
			Educational
			Heritage, cultural
			Entertainment
			Aesthetic
	Spiritual, symbolic and other interactions with biota, ecosystems, and land-/seascapes [environmental settings]	Spiritual and/or emblematic	Symbolic
			Sacred and/or religious
		Other cultural outputs	Existence
			Bequest

Annex 12a – Case study report: Implementing the Natura 2000 network; Arguments for biodiversity conservation in Natura 2000 sites: An analysis based on Life projects

Angelika Müller, Joachim Maes

1. Introduction

This BESAFE case study examines the arguments that have been used to protect biodiversity and restore ecosystems in Natura 2000 sites across Europe. The Natura 2000 network was established 1992 under the Habitats Directive (HD) to build a Europe-wide framework for nature conservation. The HD constitutes the EU's most important legislation on biodiversity conservation. The case study is based on an assessment of various LIFE projects, which aim to conserve and restore habitats and species that are protected under the Habitats Directive. LIFE is the main funding instrument of the European Commission to finance restoration projects.

This analysis aims to be insightful for understanding the tension that can appear between EU rationale and its implementation at local scale. This case study therefore analyses the effectiveness of arguments that were used by LIFE project managers to raise awareness and engage with stakeholders, given that the overall premise on conservation was predefined by EU level.

2. Analysis

2.1. Data selection and methodology

This multi-case study uses the Natura 2000 sites as example for analyzing which arguments are effective in communicating the value of biodiversity to important stakeholders. The multi-case study format was chosen because it allows abstracting from the socio-economic and cultural context and condensing context-independent effects. At the same time the multi-case study allows to extract suggestive evidence on mediating factors that influence the effect dependent on the context.

The analysis is based on document analysis and in-depth interviews. For the document analysis 365 projects were selected from the LIFE online database that referred to Natura 2000 sites. The selected projects were analyzed regarding how the project was represented in the LIFE database, on website of the project and in other public communication materials. This analysis yielded information on relative frequency of arguments that were used. Relative frequency is one indicative measure of effectiveness as perceived by the project developer.

In addition, the document analysis helped to identify important arguments and stakeholder for subsequent in-depth interviews with LIFE project managers. In total 55 project managers were requested to participate in the study. Out of these 14 responded and attended the interviews. The in-depth interviews aimed at exploring the perceptions of project managers about the effectiveness of alternative arguments. Interviews were recorded and transcribed. Transcripts were coded, while coding was based on stakeholder groups and arguments previously identified. Argument codes referred to the list of 31 possible arguments for biodiversity identified in Deliverable 1.1 (Howard et al. 2013).

Finally coded interview were analyzed according to the structural framework presented in section 2.3. For sake of comprehensibility results on different arguments types were summarized in tables. These tables express effectiveness of arguments by stakeholder group. Effectiveness is categorized in four ordinal levels: No effectiveness, low effectiveness, medium and high effectiveness. Where results for specific arguments

varied among cases a range of effectiveness was indicated, e.g. “high to medium effectiveness”. Where the deviation between results was too large to be conclusive, the label “varies strongly” was applied and potential determining factors were listed. Where the argument was often found to be not applicable for the context, the label “if applicable” was used. These labels should be understood as qualitative information that describes the observed cases of this study. Tables should not be read as “average” or “universal” indicators of effectiveness, as the external validity of results is subject to debate and needs to be conclusively explored outside of this study.

2.2. Limitations

The ideal research design for investigating the effectiveness of arguments on biodiversity would collect information from both project managers (message communicator) and all relevant stakeholders (recipient) to triangulate their answers. For this study doing so would mean to collect interview data of project managers as well as important stakeholder groups. However, interview data from stakeholder groups was difficult to obtain, because it was in many cases significantly more demanding to identify representative members of stakeholder groups and thus, appeared unfeasible for the scope of this study. For a consistent research approach among single cases, it was therefore chosen to concentrate on project managers as primary data source. However, this selection can potentially lead to a systematic bias, if in average project managers reported wrongly in favor of specific arguments. As there is no reason to believe that project managers had a personal interest in influencing the study results, no bias is to be expected from willingly falsely reported information.

However, it could be systematically biased, how project developers perceive the effectiveness of specific arguments, because persuasive power of an argument manifests as cognitive process in the mind of the addressed stakeholder. While this cognitive process is not directly observable for project developers, it can however, be observed if the change in attitude translates into a change in behavior. For instance a stakeholder group that was previously actively opposing the project could finally support project activities. While this method comes with certain limitations, it seems conducive for the purpose of this study.

A second limitation of the research design is the self-selection of interviewees into the study. It is possible that project managers, that were willing to participate in the study differ systematically from those that were not willing to participate in a characteristic will also affect their perceptions about the effectiveness of arguments. It is likely that study participants differ indeed in one important characteristic from other project managers. This characteristic is their awareness and interest in the topic of the study, i. e. the effective persuasion of stakeholder groups. Most likely participants are more aware of the difficulties that stakeholder involvement can mean than the average project manager and have engaged more intensively with argumentation strategies in the context of their project. This implies that study participants will command over more accurate perceptions on the effectiveness of arguments than their colleagues. Given these consideration self-selection seems no threat, but rather a quality control to the study results.

2.3. Structural framework

The research question of this study is effect-oriented. This study is interested in which arguments result in the persuasion of the message recipient. Therefore a relatively simple effect-oriented communication model was chosen, which can be understood as adapted version of the classic linear Lasswell model (Lasswell 1948). While the original Lasswell model consists solely in the message, the message communicator, the channel, the message recipient and the effect of the message, we extended it for our purpose through mediating factors to recognize that each message has been understood in its context as first highlighted by

Jakobson (1960). These mediating factors are as identified in work package 1 of the BESAFE project the socio-economic context, the ecological context, the stage in the policy cycle and the way of presenting the arguments (Howard et al 2013).

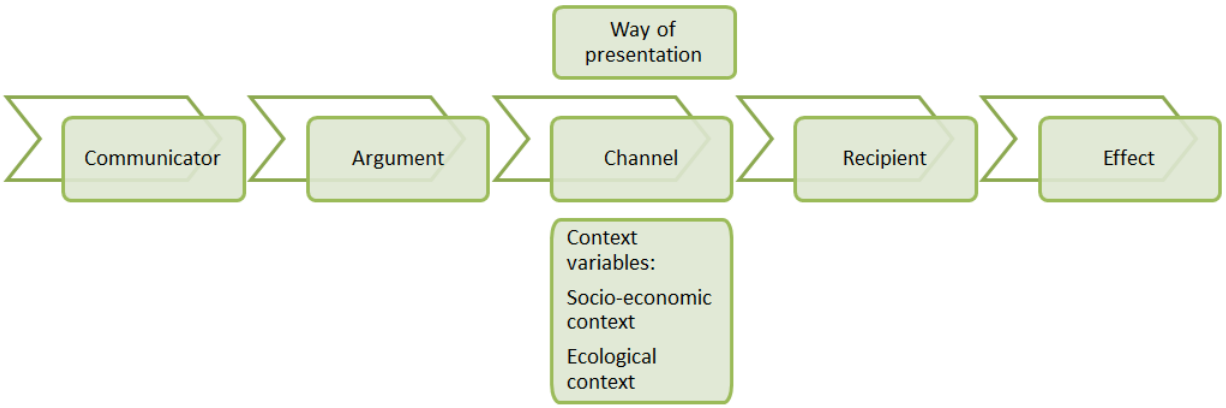

Figure 1. Structural framework used for the assessment of arguments to protect and restore biodiversity in LIFE projects across Europe

2.3.1. Type of arguments

Arguments for biodiversity conservation can be categorized in a framework developed by Howard et al. under work package 1 (Howard et al 2013, p. 21). This framework distinguishes between instrumental arguments, non-instrumental arguments and those where the goal is not expressed. Further, instrumental arguments can be divided in those referring to “economic benefit” and those referring to “social benefit”. Similarly, non-instrumental arguments can be divided in the subcategories of those referring to “human welfare” and referring to an “inherent value”. All possible argument for biodiversity can be sorted into these categories.

This theoretical framework was combined with empirical results from the literature review of work package 1 on all possible arguments for biodiversity (Howard et al 2013, p.18ff). The literature review identified 31 possible arguments for biodiversity that find mentioning in the literature. For the purpose of this study all 31 arguments were assigned to one of the five categories of the theoretical framework. This categorization is illustrated in figure XXX. It was used to structure the analysis and evaluate interview data.

Table 1. Classification of arguments

		Type of premise statement
Instrumental	Economic	17. Productivity in forestry/agriculture/fisheries/food security 18. Other industrial dependence 14. Business risk 20. Water security 21. Energy security 22. Economic 26. Employment and livelihoods
	Social	5. Ecosystem function/ resilience – anthropocentric 6. Ecosystem services (flows leading to benefits) 7. Specific regulating and supporting services other than climate regulation 8. Climate regulation services and/or carbon sequestration 12. Recreation 13. Human health/ reduction in disease risk 16. Intellectual stimulus 23. Bioprospecting 24. Precaution/ risk management (current generation or century) 25. Precaution (future generation) and option value 27. Sustainable development/ poverty alleviation/ future generations 28. Moral, ethical or religious belief related to obligations to other people 29. Legal compliance/political necessity 30. Reputational benefits
Non-instrumental	Inherent	1. Recognizing rights/values of nature itself for itself 2. Ethical, moral and religious views providing obligations to nature 3. Evolutionary processes should not be disrupted 9. Protection against invasive species/diseases in non-human life forms
	Human happiness	10. Social/cultural/heritage/collective well-being and welfare 14. Aesthetic value 15. Biophilia – the desire for relationship and contact with nature
Goal not expressed		4. Ecosystem function/resilience – purpose unclear 31. species conservation matters (underlying reason not mentioned)

2.3.2. Message communicator and message recipient

For two reasons analyzing the characteristics of the message communicator and its interaction with message effects was for the most part neglected in this study. Firstly, the focus of this study lies on the argument type and its impact on effective persuasion of stakeholders. The impact of communicator identity plays only a subordinated role. Yet the possibility of an effect of communicator identity was borne in mind during the analysis.

Secondly, in all cases of this study the message communicator was a project manager of a conservation project in a Natura 2000 site. Typically these project managers were working for public authorities. In some cases project managers were affiliated to non-governmental organizations funded by the government. As most message communicators share important attributes, message effects should not vary largely among the different cases.

In addition, recipient identity was expected to have a major impact on an argument's effect, because each single case addressed stakeholders with very different value systems and interests. For this study stakeholder groups were classified in commercial users of the ecosystem, non-commercial users of the

ecosystem, civil society organizations and local public authorities. These categories were applied to all single case stakeholder groups to explain variation in effectiveness.

2.3.3. Socio-economic and ecological context and way of presentation

It did not appear sensible to analyze the socio-economic and ecological context using a predefined classification framework, because the sample was relatively small. Further, the context varied largely among single cases, which would have resulted in individual categories for each single case. Instead context variables were analyzed in a case by case basis to create suggestive evidence on their impacts. Similarly, the way of presentation was not analyzed by a pre-defined framework, but on a case by case basis.

2.3.4. Stage of the policy cycle/ time dimension

Jokinen et al (2013) observed that arguments for biodiversity can affect the policy cycle at three stages. Arguments can appear before the policy framing and goal setting and influence its outcome. They can be used to operationalize goals into sub-goals, standards and working principles and thereby determine the implementation of the policy. And arguments can be used in implementing the practice and in measuring its effects. All argumentation of our multi-case study happened at the implementation stage. Therefore, the policy stage was no determining factor in our analysis. However, the time dimension was incorporated our analysis, in the sense that a change of argumentation over time indicated that certain arguments proofed ineffective or others more effective.

2.3.5. Argument effectiveness

This study used the framework by Primmer et al (2013) on assessing the effectiveness of an argument. Primmer et al distinguish between observed and potential effectiveness. While observed effectiveness can be studied by analyzing actual policy processes whose effects can be observed, potential effectiveness refers to how alternative arguments are valued by stakeholders or how effective they appear in laboratory experiments.

Measures for observed effectiveness are:

- persistence
- accumulation
- level-crossing
- diffusion
- replacement

The persistence of an argument can be understood as its enduring over time. The accumulation signifies that an argument is growing in importance over time. Diffusion of an argument means that it reaches new audiences within the same level, whereas level-crossing implies that new levels or actors take up the argument in their discussion. Finally, replacing or overriding of one argument through another implies a low observed effectiveness.

Potential effectiveness can be either analyzed in a purely logical exercise or in assessing the attitudes of stakeholder to certain arguments. In this study we will focus on the latter. Potential effectiveness for the various stakeholder groups was addressed by asking project developers about their beliefs how effective specific arguments might be for particular stakeholders. As discussed earlier this type of data comes with some doubts about the accurateness with which project developers are able to predict stakeholder attitudes correctly. For this reason, potential effectiveness will only make up a minor part of the analysis and will mainly be used to backup finding from the observed effectiveness.

3. Results

3.1. General description of the arguments used in the LIFE database

A first assessment screened 365 LIFE projects for the argumentation on biodiversity they contain. The spatial distribution of the sample is presented in Figure 2 while the frequency in the use of the different arguments is available in the supplement (Table S1). The arguments which were used most frequently were "Recognizing rights/values of nature itself for itself", "Species conservation matters (underlying reason not mentioned)" and "Social / cultural / heritage / collective well being and welfare". Relative frequency of the use of arguments per stakeholder group.

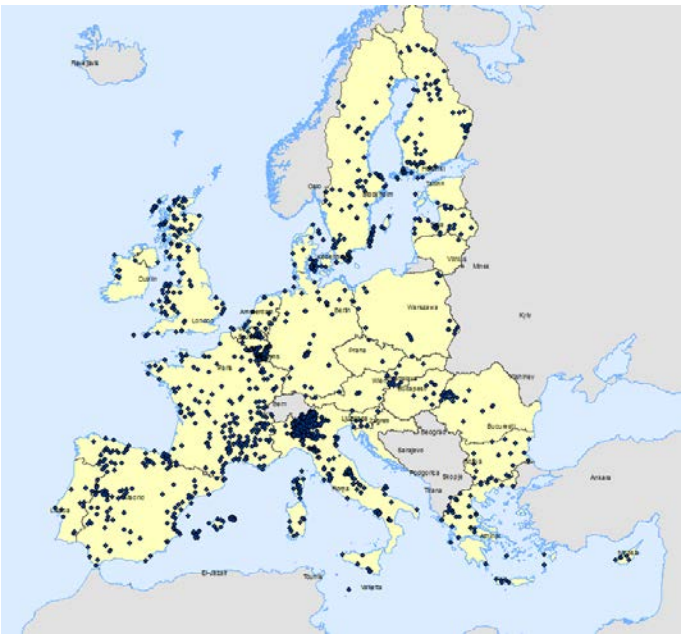

Figure 2. Spatial distribution of the screened LIFE projects

Table 2. Relative frequency of the use of arguments per stakeholder group

Argument type		NGO-Foundation	Park-Reserve authority	Local authority	Regional authority	National authority
Instrumental	Economic	14%	16%	12%	11%	7%
	Social	29%	18%	24%	28%	23%
Non-instrumental	Inherent	29%	33%	41%	28%	43%
	Human happiness	10%	13%	10%	12%	9%
Goal not expressed		15%	17%	14%	20%	16%

3.2. In-depth assessment

The in-depth assessments are based on interviews with project managers. Here we present a summary of the results per argument type. These assessments were also reported to the BESAFE database since they addressed the issue of effectiveness.

3.2.1. Economic arguments

The general economic argument was most frequently used among this type. In addition, increased productivity found occasional application and in a single case water security was presented to stakeholders. However, the examined cases contained no examples for arguments referring to energy-security and dependence of non-primary industries. Most likely this omission stems simply for the fact that these arguments were not applicable (or context dependent). Equally, employment generation was not mentioned directly by any interviewee, though it found indirect mentioning in references to a potential touristic industry.

The general economic argument showed particularly for commercial users and public authorities extremely high effectiveness. However, the argument was not applicable to many contexts, as commercial interests and conservation requirements often diverged. For instance one project manager in Bulgaria stated:

"…the government wanted to build a ski area, a ski resort. And this is of course for the bear population very dangerous…"

The argument referring to productivity increases faced similar problems with its applicability. For this reason, it was hardly used by project managers. Instead conservation projects had to deal in many contexts with strong opposition from commercial users, because commercial productivity was undermined by the conservation measures.

One typical way of dealing with these conflicting interests, would be to create the business case for commercial users by offering them subsidies for implementing conservation measures. The observed cases did not contain typical examples for this practice. In contrast, one interview partner stated that financial incentives were in his eyes not capable of introducing permanent behavioral change:

"And then we talk about the pragmatic motivation, this is very easy to convince maybe (…), because you will receive a payment. This is easy to convince, economic motivation. But this is very short term, because we have a very rapid change of values, we have economic inflation, but we have also a values inflation."

In other contexts governmental subsidies were found to be even detrimental for conservation purposes. For instance the manager of a meadow land conservation project stated that fallow lying acres could not be included in the project because land owners were receiving public subsidies for land classified as agricultural land which were higher than the payments for green areas.

In general, it seemed difficult for project managers to persuade commercial users with economic arguments, because the facts spoke against them. Where no business case for conservation could be made, it was typically the legal obligation which substituted economic arguments.
Different was the case for the engagement with municipalities. As their decision-making takes all benefits to the local community into account, it appeared in many cases easier to create a business case. For instance, while agricultural users typically do not benefit from conservation activities, conservation can create new sectors and employment opportunities that ultimately benefit the region. Though difficult to assess the magnitude of these benefits a priori, these economic aspects seemed the persuade municipalities in several cases. For example one project manager described the synergies between bird conservation and economic interest of the region like this:
"And we say, ok, guys, if you want nature tourism, you need angling and birding there. So if you want birds there, you have to have appropriate farming there which is favorable for the birds. So you want birds, you need to have extensive farming, extensive farming means late mowing, late mowing means that the farmers have a problem with the biomass, we don't know where to put the biomass because the hay is not anymore useable for animal feeding. And they say, ok, the biomass maybe can be used for biofuel, you can make pellets out of this biomass and you can heat houses. But then we say, ok, this means if the municipality would change their heating system into a heating from the biomass we would create a pre-condition that there could be a lot of birds and this would be a pre-condition for nature tourism. So we try to put this logic scheme, we try to come with economic figures."

Economic arguments were rarely used for non-commercial users of the ecosystem, because project managers expected them to be not effective. Two of the examined cases suggested that strong local social cohesion may be a factor that makes the general public more receptive to the economic argumentation.

Economic arguments were never used for civil society organizations, which implies that their low potential effectiveness for these groups. However, environmental organization used this type of argument repeatedly in addition to their normative claims to persuade other stakeholder groups, especially public authorities.

Table 3. Summary table with the effectiveness of economic arguments per stakeholder group.

Stakeholder groups		17. Productivity in forestry/agriculture/fisheries/food security	20. Water security	22. Economic
Non-commercial users	General public	Medium to low effectiveness	Medium to low effectiveness	Medium effectiveness
	Schools	Low effectiveness	-	Not effective
	Visitors/Recreationists	-	If applicable, high effectiveness	-
Commercial users	Landowners/Farmers/Fisheries	If applicable, very high effectiveness; often not applicable, as productivity and conservation interests diverge	If applicable, high effectiveness	If applicable, very high effectiveness; often not applicable, as economic and conservation interests diverge
	Stock breeders	If applicable, very high effectiveness; often not applicable, as productivity and conservation interests diverge	Low effectiveness	If applicable, high effectiveness; often not applicable, as economic and conservation interests diverge
	Forestry	Not applicable, as productivity and conservation interests diverge	-	Often not applicable, as economic and conservation interests diverge
Civil society organizations	Environmental NGOs	-	-	-
	Animal rights associations	-	-	-
Municipalities		High effectiveness	High effectiveness	Very high effectiveness; often not applicable, as economic and conservation interests diverge
Persistence		Persistent	Persistent	Persistent for the time of benefit (e.g. subsidy)
Accumulation		If applicable, accumulating	Not accumulating	If applicable, accumulating
Level-crossing		If applicable, used by both local government, civil society and sometimes commercial users	If applicable, used by regional and local government and sometimes civil society	If applicable, used by regional and local government and sometimes civil society
Diffusion		Some diffusion to general public	Diffusion to discourse between municipality and commercial users	Some diffusion to municipality
Replacing		If applicable, no replacing; if not applicable replacing by legal (29)	Replacing by legal argument (29)	If applicable, no replacing; if not applicable replacing by legal (29) or subsidies (22)

3.2.2. Social arguments

For all stakeholder groups it seemed that social benefits are the more convincing the arguments. In general the legal argument was the one most frequently used. Though for most stakeholders very effective, it showed large variance in its effects on commercial users of ecosystems. In some cases commercial users showed strong emotions to legal obligations. Several project managers explained this effect through the distance between the regulator and the local context. The strength of law enforcement was mentioned as alternative cause for this effect. One example showed this clearly through the contrast between the effects of the Habitats Directive compared to the ones of the Water Framework Directive. The project manager stated:

"There is a legal obligation because pearl mussels are protected under the Wildlife and Countryside Act and there is the Habitats directive and the legislation in Scotland and the UK. But then there is the other legislation which comes through the Water Framework Directive. (…). But some of their actions could be potentially illegal under pearl mussel legislation, but to them that wasn't important because it was the Water Framework Directive which carries potentially a lot more weight and more enforcement, so they were more concerned about if we use that legislation to talk to them and to tell them how can we help them lead their Water Framework Directive obligations…"

Another determinant - besides distance to the regulated context and variance in law enforcement - seemed to be the attitude to the normative base of a law and the attitude to the government in general. One example illustrated this very clearly. Out of the two interviewed managers of large carnivore projects one reported a high effectiveness of the legal argument, while the other spoke of strong reluctance from stakeholders. This large deviation in effectiveness came along with different attitudes to large carnivore conservation and to legal obligations in general. These cases give suggestive evidence for a causal relationship.

Arguments about ecosystem services were in contrast less frequently used. In many cases project managers seemed to face difficulties in identifying which concrete ecosystem services their projects generate. Yet some cases suggested that arguments about ecosystem services result in high effectiveness, if they are applicable. For instance one project manager identified the carbon storage potential of his project as a highly effective argument. Other interviewees mentioned flood prevention as an effective argument for all stakeholder groups. Recreation and intellectual stimulus were observed as strong arguments for non-commercial users, but limited to weak arguments for municipalities or commercial users.

These examples illustrate that ecosystem services can be very persuasive if the benefits are easily identifiable and coincide with stakeholder interests. Further, it can be hypothesized that ecosystem services work according to similar logics as economic arguments, particularly for commercial users. For commercial users economic interests had priority. Thus, where ecosystem services created direct benefits to commercial interests - as in the case of flood control – they can help to create a business case for conservation. Where this is not the case, ecosystem services show no large effect.

The finding suggests, further, that ecosystem services are effective as arguments, when they are easily understood by the stakeholder. Many project managers outlined the complexity of the ecosystem services concept as the main reason as to why they expected them to be ineffective. For instance regulating services were hardly used, as they translate only indirectly into benefits for the community. However, ecosystem services that could be easily understood were described as very effective, as the example of recreation or flood control shows.

Another strong argument in the social types were reputational benefits. Similar to the legal argument this argument was quite frequently used. It proofed particularly effective for municipalities. However the direction of the effect depends to a strong degree on public opinion on conservation. Detrimental effects were for example observed in the context of invasive species. One project manager stated:
"…they perceive this problem, because for example they had the red squirrel some years ago and now they have only the grey one. But they don't want to be exposed, because it also involves a political exposure."
Other social arguments were not observed in this study. Although our theoretical framework contains arguments about sustainable development and poverty alleviation, bioprospecting and a moral obligation towards other people, this study found no examples for their use. It seems suggestive that these arguments were not employed, because they had no connection to the case study contexts.

Table 4. Summary table with the effectiveness of social arguments per stakeholder group.

	Stakeholder groups	5. Ecosystem function/ resilience – anthropocentric	6. Ecosystem services (including carbon sequestration and health risk reduction)	12. Recreation	16. Intellectual stimulus	24. Precaution/ risk management (current generation or century)	25. Precaution (future generation) and option value	29. Legal compliance/political necessity	30. Reputational benefits
Non-commercial users	General Public	'	If applicable, medium effectiveness	Medium effectiveness	Medium effectiveness; should form part of mix of arguments	If applicable, medium effectiveness	-	Medium effectiveness	-
	Schools	Effectiveness varies strongly; depending one ecological knowledge of students	-	Medium effectiveness	Medium to high effectiveness	-	-	-	-
	Visitors/Recreationists	Medium effectiveness; depending on ecological knowledge and awareness	ESS related to recreation activities: high effectiveness	Very high effectiveness	-	High effectiveness, if threats are concrete (e.g. flooding)	-	-	-
Commercial users	Landowners/ Farmers/ Fisheries	Medium effective	If applicable, medium effectiveness	-	-	If applicable (i.e. concrete threats), medium to high effectiveness	Medium to low effectiveness, but not frequently used	Effectiveness varies strongly by context; determinants are regulatory level, strength of enforcement and acceptance of normative base of the regulation	High effectiveness, if social environment in favor of conservation
	Stock breeders	-	If applicable, medium effectiveness	-	-	-		Effectiveness depending on country context; similar projects were very differently perceived in different countries; possible determinant is attitude towards law in general	-

	Forestry	-	If applicable, medium effective	-	-	If applicable (i.e. concrete threats), medium to high effectiveness		Medium effectiveness	-
Civil society	Environmental NGOs	Pre-existing value		-	-	-	Pre-existing value	-	High effectiveness, if general public is not opposing intervention
	Animal rights associations	-	-	-	-	-	-	Not effective	-
Municipalities		Medium effectiveness	Effectiveness varies strongly; depending on how concrete benefits to local community are (→ 5)	Effectiveness varies, depending on commercial interest related to it (eco-tourism)	-	High effectiveness, if threat very concrete (e.g. flooding)	Low effectiveness	Very high effectiveness	High effectiveness; depending on public opinion about the interventions
Persistence		Dependent on cultural norms and scientific understanding	Not very frequently used	Persistent	Persistent use in context of schools; in other context not used	Not very frequently used	Not very frequently used	Persistent	Not very frequently used
Accumulation		Not accumulating, often too abstract for many stakeholder groups	Accumulating over time, but still not very frequently used	Accumulating if tourism industry is growing	No accumulation	Depending on the concrete threat	No accumulation	Accumulation if EU law reinforced through national law	No accumulation
Level-crossing		Dependent on cultural norms and scientific understanding	Some level-crossing observable	-	No level-crossing	Depending on the concrete threat	-	If level-crossing depends on country context; may also lead to reactance	Level-crossing both of agreement with argument or reactance to the argument
Diffusion		Often too abstract for many stakeholder groups	Some diffusion observable	-	No diffusion	Depending on the concrete threat	-	If diffusing depends on country context; may also lead to reactance	-
Replacing		Replacing through direct economic benefits or moral obligations	Replaces or adds to pure ecological arguments 4 or 5;	Often accompanied by biophilia (15)	No replacing	Often combined with concrete Ecosystem	Replacing by concrete threats and benefits	Replacing or combining with consensus seeking management	-

					Services etc (e.g. flood prevention)		solutions	

3.2.3. Non-instrumental arguments – inherent value

In this study arguments that refer to an inherent value showed medium effectiveness for non-commercial users, but no effect for commercial users. This seems not surprising, because moral claims would need extremely strong normative power to persuade stakeholder whose livelihoods depend on the commercial use of an ecosystem to act against their own interests. The most frequently used argument of this category was the one referring to an intrinsic value or a right of nature. This was followed by the argument about a moral obligation arising from these rights of nature. The argument on the value of evolutionary processes was very rarely used. One project manager explained that result through stating the argument was too abstract and scientific for non-technical audiences.

While the intrinsic argument found wide application with both policy-makers, general public and in some cases farmers, the project developers expressed slight doubt about its effectiveness. One possible explanation for this peculiar observation is that project managers implicitly seem to expect a certain normative power of this moral argument. However, it is also evident from the examined cases that over time ethical arguments are typically replaced through instrumental arguments.
The only exception to this rule seems to appear for school children. Project managers reported univocally a high effectiveness of inherent arguments for this group. A possible reason for this difference to other stakeholder groups is that project managers expected that school children were still developing their value system and could be influenced in this process.

The argument about protection against invasive species takes a special position among this group of arguments. Similar to arguments on evolutionary process, this argument values the reduction of a human impact on the balance of an ecosystem. However, this argument proofed very tricky in our case studies. While commercial users seem to understand more or less the harm that invasive species can bring, the effectiveness for non-commercial users depended strongly on how the invasive species were perceived. In two cases local population seemed to have accustomed to the new species and perceived it as belonging to their local environment. In addition civil society organizations from the animal rights lobby a priori set the value of an individual animal higher than that of the ecosystem balance; therefore arguments on protection against invasive species proofed completely ineffective.

Table 5. Summary table with the effectiveness of non-instrumental - inherent arguments per stakeholder group.

Stakeholder groups		1. Recognizing rights/values of nature itself for itself	2. Ethical, moral and religious views providing obligations to nature	3. Evolutionary processes should not be disrupted	9. Protection against invasive species/diseases in non-human life forms
Non-commercial users	General Public	Frequently used, but effectiveness varies	Frequently used, effectiveness depends strongly on audience	Not effective	Medium effectiveness
	Visitors/ Recreationists	-	-	-	Effective, if invasive species has not yet established large population and is perceived as part of local ecosystem
	Schools	Medium effectiveness	Medium effectiveness	-	Effective, if education on invasive species strong
Commercial users	Stock breeders	Not effective	Usually not used, only for some effective	-	-
	Forestry	-	-	-	-
	Landowners/ Farmers	Frequently used, effectiveness varies strongly	Usually not used, only for some effective	Low to no effectiveness	Effective
Civil society	Environmental NGOs	Pre-existing value	Often pre-existing value	-	Pre-existing value
	Animal rights associations	Pre-existing values; adverse effect if intervention neglects animal rights assumptions	Often pre-existing value	-	Not effective
Municipalities		Not effective	Low effectiveness	-	Medium to strong effectiveness, if intervention not opposed by public opinion
Persistence		Persistent	Persistent	Very rarely used	Depending perceptions about the invasive species (if not recognized as such, no persistence)
Accumulation		Accumulation only observed in context of invasive species, where it has adverse effect	Not accumulation	-	Depending perceptions about the invasive species (if not recognized as such, no accumulation)
Level-crossing		level-crossing from animal rights associations to general public	No level-crossing	-	Depending perceptions about the invasive species (if not recognized as such, no level-crossing)
Diffusion		Potential diffusion from school children to parents	Potential diffusion from school children to parents	-	-
Replacing		Typically replaced by legal and economic arguments	Typically replaced by legal and economic arguments	-	If not effective replacing through other arguments

3.2.4. Non-instrumental arguments – human benefit

Arguments that refer to an inherent human benefit showed particularly effective for non-commercial users. This is somehow expected. Equally unsurprising is the fact that these arguments were hardly used for commercial users and showed no effectiveness, if used for this group.

A remarkable observation was that aesthetic values played an important factor for municipalities, where these were linked to opportunities for the touristic sector. This finding suggests that the municipalities in our study have overcome a one-dimensional understanding of conservation as aim in itself, but see it also as means to benefit their communities.

Finally, findings on biophilia were very interesting. Arguments on biophilia seemed to play an important role in persuading non-commercial users of the ecosystem. Particularly recreationists seemed receptive to this argument. Other user groups such as school children or the general public were susceptible when biophilia was stimulated through personal engagement with the ecosystem, for example through guided tours. In some cases local population seemed to have alienated from their immediate natural environment and through triggering this relationship anew biophilia could be created. Another way to stimulate biophilia and use it as argumentation strategy was focusing on one specific species. One manager of a bear conservation project stated:

"But bears are always a flagship species. It's particular appealing animal which is also sometimes called a sexy species, because many people find it very interesting, so these species are often used to raise the awareness of the public for a problem that is also affecting other species."

While the strategy to use flagship species for awareness raising is not new, an important finding from the observed cases was that particularly the combination of focusing on single species with direct experiences with nature can be very effective in creating biophilia and persuading stakeholder.

Table 6. Summary table with the effectiveness of non-instrumental – human benefit arguments per stakeholder group.

Stakeholder groups		10. Social/cultural/heritage/collective well-being and welfare	14. Aesthetic value	15. Biophilia – the desire for relationship and contact with nature
Non-commercial users	General Public	-	If applicable, medium effectiveness	If conservation focuses on single species, biophilia through marketing/communications; adverse effect if invasive species are perceived as local
	Visitors/Recreationists	Medium effectiveness; strongly dependent on context	Medium to high effectiveness	If conservation focuses on single species, biophilia through marketing/communications; adverse effect if invasive species are perceived as local
	Schools	-	Medium effectiveness	High effectiveness; particularly if strengthened by education programs that involved visits to nature, engagement with specific species etc
Commercial users	Stock breeders	-	-	-
	Forestry	-	-	-
	Landowners/ Farmers	-	Not effective	-
Civil society	Envir. NGOs	-	-	Pre-existing value
	Animal rights asso.	-	-	Often pre-existing value; problematic if biophilia refers to invasive species
Municipalities		Medium effectiveness	Medium effectiveness, if linked with recreation/tourism; otherwise not effective	-
Persistence		Not very frequently used	Persistent, if economic interests are in line	Persistent if communication activities are repeatedly reinforced
Accumulation		Depending on context	Accumulating if area turns into touristic destination	No, because this argument targets each person individually
Level-crossing		Depending on context	Level-crossing if area turns into touristic destination	-

Diffusion	Depending on context	-	School children as mediator to adults, but no clear evidence for that
Replacing	Depending on context	Typically accompanied by economic argument	Accompanied by intrinsic or moral arguments

3.2.5. Goal not expressed

The arguments, which do not express any underlying premise, exist in two narratives. The first narrative refers to the necessity to maintain ecosystem resilience, the second narrative to the necessity of species conservation. Both arguments leave it open if ecosystem resilience or individual species should be maintained for intrinsic reasons or for ultimately benefiting human welfare. By leaving the premise statement out, the arguments can potentially reach a wider audience, because the underlying premise can be interpreted by everyone according to their own convictions. At the same time, however, this vagueness can potentially weaken the persuasive power.

The findings show that the ecosystem resilience narrative was hardly used. Some project developers explained that these arguments are too scientific or too abstract for most stakeholder groups. Accordingly this argument showed very low effectiveness, if used. In contrast the species narrative was in fact the most frequently used argument in our study. However, project managers reported only medium effectiveness for the argument. An explanation for these findings, which seem at the first glance contradictory, could be that despite its limited short term effectiveness, project managers believed that a frequent repetition of the message will in the long run lead to high effectiveness in persuading stakeholders.

A special case was observed for civil society stakeholders who do not need to be convinced any longer that species conservation matters. Here it is not clear if the argument is still effective or not and therefore we assigned it with the label “pre-existing value).

Table 7. Summary table with the effectiveness of goal not expressed arguments per stakeholder group.

	Stakeholder groups	4. Ecosystem function/resilience – purpose unclear	31. species conservation matters (underlying reason not mentioned)
Non-commercial users	General Public	Medium effectiveness	Mixed effectiveness; very frequently used
	Visitors/Recreationists	-	Medium to low effectiveness; very frequently used
	Schools	Medium effectiveness	Medium to high effectiveness; very frequently used
Commercial users	Stock breeders	Not effective	Not effective
	Forestry	-	-
	Landowners/ Farmers	Not effective	Not effective; frequently used
Civil society	Environmental NGOs	-	Pre-existing value
	Animal rights associations	-	Pre-existing value
Municipalities		Not effective	Medium to low effectiveness, but very frequently used
Persistence		Rarely used	Very persistent
Accumulation		No accumulation	Accumulating
Level-crossing		No level-crossing	No level-crossing observed
Diffusion		-	Yes. Different directions
Replacing		In many context replaced through direct benefits to community or economy	No replacing, but accompanying though practical arguments such as economic and social impacts or legal obligation.

4. Discussion

4.1. Argument types: Economic arguments, ecosystem services and intrinsic arguments

Economic arguments are particularly important for commercial users of the ecosystem. This finding is not surprising. It adds to the knowledge from the corporate social responsibility (CSR) literature, where it has been extensively discussed that social and ecological benefits from business can only be expected when these do not diminish the economic profitability. While the classical CSR literature focuses on manufacturing industries, this study finds similar aspects in the primary sector. Similarly, economic aspects are very important for decision-making at municipality level. However, interviewees highlighted that effects of arguments depended strongly on personal factors of the stakeholders. Thus even for commercial users other argument types do not render useless, but have their role to play.

Arguments about ecosystem services must be understood in this context. While classic economic factors fail to create the business case for conservation, ecosystem service arguments can raise awareness on additional benefits that commercial users receive from conservation. Depending on the context these benefits can help to create a business case that makes conservation ultimately more attractive, for instance in the context of flood prevention. Equally, ecosystem services can help to create an overall business case for the decision-making of municipalities.

At the same time, however, the finding suggests that the ecosystem services concept is still mainly a theoretical concept that has not been widely understood at local level. A large number of project developers used arguments that can be framed under the ecosystem services concept, without being aware that these benefits could fit in the ecosystem service framework. At the same time several project developers refused the ecosystem services narrative as too technical and ineffective for their stakeholder engagement. These findings suggest that understanding about the ecosystem services concept at the local level is not very deep both among project managers and stakeholder. At the same time however, a clear trend can be identified that arguments on benefits provided by ecosystem that go beyond direct economic benefits have established as new argumentation line.
Intrinsic arguments take a special position besides arguments on economic or ecosystem services benefits. The increasing emphasis on instrumental arguments has in no replaced discussions on moral or intrinsic values of nature. As the large debates around the necessity to incorporate environmental values in political decision making including its ethical justification have happened in the 70/80s, the general non-instrumental claims are currently widely accepted. But where direct economic interest speaks against conservation, a pure moral appeal can offer proof inefficient. In these cases instrument arguments are needed to prepare the ground for conservation.

4.2. Mediating factors

As expected the socio-economic context of a project showed significant impact on the effectiveness of arguments. Particularly the previous relationship to nature seemed important to explain the effect that an argument had on stakeholder groups. Where a stronger knowledge and emotional connotation with nature was prevalent, especially intrinsic argument seemed more effective. However, where this strong relationship with nature was not pre-existing project activities could also foster its development, for instance through specific marketing and by creating experiences with and in nature.

In addition attitudes towards public institutions and law in general seemed important for the effectiveness of the legal argument. Stakeholders with negative previous perceptions were likely to show reluctance to acceptthe legal arguments, particularly when framed as EU legislation.
Social cohesion was examined in our case studies as another mediating factor that fostered the impact of economic arguments. Where strong local social cohesion existed non-commercial users were much more likely to be convinced through economic arguments. These finding show that economic arguments are not only effective for directly affected individuals, as might be expected.
Besides the argument type and the socio-economic context, the way of communication was an important factor in explaining the effectiveness of arguments. One of these ways was already mentioned – the communication of nature's value through creating experiences in and with nature. This experience-oriented way of communication showed very effective, particularly for non-commercial users. This method links closely to another method that was frequently used in the examined cases - participatory practices. Participation in our case studies appeared in various forms. For instance in several cases users of the ecosystem were directly involved in project activities, e.g. in monitoring of an animal population. In other cases participatory meetings were held to inform stakeholder, determine their concerns and try to resolve them. These finding have to be seen in lights of the recent attention that has been paid to stakeholder theory and the resulting emphasis on participatory practices. Our case study adds to the literature that observes how participation can be used to create acceptance among stakeholders (compare e.g. Schenk et al 2007).

A second finding, which is related to participation, was that several cases demonstrated consensus seeking practices. This aspect cannot be framed as a way of communication as it goes far beyond that. Consensus seeking practices were rather changing the actual socio-economic and ecological context on the ground. However, as consensus solutions were mediated through participatory assessments and the like, they should be considered before this background. One might argue that consensus seeking was not actually a mediating factor to persuade a stakeholder, as it implied in many cases concession to the initial conservation goal. However, this extreme position seems not justified, because the consensus solution prepares the ground to achieve any conservation at all. Realizing consensus can still be understood as a better conservation outcome than without, which could imply the failure of the project. Hence, consensus seeking solutions can be understood in this context as mediating factor that helped to persuade stakeholders.

Finally, the characteristics of the communicator of the message played an important role. In some cases stakeholders employed third party mediators to channel the

message. One forest conservation project for instance used the foresters to speak to hunters as both groups had already a trustful relationship to each other.

In other cases project developers did not look for alternative mediators, but seeked to improve their own relationship with the stakeholder. This was firstly achieved through information provision and transparency which created more trustworthiness. For instance in one project working on the protection of large carnivores the project manager described how important it was for the trust of the local authorities to provide them with correct information on population size and biology of the animals.

Both cases show that relationship build on trust between communicator of the message and the recipient plays a very important role. As the second example shows trust can be build trough transparency, information provision and continued communication.

5. Summary

- This study tried to examine which arguments are effective in communicating the value of biodiversity to important stakeholders. The main focus was the question which role ecosystem services play compared to other categories of arguments. For this purpose a multi-case study was conducted on conservation projects in the European Natura 2000 Network. The analysis consisted in a document analysis and in-depth interviews with project managers.
- To guide the analysis an extended effect-oriented communication model was used that consisted besides communicator, message, channel, recipient and effect also in mediating factors. These mediating factors where the socio-economic context, the environmental context and the way of communication. In addition argumentation types were categorized in three categories: instrumental arguments, non-instrumental arguments and those where the goal is not expressed.
- The main findings of this study were ecosystem services can be understood as an addition to the category of instrumental arguments. Where pure economic factors were not sufficient to create a business case for conservation ecosystem services were sometimes applied to make the case for conservation stronger. Among non-economic instrumental arguments, ecosystem services were in fact one of the most frequently used category.
- However, the study also showed that at the local level the concept of ecosystem services is perceived as relatively abstract and impractical. While the actual ecosystem services were in several cases effectively used to persuade stakeholders, they were not brought together with the term ecosystem services. This can either mean that the theoretical concept is perceived as too academic for local stakeholder, or that project managers themselves did not recognize the ecosystem services as such.
- This study further gives insight on the question if instrumental arguments are ultimately replacing non-instrumental, ethically motivated arguments. As the findings of this study have shown, the moral base of biodiversity conservation is an accepted paradigm with which stakeholder did not generally disagree. But in most cases the acceptance of this norm was not sufficient to motivate action against economic interests. In these cases instrumental arguments come into play to create

a business case. Instrumental argument, including ecosystem services, are hence not replacing but adding to non-instrumental arguments to guarantee political feasibility.

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Supplement table S1. Frequency of the arguments used in the presentation of Life projects

	Premise	Frequency	Relative frequency
1	Recognising rights / values of nature itself, for itself	151	31%
2	Ethical, moral and religious views providing obligations to nature	8	2%
3	Evolutionary processes should not be disrupted / gene pool pollution	4	1%
4	Ecosystem function / resilience - purpose unclear	20	4%
5	Ecosystem function / resilience – anthropocentric	1	0%
6	Ecosystem services (flows leading to benefits)	11	2%
7	Specific regulating and supporting services other than climate regulation	8	2%
8	Climate regulation service and/or carbon sequestration	2	0%
9	Protection against invasive species / diseases in non-human life forms	0	0%
10	Social / cultural / heritage / collective well being and welfare	41	8%
11	Psychological / spiritual / individual well being	0	0%
12	Recreation / tourism	22	4%
13	Human health / reduction in disease risk	2	0%
14	Aesthetic value	16	3%
16	Intellectual stimulus, education beyond protection of biodiversity	24	5%
17	Productivity in forestry / agriculture / fisheries / food security	20	4%
18	Other industrial dependence	0	0%
19	Business risk	0	0%
20	Water security	3	1%
21	Energy security	1	0%
22	Economic	24	5%
23	Bioprospecting	1	0%
24	Precaution / risk management (current generation / Century)	0	0%
25	Precaution (future generations) and option value	9	2%
25	Precaution (future generations) and option value	9	2%
26	Employment and livelihoods	11	2%
27	Sustainable development / poverty alleviation / future generations	34	7%
28	Moral, ethical or religious belief related to obligations to other people	0	0%
29	Legal compliance / political necessity	18	4%
30	Reputational benefits	1	0%
31	Species conservation matters (underlying reason not mentioned)	51	10%

Annex 12b – Case study report: Implementing the Natura 2000 network;

Marion Bogers

1. Introducing Natura 2000, the legislative history of the network of protected areas and species.

Natura 2000 is an ambitious policy in the history of nature conservation. It forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. The policy protects over 1.000 animals and plant species and over 200 so called "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance[68].

The first elements of the Natura 2000 policy are developed within the Bern Convention, the ratification of the Convention on the Conservation of European Wildlife and Natural Habitats in 1979[69]. The aims of this Convention are to conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States, and to promote such co-operation. Particular emphasis is given to endangered and vulnerable species, including endangered and vulnerable migratory species.

In 1979 as well, the Birds Directive[70] was adopted by the European Council and the Member states, aiming to conserve wild bird species naturally occurring in Europe. It was adopted unanimously as a response to increasing concern about the declines in Europe's wild bird populations resulting from pollution, loss of habitats as well as unsustainable use. It was also in recognition that wild birds, many of which are migratory, are a shared heritage of the Member States and that their effective conservation required international co-operation[71]. The directive recognises that habitat loss and degradation are the most serious threats to the conservation of wild birds. It therefore places great emphasis on the protection of habitats for endangered as well as migratory species (listed in Annex I), especially through the establishment of a coherent network of Special Protection Areas (SPAs) comprising all the most suitable territories for these species. Since 1994 all SPAs form an integral part of the NATURA 2000 ecological network.

In 1992 the Habitat Directive was adopted[72], which regulates the conservation of natural habitats and of wild fauna and flora. The main aim of this Directive is to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. While the Directive makes a contribution to the general objective of sustainable development; it ensures the conservation of a wide range of rare, threatened or endemic species, including around 450 animals and 500 plants.

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[68] http://ec.europa.eu/environment/nature/legislation/habitatsdirective/
[69] http://conventions.coe.int/Treaty/en/Treaties/Html/104.htm
[70] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147
[71] http://ec.europa.eu/environment/nature/legislation/birdsdirective/
[72] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:31992L0043

Some 200 rare and characteristic habitat types are also targeted for conservation in their own right[73].

The Directive bans the downgrading of breeding and resting places for certain strictly protected animal species. Exceptions to the strict protection rules can be granted under very specific conditions. The Habitats Directive also establishes the EU wide Natura 2000 ecological network of protected areas. For these areas it provides a high level of safeguards against potentially damaging developments.

The Natura 2000 network as we know it, combines the objectives of the bird and habitat directive. It is a network to be established among all European countries and is therefore aiming for collaboration, not only between member states, but in particular within the member states. Between governments as well as between government and stakeholders, as there are various types of land users. Various arguments are expected to be used to enable the collaboration of these various actors. Some of these arguments are expected to be effective, others are not. Therefore, the aim of this study is to explore and analyse arguments used in the Netherlands to enable the development and implementation of the Natura 2000 ecological network.

2. Natura 2000 in the Netherlands: short overview

The following documents are used drafting this overview: Bouwma, I.M., D.A. Kamphorst, R. Beunen & R.C. van Apeldoorn, 2008. Natura 2000 Benchmark; A comparative analysis of the discussion on Natura 2000 management issues. WOt-rapport 90; Ministry of Economic Affairs, 2011. Implementation of Natura 2000 in the Netherlands. Analysis following the coalition agreement and the motion Van der Staaij cs to national headlines, and rack space in the Natura 2000 implementation. Janssen, J.A.M. and J.H.J. Schaminee, 2014. Nature for People, People for Nature - the implementation of Natura 2000 in our country.)

In The Netherlands, proposing sites, approval and site designation were a complicated process. The introduction of the Habitat Directive started in 1994, conducted by the former Dutch ministry of agriculture, Nature and Fisheries, hardly without consultation of other parties. In 1996 a first tranche of 27 protected areas were registered. This registration, however was found insufficient by the Commission. In 1998 a second registration was done of 67 areas. However, at the second Atlantic seminar in Kilkee (Ireland) in 1999 this registration was also found to be insufficient. Then, the European Commission even threatened with a penalty in case of continuing to fail to register a sufficient number of areas in time a next time. In so-called bio-geographical seminars, criteria for designation were clarified. Criteria such as sufficient coverage of populations or habitats, geographical spreading, and ecological variation of species or habitats, and trans boundary areas were mentioned to be important. For many of the habitat types and species the registration was found to be insufficient. In The Netherlands, until then, only areas larger than 250 ha were

[73] http://ec.europa.eu/environment/nature/legislation/index_en.htm

selected. This criteria was dropped after the second seminar, where it was mentioned that also an adequate number of small areas should be designated. As a next step, The Netherlands sharpened the criteria for selection of the areas and drafted a new list at first with 134 and later with 141 areas for the habitat directive. This new draft list now first was tested whether it met the criteria of the Commission. After some negotiation, the list was accepted by the Commission in 2004, under the condition that some Marine areas would be added to the list. The 141 habitat areas do overlap partly (58) with the 79 Birds Directive areas, that were designated in an earlier stage. The number of areas increased to 162. Later, in 2008, 4 marine areas were added. So the total number of Natura 2000 areas in The Netherlands now is 166.

Also the designating of sites under the Birds Directive was severely delayed and only in 2000 the official designation of the sites under the Birds Directive was agreed. This caused a great deal of opposition, especially from water sports enthusiasts, who feared being denied access to several sites. Meeting the obligations of site proposals, derived from the Habitats Directive, was also tricky, and the tardiness of the Dutch Government again played a role. In 2003 the European Commission approved the Dutch proposal for sites to be designated under the Habitats Directive.

In 2003 a consultation process for the Habitats Directive was organized, prior to sending the site proposals to Brussels. During this process, nature conservation organizations, representative of stakeholder organizations, provinces and municipalities were informed of the designation and offered the chance to state their views. Around 1000 opinions were expressed (Reaction document June 2004), and as a result changes to the boundaries of sites were incorporated (Contour note, Jul 2005).

In January 2007 the Minister for Agriculture presented the designation of the first 111 sites under the Habitats Directive (and partly the Birds Directive). About 5000 official complaints were received, and the Ministry of ANF prepared a report detailing the views expressed (Nota van Reply, 2007).

The implementation process of the directives further involved their incorporation into national legislation, regarding the legal protection of sites and species. Several law suits and difficulties in carrying forward plans and projects resulting from the directives, were further problems that characterized the implementation process in The Netherlands.

Due to the difficulties in the implementation process, the government decided that before officially legislating the designated sites an approved management should be in place. In The Netherlands Provinces are responsible for management plans of 102 sites, the Ministry of Agriculture for 60 and the Ministry of Infrastructure and Environment for 19 sites.

In this management plan, the baseline of the area such as current land use, nature and landscape values have to be described. Further the conservation goals (in terms of Favourable Conservation Status) of the site have to be worked out in detail. The management plan should propose measures for the maintenance or improvement of habitat and species. It should also present a framework for monitoring the progress of such measures. The management plan should further explain which current use or activities within the Natura 2000 site are acceptable. It should offer rules for further decision making. There is a requirement for owners, users and other stakeholders to be involved in the planning process and for cultural, social and economic interests to be considered (Targets document, 2006).

3. Method and data

Since we aim to explore and analyse arguments and argumentation lines that are used during the Natura 2000 network implementation, we have selected events of the national processes as well as events from two regional processes that has taken place over a period from 2003 until 2014. These the following events are:

The site designation process at the national level, including the first consultation round (2003-2004) and the second consultation rounds (2005 – 2007). Followed by the concept designation processes in the regional areas Polder Zeevang en Oostelijke Vechtplassen, including the consultation round on the concept designation (2008). Also the stakeholder processes in both Polder Zeevang & Oostelijke Vechtplassen (2008-2010) are considered, as well as the consultation rounds with regard to the concept management plan (2011-2013) in both areas. In addition, also the debate at the national level with regard to nature policy are considered to be relevant in this study.

Key actors using arguments in this process are:

- Ministry of Economic Affairs (previously named the Ministry of Agriculture, Nature and Fisheries/the Ministry of Agriculture, Nature and Food Quality/the Ministry of Economics and Agriculture)
- Ministry of Infrastructure & Environment
- Province of Noord-Holland
- Landschap Noord-Holland and Nationaal Landschap Laag-Holland,
- Staatsbosbeheer,
- Natuurmonumenten
- LTO Noord
- Agrarische Natuurvereniging Water, Land en Dijken
- Hoogheemraadschap Hollands Noorderkwartie
- Chamber of Commerce
- Intergemeentelijk Samenwerkingsverband Waterland,
- Recreatie Noord-Holland,
- Municipalities

To analyse the arguments used in these events, different data sources are used:

- Policy documents
- Reporting from consultation processes
- Newspapers and media
- Interviews with public officers being involved in the processes

List of data sources used in the analysis

National documents

1. *Accountability document May 2003*
    a. List of initial sites and explanation of the criteria for selection.
    b. Author: Ministry of Agriculture, Nature and Food security (based on ecological expertise)
2. *Reaction document June 2004*
    a. The reaction on the views submitted to the list of initial sites

b. Author: Ministry of Agriculture, Nature and Food security
c. Including 1000 views from several stakeholders (civilians, municipalities, NGOs, water boards, farmer organisations, recreation companies)

3. Contour note, Jun 2005
   a. Describes the boundaries of the N2000 targets, start the discussion on targets, designation and management plans
   b. Author: Ministry of Agriculture, Nature and Food security
4. Targets document Jun 2006
   a. Describes the targets for the N2000 in the Netherlands (overlap with Contour note)
   b. Author: Ministry of Agriculture, Nature and Food security
5. Note of Reply Nov. 2007
   a. Reaction of the Ministry on the consultation of the 1st tranche designation of 111 sites
   b. Author: Ministry of Agriculture, Nature and Food security
   c. Near 5000 questions received from different stakeholders
6. Letter to parliament 23 Feb 2011
   a. Outline of a different approach to N2000 areas
   b. Author: Ministry of Agriculture (Bleker)

Provincial level documents

7. Plan of Approach Natura 2000 Noord-Holland (March 2008)
   a. Author: Province of Noord-Holland
8. *View on consultation round 3rd tranche Natura 2000 (2009)*
   a. Author: Province of Noord-Holland
   b. Reply of the Province of NH on reactions of stakeholders
9. Concept Nature Managementplan (April 2013)
   a. Author: Province of Noord-Holland
   b. The plan of the Province
10. Interview Edith van Mourik (Province of NH) (Feb 2014)
   a. Author: Alterra (Kees en Marion)

Polder Zeevang Documents and interviews

11. *Concept decree of change (2008)*
12. Newsletters Laag-Holland (Sept 2008 – Sept 2012)
   a. Newsletter from the Province of NH, mostly on process and general information
13. *Definitive Designation Complementary targets + reactions (2010)*
   a. Official document + Reply of the Province of NH on reactions of stakeholders
14. Concept Management plan Zeevang (March 2012)
   a. Author: project steering committee (Province of Noord-Holland)
15. *Minutes information evening farmers (24 April 2012) –*
   a. Consultation on the concept management plan
   b. Many objection to uncertainty (can existing practices continue?)
16. *Newspaper articles - website search Dichtbij en Groot Water (March – November 2012)*
   a. Local news articles (webbased)
17. Reaction note management plan Zeevang (June 2012)
18. Management plan (July 2013)
   a. Author: project steering committee (Province of Noord-Holland)
   b. Definitive plan (content hardly differs from Concept)
19. Three Fact sheets on agricultural activities, other economic activities and recreation

Oostelijke Vechtplassen Documents and interviews

20. Decree Designation Bird Directive Area (April 2003)
    a. Author: Ministry of Agriculture, Nature and Food security
21. Bottlenecks analyses Oostelijke Vechtplassen + Explanation (June 2007)
22. Concept Area document (November 2007)
23. Newsletters Oostelijke Vechtplassen (June 2009 – July 2013)
24. Letter Definitive Designation Decree boundaries (March 2010)
25. Reaction note concept Natura 2000 Management plan
26. Decision on consultation round designation Oostelijke Vechtplassen (April 2004)
27. Presentation information evening management plan and national N deposition approach (Jan 2012)
    a. Consultation on the concept management plan
28. Altas Oostelijke Vechtplassen (Dec 2008)

4. Arguments scan: explorative argument analysis

Analysis of the documents and interview did reveal in total about 19 types of arguments, which can be found in the table below. The arguments are listed including the quotes in these documents.

Nr.	Argument	Quotes from documents
1	N2KNL_Value for the green living environment	Primarily focussed on nature, N2000 offer chances for other functions like a green living environment
2	N2KNL_Biodiversity is under pressure	Nature is in decline unfortunately. This is shown in the counting of species
3	N2KNL_creating a network for biodiversity	The area is part of a coherent network of nature areas in Europe allowing species to disperse better
4	N2KNL_Enjoyment	For enjoyment
5	N2KNL_EU obligation by law	The EU has set a target in 2010 to stop biodiversity decline.
6	N2KNL_Future generations	We want to preserve our natural richness for future generations
7	N2KNL_inspiration	Inspiring landscape
8	N2KNL_International important nature values or species	Proud of our special nature in national and European context
9	N2KNL_intrinsic value	Animals and plants are protected because of their intrinsic value
10	N2KNL_Obligation to stop decrease of biodiversity (Common responsibility)	Honour the obligation The Netherlands have made to stop the decline of biodiversity.
11	N2KNL_Resilience of nature	Biodiversity increases resilience of nature
12	N2KNL_Sustainable agriculture	Primarily focussed on nature, N2000 offers chances for other functions like recreation, extensive agriculture and a green living environment. N2000 contribute to wellbeing and quality of life of the inhabitants of Europa, now and in

		the future
13	N2KNL_ Unique cultural area	The unique landscape created by people
14	N2KNL_Unique nature area for birds	The area is important for meadow birds in a moist grassland, in a threatened environment in the NL
15	N2KNL_Unique nature area for rare species	the area is important for the "meervleermuis"
16	N2KNL_value for economy	Biodiversity is an important economic production factor
17	N2KNL_value for recreation	Also recreation values are of great importance
18	N2KNL_Wellbeing	Contribute to the wellbeing of people
19	N2KNL_producing services	We produce our food. We live, work, recreate and travel there.

The analysis (figure 1) clarifies that the most frequently used argument is the argument that Natura 2000 network has to be established because it is a obligation under European Law. Other frequently used arguments are that biodiversity needs to be protected because it is under pressure and the argument that the natura 2000 sites are unique area for birds. Other arguments are only used once in all documents analysed, as for instance that biodiversity needs to be protected for future generations and of value for the green living environment or the intrinsic value of nature.

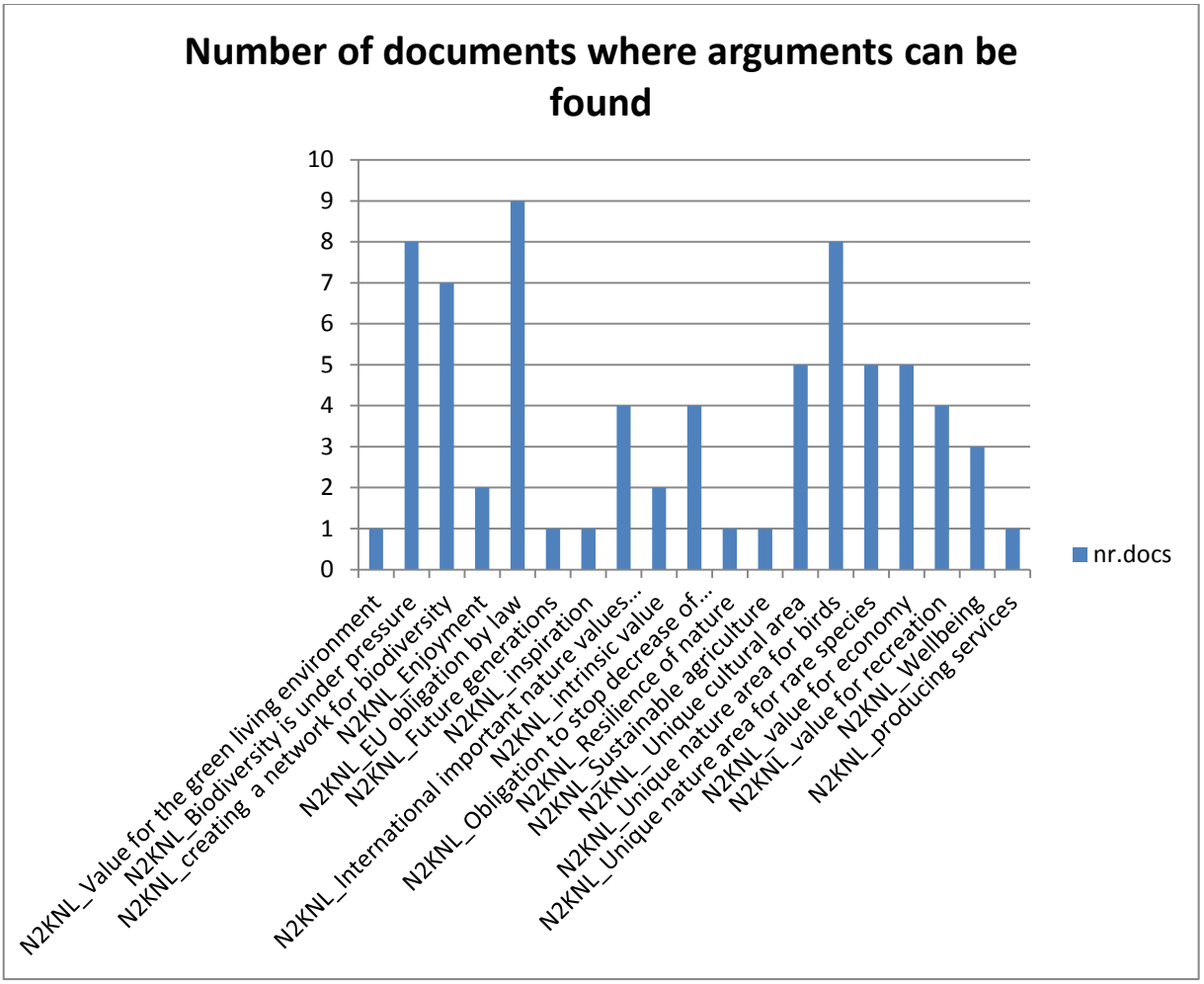

Figure 1. Number of documents were arguments can be found.

Evaluating the occurrence and persistence of arguments, it is concluded that the arguments are unevenly spread over the years. Some arguments just pop up (intrinsic value of nature) while other persist over many years (f.e. obligation under EU law). In Figure 2 the persistence in time of the different arguments in illustrated by indicating the year of the document where the argument is found. It is shown that at the start the legal and moral obligation of creating the Natura 2000 network was stressed. Later the number of different arguments has increased significantly, but the arguments mentioned at the start still persist. Due to the negative reactions, in 2007 a range of arguments appears in the documents. It is also from that moment on that value related arguments are used, indicating the value of nature for economy and society. Many arguments, especially those concerning psychological benefits (e.g. intrinsic value, inspiration, enjoyment) only appear once. Arguments concerning values (e.g. for economy or recreation) persist, as well as arguments stressing the uniqueness of the areas.

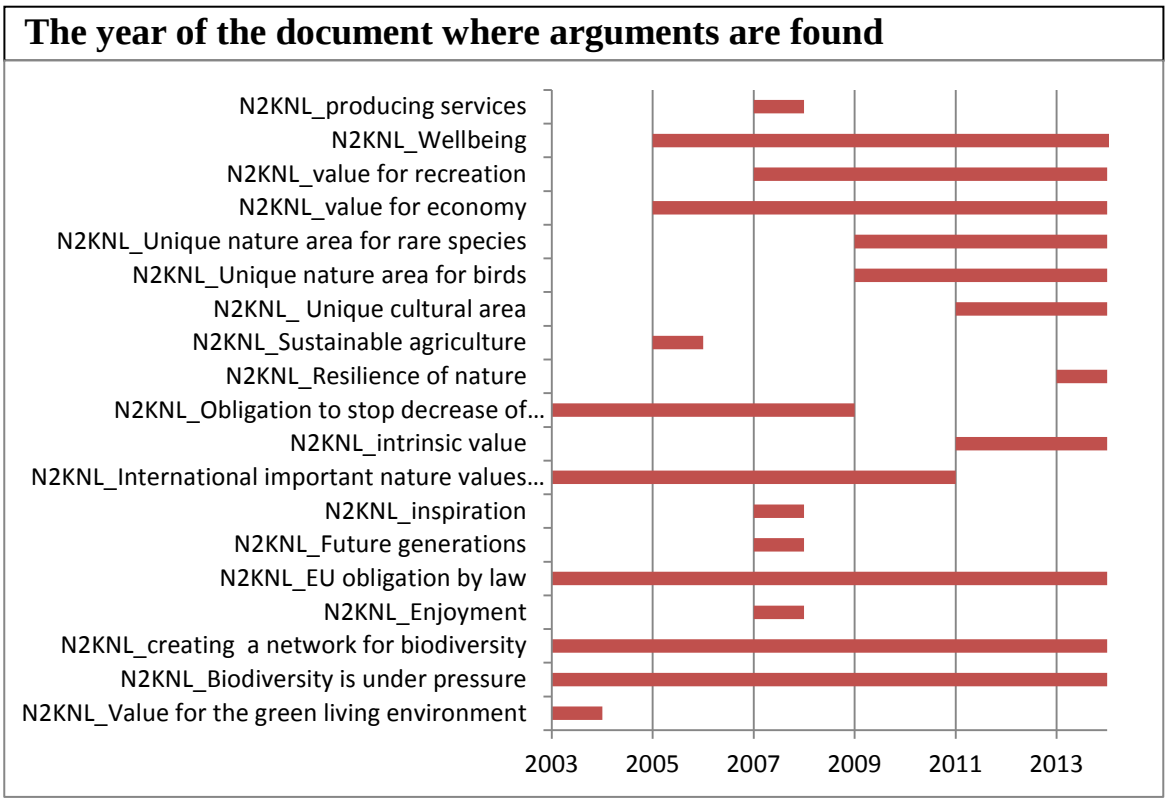

Figure 2. The persistence of arguments in time

In Figure 3 the level of the arguments is shown. It indicates that arguments like biodiversity needs to be protected for future generations, for inspiration, it is a value for green living and for sustainable agriculture are only used at the national levels. The other arguments also exist at the regional level. Uniqueness of area are arguments that occur at regional level, but have not been found in documents from the national level.

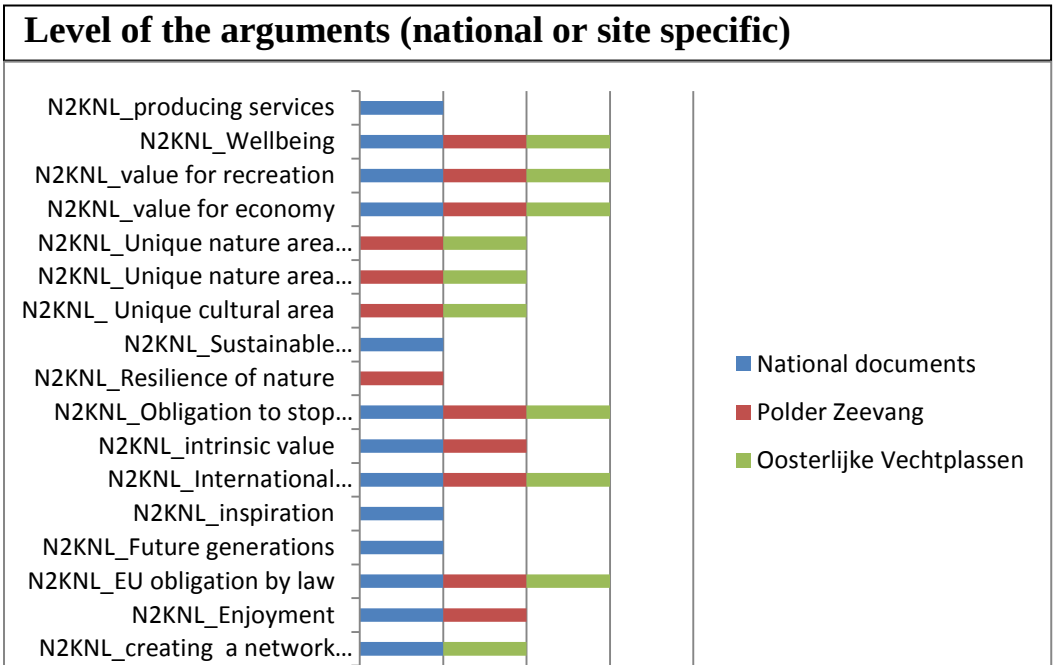

Figure 3. The level where arguments are found, national or site specific.

5. The process on National level

The selection methodology of Habitat Directive areas is described in the so called **Accountability document**[74]. The document, drafted in 2003, aims to clarify the selection methodology used, and with that to underpin the contribution of The Netherlands to the community list of European Habitat areas. The document is limited to the selection methodology of areas within the 12 mile zone. The document describes the methodology and criteria used, and is a rather technical elaboration of the Habitat Directive. Hardly any arguments for the protection of Biodiversity are mentioned. The Habitat Directive itself is used as legitimation for designation of the areas. It is mentioned that the Habitat Directive aims to secure the biological diversity by maintaining natural habitats and wild flora and fauna in the European Union.

In 2003 the ministry has organised a public consultation for relevant stakeholders to react on the draft list with 134 proposed habitat areas. Over 1.000 reactions of stakeholders were received. The reactions and answer of the ministry are given in the **Reaction document designation Habitat Directive areas[75].** In the document, the first argument used by the ministry, is the legal obligation of the Birds and Habitat Directives. But it is also mentioned that, "however focussed principally on nature, Natura 2000 also offers chances for other functions, such as recreation, extensive agriculture and living in a green environment. In this way Natura 2000 is contributing to well-being and quality of life of the inhabitants of Europe, now and in the future." For some of the proposed areas arguments are used such as the uniqueness and international rareness of species or habitats. It further is underlined that, due to the Habitat Directive, it is only permitted to base the selection of areas on ecological criteria.

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[74] *LNV, 2003. Selectiemethodiek voor aangemelde Habitatrichtlijngebieden. 'Verantwoordingsdocument' , Ministerie van Landbouw, Natuurbeheer en Visserij, Mei 2003.*

[75] *LNV, 2004. Reactiedocument Aanmelding Habitatrichtlijngbieden. Resultaten van de ontvangen reacties bij de openbare procedure voor de aanmelding van Habitatrichtlijngebieden in het kader van Natura 2000. Ministerie van Landbouw, Natuur en Voedselkwaliteit, Juni 2004.*

Later on in the process, attention moved from the designation of areas to the process of implementation of Natura 2000. The next steps to be taken are described in the **contours document**[76]**,** drafted in 2005. The document gives explanation about the Natura 2000 aims, the designation decisions, and the management plans for the Natura 2000 areas. Also the steps to be followed in the Natura 2000 process are described. The document aims to clarify the steps that are mandatory and those in which some flexibility can be built in for further policy considerations. Again, European Natura 2000 is used as the only argument for protection of biodiversity. The argument used is: "The European Union has set a target to stop the further loss of Biodiversity by 2010. An important tool for this purpose is the creation of a network of sites of European interest: the Natura 2000 network. The main objective of this network is to safeguard the biodiversity in Europe". Further it is mentioned that with the measures necessary to conserve good conditions of the habitat types, should take into account economic, social and cultural requirements, as well as regional and local details. It strikes that Nature is apparently seen as a hindrance of economic, social and cultural interests of the society.

It is in this period that, in the Netherlands there is a vigorous debate about the effect of Natura areas and species on the economy and interests of citizens. The suggestion has aroused that economic development are seriously hampered by Natura 2000. In the media people state that The Netherlands are "locked" because of the strict nature conservation regulation.

In 2006, the ministry of Agriculture, Nature and Food quality drafts the **Natura 2000 Aims Document**[77] . The document is a policy paper, and gives an explanation of the conservation targets of the 162 Natura 2000 areas. It works out the headlines as drafted in the contours document (LNV, 2005) and describes the framework of the Natura 2000 aims, the designation decisions, and the management plans for the Natura 2000 areas. The document was prepared in 2004 and 2005 on the base of consultation of experts, nature conservation officers of the areas involved, available data and expert judgement. The document was discussed with the regional governments and other governmental organisations (e.g. water boards), ngo's , umbrella organisations, and other stakeholders. On the one hand, the stakeholders were consulted because of the negative public debate around Natura 2000 as mentioned above. On the other hand consultation was necessary because the management plans were to be drafted by the regional governments (provinces) which could only be done with commitment of the relevant stakeholders.

Again arguments for the protection of biodiversity were limited to the aims of the European Union: "The European Union has set a target to stop the further loss of Biodiversity by 2010 (Göteberg 2003)".

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[76] *LNV, 2005. Natura 2000 Contourennotitie. Kaders voor Natura 2000-doelen, besluiten en beheersplannen. Ministerie van Landbouw, Natuurbeheer en Visserij, juni 2005.*

[77] *LNV, 2006. Natura 2000 doelendocument. Duidelijkheid bieden, richting geven en ruimte laten. Ministerie van Landbouw, Natuur en Voedselkwaliteit, juni 2006*

In 2007, a list of 111 Natura 2000 areas is published for public consultation. This is the first tranche, out of six tranches, in the designation procedure. In the consultation round the possibility is offered to business and citizens to present their comments to the designation of the areas. 7.773 persons and organisations have given a reaction. All the ones who gave comments have received a personal answer. The comments and answers are bundled in the **memorandum of answer**[78] which was published in 2007. In this document for the first time in the procedure of Natura 2000, new arguments are used for the conservations of biodiversity. It is the minister personally, who gives the arguments in the preface of the document. It can be understood as a late attempt to explain the interest of nature to the society, as a reaction on the ongoing public debate about economic development in relation to Natura 2000. Arguments used are: "The Netherlands is a beautiful country with nature and landscapes which you cannot find over the borders.", "... nature conservation areas are not only to enjoy. We there produce our food. We live, work, recreate and travel in these areas.", "Many rare animal species and plant species decrease in number. Unique landscapes are threatened to disappear. Nature becomes more uniform. We want to avoid that. We have to avoid that. We want to conserve our Natural Capital for future generations. In this Natura 2000 plays a role. ", "With the designation of Natura 2000 areas, important values of nature are protected. The Netherlands can be proud of these, international en European, unique nature. Because of the intrinsic and biological values, but not only because of that. Al recreational and economic values are of great importance and contribute to human well-being."

In 2011, a new government is elected and the new secretary of state of Nature, sends a **letter to the parliament**[79] about a changed approach of the implementation of Natura 2000. The most relevant issues are that the implementation will follow the European obligations, but no more than that, optimal use of possibilities for stretch and space and flexibility, to prevent that public desirable developments and project are blocked by Natura 2000, to stimulate cooperation with local stakeholders. The secretary of state mentions also the following: "With this measures, I would ensure that entrepreneurs and initiators in the spatial domain will gain clarity and can have their business also near Natura 2000 areas. But I also want The Netherlands to make realistic steps towards in protecting biodiversity, in which I want to take into account the typical dynamic of nature. Stagnation has only losers. Development creates opportunities for people, for nature and for the economy. Natura 2000 will be better when catching the bull sober, with sense and with idealism by the horns."

The process as described above is schematically presented in figure xx.

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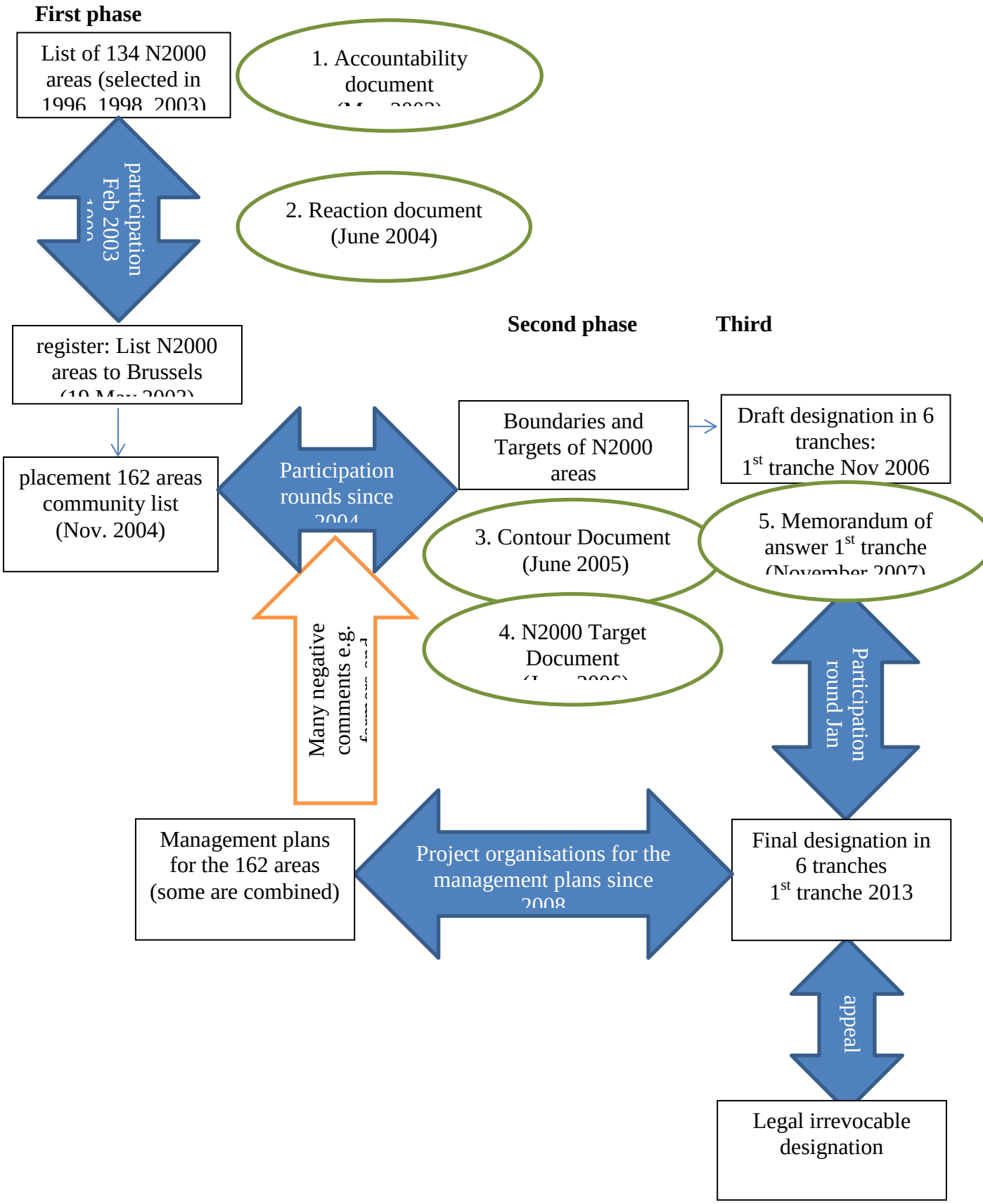
[78] *LNV, 2007. Nota van Antwoord. Inspraakprocedure aanwijzing Natura 2000-gebieden. Ministerie van Landbouw, Natuur en Voedselkwaliteit. November 2007.*

[79] *ELI, 2011. Kamerbrief aanpak Natura 2000. Brief van de staatssecretaris Economische zaken, Landbouw en Innovatie aan de Tweede Kamer. 23-2-2011*

In 2014, the next secretary of state has drafted an **Vision for Nature**[80] in which she present the nature policy for the next ten years. Key element of the vision is the change in thinking that nature belongs in society at home, and not only in protected areas. This is good for the economy and for biodiversity. The change of thinking is a follow up of the change in responsibilities for nature management in The Netherlands. Since 2013, regional governments (provinces) are responsible for nature policy. The associated budgets for nature management are also transferred from the national government to the regional government, but they are cut seriously before transferring. So the regional governments have to find ways to find additional funds. For this stakeholders, such as business, are important. This is one of the reasons the new Vision of nature wants to cooperate with stakeholders. Another reason is the raising public involvement with nature and nature conservation and their wish for participation.

[80] *EZ, 2014. Rijksnatuurvisie 2014 'Natuurlijk verder'. Ministerie van Economische zaken, april 2014.*

N2000 procedure The Netherlands



6. The process on regional level

Natura 2000 in Polder Zeevang

Polder Zeevang is one of the Natura 2000 site in the Province of Noord-Holland and is characterised by flat, open and wet meadow landscaped. Polder Zeevang has been selected as Natura 2000 site as a result of the European Bird Directive. The site harbours nine protected bird species, including different types of geese, widgeons and godwits. In the winter, these birds migrate between the nearby IJsselmeer and the agricultural grasslands in Polder Zeevang.

Source: http://www.knnvhoorn.nl/index.php/projecten/28-projecten/de-zeevang/16-de-zeevang

The actors, the responsibilities and the process.

The Natura 2000 process has started at the national level in 2003, when areas with Natura 2000 status has been selected and submitted at the European Commission. One of these areas is Polder Zeevang, which has been officially selected as a Bird Directive area on Sept. 29, 2005 by the Minister of Agriculture, Nature and Food.

Two formal sub-processes are relevant in Polder Zeevang with regard to this analysis:

1. The formal designation process and the objectives
2. The process to develop the management plan for this area, including the strategy, focal points and measures to be taken.

Process 1: The formal designation process

The Ministry of Agriculture, Nature and Food was in charge to assess these boundaries and the management objectives of Polder Zeevang. This has been a two-step procedure, which has been extended with a third step. First step was a draft 'indication decision' which has been launched by the Ministry of ANF into a multi-actor consultation processes on September 10, 2008. Participants in this consultation process were provinces, municipalities, TAUW, NGO's, etc... This consultation process, which has been finalized in 2010, has resulted in the final 'indication decision' of November 2010 by the Minister of ANF. Later on, this final 'indication decision' has been modified by the decision for modification on March 2013 The modification was the result of the motion of a few parliamentarians with regard to the criteria used to select Natura 2000 areas.

Process 2: The process to develop the management plan for the area

The province of North-Holland is responsible for drafting the management plan for this area and has started this process immediately after the draft indication decision. This is done in cooperation with owners, users, NGOs, municipalities and water boards. The management

plan indicates which measures are needed to protect the birds in Polder Zeevang. For the users of the polder, the management plan clarifies which activities are permitted and which activities are conditionally allowed.

Between 2008 and 2010, the management plan has been drafted in a participatory process. Three organisations were created to streamline the process:

1. Project group: consisting of 18 regional representatives of governments and NGOs
2. Steering group: consisting of 12 national representatives of governments and NGOs
3. Advisory Board: consisting of 15 national representatives of governments and NGOs

A first concept management plan was presented in 2010 and a discussion was held in two consultation meetings. The organisation and facilitation of these meetings were done by Tauw Consultancies. In March 2012 a draft management plan was ready for the official consultation and the final management plan approved in July 2013. Appeal was possible from 1 November 2013 until 22 December 2013.

Argumentation lines and their effects

Process 1: assessing boundaries and management objectives

In the draft indication decision, the ministry of ANF has used the argument that Polder Zeevang is a special protection zone within the Bird Directive *because of the presence of a certain amount of SMIENT that make use of the area.* In other words, Zeevang is the habitat of SMIENT.

In the final indication decision, this argument has been enforced the statement *by referring to European policy* by arguing that that '*Polder Zeevang is a special protection zone within the Bird Directive because of the availability of wet grasslands and water, resulting in an excellent habitat of a certain amount of birds listed within article 4 of the Bird Directive*'. The boundaries are determined in a way that the area is *well connected* with the surrounding Bird Directive area Markermeer, because *this coherent connection will foresee the conservation need of the birds.* One of the conservation goals focussed on the Meervleermuis, which is considered as a national objective.

The effect of these arguments was that the Province of North Holland did start the procedure to develop the management plan with regard to this area. They did follow the national procedures to implement Natura 2000 policy and did not reject the indication decision of the ministry of ANF. The effect is explained by the procedures that were nationally determined, stating that provinces are in charge of implementing policy. It is their duty to follow, as was argued.

The other effect was the reaction of parliamentarians (Nov. 2008) on the draft indication decisions in general. These parliamentarians did introduced a motion against these decision, referring towards the Dutch interpretation and implementation of European policy, in particular because:

1. the Netherlands has interpreted one of the criteria to select habitat directive areas as a juridical protection criteria, while the EU has indicated the criteria to be ecological criteria
2. the presences and influence of human activities were not taken into account while the European Commission did provide some ecological conditions that considered human activities

3. some species that have been considered as being present but negligible are now part of the conservation objectives
4. more conservation and preservation objectives are introduced than immediately needed to achieve a good national level of conservation.

The request was to evaluate the selection and indication of habitat directive area with regard to modification when needed.

The effect of this motion and these argumentations was that the Ministry of ANF has evaluated the selection and indication. This has resulted in the modification that the complementary objective of the Bird Directive and Habitat Directive were removed. In the Polder Zeevang, this meant that only the Bird Directive had to be enacted and that the Meervleermuis as being a species within the habitat directive, did not have to be part of the management plan and conservation measures. The effectiveness of the argument is determined by the fact that a new Secretary of State has entered office in October 2010, being a party member of a few of these parliamentarians, and having the same mind-set as is used in the arguments of the motion:

- only doing what is internationally obliged and not more than that

It might be that Secretary of State did consider this motion as an opportunity to lower the level of ambition of national nature policy. Or it could be explained that he did take the comments of the parliament serious, giving action to Parliamentarians motions and having to find out that indeed, the selection has been too strict. (it is his duty to do so).

Within the regional process, several counter arguments were used with regard to assessing the boundaries of the area, as there are counter arguments coming from nature minded stakeholders who argued that the designation was not sufficient and strict enough, since the designation only focussed on qualified species. Other stakeholders have used arguments with regard to the process, in order to undermine assessment:

- the procedure was not followed well
- it is not supported by science

A small group of stakeholder also stated that biodiversity could improve without needing to take these conservation measures. And that only ecological criteria were considered, not other criteria as for instance land use.

Process 2: The process to develop the management plan for the area

The province of North Holland was in charge to develop the management plan. The province has used the argument that the management plan had to be developed with regard to conserve nature and that it was an obligation of the European Union. However, this management plan has to be feasible and payable. It is also found that the draft management plan had to be develop to enact the measures with regard to nature, as was agreed on by the national government. In the draft management plan, the arguments used to support the designation of Zeevang as a Natura 2000 site are:

1. designated because it is a quiet area
2. Not a breeding area ???
3. Because it is a habitat site of the meervleermuis – which have been indicated as complementary species beside the other Natura 2000 species. – *(this has been modified after the motion in the Parliament – see previous section)*

No additional measures were developed. For this decision, the province used the argument that there are no bottlenecks with regard to these species in the area itself. It is not clear what aspects can be considered as a cause of these trends. It might even be that the cause is located outside the Netherland. Given this uncertainty, it is opted not to develop measures.

The local governments, (Municipality Purmerend and Beemster) have reacted against the management plan by using two counter-arguments:

- Farmers cannot expand their business – which is an economic argument
- The meervleermuis is not on the European list of protective species. – this argument has been effective.
- Industrial sites are not able to develop anymore
- Gooses cause damage.

These local government went to court (Raad van state) to destroy the designation decision, but they did loss their case. The Raad van State only focusses on the decline on procedures and did not see any xxx. The local governments were too late to have any effect.

Several stakeholder groups did react with counter arguments on these management plans.

1. The farmers have used counter-arguments aiming to lower the ambitions of the management plans by stating that:
    a. Agriculture contributes to the unique harmony between livestock and protected species.
    b. Maize has been a crop even before the designation
    c. Agricultural business contributes to recreational opportunities
    d. The management plan is not developed based on the Bird Directive criteria.
2. Nature organisations have used counter-argument aiming to increase the ambitions of the management plans by stating that the plans are not sufficient enough and that certain bottlenecks were missing.
3. The ice skating club have used arguments to adapt the plans, that regulation with regard to involving the nature managers in case of the organisation of a ice skating event should be changed since it delays the organisation of the event. This argument appears to be effective, since this aspect is changed in the plan.
4. Knsb (nature club): dams should be replaced by bridges, because it is more nature friendly.
5. Kvk (economic board): not sufficient focus on the socio-economic aspects of value loss.

Other arguments that were used are:

- The procedure was not followed correctly
- Biodiversity can improve even without these conservation measures.

Natura 2000 in the OOStelijke Vechtplassen
The 'Oostelijke Vechtplassen' (Eastern Vecht Lakes) area is the peat areas between the river Vecht and the eastern edge of the 'Utrechtse heuvelrug', a glacial moraine sand ridge. A large part of the area is taken up by a number of lakes originating from peat extraction down to the mostly sandy soil. Some of the lakes were considerably deepened by sand mining (extraction?). The combination of influences from the river and the water system of the sandy soils has given the area a very diverse array of marshes and marsh vegetation. From north to south the area the landscape changes from relatively closed to relatively open while from west to east the influence of seepage water from the sand ridge increases. The area is important as a breeding area for many marsh birds and was designated as a bird directive area for 17 species in 2000. In 2003 the designation was amended to add a number of important areas originally left out. In May 2013 the area was designated as a Habitats directive area for 11 non-bird species and 13 habitat types. At the same time, the BD and HD areas together were designated as a Natura 2000 site.

The actors, the responsibilities and the process.

In 2003 the designation was amended to add a number of important areas originally left out. In May 2013 the area was designated as a Habitats directive area for 11 non-bird species and 13 habitat types. At the same time, the BD and HD areas together were designated as a Natura 2000 site. Two separate process lines can be distinguished:

Process 1: The formal designation process

The Oostelijke Vechtplassen were already designated as a Bird directive on 24 March 2000, but due to lack of availability of information our evaluation starts with the amendment process in 2003. As in polder Zeevang, the Ministry of Agriculture, Nature and Food was in charge of establishing the new boundaries and adapted the designation on 25 April 2003. More than a hundred objections to this amendment were filed, and on the 20th of April 2004 a decision on those was taken. The process for N2000 designation started around that time and resulted in the final designation on 23 May 2013.

Process 2: The process to develop the management plan for the area (green line)

The provinces of Noord-Holland and Utrecht are responsible for the process of developing the management plan for the area, the province of NH has the lead.

The draft management plan is not a public document yet, and could therefore not be evaluated. We evaluated the argumentation process through a number of newsletters, the presentations at and the report of an information meeting for farmers and an the information in an atlas of the N2000 area published by the province of NH.

Argumentation lines and their effects

Process 1 : the formal designation.

Although in the amendment decision for the bird directive designation a number of arguments for biodiversity protection are given ('biodiversity is under pressure and this is a serious threat to our environment', 'the (biodiversity in the) area has a unique

value'), only two arguments persist: the legal responsibility and the common obligation, which can be seen as a social or moral responsibility (not for biodiversity, but for sticking to an agreement!). Both of these arguments refer to, are the result of, the fact that biodiversity is valued at the European level. Even the only real biodiversity argument which is mentioned in the N2000 designation, the 'uniqueness' is treated there as being part of the criteria for designation and thus incorporated in the legal obligation.

The effectiveness of the legal argument is clearly shown in the reactions to the 106 objections that were filed in relation to the amendment of the Bird Directive designation in 2003. All of these objections in one way or another concerned the interpretation of the regulation and the criteria for designation. Only the ones concerning subjects for which arrangements were to be made in the management plan were not rejected.

The effectiveness of the ecological arguments behind the regulations is absent at this level, as some of the arguments for instating them are only perfunctorily mentioned at the beginning of the process and not in any way used to explain decisions later on.

One of the arguments used in the objections is noteworthy, though. It was brought in by the hunters association against the prohibiting of hunting, stating that this would lead to less supervision and management, which would be bad for biodiversity which would be against the aim of the regulation itself. The argument was refuted on the grounds that there was no reason to assume that the supervision or management would suffer in a way that would be bad for biodiversity, but the basic point, that in some cases N2000 regulations might prohibit activities which are necessary for protection, was therefore unfortunately also not discussed.

Process 2: the management plan

In the management plan process, the obligation arguments are present but are more or less taken for granted: no use discussing things you can't change. A number of general arguments for biodiversity protection (probably all stemming from the background documents of the BD and HD, but needs to be checked) are offered: 'biodiversity is under pressure' (without the explanation that that is bad for our environment), 'biodiversity is an important indicator for the quality of our environment', 'biodiversity represents an important economic value' and 'biodiversity is important for the stability of ecosystems'. Only this last argument is used in clear relation to the area itself, suggesting that this is one of the reasons for protecting it.

Apart from the general arguments, specific arguments for N2000 (designation protected areas is essential to protect natural habitats and wild flora and fauna against extinction) and the protection of the site itself (unique value, special nature, beautiful landscape, value for recreation) are used. The argument 'the area simply meets the criteria' is strikingly absent.

Although the possible value of biodiversity or nature for recreation and agriculture is sometimes hinted at ('nature and use for recreation go together', 'only cooperation between nature and agriculture will lead to the long term survival of both'), this does not lead to a real recognition that there are possible benefits of biodiversity and its protection for both. The aim of the cooperation in the area is merely 'to minimize the burden of the N2000 regime' for both sectors.

6. Conclusions

Persistence: most frequently used argument: EU obligation

During the Natura 2000 process in the Netherlands, the most frequent used argument is the legal obligation of the Birds and Habitat Directives. This argument is mentioned in all documents and communication of the government from the beginning to the end of the process. In the documents it is also stated that for selection of areas no other arguments than ecological criteria are allowed.

Biodiversity is not an issue to argue for

The argument of the legal obligation has proven to be persistant. In the beginning of the process hardly any other arguments were used, and only few stakeholders were involved. So, there was also only little discussion on other arguments. Because of this, the process could speed up in the beginning. But at a later moment, after society expressed a lot of criticism, the process had to be adopted. More participation of stakeholders was than organized, among others, in the management plans that are drafted in consultation with local stakeholders. It is striking that in the process of drafting the management plans, also hardly any arguments are used that clarify the importance of protecting biodiversity. The most important arguments to get the plans accepted, do focus on appointments that clarify possibilities of economic use.

One of the interviewees indicated that fact-free politics, so not using arguments, can be a strategy for policymakers to have a document more easily accepted. A document with lots of arguments can looks like a week policy document, and may provoke unwanted debate.

Amount of arguments: explosion of arguments to enable implementation

At the beginning, the process is started as a top-down process by the ministry of Agriculture, Nature conservation and Fisheries. Almost nobody except for the ministry was informed of the first registration of habitat areas. Only after the process stagnated, because of objections of the Commission in the designation of areas and through comments of other stakeholders, more stakeholders were involved to the process. Later on, when there was commitment with the Commission on the number and extension of the Natura 2000 areas, a broad participation round was undertaken. More than 1.000 so called ‘views’ (comments) were submitted by stakeholders and bundled in the Reaction document (LNV 2004). In this document for the first time also other arguments were used. This broadening of arguments is also seen in the Memorandum of answer (LNV, 2007), which reflect the comments of the public consultation of the draft designation of 111 areas of the first tranche areas. 7.773 citizens and organisations brought forward their comments. Many of them are afraid that the Natura 2000 areas will cause serious limitation to future practice of their business of use of their properties.

The explanation of the increasing amount of arguments is that there was broad national resistance growing against the technical approach of national nature regulation. Farmers, the recreation sector, project developers and citizens did criticise the Natura 2000 process and the nature policy. In their view it was a thread by which they could not proceed their business as usual. Citizens were afraid of negative effects

of protected areas, such as nuisance due to mosquitos, or the closure of areas for recreation. This debate not only had its elaboration on the Natura 2000 process, but also on the nature policy in The Netherlands itself. It was concluded that nature policy had become too technical, too complex, too much focussed on the intrinsic value of nature only, and because of that, it had lost its social support. In order to restore this support a new nature policy is formulated recently (Nature Vision 2014).

When the Natura 2000 process was more criticized by stakeholders (e.g. farmers, project developers, the recreation entrepreneurs and citizens) more arguments were used such as "The Netherlands is a beautiful country with nature and landscapes which you cannot find over the borders.", "... nature conservation areas are not only to enjoy. We there produce our food. We live, work, recreate and travel in these areas.", "Many rare animal species and plant species decrease in number. Unique landscapes are threatened to disappear. Nature becomes more uniform. We want to avoid that. We want to conserve our Natural Capital for future generations. In this Natura 2000 plays a role. ", "With the designation of Natura 2000 areas, important values of nature are protected. The Netherlands can be proud of these, international en European, unique nature. Because of the intrinsic and biological values, but not only because of that. Al recreational and economic values are of great importance and contribute to human well-being." (LNV 2007).

The broadening of arguments took place at the moment an important part of the national process, the drafting of the management plans, was transferred to the regional governments. The regional governments are responsible for integration of sectorial targets in the region. Therefore, they have to work integrative and consult regional and local stakeholders. This meets one of the important points of criticism of stakeholders

Effect of large amount of counter-arguments: regional government in charge and participatory process

The broadening of arguments took place in a period that there was a heavy public debate about effects of Natura 2000. As a reaction it was decided that regional governments would become responsible for drafting the management plans for most of the Natura 2000 areas. The regional governments are responsible for implementation of all national regulation in their region. Therefore, these organisations have to integrate the different sectorial interests and responsibilities. Due to these responsibilities, the regional function and their integrative approach, the regional governments are the most obvious organisation for drafting the plans together with the local stakeholders. In the process of drafting the management plans, a large number of stakeholders are involved. This consultative approch meets one of the important points of criticism of stakeholders.

Effect of counter-arguments within the regional processes: little effect

It appears that counter arguments used in the regional processes with regard to the designation or the management plans did not have large effect within the regional processes itself. Only small changes have been made in the management plans.

Effective (counter-)arguments

1. Natura 2000 has to be implemented because it is EU law – it is considered to be effective, since the discussion is not about biodiversity, nor about the EU. The arguments relate to procedures and criteria, or counterarguments like hampering economic development by the measures.
2. Complementary goals are not part of the EU policy and therefore do not need to be part of national policy. The question in Zeevang with regard to the meervleermuis is tackled at the national level in the parliament. This aspect is opposed on a more general way, by indicating that according to the EU, complementary species do not have to be part of the national nature policy.
    - Explanation: because national government was using the argument all the time that Natura 2000 was EU law, and because the cabinet was centred – right, having high ideologies with regard to economic growth and development instead of nature, these two factors might be able to explain the efficacy of the arguments.
3. Natura 2000 hampers economic development – municipalities, farmers and entrepreneurs complained about the fact that Natura 2000 was expected to hamper economic development- Nederland ging op slot. In the regional processes itself, there was no opportunity anymore to deploy this argument, although in case Zeevang the local governments have tried to do so by going to the judge. What has happened is that the debate about economy and nature could not take place in the regional processes and this debate did shift towards the national level, resulting in a debate on the fundaments of Dutch nature policy, a shift in responsibilities and a new vision on nature coming from the national government.

Counter-argument strategy:

- **Arguments from their own perspective:**
    - **Industrial sites cannot be developed**
    - **...**
- **Matching with values, perceptions and interests of the receiver**
    - **Uniqueness of area in particular because of agriculture**

Annex 12c – Case study report: Implementing the Natura 2000 network; Nature 2000 in Hungary

Veronika Fabók, Györgyi Bela, Eszter Kovács

1. Introduction

Context of N2000 argumentation

The conservation policy in Hungary is based on the management of different type of protected areas. These protected areas differ in their concept and in their regulations, although they overlap in quite big areas. The protected areas of national significance have the longest history in Hungary. The regulation of these areas is based on conservation law (Act LIII. of 1996 on Nature Conservation). They are managed mostly either by command and control acts (like fines and penalities) or they are in state property and managed by national park directorates or national forest agencies. Another type of protected areas are the SPAs and SCIs that are part of the Natura 2000 network. These areas are designated to preserve habitats and species that are of European significance. Their regulation is based on the Habitat Directive, the Birds Directives and the Hungarian regulation that introduced these directives into national law. The management of the Natura 2000 areas partly based on command and control regulation, but compensatory paymenst for grasslands and forests from the European Agricultural and Rural Development Fund are available, and there will possibly also be subsidies for voluntary acts from the same fund in the future. The protected areas of national and European significance overlap, as 90% of the protected areas of national interest were incorporated in the Natura 2000 network (0,71 million hectar). Apart from this there are still large areas (1,2 million hectar) that are exclusively part of the Natura 2000 network. The High Nature Value (HNV) areas, that are linked to the zonal agri- environmetal programmes and work with voluntary agreements among farmers also consider conservation goals among others. There are currently 25 HNV areas in Hungary, they are often overlapping with the two other cathegories.

The Pannonian biogeoraphical region covers the whole territory of Hungary. Due to its location, the region has areas with unique habitats and endemic species that had

been designated as a part of The Nautra 2000 network. The Natura 2000 sites cover 21% of Hungary's territory (1,96 million hectar). The main part of the designation process was finished by 2004, but it was finalised in 2012. From 1994 to 2004 a preliminary process started in order to prepare for the designation. In this period data collection and monitoring projects were conducted. According to the Commission, the site selection only could take into account scientific considerations and ignored social and economic questions. In 2005 during the Pannonian biogeographical seminar the European Commission reviewed the proposed list. By 2005 the list of designated areas was public, although the stakeholders hadn't been informed personally, most of them didn't know that their land was included in Natura 2000 network. The national regulation of the Natura 2000 network was established in 2004. The implementation period started from 2007 when landusers could apply for compensation in Natura 2000 grasslands. Compensation for forest owners and associations was avaiable from 2012. However the state owned forest agencies still can not apply for compensation, therefore most of the Natura 2000 forests are managed without financial incentives. The prerapation of management plans was the next important step in the implementation. In the future these management plans could be the base of a voluntary subsidy scheme. In 2008 9 management plans were prepared by the Birdlife Hungary in a LIFE project, in 2009 further pilot management plans were made for 20 Natura 2000 areas in a participatory planning process. Currently management plans are being prepared for most of the SPAs and SCIs in Hungary.

Issue

The policy formulation and implementation of Natura 2000 network in Hungary. We examined the arguments used for and against Natura 2000 by different stakeholder groups in different policy phases (policy formulation and implementation) and in different policy levels (national and local).

Actors

1. There were actors who introduced/proposed the Natura 2000 network: Ministry of Environment (later Ministry of Rural Development), National Park Directorates, scientists (ecologists and agricultural scientists), consultants, conservation authorities, NGOs

2. There were stakeholders who were affected by the introduction of the Natura 2000 policy in local level: farmers, land owners, municipalities, forest owners, forest companies, hunters, water management agencies, NGOs

2. Process of implementation of N2000 system in Hungary

Phase of policy formulation

1994-2005: It was a preparatory period for the designation of the sites. Projects on data collecting and biodiversity monitoring took place. An NGO working group and an advisory board were set up to help the process. National legislation was established. Arguments were present at the national level.

2005-2007: The designation was mostly completed by 2005 (after revisions it was finalized by 2012). A roadshow and some workshops for local governments were organised. We could only observe the arguments at the national level in this period as we didn't have access to documents at the local level.

Phase of implementation

2007-2014 : In 2007 the regulation on the management and the related compensation payment scheme for Natura 2000 grasslands came into force. In this period management plans were prepared by the Birdlife Hungary in a LIFE project in 2008 and in 2013. Stakeholder forums were held during these planning processes. We could observe a forum in 2013. In 2009 managment plans were also made for 20 pilot Natura 2000 areas with a participatory planning process. We analysed the minutes of the events. Currently for most of the SPAs and SCIs in Hungary management plans are being prepared in a project funded by the European Agricultural Fund for Rural Development (EAFRD). We could attended and observed 3 stakeholder forums in 2014 that were held during the EAFRD project.

3. Arguments and argumentation lines within the N2000 process

Argumentation lines of implementation phase

1. *Whose responsibility is the conservation?* There is a pro argument line that was presented by the proponents of Natura 2000 and there is a counter argument by the stakeholders. The argument for the Natura 2000 is: „There is a conceptional change in conservation, it is not based on the „reservation

approach any more". Instead of the separation of protected areas, they are treated in their social- economic context, the Natura 2000 areas are good examples for this approarch. The protected areas could be comprised in the land use zone pyramid. In these zones the strictly protected areas are in the center, we can get to the intensive agricultural zone through the puffer and transition zones. The Natura 2000 covers the first 2 zones (strictly protected and puffer zone)[81]. In this system there would be compulsory and voluntary elements. There are areas (esp. grasslands) where the land use is very important to maintain the state of the habitats, the farmers are allies, it is very important for them to gain benefits from the farming. The conservation policy has to work with the people, involving them to management." The stakeholders' arguments in this line: „If these areas are really of national/ European interest the state should buy/ expropriate these areas and take care of them. The state wants to put the responsibility and the burden on the farmers."

2. *Is Natura 2000 and conservation profitable/ good for agriculture/game management/forestry?*

   The argument lines for Natura 2000 are: „The Natura 2000 compensation and other Natura 2000 subsidies that can be introduced in the future (they mostly refer to the latter) might be benefitial in agriculture. It can help develop the infrastucture of the farms, especially related to animal husbandry. It can compensate the low income of the farmers which is the consequence of low buying prices. If enviromentally friendly farming is financially awarded/compensated, it can secure the livelihoods of farmers and local residents don't have to leave the rural areas.The financial incentives have to support local people and the local agriculture. Certain conservation measures can be directly beneficial in the game management and in the agriculture as well. For example habitat restauration is also important for the small game

[81] This is a land use concept by Erz (1978) (Erz, W. (1978) Probleme der Integration des Naturschutzgesetzes in Landnungsprogramme. TUB, Zeittschrift der Technischen Universitat Berlin 10 (2), 11-19.)

species, water retention is fundamental for agriculture and forestry in some places, as the productivity of grasslands and forests can be enhanced."

But some stakeholders have arguments against Natura 2000 as well: „The conservation measures are causing loss of revenue and sometimes the compensation is not realistic. Farmers don't want to rely on subsidies rather they want to manage their business without restrictions.

3. *What is natural and therefore valuable?*

   A pro Natura 2000 argument is: „The habitats and species of Pannonian biogeographical region are unique. We have many indigenous and endemic species. Hungary still has natural habitats that are worth preserving. We have to get back to the traditional farming, we would like to see the landscape as it looked like decades ago." The argument against Natura 2000 is: „We preserved these values, the way that we used the landscape was good. The habitats that were created by the human activities are also valuable (forest plantations with alien species, artifical lakes, sand mines)."

4. **Arguments of policy formulation phase at national level**

National heritage arguments

1. *Hungary offers a significant contribution to the biodiversity protection for the European community with its natural heritage.*
2. *These sites could become the most valuable protected areas in Europe.*

Legal obligation

1. *Conserving this natural heritage is not only our national responsibility, but since the EU accession it has been a community requirement regulated by the European law.*
2. *The goals and efforts of environmental protection in the EU and Hungary are harmonized but we still have a lot to do to fulfill the requirements that were set by the EU.*
3. *The site designation process can only take into account scientific considerations, economic, social and other issues have to be neglected.*

Sustainable development

1. *As we have seen the consequences of mistakes made by the developed countries before, our goal is to develop the economy and infrastructure of our*

country in a way that helps to conserve our natural heritage. We have to do it by fulfilling the goals of sustainable use and sustainable development, that are encouraged by internatinal agreements like Ramsar Convention and CBD (Convention on Biological Diversity).

Economic/ livelihood arguments

1. *The proper operation of the system is based on contracts working through management plans and on the recognition of interests rather than command and control regulation. It means that is not necessarily fits in every aspect in the concept of Hungarian protected areas.*
2. *Threats to our natural resources can be reduced through a careful preparation and the harmonization of environmental, social and economic interests.*

Future generations

1. *It depends on us if the future generations can enjoy the benefits of the outstanding natural heritage of Hungary.*

5. Arguments of implementation phase at national level

Intrinsic value arguments

1. *The EU is commited to halt the loss of biodiversity and reverse the negative trends by 2010. The most important instrument to fulfill this goal is the designation of the well- grounded Natura 2000 network and the conservation, improvement and restoration of the sites.*
2. *The aim of network is to conserve biological diversity and to secure the long term survival of endangered, vulnerable and indigenous species and their threatened, fragmented habitats.*

Economic/ livelihood arguments

1. *The network attempts to conserve what has been left from the natural resources of Europe by supporting sustainable farming activities that are in harmony with nature and by resisting the aggressive, imprudent and short sighted economic tendencies.*

2. *Theres is no compensation for damages in the sites that are included in Natura 2000 network, as the owners or land users do not suffer any damage, but they can apply for subsidies.*
3. *Environment is protected at the Natura 2000 sites by considering and harmonizing various social, economic and cultural issues.*
4. *The goal of the programme is to urge the rational use of land and to conserve natural resources.*

Sustainable development

1. *The Natura 2000 network will contribute to the sustainable development of the rural areas by stimulating employment, etablishing alternative ways of income generation, improving the touristic attraction of the region, fostering the trade of organic products and using agri- environmental schemes.*
2. *The goal of the Natura 2000 sites'is to protect the environment in order to conserve, maintain and restore the conditions of the Natura 2000 species and habitats and to assure the conditions for sustainable management of these sites.*

Legal obligation

Unfortunately the designation process considered species with a particular interest for the community not for the Hungarian nation therefore the Ministry of Environment is not responsible for the selection.

6. Arguments for N2000 of implementation phase at Local level

Economic /livelihood arguments

1. *The protected areas started to be perceived (by the policy makers) as embedded in their social and economic context. The protected areas fit into the land use zone pyramid that range from the intensive agricultural use to strictly protected areas.* These arguments were used in 2009 and in 2013 very frequently by the scientist/ consultants who organised the stakeholder forums. All scinentists/consultants who used these arguments had a background in agricultural science and some of them were involved in the development of the

High Nature Value Areas. They often quoted the HNV areas as good examples.

2. *We compensate farmers for the loss of income caused by the regulatory restrictions. The sustainable management of the lands and restoration of habitats also will be rewarded by financial incentives through voluntary agreements.* These arguments were used by the policy makers in 2009, 2013 and 2014.
3. *Natura 2000 is a possibility to secure livelihoods. The subsidies/compensation have economic advantages. Farmers can develop their farms and can be compensated to supplement the low incomes from agriculture.* These arguments were used by Natura 2000 promoters (consultants, scientists, conservation officials) in 2009.
4. *Conservation subsidies can help maintain people in the rural areas, and help them to be able to maintain livelihoods in an environmentally friendly way.* These arguments were used in 2013 and 2014.
5. *Certain conservation regulations are beneficial for game species and game management.* This argument is valid under particular local circumstances, where small game species decline in number due to habitat loss and where game species live in crop fields where they are in danger during harvesting because of the machines. In these areas conservation goals as habitat restoration and restrictions in crop harvesting (to save species that nest in crop fields) are good for game management. This argument was used by consultants in 2013 and 2014.
6. *Water retention is good for conservation but is good for agriculture as well.* This is also a very specific argument used in dry areas where the groundwater level had dropped due to the river regulation interventions in the 19th century. The retention of water keeps the habitats alive, but also enhance the productivity of grasslands and forests. It can help animal husbandry and forestry. This argument was used by scientists and consultants in 2009, 2013 and 2014.
7. *Fighting against invasive species is good for pastures.* This argument was used in 2014 by a consultant to highlight that the animals can not eat invasive plants and they have to be cut down.

8. *The protected area could be a base for tourism.* Used in 2009.

Ecological arguments

1. *The extent of the natural habitats is so small and they are so fragmented, that we have to preserve them. They have no capacity to recover naturally and they are too vulnerable.* This argument was used in 2009 and in 2014 by scientists. Scientists used this argument in specific cases where damages were made by wild boars in wetlands and in cases of clearcuts in forests and plowing of grasslands. They said that a healthy ecosystem could have managed these effects and could have been regenerated, but these days they are so damaged that we have to be more careful.
2. *The habitats of the site is fundamental in retaining the ecological balance of the Lake Balaton.* This argument was used in 2009 by a consultant.
3. *We have to preserve the whole metapopulation, if the sink populations remain only, the populations can become extinct.* This argument was used in 2014 by a consultant.
4. *Species can be preserved by protecting their habitats.* This argument was used in 2009 by scientists.
5. *If we preserve species we can preserve communities.* This argument was used in 2014 by a consultant.
6. *The area is a feeding and nesting place.* This argument was used in 2009 and 2013 by scientists and NGO members.
7. *These species adapted to this environment (Carpathian Basin) therefore they are valuable.* This argument was used in 2014 by a consultant. It was a reaction to the stakeholders' questions on invasive species in an argument about acacia (and silkweed).

Intrinsic value arguments

1. *It is important to preserve these species and habitats because they are important/ valuable at an European level.* Used in 2009 and 2014 by scientists and consultants to highlight that Hungary has unique habitats and species.
2. *These species and habitats are indigenous/ endemic in the Carpathian Basin/Hungary therefore they are valuable. The Carpathian Basin had a specific path of evolution.* Used by a consultant in 2014.

National heritage arguments

1. *Hungary still has many valuable natural areas, we should be happy about this. In developped countries there are only small pieces of land that has to be preserved like reserves.* This argument was used in 2009 by a scientist when answering the questions about the extent of the Natura 2000 network in Hungary. The stakeholders stated that it is extreme comparing to the Netherlands and the UK.
2. *The Carpathian Basin is an independent biogeoraphical region (Pannonian biogeographical region) due to its unique natural features. The conservation of these values depends on Hungary. (That's why we designated so many sites in the Natura 2000 network.)* Used in 2009 and 2014 by scientists and consultants.

Moral arguments

1. *Conservation is a cooperative act with stakeholders, their involvement is important (conservation is depending on them).* Used in 2009 and in 2013.
2. *Local landusers have a role preserving the good natural condition of the protected area.* As these areas are in private property the conservation goals have to be achieved by the proper land use of stakeholders. Most of the time this argument is used to argue for grazing management, because certain grassland degradate without land use. The conservation policy would like to imitate the traditional land use that had maintained valuable landscapes. Scientists and conservation officials used this argument in 2009.
3. *The Natura 2000 areas the property of the whole country. We have to deal with this heritage as a common interest.* These arguments were used in 2009 and 2014 by scientists.

Arguments about ecosystem services

1. *It is important that the habitat can provide services in a long term. Destroying ecosystem services (e.g. water functions and detritivores) that are provided by indigenous species will cause a problem in the long term.* These arguments were used in 2009 and in 2014.

Arguments about future generations

1. *We have to think about the heritage that we will leave to our grandchildren. Will they leave the Carpathian Basin if we destroy it?* It was used in 2014

when the consultant talked about if we would like to sacrifise our long term interest by selling everything.

Legal obligation

1. *Natura 2000 is a compulsory European legal obligation that have been accepted with the EU accession and have to be fulfilled.* This argument was used in 2009, 2013 and in 2014.

7. Arguments against Natura 2000 and its restrictions of of implementation phase at Local level

Economic /livelihood arguments

1. *Restrictions cause loss of profit, or damage.* This was used in spceific cases, where the stakeholders explained that cutting the grass too late ruins its quality, or restrictions on works in the forest/ croplands because of bird nests cause income loss. It was used in 2009 and 2013 by farmers and forest managers.
2. *There are some species that cause income loss for farmers and hunters*. These are species like foxes and birds of prey species that catch the small game species. It was used in 2013 and 2014 by hunters and farmers.
3. *It is not profitable to manage a forest in an environmentally friendly way.* It is very expensive and difficult to manage. It was used in 2013.
4. *Compensation is not a significant amount of money./ Stakeholders prefer „proper" business instead of subsidies or compensation.* State owned forest agencies can not apply for compensation, therefore cannot be motivated by financial incentives. Used by municipalities, farmers and forest managers in 2009 and 2013.
5. *Game management helps conservation therefore it is not useful to make restrictions.* It was used by hunters in specific cases in 2009, when scientists talked about the overpopulation of wild boar and about restrictions on feeding them. Hunters stated that feeding the game species is important because they can also feed protected animals and they can prevent the damages that wild boars cause in the soil.
6. *Retaining water is not useful/harmful.* It was used in specific cases in 2009. Some of the stakeholders thought that the extensive droughts that were present in the area are natural phenomena. Water management agencies were argued

that their responsibility is to drain the inland inundation (a type of flood) as it cause economic damage to some of the farmers.

Moral argument

1. Nature *conservation is a state responsibility, if it is a national or European interest, the state should buy or appropriate the protected areas.* This argument was used in 2009 and 2014 by farmers and landowners generally and sometimes in specific cases where the land tenures were very fragmented or where the lands were in common property.

Ecosystem services

1. There *are invasive species that provide ecosystem services like nectar, honey or firewood.* It was used in 2014 by a beekeeper and other farmers when restrictions were presented for invasive species (especially acacia and silkweed).

Table 1: Summary of the type of arguments used in different policy stages and in different policy levels

	Policy formulation	**Implementation**
National level		
	Economic/livelihood Future generations Legal obligation National heritage Sustainable development	Economic/livelihood Intrinsic value Legal obligation Sustainable development
Local level		
Stakeholders for the Natura 2000	We couldn't observe arguments in the local level during the policy formulation phase.	Ecological Economic/livelihood Ecosystem services Future generations Intrinsic value

		Legal obligation Moral Natural heritage Tourism
Stakeholders against Natura 2000		Economic/livelihood Ecosystem services Moral

Methods for data collection, analysis and quality control

Data collection: The study is primarily based on the context analysis of argumentations in the documents. EU publications and policy papers in English and Hungarian of the various periods are examined. In the national level we analysed documents that is published on internet 1.) between 1994-2000 2.) between 2000-2005 3.) between 2005-2009 4.) between 2009-2014 Following documents was analysed:

- Documents of CORINE Biotope project: inventory of sites of major importance for nature conservation in the European Community
- Reports of National Biodiversity Monitoring Program
- Reports of :"Intensive Botanical Data Collection Programme " organised by the Ecological and Botanical Research Institute of the Hungarian Academy of Sciences:
- Reports of Important Bird Areas assessments.
- Reports of the twinning project:international experience exchange about site designation of Natura 2000
- Joint homepage for the Natura 2000 network (established by The Secretariat of the Environment and the Hungarian Ornithological and Nature Conservation Association.

In the local level we analysed minutes of 12 stakeholder forums from 2009, and our personal records of stakeholder forums from 2013 (one forum) and from 2014 (3 forum).

Balástya stakeholder forum (2014-03- 20)
Berhida stakeholder forum (2009-08-31)
Del-Balaton stakeholder forum (2009-09-16)
Del-Orjeg stakeholder forum (2009-11-03)
Gater stakeholder forum (2009-10-08)
Hejomente stakeholder forum (2009-09-02)
Izsak stakeholder forum (2009-10-26)
Janoshaza stakeholder forum (2009-10-21)
Jaszsag stakeholder forum (2013-05-10)
Kiskunhalas stakeholder forum (2014-03-13)
Pirto stakeholder forum (2009-10-08)
Szigetihomokok stakeholder forum (2009-08-26)
Szilvasvarad stakeholder forum (2009-08-24)
Tengelic stakeholder forum (2009-09-03)
Tiszaalpar stakeholder forum (2014-03-13)
Veresegyhaz stakeholder forum (2009-10-07)

Data analysis: At national level content alanysis of relevant documents was conducted. On the local level we attended 4 stakeholder forums in 2013 and 2014, and made minutes to record the events. We also used minutes from stakeholder forums held in 2009. We used qualitative analysis (supported by NVivo software) to analyse the arguments, the argument lines and their effectiveness. We were not able to cover all the habitat types of the Natura 2000 sites. The stakeholder forums that were avaiable for us were in Natura 2000 sites that were mostly grasslands (in the plain region of Hungary). Unfortunately we couldn't observe sites with forests (the hilly regions of Hungary) as the stakeholder forums will be held later this year. The arguments can be different in the sites that are covered with forests as the stakeholders (and the interests) and the institutional context is different. However we can get a glimpse from it as there are some smaller forests in the sites that we observed. There were sites with wetlands and croplands as well in our observations. The institutional context of the sites is complex, there are different kind of overlapping protected areas. To include the complexity, we choosed sites that are both nationally protected areas and Natura 2000 sites, areas that are only Natura 2000 sites and we also picked overlapping High Nature Value Areas (planned and exited).

Quality control

Data triangulation – we used of different sources of data (see above)

Methodological triangulation – we used document analysis and observation (see above)

Investigator triangulation – the case study report was cross checked by 3 researche

Findings

To observe effectiveness of arguments of the Natura 2000 case study we used the BESAFE protocool on effectiveness. We analysed 5 aspects of effectiveness: 1. persistence (repeated at several stages); 2. accumulation (growing importance); 3. level-crossing (extend to different policy levels); 4. diffusion (reach new audiences); 5. replacing of argument. We didn't analysed the last aspect, as we haven't had enough information.

Table 2: The effectiveness of the different argument types

	Persistence	Accumulation	Level-crossing	Diffusion
Ecological	Medium	Low	Low	Low
Economic/livelihood	High	Low	High	Low
Ecosystem services	Low	Low	Low	Low
Future generations	Low	Low	Low	Low
Intrinsic value	Medium	Low	Medium	Low
Legal obligation	High	Low	High	Low
Moral	Medium	Low	Low	Low
Natural heritage	Medium	Low	Medium	Low
Sustainable development	Medium	Low	Low	Low
Tourism	Low	Low	Low	Low

The **ecological arguments** were persistent during the local argumentation, as they were present in 2009 and in 2014. But in other aspects it's effectiveness wasn't high, the stakeholders didn't use it in the national level and its importance remained more or less the same.

The **economic/ livelihood arguments** were significant in the national level, both in the policy formulation, both in the implementation phase. Locally it remained important from 2009 to 2014. Although it was an important argument type, it didn't grow in its importance and didn't reach new groups in local level from 2009 to 2014. It's effectiveness concerning the behavioural change depended highly on the avaiability of compensation/subsidies, on the profitability of the farming and the shortage of the ecosystem services/ natural resources that could be restored by conservation measures. If these parameters were present these arguments were more welcome. The „counter" arguments that were used by the stakeholders most often were also economic/livelihood arguments about the costs/burdens of conservation.

Intrinsic value arguments were used in the implementation phase at the national and at the local level. At the local level it was used in 2009 and in 2014, thefore we can say it is persistent and level- crossing.

The **legal obligation arguments** were used both in the policy formulation and in the implementation phase, at the national level and also at local level. They were persistent and level- crossing. These arguments referred to EU law, they articulated that it was an obligation and Hungary can not stand against it. This was very important because the communication of the designation process wasn't appropriate, during the implementation phase (even in 2014) some of the staleholders still questioned the legitimacy of the designation and asked whether the extent of the Natura 2000 areas is extreme.

Moral arguments were only used at the local level, though it was persistent through the years. The argument tried to create a sense of responsibility among the stakeholders. The „counter" arguments of the stakeholders were about not wanting the responsibility of the conservation, they think of conservation more as a state role. However in some cases the argument was used under some circumstances when it could have been rational for the state to take over the lands. There are extremely

fragmented lands and lands that are in common property, these are hard to use, and it is also not easy to have conservation measures on them.

National heritage arguments tried to rely on the national feelings of stakeholders. They were used at the national and at the local level too. **Sustainable development arguments** were used at national level in the policy formulation and in the implementation stage too.

Discussion

The most important arguments and argument lines both at the national and local levels were about the economic advantages and the livelihood supports that can be provided by Natura 2000. They mostly focused on the subsidies and compensation, and less on the other economic advantages of conservation. The subsidies/ compensation argument can only be used under particular conditions. Institutional context is fundamental, as currently there are compensation only for compulsory restrictions of the grasslands and forests. There are no subsidies for voluntary restrictions (that are included in the management plans) and for other habitats (wetlands). Further influencing factor is that the state owned forest companies cannot apply for compensations/subsidies. These factors can weaken the argumentation. The profitability of the land/ farming is also very important, as the existing compensation schemes are not very high, therefore for some profitable farms it won't be very attractive. The proponents of Natura 2000 often referred to the High Nature Value Areas, which are agricultural areas with conservation goals. In these areas the farmers get fairly high subsidies for certain restrictions. Arguments that were used for emphasizing other economic advantages (conservation is useful for game management/ water retention good for agriculture) of Natura 2000 could be used in specific sites, where there were some depletion of natural resources (small game species, soil). The legal obligation was also used in all stages and at all levels. It was due to the proponents' purpose to strenghten the legitimization of the Natura 2000, as some stakeholders still questioned it. The moral arguments were used only at the local level, they emphasized the difference between the conception of Natura 2000 and the nationally protected areas. The arguments displayed Natura 2000 as a cooperative act between stakeholders and the state, a common interest, where the responsibility belongs to the stakeholders. Some stakeholders thought that there are not any

differences between the nationally protected areas and the Natura 2000 areas (there can be plenty of causes behind this, like lack of information, lack of trust or resistance, but during this study we have not examined this question), and they see conservation as mainly a state responsibility. (As we already mentioned, sometimes they mentioned it as a solution, as in some cases there are rational reasons for state property.) The last argument line is about the nature itself. Some of the stakeholders questioned the arguments that considered only the indigenous and endemic species natural and valuable. They claimed that human made habitats and invasive species can be considered natural and valuable too.

Annex 13: Progress report on the Synthetic Biology case (work ongoing)

Rob Tinch

Uses and abuses of economic arguments in the development and governance of synthetic biology

Introduction

Synthetic biology aims at the modification and construction of biological systems (ranging from organisms to in vitro biochemical systems) with understandable and predictable behaviours. A wide range of benefits could arise, including in environmental and conservation applications. However there are also many possible risks that are poorly understood. Because of that, a debate has developed that discusses potential advantages and risks related to the field of synthetic biology. In the present study we will consider the role of economic concepts and arguments in the development of synthetic biology and its governance. We will investigate the argumentation used in the synthetic biology debate using both literature review and the Q-methodology.

The methodology

The Q methodology is a tool to assess individuals' attitudes and perspectives (Stephenson 1935). The method enables studying individual perspectives and revealing patterns in underlying value systems of individuals and groups (Brown 1993, Gruber 2011). It combines both statistical analysis and qualitative interpretation that increases reliability and validity of the results (Bumbudsanpharoke et al. 2010). The method has been commonly used in environmental studies, for example to investigate perspectives on forest management (Steelman and Maguire 1999), global environmental change (Niemeyer et al. 2005), good participation process (Webler et al. 2001) or environmentally adapted management practices in agriculture (Bumbudsanpharoke et al. 2010).

During the study, each participant is given a set of statements that he/she orders on a Q-chart, from the statements he/she agrees most with to the statements he/she agrees

least with. At the same time, the participant is interviewed about his/her choices to gain qualitative information about the underlying values. Quantitative analysis of the Q-sorts aims at finding patterns in opinions across participants. In our study we designed a set of 40 statements (see list below) that broadly encompass the general debate about synthetic biology. The statements were derived from a comprehensive literature review concerning this topic.

Within the study 13 or more Q-interviews will be conducted (depending on the availability of the respondents). The work has started in June and will be finilised in September 2014.

Q-statements in the study

1. The effects that Synthetic Biology could have on biodiversity are already known.
2. Synthetic Biology is not necessary to ensure a secure food supply
3. Synthetic Biology is an excellent and safe solution for reviving and restoring extinct species.
4. Synthetic Biology should be used for curing major diseases despite the environmental risks from unexpected mutations.
5. There is a danger that Synthetic Biology will be used to develop new bioweapons.
6. I trust industry to take voluntary measures to appropriately manage Synthetic Biology use.
7. Government should invest in Synthetic Biology development to help improve the economy.
8. Many people are reluctant to accept the use of Synthetic Biology although they are aware of its benefits.
9. Producing novel organisms using Synthetic Biology could not ultimately endanger human life.
10. Synthetic Biology applications will becomes so widespread that all humans will eventually be affected.
11. Government should play a role in ensuring that the public is properly informed about the dangers and benefits of Synthetic Biology
12. European Union legislation should be changed to allow Synthetic Biology use in plants and animals to improve European agricultural competitiveness.

13. Government should remove all regulations on Synthetic Biology development and use.
14. Regulation is essential to limit Synthetic Biology uses and applications so that biodiversity can be protected.
15. Appropriate de-regulation of Synthetic Biology in Europe would allow production of improved energy crops and would therefore reduce food production risks.
16. The market should ultimately decide whether Synthetic Biology becomes a widely used technology or not.
17. Military development and applications of Synthetic Biology should be banned.
18. The public is suspicious of Synthetic Biology because they know nothing about it.
19. Synthetic Biology is necessary to increase disease resistance for humans, plants, and animals.
20. Synthetic Biology will encourage development of linked industry applications which will provide employment and improve the economy of those countries that accept to use it.
21. Biodiversity conservation will not be improved with good management of Synthetic Biology use.
22. Synthetic Biology is a new and important field which is growing and could improve the economy.
23. Synthetic Biology does not threaten ecosystems at all.
24. The Synthetic Biology research investment is greater than the profits that industry can expect.
25. Synthetic Biology will provide climate change solutions.
26. In their search for profits, large corporations will ignore the risks that Synthetic Biology applications could have.
27. It is necessary to continue investing in Synthetic Biology to benefit from its uses and applications.
28. Greater public involvement and public investment is not needed to promote Synthetic Biology.
29. Synthetic Biology technologies could create damaging dependency on large corporations.
30. There is not a risk that military applications of Synthetic Biology could have a devastating effect on biodiversity and humans.

31. We need to understand the technology. Therefore, new discoveries from Synthetic Biology should not be patented when there are biosecurity risks such as introducing invasive flora, fauna, pests, and diseases.

32. The danger that Synthetic Biology poses to society has been exaggerated by the media, whilst the benefits are hardly reported. The public is therefore misinformed about Synthetic Biology.

33. I am confident that I understand what Synthetic Biology is.

34. Synthetic Biology is not necessary to address increased energy demand.

35. Popular misunderstandings in the uses and applications of Synthetic Biology have been derived from people who are not experts in this field.

36. The Cartagena Protocol is sufficient to guarantee biosecurity with Synthetic Biology use.

37. There is enough information to identify the risks from Synthetic Biology.

38. Accidental release of Synthetic Biology life-forms from laboratories could potentially be harmful to biodiversity.

39. Synthetic Biology will not encourage development of a highly skilled workforce.

40. Researchers should accept funding from the military.

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Annex 14

BESAFE

Conducting interviews

Pekka Jokinen (SYKE)

The definition of "interview"

Interview refers to a method of data collection, information or opinion gathering that specifically involves asking a series of questions. Interviews generally take the form of a conversation between two people (i.e. face-to-face; but also interviews with focus groups; further, interviews by telephone or electronic communication).

Various interview types

Interviews are used both in quantitative and qualitative research. *Quantitative* interviews typically involve the use of a structured survey instrument asking all respondents the same questions in the same order (the responses are thus amenable to statistical analysis). *Qualitative* interviews are flexible and open-ended. While quantitative methods gather a narrow amount of information from a large number of respondents, qualitative interviews gather broader, more in-depth information from fewer respondents.

In terms of standardisation, the three main types are structured, semi-structured and unstructured interviews. *Structured* interviews are similar to questionnaires as they use a standard format consisting of pre-determined questions in a fixed order. *Semi-structured* interviews involve the interviewer deciding in advance what broad topics are to be covered and what main questions are to be asked. *Unstructured* interviews allow the researcher to adopt almost a conversational style; also the interviewee can thus determine the course of discussion.

A different typology (Silverman 2001) highlights different types of research questions (or research interests). *Positivist* interview research approaches are interested in 'facts' ("what"). For instance, when studying a policy process, we would collect as accurate information as possible about what happened in the process. *Emotionalist* interview research approaches consider interviews as a pathway to the participants' authentic experiences ("what"). In this case, we would examine how people experience the policy process. Further, *constructionist* approaches focus on how meanings are produced through the interaction that takes place between the interviewer and interviewee ("how").

Analytical and evaluative notes on different interview types

- Since everyone has experience of talking to people, there is a tendency to assume that conducting interviews is easy to do. Not the case…
- Research questions ≠ interview questions – interview questions provide material helping in answering the research questions through analysis. Interviewees cannot directly answer our research questions.
- The interview format allows the interviewer to explain ambiguities and correct misunderstandings in the questions.
- The interviewer can make connections between different parts of the conversation.

- The less standardised the format, the more scope for flexibility.
- Unstructured interviews produce rich grounded data but are time-consuming to analyse.
- Highly structured interview schedules may lack validity. Yet, it might be a good choice if the interviewer is inexperienced.
- Since unstructured and semi-structured interviews are not standardised, this may affect the reliability ("reproducibility") of the data produced.
- Since the interviewer may change the order of questions, ask different questions of different people etc., this makes it difficult to compare answers.
- There might be various interviewer effects.

In practice?

- First, are interviews the best way of collecting empirical materials for your research project?

- If they are:
- Decide what type of interviews will be carried out (structured and standardised / guided and semi-structured / unstructured and open).
- Develop interview questions – you can use same types of questions throughout the interview; or combine various types of questions; the logic of open questions illustrated by "*Tell me…*", closed questions by "*Do you … or not*"; consider the order of questions.
- Think ahead about your interview questions; think how the answers on particular questions may affect other questions and answers.
- Decide how to record the interviews: notes written on the spot (not good, interfering) / notes written afterwards (not good, easily miss out details) / taping the interview with a recorder (test it beforehand!).

- Making several simple questions is better than one complex question.

- To avoid getting "socially acceptable answers" assure the interviewee of confidentiality at the beginning of the interview.

- At the beginning of an interview, start with some "small talk" and not with "sensitive" questions.

- Also at the beginning of an interview explain well what the goal of the project and of this particular interview is.

- Ask if the interviewee would like to get the results of the research. If so, explain how and when he/she can receive that.

- Always ask for permission to record the interview (assure of confidentiality!)

- Prefer neutral questions avoiding pre-given answers.
- If the issue is not especially sensitive, use direct questions.
- During the interview use expressions like "you have told before that…" or "you mentioned that…" to follow up the information you have gotten before, but also to show the interviewee that you actually have listened to what he/she said (it is good to take notes during interview on what you can relate/come back to later on).
- In the end of the interview, be sure that all topics were covered. If needed, make clearing questions in the end, e.g. "*Can you think of anything else*…"

- Try to develop a balance between talking and listening (i.e. remembering what the respondent has said and knowing when and when not to interrupt).
- With semi-structured interviews, use an *aide-memoire* to remind of the key topics and issues and to assist in making connections between different parts of the interaction.

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Annex 15

Focus groups

Ann Van Herzele

Definition

Focus groups are a research technique that yields qualitative data through group interaction on a topic determined by the researcher. The researcher's interest provides the focus, whereas the data come from the group interaction. Focus groups typically involve 6-10 participants and are conducted by a skilled moderator using an interview or topic guide. A main purpose is to stimulate interaction and thereby understand the meanings, norms, etc., which underlie the group's answers, rather than just eliciting these answers.

Advantages

- Ability to provide access to a wide range of perspectives in a rather short time. In a group situation, participants stimulate each other. A comment by one individual often triggers a chain of responses from the other participants.
- Focus groups allow participants to react to and build upon the responses of other group members. This synergistic effect may provide unique information, in particular, on how participants compare among each other's experiences and opinions and come to understand their similarities and differences.
- The focus is on the group rather than the individual, participants can expose an idea without necessarily being forced to defend, follow through or elaborate on it. They are not required to answer any given questions and the things they say are not necessarily being identified with them.
- Focus groups provide a setting for developing evaluations, opinions, etc. in interaction and that is precisely where evaluations appear in everyday life: in arguments and conversation with others. Focus groups work best for topics people can talk about in their own ways and in their own words.

Warning! Focus groups are a socially dynamic situation. Maintaining the focus influences the group's interaction and, most important, it is the group's interaction that influences what participants say and how they say it. The responses from participants are not independent of one another! And, they are often based on information that is already shared by the group (so downplaying unique information held by specific individuals).

Uses for focus groups

*Supplementary uses (most common): focus groups serve either as a source of exploratory or preliminary data (e.g. in pre-pilot work to provide contextual data, to reveal the language and concepts used in relation to the topic, to generate survey items) or a source of follow-up data to clarify findings from the primary method (e.g. issues that came up during the analysis of interview or survey results). Furthermore, focus groups may provide feedback on findings to research participants or involve them more actively in the research process through reviewing progress and findings.
*Self-contained uses: focus groups serve as the principle source of data (the results can stand on their own). The goal is often to learn about the participants' experiences, perceptions, evaluations, opinions, and the meanings that lie behind these. A further

interest is the group processes of meaning generation and the normative understandings drawn upon. The researcher may find out not only what participants think about an issue but also how they think about it and why they think the way they do.
*Multi-method uses: similar as previous but the focus groups add to the data that are collected through other methods: individual interviews, participant observation, survey, etc. Each method contributes something unique to the researcher's understanding of the phenomenon under study. Analysis of different kinds of data may serve to deepen and enrich a researcher's understanding of the phenomenon.

Designing, conducting and analysing focus groups

Researchers have to make choices at each stage of the process. Whereas several handbooks exist on doing focus groups, including useful recommendations, there is no generally agreed code of good practice. Furthermore, choices are not just about practical matters. They also carry implicit theoretical commitments.
The important issues to consider are as follows: composition of groups, size of groups, number of groups, sampling and recruitment of participants, incentives, choice of venue, duration, design of the topic guide, moderator intervention, facilitating the discussion, audio-recording, transcription, coding and interpreting the data, reporting.

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Annex 16-17

Document selection and qualitative analysis
Eeva Primmer, SYKE

- Questions:
  - What argument types are used, how do arguments generate an effect?
  - What arguments are used at different levels, how do arguments transfer?
  - Whicc biodiversity and ecosystem arguments are used, how are they used relative to value?
- Questions relate to our general framework and WP1 classification
- Arguments need to be explored qualitatively because they are case specific

→The documents that would serve as data area also case specific

The case context and questions set the scene for choosing data

- What is the biodiversity conservation issue?
  - What needs to be conserved or is under threat (biophysical, social)
- What is stage of the policy process?
  - In what sequence is the policy/decision processe (& history)
- What are the relevant formal policies/decisions/agreements
  - That have been / will be sealed
  - Which events and forums are crucial for the policy process
- Who are involved?
  - Which governance levels are directly engaged
  - Which actors are directly engaged

- Which other actors have a stake (might benefit or lose benefits)?

→Which texts are relevant for our analyses?

Documents as data

- Readydata
- Can be easy to access and compile
- Even in electronic format

Criteria for choosing documents

- Authenticity
  - Secondary reports and tidied memoranda might not portray the original arguments
  - Drafts might not correspond with final documents
- Credibility
  - Coincidence of the original purpose of the document and answering your questions
- Representativeness
  - Just like with any data the degree to which the chosen documents illustrate what that type of documents more broadly would
- Meaning
  - Literal meaning: text within the document (each document)
  - Interpretative value: meaning of the text in the context (or process or interaction)
  -

Document types useful for BESAFE

- Formal policy documents (e.g. policy programs, strategies, agreements, laws, statements, memoranda)
- Political documents (e.g., speeches, appeals)
- Media documents (e.g., newspaper articles, blogs, webcommentary)
- Operational documents (e.g., annual reports or plans, guidelines)

→ Screen document types and their content before choosing what you use as data.

→ Treat the other document types as background information sources.

Argument types from different documents

- Formal policy documents
  - Broad coverage of arguments
  - Compromises: little or no conflicts, few reservations
- Political documents
  - ”Big words”
  - Emotions (and often also fact-type statements)
- Media documents
  - Many different angles to the same issue
  - Can appearmore neutral than what they are
- Operational documents (e.g., annual reports or plans, guidelines)
  - Technical arguments
  - Can be used for checking coverage against a hypothesised set of arguments

→ The data choice will define what questions you can answer

Ways to analyse documents

- Content analysis: counting expressions – quantitative analysis to demonstrate dominance or weight:

- count the number of times “nature” or “biodiversity” appears

- Analysis aimed at understanding or establishing categories of meanings (or to pay attention to weight or presence / absence)
  - ways that policy documents address value against a given framework
  - types of benefits or harms that are brought up in appeals and develop a categorization
  - references to different knowledge bases in plans and their justification
- Narrative analysis to provide in-depth understanding of how issues are framed or dealt with, how arguments are generate meaning
  - ways that biodiversity is dealt with in newspaper articles and the different ways that it is framed
  - how biodiversity protection arguments and argument structures function in appeals and court proceedings

Step by step

- **Screen** available texts that allow addressing and answering your questions
- **Choose** the type of text that best suits your inquiry to constitute your data, use the other screened texts as background material, if it helps you.
- Decide your approach
  - searching for expressions or categories or more explorative narrative – If both , explore first, then design systematic search procedures.
- **Code** - use software or e.g. coloured pencils or copy-pasting into tables to identify the text sections that fall into your categories (or contradict).
  - Identify potential subcategories and report them in a similar fashion.
- **Evidence** - tables with quotes, or lists of quotes
- **Count or weigh-** If you want to do quantitative content analysis in a strict fashion, report numbers of occurrences.
  - If it suits to be less rigid, evaluate the weight placed on an argument (e.g., always, often, sometimes, rarely, never)

- **Report** your procedure of choosing data, analyzing and findings.
- **Interpret** place the findings in your study context
  - evaluate what other outcomes could have been possible, what your analysis captured

Annex 18

Discourse analysis

Ulrich Heink
Kurt Jax

Basic idea of discourse analysis

Discourse analysis refers to the interpretation of mainly texts but also of other phenomena which bear meaning in society (e.g., institutional settings and practices, buildings as materialization of social conditions). It gained impetus in the 1980s when the "linguistic turn" finally entered sociology which conveyed the idea that a signifier (in language for example a word like "table") is not merely a static reflection of the signified (e.g., any object or phenomenon, like an actual table) but different signifiers (words) are determined by comparing and contrasting their meanings to one another. This process of embedding words, texts and other symbols in different contexts is a dynamic process – the discourse – which is actively driven by persons or institutions.

In brief, discourse analysis

- deals with the actual use of (written and oral) language and other symbols in societal practice
- emphasizes that the use and interpretation of symbols is a social process (and not a fixed reflection of phenomena)
- maintains that different interpretations of symbols are determined and stabilized in institutional contexts
- assumes that rules and purposes for the interpretation of symbols can be reconstructed.

Defining "discourse"

There are many definitions of a discourse, but as environmental scientists we certainly are subscribed to Hajer's (1995: 44) definition: "Analytically we try to make sense of the regularities and variations in what is being said (or written) and try to understand the social backgrounds and the social effects of specific modes of talking. First by analyzing in which context a statement is made or to whom statements are directed. Discourse is then seen internally related to the social practices in which it is produced. One may also point to the content of what is said. A discourse is then seen as an ensemble of ideas, concepts and categorizations that are produced, reproduced, and transformed in a particular set of practices and through which meaning is given to physical and social realities."

Methodical approaches

Discourse analysis in general is rather a research paradigm than a method. However, there are many different sorts of discourse analyses which developed their own

methodologies mainly dependent on their background in linguistics, sociology, and cognitive psychology. Here

Linguistic discourse analysis focuses on the investigation of semantic relations between linguistic symbols (like words as "biodiversity" or "ecosystem services") in a discourse. The analysis is on different levels: the discourse, which is represented by a corpus of texts and the textual level. Within the textual level text-oriented, proposition-oriented and word-oriented analyses (for example for key words or metaphors) can be done. While linguists possess quite a number of methods for text analysis, which cannot referred to here in detail. A very important step is the compilation of text corpora. Basic criteria for such a compilation are the research topic, functions of the text, explicit references of texts to each other and delimitation within a time span, policy fields and text types (e.g., newspaper articles).

In contrast to linguistic discourse analysis, **critical discourse analysis** (CDA) examines the relation of discourse, world views ("ideology" according to Foucault) and institutional practices (e.g., in family, law, media, education system etc.). Critical discourse analysis thus engages in social issues and does not focus on the use of language per se but on its role in social and cultural processes. It addresses the distribution of power on different social groups, namely the power to take part in a discourse (who is heard?) and power to direct the discourse (who has the power of giving meaning to symbols?). The rules which determine the scope of what can be talked about in a discourse is thus a major concern of critical discourse analysis.
In short, CDA has the following aims (van Dijk 2003):

- It focuses primarily on social problems and political issues.
- Rather than merely describe discourse structures, it tries to explain them in terms of properties of social interaction and especially social structure.
- More specifically, CDA focuses on the ways discourse structures enact, confirm, legitimate, reproduce, or challenge relations of power and dominance in society.

And last, **frame semantics** recently became an important strand in discourse analysis which dates back to the 1970s. The basic idea from a cognitive psychology view is that new information are processed by integrating them into existing knowledge. Thus, we already have a structure, or as Minsky (1974: 1) says, "a remembered framework to be adapted to fit reality by changing details as necessary". Such a structure can for example be a division of ecosystem services into regulating, provisional and cultural services. In this case, "ecosystem service" is on a higher level of abstraction than for example "cultural service". The lower levels of abstraction consist of three elements. "Slots" are concepts, which raise expectations to be filled by concrete instances, the "fillers". Importantly, the slots generally are filled with "default assignments", i.e., expectations what will be the concrete instances. Thus, a frame may contain many details whose supposition is not specifically warranted by the situation (Minsky 1974). The default values can in principle be replaced by other fillers. However, new information is more readily adopted, if it conforms to existing information. The effectiveness of mobilizing people is dependent on the degree the framing of information resonates with existing frames (Benford & Snow 2000). Environmental policy frequently attempts to modify people's frames (e.g., from a

“useful” biodiversity to “biodiversity as a value in itself” and back). However, as Lakoff (2010) notes, it is extremely hard to change these frames.

The understanding of frames as cognitive representations is the basis for framing as an interactional construction of frames (for an overview of frames and framing DeWulf et al. 2009). These framing processes and attempts to achieve frame resonance are the focus of frame analysis as one methodology of discourse analysis. It should be noted here, that the frame-concept is as ambiguous as the discourse concept and that parallel to the development in cognitive psychology there were approaches in sociology (Goffman 1974) and linguistics (Fillmore 1975).

Conclusions for case studies

While we cannot derive concrete methods from discourse analysis, it is certainly fruitful for case studies in other respects. It illuminates how the effectiveness of arguments is influenced by institutional settings, power relations, the meaning of words and texts in the discourse and the perception and cognitive constitution of people. By this it opens a broad research agenda which can be considered in the case study protocol. So far, with the relation to different policy fields and governance levels, the “critical” part is well considered. Linguistic methods for argument and text analysis seem to be rather neglected – but is well addressed in the method workshop agenda. Perceptions of values and BD/ES-related concepts are somewhat referred to in the Q-method, the Andalusian case study and the IAS study but apart from that are largely ignored.
For the protocol, the discourse analysis perspective raises the following questions: What other research paradigms for analysing effectiveness are there from which the BESAFE project can profit? Should we analyse our case studies from different angles (and thus with different methods) of discourse analysis (i.e. linguistic and critical discourse analysis and framing) in order to get a “complete” picture of the case? What kind of discourse analysis can we do with the available data? Should we focus on one kind of discourse analysis to enhance comparability?

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Annex 19

Argumentation analysis
Rob Bugter

What is an argument?

An ***argument*** is a social and verbal means of trying to resolve, or at least to contend with, a conflict or difference that has arisen or exists between two (or more) parties.

Argumentation and argument

- There is not much difference between argumentation and an argument, but a convenient definition is that argumentation spans a complete discussion and consists of arguments.
- An argument is then the smallest consistent unit with a descriptive premise, a normative premise and a conclusion

Biodiversity argument

- ***Descriptive premise***: (A subset of) Biodiversity delivers something, does something, is good for something,
- ***Normative premise***: this something has value for us / them / anyone,
- (Implicit normative premise: therefore (this subset of) biodiversity has value for us / them ..),
- ***Conclusion***: therefore protective action is required to preserve / restore / stop a threat.

An example: Bialowieza Forest

*"Because of its biodiversity, Bialowieza Forest represents **unique value on a world scale**. The area of the primeval forest that has survived up to now is a **refuge for many rare species** of plants and animals. This is also an internationally important **area of bird protection**. Bialowieza Forest is one of few places where ecological and **evolutionary processes** that have been taking place for millions of years have not yet been stopped. The area of such exceptional importance, being the **World Heritage Site**, **deserves the highest form of protection - as a national park**.*

***In the light of the above facts**, **continuing the tree logging** in over 80% of the forest area and treating the last parts of ancient forests as a source of timber is one of the most **environmentally destructive** enterprises in Europe. Such actions have a negative effect on the international **reputation** of Poland."*

Argument type

- In (mostly philosophical) literature: argument morfology rather than from taxonomy. Walton (2011) cites 29 'classic' types. For instance:
- From position to know: 'he lives there, so he should know the way'
- From expert opinion: 'This is true, because he says so and he is an expert'
- From ignorance: 'We are not sure, but we assume ...'. But also: 'If that is true we would have known (by now)'.

Argumentation schemes

- Per type
- Recent interest from argumentation mining / artificial inteligence
- Based on lots of examples of the types

Types for biodiversity field?

Based on CBD types:

- From intrinsic value
- From fairness
- From Ecosystem Services

Possible extra's:

- From ignorance
- From expert opinion
- From dislike
- From another interest

Annex 20

Protocol on evaluating the effectiveness of arguments
Eeva Primmer, Pekka Jokinen, Malgorzata Blicharska

1. What we are analysing

The BESAFE project analyses the effectiveness of arguments in biodiversity conservation. Effects of arguments is eastiest to observe within the context where they are used, and considering the interactions between different arguments. Argument effectiveness can also addressed at a more general level, considering the logic of the argument and making causal inferences. In the BESAFE we call these two approaches observed effectiveness and potential effectiveness.

Observed effectiveness can be analysed only through empirical work, and requires observations of relations, between e.g. events, decision-making levels or stakeholders. Effects take place when the arguments in one event, at one level or by one stakeholder produce a change in behavior or in arguments used in another event, level or by other stakeholders (Cash et al., 2003; Mickwitz, 2003). Analysing policy processes, we are in a position to make inferences about observed effectiveness.

Potential effectiveness can be studied empirically or applying just the methods of logic, as used by philosophy, semantics and linguistics. Empirically, this kind of logic can be sought from people's inferences about causal mechanisms between arguments and the policy outcomes. The second way is to study effectiveness in laboratory settings e.g. in psychological communication studies (e.g. Levin et al., 2002). For analyzing potential effectiveness, we must rely on informants' views on effectiveness or simply make causal inferences.

2. Analysing observed effectiveness

Analysing the effects of arguments in policy processes differs from the laboratory settings in that the data are secondary or retrospective, e.g. documents or interviews. Analysing arguments at any particular stage of a policy process and from one stage to another can reveal the assumed logic by which the policy was designed to generate effects (Hoogerwerf, 1990; Mickwitz, 2003). For example, Hoogerwerf (1990) suggests that after the arguments used at different stages have been collected from policy documents and interviews, the assumed means-ends relations and other causal assumptions, as well as the normative bases of the policy can be explicated. Additionally, empirical analysis will be likely to identify also unintended effects (Mickwitz, 2003).

In the BESAFE project, we take the policy process or policy cycle to consist of three main phases: 1) problem framing and goal setting, 2) implementation, 3) outcome evaluation. We will observe, record and analyse arguments at different stages of the process and across the stages as well as at different levels of decision-making or among different groups of stakeholders.

To analyse observed effectiveness, we trace back the 1) persistence, 2) accumulation, 3) level-crossing, 4) diffusion, 5) replacing of arguments. After we have identified the

arguments that are relevant and interesting in the policy process we are analyzing; preferably several dimensions of arguments, search for evidence of whether these same arguments or argumentation lines (or discourses) appear at other stages, at different levels of decision-making or among different groups of stakeholders.

Examples of empirical analyses of arguments generating effects include:

- **Persistence**: e.g. the biofuel arguments in EU policy (Sharman and Holmes, 2010), or the arguments framing forests as income sources in the Finnish payments for ecosystem services scheme (Primmer et al., 2013)
- **Accumulation** and growing in importance: e.g., ecosystem arguments in Swedish forest biodiversity conservation (Angelstam, 2010).
- **Level-crossing**: taking up by new levels or actors: e.g., biodiversity conservation, agricultural and water policy integrating climate adaptation across levels (Urwin and Jordan, 2007), or how the ways in which green and environmental business is framed shift across a network of organisations (Stenberg 2007).
- **Diffusion**: reaching new audiences, e.g. the legitimacy of biodiversity conservation among land-owners has been conditional to the weight they placed on their autonomy (Paloniemi and Varho, 2009). Ecosystem management ideas have been integrated to forestry practices only partially, so they have not been as effective as expected (Koontz and Bodine, 2008).
- **Replacing** or overriding other arguments, e.g. the climate change framing replacing the industrial energy needs framing in biomass-based energy policies (Kivimaa and Mickwitz, 2011).

3. Analysing potential effectiveness

Analysing potential effectiveness of arguments does not necessarily require empirical analysis. It can also be done simply as an exercise of logical inference. This kind of practice is used e.g., in legal analyses and assessments of new laws (XXXX). Law assessments are often normative (Posner, 1998), which is not different from this type of analysis of biodiversity effects (Tallacchini, 2000). If this logical causality is the chosen focus for analysing potential effectiveness, it is important to simply record the sequence of inference.

Potential effectiveness can also be assessed with the help of stakeholder assessments, e.g. through surveys. For example, research on impact of attitudes on behaviour takes both beliefs about effects and values placed on these effects into consideration (Ajzen, 1991; Primmer and Karppinen, 2010). Stakeholders can be asked to evaluate which arguments work to the benefit of biodiversity. If this is the chosen focus, it is important to not leave the analytical interpretation at the level of interview or survey results recording, but additionally place the informant views in context and attempt to generalise from them.

4. Argument foci at different stages of the policy process

4.1 Problem framing and goal setting

Identify different discourses about conservation, the need for conservation, and the potential implications of the conservation policy. Consider the following types of argumentation lines identified in the WP2 Review (Primmer et al., 2012):

- Positive and negative framing
- Scientific knowledge and risk
- Jointly produced knowledge and learning
- Interests, power and social identity.

Analyse the weight that the identified discourses and argument lines get, to identify accumulation, persistence and replacing. Analyse which policy levels and stakeholders produce these arguments and which are ignored arguments to understand level-crossing and diffusion. If you analyse also implementation, identify which arguments persist to the next policy stage, i.e. policy that will be implemented.

4.2 Implementation

Trace back policy targets and identify ways that they are interpreted and operationalized by organizations, professionals and other stakeholders.

Analyse the factors that enabled or hindered turning the arguments of the goal-setting stage into practice and the influence of intervening arguments:

- Mandates and institutional roles
- Technical and technocratic arguments
- Collaborative governance and learning arguments
- Contesting and interest-driven arguments

Analyse which arguments persists, accumulate and replace other arguments in implementation. Analyse whether the arguments “trickle down” in hierarchy or whether they emerge in the implementation process to identify level-crossing. Analyse the ways that different actors’ views transfer across organizational boundaries or from one stakeholder group to another, to identify diffusion. If you analyse also outcome evaluation, identify which arguments persist to measuring policy outcome. Draw conclusions about how the effects of the arguments have emerged.

4.3 Outcome evaluation

Identify the indicators by which conservation policy outcome is evaluated:

- Assumptions about conservation success
- State and trends
- Species, habitats and other specific indicators
- Ecosystem and ecosystem service arguments

Identify which arguments are used in identifying new conservation problems and if they persist from previous policy stages. Analyse which of the pre-existing arguments

accumulate and whether new arguments replace the ones that were made to justify the policy originally. Try to also analyse whether arguments from different levels and stakeholders cross levels or diffuse.

What produces effectiveness of arguments in a policy process

Draw conclusions about how the effects of the arguments have emerged. Having identified persistent, accumulating, level-crossing, diffusing, or replacing arguments, identify the mechanisms by which they became effective, i.e. what contributed to their success. It is likely you have to search for evidence qualitatively, demonstrating it with chains of arguments in the process or across levels. In some cases the volume or repetition of arguments can be measured, and quantitative analysis is possible.

Effectiveness & success of arguments might not always coincide with success in biodiversity conservation, although if we trace back processes where conservation has been successful, (e.g., when a policy has been established, as in Rivera et al., 2009, Sharman and Holmes, 2010), we should find evidence for this kind of positive streams. However, also arguments that influence decisions against conservation should be identified and their role in influencing the effectiveness of conservation arguments should be analysed.

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