Natura 2000 Seminars

Atlantic Region

Atlantic Seminar

3-5 December 2012, Bergen, The Netherlands

Atlantic Natura 2000 Seminar Report (Final Draft)

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NATURA 2000

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Authors: This document is the result of a long process involving many different parties and authors. The basis for this document has been laid at the Atlantic Preparatory Workshop that took place in The Hague on 20 and 21 June 2012.

Following the drafting of the workshop report, a consultation phase was started, coordinated by the chairs of the working groups in close cooperation with member state representatives. The Chairs coordinating the work were: Jean-Louis Herrier and Bernd Netz (Coastal & Dunes habitats), Jacques Trouvilliez (Wet & Dry Grasslands), Greg Mudge (Heaths & Bogs), and Jan Willem van der Vegte (Rivers & Lakes).

Further input to the document and knowledge on the respective habitat groups was provided during the Atlantic seminar, held in Bergen (NL) from 3 to 5 December 2012. Participants at this seminar (see annex) provided input under guidance of the chairs listed above and facilitators provided by the contractor.

Some of the work was outsourced: Alterra coordinated the drafting and updating of the 'Cross-Cutting ' and the 'Rivers and Lakes' issues as part of the statutory research on Nature & Environment for the Dutch Ministry of Economic Affairs (WOT-IN). OB+N provided the Knowledge Transfer Issue and extensive additional input on the 'Wet and Dry Grassland' issues.

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Contents

1. Introduction: the New Biogeographical Process (with specific reference to the Atlantic biogeographical region)

The purpose of the New Biogeographical Process is to help Member States to manage Natura 2000 as a coherent ecological network, whilst exchanging experience and best practice, addressing objectives and priorities and enhancing cooperation and synergies. The process should contribute to the achievement of Favourable Conservation Status (FCS) for those habitats and species of community interest (listed in annex one of the Habitats Directive) that have been identified as having priority within the given biogeographical region, with a special focus on the contribution of the Natura 2000 network, but without ignoring horizontal measures where necessary.

In the context of the viability of the Natura 2000 network it is important to know how to ensure that habitats also achieve a level of FCS outside Natura 2000 site boundaries, and also how to address the major threats that occur there.

The process for each biogeographical region consists of three milestone meetings:

1) Steering Committee (meetings): The Steering Committee has an essential role and each regional process starts with a meeting of the Steering Committee. It is composed of representatives of the Member States that fall in the biogeographical region and in addition the following organisations are also represented: European Commission (EC), European Environment Agency (EEA), and European Topic Centre on Biological Diversity (ETC/BD). Observers from other MS are also allowed to attend upon invitation. The Steering Committee reviews the pre-scoping document, and makes the final decision about the priority habitats and species, and the habitat groups.

2) Preparatory Workshop: The workshop is used to prepare the seminar. The workshop is an informal working meeting that provides the basic material and preparation for the Seminar. It is informed by the Background Document but does not consider the content or technical detail of the latter; rather it provides a set of themes (crosscutting or unique to the individual habitat groups) whose elaboration in terms of solutions and actions will form the basis of the seminar document. The role of the contractor regarding the preparatory workshop is to work with the EC and to assist MS in preparation, minutes, proceedings, organising, leading discussions, and to decide with MS on themes.

3) Seminar: The Seminar is based on the Seminar Document whose content is derived from the preparatory workshop. Central to this document are a list of habitat groups related and cross-cutting issues and problems whose solutions will directly contribute to achieving FCS. The seminar should draw conclusions and make recommendations regarding management and actions in relation to selected habitat types (based on the habitat specific and cross-cutting issues). The seminar should result in a jointly agreed list of actions on the part of MS. As the seminar returns only once every five years, what happens in between is very important.

- Ad Hoc Expert Group Meetings can be held between the workshop and the seminar in order to address specific issues (which may be raised during the workshop or may become clear after the workshop).
- A pre-scoping document with lists of priority habitats and species is drafted by the ETC/BD. The pre-scoping document explains the selection of habitats and is posted on CIRCABC. The Contractor and partners are free to contact ETC/BD for information on the contents and composition of the pre-scoping doc.
- For each biogeographical region the pre-scoping document provides details on a selection of a manageable number of habitats and species: focusing on those habitat types where action is most needed. This first list is discussed and agreed with the Member States inside the biogeographical region during and shortly after a Steering Committee meeting.
- During the Atlantic biogeographical process, information was collected through the use of a targeted questionnaire. This was then compiled into a Background Document which

informed the working groups within the preparatory workshop. The Background Document has a life beyond the seminar; it should therefore be continuously improved, modified and added to as each five-year cycle continues. The Habitat Information Sheet (HIS) has been specifically designed in order to allow for data and information to be collected on an on-going basis and, therefore, to directly support the continuous development of the background document.

- The Seminar brings together key actors (including ministry and state institute officials, NGOs and stakeholders) from different countries for the exchange of practice and should result in the creation of expert networks about similar habitats inside a biogeographical region. The New Biogeographical Process is to be used to assess management practices and best practices and result in the formulation of recommendations based on the process.
- Internal Communication within the process for each biogeographical region is particularly important; thus:
  - CIRCABC is currently the main internal information platform for the process: http://circa.europa.eu/Public/irc/env/natura_2000/library?l=/biogeographic_atlantic&vm=detailed&sb=Title;
  - In order to make the relevant documents easily accessible, special interest groups for each Biogeographical Region (BGR) are created on CIRCABC;
  - An Interest Group for the Atlantic Seminar Steering Committee has already been created and is composed of representatives of the EC, the EEA, the ETC/BD and MS.
  - For the moment CIRCABC is to be used to store meeting agendas, minutes, documents.

The Atlantic process is led by the Netherlands. The Steering Committee of the Atlantic process is composed of representatives of the nine Member States (B, D, DK, F, ES, IE, NL, PT, UK) and the EEA, ETC/BD, and EC. Based on the pre-scoping document and the discussions of the Steering Committee, four focus habitat groups were selected: coastal, dunes and estuaries; grasslands; heaths and bogs; rivers and lakes. For the Atlantic process, for the first time species have been included in the discussions at the workshop in connection to the selected habitats and how they function as habitat for the species concerned.

The role of the stakeholders in the process is of great importance. MS should be encouraged to play an active role in the process and the lead countries approach is important. The Contractor should coordinate and enthuse, orchestrate the lead countries. For each biogeographical cycle, one MS should take the lead and this MS takes an active role in the organisation and logistics of the steering committee meetings, the preparatory workshop and the seminar. MS should also be encouraged to lead on the coordination of habitat working groups, working on one of the priority habitat groups selected for the biogeographical region. NGOs play an important role in the process and a *modus operandi* for including the European Habitats Forum has been developed.

An internet based platform for external and internal communication is being developed as part of project. The primary target audience for the internet platform should include those people that can take action for Natura 2000 (in a first instance site managers but also policy makers, civil society, and land owners).

The objectives of the Atlantic Workshop, held in the Hague, the Netherlands, hosted by the Netherlands Ministry of Economic Affairs, was to discuss the key conservation issues for each group of selected habitat types in the Atlantic biogeographical region and to prepare the ground for adopting conclusions and recommendations at the Seminar for the Atlantic biogeographical region held in Bergen, the Netherlands, 3 to 5 December 2012. These discussions were given focus by the context provided by the EU 2020 Biodiversity Strategy and the target to halt the deterioration in the status of all species and habitats covered by EU nature legislation and to achieve a significant and measurable improvement in their status by 2020.

2. The Atlantic Workshop: The Hague, 20-21 June 2012

2.1 Introduction

The Workshop was opened by Mr Ger de Peuter on behalf of the hosts, the Dutch Ministry of Economic Affairs (at the time Ministry of Economic Affairs, Agriculture and Innovation), and by Mr Micheal O'Briain of the European Commission.

Mr François Kremer explained the outline of the New Biogeographical Process: a general view of the process, its objectives and the role of the Workshop in preparing for the Seminar[1].

Doug Evans of the European Topic Centre on Biological Diversity (ETC/BD) presented the methodology for the selection of the 20 habitat types[2] which are to be considered at the Workshop and later at the Seminar, elaborated in detail in the 'Pre-Scoping Document for the Atlantic Region Natura 2000 Seminar'. The 20 selected habitats are grouped into four groups: Coastal and Dunes (including estuaries); Wet and Dry Grassland; Heaths and Bogs; and Rivers and Lakes.

Lawrence Jones-Walters, Team Leader of the ECNC-led Consortium (the contractor) briefly introduced the role of the Atlantic Background Document in supporting the process up to and beyond the Atlantic Seminar in December, and added some reflections on the Boreal process and its achievements to date.

The participants were divided into four groups (based on their personal preference), each group corresponding to one of the habitat groups.

Habitat Group	Lead MS	Chair	Number of participants	Support by the contractor
Coastal and Dunes (including Estuaries)	Belgium	Jean-Louis Herrier	22	Lawrence Jones-Walters
	Germany	Bernd Netz		
Wet and Dry Grasslands	France	Jacques Trouvilliez	23	Mark Snethlage
Heaths and Bogs	United Kingdom	Greg Mudge	17	Roger Catchpole
	Ireland			
Rivers and Lakes	The Netherlands	Jan Willem van der Vegte	16	Ben Delbaere / Katrijn Loosveldt

The groups then worked in simultaneous sessions to answer two sets of basic questions. The first set focussed on the habitats (but included a question that addressed the management of habitats for species) as follows:

1. What are the common problems/issues in management of habitats over the biogeographical region?
2. What are the potential solutions to these problems?
3. Are there concrete possibilities for cooperation/cooperative action linked to the preferred solutions that could be launched at the seminar?
4. What special management measures are required to accommodate habitats and key associated species?

[1] The background/context for the New Biogeographical Process is elaborated in full in the *Summary of the Biogeographical Process* available on the Circa website at: http://circa.europa.eu/Public/irc/env/natura_2000

[2] The full process of selecting the 20 habitats to be considered as part of the Boreal process is set out in the: *Pre-scoping document for the Natura 2000 seminar at Atlantic region* (Evans, *et al.* 2010). Available on the Circa web site at: http://circa.europa.eu/Public/irc/env/natura_2000

The second set of questions addressed cross-cutting themes – one per group:

1. How do these cross-cutting themes impact on favourable conservation status?
2. What are the potential ways forward / approaches to these cross-cutting themes?
3. Are there concrete possibilities for cooperation/cooperative action linked to the preferred solutions that could be launched at the seminar?

The cross-cutting themes that each group addressed were as follows:

Habitat Group	Cross-Cutting Theme
Coastal and Dunes (including Estuaries)	Cross-Boundary Issues
Wet and Dry Grasslands	Stakeholders & Communication
Heaths and Bogs	Knowledge Transfer
Rivers and Lakes	Policy Integration

2.2 Results of the Working Groups

Each working group was moderated by a representative from the Member State that was leading on that habitat group. The working group sessions began on the afternoon of Day 1 and were concluded on the morning of Day 2. Each group then fed back to the plenary and their results are summarised below grouped around the five key questions[3]. It should be noted that each group took a slightly different approach to answering the questions. The format of each section is therefore also slightly different – in order to reflect this variation. However, the derivation of the cross-cutting and unique themes from the working groups can be seen to derive directly from the outcomes of each group.

Working groups identified 3-4 priority issues to be worked out in more detail. In the months following the workshop these priority issues were worked out in more detail by the respective chairs, followed by a consultation round with all work group members by e-mail. The results of these consultation rounds are presented here below, by habitat type and then by issue within the habitat type. These are then followed by descriptions of cross-cutting issues.

The ASC also developed the following preparatory questions. The purpose of these questions is to give the experts an opportunity to discuss the possible actions with their colleagues and superiors. It is hoped that this will allow them to think about and elaborate on the potential actions that they may be able to take at national and cross boundary level. It also means that, for those that have a level of decision-making responsibility, they will have the potential to come to the seminar with 'a mandate in their luggage' for agreeing and taking these actions forward.

Preparatory questions for the seminar:

- *What could be done / actions could be taken (national and transnational) to address the barriers/opportunities identified in the template?*
- *What can you/your institution, organisation/organisations you work with or are familiar with do to implement these actions?*
- *What actions could only be done in cooperation with other sectors/organisations (include consideration of national and transnational levels)?*
- *What are the concrete proposals that you can bring to the seminar; for example:*
    - *national actions;*
    - *transnational/ cooperative actions;*
    - *actions to improve networking and knowledge transfer (e.g. workshops, field trips, data sharing, etc.); and*
    - *concrete actions beyond networking and knowledge transfer that directly target the main conservation issues?*

3. The Atlantic Seminar: Bergen, 3-5 December 2012

The first day of the Seminar was devoted to field trips. Participants were given the opportunity to attend one out of four field trips, which included excursions to habitats that fall in one of the four identified habitat groups for the Atlantic region. During the field trips, local guides presented the respective areas and experts from a range of institutions (coordinated by Alterra) provided topical

[3] All of the PowerPoint presentations are available on Circa at: http://circa.europa.eu/Public/irc/env/natura_2000/library?l=/biogeographic_atlantic/preparatory_workshop/presentations_preparator&vm=detailed&sb=Title

presentations and discussions. In the evening, each working group chair presented a brief summary of the key finding of the on-site workshops.

The formal Seminar programme was opened on 4 December by Mr Ger de Peuter (Director Natura 2000) on behalf of the hosts, the Dutch Ministry of Economic Affairs (at the time Ministry of Economic Affairs, Agriculture and Innovation), and by Mr Micheal O'Briain (Deputy Head of Unit B3 'Natura 2000') of the European Commission, DG Environment.

Mr François Kremer (DG Environment, B3) explained the outline of the New Biogeographical Process and in particular of the Seminar process: a general view of the process, its objectives and the role of the Seminar in the wider Process. He explained that while the responsibility for establishing and implementing the necessary conservation targets and measures to achieve FCS lies with the individual Member States, the main objective of the New Biogeographical Process is to enhance coherence in the management of Natura 2000 by promoting cooperation and exchange of information between MS and all other actors involved.

Mr Lawrence Jones-Walters, Team Leader of the contractor then introduced the setup of the Seminar and the tasks of the respective working groups.

The participants were divided into four groups (based on their personal preference), each group corresponding to one of the habitat groups.

Each of the working groups started with a round table for all participants to briefly present themselves. This was followed by a brief presentation by the chair on the story so far, to ensure that all participants had the same background understanding of what had been done so far. During a first interactive session, the working groups then identified additional issues (on top of the ones identified during the preparatory workshop) in order for each group to have a set of 8 priority issues and for all to be actively involved in the decision process.

In the afternoon, each group started to develop an action plan to respond to the issues that had been prioritized. For each priority issue the groups identified solutions, recommendations, possible actions and proposed first steps. These were then organised into a series of actions/activities and outcomes that can be taken following the seminar.

On the evening of 4 December a knowledge market place was organized, opened by the Mayor of Bergen, Mrs Hafkamp. Participants were asked in advance to bring along posters or other display material about cases of good practice in managing habitats. This was combined with an award ceremony. Visitors to the market place were asked to vote for the best presented or most innovative case. The winner of the ceremony was the Burren Farming for Conservation Programme, Ireland.

The working groups continued with preparing the action plan in the morning of 5 December.

This was then followed by a presentation in plenary of the outcomes of each working group and an identification of specific actions that member states volunteered to take the lead on in the next few months. A number of these actions are awaiting confirmation from MS representatives and have not been included in the overview tables below.

The results of all the working group discussions are integrated in the tables for each habitat group in this document. For each issue under the respective habitat group the results of the workshop are first presented (tables with blue column). These are then followed by the action plan and possible additional issues as identified during the seminar (tables with green column).

The tables below presents a summary of the key actions that were agreed during the Seminar.

Heaths and bogs

Objective	Action	How	When
reduce habitat fragmentation	Collate/capture existing information on fragmentation impacts affecting heaths & bogs on N2K sites	Workshop or systematic evidence review, (connectivity & restoration literature)	2013
Complex owner/occupier issues: (i.e., tenure pattern and cultural change)	Collate general information on best practice	Preceding objectives used!	To be confirmed
Appreciation / promotion of multiple benefits	Develop niche marketing approaches (e.g. French wine/cheese AOC + CZ work on N2K labelling)	Workshop to assess how to implement e.g. LIFE+	Post alpine seminar
Nitrogen deposition & diffuse pollution of groundwater and surface water	Reduce at source either through regulation or alteration of land management/land use practices.	Knowledge exchange meeting to determine: CL's /per habitat & nitrogen ceilings needed to reach FCS	2013 (tbc)
	Learn from NL landscape programme (BAT – Best Available Technology).	Translate OBN / government report into English(problems & measures)	2013
	Evaluate utility of AERIUS model (NL) in other communities (free!)	Circulate information on the model to all MS	To be confirmed
Inappropriate hydrological conditions for the management and/or restoration of 4010, 7110 & 7230, e.g. artificial drainage	Organise exchange of knowledge on different approaches to catchment planning between MSs	Plan international seminar on hydrological management planning & produce guidance	2013/2014
	Gain a better understanding of evidence base	Review of hydrological literature linking to: 4010, 7110, 7140, 7230 and possibly 4030	2013
Lack of "functional" management units & links to individual site conservation objectives	Organise a training workshop on management planning for ecological processes and biological outcomes that go beyond site boundaries (conservation rocket – hydrology – duplication?)	Provide examples of best practice from highly fragmented, intensive landscapes i.e. different functional relations of the N2K sites and landscapes (different dependencies) with an introduction to the landscape ecological approach. Include managers and scientists – produce symposium volume?	Autumn 2013
Peat extraction/ mining	Literature review/ seminar to exchange knowledge & create website with restoration case studies and methodologies	Use communication platform to disseminate seminar/review results	To be confirmed
	Target local stakeholders and wider public to inform on benefits of intact peat	Identify demonstration sites and provide interpretation material	To be confirmed
	Promote alternatives to peat in horticulture & home energy use	Implement education and communication campaign	To be confirmed
	Identify specific areas where cutting must stop , i.e. where it is inappropriate	Commission research to understand what is inappropriate & map all areas of bog currently being cut	To be confirmed

Coastal dunes and estuaries

Issue/objective	Action	How	When
Natural dynamics	Incorporate dynamics into management plans, planning and FCS	Workshop for MS	Within 2-3 years
	Show good examples, demonstration sites in collaboration with partners and show links to ESS.	Site excursions for relevant stakeholders from other sites and states.	Within 2-3 years
Promote an integrated approach in Natura 2000 planning and in developing projects, plan etc.	Organise workshop on integrated management planning in estuaries (Germany)	Organise and invite MS and relevant stakeholders	2014?

Stakeholder involvement and communication

Objective	Action	How	When
Stakeholders, both individual and institutional, are aware and proud of Europe's nature as enhanced through Natura 2000 and participate actively, collaboratively and responsibly in its management and conservation."	Promote the development / adaptation of a mobile app for finding the (public) Natura 2000 sites in real life, providing information including for instance (common) species, Nitrogen deposition	Organise meeting with MS to identify existing apps and IT communication solutions	Next 12 months
	Set up an award scheme to recognise achievements and convey pride to stakeholders involved in the wider implementation of N2K	Organize a meeting/workshop with MS that have experience on these kind of awards, e.g. France, Ireland and Austria, to identify opportunities	Next 12 months

Cross-boundary issues

Action	How	When
Set up a working group/groups to set up biogeographical level conservation objectives and agree on MS contributions for different habitats and species to reach FCS	Article 17 reports will provide a basis. Calibration meetings/expert exchange to agree common standards for FCS. Opportunity from current round of Art. 17 reporting? Focus on where there is a need to have an increased effort in certain places (re FCS) and see where it can be reached. Issue: is there a common agreement on what FCS is between countries? Has been left to individual MS. 'Inspector' to provide common standards.	Spring 2013

4. Priority issues per habitat group

In the following pages for each habitat group and each issue the results of the workshop, the expert consultation and the seminar are presented in tabular form. A distinction is made between the results of the workshop and consultation (blue tables) and the results of the seminar, including newly identified priority issues (green tables).

For a number of habitat types and issues, reference is made to solutions and actions in connection to communicating results and best practices resulting from LIFE projects. LIFE projects are by excellence contributing to developing best practice in conservation and restoration measures. Their role is crucial when it comes to communicating best practice and experience for the benefit of all involved in Natura 2000 management. The communication platform of the process will be the main instrument for such communication. It should be actively used by LIFE projects to communicate relevant results and experience in relation to the habitats and species that have been selected as priorities in the different biogeographical regions. Existing and new networking activities under LIFE projects are most welcome to join the cooperation process under the new biogeographical process and play an active role there. LIFE projects are encouraged to join the networking activities under the new biogeographical process and to use the communication platform to communicate their findings and experience on the management of selected habitat types and species.

4.1 Coastal and Dunes (including Estuaries)

ISSUE/ISSUES	**Large scale loss of natural habitat**
Problem definition	Large scale loss of natural habitats. Dunes: Urbanisation and touristic development (e.g. camping sites) have led to large scale loss of nature area and to fragmentation of the remaining nature areas, leaving the remaining areas too small and isolated for the natural dynamics that are required for well-functioning systems and for the viability of isolated populations of less mobile species. *Note: during post-workshop consultation nitrogen deposition and invasive alien species were mentioned as the pressures of most relevance to dune systems in Denmark. These have not been addressed in the solutions and further steps below.* Estuaries: historic Land reclamation by enclosure, development of ports and deepening of the channels have led to large scale loss and alteration of natural habitats, resulting in unfavourable structure and functioning of remaining estuaries (morphology, coastal squeeze) and related on-going declines in the quality of the composing habitats. This also affects the carrying capacity for dependent species such as migratory waders.
Proposed solution	1. Dunes: large scale natural habitat restoration by removing obsolete buildings and infrastructure, create new dune areas (e.g. by beach nourishment). 2. Estuaries: Large scale habitat restoration: More space to create habitats and to allow natural processes. Controlled flooding, managed realignment.

	3. Both estuaries and dunes: Schemes and financial funds for land acquisition or compensation of income forgone. 4. Integrated Coastal Zone Management, with implemented standard 'no loss of valuable coastal habitat' and with space for restoration guaranteed. 5. Express and accent WFD requirements (obligation to restore 'good ecological status' of water bodies = recognize that this may include an obligation to restore and enlarge estuaries; dunes may be sometimes considered as 'water bank zone' – one of quality elements of water bodies?)
Barriers to / opportunities for implementing the solution	• Dunes: Large-scale natural habitat restoration needs - Economic (and sometimes heritage) value of buildings and infrastructures that have to be removed and fear for loss of security against marine floods, both leading to a lack of social and (local) political acceptance; - Insufficient sand stock for the creation (e.g. by beach nourishment) of new nature areas, including natural processes as well as habitats; - Be aware of possible negative impacts on existing dune areas of oversized nourishments; - Lack of financial means for large scale habitat restoration and nature development. • Estuaries: Large scale habitat restoration needs - Major financial investments and can cause resistance by local residents. Nevertheless new schemes on maintenance of shipping channels and coastal defence could lead to win-win situation with habitat restoration. WFD objectives to achieve good ecological potential are a perfect base for this. Schemes for buying private land can help to ease discussion. In some cases 'restoration by abandonment' may be a cost effective option. • Opportunities for large scale habitat creation exist in combination with coastal defence to mitigate sea level rise (beach nourishment, coastal realignment as a measure for climate change adaptation).
Stakeholders	Dunes: owners and managers of dune sites, local residents, municipalities (local authorities), tourists, tourism agencies, agencies responsible for coastal defence and mobility, drinking water companies, nature conservation NGOs … Estuaries: Authorities responsible for ports, shipping channels and coastal defence, land owners, NGOs (esp. nature conservation), local authorities, WFD-management.
Recommendations	1. Estuaries: give back land to the tide = managed retreat. 2. Dunes: restore sand drift by removal of obsolete infrastructures (dikes, roads, buildings, artificial forest plantations and other artificial vegetation etc.) and beach nourishment. 3. Include habitat creation in national/regional planning for climate change adaptation. 4. Make ERDF funding available for large scale restoration in coastal regions. 5. Approach solution in steps: i. Awareness raising about the issue in general: communication.

	ii. Identifying opportunities scientifically (ecological needs) – international networking and cooperation. iii. Feasibility assessment (socio-economic, security). iv. Choice of locations/ decision: concrete restoration plan. v. Communication. vi. Implementation of measures. vii. Link to Interreg and Life projects and bring in to process. viii. Link with WFD requirements (at least for estuaries seems to be crucial).
Possible actions	• Include habitat creation in national/regional planning for climate change adaptation. List all possible locations for synergies between large scale restoration and coastal defence. • Adopt 'climate change adaptation through coastal habitat restoration' as a priority for ERDF funding in the Operational Programmes for coastal regions (priority 5 of draft regulation). • Dunes: - Raising public awareness about the ecosystem services and the heritage value of the natural habitat(s) that are to be restored; demonstrating with solid scientific evidence that the removal of e.g. dikes does not increase (or even decreases) the risks for marine floods; - Consider the creation of new dune areas only on those locations where there is sufficient sand stock in the sea; - European co-financing (LIFE) and private sponsoring. • Estuaries: - Raising public awareness about the ecosystem services and the heritage value of the natural habitat(s) that are to be restored. - Seeking alliances with authorities responsible for ports, shipping channels and coastal defence to combine large scale habitat restorations with their aims.
Species relevant information	• In general: the preservation of species is an important measure of success of the preservation of habitats (an 'empty' habitat has no conservation value, just as an art gallery is not functioning without paintings). • Bird species are dependent on estuarine habitats as stepping stones during migration: international coordination of restoration is recommended. • Besides bird species, also some species of plants, fungi, invertebrates, fishes, amphibians, etc. should receive the necessary attention as key indicators for the conservation status of the habitats (not limited to the species in the actual annexes of the 'European Habitats directive'). • diversification in management and habitats is the key: species need a mosaic of habitats to satisfy their ecological requirements, the (partial) sites within an SCI or several SCIs containing the same habitat group should not all look the same; different choices can be done for different (parts of the) sites, resulting in the restoration or maintenance of all target habitats and populations of

	target species.
Communication/ networking	**Existing** (non-governmental) **networks**: Sand Dune and Shingle Network, website: www.hope.ac.uk Coastal and Marine Union / EUCC, website: www.eucc.net Estuarine and Coastal Science Association, website:www.ecsa-news.org **New to be created network**: an expert-network of governmental agencies that are competent for the conservation policy and the management of coastal dune sites in all member states of the EU.
Proposed first steps	• An inventory in all member states that are (partially) included in the Atlantic Biogeographic Region of the locations/situations where one or more of the 3 main issues occur and exchange knowledge about those national inventories within a new EU network; and the opportunities for large scale restoration in climate change adaptation plans. • Involve Natura 2000 specialists in the drafting of Operational Programmes.

Issue: Large scale loss of natural habitat			
Actions	**Steps**	**Actors**	**Timeline**
Strategic review of estuarine habitat restoration cost benefit	(a) Review of estuaries not likely to reach Good Conservation status [potential to get ranked list but with each estuary type represented (b) site level cost benefit of restoration of select feature (climate change benefit)	MS Or European research institute Competent authorities Stakeholders	Short term
Guidelines for soft coastal site management incl. erosion control	By habitat an species complex Use existing literature and practise	Our new European network and form working group	Short term
Restore connectively within and between sites and habitat process functioning	Site analyses of structures and Selective removal of interfering infrastructure	Competent authority at site level following the guidelines	On-going more with guidelines
Establish good on-going management processes to restore and maintain coastal habitats (e.g. grey dune Integrated	Site level exchanges /visits Knowledge Market Design dune Award system (e.g. Austrian model meadow championship)	Expert network + farm org scientists, env NGOs other stakeholders	On-going Workshop to initiate 2013
Dune remobilisation Public awareness	Media involvement Public tours. Meetings at site level	Experts climate change including stakeholders site level	On-going

	University lecturer level discussion/info	Universities Education ministries, agriculture and Nature	
Sediment flow	See other action		
Biogenic reef management in estuaries (e.g. mussels)	Info exchange Management of use for biodiversity targets. Citizen science for finding reefs and avoid damage	Biogenic reef working group Harmonisation (what is restored?)	Start in 2013
Information on restoration strategies	Info exchange Exiting inventories	Site managers, NGOs Educators/schools/ universities	EC info platform

ISSUE/ISSUES	**Interference with natural dynamics**
Problem definition	Dunes: Aeolian sand drift is the matrix of the dune landscape and of the habitats linked to that landscape. Plantation of marram grass and afforestation have fixed large parts of the dunes, the presence of buildings, roads and other infrastructure (for coastal defence, e.g. dikes, and for water extraction, e.g. pipes and service roads …) are obstacles for the sand drift and, locally, for marine intrusions needed for the development and maintenance of sea-inlets. Estuaries: Maintenance of shipping channels and bank reinforcement have changed hydro-morphological parameters in estuaries (e.g. tidal-range, flow velocity, salinity etc.) in an unnatural way. So, the natural dynamic has been changed also. Other natural dynamic processes (e.g. erosion and sedimentation) and their effects on habitats are directly affected or inhibited by maintenance activities and coastal protection buildings/bank reinforcements. Natural dynamics are needed to keep the complete variety of natural habitats within the estuaries.
Proposed solution	1. Remobilize the dunes and allow locally marine erosion to take place. 2. Recognize Favourable Conservation Status of dune habitats as including dynamic natural processes, requiring maintaining or restoring mobile dunes complexes, not necessary requiring maintaining the same area of the same 'Natura 2000 code habitat' in the same place. 3. Understand natural processes under the Favourable Conservation Status concept, as element of FCS. Focus not only on defining conservation objectives by fixed habitat and species parameters, but include restoring natural processes in conservation objectives. 4. Estuaries: Develop multi-channel-systems, remove bank reinforcement wherever possible, or replace them by more natural ones, allow erosion and sedimentation.
Barriers to / opportunities for implementing the solution	• Remobilizing the dunes: - Lack of social acceptance of the removal of the vegetation (especially forest).

	- Rapid spontaneous re-encroachment by vegetation of newly remobilized sand. - Economic (and sometimes cultural heritage) value of buildings and infrastructures that have to be removed leading to a lack of social and political acceptance of their removal. - Lack of finances for large scale management intervention. • Estuaries: Maintenance of shipping channels is needed. Removal of bank reinforcement could damage dikes or private land. Nevertheless authorities responsible for shipping channels and banks start to think about 'working with nature'. Implementation of the WFD helps as well.
Stakeholders	Dunes: owners and managers of dune sites, local residents, municipalities (local authorities), tourists, tourism agencies, agencies responsible for coastal defence and mobility, drinking water companies, Nature conservation NGOs … Estuaries: Authorities responsible for ports, shipping channels and coastal defence, land owners, NGOs (esp. nature conservation), local authorities, WFD-management.
Recommendations	1. Site level restoration: share knowledge/ working with nature/ international networking/ examples. Case studies. Add coastal defence people (Awareness). 'Side Event'. 2. Involve existing networks for key stakeholders (e.g. estuaries working group, etc.). 3. Take a more holistic approach and proactively engage with relevant for a working on specific issues (e.g. sedimentation, climate change adaptation, etc.). 4. Template + example: identify areas with/ without conflicts; zonation/ prioritisation. Synergies with climate change adaptation. 5. Make ERDF finances available for restoring natural dynamics in coastal areas. 6. Build general public support: Disseminate and promote 'landscapes shaped by natural forces' as value (for general society, for tourists, exposing beauty of such landscapes and appreciating the 'naturalness' feeling). 7. Example in Background document: identify different strategies per habitat group.
Possible actions	Dunes: • Raising public awareness about the issue through convincing communication demonstrating that the fixed state of the dunes is unnatural and that de remobilization of the dunes is needed for the functioning of the dune ecosystem. • Regular removal of the re-appearing vegetation by mechanical means or manually by intensive input of labour force. • Raising public awareness about the economic value of the scenery of the dynamic dune landscape as a touristic asset and about the other ecosystem services provided by the dunes. Estuaries: • Taking the targets of N2K into account in maintenance (esp. dredging). Raising public awareness about the issue of a more dynamic development. Development of alternative, more natural bank reinforcements. Removing bank reinforcement wherever possible.

	Both: • Take up 'dynamic coastal management' as a priority for ERDF funding in the Operational Programmes for coastal regions (cf. priority 5 of draft regulation).
Species relevant information	• In general, the preservation of species is the key measure of success to the preservation of habitats. • Diversification in management and habitats is the key. Species need a mosaic of habitats to satisfy their ecological requirements, the (partial) sites within an SCI or several SCIs containing the same habitat group should not all look the same; different choices can be done for different (parts of the) sites, resulting in the restoration or maintenance of all target habitats and populations of target species.
Communication/ networking	**Existing** (non-governmental) **networks**: Sand Dune and Shingle Network, website: www.hope.ac.uk Coastal and Marine Union / EUCC, website: www.eucc.net Estuarine and Coastal Science Association, website:www.ecsa-news.org **New to be created network**: an expert-network of governmental agencies that are competent for the conservation policy and the management of coastal dune sites and estuaries in all member states of the EU.
Proposed first steps	• An inventory in all member states that are (partially) included in the Atlantic Biogeographic Region of the locations/situations where one or more of the 3 main issues occur and exchange knowledge about those national inventories within a new EU network. • Involve Natura 2000 specialists in the drafting of Operational Programmes to ascertain the availability of finances for synergies between nature restoration and regional development.

Objective: Interference with natural dynamics			
Actions	**Steps**	**Actors**	**Timeline**
Incorporate dynamics into management plans, planning and FCS	Workshop for MS	Germany and Belgium	Within 2-3 years
Remove bank reinforcements where management plans are in place	1. Contact river authorities 2. Get money (foundations, ERDF)	Site manager, river authority	On-going
Restore sand drift and remove obsolete infrastructure and buildings	Get money (foundations, ERDF)	Site manager, land owner	On-going
Include aspects of natural dynamics into maintenance schemes	Review or set up maintenance plans	Site manager + river authorities	On-going

Dyke removal - Give land back to the tide - Reconnect river arms	Consult coastal defence authority and establish communication process with public	Site manager, partners (including water authority)	Start process (consultation)
Show good examples, demonstration sites in collaboration with partners and show links to ESS.	Site excursions for relevant stakeholders from other sites and states.	De, Be (estuaries) Nl, Fr (Dunes)	Within 2-3 years
Promote Europe wide pilot projects	TV, newspapers, internet	Commission, MS	Within 2-3 years
More guidance on natural dynamics for setting conservation objectives	Establish EU guidance	Commission + MS-involvement	1 year?

ISSUE/ISSUES	**Lack of integrated approach**
Problem definition	Estuaries and coastal zones support a wide variety of economic uses (ports, industries, tourism and recreation, drinking water) in addition to their ecological values. Yet, these different interests are not always managed in an integrated manner, leading to conflicts, inefficient resource use (including habitat deterioration) and missed opportunities. Dunes: Coastal defence measures, drinking water production and recreational use of the coastal dunes do not always take the fragility and needs of the natural habitats into account. Estuaries: Estuaries are complex habitats with a wide variety of human impact. Measures to improve the conservation status cannot be successful without consideration of human activities.
Proposed solution	1. Integration of biodiversity conservation into planning and development decisions. 2. Dunes: 'work with nature', integrate an ecosystem-approach into coastal defence, spatial planning, drinking water production and touristic development using the instrument of ICZM. 3. Estuaries: Developing integrated management plans (art. 6.1 HD).
Barriers to / opportunities for implementing the solution	• Resistance of the concerned stakeholders who fear an 'ecological' patronizing and a containment of their own competence. • Continued sectoral thinking and planning.
Stakeholders	Dunes: owners and managers of dune sites, local residents, municipalities (local authorities), tourists, tourism agencies, agencies responsible for coastal defence and mobility, drinking water companies, industries, NGOs. Estuaries: Authorities responsible for ports, shipping channels and coastal defence, land owners, NGOs (esp. nature conservation), local authorities, WFD-management.

Recommendations	1. Atlantic platform: information exchange, working to formulate best practice, focus on estuaries, focus on dunes. 2. Restoration pilots, evaluation contribution + FCS. 3. Development of integrated management: awareness, exchange best practice (good and bad examples), workshop, making biodiversity conservation a shared responsibility. 4. Citizen science. 5. Data. 6. How to integrate sectors – examples and techniques.
Possible actions	Dialogue between conservationists and the utilitarian stakeholders, convincing the second group that an ecosystem approach is in their own interest.
Species relevant information	• In general: the preservation of species is an important measure of success to the preservation of habitats. • diversification in management and habitats is the key: species need a mosaic of habitats to satisfy their ecological requirements the (partial) sites within a SCI or several SCI containing the same habitat group should not all look the same; different choices can be done for different (parts of the) sites, resulting in the restoration or maintenance of all target habitats and populations of target species.
Communication/ networking	**Existing** (non-governmental) **networks**: Sand Dune and Shingle Network, website: www.hope.ac.uk Coastal and Marine Union / EUCC, website: www.eucc.net Estuarine and Coastal Science Association, website:www.ecsa-news.org **New to be created network**: an expert-network of governmental agencies that are competent for the conservation policy and the management of coastal dune sites in all member states of the EU
Proposed first steps	• An inventory in all member states that are (partially) included in the Atlantic Biogeographic Region of the locations/situations where one or more of the 3 main issues occur and exchange knowledge about those national inventories within a new EU network. • Include biodiversity conservation as a responsibility for all public bodies in coastal regions.

Objective: Promote an integrated approach in Natura 2000 planning and in developing projects, plan etc.			
Actions	**Steps**	**Actors**	**Timeline**
Apply the relevant EC guidance	Enhance awareness about guidance amongst	All MS	Continuous

	stakeholders and promote implementation		dialogue
To incorporate socio-economic objectives		Relevant sectors	Continuous dialogue
Agree principles for effective management including the elaboration of precise targets with special attention for integration of socio-economic priorities	Establish representative fora for developing projects / plans and promote successes	All MS	As needed / required
Identify and share best practices	By ad hoc workshops, using the communication platform and consultation	Networks	Continuous dialogue
Establish mechanisms for sharing information including interactive face to face meetings	Establish representative fora for developing projects / plans and promote successes	Relevant sectors	as needed / required
Establish cooperation processes on integrated estuaries and/or coastal management open to all sectors	- As an outcome of Bio-geographical seminars and utilise existing networks - Use of available mechanisms e.g. LIFE and INTERREG	Implementing body (that can and should apply at different levels)	Continuous dialogue
Organise workshop on integrated management planning in estuaries (Germany)	Organise and invite MS and relevant stakeholders	All MS	2014?
Establish follow up mechanisms for performance evaluation	By ad hoc workshops, using the communication platform and consultation	Networks	Continuous dialogue
Identify demonstration projects, best practices	By ad hoc workshops, using the communication platform and consultation	Relevant stakeholders	Continuous dialogue
Develop projects that demonstrate integrated approaches working with nature	Promote integrated projects for INTERREG and LIFE funding	Implementing body (that can and should apply at different levels)	2013/14/15
Identify and reward N2000 partners, products and successes	Seek an existing / organising body to develop criteria and agree mechanisms	MS	2013/14

NEW ISSUE: Invasive alien species			
Actions	**Steps**	**Actors**	**Timeline**
Identify risky invasives and vectors and determine possible actions.	List per MS invasives in background document	Steering committee	January 2013 Elaborate further later as part of taskforce
Implement IAS Directive	Don't block IAS directive	EC	Spring 2013

Develop an early warning system	As part of IAS Life project Atlantic region for dunes	Some MS (?)	2013
Establish a transnational coordination of eradication and control project/ efforts	MS representatives (Atlantic regions) make proposal and form taskforce	EC or EU nature directors	2013
Start research for innovative eradication/control measures	Prioritize this theme in FP7 LIFE project Atlantic region for dunes	MS and DG Research and Innovation Some MS (?)	2013 2013
Collect and share list of good and bad practices in control, eradication and prevention mechanism.	Symposium EU27 to exchange good/bad practices and networks (as part of kick off of taskforce?)	EC with support some MS (?)	2013

NEW ISSUE: Climate change			
Actions	**Steps**	**Actors**	**Timeline**
exchange knowledge about expected CC effects on habitats and species	- Enumerate expected effects (e.g. Coastal squeeze), - and put them on website (e.g. Communication platform)	Scientific institutions in all MS	2013
Collaborate with national officers who manage ERDF funds, to search for synergies between N2000 and climate change adaptation	Assign Natura 2000- ERDF coordinator Organise workshop	Nature Directors in each MS	Early 2013 (operational programs will need to be ready in 2014)
Identify opportunities for habitat creation in national climate change adaptation programs	Assign N2000 officer for this task	Nature director in each MS	Early 2013 (operational programs will need to be ready in 2014)
Biodiversity proofing of renewables	Strategic assessment at biogeographic level to identify where to best use each kind of renewable technology from Natura 2000 view	Contract by European Commission	To be confirmed

NEW ISSUE: Communication			
Actions	**Steps**	**Actors**	**Timeline**
To promote existing guidance beyond conservation communities	Toolkit Training of trainers Translate and share available	N2000 authorities and NGOs	To be confirmed

	guidance		
Adopt site / regional public level workshops or events on dune / estuaries explaining / discussing the objectives and measures of N2000	Public info meetings Media Local publications Electronically Exhibitions	N2000 authorities and NGOs	To be confirmed
Establish a consultative body at site level to get input from stakeholders	Regular meetings France as a model?	Relevant authority	To be confirmed
Best practice awards to be promoted and also projects	See earlier sections.		

NEW ISSUE: Appropriate sediment management			
Actions	**Steps**	**Actors**	**Timeline**
Asses present extraction practises and impacts	Inventory and analyses of extraction techniques, volumes and impacts (on habitats, species, hydrology)	Government /licensing authority (permit analyses) Water body Managers Universities /researchers	Launch To be confirmed
Develop guidelines	Based on 1	EC lead , Contractor coordination, MS and stakeholders incl. NGOs group	After 1 – 2014 ?
Prevent Illegal extraction	Training inspectors Review law - Ensure law is adequate Use Google earth/ satellite to find/deal with larger illegal extraction Exchange info on successful law enforcement	National government and authority	To be confirmed
Encourage use of guidelines	Inform stakeholders and admin	Government /responsible licensing authority with relevant NGOs	After 1
Share knowledge of sediment flow between estuarine researchers	Establish/reconvene Working group at biogeographical or EC level Link to Flood directive and WFD network	MS experts Nat 2000 site managers Official network nodes Universities	To be confirmed

Identify drivers and impacts of sediment flow modification	Produce or case studies on restoration and r. strategies Model in N 2000 sites	Research community (international and site specific with site managers	To be confirmed
Take silting into account in aquaculture	include sediment flow and s silting impacts in EIS and planning conditions for aquaculture .	EC new guidelines MS stakeholders	Now for guidelines
Monitoring of sediment flow and impacts	Develop appropriate monitoring system on impacts and sediment flow measures	EU expert Universities, Topic Centre and EEA	To be confirmed
Sharing Information	See communication		
Share knowledge of restoration projects and measures	Knowledge Market Place and similar	EU network	To be confirmed
Maintain multi-channel systems in estuaries	Knowledge Market Place and similar	EU network	To be confirmed

NEW ISSUE: Connectivity			
Actions	**Steps**	**Actors**	**Timeline**
Collect population data of the species	Monitoring (WFD)	MS	On-going
Inventory of the migration problems	Monitoring (WFD)	MS	On-going
Best practice examples for dealing sluices, barrages, fish traps, deoxygenated zones and water intakes	Communication platform for exchange between the MS for best practices	MS + Commission	Within 2-3 years
Definition of minimum viable population and necessary area	Research	MS	Within 2-3 years
Provide wildlife corridors in fragmented dune areas (e.g. butterflies, grasshoppers, amphibians, reptiles, etc.)	Public awareness: change treatment of public areas and gardens	Local authorities, site managers	Start now if not already on-going
Plan/ implement/ develop 'stepping stones' (e.g. brownfield sites in cities, small scale bays)	Working groups with local authorities and port authorities	Local authorities, site managers	Start now if not already on-going
Allow temporary nature	Make sure that there are no legal problems for future uses	MS, Commission,	Start process

4.2 Wet and Dry Grasslands

ISSUE/ISSUES	**Eutrophication**
Problem definition	Atmospheric nitrogen deposition from increased emissions of intensive livestock breeding (NH_x), (road) transport (NO_x), and industry (NO_x). This may lead to eutrophication of formerly N-poor sites, increased growth of dominants and the decline of many rare species. In addition, it can cause soil acidification and/or increased availability of ammonium. Both changes can lead to reduction of grassland diversity. Diffuse pollution with nutrients (nitrate, phosphate) of groundwater and surface water, especially affecting the nutrient status of wet N2K grassland sites surrounded by intensive (agricultural) systems. This eutrophication leads to degradation of species-rich sites
Proposed solution	1. Improve policy. 2. Increase knowledge (including more research). 3. Adapt financial schemes. 4. Encourage better or adaptive site management.
Barriers to / opportunities for implementing the solution	Barriers: • Cost implications for the reduction of the emissions of N compounds, both from agriculture, industry and transport. • Cost implications of the reduction of diffuse pollution (N, P) from agriculture and waste water. • The availability of appropriate technologies. • Improper use of lower fertiliser applications can decrease agricultural output and farm income. • Knowledge gaps at national scales. Opportunity: • Agri-environmental measures
Stakeholders	Land owners, land managers, farmers, operators of agri-environment schemes, transport sector, industry.

Recommendations	*Solution 1.* 1. Better implementation of international agreements. 2. Promote policy integration, including atmospheric control measures and control of diffuse pollution at the local and national scale. 3. Reduce the emissions of both reduced and oxidised N to the air via regulations. *Solution 2.* 1. Better define baselines and targets (e.g. re: critical loads). 2. Better integration of environmental information within production advice given to farmers. 3. Research should include mitigation measures to control and restore the negative impacts of atmospheric N deposition (N eutrophication, acidification and ammonium toxicity) as well as restoration measures to counterbalance the impacts of diffuse pollution (N & P) in wet sites, including (ground)water influences. 4. Learn from O+BN programme and the NL approach to reduce ammonia emissions from agriculture (Bat – Best Available Technology). 5. Knowledge exchange meetings/networks (CCE, ENA etc.). 6. Raise awareness where problem is not currently recognised. *Solution 3.* 1. Compensate for adapted land management (e.g. less use of fertilisers). 2. Organise payments for ecosystem services / incentives. 3. Include payment for buffers in agri-environment schemes. *Solution 4.* 1. Apply technical solutions (BAT) and new agricultural techniques (equilibrium fertilization). 2. Remove excess nutrients. 3. Promote agro ecological measures; reduce the loss of N and P to the groundwater and surface water by alternation of agricultural practices (e.g. equilibrium fertilization) and control of waste water outflow.
Possible actions	• Include grassland conservation and restoration in priority action frameworks and rural development schemes. • Provision of a farm advisory/mentoring service for landowners/farmers. • Enable more exchange of good practice . • Organise workshops on better communication of N2K and grassland issues. • Harmonisation of analyses of environmental problems and solutions, such as models for nitrogen deposition,

	and hydrological analysis in cross-boundary sites. • Achieve better harmonisation of monitoring and assessment. • Organise ad hoc meetings on specific issues. • Identify ecological gaps in the environment. • Promote the better use and dissemination of existing knowledge (e.g. EPBRS, EEA, ETC/BD). • Set up a communication platform (e.g. with a newsletter), e.g. like O+BN. • Introduce a certain level of harmonisation in agri-environmental measures. • Facilitate a better interaction between science policy and practice.
Species relevant information	Issues: • A large number of grassland habitats are present: from dry to wet, and from acid to alkaline, with different sensitivities. • Major gaps in knowledge exist across the Atlantic region. • Need to deal with a wider range of characteristic species, not just Annex 2 & 4. • Necessity to incorporate important invertebrate groups, macrofungi and non-vascular plants in ecological grassland restoration.
Communication/ networking	Exchange of good practices, field visits and excursions to showcase good examples of successful grassland management, preferably in a wider context of regionally sustainable approaches. Cooperate with existing expert networks at national and European level such as European Dry Grassland Group http://www.edgg.org
Proposed first steps	• Assess availability and effectiveness of support service to landowners & develop strategy to increase understanding of the high nature value of this habitat & build expertise in its management. • Set up a network of grassland experts (including: researchers, site managers, site users and existing networks) as part of the NBP Communication Platform. • Identify special cases of good practice related to grassland management to share through the Communication platform.

Objective: Less eutrophication			
Actions	**Steps**	**Actors**	**Timeline**
Less input from agriculture on site for sensitive habitats, more based on scientific evidence.	• Regulation for rare habitats (including Natura 2000 sits). • Buy sites of very important biological interest	Authorities, landowners and farmers	To be confirmed

	(including LIFE projects) • A-E scheme		
Less input from agricultural practices in the near surrounding (intensive land and grasslands), buffer areas	• A-E scheme • Contracts with custodians • But sites for very sensitive habitat		To be confirmed
Less input through polluted air	• Implementation of critical loads		To be confirmed
Less input from polluted water	• Synergy with WFD		To be confirmed

ISSUE/ISSUES	**Fragmentation**
Problem definition	Small isolated patches of remaining grassland habitat are increasingly surrounded by large areas of intensive land use or reforested lands. The fragmentation, isolation and small size of these patches results in very important edge effects (drainage, eutrophication, pollution, disturbance etc.). Also larger stretches of grassland habitat suffer from isolation and fragmentation (e.g. caused by conversion into fields or biogas production), although the edge effects are relatively less important.
Proposed solution	1. Governance and policy 2. Improve knowledge 3. Increase finances 4. Increase the density of the ecological network by creating new grassland habitats and/ or enlarging existing grasslands, where suitable abiotic conditions exist.
Barriers to / opportunities for implementing the solution	Barriers : • Low income for farmers who switch to others production ways – low intensive, more biodiversity friendly -, including wood. • Lack of financial means for appropriate nature development of new grassland areas and for the ecological restoration of existing habitats. • Difficulty to construct a suitable ecological network of (species-rich) grasslands. • Development of sustainable habitat network ask for actions outside N2K areas, where nature managers need to participate in land use planning with many competing land use claims. Opportunities exist in organic, low intensive agricultural use of grasslands, or strategies such as 'mountain farming'.

Stakeholders	Land owners, land managers, farmers, operators of agri-environment schemes
Recommendations	*Solution 1.* 1. Apply landscape approach. 2. Promote management coordination. 3. Promote cross border cooperation. 4. Implement Art. 10 and NEN. 5. Consistent implementation of cross compliance & utilise greening opportunities under CAP Reform. *Solution 2.* 1. Identify knowledge gaps (incl. population ecology/dispersal). 2. Improve research into ecology of fragmentation and isolation (cf Art. 18). 3. Effective advisory support structure for landowners/farmers. *Solution 3.* 1. Ensure continuity in AE payments. 2. Make AE payments habitat dependent. 3. Include landscape connectivity options within AE Programmes. *Solution 4.* 1. Increase the connectivity between grasslands sites by mitigating the increased isolation via enhanced transports of diaspores. Grazing with flocks of large herbivores can increase the spread of diaspores. 2. Construct appropriate buffer zones that reduce the edge effects of neighbouring agricultural lands. Convenient buffer zones can be constructed or bought to reduce the direct, negative impacts on the grassland site.
Possible actions	• Set up a communication platform (e.g. with a newsletter), e.g. like OB+N. • Achieve better harmonisation of monitoring and assessment. • Organise ad hoc meetings on specific issues. • Identify ecological gaps in the environment. • Promote the better use and dissemination of existing knowledge (e.g. EPBRS, EEA, ETC/BD). • Introduce a certain level of harmonisation in agri-environmental measures with respect to grassland biodiversity. • Facilitate a better interaction between science policy and practice.

	• Include grassland (conservation) in priority action frameworks and rural development schemes. • Enable more exchange of good practice . • Organise workshops on better communication of N2K and grassland issues. • Provision of advisory support services for landowners funded by the EC.
Species relevant information	Issues: • A large number of grassland habitats are present: from dry to wet, and from acid to alkaline. • Major gaps in knowledge exist. • Need to deal with a wider range of characteristic species- not just Annex 2 & 4. • Necessity to incorporate important invertebrate groups, macro fungi and non-vascular plants in ecological grassland management.
Communication/ networking	Exchange of good practices, field visits and excursions to showcase good examples of successful grassland management, preferably in a wider context of regionally sustainable approaches. Cooperate with existing expert networks at national and European level such as European Dry Grassland Group http://www.edgg.org
Proposed first steps	• Set up a network of grassland experts (including: researchers, site managers, site users and existing networks) as part of the NBP Communication Platform. • Identify special cases of good practice related to grassland management to share through the Communication platform.

Objective: Improve spatial connectivity			
Actions	**Steps**	**Actors**	**Timeline**
Define connectivity goals, specific species, habitat types, sites	• Research on requirements of species habitats with respect to fragmentation. • Knowledge transfer by communication platforms, etc.	Experts, NGOs, Government (O+BM framework)	Starting 2013
Create connectivity inside N2K sites	• Cooperation and synchronization between managers (including private owners and farmers) of sites -> really integrated MP. • If difficult, mutual gain approach with trustful moderator.	Site managers	When making the MP/ during MP process
Establish populations (first make sure there is something connect)	• Create large enough areas suitable for species/habitat to be viable.	Authorities (policy, finance), site mangers	

	• Right management for viable populations.		
Create connectivity between N2K sites (e.g. infrastructure), including cross border	• Landscape approach • Create connections in/on/by roadsides, riversides, N2K habitats outside N2K network, other nature areas, and specific connections. • Temporary nature (dynamic stepping stones). • From the beginning, cooperation and synchronization between management plans of different sites. • Communication and participation with stakeholders to create local involvement and public support. • Authorities provide adequate nature/environmental policy and finance for the specific site. • Specific cooperation of grasslands; CAP proposal that 7% of area's ecological measures to produce biodiversity should be coordinated to create best connectivity measures.	Managers inside and outside N2K (including farmers, infrastructure, water managers)	When making the MP/during MP process. Starting 2013 w/N2K sites.

ISSUE/ISSUES	**Landscape Polarisation** (intensification / abandonment)
Problem definition	Intensification of agricultural areas was (or sometimes still is in more remote regions) identified as important driver of pressure on grassland conservation. Intensification is linked to high nutrient inputs, pollution by agrochemicals (e.g. biocides), loss of crop diversity, and drainage. In many case, intensive modern agriculture leads to grass monocultures, very poor in biodiversity. Abandonment of former agricultural ground with low intense use gradually results in scrub invasion and woodland encroachment as part of the process of natural succession toward climax vegetation. In this way, all typical grassland species will disappear.
Proposed solution	1. Improve governance of species-rich, traditional grassland habitats to prevent both intensification and abandonment. 2. Raising awareness/education on the importance of grassland habitats for European biodiversity. 3. Increase knowledge, including research on different restoration efforts, i.e. formerly abandoned grassland after highly intensive agricultural use vs. the recreation of typically grassland habitats. 4. Target finances / efforts to the old traditional use of these grasslands or support agricultural use that sustain and preserve the typical grassland situation.

Barriers to / opportunities for implementing the solution	Barriers: • Agricultural land owners have to earn money, and intensification of agricultural use is one of the strategies to survive in the modern economy of agriculture. • Lack of awareness about the value of (semi) natural grasslands, often considered 'wastelands'. This is especially relevant after abandonment.
Stakeholders	Land owners, land managers, farmers, operators of agri-environment schemes
Recommendations	*Solution 1.* 1. Promote more stakeholder participation in process. 2. Ensure consistency in cross compliance. 3. Utilise opportunities provided by greening under CAP. *Solution 2.* 1. Education about management practices. 2. Education about how to cope with regulations. 3. Encourage agro-ecological farming. *Solution 3.* 1. Set clear targets and baselines. *Solution 4* 1. Compensation to maintain extensive and reduce intensive management. 2. Incentives for habitat restoration including control of invasive species.
Possible actions	• Highlight the value of the grassland for biodiversity and landscape. • Set up a communication platform (e.g. with a newsletter), e.g. like OB+N. • Achieve better harmonisation of monitoring and assessment. • Organise ad hoc meetings on specific issues. • Identify ecological gaps in the environment. • Promote the better use and dissemination of existing knowledge (e.g. EPBRS, EEA, ETC/BD). • Introduce a certain level of harmonisation in agri-environmental measures. • Facilitate a better interaction between science policy and practice.

	• Include grassland conservation and restoration in priority action frameworks and rural development schemes. • Enable more exchange of good practice . • Organise workshops on better communication of N2K and grassland issues. • Ensure effective advisory service for farmers and landowners to increase understanding and competence (funded by the EC).
Species relevant information	• Appropriate management of grasslands habitats for ground nesting species (Corncrake and breeding waders), e.g. needs adapted agricultural activity during breeding season. • Areas of sacrificial crops provided where wildfowl using inland wetlands are causing damage to nearby lands (pasture, crops etc), to minimise conflicts with agriculture. • Management of coastal grasslands for foraging Choughs. • Regulation of use of pesticides and rodenticides likely to be impacting on raptors/ owls. • Maintenance of hedgerows for nesting passerines. • Appropriate crop management for seed-eating species - to ensure food availability year-round. Issues: • A large number of grassland habitats are present: from dry to wet, and from acid to alkaline, with different sensitivities. • Major gaps in knowledge exist across the Atlantic region. • Need to deal with a wider range of characteristic species- not just Annex 2 & 4. • Necessity to incorporate important invertebrate groups, macrofungi and non-vascular plants in ecological grassland restoration.
Communication/ networking	• Exchange of good practices, field visits and excursions to showcase good examples of successful grassland management, preferably in a wider context of regionally sustainable approaches. • Cooperate with existing expert networks at national and European level such as European Dry Grassland Group http://www.edgg.org.
Proposed first steps	To be added later

Objective: Appropriate grazing and mowing to overcome polarization			
Actions	**Steps**	**Actors**	**Timeline**

Better targeting of pillar II AE payments		EC, MS	For 2014 CAP
Higher payments		EC, MS	For 2014 CAP
Purchase land and controlled grazing levels	LIFE + instrument	NGOs	For 2014 CAP
Cooperation between land owners to ensure areas are appropriately grazed		Site manager, NGO, farmers associations	
Grazing by contract as a service		Site manager, local authorities, landowner organizations, farmers	
Improved implementation of HBD – consistent interpretation	Developing guidance – paper and information platforms	MS, local authorities	
Cross compliance and greening	Discussion CAP	EC, MS	For 2014 CAP
Improved payments for nature conservation by contracts		EC, MS	For 2014 CAP

Objective: Appropriate engagement with landowners			
Actions	**Steps**	**Actors**	**Timeline**
Mapping assessment of Conservation Status for each site	Methodology scientifically based	Nature conservation Agency (info to landowner)	To be confirmed
Contact: Proposal list of management measures for each habitat type	Written and spoken communication	To custodian of the property from the authorities	TO BE CONFIRMED
Consultation: identify the measures to be applied	Individual and group meeting public consultation	Custodian: farmers, public, organization	On-going from until agreement
Compensation: Implementation of measures	By monetary adjustment	Farmers	Of time of agreement

Objective: Nitrogen & hydrology are not a problem anymore for Natura 2000			
Actions	**Steps**	**Actors**	**Timeline**
Streamlining of Nitrogen reduction policies in Member States	• Agreement on: o Levels of critical deposition values o How to measure N-deposition	Ministries for nature conservation	TO BE CONFIRMED

	o Lowering N-deposition o Implementation of N-policy o Lowering N-ceiling of NEC directive to critical deposition value for N2K • Exchange knowledge about technical solutions		
Monitoring of indicator species (for N and H2O) and measure actual values in soils	Selection of indicator species	Contractors of Governments, NGOs, (government) experts	TO BE CONFIRMED
Synchronize WFD and Natura 2000	Encouragement by national governments	EC, National governments	
Cross-boundary cooperation between (local) authorities on hydrology (and Nitrogen if feasible) in trans-boundary site	• Try to find mutual sense of urgency between different authorities • Exchange knowledge on technical solutions • Start a process with a trustful mediator/chair	Authorities (national, regional, and/or local) – depending on organization in MS and site characteristics	TO BE CONFIRMED for selection of sites near the borders: NL/BE, DE/NL, BE/FR. Start with 1 or 2 sites per boundary in 2013.
Agreement on targets in trans-boundary site (concerning N2K)	• Bilateral discussions • Cooperation on management plans of sites near borders of member states	Authorities that make management plans for concerned sites	
Create another market for manure	Explore biogas, etc.		

Objective: Identify and agree on a common set of biotic and abiotic parameters that should be met to achieve local FCS			
Actions	**Steps**	**Actors**	**Timeline**
Same definition of habitats			
Analysis of parameters		ETC/BD, MS	
Literature review of scientific standards		ETC/BD, MS	
Measureable, existing reporting (FE WFD); butterfly index			
Identification of knowledge gaps (including MS)		ETC/BD, SCI SC	
Scientific research on gaps		ETC/BD, MS	
Set baseline for parameters		DG ENVI, SCI SC	

Current status		MS, SCI SC	
Distance to target		MS, SCI SC	
Cost of reaching baseline		DG ENVI, SCI SC, SE SC	
Socio-economic considerations (+PAF)		SCI SC, SE SC	
Decision		DG ENVI, MS	
Integrating parameters with Article 17		ETC/BD, MS	
Staking of hierarchy of parameters (site, local, regional, national)		ETC/BD, MS	

Objective: Adequate management of grasslands			
Actions	**Steps**	**Actors**	**Timeline**
Pinpoint management practices that need to chance to achieve FCS	Analyze barriers		
Establish an information platform to include scientific information, examples of financing, and existing knowledge.	• Involve practical knowledge • Address language issues	Government	To be confirmed
Establish a network of site managers and advisors to support landowner/manager in development and implementation of management plan	Finances, central and regional strategy, perhaps EC co-funding	Government, NGOs	1st review of sites
Make use of A-E schemes to finance approach management practice; financial compensation	Pillar II CAP, national funding, Priority Action Framework, Consistent approach, including all MS	Government, NGOs (farmer organizations)	Now and continuously adapt
Establish support sciences for landowners/manager, e.g. contracted services	Searching -> find specialist in NGO (and government), locally based, well communicated/supervised	NGO (government)	= Management plan
Identify gaps in science base and seek funding for R&D	Commission research, knowledge exchange network	Specialist scientists (agencies, universities)	Continuously
Capacity building for specialized skills, peer learning	Training groups, Pillar II	NGO, Government	= Management plan
Restoring grassland types where it has potential to be sustainable; e.g. transferring seeds			

Evaluation of impact of management measures -> condition status/review management adapted	Consistent application of cross compliance monitoring legislation	Internal conservation conflicts/habitat objectives	Annually
Recognition for landowner/manager (medals gold, silver, bronze)			

Objective: Restoration of FCS at a scale larger than N2K site			
Actions	**Steps**	**Actors**	**Timeline**
Regional: Identify needs at landscape level. Themes include connectivity, hydrology, pollution, acidification, nitrogen deposition.		Steering group, stakeholders, farmers, owners	
Regional: Steering group that operates at a regional level		Steering group, stakeholders, farmers, owners	
Regional: Management plan review to include "outside but effecting" themes		Steering group, stakeholders, farmers, owners	
Regional: Assessment of current instruments, including dedicated instruments, synergies with current instruments, gaps in current instruments for N2K.		Steering group, stakeholders, farmers, owners	
National: Needs for new instruments	• Analysis of best practices • New instruments	Competent authority	
International:	• Open coordination • New instruments (F.E. CAP) • Policy and practice exchange of experiences • Review and revise policy	DG Environment/Agriculture/etc., Nature Directors	

4.3 Heaths and Bogs

ISSUE/ISSUES	**Lack of functional management units**
Problem definition	In the context of appropriate conservation management, there are challenges in defining the scale of intervention required (e.g. habitat specific, habitat mosaic, Natura site level, landscape level) and implementing measures at the appropriate management unit scale.
Proposed solution	1. Develop management plans and deliver conservation objectives at relevant scales. 2. Agree and define units and objectives with stakeholders at the relevant scale. 3. Develop ecological networks through a landscape ecological approach, e.g. corridors, enhancement areas and buffers based on a landscape ecological analysis (LESA).
Barriers to / opportunities for implementing the solution	• Lack of foresight or consideration of issues at different scales leading to inability to plan or manage at the appropriate level. • Lack of knowledge of functioning of the system as a whole (interaction flora and fauna, interaction flora and fauna with abiotic site conditions, determination of site conditions by processes on landscape scale).
Stakeholders	Landowners, land managers, operators of agri-environment schemes.
Recommendations	1. Identify and demonstrate using practical examples - good & bad (evidence based conservation); 2. Provide training. 3. Carry out a landscape ecological analysis[4].
Possible actions	Identify examples of appropriate management at different scales.

4. See Van der Molen, P.C., G.J. Baaijens, A.P. Grootjans& A.J.M. Jansen, 2011. *Landscape Ecological System Analysis: LESA.* Dienst Landelijk Gebied, Utrecht.

Species relevant information	Issues: • Very large knowledge gaps exist. • Highly variable habitat associations are present. • Need to deal with wider range of 'typical' species - not just Annex 2 & 4. • Trade-offs between habitat and species create problems in some countries (SPA vs SAC conflict). • Deliver FCS across whole network rather than on every individual site unless rare. • Rectify deterioration as appropriate within each Member State. • Consider species-specific requirements in habitat management + conservation objectives. • Deliver typical species for each habitat type – don't always aim to maximise biodiversity. • Need to think about invertebrates and non-vascular plants when restoring habitats. Potential solutions to some of these issues: • Demonstrate how a selected range of N2K-dependent species are responding to habitat management. • Disseminate species integration literature, e.g. Webb et al. • Define the typical associations between habitats and species (keystone, umbrella etc.), including their arrangement (mosaics, patterns) and their position in the landscape. • Create feeding areas for associated species in surrounding areas outside N2K sites. • Resolve conflicting site objectives through integrated management.
Communication/ networking	To be added later
Proposed first steps	To be added later

Objective: Lack of "functional" management units & links to individual site conservation objectives			
Actions	**Steps**	**Actors**	**Timeline**
Organise a training workshop on management planning for ecological processes and biological outcomes that go beyond site boundaries (conservation rocket – hydrology – duplication?)	Provide examples of best practice from highly fragmented, intensive landscapes i.e. different functional relations of the N2K sites and landscapes (different dependencies) with an introduction to the landscape ecological approach. Include managers and scientists – produce symposium volume? **See reference in Heaths & Bogs section of the seminar document as a starting point.**	MS	Autumn 2013

ISSUE/ISSUES	**Inappropriate grazing**
Problem definition	Grazing regimes that are insufficiently tailored to the specific requirements of qualifying habitats and species.
Proposed solution	1. Implement suitable grazing regimes based on adequate knowledge of site requirements. Adaptive management of grazing regimes should be based on feedback from monitoring of habitat and species condition. 2. Resolve policy issues in relation to agri-environment (CAP) rules, e.g. broaden permanent grassland definition to include ericoid communities and make all qualifying, managed habitats within N2K sites eligible. Link agri-environment incentives to favourable habitat and species condition rather than just to prescriptions. 3. Provide knowledge & training for achieving favourable habitat and species condition rather than 'blind', blanket prescriptions.
Barriers to / opportunities for implementing the solution	• Poor understanding of suitable grazing regimes for different Natura habitats and species. • Conflicting grazing requirements for different habitats and species within the same Natura site/management unit. • Conflict between optimal grazing regime for nature conservation and farmers interests and technical requirements.
Stakeholders	Landowners, land managers, operators of agri-environment schemes.
Recommendations	*Solution 1.* 1. Influence applied research agenda on links between grazing impacts and FCS; 2. Sustainable grazing systems workshop with invitations to key DGs & Ministries to highlight issues. 3. Develop long-term monitoring programme on grazing impacts across Region. *Solution 2.* 1. Sustainable grazing systems workshop with invitations to key DGs & Ministries to highlight issues. 2. Prepare a policy paper on CAP eligibility issues, e.g. definition of permanent pastures. *Solution 3.* 1. Use existing knowledge bases more effectively, e.g. Grazing Animals Project. 2. Capture tacit knowledge of experienced site managers and disseminate – case studies.
Possible actions	Promote best-practice guidance on sustainable grazing systems through workshops and suitable research-based literature.

Species relevant information	Issues: • Very large knowledge gaps exist. • Highly variable habitat associations are present. • Need to deal with wider range of 'typical' species - not just Annex 2 & 4. • Trade-offs between habitat and species create problems in some countries (SPA vs. SAC conflict). • Deliver FCS across whole network rather than on every individual site unless rare. • Rectify deterioration as appropriate within each Member State. • Consider species-specific requirements in habitat management + conservation objectives. • Deliver typical species for each habitat type – don't always aim to maximise biodiversity. • Need to think about invertebrates and non-vascular plants when restoring habitats. Potential solutions to some of these issues: • Demonstrate how a selected range of N2K-dependent species are responding to habitat management. • Disseminate species integration literature, e.g. Webb et al. • Define the typical associations between habitats and species (keystone, umbrella etc.). • Create feeding areas for associated species in surrounding areas outside N2K sites. • Resolve conflicting site objectives through integrated management.
Communication/ networking	• Exchange of best practice examples.
Proposed first steps	• Promote workshops on sustainable grazing systems.

Objective: Inappropriate grazing that ignores individual site conditions			
Actions	**Steps**	**Actors**	**Timeline**
Hold 2 separate workshops for land managers to compare best practice and policy-makers (DG & Ministries) to understand sustainable grazing systems	Link with coastal and grassland habitats	MS ?	2013
Evaluate national approaches and identify best practice (or problems - inappropriate incentives + negative outcomes) arising from implementation of CAP	Collation and evaluation of information / exchange of experience	EC with MS, NGO, landowners etc.?	To be confirmed

ISSUE/ISSUES	**Inappropriate hydrology**
Problem definition	Hydrological conditions are inappropriate for the management and/or restoration of wet heath, active raised bogs and alkaline fens, e.g. because of artificial drainage.
Proposed solution	1. Integrated, participative catchment management plans. 2. Monitoring linked to adaptive management (e.g. Nature Conservancy and INBO Belgium). 3. The five-stage 'conservation rocket': - Identify landscape issues by a landscape ecological analysis (LESA; present and past determining hydrological processes on landscape scale). - Evaluate individual site conditions: are they appropriate? - Identify restoration areas and measures. - Produce catchment management plan. - Implement the plan.
Barriers to / opportunities for implementing the solution	Multiple ownerships/management responsibilities across complex sites coupled with conflicting management priorities has led to an inability to effectively plan and manage issues at an appropriate catchment scale. Measures may have an (large) negative impact for agriculture outside the N2K site. Often measures outside the N2K sites are required. Measures are often (very) costly. Measures may have a large societal impact, for example closing of drinking water abstractions and re-allocation of farms. Lack of knowledge regarding hydrological functioning and restoration of water quantity and quality. Lack of motivation for landowners to keep water in their wetland.
Stakeholders	Landowners, land managers, operators of agri-environment schemes.
Recommendations	*Solution 1.* 1. Catchment management manuals. 2. WFD integration 'stream-lining'. 3. Knowledge exchange meetings/ networks.

	4. Review tools and translate key ones. 5. Develop good standards for impact assessment and landscape ecological analysis. *Solution 2.* 1. Identify examples - good & bad (evidence based conservation). 2. Demonstrate through examples. 3. Provide training. *Solution 3.* 1. Identify who is using the approach. 2. Knowledge exchange meetings/ networks. 3. Develop / define good standards for landscape ecological analysis and catchment management plans. 4. Secure funding through LIFE etc. to test the approach. 5. Identify funding routes for implementation, especially through agri-environment routes.
Possible actions	Promote the creation, at appropriate scales, of catchment management plans. Promote the application of a landscape ecological analysis as the base of a proper catchment management plan. Prepare guidance and case-studies on restoration strategies, on a local as well as on a regional scale, and evaluate the use of landscape ecological analysis as a tool for the development of restoration measures.
Species relevant information	Issues: • Very large knowledge gaps exist. • Highly variable habitat associations are present. • Need to deal with wider range of 'typical' species - not just Annex 2 & 4. • Trade-offs between habitat and species create problems in some countries (SPA vs SAC conflict). • Deliver FCS across whole network rather than on every individual site unless rare. • Rectify deterioration as appropriate within each Member State. • Consider species-specific requirements in habitat management + conservation objectives. • Deliver typical species for each habitat type – don't always aim to maximise biodiversity.

	• Need to think about invertebrates and non-vascular plants when restoring habitats. Potential solutions to some of these issues: • Demonstrate how a selected range of N2K-dependent species are responding to habitat management. • Disseminate species integration literature, e.g. Webb et al. • Define the typical associations between habitats and species (keystone, umbrella etc.). • Create feeding areas for associated species in surrounding areas outside N2K sites. • Resolve conflicting site objectives through integrated management.
Communication/ networking	*To be added later*
Proposed first steps	Make available examples of good management guidance at appropriate scales. Develop / define good standards for landscape ecological analysis and catchment management plans.

Objective: Inappropriate hydrological conditions for the management and/or restoration of 4010, 7110 & 7230, e.g. artificial drainage			
Actions	**Steps**	**Actors**	**Timeline**
Organise exchange of knowledge on different approaches to catchment planning between MSs	Plan international seminar on hydrological management planning & produce guidance	MS	2013/2014
Apply site-based conceptual hydrological models based on best practice	Use previous action to embed model in site management planning process	MS	2014
Gain a better understanding of evidence base	Review of hydrological literature linking to: 4010, 7110, 7140, 7230 and possibly 4030	MS	2013

ISSUE/ISSUES	**Nitrogen deposition**
Problem definition	Nitrogen deposition & diffuse pollution of groundwater and surface water with nutrients adversely affecting the condition of Natura habitats and their species.

Proposed solution	1. Reduce at source either through regulation or alteration of land management/land use practices. 2. Learn from NL landscape programme (BAT – Best Available Technology), 'PAS' – Programmatic Nitrogen Approach and OBN (Survival Plan Nature). 3. More research on: - How to use 'restoration strategies', e.g. the combination of management and restoration measures (especially those aiming at restoration of the former water management), to mitigate impacts, including the effectiveness of the spatial targeting of mitigation measures to deliver reductions in impacts at both and regional scale. - Tools/approaches to help us elucidate the relative contribution and significance of different sources of eutrophication. This will improve our understanding of the combined effects of atmospheric sources and aquatic sources of nitrogen and other nutrients affecting wetlands, internal eutrophication (the release of nutrients, especially phosphorus, as a consequence of the inlet of sulphate-rich surface water from outside or the upward discharge of sulphate-rich groundwater) and the release of nutrients as a consequence of desiccation e.g. lowering of ground water tables and reduction of seepage fluxes) and enable targeting of the most significant sources. - NPK alternatives and application modification. The extent of the impact across Europe and how habitats will respond to changes in pollution loading. In particular the timescales for vegetation responses and the nature and timescale for recovery when atmospheric pollution pressures are reduced. - Demonstrate co-benefits of mitigation measures with other policy areas.
Barriers to / opportunities for implementing the solution	Cost implications for the state, industrial operators and agricultural sector coupled with the availability of appropriate technologies and restoration strategies. Knowledge gaps at a national scale.
Stakeholders	Landowners, land managers, policy makers and regulators, relevant industries.
Recommendations	*Solution 1* 1. Knowledge exchange meetings/ networks (CCE etc.). *2.* Integrated and targeted atmospheric pollution control measures. *Solution 2* 1. Learn from OBN programme and PAS. 2. Literature synthesis for impacts and mitigation measures. 3. Raise awareness where problem is not currently recognised. *Solution 3* 1. Elaborate examples in English (initially) and upload to the web.

Possible actions	• Prepare best-practice guidance with worked examples. • Establish knowledge exchange meetings with stakeholders.
Species relevant information	Issues: • Very large knowledge gaps exist. • Highly variable habitat associations are present. • Need to deal with wider range of 'typical' species - not just Annex 2 & 4. • Trade-offs between habitat and species create problems in some countries (SPA vs SAC conflict). • Deliver FCS across whole network rather than on every individual site unless rare. • Rectify deterioration as appropriate within each Member State. • Consider species-specific requirements in habitat management + conservation objectives. • Deliver typical species for each habitat type – don't always aim to maximise biodiversity. • Need to think about invertebrates and non-vascular plants when restoring habitats. Potential solutions to some of these issues: • Demonstrate how a selected range of N2K-dependent species are responding to habitat management. • Disseminate species integration literature, e.g. Webb et al. • Define the typical associations between habitats and species (keystone, umbrella etc.). • Create feeding areas for associated species in surrounding areas outside N2K sites. • Resolve conflicting site objectives through integrated management.
Communication/ networking	Existing networks include various groups under the UNECE Convention on Long-Range Transboundary Air Pollution, including the task force for Reactive Nitrogen and the Working Group on Effects. European Centre of the International Nitrogen Initiative.
Proposed first steps	Prepare best-practice guidance with worked examples.

ISSUE: Nitrogen deposition & diffuse pollution of groundwater and surface water			
Actions	**Steps**	**Actors**	**Timeline**
Reduce at source either through regulation or alteration of land	Knowledge exchange meeting to determine: CL's /per habitat &	MS jointly	2013 (tbc)

management/land use practices.	nitrogen ceilings needed to reach FCS	organize	
Learn from NL landscape programme (BAT – Best Available Technology).	Translate OBN / government report into English(problems & measures)	MS	2013
Evaluate utility of AERIUS model (NL) in other communities (free!)	Circulate information on the model to all MS	MS	To be confirmed

ISSUE/ISSUES	**Peat extraction**
Problem definition	Industrial-scale, private mechanised and small-scale traditional cutting of peat for horticulture and for fuel.
Proposed solution	1. Halt all inappropriate peat extraction. 2. Promote alternatives to peat for fuel and horticulture. 3. Restoration to give relevant prerequisites attached to any new permissionsaiming at a favourable condition for rapid restoration of cut peat bog surfaces and damaged bogs to well-functioning bog ecosystems. 4. Promote the development of techniques aiming at the restoration of bogs / growth of Sphagnum on peaty soils as renewable resources for peat. 5. Promote other uses of peatlands (ecosystem services) than peat extraction.
Barriers to / opportunities for implementing the solution	Different value judgments between different stakeholders including conservationists, private landowners, rights holders and the energy and horticulture sectors.
Stakeholders	Landowners, rights holders, land managers, policy makers, operators of agri-environment schemes, energy industry, horticulture industry.
Recommendations	*Solution 1.* 1. Knowledge exchange meetings/ networks to identify examples where this has already happened. *Solution 2.* 1. Implement campaigns to influence behaviour in relevant countries. 2. Identify practical examples - good & bad (evidence based conservation). 3. Research on how to supply horticultural industry.

	4. Knowledge exchange meetings/ networks. *Solution 3.* 1. Knowledge exchange meetings/ networks. 2. Identify practical and costed examples - good & bad (evidence based conservation). Identify success a fail factors. 3. Joint workshop with the peat companies, including field trips, to understand success and failure. *Solution 4* 1. Stimulate research on the sustainable use of bogs as renewable peat source. Learn from experiences in Canada. *Solution 5* 1. Agri-environment schemes supporting the maintenance of wet and untouched peatlands as carbon stores and for water regulation. 2. Disseminate understanding of the carbon store and water regulation roles of peatlands. 3. Peatland tourism development.
Possible actions	• Prepare best-practice guidance with worked examples. • Establish knowledge exchange meetings with stakeholders.
Species relevant information	Issues: • Very large knowledge gaps exist. • Highly variable habitat associations are present. • Need to deal with wider range of 'typical' species - not just Annex 2 & 4. • Trade-offs between habitat and species create problems in some countries (SPA vs. SAC conflict). • Deliver FCS across whole network rather than on every individual site unless rare. • Rectify deterioration as appropriate within each Member State. • Consider species-specific requirements in habitat management + conservation objectives. • Deliver typical species for each habitat type – don't always aim to maximise biodiversity. • Need to think about invertebrates and non-vascular plants when restoring habitats. Potential solutions to some of these issues: • Demonstrate how a selected range of N2K-dependent species are responding to habitat management. • Disseminate species integration literature, e.g. Webb et al.

	• Define the typical associations between habitats and species (keystone, umbrella etc.). • Create feeding areas for associated species in surrounding areas outside N2K sites. • Resolve conflicting site objectives through integrated management.
Communication/ networking	Use International Peat Association for communication and networking
Proposed first steps	Prepare best-practice guidance with worked examples.

Objective: Peat extraction/ mining			
Actions	**Steps**	**Actors**	**Timeline**
Literature review/ seminar to exchange knowledge & create website with restoration case studies and methodologies	Use communication platform to disseminate seminar/review results	IR ?	To be confirmed
Target local stakeholders and wider public to inform on benefits of intact peat	Identify demonstration sites and provide interpretation material	IR ?	To be confirmed
Promote alternatives to peat in horticulture & home energy use	Implement education and communication campaign	IR ?	To be confirmed
Identify specific areas where cutting must stop , i.e. where it is inappropriate	Commission research to understand what is inappropriate & map all areas of bog currently being cut	IR ?	To be confirmed

NEW Objective: reduce habitat fragmentation			
Actions	**Steps**	**Actors**	**Timeline**
Collate/capture existing information on fragmentation impacts affecting heaths & bogs on N2K sites	Workshop or systematic evidence review, (connectivity & restoration literature)	MS	2013

NEW Objective: Complex owner/occupier issues: (i.e., tenure pattern and cultural change)			
Actions	**Steps**	**Actors**	**Timeline**
Collate general information on best practice	Preceding objectives used!	UK & Ireland?	To be confirmed
Circulate examples of multiple-owner/occupier land management agreements	email	All	now

Objective: Appreciation / promotion of multiple benefits			
Actions	**Steps**	**Actors**	**Timeline**
Produce guidance on how to incorporate ecosystem services/ benefits in management plans	Compile lists of services specific to habitat types & hold a workshop	EC + MS	Late 2013 - mid 2014
Identify & create opportunities for public involvement and engagement with N2K sites	Identify specific projects in each country, supported with guidance & hold a workshop	MS + NGO ?	Late 2013 - mid 2014
Develop niche marketing approaches (e.g. French wine/cheese AOC + CZ work on N2K labelling)	Workshop to assess how to implement e.g. LIFE+	MS	Post alpine seminar
Create or provide alterative greenspace adjacent to site to buffer negative impacts (zoning activity / access)	Link to work on green infrastructure; develop and promote best practice examples e.g. via communication platform; secure funding; implement Article 10; and encourage uptake via spatial planning system	EC + NGO + MS + landowners	Late 2013
Develop best practice guidance and collate good practice examples	Hold EC contract workshop to collate ideas from a range of stakeholders	EC + IUCN ?	Late 2013

3.4 Rivers and Lakes

ISSUE/ISSUES	Habitat fragmentation
Problem definition	Land use change and the regulation of river courses have resulted in habitat loss and the resulting fragmentation and isolation of the remaining (semi)natural habitats. Dams and sluices in rivers and lakes form barriers for aquatic organisms. Reduced landscape permeability caused by the intensifying of agriculture and urbanization has added to the isolation of habitats by reducing the landscape permeability. The ecological consequences of habitat fragmentation are decline and extinction of species and disintegration of natural landscape level processes. Habitat fragmentation also enhances the negative impacts of climate change on species viability. Changes in geographical distribution of species as a response to climate change will be limited by habitat fragmentation, when species are unable to colonize habitats in new areas that have become climatically suitable. Most river courses in the Atlantic biogeographical region are strongly regulated and flow through situated urbanized landscapes. This causes several problems related to habitat fragmentation and lack of natural river dynamics. 1. Natural habitats related to rivers have become small and isolated. 2. Loss of natural dynamics has reduced the heterogeneity of the habitat especially those habitats related to high dynamics have become scarce. 3. The lateral relationships between the river system and the hinterland have become fragmented. 4. Dams and sluices regulating the water flow cause barriers for migrating fish e.g. sturgeon, salmon and trout. 5. Isolation of lakes might play a role for survival for some of the species.
Proposed solution	Rivers: 1. Develop methods for integrated and strategic planning of ecological networks at appropriate scales. 2. Develop methods for integrated and strategic planning based on the whole river stream valley and include catchment areas. 3. Manage the natural habitats along rivers as a functional ecological network by enlarging areas, restoring new nature areas and increasing connectivity between nature areas. 4. Restore natural dynamics within the river valley by giving room to sedimentation and erosion processes, thus restoring heterogeneity.

	5. Increase connectivity between the river and the hinterland by creating corridors and by taking mitigating measures at barriers caused by infrastructure, dikes, etc. 6. Implement mitigating measures at dams and sluices to increase the permeability for migrating fish. Lakes: 1. Manage lakes as a functional ecological network, where exchange of species between sites is possible. *Note: during post-workshop consultation the relevance of ecological networks for lakes was questioned, except for water birds.* 2. Increase the density of the ecological network by creating new aquatic habitats or enlarging existing lakes *(Note: questioned during post-workshop consultation)*, where suitable abiotic conditions exist. For some species also ponds in the agricultural landscape could contribute to the total habitat network (e.g. *Triturus cristatus*). 3. Increase the connectivity between lakes and ponds by mitigating barriers (e.g. infrastructure, canals). 4. Develop methods for integrated and strategic planning of ecological networks at appropriate scales.
Barriers to implementing the solution	• River management often requires international cooperation, or cooperation between different provinces, municipalities, etc. • Development of sustainable habitat networks ask for actions outside Natura 2000 areas, where nature managers need to participate in land use planning with many other competing land use claims. • Management goals for biodiversity might conflict with management focussed on transport by river and water safety (e.g. water discharge and the development of alluvial forests). • The problem of alien species that expand quickly through river systems might form a barrier to the willingness to increase connectivity.
Stakeholders	• Regional planning: local authorities, local communities, nature organizations, water boards, voluntary and private sectors, farmers and other land owners. • Integrated river plans: National and regional authorities from all countries that share the same river that are responsible for: nature conservation, water management, transport and economic development; NGO's, private sectors, landowners.
Recommendations	1. Ecological networks need to become an integral part of regional planning, where the supra regional context of the planning area is taken into account. 2. Find synergy between water safety and nature conservation goals (e.g. Room for the river programme). 3. Identify ecosystem services as a linking concept for integration. 4. Identify Green Infrastructure as a concept for integrating land use as many coalitions can be found with other land uses and functions, such as agriculture, forestry and water management. Also the multifunctional nature of green infrastructure provides multiple benefits for society, e.g. biodiversity, climate change mitigation and adaptation, water management, pest control, etc., which will help the support for and implementation of green infrastructure.

	5. Measures on the network level are important to enable species to disperse from present to future suitable climate zones. For species to expand their range, existing habitat networks need to be connected with neighbouring areas, which will become suitable due to climate change. 6. Provide information on the trade-off between improving connectivity and expansion of alien species. Distribute information on effective alien species management (http://www.nobanis.org/Factsheets.asp).
Possible actions	• Identify ecosystem services as a linking concept for integration of ecological networks with other land use. • Develop Green Infrastructure as an integrating concept contributing to the spatial cohesion of the ecological network and providing many other ecosystem services (e.g. climate adaptation, natural pest control, water management, etc.). • Develop (inter)national and regional ecological network plans for rivers and lake habitats, indicating priority zones for enlarging existing areas, restoring nature areas and zones for enhancing connectivity and mitigating barriers in rivers and on land.
What species relevant information do you want to add?	• Develop spatial conditions for ecological networks that meet the requirements of all species associated with the specific habitats. Species differ in area requirements, dispersal capacity and sensitivity for landscape permeability and barriers. Design networks that are large enough for species with large area requirements and connected enough for species with small dispersal capacity that are sensitive for barriers in the landscape. • Facilitate migration for migrating fish in rivers and between rivers and seas by overcoming barriers (e.g. Atlantic salmon). Implement specific measures for non-jumping fish (e.g. sea lampreys). Share evidence on the effectiveness of measures between countries. • Avoid optimizing habitats for one species, as what is optimal for one species might be damaging for others. Focus on habitat heterogeneity instead.
Communication/ networking	• Form (international) working groups of all involved parties to develop integrated river management plans. • Form working groups where biodiversity goals, transport and water safety are discussed in an integrated way with all parties involved (e.g. Rhine, Loire, etc.) to solve problems where nature goals, transport and water safety seem to clash. • Develop a framework for spatial planning approaches where ecological networks and green infrastructure are part of multifunctional planning at different scales.
Proposed first steps	Include national level steps/ and cross-boundary level steps that will begin the process of delivering solutions to the defined problems.

Objective: Restore connectivity or alternatively functionality		
Actions	**Actors**	**Timeline**
Define the requirements for connectivity of a catchment level in	member states; cross-border	Now

relation to nature conservation objectives		
Identify types of barriers, map barriers, identify degree of isolation, priorities for species/functions	Responsible authorities at catchment level (on-going Interreg project?); on-going work in F; cf WFD reports, Eels regulation	
Translate expertise into management plans using expert consultation (e.g. LIFE+)	Responsible site managers	
Apply management plans (including; remove barriers, restore riparian habitats & mitigate effects)	Local level + joint effort at higher levels	Check catchment management plans

ISSUE/ISSUES	**Hydromorphological modification**
Problem definition	Over time, use of rivers and lakes by humans has led to severe degradation of water quality, hydromorphology and ecosystem functions. The EU Water Framework Directive fundamentally changed water management in all EU states by using ecosystem health as the basis for decisions. Initial WFD implementation and monitoring confirmed that the majority of rivers and lakes still suffer from degradation, despite successful efforts to tackle pollution. Based on these findings, EU states have drafted River Basin Management Plans with restoration measures focusing on restoring river and lake hydrology and morphology. To reach the demanding WFD targets as well as N2000 goals, there is a need for understanding in the following problem areas: - Hydromorphological degradation is composed of shortening of river length, canalization of the river bed and loss of transversal profile variation and regulation of flow by dams and weirs and flow regulation (like water inlet, hydropower). In lakes it mainly is loss of bank variation and water level changes. - Loss of hydromorphological variation contributed strongly to biological losses because of habitat loss (by erosion and siltation) and hydrological stress (flow extremes of floods and droughts). - The importance of hydromorphological change as part of multiple stress in river and lake systems is strongly underestimated. - Hydromorphological processes, in stream and in the floodplain, do not have enough space nor length of time, anymore to fully function. - Hydromorphological degradation is thus a loss of processes instead of a change in patterns. This difference is overlooked in restoration that focusses too much on patterns. - Hydrology is the main driver of morphology but the strong increase in its dynamics caused morphology to become strongly degraded by instability of habitats. - Exploitation of knowledge is deficient between scientists and management / practitioners.
Proposed solution	1. Tackle hydromorphological modifications and improve (in a cost-effective manner) the success of hydromorphological restoration measures; hydromorphologically sustainable and ecologically effective measures are needed. 2. Fully exploit the full potential within the socio-economic setting. Cost-effective implies an optimisation of ecosystem goods and services that rivers, floodplains and connected groundwater provide.

Barriers to implementing the solution	• No clear targets are set on forehand. • The focus is only applied at a local scale or specific area not a hydrological unit. Lack of large scale (international) cooperation. • The focus is only targeted upon one or a few environmental stressors, like eutrophication in lakes or meanders in rivers. • Restoration does not take the riparian / littoral zone nor the whole floodplain of water basin into account. • The focus or objectives only target for the demands of one organism group or specific species. • The presence of barriers or the distribution capacities of target species are not considered. Also exotic species are forgotten. • Stakeholder participation and communication is neglected. • The focus is based on historical conditions or references, and future environmental conditions are forgotten. • Different restoration / management activities are not mutually fine-tuned. • Lack of monitoring to adjust in time when unwanted effects occur. • Failures in management alienate public opinion and limits future participation and support.
Stakeholders	Policy makers of direct relevance with river restoration and the implementation of the WFD, Groundwater Directive, Renewable Energies and Floods Directives, as well as policy makers involved in neighbouring fields, e.g. aquatic biodiversity (HD). Those involved in European and national environmental policy, Common Implementation Strategy working groups under WFD, water practitioners, and local stakeholder.
Recommendations	1. Chose for an integrated approach that includes both the aquatic systems and their surroundings. 2. Embed measures in the natural, intrinsic process of the whole catchment/water basin and take the hierarchy between key factors on different scales from catchment to habitat into account. 3. Recovery needs a lot of time, results can come decennia later. 4. Adapt measures to local and regional circumstances. 5. Measures must be argued based on knowledge of the processes in the whole catchment / water basin (by performing ecosystem analysis). 6. Integrate measures and solutions in the human uses already present, seek for combinations of solutions. 7. Communicate open and clear with stakeholders, local civilians based on a transparent, detailed action plan. Seek for a common approach. 8. Already define the future management and maintenance of the aquatic system and its riparian / littoral zones. 9. Measures and policies should be in balance and fit to each other. Including stream / lake and valley / basin offers win-win conditions. 10. Plan and perform a solid monitoring, and give opportunity to in between refined measures.

Possible actions	The actions needed imply the development of protocols and procedures to monitor the biological response to hydromorphological change with greater precision, this to support the design of programmes of restoration and mitigation measures for the WFD and N2000, in particular for the upcoming 2nd round of RMBPs, and to integrate restoration better with socio-economic activities. More in detail the following actions are needed: 1. Monitoring improvement: To select WFD compliant hydromorphological and biological indicators for cost-effective monitoring that characterise the consequences of physical degradation and restoration in rivers and lakes, and their services. 2. Tools development: (a) To evaluate and improve practical tools and guidelines for the design of cost-effective hydromorphological restoration and mitigation measures for practitioners and end-users. (b) To develop instruments to analyse risk and assess benefits of successful restoration, including resilience to climate change and relations to other socio-economic activities. 3. Knowledge building: (a) To compile and integrate existing data and information on hydromorphological degradation and restoration, underlying physical and ecological processes, their interactions and ecosystem services. (b) To develop a process-based, multi-scaled hydromorphological framework on European water bodies and floodplains / basins and connected groundwater that is relevant to ecology and suitable for hydromorphological monitoring. (c) To understand how hydromorphological pressures interact with other pressures that may constrain successful restoration. (d) To assess the significance of scaling effects on the effectiveness of different adaptation, mitigation and restoration measures to improve ecological status or potential of rivers / lakes, floodplains / basins and connected groundwater. 4. Stakeholder involvement: To increase awareness and appreciation for the need, potential and benefits of restoration measures through active involvement of and dissemination of project outputs to policymakers, practitioners and stakeholders.
What species relevant information do you want to add?	In rivers, two groups of species are especially relevant: (1) cold stenothermic species and (2) rheophilic species. Hydromorphological modification more often goes along with cutting the trees and bushes in the riparian zone. This directly affects the temperature regime of the stream. Coldwater dependent species will disappear fast. Rheophily is an essential criterion in Atlantic streams as the slope of the area is limited. Fast flowing streams lack. In slow flowing stream current is a life critical parameter. In lakes, the littoral community is of greatest importance as both bank profile variability and water level dynamics effects come into effect. Representatives for characteristics habitats and processes of silting up are most relevant.
Communication/ networking	
Proposed first steps	• Involvement in the development of the second tranche of River Basin Management Plans. • Stimulate the formation of integrated management groups in which water quality, water quantity, groundwater, water safety, nature and ecology work together. • Involve departments of spatial planning in the development of River Basin Management Plans.

List of specific measures to redress hydrological modifications:

- forestation
- development of a wooded bank along rivers
- drainage removal
- groundwater storage
- improvement of infiltration in the soil, like wadi's
- creation of inundation zones
- natural water level management in lakes
- excavation of the upper layer of the riparian zones/floodplain
- construction of water storage/retention reservoirs/ponds
- digging of high-water channels
- construction of a two-stage channel
- enlargement of the riverbed
- reconnection of old meander beds
- relocation of dikes to enlarge the riverbed
- restoration of natural river network
- removal of weirs
- removal of obstacles from the floodplain
- construction of hydrological buffers
- reduction of water extractions
- reuse of treated wastewater
- passive re-meandering
- removal of bed fixation
- digging of new meanders
- reduction of the wet profile
- construction of sediment buffers
- construction of asymmetric /natural bank profiles
- improvement of habitat heterogeneity (micro-meandering)
- improvement of habitat heterogeneity (pools and runs)
- improvement of habitat heterogeneity (obstacles)
- addition of species-specific structures, like fish habitats
- re-profiling of banks (steep and overhanging in rivers and wetted low slope areas along lakes)
- improvement of habitat heterogeneity
- reduction of the use of fertilizers
- removal of point sources of pollution
- removal of sewage discharges (houses)
- reduction in sewage overflows/load
- improvement of sewage treatment
- separation of sewage and rain water overflow
- disconnection of polluted tributaries
- creation of helophyte filters/wetland
- construction of horse-shoe wetlands
- construction of buffer zones with agricultural land
- dredging
- reintroduction of critically endangered species, like fish stocking
- digging of off-channel ponds
- reduction of maintenance
- assigning space for natural floodplain development
- construction of fish passages
- regulation of recreation pressures
- assignment of protected areas

Objective

1. raise awareness of hydromorphological modification on both flooding, water quality/quantity and conservation objectives **2. restore the natural values and functions of river systems**		
Actions	**Actors**	**Timeline**
develop and exchange tools to evaluate green and grey infrastructure (e.g. Ecosystem services)	Link to MAES WG	
stimulate decision makers to use these strategies, for instance by exchanging this within the decision making level	examples from Ministry I&M, ONEMA, Schelde river and others	
organize workshops to bring knowledge of WFD and N2K together, as well as case studies outside the EU; Sharing best practice	those responsible, e.g. member state level and EU level; link to WFD WG on hydromorphology	2013

ISSUE/ISSUES	**Pollution**
Problem definition	Land use changes and intensification of agriculture, industrial activities and urbanization have resulted in an increased emission of polluting substances to rivers and lakes. In these ecosystems, one of the main problems for not meeting the required habitat quality has been identified as (diffuse) pollution, either internally or externally. The pollution might be diffuse pollution to surface water and local groundwater (e.g. by agriculture) or specifically from located sources (e.g. by waste water treatment plants, household sewage). Fish stocking might also put pressure on these lake systems. From these possible sources, the diffuse ones and the cumulative effects of small discharges are the most problematic ones to solve. Diffuse pollution includes eutrophication, acidification and nitrogen deposition. While eutrophication in rivers and lakes is mainly caused by phosphorous enrichment– although also nitrogen enrichment might play a role – atmospheric deposition mainly causes pollution with air-borne nitrogen. While since the eighties of the last century a strong reduction in atmospheric sulphur deposition has been achieved, atmospheric nitrogen pollution still continues. Internal pollution within the ecosystems results in increased fluxes of phosphorous from sediment to the water layer, thereby causing eutrophication of the water layer. In buffered ecosystems altered surface water quality by inflowing river water to supply the deficit of surface water in summer time and control and fixed water-levels in those lakes for agricultural purposes, contribute to the eutrophication of these lakes. In buffered ecosystems, with enough buffering capacity in the sediments, increased loads of phosphorous and nitrogen or both in combination, cause changes in the aquatic ecosystem and can even result into complete ecosystem shifts thereby changing macrophyte-dominated ecosystems into algae-dominated ecosystems. The latter systems often suffer from fish loss as a result of oxygen depletion. In poorly buffered ecosystems like oligotrophic waters, acidification and nitrogen-deposition result in ecosystem changes, where more generalist and fast-growing species outcompete the original characteristic ones. Water courses are also exposed to diffuse toxic pollution (industrial discharges, agrochemicals).
Proposed solution	1. Prioritization - Identification of sources of pollution - prioritization – tackling of the sources, for eutrophic systems focus on phosphor

	load. - Abatement of sources / reducing or eliminating nutrient inputs, including treatment of waste water and agricultural technical solutions. 2. Measures in rivers and lakes - Removal of eutrophicated sediments in combination with fish management (depletion of unfavourable fish stock like bream and other floor-dwelling fish) (NB. Dredging in eutrophicated, originally oligotrophic lakes might be necessary for restoration of the isoetid populations, but must take into account the buffering capacity and the fauna populations in the habitat, e.g. by restoring the buffering capacity and by removal of the organic sediments in phases, respectively; Dredging in buffered lakes in peat-bog areas is not always successful due to the presence of older phosphor-rich peat layers). - Scale based solutions (e.g. buffer zones). - Upland habitat restoration. - Restore the local hydrology and groundwater influxes including a package of measures which is depending on the local situation. - Disconnect the water regime of nature areas from agricultural areas and let water levels follow the natural course: high in winter and low in summer. - Restore natural dynamics. - Exclude areas from nautical recreation. - Provide habitat differentiation. - Install de-phosphortation traps between agricultural areas and nature areas. - Isolate areas with vulnerable habitats. - Lengthen the water-supply route for surface water in order to use the self-purification capacity of the aquatic ecosystems to improve water quality. - Focus on phosphor-limitation of the aquatic ecosystems. 3. Participative catchment management plans and policy - Integrated and strategic planning at the national and international level; changing policy at the landscape and catchment level; - Stakeholder engagement and communication: including participative processes, influencing policies, education and awareness raising; - Reform of the Common Agricultural Policy to deliver public goods including good water quality (e.g. targeted payments, remove harmful subsidies);

	- Policy activities and regulations; - Implementation of the EU policies; - Integrating nature pollution target to river management (WFD planning). 4. The main solution lies in a combination of which the most promising combination is: - the identification, prioritization, and tackling of sources; - the strategic and integrated planning at the national level; - a reformation of the Common Agricultural Policy to deliver public goods including good water quality (e.g. targeted payments, removal of harmful subsidies); - The integration of nature targets into lake and river management and planning.
Barriers to / opportunities for implementing the solution	• The integration of nature targets into lake and river management might require extra efforts among stakeholders and member states; • River management requires international cooperation and cooperation between different stakeholder groups; • Available funds are insufficient for habitat restoration; • Knowledge about habitat restoration is not always available; • There is a lack of knowledge about system-related hydrology and groundwater systems; • There is a lack of any mechanism for enabling definitions and management of a groundwater protection zone for conservation purposes; • Agricultural policies might be a barrier for the implementation of the solutions.
Stakeholders	• Local and regional authorities, local communities, water boards, nature organizations, voluntary organizations, private sector farmers, landowners, land-users. • The Water Framework Directive river basin boards, national and regional authorities from all countries that share the same river or lake and that are responsible for: nature conservation, water management, water quality, transport and economic development; NGOs, private sectors, landowners.
Recommendations	1. Harmonize approaches to Habitat Directive and Water Framework Directive implementation; 2. Integrate nature targets into lake and river management and planning. 3. Integrate land use and management planning (e.g. in relation to hydroelectric power generation issues, spatial planning etc.); 4. Explore the possibility of the ecosystem services concept as a linking concept for the integration of nature targets into river management and planning; 5. Identify, prioritize, and tackle sources of pollution;

	6. Integrate and plan strategically at the national level; 7. Reform the Common Agricultural Policy, i.e. delivering public goods including good water quality (e.g. targeted payments, removal of harmful subsidies); 8. Increase education and awareness; 9. Engage stakeholders and improve stakeholder awareness and communication; improve participative processes; 10. Influence policies.
Possible actions	• Elaborate and specify the ecosystem services concept as a linking concept for the integration of nature targets into river management and planning; • Identify issues at the of local, regional and national scale; • Develop international and integrated working groups around rivers / lakes for WFD and Habitat Directive to explore integration of nature targets into river management and planning.
Species relevant information	The background document shows that the characteristic macrophyte species which inhabit these specific habitats are sensitive to eutrophication. In addition, the macrophyte species that are characteristic for the poorly buffered lakes are also sensitive to acidification and air-borne nitrogen-deposition. The abatement of pollution is therefore highly important in order to achieve the abiotic conditions for these specific species and habitats.
Communication/ networking	• Stimulate cooperation of Water Framework Directive River boards with nature conservation bodies. • Form national and international working groups of all stakeholders to develop integrated river basin management plans to abate pollution. • Stimulate integration of water and nature networks and exchange of knowledge.
Proposed first steps	Include national level steps/ and cross-boundary level steps that will begin the process of delivering solutions to the defined problems.

Objective: control pollution issues, reduce pollution (e.g. eutrophication, acidification)		
Actions	**Actors**	**Timeline**
develop networks for exchange (including wiki-pollution and expert database) on different scales (site to catchment level)		
create alarm system for river pollution (e.g. existing ones for Rhine, Schelde and Maas river)		
reinforce field control and enforce existing rules (make polluter pay)		

create guidelines to combat issue of stored/aerial pollutants		
create guidelines to combat issue of stored pollutants		
involve water treatment and extraction companies into pollution prevention		
Find a catchment based approach to eutrophication		
Assess (cumulative) impact of pollutants on conservation status of habitats and species		

NEW issue as a result of the seminar: Catchment area approach		
Objective: Initiate catchment management plans that include N2000 and WFD ecosystem functional objectives		
Actions	**Actors**	**Timeline**
Identify catchment & N2k network within it.		
Identify ecosystem functions & roles within catchment (research if necessary).		
N2k managers collaborate to determine common problems & solutions.		By end 2013
N2k managers & water managers consultations before wider stakeholder workshops		By end 2013
Mainstream N2k objectives & maximize synergies with water objectives.		By end 2013
Workshops with balanced representation of stakeholders including conservation interests for catchment.		
Create catchment management plans		By end 2015
Sharing best practice (X-catchment; x-country)		

NEW issue as a result of the seminar: climate change and conservation objectives		
Objective: adopt approach to be flexible regarding conservation objectives in relation to effects of climate change		
Actions	**Actors**	**Timeline**
Assess vulnerability of habitats and species at BGR level, in connection to existing monitoring (art 17)		

Develop communication strategy on relation between climate change and Natura 2000		
Include climate change indicators into EU network (SEBI)	EEA	Happening
Include CC considerations into MP updates	Site manager	Every 6 years

NEW issue as a result of the seminar: how to deal with natural succession		
Objective: take natural succession into consideration at (multi)-site-level in management plans		
Actions	**Actors**	**Timeline**
Exchange expertise on identifying habitats/species that benefit from succession, natural processes and cyclic management		
Translate expertise into management plans (incl. opportunities for restoring natural processes, spatial differentiation and monitoring)		
Training of field managers and stakeholders		
Develop methodology to assess effect of natural succession on conservation objectives at multi-site level using art 17 reporting		

NEW issue as a result of the seminar: lack of clarity on responsibilities		
Objective: – **To provide a clear mandate to authorities** – **To enhance transparency on procedures** – **To encourage cross-border communication**		
Actions	**Actors**	**Timeline**
Clarify responsibilities at the local level		
Relevant N2K legislation in place	MS/all levels	
Create/promote coordination committee		
Exchange information on policy aspects on water/nature		
Set up common water/nature committees for coordination	EC	

Set up national government review to look at implementation of nationally transposed legislation to clarify responsibilities	MS	
Collect/create case studies of successful coordination		
Guidance documents on integrating water and nature	EC	
Consultation on management measures (on MS level and cross-border)		
Making information available for people at local level		

NEW issue as a result of the seminar: Invasive species		
Objective: – **To minimise the impact of invasive species on Natura 2000 habitats and species** – **To minimise the introduction of invasive species**		
Actions	**Actors**	**Timeline**
Identify species that cause major problems on sites now (pressure) and in future (threat) + assess major impacts	EEA	On-going/now
Make monitoring system to identify in early stadium the occurrence of invasive species	Public authority (all levels) with volunteers for data input	
Identify methods of transportation into sites		
Communicate EU guidelines & strategy to N2K managers and community (build common understanding)		
Carry out research on key factors influencing numbers of invasive species		
Eradicate invasive species as early as possible		Immediate
Coordinate/harmonize action to reduce invasive species at EU level		
Carry out risk assessment to identify most appropriate action		By 2015
Exchange experience on reducing invasive species	EC with MS	To be confirmed
Share knowledge on management options at site level	EC with MS	To be confirmed

Guidelines to prioritize between possibly contradictory N2K objectives	EC with MS	To be confirmed
Communicate about problems and solutions (MS, cross-border), learn from experience		
Educate public and stakeholders about invasive species		
Regulate and enforce trade in invasive species		
Use visible impacts in communication and awareness raising		
Raise awareness of trade sector		
Border control		
Include biodiversity into regulation on plant and animal health	Responsible authorities	

5.Cross-cutting issues

4.1 Policy integration

Problem definition	As defined in the Workshop report from June 2012 there is a lack of policy integration between various existing national policies developed for specific sectors based on European Union obligations. Policy objectives of Natura 2000 are not always embedded in the sectoral policies. This sometimes results in conflicts of interests during the implementation of Natura 2000 plans in the countries. Main examples are the policy integration issues between the Natura 2000 policy and the objectives of the Water Framework directive, Floods directive, Agricultural policies (CAP) and fisheries, spatial planning, energy & climate policy, transport and infrastructure sectors etc. During the implementation of Natura 2000 in many countries it became evident that Natura 2000 cannot be implemented as a policy on its own, but it needs to be institutionally and legally integrated into the other policy frameworks. This is possible if more synergy is build up between the policy objectives of different sectors. In this relation different policy integration approaches are under development by the EU and the individual member states. Yet, there is no commonly approved or unified policy integration process at national or a EU level. There is a emergent need to develop and test the efficiency of potential policy integration mechanisms suitable for the different member states institutional frameworks and practices on Natura 2000 implementation.

Proposed solution	1. Identifying the degree of policy integration of Natura2000 in national sectoral policy plans and strategies: identify the main conflicting policy objectives of Natura 2000 measures per sector; 2. Developing and propose policy integration mechanisms/approaches at European, national and local level e.g.: • Structural integration of institutions to deal with N2000 concerns per sectoral policy. • Making all public bodies responsible for taking account of habitats and species conservation in their decision making. • Improve procedural (legal) mechanisms such as EIA and SEA with specific criteria on N2000 measures. • Integrate the financing of Natura 2000 into sectoral policy and existing financing mechanisms, identify adverse subsidies and incentives and remove them. • Introducing collaborative practices to improve communication between policy makers, experts on N2000 and local stakeholders (develop expert committees/teams between specialized departments/divisions at national and local levels. • Develop coordinating bodies among governmental levels and policy sectors to provide guidance on the Natura 2000 implementation process.
Barriers to / opportunities for implementing the solution	Barriers: • Sectoral policies with contradicting objectives on European and national levels. • Contradictory financial and political interests of other sectors (e.g. agriculture). • Fragmented organizations across the EU dealing with the Natura 2000 policy and knowledge base which needs to be improved. • There is a need to make a better use of knowledge on Natura 2000research concept within research for policy development and implementation measures (e.g. apply research on management of Natura 2000 rivers in order to properly integrate with WFD river basin management. Opportunities: • Improved sectoral integration can help save costs and avoid unnecessary conflict for all affected sectors. • Growing recognition of the problem of policy integration will serve as an a opportunity towards development of solutions. • Awareness and willingness of the policy sectors to introduce better coordination and collaboration with regard to Natura 2000 implementation process.
Stakeholders	For strengthening the policy integration process the collaboration between governmental agencies is essential at national and local level, including professionals from different policy sectors (inter-ministerial committees, working groups on Natura 2000 with representatives from different ministries, agencies, and research organizations). Furthermore, stakeholder involvement at regional

	and local level is as well part of the policy integration process. This includes the participation of local authorities, NGOs, farmers and local communities in the process of Natura 2000 development at site level. Via the stakeholders collaboration at this level agreement can be made for considerations of specific Natura 2000 measures within spatial development plans.
Recommendations	<u>EU level:</u> Develop better guidance at EU level on policy integration process by identifying interlinks between different policies and the Natura 2000, where lack of guidance is a problem. DG ENV has developed helpful guidance documents for integration at technical level for almost all 'conflict sectors'. Integration of N2000 into other policies on is also necessary at policy levels (e.g. within the EU Budget). • Analyse the existing synergies and conflict between the different sectoral policies (e.g. TEN-T vs. Natura 2000, CAP vs. N2000), exchange these between the Member States, and identify reform needs (e.g. removal of harmful subsidies). • Further promote the contribution of Natura 2000 policy to the sustainability of the other sectoral developments ('greening' the economy and agriculture). • Exchange on good practices of integrated approaches where these were applied in Member states (case studies). • Further Harmonisation of data, terminology, indicators and reporting for the various policies related to the Natura 2000 development and implementation between the Member states: For example within the Natura 2000 EU data base to develop more unified system of methods to apply: - Favourable conservation status indicators, Habitat restoration actions and models across national Infrastructure networks, - Experts' based assessment approaches of spatial development plans in proximity to Natura 2000 areas, - Agri-environmental measures. • Make use of possible financial instruments and incentives for achieving integration of Natura 2000 objectives in development sectors (such as compensation mechanisms, green infrastructure planning practices e.g. red for green etc.). • Identify legally compatible instruments at EU level to stimulate policy integration of Natura 2000 within development initiatives of regional and local authorities of the Member states such as transferrable development rights for land preservation, requirements for assessment of development plans and policies. • Develop regulation for the biodiversity proofing of sectoral policies and instruments. <u>Biogeographic level:</u> • Exchange on good practices of integrated approaches where these were applied in Member states . • Establish biogeographic level working groups to work out solutions for the most important sectoral integration challenges (e.g. nitrate pollution) and communicate these to governments and the EU. <u>Regional level:</u>

	• Provide better guidance to the regional and local authorities in the Member states on the potential approaches for integration of Natura 2000 in regional spatial planning: collaborative, legal, financial, strategic etc. • Cross sectoral / integrated development of management plans for Natura 2000 with better stakeholder involvement locally. • Use suitable language/ terminology to mainstream N2000 objectives into other sectors and broader groups of stakeholders. • Develop more collaborative practices at national and regional level such as meetings between policy makers and practitioners from specialised departments (planners, ecologists, developers etc.). • Policy integration at management plan level (i.e. Natura 2000-managementplan, WFD catchment area plan) can contribute much in term of finding synergy between policies. A clearer framework for integrated management plans can enhance this. • Make ERDF funding better available for Natura 2000 at a national level.
Possible actions	• Getting to know each other: bring together main actors from Natura 2000 policy sector and selected priority development sectors such as the agricultural, water, infrastructure sectors at EU level and at regional level. • Make agreements on the needed guidance and coordination of the Natura 2000 policy integration process among Member states and first actions needed at national levels of MS. • Member states to take a pro-active role in addressing Natura 2000 objectives to other policy sectors. • Share knowledge on specific cases were possible conflicting policy objectives have been welded to synergetic processes. As a first step this can be done by making links between the national Natura 2000 networks in the member states where there exist. • Take up Natura 2000 as a priority, objective and indicator in Operational programs for ERDF.
Species relevant information	Not relevant
Communication/ networking	Via the EU networks related to Natura 2000 development and implementation such as: • Natura 2000 Barometer. • European Habitat Forum. • Natura 2000 UsersForum (ELO, FACE, Copa-Cogeca etc.) • Management of Natura 2000 sites data exchange base. • Developing methods for and working on an integrated approach can only be done when networks related to the different policies are connected. Existing network for Natura 2000 and WFD should connect. Via the existing, up to now, National Natura 2000 virtual networks in some MS.
Proposed first steps	• Pick out one or two of the most important policy integration challenges that exists on the Atlantic biogeographic level (e.g.

	nitrate pollution) and aim for solution in cooperation between interested MS. • Make an EU wide review of existing and potential integrated approaches for Natura 2000 in other policy sectors e.g. agriculture, transport, water policies (review possible use of strategic, legal and financial incentives for policy integration process). • Make such analysis on national or regional level. • Make a list of well working cross-sectoral bodies (working groups, forums) in Atlantic MS, invite experts to meetings from other countries(for example Netzwerk Land Austria). • Collect case studies of successful policy level integration initiatives from Atlantic MS. • Develop guidance plans on application of integrated approaches for Natura 2000 in water management and infrastructure development at EU level, including set of impact assessment criteria on Natura 2000 network/sites. • Develop guidance to minimalize trans-boundary nitrogen pollution. • Natura 2000 (policy) experts and stakeholders need to participate in the establishment of Operational Programs.

Objectives	**Actions**
Ensure EU funds are directed to provide clear conservation benefits (integration of nature financing)	1. Engage locally, within regions 2. Develop integrated projects for LIFE programme 3. Ensure the Prioritised Action Framework is linked to implementation 4. Encourage knowledge sharing on best practice, i.e. Articles
Make better use of pan European habitat classification systems (EUNIS,CORINE etc.)	Scope feasibility with EEA
Consider feasibility of European biophysical standards for the definition of FCS	1. NL + Flanders to produce discussion paper for further consideration at the N2K management group 2. Suggest Expert Reporting Group consider creating an inventory of indicator metrics and whether any thresholds that have been applied by MS can be captured
Ensure that N2K policy accommodates dynamic environmental change, e.g. climate change, and that mitigation and adaptation actions are used as opportunities for nature gain	1. Scope need for North Atlantic knowledge sharing network via communication platform and meetings, e.g. coastal defence 2. Debate how natural dynamic nature can be accommodated within COs – policy evolution
Apply appropriate assessment and in-combination effects to renewable energy developments and use strategic spatial planning	Collate case studies and circulate EU guidance to encourage best practice across MS (communication platform)
Ensure that policy drivers are 'N2K proofed', e.g. CAP Pillar I prescriptions	No Actions defined (out of time)
Promote N2K as a **solution** to adaptation and mitigation to climate change – working with nature, e.g. coastal managed realignment + flood mitigation + green SUDS (rain	No Actions defined (out of time)

gardens etc.) + carbon sinks	
Harmonise policy tools to achieve better integration and resolve outstanding conflicts, e.g. N2K, WFD & MSFD	No Actions defined (out of time)
Consider spatial constraint and opportunity mapping that supports N2K objectives across appropriate spatial scales	No Actions defined (out of time)
Make full use of spatially explicit planning tools, e.g. strategic spatial planning	No Actions defined (out of time)
Integrate N2K considerations across different policy sectors, e.g. fishing, hunting, roads etc.	1. Provide sectoral training and guidance, including enforcement action 2. Develop policy knowledge network between countries (the good, the bad and the ugly) and/or potentially link with existing networks and communication platform

4.2 Knowledge transfer

Problem definition	A practitioner aims to restore and manage Natura 2000 with the best available knowledge and preferably in an encouraging political environment. Due to lack of knowledge transfer between researchers, stakeholders, practitioners and policy makers this is suboptimal. Researchers, stakeholders practitioners and policymakers live in 'different worlds' with different goals and different terminology. This results in a less efficient and effective approach to protect, restore and manage Natura 2000. An extra effort – in terms of time and money – is needed to ensure knowledge transfer.
Proposed solution	1. Gather information on what is available, share this knowledge and make it accessible to each stakeholder. A knowledge network should focus on the following topics: - ecology and site management - legislation and assessment - finance - general policies, communication and stakeholders
Barriers to / opportunities for implementing the solution	• Lack of political decision-making • Money deficit • Lack of direction on research budgets • No shared definition of the problem
Stakeholders	Researchers, practitioners, NGOs, economic stakeholders and policymakers responsible for Natura 2000
Recommendations	1. Define a shared definition of the different problems and create a common European overview of research questions. 2. Give priority to budget favouring shared research questions addressing Natura 2000 problems. For instance by optimising the use of LIFE projects (e.g. LIFE information). Examples of research topics: - Scientific based restore programmes for ecosystems - Research into cross border environmental restoration, like harmonizing nitrogen deposition models - Develop rules of thumb by translating global/regional experiences for operational application 3. Invest in successful cooperation between practitioners and researchers e.g. the Dutch O+BN Programme – Knowledge Network for

	Restoration and Management of Nature in The Netherlands. Expert teams from the OBN Knowledge Network support practitioners in local language. OBN could be taken as an example and be extended towards other member states. For example: dt.natuurkennis.nl/uploads/Engelse_Brochure_OBN_DEF_juni_2012.pdf
Possible actions	• Launch a European digital knowledge portal. Knowledge documents from all member states are united in one database with a comprehensive search engine. For example: www.natuurportal.nl. • Launch a European website with knowledge arranged per habitat type. Cluster habitats at a sensible level. Include definite links between national and European Natura 2000 websites. Examples of national and international websites: www.natuurkennis.nl or www.conservationevidence.com; http://eunis.eea.europa.eu/ • Launch a European online thematic issue forum created by users for users for sharing practical knowledge on habitat restoration and management, including the possibility to ask questions. This ensures bi-directional transfer of grass-roots knowledge. For example as part of the online forum for this biogeographic seminar. See alsowww.wikinatuurbeheer.nl • Organize exchange in field based workshops. These could be funded trips for local practitioners and be part of an exchange programme. Ensure these workshops are at least supplementary to activities of Eurosite/Europarc. See: www.eurosite.org. • Use projects meetings creatively (LIFE, INTERREG etc.) to enable such exchange. Don't forget to involve fellow experts from the biogeographic level to such workshops. • Suggest to the EC LIFE Unit to encourage the LIFE projects to support biogeographic level exchange and knowledge transfer between practitioners. • Make it obligatory (when relevant) to disseminate LIFE project results on at least the biogeographic level.
Species relevant information	Not applicable.
Communication/ networking	Build from the existing OBN Knowledge Network and Eurosite/Europarc/ IUCN activities in order to involve both researchers and practitioners. Add a network of well-informed policy workers.
Proposed first steps	• Start with involving the existing national and European networks as OBN Knowledge Network and Eurosite/Europarc/IUCN. Add a network of well-informed policy workers. • Create a Google group for the experts of each habitat group that participated in the Atlantic seminar as a platform for later exchange. • Show how much knowledge is already available by launching an European digital knowledge portal, including knowledge arranged per habitat type and a forum. • Transfer the knowledge by organizing field based workshops. • Define a shared definition of the problems and create a common European overview of research questions. Liaise with EPBRS. • Give priority to budget favouring shared research questions addressing Natura 2000 problems.

Objective: To exchange and build knowledge between various parties in order to facilitate implementation of Natura 2000		
Actions	**Actors**	**Timeline**
Make a survey of existing networks (scientific AND practical) and build on them	European Topic Centre, DG Envi.	
Translate into English (access via English summary)	Contractor in relation to communication platform	
Create a lasting organisation to manage knowledge	ETC**?**	
Create a database for best practices and lessons learned with simple template for submitting data by site managers	• EC in relation to LIFE-projects, others ? • Relate to communication platform • Check with Eurosite	
Sing out the message	All	

Note on interpretation of terms, as raised during the seminar:

- Accessibility: language, open access, jargon, information overload > digest, structure, multi-entry, culturally aware
- Parties: policy-policy, x-border, policy-practice, practice-practice, science, unusual suspects (unknown sources), other stakeholders
- Knowledge: best practice; formal
- Transfer: multi-directional; identify needs > research programmes

4.3 Stakeholder involvement and communication

Problem definition	Insufficient and /or inappropriate involvement and participation of and communication with stakeholders represents a bottleneck or threat to the effective implementation of management of N2000 sites/habitats (page 12, workshop report): A. There is a need to involve those stakeholders that can be a valuable asset for the implementation of N2000 measures (such as local farmers, industry, tourism, nature conservation NGOs). B. There is a need to involve those stakeholders that are affected by the implementation of N2000 measures (such as local farmers, landowners, and recreants). C. There is a need to communicate with those stakeholders who because of lack of information see N2000 as a major threat to their activities. D. There is a need to communicate about the relation between economy and ecology to increase the perceived value of N2000 habitats. Often, a lack of (financial) capacity forms a major bottleneck for stakeholders to participate. There is a need to compensate stakeholders for decreasing of its incomes/realisation of other interests, if such decreasing follows site conservation. This should be understood as 'cost of conservation' and must not be avoided.
Proposed solution	1. Improve stakeholder involvement by developing a multi-scale strategy (local, regional, national, transnational) which defines clearly who to involve, why, how, and by whom (A,B). 2. Develop a communication strategy with stakeholders, instead of for stakeholders (A,B). 3. Communication should be aimed at site level to talk to local representatives (C,D). 4. Improve communication through improving message content, message form and better targeting (who, message, result) (C,D). 5. Improve communication about the delivery of ecosystem services provided by N2000 sites (D). 6. Develop compensation mechanisms. 7. Improve stakeholder involvement and participation by providing some financial compensation for participation. In return, high quality contributions and truthful communication with grassroots can be demanded (preventing the need for constant myth busting)
Barriers to / opportunities for implementing the solution	Barriers: • Lack of capacity /budget for agencies responsible for the process of stakeholder involvement.

	• Lack of funding for compensation for stakeholders.and lack of compensation mechanisms. • Lack of commitment to nature amongst stakeholders. • Lack of consensus amongst stakeholders. • Lack of public appreciation of importance of N2000 biodiversity. • Lack of competence amongst N2000 site managers to engage in cross border site management planning (e.g. language, culture).
Stakeholders	Stakeholders can be divided into two groups: 1) stakeholders whose activities (in)directly affect N2000 sites (A,B,C,D) and 2) stakeholders that are (in)directly affected by N2000 management (B). 3) stakeholders who are still sympathetic towards the goals of Natura 2000 Key stakeholders are: • Site managers. • Local landowners and land users in and around N 2000 sites. • Local and regional administrative and legislative bodies/authorities. • Local and regional (representatives of) economic parties from various sectors (business, industry). • Local and regional (representatives of) NGO's (farmers associations, recreation, environmental groups). • Local and regional (representatives of) citizens. • Tourists visiting the region / the site, expecting natural landscapes and high biodiversity • General public appreciating biodiversity in general, naturalness or charismatic species, even not organized in NGO's Other important stakeholders are: • Government & officials at national levels. • National (representatives of) NGOs (farmers associations, recreation, environmental groups). • National (representatives of) economic parties from various sectors (business, industry). • Scientists. The relative importance of these stakeholder groups may vary between the different countries in the Atlantic Biogeographic region, because of differences in organization of administration and finances.
Recommendations	***STAKEHOLDER INVOLVEMENT*** ***Management planning***

	1. Landowners and land users need to be involved in decision-making processes for management planning, as well as in the management itself. 2. Building and maintaining long-term relationships with local and users and landowners. 3. Pursue and encourage active cooperation of local stakeholders in N2000 strategy and management. 4. Apply flexible approaches (good balance between top down and bottom up depending on local situation and context). 5. Influence of site conservation on stakeholders interests should be always assessed as a part of management plans, and if necessary, compensations should be planned as conservation measure. ***Training and education*** 1. Training of site managers in participatory planning processes (communication, mitigation, negotiation, and building consensus and trust). ***STAKEHOLDER COMMUNICATION*** ***Sharing experiences and responsibility*** 1. Integration of scientific data with local knowledge and experience of stakeholders to build a common knowledge base and to create local ownership. 2. Exchange of good practices between site managers, local land users and landowners and joint broadcasting of good practices to larger audiences, other economic stakeholders, and policy makers at higher scale levels. 3. Be transparent about different point of views of stakeholders and N2000 site interests about constraints and limitations to create mutual understanding. 4. Joint formulation of information and education strategies targeted to the specific need of stakeholders at all scale levels. 5. Set up and reward joint responsibility for N2000 site management. ***Quality of communication*** 1. Have a clear jointly formulated idea about long term vision and objectives. 2. Give special attention to raising the awareness of the general public to the value of habitats that are not perceived as nature. 3. Give special attention to the use and delivery of ecosystem services provided by N2000 sites. 4. Adapt language to the need of the specific target group. 5. Use peer-to-peer exchange (to build trust and credibility) to communicate about N2000. 6. Use wide range of communication forms, e.g. panels, folders, internet etc.

	7. Use face to face contacts to communicate to individual stakeholders (key land owners and managers). *8.* Ensure continuity in all contacts and communication.
Possible actions	• Develop (trans)national communication and education campaigns and invest in training programmes for site managers on stakeholder involvement and communication. • Make guidance material on stakeholder dialogue available in different languages and facilitate knowledge exchange for N2000 sites management planning. • Invest in national monitoring programmes and research on effects of various land uses on N2000 sites to better address the issue of conflicting management and to enable exchange of knowledge and effects of land use. • Integrate N2000 into (sustainable) development strategy of spatial planning and integrate it with multifunctional land use in regional rural development. • Support and promote efforts with different sectors to address potential national and international conflicts of planned developments in infrastructure at a strategic level. • Provide targeted schemes for financing the required site management and if need be for compensating land owners and users, and ensure that funding reaches N2000 areas. • Involve the public at large through citizen science, ambassadors (famous people, juniors and species), award schemes etc.
Species relevant information	Not relevant for habitats
Communication/ networking	• Natura 2000 networking programme (http://www.natura.org/about.html, managed by Eurosite, Europarc, ELO) • Leaders for nature (IUCN) • The European Business & Biodiversity Platform (http://ec.europa.eu/environment/biodiversity/business/index_en.html)
Long list of possible actions	• Consultation early stage, site specific level • Ensure resources are available to stakeholder organisations for communication • Establish guidelines for MS to initiate stakeholder involvement • Find win/win situations to increase awareness of the value of participating • Knowledge transfer of good examples • Collation of best practice stakeholder involvement examples • Identifying pilot studies and existing examples to promote and implement • Strategy of involvement • Clear objectives of start of management planning process • Citizen science at the site level (share good examples) and Atlantic region (e.g.). Aim: citizen involvement • Really listen to concerns of stakeholders; some mechanism to facilitate this. • Personal communication with one manager

	• Point out facilitators (local) • Information: EC wide site signs with information where to get more information. • Phone app N2K • Inform on management ideas. Goal – request participation. • Quality Award, Management Award. Reducing impact; restoration. Award Logo represents efforts.

Objective "Stakeholders, both individual and institutional, are aware and proud of Europe's nature as enhanced through Natura 2000 and participate actively, collaboratively and responsibly in its management and conservation."			
ACTION	**HOW**	**Actors**	**Timeline**
Promote the development / adaptation of a mobile app for finding the (public) Natura 2000 sites in real life, providing information including for instance (common) species, Nitrogen deposition	Organise meeting with MS to identify existing apps and IT communication solutions	MS	Next 12 months
Provide **overview of stakeholder involvement** in N2K MP development	Share available information on stakeholder involvement in MP development on communication platform	MS, National NGO or network of NGO that has sufficient knowledge on biodiversity	After communication platform is online
Set up an **award scheme** to recognise achievements and convey pride to stakeholders involved in the wider implementation of N2K	Organize a meeting/workshop with MS that have experience on these kind of awards, e.g. France, Ireland and Austria, to identify opportunities	MS together with the EC	Next 12 months
To promote the use of **citizen science** based platform and link these to Natura 2000 (e.g. for reporting biological records, or threats and infringements).	• Bring together representatives of existing initiatives to explore the opportunities • Establish a link to the NBP Communication Platform	The EC with their contractor	Next 12 months

4.4 Cross-boundary issues

Problem definition	'Cross-boundary issues' relate to different types of problems being: A. Lack of joint goal setting and management of cross-boundary / connected Natura 2000 areas (e.g. along river systems or mountain ranges or sea & land- interface along coasts). This includes consistency in site selection and delineation across the border as well as management planning (e.g. inconsistent timing of decision making) and integration of site specific conservation status and reference values and need for connectivity. B. Lack of common approach and communication between MS to address similar issues especially in the field of opportunities for economic developments leading to (perception of) uneven playing field for stakeholders. C. No system to enable priority setting between MS faced with a shared responsibility for different FCS of(cross boundary populations of) species and habitats. D. Lack of joint MS policy or methodology to tackle the effect of major changes in species distribution due to climate change and autonomous changes facilitating these changes in distribution by removal of barriers and development of new nature areas (see also issue habitat fragmentation). The problems are most explicit in cross-boundary or adjacent Natura 2000 sites.
Proposed solution	1. Review site boundaries to ensure consistency (A) if this is the only possible solution to reach FCS of habitats and species on the biogeographic level;. 2. Timing & synchronisation of management planning; preferably one single management plan for cross border sites (A). 3. Improved exchange and agreement on appropriate assessment to prevent uneven playing field for stakeholders; (B). 4. Agreements between member states on the management of cross boundary populations of species having their FCS dependent on multiple MSs (C). 5. Setting conservation objectives on Biogeographical level and agree on contributions of MS[5]. 6. Financing of cross border issues in national programmes and EU programmes with national co-financing (INTERREG, LIFE). 7. Development of Green Infrastructure (see for specific recommendations/actions on this issue see issue of habitat fragmentation(D).
Barriers to implementing the solution	• Weak coordination between MS on cross-boundary issues. • Different national financing schemes & programmes.

[5] In case a country already set conservation objectives for habitats and species on national or other levels, these should be accepted and integrated as such in the biogeographical level planning.

	• Different policy planning and legislation between MS. • Overall shortage of money and staff for management planning and management implementation on the field. • Lack of competence amongst N2000 site managers to engage in cross border site management planning (e.g. language, culture) and joint practical implementation of the common management plans on the field.
Stakeholders	**Issues of joint management planning cross-boundary/connected sites (A)** Site managers, Local and regional government officials; Representatives of economic sectors; NGOs. **Issues B/C/D** Government & officials at national levels; Representatives of economic sectors at national level; National / international NGOs; Scientists.
Recommendations	• Improve joint goal setting and management of cross-boundary/ connected sites. • Improve exchange on appropriate assessments undertaken in MS, especially between adjacent regions. • Discuss system of priority setting at EC level based on ecological requirements and scientific grounds. • Further develop and integrate existing policies on Green Infrastructure at MS level and EU level.
Possible actions	• Set up international management working groups for integrated conservation and management planning for specific cross border/ connected sites. • Set up a working group(s) to set biogeographic level conservation objectives and agree on MS contributions for different habitats and species to reach FCS. • Joint monitoring schemes & databases (cross border and site level). • Set up international working groups for exchange and review of procedures for appropriate assessments for economic developments. • Arrange national financial schemes to enable cross-boundary co-operation especially to enable cross-border planning and management of Natura 2000 sites. • Improve use of existing EU scheme for Natura 2000 management (e.g. EU Territorial Cohesion Programme).

	• Organise high level government meeting on development of Green Infrastructure & Natura 2000 in Atlantic region/ EU level, also in the face of climate change.
What species relevant information do you want to add?	• Species which need enlargement of their habitat and/or increasing their habitat connectivity (see specific studies). • Alien and/or invasive species. • Need for coherent action for migratory species and cross boundary populations.
Communication/ networking	A. There is no specific network focusing on Cross border cooperation on Natura 2000 sites. However in several existing networks of IUCN, Europarcs and Eurosite experiences on cross border cooperation between protected areas is shared. Furthermore in the EU Territorial cohesion programme general information is available (http://ec.europa.eu/regional_policy/cooperate/cooperation/crossborder/index_en.cfm).Also there are already Natura 2000 sites that are cooperating on management planning or have shared management bodies. B/C. Habitats Committee and Ornis Committee. D. Expert Group on the Management of Natura 2000.Working Group on Green Infrastructure (set up by EC).Dedicated section of the Circa website on Green Infrastructure.
Proposed first steps	

Actions	**Steps**	**Actors**	**Timeline**
Set up international management working groups for integrated conservation and management planning for specific cross border connected sites	*Systematic* approach to x border sites – develop a plan for cooperation on these sites. *Ad hoc* - Sit together on individual sites, form a steering group and try to find funding for specific projects. Issue – different MS have different levels of funding. Transborder collaboration entity – for equal investment of funding. LIFE+? "European Nature Park" status – one site, one designation, one management plan. Establish legal status for agreement – not always necessary? (e.g. Waddenzee trilateral agreement – DK, DE, NL since 1999; part of OSPAR)	Member states with x boundary sites	On-going – collaboration should be over long term
Set up a working group/groups to set up biogeographical level conservation objectives and agree on MS contributions for different habitats and species to reach FCS	Article 17 reports will provide a basis. Calibration meetings/expert exchange to agree common standards for FCS. Opportunity from current round of Art. 17 reporting? Focus on where there is a need to have an increased effort in	X Boundary MS.	Spring 2013

	certain places (re FCS) and see where it can be reached. Issue: is there a common agreement on what FCS is between countries? Has been left to individual MS. 'Inspector' to provide common standards.		
Joint monitoring schemes and databases (cross border and at site level)	Differentiate between surveillance, site quality, integrity monitoring, etc. Whatever the monitoring it should be consistent between countries. Establish implementable scientific protocols across boundaries between MS. Has to be practical and easy to deliver (experience based). Could flow from calibration meetings – can talk about common standards for monitoring and sharing of data. Establish a single MS-shared monitoring scheme for each site. Issue around getting permissions for site visits from multiple owners, etc. But should be sorted within countries.	X Boundary MS. Scientific institutes and researchers – in association wit site managers	Spring 2013
Set up international management working groups for exchange and review of procedures for appropriate assessments for economic developments	Responsibility of the project sponsor to do the assessment for the whole site (including across borders). Different approaches by MS can be a cause for tension – ultimately a political issue. Talk to each other and calibrate procedures. Trilateral discussions (e.g. Commission, BE and NL). Form of adjudication – what is acceptable, how can things be done. Bilateral discussion (e.g. UK and NL on the Dogger Bank to discuss wind farm developments). Procedures and assessments available on MS websites.	Site by site basis. Relevant MS (and Commission where adjudication is required).	Ad hoc – when necessary.
Arrange national financial schemes to enable cross boundary cooperation especially to enable cross border planning and management of Natura 2000 sites	Ensure specific considerations for trans border sites in the PAFs (should be in both MS PAFs – e.g. N Ireland and Republic of Ireland). Already have x5 LIFE+ projects in MS to work up PAFs and test the required content – as a lead in to the development of integrated projects. Also use existing mechanisms; Interreg offers current possibilities for collaboration between countries (don't need to wait for PAFs). New opportunities for financing; e.g. agreements between NL and BE for x border water policy. Should be specific pilots designated for those new opportunities. Need to overcome language barriers (sometimes even in the same countries)	The authors of the PAFs in MS need to ensure that they are integrating with their neighbours	During drafting process – December 2012 for first PAFs

Improve use of existing EU scheme for Natura 2000 management e.g. territorial cohesion programme	Also use existing mechanisms; Interreg offers current possibilities for collaboration between countries (don't need to wait for PAFs). For using EU funds other than LIFE there are bigger opportunities to use that money better. Reference to Natura 2000 must be included in the operational programmes of the MS. Terms of Partnership Agreements (between Commission and MS) – have to include reference to the PAFs, need to pick up x boundary issues. Need to work to ensure a better understanding of Natura 2000 across the board; and positively engage with appropriate ministry and agency officials to get the right level of reference to Natura 2000	MS & Commission	2013 Now - completion by 2013-14
Organise high level government meeting on development of green infrastructure and Natura 2000 in the Atlantic region EU level, also in the face of climate change	Issue: to achieve FCS for Annex 1 habitats and Annex 2 & 4 species measures may have to be taken outside Natura 2000. Article 10. Target 2 of the 2020 Biodiversity Strategy. Green Infrastructure (GI - green paper) will come out soon. Use GI strategy as basis for setting up a high level meeting. Talk in other meetings – e.g. nature directors meeting; item on the agendas Include GI in the FCS assessment process; and then into management plans and development of objectives to take into account climate change adaptation and connectivity. At biogeographical level/ between countries. Codes of conduct (e.g. NL)	MS experts (objectives) Implementation at national level EEA/ETC Providing help and guidance in their reports Meeting organisers	On-going On-going Current Art 17 round

Annex: List of participants to the Atlantic seminar

First name	Last name	Organisation	Habitat group	Crosscutting issue
Werner	Ackermann	PAN Planungsbüro für angewandten Naturschutz GmbH	Grasslands	Knowledge transfer
Annemiek	Adams	Ministry of Agricultural Affairs	Grasslands	Knowledge transfer
Francisco	Alvarez	Basque Society for Biology Conservation - Naturtzaindia	Lakes and Rivers	Knowledge transfer
JOSE A.	ATAURI	EUROPARC-SPAIN	Lakes and Rivers	Knowledge transfer
Joost	Backx	Rijkswaterstaat	Lakes and Rivers	Cross-boundary issues
Dick	Bal	Ministry of Economic Affairs, Natura 2000 Department	Heaths and Bogs	Knowledge transfer
Jessamy	Battersby	Joint Nature Conservation Committee (JNCC)	Heaths and Bogs	Policy integration
Annika	Bente	Federal Ministry for the Environment, Natura Conservation and Nuclear Safety	Coastal and Dunes	Cross-boundary issues
Andy	Bleasdale	National Parks and Wildife Service, Dept of Arts, Heritage and the Gaeltacht	Grasslands	Policy integration
Winnie Heltborg	Brøndum	Knowlegde Center for Agriculture, The Danish Agriculture & Food Council	Grasslands	Stakeholder involvement and communication
Marie-Alice	Budniok	European Landowners Organization + Natura 2000 Users Forum	Heaths and Bogs	Policy integration
Anne	Burrill	European Commission - LIFE Nature unit of DG Environment	Coastal and Dunes	Policy integration
Roger	Catchpole	Aspen International	Heaths and Bogs	Policy integration
Pascal	CAVALLIN	Conservatoire du Littoral	Coastal and Dunes	Policy integration
Emmanuelle	CHAMPION	LPO	Lakes and Rivers	Cross-boundary issues
Geert	De Blust	Research Institute for Nature and Forest, INBO	Heaths and Bogs	Knowledge transfer
Ben	Delbaere	ECNC	Lakes and Rivers	Knowledge transfer
Joost	Dewyspelaere	Natuurpunt	Heaths and Bogs	Policy integration
Lars	Dinesen	Danish Nature Agency	Coastal and Dunes	Policy integration
Padraic	Divilly	The Irish Farmers Association	Grasslands	Stakeholder involvement and communication
Steven	Dora	The Scottish Government	Heaths and Bogs	Policy integration
Caitriona	Douglas	National Parks and Wildlife Service	Heaths and Bogs	Knowledge transfer
Karin	Dubsky	Coastwatch	Coastal and Dunes	Stakeholder involvement and communication
Douglas	Evans	European Topic Centre on Biological Diversity	Heaths and Bogs	Knowledge transfer
Jennifer	Fulton	Ulster Wildlife Trust	Grasslands	Knowledge transfer
Karen	Gaynor	National Parks and Wildlife Service, Departmetn of Arts, Heritage and the Gaeltacht	Coastal and Dunes	Knowledge transfer
Tony	Gent	Amphibian & Reptile Conservation	Heaths and Bogs	Policy integration
Jean-Louis	HERRIER	Agency for Nature and Forests, Flemish Government	Coastal and Dunes	Cross-boundary issues
Susanne Brusvang	Hjuler	The Danish Agrifish Agency, Ministry of Food, Agriculture and Fisheries	Grasslands	Policy integration
Danny	Hooftman	Centre for Ecology and Hydrology	Grasslands	Cross-boundary issues
Rebecca	Jeffrey	National Parks and Wildlife Service	Lakes and Rivers	Stakeholder involvement and communication
Bjarke Huus	Jensen	Danish Nature Agency	Heaths and Bogs	Knowledge transfer

First name	Last name	Organisation	Habitat group	Crosscutting issue
Jan Steinbring	Jensen	Danish Nature Agency	Lakes and Rivers	Cross-boundary issues
Lawrence	Jones-Walters	ECNC	Coastal and Dunes	Cross-boundary issues
Hendrien	Kakebeeke	Ministerie Economische Zaken	Coastal and Dunes	Policy integration
Rory	Keatinge	The Environmental Pillar	Lakes and Rivers	Stakeholder involvement and communication
Ctibor	Kocman	EC	Lakes and Rivers	Knowledge transfer
François	Kremer	European Commision	Coastal and Dunes	Stakeholder involvement and communication
Mirjam	Kuzee	Regional Government of Zeeland	Coastal and Dunes	Policy integration
Bo Boysen	Larsen	Holstebro Kommune, Natur & Miljø, Nupark 51, DK-7500 Holstebro, Denmark	Heaths and Bogs	Stakeholder involvement and communication
Chris	Mainstone	Natural England	Lakes and Rivers	Policy integration
Els	Martens	Agency for Nature & Forests, Flemish Government	Lakes and Rivers	Cross-boundary issues
Neil	McIntosh	Eurosite	Coastal and Dunes	Cross-boundary issues
Wim	Mertens	Agency for Nature and Forest	Coastal and Dunes	Cross-boundary issues
Christian	Michalczyk	Behörde für Stadtentwicklung und Umwelt, Hamburg	Coastal and Dunes	Stakeholder involvement and communication
Greg	Mudge	Scottish Natural Heritage	Heaths and Bogs	Policy integration
Bernd-Ulrich	Netz	Landesamt für Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein	Coastal and Dunes	Policy integration
Frank	Neumann	for Infrastructure, Environment and Innovation	Lakes and Rivers	Policy integration
Micheal	O'BRIAIN	European Commission - DG Environment	Heaths and Bogs	Policy integration
Wendelina Saskia	Olivier	EZ		
Wout	Opdekamp	Natuurpunt	Grasslands	Knowledge transfer
Richard	Peters	ARCADIS Belgium	Grasslands	Knowledge transfer
Ger	Peuter, de	Natura 2000	Coastal and Dunes	Policy integration
Howard	Platt	Northern Ireland Environment Agency	Coastal and Dunes	Cross-boundary issues
Renaud	Puissauve	Service du Patrimoine Naturel (Muséum national d'Histoire naturelle)	Heaths and Bogs	Knowledge transfer
Lucile	RAMBAUD	Ministry of ecology, sustainable development and energy	Heaths and Bogs	Policy integration
Markus	Richter	NABU Niedersachsen	Heaths and Bogs	Knowledge transfer
Bas	Roels	Ministry of Economic Affairs	Coastal and Dunes	Policy integration
David	Scallan	National Association of Regional Game Councils	Heaths and Bogs	Stakeholder involvement and communication
Joop	Schaminée	Alterra	Grasslands	Knowledge transfer
Ralf	Schlüter	State Agency for Nature, Environment and Consumer Protection of North Rhine Westphalia (LANUV)	Grasslands	Policy integration
Nirmala	Séon-Massin	Onema (the French national agency for water and aquatic environments)	Lakes and Rivers	Policy integration
Jan	Sherry	Countryside Council for Wales	Heaths and Bogs	Knowledge transfer
Mark	Snethlage	ECNC-European Centre for Nature Conservation	Grasslands	Stakeholder involvement and communication
Eric	Sommen, van der	Minsterie EZ		Stakeholder involvement and communication
Gijs	Steur	ECNC	Grasslands	Stakeholder involvement and communication

First name	Last name	Organisation	Habitat group	Crosscutting issue
Jacques	TROUVILLIEZ	Ministry of ecology	Grasslands	Stakeholder involvement and communication
Kees	van Berkel	PDN	Lakes and Rivers	Cross-boundary issues
Christina Maria	Van der Valk	Ministerie van Economische Zaken		
Jan Willem	Van der Vegte	Province of Gelderland	Lakes and Rivers	Knowledge transfer
Gunther	Van Ryckegem	Research Institute for Nature and Forest	Coastal and Dunes	Cross-boundary issues
Wilbert	van Vliet	European Habitats Forum	Coastal and Dunes	Cross-boundary issues
Valerie	Vandenabeele	Hubertus Vereniging Vlaanderen - Landelijk Vlaanderen	Grasslands	Stakeholder involvement and communication
Ward	Verhaeghe	Agency for Nature & Forests (Flanders region - Belgium)	Grasslands	Policy integration
Albert	Vliegenthart	Dutch Butterfly Conservation (De Vlinderstichting)	Grasslands	Knowledge transfer
Olaf	von Drachenfels	Lower Saxony Water Management, Coastal Defense and Nature Conservation Agency	Grasslands	Knowledge transfer
Lasse	Werling	the Nature Agency, Danish Ministry of Environment	Grasslands	Stakeholder involvement and communication
Lionel	Wibail	Public Service of Wallonia	Grasslands	Knowledge transfer
Wim	Wiersinga	Bosschap	Coastal and Dunes	Knowledge transfer
Mark	Wilmot	Ministry of Economic Affairs	Coastal and Dunes	Stakeholder involvement and communication
Titia	Zonneveld	Natuurmonumenten	Grasslands	Cross-boundary issues