



Ponderful

PONDS FOR CLIMATE



Deliverable D1.2

Task 1.3 by ISARA

Analysis of social aspects, ecosystem services and perception
of cultural values of ponds

Pond Ecosystems for Resilient Future
Landscapes in a Changing Climate



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Executive Summary

The work presented in this deliverable has been conducted within the Horizon 2020 project PONDERFUL funded by the European Commission. The mission of this research project is to address the role of pondscales (i.e. landscapes of ponds) in providing Nature's Contribution to People (NCP) - including social and economic benefits - and to promote greater implementation of pondscales as Nature-based Solution (NBS) in order to mitigate or adapt to the current trends of environmental deterioration. Ponds are the most numerous lentic water bodies and have a crucial contribution to aquatic biodiversity, though they are largely neglected in water- and nature-related national and European policies and strategies. This is problematic, as ponds are exposed to the same threats as larger water bodies and are particularly vulnerable to climate change.

This document presents the results of a survey carried out between 2021 and 2023 on the perceptions of inhabitants and stakeholders, with field studies in six countries in Europe, as well as Turkey and Uruguay. Special attention was paid to 17 pond landscapes (named pondscales) to understand how inhabitants and stakeholders relate to pondscape DEMO-sites in PONDERFUL. Different questionnaires were created and a series of workshops was conducted to identify their preferences and expectations of the pondscales near them. The subjects covered include the participants' proximity to the pondscape, their awareness regarding the knowledge about, and an overall assessment of, the site(s). We collected 108 exploitable answers from stakeholders and 590 from inhabitants.

As demonstrated in our study, there is evidence that pondscales are widely valued by the inhabitants and stakeholders because of their benefits for quality of life and for biodiversity. They are life areas, also perceived as safe places. There is evidence that pondscales are widely valued by the inhabitants and stakeholders because of their benefits for quality of life and biodiversity. Stakeholders gave almost always higher ratings than inhabitants. Their professional profile of environmental manager/planner or their degrees in environmental studies might help explain this difference. A wide consensus was found on a range of issues as the environmental condition of pondscales and the contributions of pondscales.

We would like to emphasise specifically the convergence of views concerning the NCPs, the threats and the NBS measures. The comparison between stakeholders and inhabitants show similar results with a clear NCP top-3: 'maintenance of habitats and creation', 'physical and psychological experiences' and 'maintenance of options' (i.e. potential opportunity offered by nature to ensure resilience in the future). The biodiversity established in these pondscales is highly valued by all the stakeholders and the general public, who also expressed their importance for the conservation and protection of threatened species. Social, cultural and recreational activities are also beneficial and offer great diversity (hiking, wildlife watching, relaxation, cycling, education purpose, workplace) to promote wellness and integration to the community. By supporting identities, promoting ponds and pondscales therefore enhances understanding of the environmental change and social cohesion as places of meeting and environmental education. Some perceptions of all NCPs are more prominent than others amongst the DEMO-sites: as example we can mention Uruguay and Turkey with highest scores to 'food and feed' and 'regulation of water quantity'. The value of such NCPs is context-dependent of the local uses of each pondscape.

There are similar threats identified by stakeholders and inhabitants. Interestingly, there is only a small number of substantial differences between the assessment of the same pondscape by inhabitants and stakeholders. Threat perception depends on the environmental condition, the land-use and the water uses. Results are consistent and research evidence suggests that 'climate change'

and ‘pollution’ are clearly the most important threats all pondscapes combined. The situation is nuanced from pondscape to pondscape: in Turkey and Uruguay, the stakeholders are much more concerned with high average scores whereas the reverse is true in Switzerland, England and Spain. By detailing the threats, we identified the effects on ‘water quantity’, ‘water quality’ and ‘biodiversity’ as the one with the most worrying ratings. The respondents from Germany, Belgium, Turkey and Uruguay are particularly concerned about the water quantity. Respondents from Uruguay and Turkey show also great concern about water quality.

Except for 5 pondscapes (Rhône Verbois in Switzerland, in Germany, Tommelen and Pikhakendonk in Belgium, Pinkhill Meadows in UK), there is a difference of perception between stakeholders and the general public about the changes occurred the last decade. All pondscapes combined, the changes highlighted are more negative than positive. The negative changes the most frequently cited are “more frequent drying of ponds”, “lower pond water level”, “more rubbish” and “degradation of water quality”. Therefore, the threats perception is consistent with the observed changes in the pondscapes by people and stakeholders.

As regards the various ways of addressing the problems identified, the perceptions on NBS are quite similar for a large majority of pondscapes. The fact that stakeholder and inhabitant ideas about NBS are similar is not surprising given the shared understanding of the pondscapes that we depicted previously. The most appropriate NBS measures selected are “restoration”, “connectivity”, “maintenance of biodiversity” and “improving the water quality”. The level of intervention is perceived as moderate, even if NBS with higher level of action like “creation of ponds” are mentioned in some pondscapes. For the challenge of water quantity, respondents from the Belgian, German, Turkish and Uruguayan pondscapes selected other options as “increasing water volume” and “limitation/abandonment of certain uses” with action both on the supply and demand of water. In light of this, conservation and maintenance actions should be taken to ensure that these pondscapes continue to play a key role in biodiversity conservation and improving people's lives with recreational activities.

The environmental changes observed, the condition of the pondscapes and the level of existing threats give rise to a series of challenges and represent the pivotal moment of the pondscape management. With the help of our partners in the PONDERFUL project, our social data will be useful to develop an analysis of synergies and trade-offs in forthcoming pondscape management and policies. In the light of the discussion and the results, we can infer some points of leverage for facilitating or extending the implementation of NBS measures:

- The provision of focused technical support, as well as supporting broad-based knowledge exchange collaborations, should be available to assist managers in implementing promising strategies to promote enhanced implementation of NBS measures.
- Positive NBS impacts in some pondscapes have to be shared as “success stories”: demonstrating the potential for NBS measures can be a powerful incentive for other pondscapes’ managers to adopt these measures as “best practices”. Demonstration projects can showcase the benefits of sustainable practices and help to build trust and confidence in these approaches. Publish information in a way that enables remote access is also important. This work is developed in WP4 work with a handbook and leaflets disseminated to people and stakeholders.
- Stakeholders call for better ‘networking’ (facilitating knowledge exchange) across multiple levels (e.g. dissemination to the general public and local actors), meso-level (e.g. regional actors and civil society) and macro-level (e.g. legal and regulatory systems) that together shape management decisions. The idea is to create an environment that is conducive to learning and laying the foundations for linking visitors, inhabitants, civil society, managers and decision-makers at all levels.
- Educational and dissemination campaigns are needed to raise awareness of the value of pondscapes (functional definition, contributions, uses, species, threats).

1. Introduction

1.1. General objectives of the research project

The PONDERFUL project focuses on the role of ponds and pondscales (networks of ponds) in the delivery of different Nature's Contribution to People (NCP). Particular attention is paid to pondscales' as Nature-Based Solutions (NBS), their role in climate mitigation and adaptation, as well as in biodiversity conservation (Hill et al., 2021). The mission of the project is to increase the understanding of the role of pondscales in providing NCPs and to promote greater implementation of pondscales in order to mitigate or adapt to the current trends of environmental deterioration (Cuenca-Cambronero, 2023).

Ponds are the most numerous water bodies and have a special contribution regarding the aquatic biodiversity, e.g. supporting 70% of the freshwater species pool in European landscapes (Williams et al., 2004; Davies et al., 2008). In spite of their great ecological importance, ponds are largely neglected (Mozley, 1944) in water- and nature-related national and EU policies and strategies (Hill et al., 2018). This is problematic, as ponds are exposed to the same threats as larger bodies of water (e.g. land and water use, pollution, invasive species) and may be particularly vulnerable to climate change, being less buffered to temperature extremes and changes in hydrology (Pilmorat et al., 2013; Abney et al., 2019). Several other factors are responsible for the threats to ponds such as urbanization, industrialization, and most strongly agriculture intensification and its fertilizers. Management is therefore needed to conserve existing ponds and promote the creation of new ones, adapted both for social, economic and ecological contributions (Cérégino et al., 2014). It is important to investigate the relationships between pondscales' biodiversity and NCPs delivery, particularly as the supply of these contributions are likely to dramatically change with the ecological status of ponds and ongoing climate change.

PONDERFUL will quantify the relations between biodiversity, ecosystem state, NCP and climate change, develop scenarios for climate mitigation and adaptation using pondscales, and test the implemented pondscales-based solutions using DEMONstration sites (DEMO-sites) co-developed with stakeholders. Ultimately, PONDERFUL will develop practical tools for creating, restoring, and managing pondscales.

1.2. Work Package 1 (WP1)

Ponds and freshwater bodies are affected by socio-economic factors, including public policy, economic and financial incentives, as well as social perceptions of ponds. These socio-economic factors can drive implementation and protection of pondscales, or place barriers in their way and drive their deterioration or destruction. WP1 aims to understand how policy, finance, economics, and public perceptions affect ponds. The objective is to identify how these levers can be used to increase the implementation of high-value pondscales as Nature-based Solutions to many societal challenges, including by mitigating or adapting to climate change, and providing biodiversity protection.

The overarching aim of WP1 of the PONDERFUL project is to develop a multidimensional analysis that supports the effective, efficient, and equitable implementation of pondscales as NBS for climate change mitigation and adaptation, biodiversity conservation.

The overarching aim and specific tasks of WP1 are captured in figure 1.

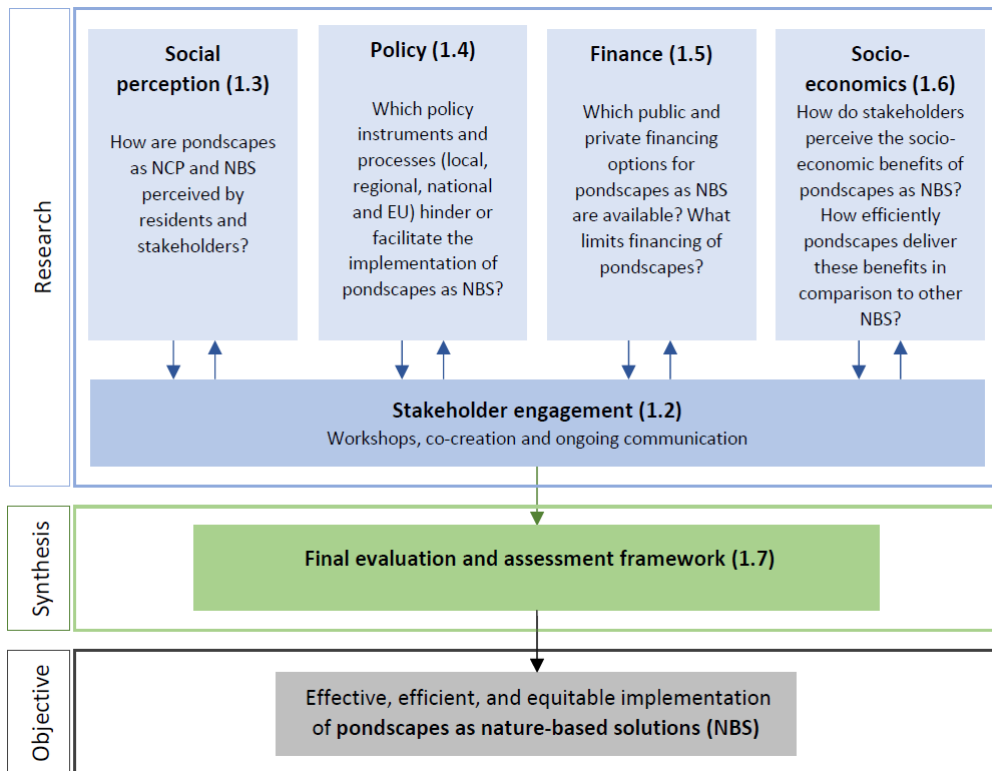


Figure 1: Tasks and overarching aim of WP1 of PONDERFUL (Deliverable D1.1 Evaluation and implementation framework protocol for policy, socio-economic and financial analysis of pond nature-based solutions)

The objectives of WP1 are summarised below, and are to:

- Organise and co-design a multi-actor approach for the project's stakeholder interaction in collaboration with all WPs, with stakeholder mapping, organisation of stakeholder workshops and other stakeholder communication;
- Develop the evaluation and implementation framework for pondscape NBS to be applied and implemented in all DEMO-sites;
- Explore the social perception of ponds and their importance for delivery of NCP;
- Analyse pond policy context at multiple governance level (from EU to DEMO-sites) to identify enabling factors and barriers for implementing pondscape NBS, as well as instruments to sustainably finance pondscape NBS
- Analyse the economic context of ponds focusing on the economic assessment of risks associated with ponds NBS.

2. Introduction of task 1.3 : Analysis of social aspects, ecosystem services, contributions and perceptions of cultural values of ponds

2.1. Overall mission

The research question deals with the role of social and geographic aspects in the management of the pondscares (Boothby, 1997) selected in the PONDERFUL project. The objective is to examine how local population and the stakeholders perceive the purpose and the environmental condition of these pondscares. Local knowledge (Mathé et al., 2015) and perceptions, as “*mechanisms and processes by which an organism gains knowledge on its environment and the world on the basis of information processed by its senses*” (Bonnet et al., 1989), are important dimensions (Blayac et al., 2014) and are considered as key issues for the sustainable planning and management of ponds(cares). Our study addresses how resident and stakeholder perceptions link to the biophysical properties and functions of the ponds and pondscares. The overlap between local actors’ needs and perception of nature is considered important to the successful completion of this study by comparing perspectives on the ecosystem values given to different types of DEMO-sites of PONDERFUL.

A better knowledge of expectations of these actors may facilitate incentive mechanisms based on their endogenous motivations to preserve or improve the conditions of pondscares. This implies that the study of the perceptions is a necessary step to understanding all the reasons underlying the interest to conserve or restore the pondscares. Gathering the opinions and perceptions enhances the effectiveness and legitimacy of environmental restoration, taking account of the diversity of viewpoints in order to identify all the stakes and issues. Identification of the variability of benefits provided by pondscares is helpful for improved development, implementation, and management of pondscares.

We assumed that the large part of the perceptions could be in favour of the conservation of pondscares. Several studies show that water is an aspect of the environment that is highly valued by people, bringing psychological benefits (Finlayson, 2005), as well as cultural services (Oertli and Parris, 2019). However, it is possible to collect some contrasting perceptions of pondscares as spaces intended either exclusively for human uses¹ or anthropogenic pressures. It is also interesting to bring to light concordance and divergences between the public perception of the quality of ponds and their ecological richness (Mitroi et al., 2022). It is essential for researchers to understand the local context of each DEMO-site and their constraints to improve ecological knowledge, familiarity, and appreciation of nature. Without all this information, it would be much more difficult to develop effective policy and implement measures to make pondscares better for local actors. In the face of growing societal demand for information and involvement, the analysis of perception could help the incorporation of social and geographic perspectives into account (Castro et al., 2014; Quintas-Soriano et al., 2018) by proposing strategic ecological intervention measures. The identification of values of ponds and perceptions provides the basis for prioritising the most important social and environmental stakes with regard to local actors (Lopez-Rodriguez et al., 2015), as perceptions of and preferences depend on social and cultural context. For example, meeting the specific needs of local actors could contribute to cultural heritage, pond restoration

¹ We have in mind in particular to the ponds for agricultural purposes (water for animals, fish ponds...) or ponds configuration for hydropower plant.

or biodiversity conservation, educational intervention (such as signposting, workshops and games), or prevent area degradation.

At the start of the PONDERFUL project, no information was yet available about the different DEMO-sites. It was therefore not known how local actors felt in relation to ponds and pondsapes, what they valued about them (Jarvie, 2017), and what benefits and contributions from pondsapes were most important to them. This perception study plays a major part in the acknowledgment of the contributions of ponds and pondsapes. Our survey describes and compares perceptions within and across DEMO-sites, and explores how perceptions vary among local inhabitants and among stakeholder groups. Based on data analysis, we have established a typology of social perceptions of pondsapes.

We have also paid particular attention to gender mainstreaming. As we may not be able to control the gender of the stakeholders and the general public who responded to the surveys, we have tried to incorporate this criterion in the analysis of the survey results for both gender equity and epistemic reasons (Packett et al., 2020). The most direct way of highlighting the differences between the male and female perceptions of pondsapes is to compare their answers. We drew inspiration from the "Resource guide: Mainstreaming Gender in Water Management" (2006). In practice, the questionnaire completed by the general public has been most extensively studied due to the greater number of respondents. The stakeholder sample is limited and the great deal of difficulty in striking a balance between the genders shows the limitation of our analysis with the data from stakeholders.

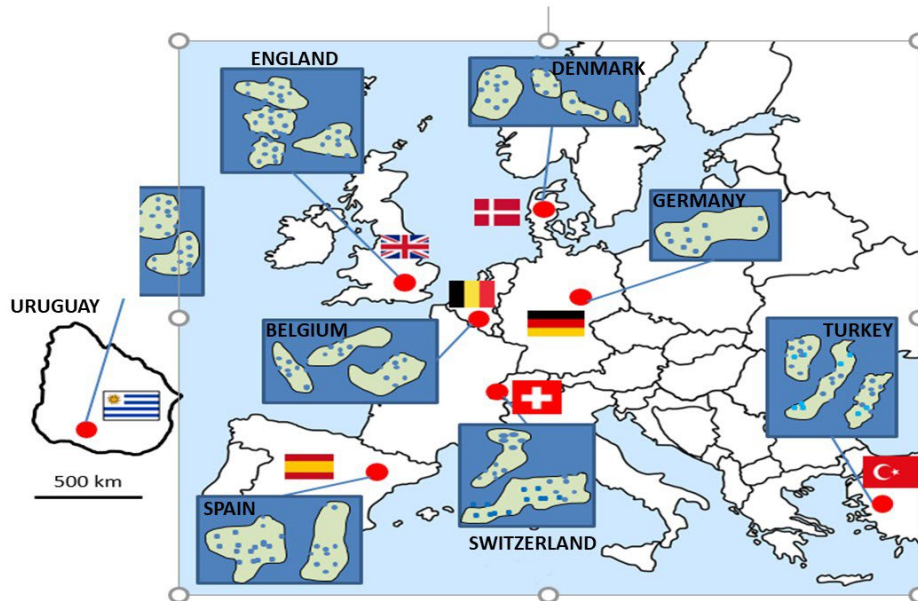
In the result section, we present results by DEMO-site separately and the overall results. Providing the data for each pondscape and DEMO-site is important for the readers (European Union, researchers, stakeholders, local actors and general public) because of the right to access information and data transparency. Furthermore, the cross-analysis of data would be not understandable without the results from each pondscape.

2.2. Short presentation of the pondscales

Table 1: summary of the pondscales studied

Name of the pondscape	DEMO-site	Bioclimatic zone	Land use	area	Nb of ponds	Pond sizes (m ²)	Pond depth (m)	Pond age
Bois de Jussy	Switzerland	Continental	Woodland	7 km ²	25	100 to 4000	0.4 to 2	5 to 50
Rhône Verbois			Grass/arable, partly urbanized	16 km ²	40	50 to 20000	0.4 to 4	5 to 50
Schöneiche	Germany	Continental	Agriculture	16 km ²	12	100 to 20000	0.1 to 0.5	10 to 10000
Dikkuyruk	Turkey	Central-Anatolian arid-cold steppe climate	Peri-urban	0,58 km ²	4	4000 to 80000	0,2 to 1,32	NA
Gölbasi				0.26 km ²	23	100 – 10.000 m ²	2 to 6	30
Imrahor				2,51 km ²	12	225 to 57000	2 to 6	NA
Pinkhill Meadows	England/UK	Atlantic	Floodplain	0.1 km ²	50-60	2.0 to 3000	0 to 2.5	up to 30
Water Friendly Farming (WFF)			Farmland	30 km ²	120	c.100 to 5000	0 to 2.5	up to 500 years
Albera	Catalonia/Spain	Mediterranean	Mediterranean scrub	25 km ²	23	450 to 62000	0.5 to 1.5	6 to hundreds of years
La Pletera			Coastal marshes	0.6 km ²	20	100 to 3600	0 to 4	3 to natural
Gete Vallei	Belgium	Atlantic	Grassland/arable land	>10 km ²	16	100-150	0.5 to 1	1- >100
Pikhakendonk			Grassland	0.1 km ²	12	100-150	0.5 to 1	1- >50
Tommelen			Nature reserve	0.12 km ²	22	100-150	0.5 to 1	76
Sierra de Caracoles	Uruguay	Subtropical/temperate humid	arable/ extensive grazing cattle	NA		400 to 5000	0.4 to 2	10+
La Pedrera								
Lystrup	Denmark	Continental	Suburban/arable	8 -30 km ²	14+	100 to 1500	0.4 to 2	5 to 100
Fyn			Pasture/arable	8-250 km ²	30+	100 to 1500	0.4 to 2	40 to 1000

The DEMO-site leaders were chosen to represent a diversity of the field studies in terms of bioclimatic zone (Continental, Mediterranean, Subtropical, Arid context, Atlantic), land use (arable, urban zone, grassland, nature reserve, scrub), surface area of the pondscales (less than 1 km² to 30km²) and pond age (from newly created to naturally occurring since thousands of years). Pond depth is relatively similar across the DEMO-sites, except for Turkey. These features have a direct effect on the relation of stakeholders and inhabitants to the ponds(scales) because the issues and challenges linked to them are different.



Map 1: DEMO-sites of PONDERFUL

The DEMO-sites are not representative of all the pondsapes of each country and around the world. Each one has a specific context (protected or with human-induced perturbation), urban, peri-urban or rural, temporary or permanent ponds, isolated or frequented areas.

2.3. Research approach

We used the concept of Nature's Contribution to People (NCP) proposed by Diaz et al. (2018) as experts of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. NCPs are all the contributions, both positive and negative, of living nature to people's quality of life. Many NCPs may be perceived as beneficial or detrimental depending on the cultural, socioeconomic, temporal, or spatial context. This notion considers the socio-cultural dimension, through the identification of all links between society and nature. The concept of "quality of life" was defined as follows: « *the achievement of a fulfilled human life, the criteria for which may vary greatly across different societies and groups within societies. It is a context-dependent state of individuals and human groups, comprising aspects such access to food, water, energy and livelihood security, and also health, good social relationships and equity, security, cultural identity, and freedom of choice and action* » (Pascual et al., 2017).

Diaz et al. proposed 18 different types of NCPs, of which not all are necessarily relevant to ponds. During the preparation of the project proposal (2018-2019), the list of 18 types of NCPs was therefore filtered according to their relevance for pondsapes, and reduced to a final list of 11 NCPs, selected to determine the values they provide and how they impact quality of life:

Table 2: List of the 11 types of NCPs selected for the assessment of pondscales in the framework of PONDERFUL

Regulation of environmental processes	Explanations
Habitat creation and maintenance	diverse habitats (shelter, nesting, breeding, refuge...) for numerous freshwater species such as aquatic plants, benthic invertebrates, amphibians, fish...
Pollination	Favourable habitats for beneficial insects, such as wild bees and syrphid flies, due to the surrounding vegetation and the water supply in the pond landscape.
Regulation of climate	Ponds can influence the microclimate by cooling or warming the surrounding air. Ponds also have the potential to sequester greenhouse gas and capture carbon through wetland vegetation
Regulation of water quantity, location and timing	A pond, being a water reservoir, can contain a certain level of stormwater and serve to reduce the amount of water delivered downstream
Regulation of water quality	Ponds can be important in purifying water against pollutants, by retaining them through algae, plants and other organisms present in the environment
Regulation of hazards and extreme events	prevent flooding during heavy rainfall events
Materials and assistance	
Food and feed	Fishponds, livestock watering...
Non-materials	
Physical and psychological experiences	Place open to the public and providing a great environment in which people can exercise and relax.
Learning and inspiration	People can learn and be inspired by contact with nature. This space can also be used and studied for educational programmes.
Supporting identities	Cultural heritage, local identity
Other	
Maintenance of options	Potential opportunities offered by nature to ensure resilience in the future

Previous studies on NCP (Christie et al., 2019; Martin-Lopez et al., 2019) have here been considered to determine the best approach to addressing the pondscales issues. An effort was also made to understand the differences between the notion of NCP and other notions as Ecosystem Services (Barnaud et al., 2014). We distinguish the contributions from Ecosystem Services (Peterson et al., 2018; Pires et al., 2020) by considering the proportion of potential benefit provided by pondscales. We consider the use of the NCP concept to provide a clear picture of the current situation in each pondscape and to produce an exhaustive inventory of existing expectations of local actors regarding the potential contributions in the future. Potential contributions describe how nature could impact people and their quality of life. On this qualitative dimension of contributions, it is important to emphasize the differences in identification of positive and negative contributions between the eight DEMO-sites in the achievement of the best possible quality of life.

Our study could provide an intermediate step toward determining priority of NBS' implementation (Dumitru, 2021) and valuing the role of pondscales for the quality of life. This perception analysis could make a genuine contribution by determination of quality-of-life indicators (that could contribute to WP4 work), facilitating also the implementation of the adaptive measures for tackling climate change. The survey findings will provide the foundation for choosing some relevant indicators to adapt NBS and pondscape management to the local social context. In designing the framework of the list of indicators in WP4, the main goal is to match NCP categories and NCP indicators. Our bottom-up approach assumed that the needs of the society are a pre-condition for the success of NBS.

To conduct this in-depth social study, a qualitative and quantitative approach was selected to inventorying the perceptions and the feedbacks on previous measures (first NBS' implementation during the last years). Applying an inter-site analysis method, data was collected through quantitative and qualitative research tools. Data collected from stakeholders (during the workshops and using a questionnaire) and from inhabitants (another questionnaire) compose the data base of this task 1.3. Analysis of data from individual DEMO-site and analysis across DEMO-site has been carried out.

2.4. Methodology

2.4.1. Survey to stakeholders and general public

We collected the perception of stakeholders and inhabitants using questionnaires including questions concerning preferential choice/ranking/rating (Likert scale)/written remarks and declarative statement of knowledge.

We developed and circulated the stakeholder questionnaire to give participants the opportunity to describe their perceptions and knowledge on the pondscares of each DEMO-site. The questionnaire was developed by the WP1 team and provided to each DEMO-site. The questionnaires were translated in each DEMO-site local language (English, French, Turkish, Danish, German, Spanish, Catalan), following which the DEMO-site leaders made it available to their respective stakeholders between March and December 2021. The subjects included in the questionnaire address the profile of the respondents (gender, level of education and subject area, type of stakeholder); the professional closeness with pondscares (frequency of visits, level of responsibility); the perception of changes over time; the general assessment of the pondscape (aesthetic scenery, environmental state, optimal characteristics of a pondscape, main risks); the perception on NCPs (role of the pondscape as a source of well-being) and the perception on NBS' (choices to limit risks, measures to implement). The questionnaire is attached to this report as annex n°2.

The questionnaire focused on the general public for all DEMO-sites took place between July 2021 and December 2022 through website links, QR codes, face-to-face interviews, and use of information panels. Before starting the interview, the research description, as well as statement of confidentiality and assurance of anonymity were provided verbally or in writing. The subjects of the inhabitant questionnaire addressed are the profile of the respondents (gender, age, type of job, background), the social and geographical closeness to the pondscares (regularity and frequency of on-the-spot visits, distance from home), the relation to nature and to the ponds (activities), the knowledge (origin, emblematic species), the perception of changes over time, the general assessment of the pondscape (aesthetic scenery, environmental condition, idealistic characteristics of a pondscape, main risks), the perception on NCPs (role of the pondscape as contribution to the life quality) and the perception on NBS (choices to limit risks, measures to implement). The questionnaire is attached to this report as annex n°1.

The completed questionnaires were manually entered into a LimeSurvey database (<http://www.limesurvey.org>) that we developed for this study. Statistical analyses were carried out in Excel, and in lesser extent, Jamovi (2.3.21).

Some bias may be introduced into the inhabitant sample. With the face-to-face and the sign boards, it is likely that the respondents include people already interested in pond(scape)s, as we targeted respondents who live near/within or use the pondscares. It should also be stressed that the representativity of the inhabitant sample was not a issue in terms of gender, income, geographical location or age group. Besides, as for any studies, it is quite possible that we asked questions on words (pondscape, contributions) and concepts (NCP and NBS) that are not part of the respondent vocabulary.

2.4.2. Stakeholder workshops

The second method for interaction was the organization of stakeholder workshops. The WP1 team organised workshops in each DEMO-site with help from the DEMO-site leaders and WP3. The aim was to understand stakeholders' diverse needs, as well as opportunities and threats for improved management. At the preparation stage, several meetings were held during March and April 2021 with WP3 and DEMO-site leaders to develop the content of the workshop. A detailed check-list for the workshop was prepared, and detailed discussions with DEMO-sites about their

workshop preparations took place, including discussions with ISARA, BU, TUM and ECOLOGIC partners about particular sessions of the workshop.

Workshops date:

<i>Switzerland:</i>	19 October 2021
<i>Germany:</i>	5 November 2021
<i>Turkey:</i>	16 November 2021
<i>England:</i>	18 (Pinkhill Meadows) and 19 November 2021 (WFF)
<i>Spain:</i>	18 November (Pletera) and 26 November 2021 (Albera)
<i>Belgium:</i>	2 December 2021
<i>Uruguay:</i>	13 December 2021
<i>Denmark:</i>	2 March 2022

All workshops were held face-to-face in the context of COVID-19 pandemic, apart from of the one in La Pletera (Spain, Catalonia), which took place through video conference.

The workshops were divided into sessions including those dedicated to task 1.3. ISARA wanted to collect as much qualitative data as possible from the stakeholders to gain a better understanding of the pondscares. Our intention was to put into perspective the results of the questionnaire and obtain explanations about some perceptions. We tried to obtain the largest diversity of stakeholders (gender, professional profile) when composing the stakeholder groups to elaborate a collective reflexion on the different issues of each pondscape. During the workshops, we strived for maximum transparency and allocated speaking time to address this issue.

We conducted three different exercises (the templates for them are attached to this report as annexes):

- Exercise #1: Scoreboard of NBS measures to get a better understanding of the history of management and the expectations of solutions.
- Exercise #2: Exercise of participatory mental map (developed with the colleagues from BU) as methodology (Felker-Kantor, 2021) to collect the spatial perceptions and social representations of the pondscares by stakeholders. The exercise of the participatory mapping exercise for each DEMO-site is an opportunity to spatialize the contributions of pondscares (NCP) selected by stakeholders with a comparison between the current situation and what is needed to be done in the future.
- Exercise #3: Table with a comparison between the NCPs selected by the stakeholders in the present and the future (through a group dynamic and a dialogue in justifying selection). The stakeholders were asked to clarify in present and in the future with appropriate justification for their selection. Each selected NCP corresponds to the intended purpose of pondscape or what areas should effort be invested to implement of conserve.

The workshop analysis has a number of methodological limitations:

- The stakeholders asked often during the workshops whether the answers should be given as personal or professional interest.
- Tension between individual perception (questionnaire) and collective perception (workshop) can be felt concerning the opinion on formation and the development of reflexive stance.
- The common framework of NCP raises some questions because the assessment on different categories of NCP requires combination of two elements: knowledge and perceptions. Opinion may be influenced by experience, knowledge, and perception. It's important to not get discourses mixed ups.

After the series of workshops, part of the results was communicated to all DEMO-sites to enable the provision of feedback to the stakeholders. A short summary of each workshop was drafted and distributed to the stakeholders in 2022. The aim was to provide them with information

concerning outcomes of the workshop, and to continue building good relationships and trust between researchers and stakeholders.

As a result, a continuity in the collection of data between both questionnaires and the implementation of the workshops can be observed. The figure below summarizes the overall logic of the exercises:

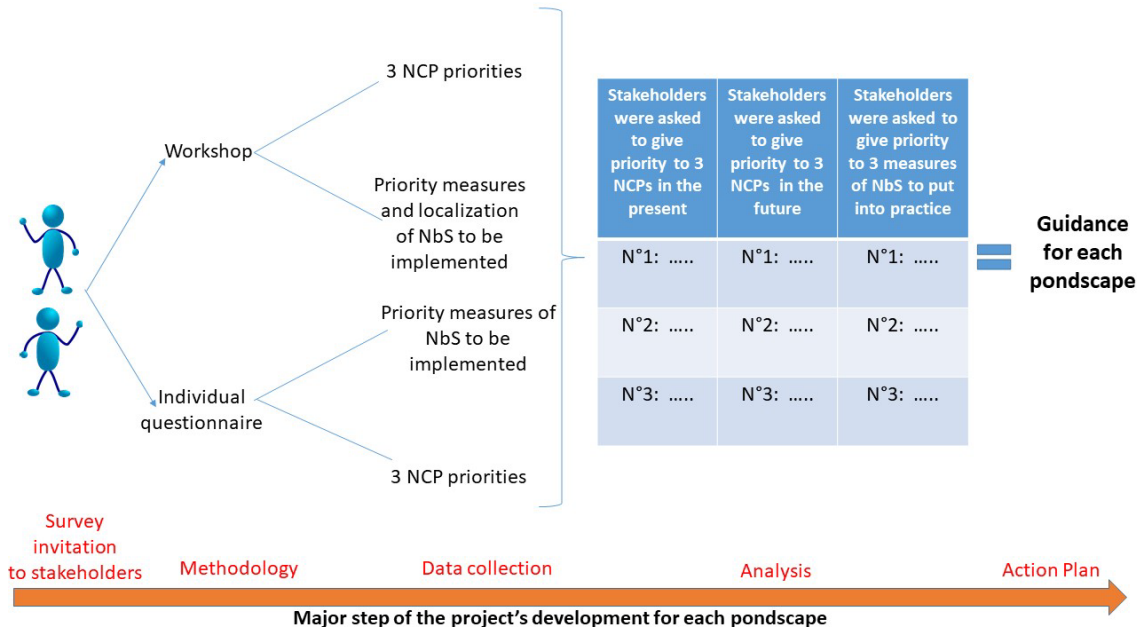


Figure 2: Process of making database complementary in our task 1.3.

All of the results presented in this report, expressed as percentage or rating, are given to the first decimal.

3. Results from the questionnaire to stakeholders

3.1. General intent

Our objective is to generate a general overview of the perceptions of the stakeholders from all the pondscapes. Each question group from the questionnaire has a specific purpose, including to:

- analyze the profiles of stakeholders;
- know more about their relationship to the ponds and pondscapes;
- understand their perceptions concerning the contributions of pondscapes, about pondscapes' environmental conditions, and the threats to which they are exposed;
- collect their preferences and expectations about the options of NBS measures.

Each pondscape is presented in order to highlight the different geographical, ecological and cultural settings/contexts, followed by a comparison between the pondscapes.

Note that, with the Likert scale, we consider a scale with where 1 is the less important rating and 5 is the highest rating. We are focused on perception: this does not imply that these perceptions correspond with field measurements.

3.2. Sample and profile of participants (including gender)

We have focused on the completed answers and have set aside the 73 uncompleted answers to reduce the impact of missing data. Ultimately, 108 completed answers were collected from the different stakeholders. No questionnaire was disseminated to stakeholders in the La Pletera pondscape given the on-going research initiative with a LIFE project.

Table 3: Respondents' profiles from the stakeholder questionnaire.

	Nb of answers	Gender	Dominant area education	Dominant type of actors	Prominent role	Sense of professional responsibility (rating 1-5)
Switzerland Bois de Jussy	7	2 women 5 men	n°1: biology n°2: environment management	n°1: consultancy n°2: civil society AND local authority	n°1: counselling n°2: technical support	Average score: 3,2
Switzerland Rhône Genevois	7	2 women 5 men	n°1: biology n°2: environment management	n°1: consultancy n°2: civil society AND local authority	n°1: Counselling	Average score: 3,8
Germany Schöneiche	5	2 women 3 men	n°1: administration	n°1: local authority	n°1: project facilitator n°2: counselling	Average score: 2,6
Turkey Dikkuyruk	8	3 women 5 men	n°1: engineering n°2: biology	n°1: civil society	project facilitator technical support	Average score: 4
Turkey Golbasi	9	3 women 6 men	n°1: engineering n°2: biology	n°1: civil society n°2: national authority	n°1: project facilitator n°2: technical support	Average score: 4,1
Turkey Imrahor	6	3 women 3 men	n°1: engineering n°2: biology	n°1: national authority	n°1: project facilitator n°2: technical support	Average score: 4,3
England Pinkhill	11	9 women 2 men	n°1: ecology n°2: biology	n°1: civil society n°2: national authority	n°1: project facilitator n°2: technical support	Average score: 3
England WFF	6	3 women 3 men	n°1: ecology	n°1: national authority n°2: civil society	n°1: project facilitator n°2: technical support	Average score: 3
Catalonia/Spain Albera	17	1 women 16 men	n°1: biology n°2: administration	n°1: regional authority n°2: local authority	n°1: technical support n°2: public policy plan.	Average score: 3,1
Belgium Gette Vallel	5	1 women 4 men	n°1: ecology n°2: biology	n°1: civil society	n°1: counselling	Average score: 3,6
Belgium Pikhakk.	5	1 women, 4 men	n°1: ecology	n°1: research	n°1: counselling	Average score: 3,4
Belgium Tommelen	7	3 women 4 men	n°1: ecology n°2: biology	n°1: civil society	n°1: counselling	Average score: 3
Uruguay Sierra Caracoles	4	1 women 3 men	n°1: agronomy n°2: ecology	n°1: research n°2: production	n°1: counselling n°2: production	Average score: 3,5
Uruguay La Pedrera	3	1 women 2 men	n°1: ecology	n°1: research n°2: environmental management	n°1: decision- maker n°2: production	Average score: 4,6
Denmark Lystrup	3	3 women	n°1: biology	n°1: national authority	technical support	Average score: 3,6
Denmark Fyn	5	3 women 2 men	n°1: biology n°2: humanities	n°1: national authority n°2: consultancy	technical support	Average score: 4

Social science research has provided evidence (Pearson et al., 2010; Dunlop, 2017) that the profile of policymakers and the relationship with some epistemic communities can shape local environmental policy. The analysis brought to light a number of underlying trends regarding the profile of the stakeholders. Generally, where a DEMO-site includes several pondscape, answers on these pondscape were obtained from the same stakeholders, except for England. The average of 6-7 stakeholders per pondscape is a good illustration of the difficulty in attracting participants. There are many reasons for this experience, and some of them are specific to the DEMO-site, to know:

- No exclusive legal responsibility (uncertain status of ownership) for the ponds in some countries with challenge of identifying the stakeholders;
- Limited knowledge of the pondscape from the stakeholders with reduced level of legitimacy;
- Some ponds and pondscape have small surface areas or are located in geographically remote areas;
- Ponds are sometimes without water (irregular or short hydroperiod) with no clear strategy to manage them.

These explanations could justify the potential low sense of stakeholder engagement in some DEMO-sites. Please refer to the table 3 to see the results on the sense of stakeholders based on a five-point scale where 1 means 'no engagement' and 5 means 'major engagement'. This gives an idea of the relevance of the answers and enables to know whether or not we have reached our target audience. The results vary according to the circumstances of each pondscape with a best average with La Pedrera in Uruguay (4,6) and the lowest in Germany (2,6). All pondscape combined, the difference between the strongest and weakest score (2-5) is an effective indicator of stakeholder involvement in pondscape management.

The data collected from stakeholders is disaggregated by gender. Of the 108 completed responses, 41 (37.96%) were from women. The analysis of these data shows that there are no significant differences between the responses of men and women in terms of their profile and sense of professional responsibility in the different countries. However, we would like to point out that there are some small differences between countries²:

- In Switzerland, the profile of the participating women (geography and environmental management) are different from those of men. On average, female respondents chose a slightly lower score than men for the sense of professional responsibility.
- In Germany, the profile of the women (ecology, agriculture) is different from those of men. They chose a slightly higher score than men for the sense of professional responsibility.
- In Turkey, on average of professional responsibility, women chose a slightly higher score to men for the sense of professional responsibility.
- In Spain, Belgium and England, the imbalance between women and men does not allow an analysis.
- In Uruguay, only women have chosen the role of decision-maker.
- In Denmark, on average, women have chosen a score slightly higher than men for the sense of professional responsibility.

The stakeholders see themselves mostly in the role of counselling, technical support and project facilitator. The profile of stakeholders varies from one DEMO-site to another, revealing the difficulty to reach out more effectively to all kind of target audience. It was rather rare to welcome a wide variety of stakeholders' profiles for each DEMO-site. We noted with regret that it was too hard to obtain responses from landowners, farmers, foresters, and decision-makers (as mayor or politicians).

² Even if there is a relatively small number of answers for each country.

3.3. Results by DEMO-site

3.3.1. Switzerland (7 stakeholders for each pondscape)

Table 4: results on the value placed on pondscape according to the stakeholders in Switzerland (average, score from 1-5)

	Relationship with nature	Relationship with pondscales	How important are the pondscales for your quality of life?
Pondscape Bois de Jussy	4,8	4,2	4,2
Pondscape Rhône Verbois	4,8	4,2	4,2

No difference exists between the two Swiss pondscales (Table 4) regarding the average scores for the stakeholders' relationship with nature, and with the pondscales; as well as with regard to pondscape importance for them. One reason may be that the stakeholders are the same because of the small distance between the pondscales near Geneva (15 kilometers from a bird's-eye perspective).

A specific question from the questionnaire was raised about the occurrence of significant changes in the pondscales during the last ten years. Regarding Bois de Jussy, few respondents decided to select the box 'yes' (Table 5).

Table 5: Results on the observed changes in the pondscales according to the stakeholders in Switzerland

	Number of 'yes'	Number of 'no'	Number of no-opinion	Type of 'change' selected
Pondscape Bois de Jussy	2	0	5	<u>Co-occurrence:</u> - arrival of new animal species (2 times) - increase of the number of ponds (2 times)
Pondscape Rhône Verbois	4	0	3	<u>No co-occurrence</u>

According to the stakeholders, there are significant changes that occurred only in Rhône Verbois. Regarding the existence of emblematic/key species, there is no consensus on their existence (table 6).

Table 6: Results on emblematic species according to the stakeholders in Switzerland

	Number of 'yes'	Number of 'no'	Name of the key species
Pondscape Bois de Jussy	4	3	<u>Co-occurrence</u> (2 times for each): European pond turtle (<i>Emys orbicularis</i>), Hydrocharis, Yellow-bellied toad (<i>Bombina variegata</i>)
Pondscape Rhône Verbois	5	7	<u>Co-occurrence</u> (2 times for each): Northern pike (<i>Esox lucius</i>), swallow, viperine snake (<i>Natrix maura</i>), castor fiber

Table 7: The scoring of the current NCPs according to the stakeholders in Switzerland (average, score from 1-5)

Type of NCP (present)	top-3	
	Jussy	Verbois
food and feed (productivity of food)	2,8	3,2
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	5	4,8
pollination (diversity of plants to be pollinated)	4	4
regulation of water quality (water purification)	4,4	4,1
regulation of water quantity (reservoir of irrigation, water supply)	3,1	3,2
regulation of hazards (flooding regulation, fire protection)	3,5	3,7
regulation of climate (carbon storage, maintaining an acceptable temperature)	3,8	4,2
physical and psychological experiences (calm, freshness, sociability, activities)	4,7	4,7
learning and inspiration (aesthetic, art, education, science)	4,5	4,5
supporting identities (cultural heritage, local identity)	4	4,4
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	4,1	4,1

The ranking of the NCPs is similar for both pondscapes, with ‘habitat creation and maintenance’, ‘physical and psychological experiences’ and ‘learning and inspiration’ as top choices (Table 7). This may be explained by the spatial proximity between the pondscapes with similar stakes and by the same respondents. Almost tied for third place, we can also observe the importance of the ‘regulation of water quality’ (regarding the pondscape Bois de Jussy) and ‘supporting identities’ (regarding Rhône Verbois).

Table 8: The future NCPs according to the stakeholders in Switzerland

Type of NCP for the future	Ranking	
	Bois de Jussy	Rhône Verbois
#1	habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	habitat creation and maintenance (preservation of desired species, for biodiversity conservation)
#2	regulation of climate (carbon storage, maintaining an acceptable temperature)	regulation of climate (carbon storage, maintaining an acceptable temperature)
#3	regulation of water quantity (reservoir of irrigation, water supply)	supporting identities (cultural heritage, local identity)

The ranking of the future NCPs is also similar for both pondscapes, with the exception for the third choice (Table 8). Comparing the ranking between the present and future, we would remark that the differences are clear. The non-material NCPs are not perceived in the same way and are viewed as less important in the future. Regarding the environmental condition, Bois de Jussy obtained a better score (4 of 5) than Rhône Verbois (3.5 of 5). The overriding criteria selected in determination of the environmental conditions are similar (Table 9).

Table 9: The criteria for determining the environmental condition according to the stakeholders in Switzerland

	Bois de Jussy	Rhône Verbois
#1	animal species composition	animal species composition
#2	plant species composition	plant species composition
#3	number of ponds	surface area

We also asked the stakeholders to choose the most important threats (Table 10).

Table 10: The threats assessment by stakeholders in Switzerland (average, score from 1-5)

	top-3	
	Bois de Jussy	Rhône Verbois
climate change	4,1	3,8
Deforestation	1,7	2,1
extraction of materials	1,5	2,7
intensive farming	2,2	2,2
invasive species	3,5	3,7
over-exploitation	2,2	3,1
Pollution	2,7	3,8
tourism (rubbish, trampling)	3,5	3,8
Urbanization	2,5	3,2

The ranking of the threats is also similar for both pondsapes, with the exception for the third choice. Also, stakeholders from both pondsapes ranked the impact of the threats in similar way? with a main impact on biodiversity (Table 11).

Table 11: The impact on threats assessment by stakeholders in Switzerland (average, score 1-5)

	top-3	
	Bois de Jussy	Rhône Verbois
impact on the productive purpose	3,4	3,7
impact on human health	2,7	2,7
impact on water quantity	3,5	3,5
impact on water quality	3,5	3,7
impact on biodiversity	4,4	4,1
impact on water temperature	3,8	4
impact on soil erosion	2,8	3
impact on the landscape	4,1	4,1
impact on my property	2,1	2,4

We asked stakeholders to choose some specific measures (NBS) to limit the threats and the impacts for each pondscape (Table 12). A similar result has been achieved with proposition of restoration measures and management for maintaining endangered species.

Table 12: Highest ranked Nbs measures according to the stakeholders in Switzerland

	Ranking	
	Bois de Jussy	Rhône Verbois
#1	restoration measures	restoration measures
#2	maintaining populations of endangered species	maintaining populations of endangered species
#3	developing public ownership	better/more environmental education

Stakeholders have come out strongly in support of a moderate level of intervention (Table 13).

Table 13: results on level of intervention according to the stakeholders in Switzerland

Level of intervention:	Bois de Jussy	Rhône Verbois
-Weak (better use)	Moderate	Moderate
-Moderate (restoration)		
-Strong (creation)		

3.3.2. Germany (5 completed answers for Schöneiche)

Here are some ratings from the German stakeholders.

Table 14: Results on the value placed on pondscape according to the stakeholders in Germany (average, score from 1-5)

Relationship with nature	Relationship with pondsapes	How important are the pondsapes for your quality of life?
4,8	3,6	4,2

The level of relation with pondscape is relatively low (Table 14).

A specific question from the questionnaire was raised about the occurrence of significant changes in the pondscape during the last ten years. All the respondents decided to select the box 'yes' with clear changes observed on the decrease of water surface (Table 15).

Table 15: The observed changes in the pondscape according to the stakeholders in Germany

	Number of 'yes'	Number of 'no'	Type of 'change' selected
Pondscape Schöneiche	5	0	<u>Co-occurrence:</u> - decrease of water surface (5 times) - more frequent drying ponds (5 times) - lower water level (4 times) - decrease of the number of ponds (4 times)

Table 16: The scoring of the current NCPs according to the stakeholders in Germany (average, score from 1-5)

Type of NCP	Top-3
food and feed (productivity of food)	2
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	4,6
pollination (diversity of plants to be pollinated)	4
regulation of water quality (water purification)	3
regulation of water quantity	3,2
regulation of hazards (flooding regulation, fire protection)	2,4
regulation of climate (carbon storage, maintaining an acceptable temperature)	3,2
physical and psychological experiences (calm, freshness, sociability, activities)	3,8
learning and inspiration (aesthetic, art, education, science)	2,2
supporting identities (cultural heritage, local identity)	2,6
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3,6

If biodiversity is the first NCP selected by stakeholders (Table 16), they ranked 'pollination' in #2: it is uncommon compared to the other PONDERFUL pondsapes. The third rank concerns 'physical and psychological experiences'.

Regarding the most important NCPs for the future (Table 17), the ranking with n°2 and n°3 is totally different from the result about the present. This reflects probably the anxiety about the future with the lack of water.

Table 17: The future NCPs according to the stakeholders in Germany

Type of NCP for the future	Ranking
#1	habitat creation and maintenance
#2	regulation of water quantity
#3	regulation of hazards

Stakeholders gave their evaluation on the environmental condition of this pondscape and the score is extremely low with 1,6 of 5. No table are provided to present this result.

The criteria selected in determining of the environmental conditions is clearly linked to the local concerns with the disappearance of the ponds due to the lack of water (Table 18). Therefore, this is in line with the results of the previous questions.

Table 18: The criteria for determining the environmental condition according to the stakeholders in Germany

Criteria selected (ranking)	Schöneiche
#1	water level
#2-3-4 (equal)	surface area – water temperature – water quality

Table 19: The threats assessment by stakeholders in Germany (average, score from 1-5)

Threats	Top-3
climate change	3,2
deforestation	2
extraction of materials (gravel, sediment, sand...)	1,8
intensive farming (trampling by cattle for example)	2,8
invasive species	3,6
over-exploitation (water abstraction, irrigation)	2,4
pollution	3
tourism (rubbish, damage to vegetation by trampling, disturbance of wildlife)	3,4
urbanization	3,8

The results about the threat assessment is somewhat surprising because the option ‘invasive species’ was not chosen during the question on the ‘environmental changes’ and ‘climate change’ obtained from the fourth ranking (Table 19).

Table 20: The impact of threats assessment by stakeholders in Germany (average, score 1-5)

Impacts of threats	Top-3
impact on the productive purpose	2
impact on human health	2,4
impact on water quantity	4
impact on water quality	3,4
impact on biodiversity	4,2
impact on water temperature	3
impact on soil erosion	2,4
impact on the landscape	3,6
impact on my property/my security	2,2

The results about the impacts of threats are consistent with the previous questions with a significant perceived risk of water scarcity and its impact on biodiversity and landscape.

For respondents, the first measure to tackle with threats is to encourage environmental education (Table 21).

Table 21: Highest ranked NbS measures according to the stakeholders in Germany

Specific measures should be taken to limit these threats and these impacts	ranking
#1	better/more environmental education
#2-3-4 (equal)	increasing water volume - maintaining populations of endangered species - pond restoration

The majority prefer a moderate level of intervention (Table 22).

Table 22: results on level of intervention according to the stakeholders in Germany

Level of intervention:	Priority given to :
-Weak (better use) -Moderate (restoration) -Strong (creation)	Moderate

3.3.3. Turkey (8 completed answers Dikkuyruk Havuzu, 9 completed answers Gölbaşı Düzlüğü, 6 completed answers İmrahor Vadisi)

The score for ‘relation with pondsapes’ is relatively low, more than one point below ‘relation with nature’ (Table 23).

Table 23: results on the value placed on pondscape according to the stakeholders in Turkey (average, score from 1-5)

	Relation with nature	Relation with pondsapes	How important are the pondsapes for your quality of life?
Dikkuyruk Havuzu	4,6	3,4	4
Gölbaşı Düzlüğü	4,6	3,3	4
İmrahor Vadisi	4,6	3,4	4,1

A specific question from the questionnaire was raised about the occurrence of significant changes in the pondsapes during the last ten years. A majority of respondents decided to select the box ‘yes’ (Table 24). The changes found are perceived negatively with the decrease of pondscape surface area, the deterioration of water quality, the lower pond water level and increased rubbish generation.

Table 24: Results on the observed changes in the pondsapes according to the stakeholders in Turkey

	Number of yes-answers	Number of no-answers	Number of no opinion	Type of ‘change’ selected
Dikkuyruk Havuzu	4	1	3	<u>Co-occurrence (4 times for each):</u> decrease of pondscape surface area, deterioration of water quality <u>Co-occurrence (3 times for each):</u> extinction of local animal species, more rubbish, lower pond water level, more frequent drying of ponds
Gölbaşı Düzlüğü	7	1	1	<u>Co-occurrence (5 times for each):</u> decrease of pondscape surface area, lower pond water level <u>Co-occurrence (4 times):</u> more rubbish <u>Co-occurrence (3 times for each):</u> extinction of local animal species, extinction of local plant species, deterioration of water quality, more frequent drying of ponds
İmrahor Vadisi	5	1	0	<u>Co-occurrence (3 times for each):</u> decrease of pondscape surface area, deterioration of water quality, lower pond water level, more rubbish

Key species are only identified in Dikkuyruk with the presence of white-headed duck (*Oxyura leucocephala*) and common pochard (*Aythya farina*) (Figure 25).

Table 25: Results on emblematic species according to the stakeholders in Turkey

	Number of yes/no	Name of the species
Dikkuyruk Havuzu	5/3	Co-occurrence (3 times): Dikkuyruk/ white-headed duck Co-occurrence (2 times): elmabaş patka/common pochard
Gölbaşı Düzlüğü	2/7	No co-occurrence
İmrahor Vadisi	2/4	No co-occurrence

All the NCPs obtained high scores with a tight margin. The options ‘food and feed’, ‘habitat creation and maintenance’, ‘regulation of water quality’ and ‘maintenance of options’ are at the top of the list.

Table 26: The scoring of the current NCPs according to the stakeholders in Turkey (average, score from 1-5)

Type of NCP for the present	Top-3		
	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
food and feed (productivity of food : fish, waterfowl, livestock)	4,6	4,5	4,8
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	4,8	4,7	4,8
pollination (diversity of plants to be pollinated)	3,4	4,2	4,8
regulation of water quality (water purification)	4,6	4,8	4,5
regulation of water quantity (reservoir of irrigation, water supply)	4,5	4,7	4,6
regulation of hazards (flooding regulation, fire protection)	4,1	4,5	4,6
regulation of climate (carbon storage, maintaining an acceptable temperature)	4,6	4,5	4,5
physical and psychological experiences (calm, freshness, sociability, activities)	4,3	4,1	4,5
learning and inspiration (aesthetic, art, education, science)	4,1	4	3,8
supporting identities (cultural heritage, local identity)	3,2	3,2	4
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	4,6	4,7	4,6

Table 27: The future NCPs according to the stakeholders in Turkey

NCPs for the future	Ranking NCP		
	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
#1	food and feed	habitat creation and maintenance	habitat creation and maintenance
#2	habitat creation and maintenance	food and feed	maintenance of options
#3	regulation of water quality	regulation of water quality	<i>Inconclusive result</i>

Regarding the future, the results are similar than the present (Table 27).

The perception on the environmental condition of these pondsapes is quite with low ratings with the exception of Dikkuyruk (Table 28).

Table 28: results on the environmental condition according to the stakeholders in Turkey (average, score from 1-5)

Perception of environmental condition of the pondscape	Average (1-5)		
	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
	3,8	2,8	2,7

Concerning the criteria in determining the environmental conditions, some elements are common between the three Turkish pondsapes: pollution, rubbish or decrease of the surface area (Table 29). These criteria reflect issues raised by stakeholders.

Table 29: The criteria for determining the environmental condition according to the stakeholders in Turkey

Criteria selected (ranking)	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
#1	animal species composition	pollution	pollution
#2	surface area	surface area	surface area
#3	water level	presence of rubbish	presence of rubbish

The most important threats between the three pondsapes are ‘climate change’, ‘pollution’ and ‘urbanization’ (Table 30).

Table 30: The threats assessment according by stakeholders in Turkey (average, score from 1-5)

Threats	top-3		
	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
climate change	4,5	4,2	4,4
deforestation	2,2	3,5	3,8
extraction of materials	3,2	3,5	4
intensive farming	3,8	3,3	3,8
invasive species	3,5	3,5	3,8
over-exploitation	4	3,6	4,8
pollution	4,3	4,3	4,8
tourism	4,2	3,6	4,4
urbanization	4,2	4,1	4,6

Analysis of the impact of the threats indicated, similarities are found between Dikkuyruk and Gölbaşı with the highest ratings to ‘impact on water quality’ and ‘impact on biodiversity’ (Table 31). For Imrahor Vadisi, ‘water quality’ and ‘human health’ are expected to be affected.

Table 31: The impact of threats assessment by stakeholders in Turkey (average, score from 1-5)

Impact of threats	top-3		
	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
impact on the productive purpose	3,6	3,3	3,4
impact on human health	3	3,1	4,6
impact on water quantity	3,3	4,1	4,6
impact on water quality	4,1	4,3	3,8
impact on biodiversity	4,1	4,3	4,4
impact on water temperature	3,8	4,1	3,6
impact on soil erosion	3,5	3,3	4,4
impact on the landscape	4,3	3,8	4,2
impact on my property/my security	3,8	3,8	4,4

According to the stakeholders the main priority is improving water quality (Table 31).

The ‘abandonment of certain uses’ and ‘developing environmental regulation’ are also perceived as priorities. The stakeholders agree with a moderate level of intervention (Table 32).

Table 32: Highest ranked NBS measures according to the stakeholders in Turkey

Specific measures should be taken to limit these threats and these impacts for each pondscape	ranking		
	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
#1	improving water quality	improving water quality	improving water quality
#2	abandonment of certain uses	abandonment of certain uses	developing environmental regulation
#3	better/more environmental education	developing environmental regulation	monitoring of local public ponds

Table 33: Results on level of intervention according to the stakeholders in Turkey

Level of intervention: -Weak (better use) -Moderate (restoration) -Strong (creation)	Priority given to:		
	Dikkuyruk Havuzu	Gölbaşı Düzlüğü	İmrahor Vadisi
	Moderate	Moderate	Inconclusive result

3.3.4. England (11 completed answers Pinkhill, 6 completed answers WFF)

The relation to nature is highly important for the English stakeholder groups. The ‘relation to pondscapes’ obtained a high score in WFF whereas Pinkhill was rated moderate, like the majority of the pondscapes.

Table 34: Results on the value placed on pondscape according to the stakeholders in England (average, score from 1-5)

	Relation with ‘nature’	Relation with pondscapes	How important are the pondscapes for your quality of life?
Pinkhill Meadows Complex	4,7	3,9	4,3
Water Friendly Farming/Harborough District	5	4,5	4,3

A question was included to learn of the occurrence of significant changes in the pondscapes during the last ten years. A minority of respondents decided to select the box ‘yes’ (Table 35).

Table 35: Results on observed changes in the pondscapes according to the stakeholders in England

	Number of ‘yes’	Number of ‘no’	Number of ‘no opinion’	Type of ‘change’ selected
Pinkhill Meadows Complex	3	0	8	<u>Co-occurrence (2 times for each):</u> colonisation by new plant species, increase in the number of ponds
WFF/Harbor.	2	0	4	No co-occurrence

There is insufficient evidence for affirming that some key species are identified by stakeholders (Table 36).

Table 36: Results on emblematic species according to the stakeholders in England

	Number of yes/no about the key species	Name of the key species
Pinkhill Meadows Complex	2/11	No co-occurrence
Water Friendly Farming	3/6	No co-occurrence

Table 37: The scoring of the current NCPs according to the stakeholders in England (average, score from 1-5)

Type of NCP (present)	top-3	
	Pinkhill Meadows Complex	Water Friendly Farming
food and feed	2,1	2,8
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	5	4,1
pollination	4,5	3,5
regulation of water quality (water purification)	3,2	3,5
regulation of water quantity (irrigation, water supply)	2,1	1,8
regulation of hazards (flooding regulation, fire protection)	3,1	3,1
regulation of climate	3,7	3,5
physical and psychological experiences	3,8	2,3
learning and inspiration (aesthetic, art, education, science)	4	2,3
supporting identities	3	3
maintenance of options	4,1	4

We note a convergence on some NCP priorities between both pondsapes regarding the biodiversity and the resilience (Table 37). A great difference is seen between the pondsapes regarding the non-material NCPs ‘physical and psychological experiences’ and ‘learning and inspiration’. Note that the NCP ‘regulation of water quantity’ obtained very low average scores.

Table 38: The future NCPs according to the stakeholders in England (average, score from 1-5)

NCPs for the future	Ranking of NCPs	
	Pinkhill Meadows Complex	Water Friendly Farming
#1	habitat creation and maintenance	habitat creation and maintenance
#2	Pollination (diversity of plants to be pollinated)	regulation of hazards (flooding regulation, fire protection)
#3	regulation of climate (carbon storage, maintaining an acceptable temperature)	Inconclusive result

Concerning Pinkhill, the results are similar between the present and the future with the exception of the contribution ‘regulation of climate’. In WFF, ‘regulation of hazards’ is named as a priority, contrary to the present.

Table 39: The environmental condition according to the stakeholders in England

Environmental condition of the pondsapes	Average (1-5)	
	Pinkhill Meadows Complex	Water Friendly Farming
	4,7	3,4

Regarding the assessment of the environmental condition of the pondsapes, the grades given to both pondsapes are very different with a low score for WFF (Table 39).

Concerning the different criteria in determining the environmental conditions, stakeholders valued the same criteria, with first ‘biodiversity’ and then ‘water quality’ and ‘the number of ponds’ (Table 40).

Table 40: Criteria for determining the environmental condition according to the stakeholders in England

Criteria selected (ranking)	Pinkhill Meadows Complex	Water Friendly Farming
#1	animal species composition	plant species composition
#2	plant species composition	animal species composition
#3	number of ponds	water quality
#4	water quality	number of ponds

The perceptions on the threats illustrate the different local contexts. Some similarities are clear (climate change, pollution), as well as several differences (intensive farming for WFF, tourism for Pinkhill) (Table 41).

Table 41: The threats assessment according by stakeholders in England (average, score 1-5)

Threats	with top-3	
	Pinkhill Meadows	Water Frien. Far.
climate change	4,4	4,5
Deforestation	2	2,1
extraction of materials	1,9	2,5
intensive farming (trampling by cattle)	1,9	4
invasive species	3,8	3,5
over-exploitation (water abstraction, irrigation)	2,5	2,6
Pollution	4	4
Tourism	3,3	1,5
Urbanization	2,7	1,3

In terms of the impact of threats, the same concerns are obtained for both pondsapes, with expected impacts on biodiversity, water quality and quantity (Table 42).

Table 42: The impact of threats assessment by stakeholders in England (average, score from 1-5)

Impacts of threats	top-3	
	Pinkhill Meadows	Water Fr. Farm.
impact on the productive purpose	1,5	1,5
impact on human health	2,9	2
impact on water quantity	4,2	4,5
impact on water quality	4,8	4,8
impact on biodiversity	5	4,8
impact on water temperature	3,6	3,1
impact on soil erosion	3,5	4
impact on the landscape	4	3,6
impact on my property/my security	2,1	2,5

The stakeholders were also asked to select the relevant measures (NBS) to limit these threats and their implied impact. The stakeholders have selected different NBS measures (Table 43).

Table 43: Highest ranked NbS measures according to the stakeholders in England

Specific measures should be taken	ranking	
	Pinkhill Meadows	Water Friendly Farming
#1	<i>increasing biodiversity (species, populations, on a genetic level)</i>	improving water quality
#2	maintaining populations of endangered species	creating new ponds
#3	monitoring of local public ponds	increasing biodiversity (species, populations, on a genetic level)

Considerable emphasis has been made on the situation of biodiversity for Pinkhill Meadows. A strong level of intervention is also received as a priority (Table 44).

Table 44: results on level of intervention according to the stakeholders in England

Level of intervention: -Weak (better use) -Moderate (restoration) -Strong (creation)	Priority given to:	
	Pinkhill Meadows	Water Friendly Farming
	Strong	strong

3.3.5. Catalonia/Spain with Albera (17 completed answers)

In Albera, as in other DEMO-sites, the ‘relation to pondsapes’ received moderate ratings (Table 45).

Table 45: Results on the value placed on pondscape according to the stakeholders in Spain (average, score from 1-5)

	Relation with ‘nature’	Relation with ‘pondscape’	How important are the pondsapes for your quality of life?
Albera	4,5	3,9	4

A question was included about the occurrence of significant changes in the pondsapes during the last ten years. A minority of the total sample decided to select the box ‘yes’ but it is the largest number (7/17). Among these seven stakeholders, they emphasized the same changes on water availability (Table 46).

Table 46: Results on observed changes in the pondsapes according to the stakeholders in Spain

	Number of ‘yes’	Number of ‘no’	Number of ‘no opinion’	Type of ‘change’ selected
Albera	7	5	5	<u>Co-occurrence (7 times):</u> lower pond water level <u>Co-occurrence (6 times):</u> more frequent drying of ponds <u>Co-occurrence (4 times):</u> decrease of pondscape surface area

A large majority of stakeholders thought that some key species (amphibian, bird, fish, invertebrate, mammal, reptile, plant species) are part of the Albera pondscape (Table 47).

Table 47: results on emblematic species according to the stakeholders in Spain

	Number of yes/no	Name of the species
Albera	12/5	<u>Co-occurrence (5 times):</u> Pelobates cultriples/gripau d’esperons <u>Co-occurrence (4 times):</u> marbled newt (Triturus Marmoratus) <u>Co-occurrence (3 times):</u> palmate newt (Lissotriton helveticus)

The stakeholders have selected the biodiversity-related NCP and the non-material NCPs ‘physical and psychological experiences’ and ‘supporting identities’ (Table 48).

Table 48: The scoring of the current NCPs according to the stakeholders in Spain (average, score from 1-5)

Type of NCP (present)	top-3
	Albera
food and feed	2,6
habitat creation and maintenance	4,8
pollination (diversity of plants to be pollinated)	3,9
regulation of water quality (water purification)	3,2
regulation of water quantity (reservoir of irrigation, water supply)	3,2
regulation of hazards (flooding regulation, fire protection)	2,9
regulation of climate	3,6
physical and psychological experiences	4,2
learning and inspiration (aesthetic, art, education, science)	4
supporting identities (cultural heritage, local identity)	4,2
maintenance of options	4

With regard to the future, there are some differences with the results for the present (Table 49). Biodiversity remains at the top ranking but the non-material NCPs give way to climate and resilience.

Table 49: The future NCPs according to the stakeholders in Spain

NCPs (future)	Ranking
#1	habitat creation and maintenance
#2	regulation of climate (carbon storage, maintaining an acceptable temperature)
#3-4	maintenance of options AND food and feed

The stakeholders have given an average score of 3,3 on 5 regarding the environmental condition of this pondscape. By assigning this score, they have favoured criteria related to the biodiversity and the number of ponds (Table 50). It can be observed that these preferred criteria are not related to the change found during the last ten years, indicating that the examination of the current situation (drought) does not give only one deterministic pattern of understanding and perception.

Table 50: The criteria for determining the environmental condition according to the stakeholders in Spain

Criteria selected (ranking)	Albera
#1	plant species composition
#2	number of ponds
#3	animal species composition

The average of each threat is quite low except for ‘climate change’ considered as the most important threat for pondsapes (Table 51).

Table 51: The threats assessment by stakeholders in Spain (average, score from 1-5)

Threats	Top-3
climate change	4,7
Deforestation	2,5
extraction of materials (gravel, sediment, sand...)	2,3
intensive farming (trampling by cattle for example)	3,8
invasive species	3,7
over-exploitation (water abstraction, irrigation)	3,4
Pollution	3,4
Tourism	2,9
Urbanization	2,4

The average of each impact of threat is quite low except for ‘biodiversity’ as #1 (Table 52).

Table 52: The impact on threats assessment by stakeholders in Spain (average, score from 1-5)

Impacts of threats	Top-3
impact on the productive purpose	2,3
impact on human health	2,4
impact on water quantity	3,5
impact on water quality	3,5
impact on biodiversity	4,2
impact on water temperature	3,5
impact on soil erosion	3,2
impact on the landscape	3,8
impact on my property/my security	2,5

The stakeholders were also asked to select the relevant measures (NBS) to limit these threats and these impacts. Their answers are consistent with a moderate level of intervention and restoration measures like increasing the volume of water, maintaining endangered species or limiting certain uses (Table 53, 54).

Table 53: Highest ranked NBS measures according to the stakeholders in Spain

Specific measures	ranking
#1	restoration measures
#2	maintaining populations of endangered species
#3 (equal)	increasing the volume of water - limitation of certain uses - better/more environmental education

Table 54: Results on level of intervention according to the stakeholders in Spain

Level of intervention:	Priority given to:
-Weak (better use) -Moderate (restoration) -Strong (creation)	moderate

3.3.6. Belgium (5 answers on Gete Vallei, 5 answers on Pikhakendonk, 7 answers on Tommelen)

Compared to the other DEMO-sites, all the scores related to nature/pondscapes are low (Table 55). Surprisingly, the ‘relation with pondscales’ is much higher than ‘relation with nature’ for respondents of Pikhakendonk and Tommelen. It is a unique case all PONDERFUL pondscales combined.

Table 55: Results on the value placed on pondscape according to the stakeholders in Belgium (average, score from 1-5)

	Relation with ‘nature’	Relation with ‘pondscapes’	How important are the pondscales for your quality of life?
Gete Vallei	3,1	2,8	2,2
Pikhakendonk	2,5	3,2	2,2
Tommelen	2,2	2,4	2,6

A specific question explored the occurrence of significant changes in the pondscales during the last ten years. Only Tommelen have undergone significant changes according to the data.

Table 56: The observed changes in the pondscales according to the stakeholders in Belgium

	Number of ‘yes’	Number of no	Number of no opinion	Type of ‘change’ selected
Gete Vallei	2	0	3	<u>Co-occurrence (2 times)</u> : deterioration of water quality
Pikhakendonk	1	1	3	No co-occurrence
Tommelen	4	1	2	<u>Co-occurrence (4 times)</u> : lower pond water level, more frequent drying of ponds <u>Co-occurrence (2 times)</u> : extinction of local animal species, colonisation of new plant species, increase of pondscape surface area, more rubbish

A large majority of stakeholders agree with the existence of one emblematic species in the pondscales (Table 57).

Table 57: Results on emblematic species according to the stakeholders in Belgium

	Number of yes/no	Name of the species
Gete Vallei	4/1	<u>Co-occurrence (3 times)</u> : Northern crested Newt (<i>Triturus cristatus</i>)
Pikhakendonk	4/1	<u>Co-occurrence (3 times)</u> : Northern crested Newt (<i>Triturus cristatus</i>)
Tommelen	6/1	<u>Co-occurrence (4 times)</u> : Northern crested Newt (<i>Triturus cristatus</i>)

Results for NCP ranking are similar between the three pondscales with first ‘habitat creation and maintenance’ and secondly ‘physical and psychological experiences’ (Table 58). Compared to the other DEMO-sites, the NCP ‘supporting identities’ is in the top-3.

Table 58: The scoring of the current NCPs according to the stakeholders in Belgium (average, score from 1-5)

Type of NCP for the present	top-3		
	Gete Vallei	Pikhakendonk	Tommelen
Food and feed	1,6	2	1,5
habitat creation and maintenance	4,8	4,8	4,8
pollination	2,8	3,4	3,2
regulation of water quality	3	3,4	2,4
regulation of water quantity	3,8	4	3
regulation of hazards	3,2	4	2,8
regulation of climate	4	4	3,8
physical and psychological experiences	4,6	4,6	4,2
learning and inspiration	3,8	3,6	3,8
supporting identities	4	4,2	4,5
maintenance of options	3,8	4	4

When comparing the data on present and future, the non-material NCPs become less important in the future with growing long-term trends (climat, resilience, hazards) with the exception of Tommelen (Table 59).

Table 59: The future NCPs according to the stakeholders in Belgium

NCPs for the future	Ranking NCP by priority		
	Gete Vallei	Pikhakendonk	Tommelen
#1	habitat creation and maintenance	habitat creation and maintenance	habitat creation and maintenance
#2	regulation of climate - maintenance of options - learning and inspiration	regulation of hazards	learning and inspiration - supporting identities
#3		food and feed - supporting identities	

The score on the environmental condition is exactly the same for the pondscape and is relatively low (Table 60).

Table 60: Results on environmental condition according to the stakeholders in Belgium (average, score from 15)

Perception of environmental condition of the pondscape	Gete Vallei	Pikhakendonk	Tommelen
	3	3	3

By assigning these scores, stakeholders have favoured some criteria mainly linked to biodiversity and water quality. All the criteria highlighted are similar with first biodiversity and water quality.

Table 61: Results on the criteria for determining the environmental condition according to the stakeholders in Belgium

Criteria selected (ranking)	Gete Vallei	Pikhakendonk	Tommelen
#1	plant species composition	plant species composition	plant species composition
#2		water quality	water level
#3	animal species composition	animal species composition	animal species composition
#4	number of ponds	/	water quality

The perception of threats is relatively low except for ‘climate change’ and ‘intensive farming’.

Table 62: The threats assessment by stakeholders in Belgium (average, score from 1-5)

Threats	Top-3		
	Gete Vallei	Pikhakendonk	Tommelen
climate change	4	4,4	4,4
deforestation	2,2	2	2
extraction of materials	1,6	1,6	1,7
intensive farming	4,2	4	2,4
invasive species	3,6	3,6	3,4
over-exploitation	3,8	3,4	3,2
pollution	3,8	4	2,5
tourism	3	2,8	2,7
urbanization	2	2,8	3,7

The stakes are clearly identified with three major impacts of threats: biodiversity loss, degradation of the water quality and problems of water availability (Table 63).

Table 63: The impact on threats assessment according to the stakeholders in Belgium (average, score from 1-5)

Impact of threats	Top-3		
	Gete Vallei	Pikhakendonk	Tommelen
impact on the productive purpose	1,4	1,6	1,4
impact on human health	2,2	2,6	2,1
impact on water quantity	4,6	4,6	3,8
impact on water quality	4,6	4,6	3,8
impact on biodiversity	4,6	4,4	3,8
impact on water temperature	3,4	3,4	3,4
impact on soil erosion	2,8	3,4	2,2
impact on the landscape	4,2	4,2	3,2
impact on my property/my security	2	2,8	2,7

The stakeholders were also asked to select the relevant NBS measures to limit these threats and reduce their impact. Similar measures were chosen for the three pondscapes with ‘increasing biodiversity’ and ‘restoration measures’ (Table 64). Answers are consistent with an equilibrium between moderate and strong level of intervention and restoration measures to implement (Table 65).

Table 64: Highest ranked NBS measures according to the stakeholders in Belgium

Specific measures	ranking		
	Gete Vallei	Pikhakendonk	Tommelen
#1	increasing biodiversity	abandonment of certain uses	increasing biodiversity
#2	improving water quality	limitation of certain uses	conservation of endangered species
#3	restoration measures	creation of new ponds	increasing the volume of water
#4		increasing biodiversity improving water quality restoration measures	maintaining populations of endangered species restoration measures

Table 65: Results for the level of intervention according to the stakeholders in Belgium

Level of intervention	ranking		
	Gete Vallei	Pikhakendonk	Tommelen
	Equality between moderate and strong	strong	moderate

3.3.7. Uruguay (4 respondents on Sierra de Caracoles, 3 on La Pedrera)

The stakeholders are considered with a high level of relation with nature. La Pedrera reach a high score for the question about ‘relation with pondscales’ (Table 66).

Table 66: Results on the value placed on pondscape in Uruguay (average, score from 1-5)

	Relation with ‘nature’	Relation with ‘pondscales’	How important are the pondscales for your quality of life?
Sierra de Caracoles	4,5	3,2	3
La Pedrera	5	4	3

A specific question addressed the occurrence of significant changes in the pondscales during the last ten years. Almost all respondents decided to select the box ‘yes’ (Table 67). A majority of respondents do not think there is some key species in both pondscales.

Table 67: Results on the observed changes in the pondscales according to the stakeholders in Uruguay

	Number of yes	Number of no	Number of no opinion	Type of ‘change’ selected
Sierra de Caracoles	3	0	1	<u>Co-occurrence (3 times):</u> increase in the number of ponds, colonisation of new animal species
La Pedrera	2	0	1	No co-occurrence

Compared to other DEMO-sites, The NCP ‘food and feed’ is well valued and considered to be on the same level of importance as ‘biodiversity’ (Table 68).

Table 68: The scoring of the current NCPs according to the stakeholders in Uruguay (average, score from 1-5)

Type of NCP	top-3	
	Sierra de Caracoles	La Pedrera
food and feed (productivity of food : fish, waterfowl, livestock)	3,5	4,3
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	3,7	4,3
Pollination	2,7	4
regulation of water quality	2,5	4,6
regulation of water quantity	3,7	4,6
regulation of hazards	3,2	3,6
regulation of climate	3,2	4,3
physical and psychological experiences (calm, freshness, sociability, activities)	3,2	4
learning and inspiration (aesthetic, art, education, science)	3,7	3,6
supporting identities (cultural heritage, local identity)	3,2	4
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3,7	4,3

The NCP priorities are quite similar among both pondscales, however, differences are significant for ‘pollination’, ‘regulation of water quality’ or ‘regulation of climate’

When comparing the data on present and future, a clear difference emerges on Sierra de Caracoles. The ‘regulation of water quality’ becomes a priority whereas this NCP obtained the lowest score in the previous question. Regarding La Pedrera, the results are similar (Table 69).

Table 69: The future NCPs according to the stakeholders in Uruguay

Type of NCP for the future	Ranking	
	Sierra de Caracoles	La Pedrera
#1	habitat creation and maintenance	regulation of water quantity
#2	regulation of water quality	food and feed
#3	regulation of water quantity	/

By assigning moderate scores about the environmental condition of the pondscape (Table 70), stakeholders have favoured similar criteria linked to biodiversity and water quality (Table 71).

Table 70: The environmental condition according to the stakeholders in Uruguay (average, score 1-5)

Perception of environmental condition of the pondscape	Sierra de Caracoles	La Pedrera
	3,5	3,7

Table 71: The criteria for determining the environmental condition according to the stakeholders in Uruguay

Criteria selected (ranking)	Sierra de Caracoles	La Pedrera
#1	animal species composition	plant species composition animal species composition water quality colour of water
#2	plant species composition	
#3	colour of water	
#4	water quality	

Compared to the other DEMO-sites, several options of threats obtained very high ratings. This is the case for climate change, intensive farming, and over-exploitation (Table 72).

Table 72: The threats assessment by stakeholders in Uruguay (average, score from 1-5)

Threats	top-3	
	Sierra de Caracoles	La Pedrera
climate change	4,7	5
deforestation	3,5	4,3
extraction of materials (gravel, sediment, sand...)	3	3
intensive farming (trampling by cattle for example)	4,7	4,3
invasive species	4,7	4,3
over-exploitation (water abstraction, irrigation)	4,5	5
pollution	4,5	4,3
tourism (rubbish, damage to vegetation by trampling, disturbance of wildlife)	3,7	3,6
urbanization	3,5	3

Compared to the other DEMO-sites, all the options concerning the impact of threats obtained high ratings (Table 73). A specific particularity is the rating of ‘impact on my property/my security’ which is different from anywhere else. The issues on water quality and quantity are a core concern.

Table 73: The impact of threats assessment by stakeholders in Uruguay (average, score from 1-5)

Impact of threats	top-3	
	Sierra de Caracoles	La Pedrera
impact on the productive purpose	3,5	4
impact on human health	3,5	4,3
impact on water quantity	4,5	5
impact on water quality	4,7	5
impact on biodiversity	4,5	4,3
impact on water temperature	4,5	4,3
impact on soil erosion	3,5	4,3
impact on the landscape	4	5
impact on my property/my security (nuisance species and flooding for example)	3,7	5

Stakeholders were also asked to select the relevant NBS measures to limit these threats and these impacts (Table 74).

Table 74: Highest ranked NBS measures according to the stakeholders in Uruguay

Specific measures	ranking	
	Sierra de Caracoles	La Pedrera
#1-#3	Inconclusive	better/more environmental education monitoring of private ponds limitation of certain uses

For Sierra de Caracoles, no common option was selected but stakeholders tend to favour a moderate level of intervention (restoration). In La Pedrera, stakeholders preferred strong form of intervention, notably with limitation of certain uses.

3.3.8. Denmark (3 answers on Lystrup, 5 answers on Fyn)

Ratings are significantly higher in Denmark to those of other DEMO-sites, for the relations to nature and pondsapes, especially with respect to the last question on quality of life.

Table 75: Results on the value placed on pondscape according to the stakeholders in Denmark (average, score from 1-5)

	Relationship with 'nature'	Relationship with 'pondsapes'	How important are the pondsapes for your quality of life?
Lystrup	5	4,3	4,6
Fyn	5	4,2	4,8

Concerning the occurrence of significant changes in the pondsapes during the last ten years, almost all Fyn' stakeholders decided to select the box 'yes' with changes easily distinguished (Table 76). For Lystrup, the answer is negative.

Table 76: Results on the observed changes in the pondsapes according to the stakeholders in Denmark

	Number of yes-answers	Number of no-answers	Number of no opinion	Type of 'change' selected
Lystrup	0	1	2	No co-occurrence
Fyn	4	1	0	<u>Co-occurrence (3 times)</u> : extinction of local animal species, decrease of pondscape surface area, lower pond water level

A large majority of stakeholders agree with the existence of one toad emblematic species in the Fyn pondscape with presence of amphibians (Table 77).

Table 77: Results on emblematic species according to the stakeholders in Denmark

	Number of yes/no	Name of the species
Lystrup	1/2	No co-occurrence
Fyn	3/2	<u>Co-occurrence (2 times)</u> : European fire-bellied toad (<i>Bombina orientalis</i>)

Table 78: The scoring of the current NCPs according to the stakeholders in Denmark (average, score from 1-5)

Type of NCP for the present	top-3	
	Lystrup	Fyn
food and feed	1,6	2,4
habitat creation and maintenance	4,3	5
pollination	3,3	3,8
regulation of water quality	4,6	3,6
regulation of water quantity (reservoir of irrigation, water supply)	3	2,4
regulation of hazards (flooding regulation, fire protection)	3,3	2,6
regulation of climate (carbon storage, maintaining an acceptable temperature)	2,3	3
physical and psychological experiences (calm, freshness, sociability, activities)	4,6	4,6
learning and inspiration (aesthetic, art, education, science)	3,6	4
supporting identities	2,3	3,6
maintenance of options	4	4,6

Compared to the other DEMO-sites, non-priority NCPs obtained very low scores but the first four NCPs obtained a high rating with 4,3 of 5 at minimum. This is the case for the two pondsapes for ‘habitat creation and maintenance’ and ‘physical and psychological experiences’ (Table 78). No significant differences are observed between the NCP selected in the present and the future (Table 79).

Table 79: The future NCPs according to the stakeholders in Denmark

Type of NCP for the future	Ranking	
	Lystrup	Fyn
#1	physical and psycho. experiences	habitat creation and maintenance
#2	habitat creation and maintenance	physical and psychological experiences
#3		supporting identities

By assigning these low scores on environmental condition of the pondsapes, stakeholders have favoured some criteria mainly linked to biodiversity in Fyn (Table 80, 81).

Table 80: results on environmental condition according to the stakeholders in Denmark (average, score from 1-5)

Perception of environmental condition	Lystrup	Fyn
	3,5	3

Table 81: The criteria for determining the environmental condition according to the stakeholders in Denmark

Criteria	Lystrup	Fyn
#1	Inconclusive	animal species composition
#2		plant species composition
#3		water level

The major threats identified are ‘climate change’ and ‘intensive farming’.

Table 82: Results on threats assessment by stakeholders in Denmark (average, score from 1-5)

Threats	top-3	
	Lystrup	Fyn
climate change	Inconclusive (only 1 completed answer to this question)	4,6
deforestation		1
extraction of materials		2
intensive farming		4,3
invasive species		2,3
over-exploitation		2,3
Pollution		3,3
tourism		2,3
urbanization		3

Concerning the impacts of threats, the evolution of water quality and quantity and biodiversity are core challenges and strongly linked to the results obtained above (Table 83).

Table 83: The impacts of threats assessment by stakeholders in Denmark (average, score from 1-5)

Impact of threats	top-3	
	Lystrup	Fyn
impact on the productive purpose	Inconclusive (only 1 completed answer to this question)	2,3
impact on human health		3,3
impact on water quantity		4,3
impact on water quality		4,3
impact on biodiversity		4,6
impact on water temperature		3,6
impact on soil erosion		2
impact on the landscape		4
impact on my property/my security		1,6

The stakeholders were also asked to select the relevant measures (NBS) to limit these threats and these impacts (Table 84).

Table 84: Highest ranked NBS measures proposed by stakeholders in Denmark

Specific measures	ranking	
	Lystrup	Fyn
#1	Inconclusive (only 1 completed answer to this question)	Restoration measures
#2		Inconclusive
#3		

Only the ‘restoration measures’ has been selected by several stakeholders and they tend to favour a moderate level of intervention (restoration). Concerning Lystrup, stakeholders preferred strong level of intervention but more accurate data is missing.

3.4. Cross-analysis between DEMO-sites

3.4.1. Gender dimension of stakeholders

Given the small number of stakeholders overall and by pondscape, it is difficult to draw general conclusions related to gender differences. However, based on this sample, we have analysed the data from this perspective. There are some slight differences.

- regarding the backgrounds: women are likely to work in research;
- regarding the NBS measures: women are likely to choose different options than men.

Mean scores of women, when the questionnaire required a rating, are not significantly different from mean scores of men. We also demonstrated other results by the Table 85 below (all pondscares combined)³:

Table 85: results of gender research of stakeholders (average, score from 1-5)

Questions DEMO-site	Relation with nature		Relation with pondscape		Pond and quality of life		Professional responsibility		Average of all NCP		Average of all threats	
	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>	<i>F</i>	<i>M</i>
<i>Gender</i>												
Switzerland (2F, 5M)	5	4,8	4	4,4	4	4,4	3,7	3,5	3,6	4,2	3,3	2,8
Germany (2F, 3M)	5	4,6	4	3,3	5	3,6	3	3,3	3,7	2,7	2,8	2,9
Turkey (3F, 6M)	5	4,6	3,6	3,3	5	3,8	4	3,4	4,6	3,6	4,8	3,5
England (9F, 5M)	4,8	4,6	4	3,8	4,5	3,8	2,7	3,4	3,6	3,1	2,8	3
Spain (1F, 16M)	5	4,3	4	3,8	4	3,9	3	3	3,5	3,7	3,1	3,2
Belgium (3F, 5M)	4,3	4,7	4	4,4	4	4	3,6	2,7	3,6	3,3	3	2,8
Uruguay (1F, 5M)	5	4,6	2	4,2	1	3,8	4	2,5	3,3	3,7	4,3	4
Denmark (3F, 2M)	5	5	4,3	4	4,6	5	3,6	2,2	3,3	4	2	3,1
Average	4,8	4,6	3,7	3,9	4	4	3,3	3	3,6	3,5	3,2	3,1

Based on a threshold criterion of more than 0,5 points between the answers of women and men, we highlighted the differences:

- Germany, Turkey and England are the countries with the greatest number of differences between women and men. In order to confirming possible cultural differences, the data from the general public will be useful in the final part of this report.
- Professional responsibility is the topic with the largest gap in ranking between the respondents of the two gender (0,3 out of 5).
- Using the 0,5 points threshold, questions with the total number of significant differences (16) allow to demonstrate that women tend to give higher ratings than men (12/16). In Turkey, women gave always better scores than men.
- Gender differences are particularly evident in the assessment of professional responsibility and NCPs.

³ Regarding the gender distribution of the sample, pay attention to the number of answers from women and men as indicated in the first column. The average of the mean response needs to be put into perspective.

Given the different background and profiles between women and men, women tend to select only one professional role whereas men usually choose several of them. Among the respondents, more women than men are academics.

3.4.2. General questions

We consider the general questions as indicators to provide a context for the results.

Regarding the relation with nature, all the averages are very high for all countries and pondscapes whereas there is a lesser attachment to the pondscapes (Table 86). Only Belgium, Denmark, Switzerland and England (WFF) reach a high score regarding the relation with pondscapes.

Denmark (Lystrup) attains a high average in the three questions and, to a lesser extent, this is similar in Switzerland and Belgium. Regarding the question on life quality, the lowest mean score was provided by the stakeholders in Uruguay.

Table 86: comparison of results on the value placed on pondscapes according to the stakeholders

	Relation with nature	Relation with pondscapes	How important are the pondscapes for your quality of life?	Overall average
Switzerland: <i>Bois de Jussy</i>	4,8	4,2	4,2	4,4
Switzerland: <i>Rhône Verb.</i>	4,8	4,2	4,2	4,4
Germany: <i>Schöneiche</i>	4,8	3,6	4,2	4,2
Turkey: <i>Dikkuyruk</i>	4,7	3,6	4,3	4,2
Turkey: <i>Gölbasi</i>	4,7	3,4	4,2	4,1
Turkey: <i>Imrahor</i>	4,8	3,6	4,5	4,3
England: <i>Pinkhill M.</i>	4,7	3,9	4,3	4,3
England: <i>Water Fr. Fa.</i>	5	4,5	4,3	4,6
Spain: <i>Albera</i>	4,4	4	4	4,1
Belgium: <i>Gete Vallei</i>	4,8	4,6	4,2	4,5
Belgium: <i>Pikhakendonk</i>	4,6	4,4	4	4,3
Belgium: <i>Tommelen</i>	4,5	4,2	4,1	4,2
Uruguay: <i>Sierra de C.</i>	4,5	3,2	3	3,5
Uruguay: <i>La Pedrera</i>	5	4	3	4
Denmark: <i>Lystrup</i>	5	4,3	4,6	4,6
Denmark: <i>Fyn</i>	5	4,2	4,8	4,6
Overall average	4,7	3,9	4,1	/

3.4.3. Cross-countries comparison on the main changes observed during the last ten years and rating on environmental condition

In the light of our data, there are three types of prevailing perceptions among stakeholders (Table 87):

- Stakeholders noticed significant changes (>75%): Germany, Turkey (Gölbasi and Imrahor), Denmark (Fyn)
- Stakeholders with a medium level of agreement about changes (between 50-70%): Switzerland (Rhône Verbois), Turkey (Dikkuyruk) Belgium (Tommelen), Uruguay (La Pedrera)
- Stakeholders do not observe significant changes (<50%): Switzerland (Bois de Jussy), England (Pinkhill Meadows and WFF), Spain (Albera), Belgium (Gete Vallei, Pikhakendonk).

The most important type of changes highlighted are:

- 'decrease of pondscape surface area' and 'lower pond water level' (both cited for 4 different pondsapes)
- 'more frequent drying ponds', 'deterioration of water quality' and 'increase in the number of ponds' (both cited in 3 different pondsapes).

Table 87: comparison of results on the observed changes according to the stakeholders

	% of agreement with changes	Main type of changes (an option of changes is selected two times at minimum) with colour schemes	environmental condition
Switzerland: Bois de Jussy	28,5	arrival of new animal species, increase in the number of ponds	4
Switzerland: Rhône V.	57	/	3,5
Germany: Schöneiche	100	decrease of pondscape surface area, more frequent drying ponds	1,6
Turkey: Dikkuyruk	50	decrease of pondscape surface area, deterioration of water quality	3,8
Turkey: Gölbasi	77,7	decrease of pondscape surface area, lower pond water level	2,8
Turkey: Imrahor	83,3	decrease of pondscape surface area, deterioration of water quality	2,7
England: Pinkhill M.	27,2	colonisation by new plant species, increase in the number of ponds	4,7
England: Water Fr. Fa.	33,3	/	3,4
Spain: Albera	41,1	lower pond water level, more frequent drying of ponds	3,3
Belgium: Gete Vallei	40	deterioration of water quality	3
Belgium: Pikhak.	20	/	3
Belgium: Tommelen	57,1	more drying frequent pond, lower pond water level	3
Uruguay: Sierra de C.	75	arrival of new animal species, increase in the number of ponds	3,5
Uruguay: La Pedrera	66,6	/	3,7
Denmark: Lystrup	/	/	3,5
Denmark: Fyn	80	extinction of local animal species, decrease of pondscape surface area, lower pond water level	3

Almost all of these prevailing perceptions are consistent with negative perspective of environmental change with an exception with an ‘increase in the number of ponds’.

During the thematic organization of the questionnaire, we assumed that a negative perception on environmental change can be related to a poor rating on environmental condition. But this is not really apparent and reflected in the table above. In Germany, Turkey (Gölbasi, Imrahor), Belgium (only Tommelen) and Denmark (Fyn), the results are congruent between a positive level of agreement, negative changes and a low rating on environmental changes. This means that the stakeholders consider these issues raise concern. Two pondsapes (Gete Vallei in Belgium and Albera in Spain) appear to be affected by deterioration for a longer period of time. However, this remains to be confirmed.

A case-specific analysis would be required to better understand the history of each pondscape and grasp how they have been modified over the time. Over a long time of history, the pondsapes experienced trend in improvement and deterioration and it will be useful to provide context to the current situation. This long-term vision could provide another dimension in the understanding of the perceptions.

Conversely, Bois de Jussy (Switzerland), Pinkhill Meadows (England) and Sierra de Caracoles (Uruguay) appear to have improved in recent years. With these pondsapes, there is no immediate correlation between the no-change and the environmental condition of the pondscape. We have reason to believe in this context, no-change management may result also in a good dynamic.

3.4.4. NCP in the present

Given the highly average ratings, the NCPs with less than 3 on average can be deemed less important for the respondents and are not listed in the figure below. That is why we have removed the NCPs with scores below 3 to make reading of the figure below easier (Figure 2).

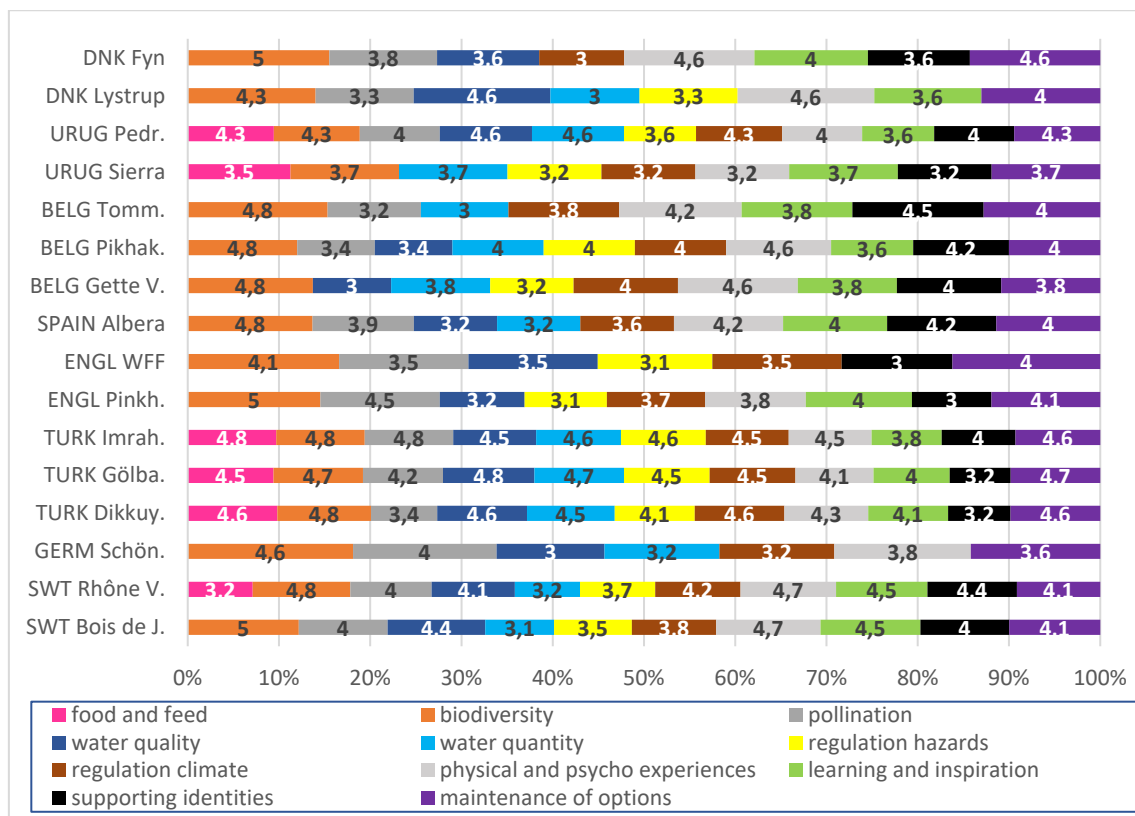


Figure 3: comparison of results on the NCP assessment by stakeholders

The main comparative results are:

- The NCP ‘maintenance of habitat’ is rated highest (overall average: 4,6) in all DEMO-sites with exception of Uruguay;
- The NCPs ‘physical and psychological experiences’ (overall average: 4,1) and ‘maintenance of options’ (overall average: 4,1) obtained also high scores with low discrepancies among the pondscapes;
- The NCP ‘food and feed’ is of importance only in Uruguay and Turkey;
- The NCP ‘water quality’ was deemed to be relatively unimportant in Germany, Belgium and England;
- The NCP ‘water quantity’ was deemed to be relatively unimportant in England and Denmark probably because there is no need to store water in these countries. In Turkey, Uruguay and Belgium, the situation is the contrary;
- The NCP ‘learning and inspiration’ obtained very low rating in Germany and in Water Friendly Farming (England). The situation is the opposite in Switzerland.
- The NCP ‘supporting identities’ is deemed to be relatively unimportant in Germany, England and Lystrup in Denmark but highly valued in Switzerland, Spain and Belgium.

DEMO-sites may be grouped according their similar assessment and fairly significant commonalities:

- Both Swiss pondscapes, Albera, and, to a lesser degree, Pinkhill Meadows (England) as well as Fyn (Denmark), value the same NCPs (biodiversity, pollination, non-material NCPs, maintenance of options) in the same order of magnitude.
- The three Turkish pondscapes and La Pedrera (Uruguay) have similar ratings of the same priorities for NCP (food and feed, biodiversity, water quality, physical and psychological experiences, maintenance of options).

To provide a context for the results above, it is important to be aware of the overall average of all the NCPs assessment by DEMO-site (Table 88). In this way, our analysis can be put into a better perspective.

Table 88: comparison of the assessment of current NCP by stakeholders

	Overall average of NCPs combined assessment
Switzerland: Bois de Jussy	3,9
Switzerland: Rhône Verbois	4
Germany: Schöneiche	3,1
Turkey: Dikkuyruk	4,2
Turkey: Gölbaşı	4,3
Turkey: Imrahor	4,5
England: Pinkhill Meadows	3,5
England: Water Friendly Farming	3
Spain: Albera	3,6
Belgium: Gete Vallei	3,5
Belgium: Pikhakendonk	3,8
Belgium: Tommelen	3,4
Uruguay: Sierra de Caracoles	3,3
Uruguay: La Pedrera	4,1
Denmark: Lystrup	3,3
Denmark: Fyn	3,6

Ignoring the potential cultural differences, it is easy to identify the pondscapes with the highest average all NCPs combined. Water Friendly Farming (England) and Schöneiche in Germany are the pondscapes the lowest-rated whereas Rhône Verbois, the Turkish pondscapes and La Pedrera are highest-rated. It remains unclear whether the potential is not being fully exploited or whether efforts have already been made to enhance their potential.

We also choose to analyse the NCPs with a question on the future NCPs. We classified the pondsapes according to their similarities thanks a color scheme (each dominant NCP have the same color; each empty box of the table means that there is no unanimous choice):

Table 89: comparison on the NCP expected by stakeholders to be provided in the future by the pondsapes

Future NCPs	NCP n°1	NCP n°2	NCP n°3
Switzerland: <i>Bois de Jussy</i>	Habitat creation	Regulation of climate	Regulation of water quantity
Switzerland: <i>Rhône V.</i>	Habitat creation	Regulation of climate	Supporting identities
Spain: <i>Albera</i>	Habitat creation	Regulation of climate	
England: <i>Pinkhill M.</i>	Habitat creation	Pollination	Regulation of climate
Turkey: <i>Dikkuyruk</i>	Food and feed	Habitat creation	Regulation of water quality
Turkey: <i>Imrahor</i>	Habitat creation	Regulation of water quality	
Uruguay: <i>Sierra de C.</i>	Habitat creation	Regulation of water quality	Regulation of water quantity
Uruguay: <i>La Pedrera</i>	Regulation of water quantity	Food and feed	
England: <i>Water Fr. Fa.</i>	Habitat creation	Regulation of hazards	
Belgium: <i>Pikhak.</i>	Habitat creation	Regulation of hazards	
Germany: <i>Schöneiche</i>	Habitat creation	Regulation of water quantity	Regulation of hazards
Denmark: <i>Lystrup</i>	Physical and psychological exp.	Habitat creation	
Denmark: <i>Fyn</i>	Habitat creation	Physical and psychological exp.	Supporting identities
Belgium: <i>Tommelen</i>	Habitat creation		
Turkey: <i>Gölbasi</i>	Habitat creation	Food and feed	Maintenance of options
Belgium: <i>Gete Vallei</i>	Habitat creation		

The main lesson learned is that major priority has been placed upon ‘habitat creation and maintenance’. The other NCP selected depend probably on the status and threats observed on each pondscape. Surprisingly ‘maintenance of options’ is almost never selected by the stakeholders as future priority despite its high average in the question regarding the ranking of NCP in present.

In this table, thanks to the color scheme, a similar group of pondsapes is visible in pink and yellow composed of Swiss pondsapes, Albera and, to a lesser degree, Pinkhill Meadows (England). Another group of pondsapes can be also distinguished with Water Friendly Farming, Pikhakendonk and Schöneiche with ‘habitat creation and maintenance’ and ‘regulation of hazards’ as priorities.

3.4.5. Perception of threats

The threats with less than 3 on average can be deemed relatively unimportant by respondents and is not listed in the figure below. That’s why we have removed the threats with scores below 3 to make reading of the figure below easier (Figure 3).

The option ‘climate change’ (with ratings between 3,2-5) has been chosen by all the stakeholders as the number one threat. Pollution is also considered a major threat for pondsapes (with ratings between 2,5-4,8) except for Switzerland and Tommelen (Belgium). ‘Invasive species’ (with

ratings between 2,3-4,7) counts as important threat (3,4 to 4,7) for all the pondsapes except for Denmark. Intensive farming is a threat (3,3 to 4,7) for the Turkish pondsapes, Water Friendly Farming (England), Albera (Spain), the Belgian pondsapes except Tommelen, the Uruguayan pondsapes and Fyn in Denmark. Deforestation is a real threat (above 3,5) for the Turkish and Uruguayan pondsapes. However, the options ‘deforestation’ (1,7-4,3) and ‘extraction of materials’ (1,5-4) obtained the poorest ranking.

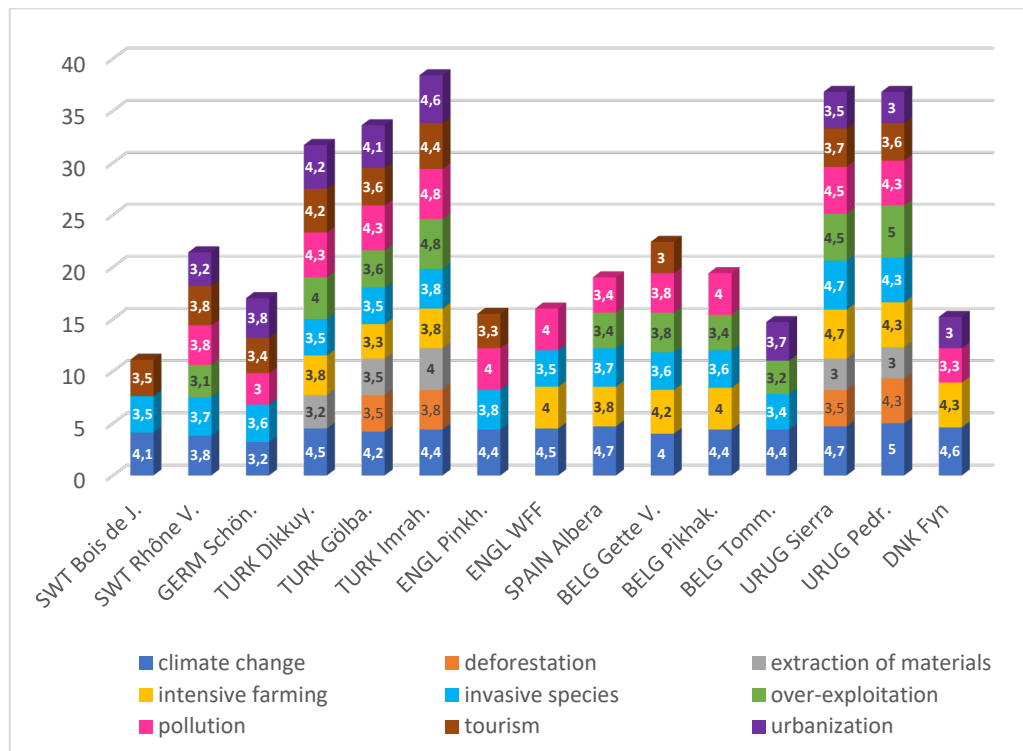


Figure 4: comparison of the assessment of threats by stakeholders

Gölbasi-Imrahor (Turkey) and Uruguayan pondsapes share the same concerns with deforestation, intensive farming, over-exploitation and pollution.

Given the geographic factors (urban-rural-forest), the differences among the pondsapes are so large that it is not possible to highlight some general ‘pattern’ of high-risk territories.

3.4.6. Impacts of threats

The options with less than 3 on average can be deemed as relatively unimportant by respondents and is not listed as a serious stake. That’s why we have removed the impacts of threats with scores below 3 to make reading of the figure 4 below easier.

All the pondsapes have an average above 3 regarding the ‘impacts on biodiversity’ (with ratings between 3,8-5), ‘impacts on water quality’ (with ratings between 3,4-5), ‘impact on water quantity’ (with ratings between 3,3-5) and ‘impact on the landscape’, ‘impact on water temperature’ (with ratings between 3,2-5).

On the average, ‘impacts on biodiversity’ (4,3), ‘impacts on water quality’ (4,1), ‘impact on water quantity’ (4,1) and ‘impact on the landscape’ (4) are the highest ranked impacts of threats identified by all the stakeholders.

The stakeholders from the Turkish and Uruguayan pondsapes expressed similar concern about the ‘impacts on productive purpose’ and ‘impact on my property/security’.

A quick look at the figure is enough to underline the number of concerns that are important in La Pedrera, Imrahor and Gölbaşı.

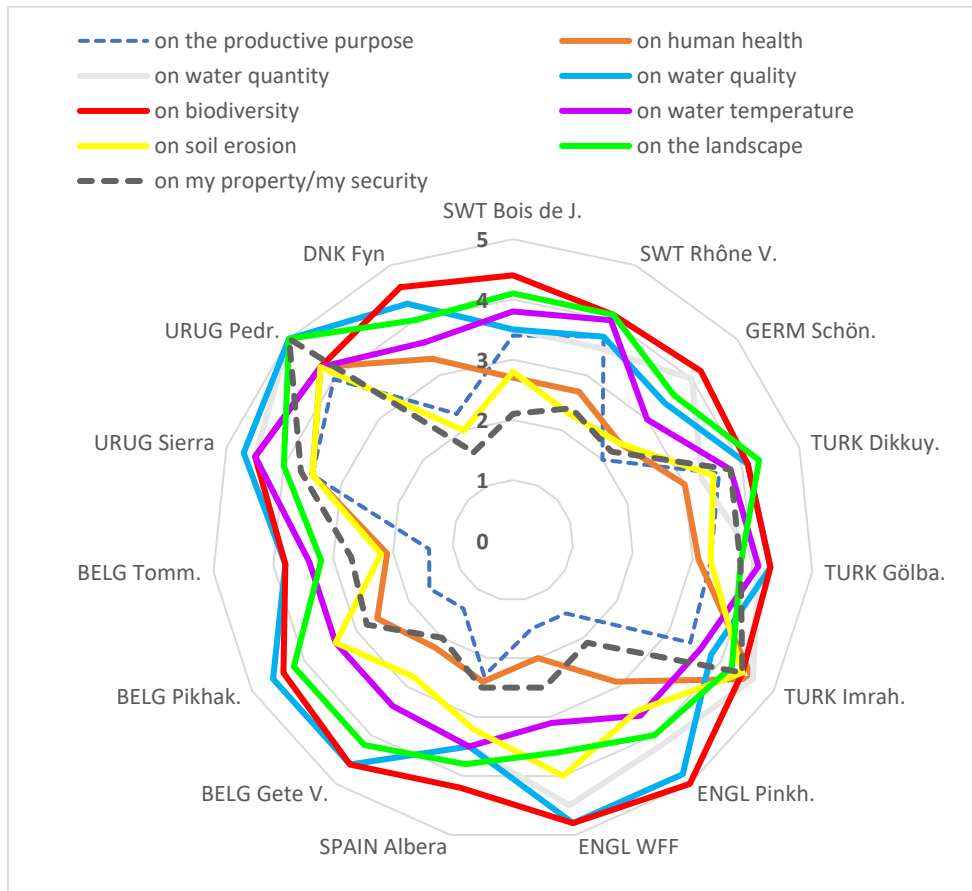


Figure 5: Comparison of the assessment of impacts of threats by stakeholders

3.4.7. NBS measures and level of intervention

By examining the different stakeholders' choices on the NBS measures and the type of level of intervention, we developed a table grouping the pondscapes according to the stakeholders' preferences (table 90: one color for each dominant NCP). The colour scheme reveals the similarities between the pondscapes. Three measures requiring priorities were particularly selected: biodiversity (increasing biodiversity or maintaining populations of endangered species), restoration measures, and improving water quality. Some combination of two or more NbS measures, is expected to lead to synergies and increased achievable benefits. Three combinations are especially highlighted:

- biodiversity related-action and restoration measures
- biodiversity related-action and improving water quality
- biodiversity related-action and increasing the water volume.

Specific strategies for NbS measures combinations put in place for achievement of stakeholders' objectives should be further studied.

Table 90: comparison of the NbS measures selected by stakeholders

Pondscapes	NbS n°1	NbS n°2	NbS n°3
Switzerland: <i>Bois de J.</i>	Restoration measures	Biodiversity related-action	Developing public ownership
Switzerland: <i>Rhône V.</i>	Restoration measures	Biodiversity related-action	Better/more environmental education
Spain: <i>Albera</i>	Restoration measures	Biodiversity related-action	Increasing the volume of water – limitation of certain uses
Belgium: <i>Tommelen</i>	Biodiversity related-action		Increasing the volume of water
Germany: <i>Schöneiche</i>	Better/more environmental education	Increasing the volume of water – Restoration measures - Biodiversity related-action	
Denmark: <i>Fyn</i>	Restoration measures	Biodiversity related-action - improving water quality - Monitoring of public ponds	
Belgium: <i>Gete Vallei</i>	Restoration measures - Biodiversity related-action – improving water quality		
Belgium: <i>Pikhakend.</i>	Restoration measures - Biodiversity related-action – improving water quality - limitation of certain uses		
Uruguay: <i>Sierra de C.</i>	Restoration measures - Biodiversity related-action – improving water quality - monitoring of public ponds – monitoring of private ponds		
England: <i>Pinkhill M.</i>	Biodiversity related-action		Monitoring of public ponds
England: <i>Water Fr. Fa.</i>	improving water quality	creating new ponds	Biodiversity related-action
Turkey: <i>Imrahor</i>	improving water quality	abandonment of certain uses	monitoring of public ponds
Turkey: <i>Gölbasi</i>	improving water quality	abandonment of certain uses	developping environmental regulation
Turkey: <i>Dikkuyruk</i>	improving water quality	developping environmental regulation	Better/more environmental education
Uruguay: <i>La Pedrera</i>	monitoring of private ponds - limitation of certain uses - better/more environmental education		

The cross-tabulation of the results must also be done to understand the relationship between the environmental condition and the perceptions on NBS measures. We sorted the pondscapes in

descending order (rating on environmental condition between 1 and 5 scale-point) to show the level of intervention and NbS measures associated (table 91: one color for each dominant NCP).

Table 91: Comparison between the environmental condition and the NbS selected by stakeholders

Pondscapes	Environmental condition (1-5, average)	Dominant level of intervention	NbS measure #1 the most selected	NbS measure #2 the most selected
England: Pinkhill M.	4,7	strong	Biodiversity related-action	Monitoring of public ponds
Switzerland: Bois de J.	4	moderate	Restoration measures	Biodiversity related-action
Turkey: Dikkuyruk	3,8	moderate	improving water quality	developing environmental regulation
Uruguay: La Pedrera	3,7	strong	monitoring of private ponds - limitation of certain uses - better/more environmental education	
Switzerland: Rhône V.	3,5	moderate	Restoration measures	Biodiversity related-action
Uruguay: Sierra de Caracoles	3,5	moderate	Restoration measures - Biodiversity related-action - improving water quality - monitoring of public ponds - monitoring of private ponds	
England: Water Fr. Fa.	3,4	strong	improving water quality	creating new ponds
Spain: Albera	3,3	moderate	Restoration measures	Biodiversity related-action
Belgium: Tommelen	3	moderate	Biodiversity related-action	Increasing the volume of water
Denmark: Fyn	3	moderate	Restoration measures	Biodiversity related-action - improving water quality - Monitoring of public ponds
Belgium: Gete Valleï	3	/	Restoration measures - Biodiversity related-action - improving water quality	
Belgium: Pikhakend.	3	strong	Restoration measures - Biodiversity related-action - improving water quality - limitation of certain uses -	
Turkey: Gölbası	2,8	moderate	improving water quality	abandonment of certain uses
Turkey: Imrahor	2,7	strong	improving water quality	abandonment of certain uses
Germany: Schöneiche	1,6	moderate	Better/more environmental education	Increasing the volume of water - Restoration measures - Biodiversity related-action

The environmental condition assigned by stakeholders and the level of intervention are not really correlated. Our assumption is the answers to these questions may hinge crucially on the requirement and the level of ambition for each stakeholder. To illustrate the data, the stakeholders from Pinkhill Meadows (England) and La Pedrera (Uruguay) have a positive perception on the environmental condition on the pondscapes but they want to go much further. Conversely, stakeholders from Gölbası and Schöneiche (Germany) have a negative perception on the environmental condition on the pondscapes but they preferred to take moderate measures. The different types of NbS measures are not correlated with the other data.

Another cross-tabulation of the results was developed to understand the relationship between the most important negative changes observed, the main threats (except climate change), the main impacts on threats and the most selected NbS measures (Table 92: we have grouped similar threats and NbS measures with a new score scheme).

Table 92: comparison between the threats and the NbS selected by stakeholders

Pondscales	Top-2 of threats	Top-2 impacts of threats	Negative change observ.	Top-2 of the NbS measures
England: <i>Pinkhill M.</i>	Pollution Invasive species	On biodiversity On water quality	colonisation by new plant species	Biodiversity Monitoring of public ponds
Switzerland: <i>Bois de J.</i>	Invasive species Tourism	On biodiversity On the landscape	/	Restoration measures Biodiversity
Turkey: <i>Dikkuyruk</i>	Pollution Urbanization	On the landscape On water quality	deterioration of water quality	water quality developping env. regul.
Uruguay: <i>La Pedrera</i>	Over- exploitation	On water quality On water quantity	/	limitation of certain uses - better/more environmental education
Switzerland: <i>Rhône V.</i>	Pollution Tourism	On biodiversity On the landscape	/	Restoration measures Biodiversity
Uruguay: <i>Sierra de C.</i>	Intensive farm. Invasive species	On water quality On biodiversity	arrival of new animal species	Biodiversity - water quality -
England: <i>Water Fr. Fa.</i>	Intensive farm. Pollution	On water quality On biodiversity	/	water quality
Spain: <i>Albera</i>	Intensive farm. Invasive species	On biodiversity On the landscape	more frequent drying of ponds	Restoration measures Biodiversity
Belgium: <i>Tommelen</i>	Urbanization Invasive species	On biodiversity On water quantity		Biodiversity - water volume
Denmark: <i>Fyn</i>	Intensive farm. Pollution	On biodiversity On water quality	extinction of local animal species	Biodiversity - water quality
Belgium: <i>Gete Vallei</i>	Intensive farm. Pollution	On biodiversity On water quality	deterioration of water quality	Biodiversity - water quality
Belgium: <i>Pikhakend.</i>	Intensive farm. Pollution	On water quality On water quantity	/	Biodiversity - water quality -
Turkey: <i>Gölbasi</i>	Pollution Urbanization	On biodiversity On water quality	decrease of surface area	water quality abandonment of certain uses
Turkey: <i>Imrahor</i>	Over- exploitation Pollution	On human health On water quantity	deterioration of water quality	water quality abandonment of certain uses
Germany: <i>Schöneiche</i>	Urbanization Invasive species	On biodiversity On water quantity	more frequent drying ponds	Increasing the volume of water - Biodiversity

With this new table, the assessment of the local situation and the preferred options are visible. The table demonstrates the consistency of the different data and identify the broad trends.

All the DEMO-sites have one or two recurrent and dominant issues emerging from the replies to the questionnaire. Here are the broad trends:

- Stakeholders from Albera and the Swiss pondscales are particularly focused on biodiversity and pondscape scale;

- Stakeholders from Fyn (Denmark), Pinkhill Meadows (England), Sierra de Caracoles (Uruguay) and Gete Vallei (Belgium) are particularly focused on biodiversity and water quality;
- Stakeholders from Tommelen (Belgium) and Schöneiche (Germany) are particularly focused on biodiversity and water quantity;
- Stakeholders from Imrahor (Turkey) are particularly focused on water quality and water quantity;
- Stakeholders from Gölbası and Dikkuyruk (Turkey) are particularly focused on water quality;
- Stakeholders from La Pletera (Uruguay) are particularly focused on water quantity.

3.5. General assessment of the stakeholder questionnaire

One hundred completed responses have been received, including 41 from the female stakeholders (38%). This averages to 7 responses per pondscape, which illustrates the difficulty in attracting stakeholders. The average of their self-ranked professional responsibility is 3.5 (with variance in mean score between 2,6 – 4,6). The stakeholders have a sense of themselves as ‘counselling’, ‘technical support’ and ‘project facilitator’. Most of the stakeholders are part of civil society and national authority. Not many answers were received from landowners, farmers, foresters, and decision-makers (as mayor or politicians).

All pondscares are viewed as making a positive contribution to the life quality (rating between 3 and 4,8/5). Regarding the perception on environmental condition, only Pinkhill Meadows (England), Bois de Jussy (Switzerland) and Dikkuyruk obtained high ratings where the picture appeared more contrasted in Germany, Belgium and the other Turkish pondscares. This remains to be verified thanks to factual data from WP2. The most important changes highlighted are ‘decrease of pondscape surface area’, ‘lower pond water level’, ‘more frequent drying ponds’, ‘deterioration of water quality’ and ‘increase in the number of ponds’. Almost all these prevailing perceptions can be considered as negative environmental change with an exception with an ‘increase in the number of ponds’ due to the restoration measures in recent years (Bois de Jussy, Pinkhill and Sierra de Caracoles).

From the perspective of the contributions of the pondscares, some converging and differing perceptions are measured. NCPs about ‘habitat creation and maintenance’ (overall average: 4,6), ‘psychological and physical experiences’ (overall average: 4,1) and ‘maintenance of options’ (overall average: 4,1) obtained the highest scores while ‘food and feed’ obtained the poorest ranking. We note that ‘maintenance of option’ is never/rarely selected in the three first NCP option per each pondscape but this NCP option have a high overall average. Some cross-pondscape differences are clearly visible:

- Both Swiss pondscares, Alpera, and, to a lesser degree, Pinkhill Meadows (England) and Fyn (Denmark) values the same NCPs (biodiversity, pollination, non-material NCPs, maintenance of options) in the same order of magnitude.
- The three Turkish pondscares and La Pedrera (Uruguay) have similar ratings on the same priority NCP (food and feed, biodiversity, water quality, physical and psychological experiences, maintenance of options).

Responding to a question on the future contributions of the pondscares, the same two groups are clearly visible composed of Swiss pondscares, Alpera and, to a lesser degree, Pinkhill Meadows (England) with ‘habitat creation’-biodiversity and ‘regulation of climate as priorities. Another group of pondscares can be distinguished with Water Friendly Farming (England), Pikhakendonk (Belgium) and Schöneiche (Germany) with ‘habitat creation and maintenance’ and ‘regulation of hazards’ as priorities.

In the area of current and emerging threats, the option ‘climate change’ (overall average of 4,3 and average ratings between 3,2-5) have been chosen by all the stakeholders as the top-one threat. The option ‘pollution’ is also seen as an important threat in all pondscapes (overall average of 3,7 with ratings between 2,5-4,8) except in Switzerland and Tommelen (Belgium). ‘Invasive species’ (overall average of 3,4 with ratings between 2,3-4,7) as important threat (3,4 to 4,7) for all the pondscapes except in Denmark. Intensive farming is a threat (3,3 to 4,7) for the Turkish pondscapes, Water Friendly Farming (England), Albera (Spain), the Belgian pondscapes except Tommelen, the Uruguayan pondscapes and Fyn in Denmark.

The options ‘impacts on biodiversity’ (overall average of 4,3 and ratings between 3,8-5), ‘impacts on water quality’ (overall average of 4,1 with ratings between 3,4-5), ‘impact on water quantity’ (average of 4,1 with ratings between 3,3-5) and ‘impact on the landscape’ (overall average of 4) are the highest ranked impacts of threats identified by all the stakeholders.

A cross-comparison of all the responses provides a full overview of the results. All the DEMO-sites have one or two recurrent and dominant themes through the different questions from the questionnaire. Here are the broad trends:

- Stakeholders from Albera and the Swiss pondscapes are particularly focused on biodiversity and pondscape’ scale;
- Stakeholders from Fyn (Denmark), Pinkhill Meadows (England), Sierra de Caracoles (Uruguay) and Gete Vallei (Belgium) are particularly focused on biodiversity and water quality;
- Stakeholders from Tommelen (Belgium) and Schöneiche (Germany) are particularly focused on biodiversity and water quantity;
- Stakeholders from Imrahor (Turkey) is particularly focused on water quality and water quantity;
- Stakeholders from Gölbasi and Dikkuyruk (Turkey) are particularly focused on water quality;
- Stakeholders from La Pletera (Uruguay) are particularly focused on water quantity.

Regarding the concept of NBS, three measures requiring priorities were particularly selected: ‘biodiversity’ (increasing biodiversity or maintaining populations of endangered species), ‘restoration measures’ and ‘improving water quality’. Some combination of two or more NbS measures, is expected to lead to synergies and increased achievable benefits. Three combinations were especially highlighted by stakeholders:

- Biodiversity related-action and restoration measures;
- Biodiversity related-action and improving water quality;
- Biodiversity related-action and increasing the water volume.

4. Results from the workshops with stakeholders

4.1. General intent

The main objective of the different workshops was to collect qualitative data from a variety of stakeholders. Our intention was to put into perspective the results of the questionnaire to stakeholders and obtain explanations on perceptions. The workshops have been specifically designed to emphasize the collective argument.

Disparities of familiarity with concepts among stakeholders were given careful consideration during all workshops. It was therefore considered appropriate to devote time during the workshops to lay the basis of these concepts. We made sure that the presentation of the concepts and their contents was targeted and effective (pedagogical), particularly with the synergies between potential contributions and contributions made.

4.2. Profile of participants

The PONDERFUL research team welcomed over 144 stakeholders (35,4% were women). With an average of 14 stakeholders per workshop with a large variety of profiles, the workshop reports are available for further information (please contact WP1 team). Effort was made to work with mixed-gender groups as much as possible, making it impossible to generate gender-disaggregated data.

Table 93: Stakeholder profiles during the workshops

DEMO-site	Number of participants	Gender distribution	Date	Dominant profile
Switzerland	11	4 women (36%) 7 men (64%)	19th October 2021	regional authority + NGOs
Germany	7	4 women (57%) 3 men (43%)	5th November 2021	diversified
Turkey	9	3 women (33%) 6 men (67%)	16th November 2021	diversified
England <i>Pinkhill</i>	13	8 women (61%) 5 men (39%)	18th November 2021	Research NGO
<i>WFF</i>	9	4 women (44%) 5 men (56%)	19th November 2021	
Spain <i>Albera</i>	29	6 women (21%) 23 men (79%)	26th November 2021	Diversified Tourism + Natural Park
<i>La Pletera</i>	11	5 women (45%) 6 men (55%)	18th November 2021	
Belgium	11	3 women (27%) 8 men (73%)	2 December 2021	NGO
Uruguay	13	4 women (30%) 9 men (70%)	13th December 2021	National authority
Denmark	11	5 women (45%) 6 men (55%)	2th March 2022	National authority + consultancy

4.3. Results by DEMO-site

4.3.1. Switzerland

- **Exercise n°1: NBS measures**

Key lessons (Table 94):

- Stakeholders have highlighted three different scales (pond, pondscape and larger scale);
- They were focused on biodiversity (species and habitats) and pondscape functioning;
- Stakeholders have a medium-term strategy;
- A number of projects have already been completed;
- The connectivity is the measure selected.

Table 94: Selection of NBS measures by stakeholders during the Swiss workshop

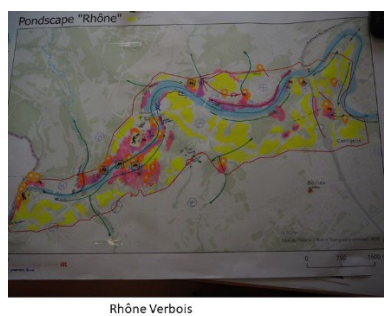
Pondscape	Measure(s) selected	Level of importance	Preferred scale
PAST			
Bois de Jussy	restoration and upkeep of the forest/wood	moderate	pondscape scale
Rhône Verbois	creation of ponds	strong	intermediate (scale between pond and pondscape)
FUTURE			
Bois de Jussy	improve the connectivity (thanks to the ditches) until 2030	moderate	beyond the pondscape (because of the French-Swiss border)
Rhône Verbois	connectivity between the ponds	/	Pondscape scale

- **Exercise n°2: participatory mental map**

Here below are the maps produced by the stakeholders.

Key lessons:

- Attention is drawn not only on the ponds but also to the land use, the water connectivity between ponds, the vegetation (hedge) around the ponds, the habitats species (including exotic species) and the corridor.
- Regarding Rhône Verbois, the hope was expressed to reach greater convergence between the ponds and river management regarding the dykes and fishpasses.
- Out of this exercise came proposals such as creation of ponds and pools.



Rhône Verbois



Bois de Jussy

Map 2: example of participatory maps from the Swiss workshop

- **Exercise n°3: NCPs assessment**

Key lessons (Table 95):

- Four NCPs were mainly identified. ‘habitat creation and maintenance’ is clearly the number 1 for both pondscales in the present and for the future.
- Regarding the both pondscales, the farsighted answers from the stakeholders have been chosen and underscore the concerns about the future (resilience, impact of water uses and drought risk).
- There is a will and real determination to take action on the connectivity, raise the water table level and limit the access to ponds (channelling traffic).

Table 95: selection of NCPs by stakeholders during the Swiss workshop

Pondscape	NCP #1	NCP #2	NCP #3	Justification
PRESENT				
Bois de Jussy	habitat creation and maintenance	Physical and psychological experiences	Regulation of hazards + Supporting identities	Enhance the natural environment (biodiversity, forest)
Rhône Verbois	habitat creation	Regulation of water quantity	Supporting identities	
FUTURE				
Bois de Jussy	habitat creation and maintenance	Regulation of water quantity Physical and psychological experiences	Regulation of water quality Regulation of hazards	Resilience, water table
Rhône Verbois	Regulation of water quantity	habitat creation and maintenance	Physical and psychological experiences + supporting identities	Handle water scarcity in the future

4.3.2. Germany

- **Exercise n°1: NBS measures**

Key lessons:

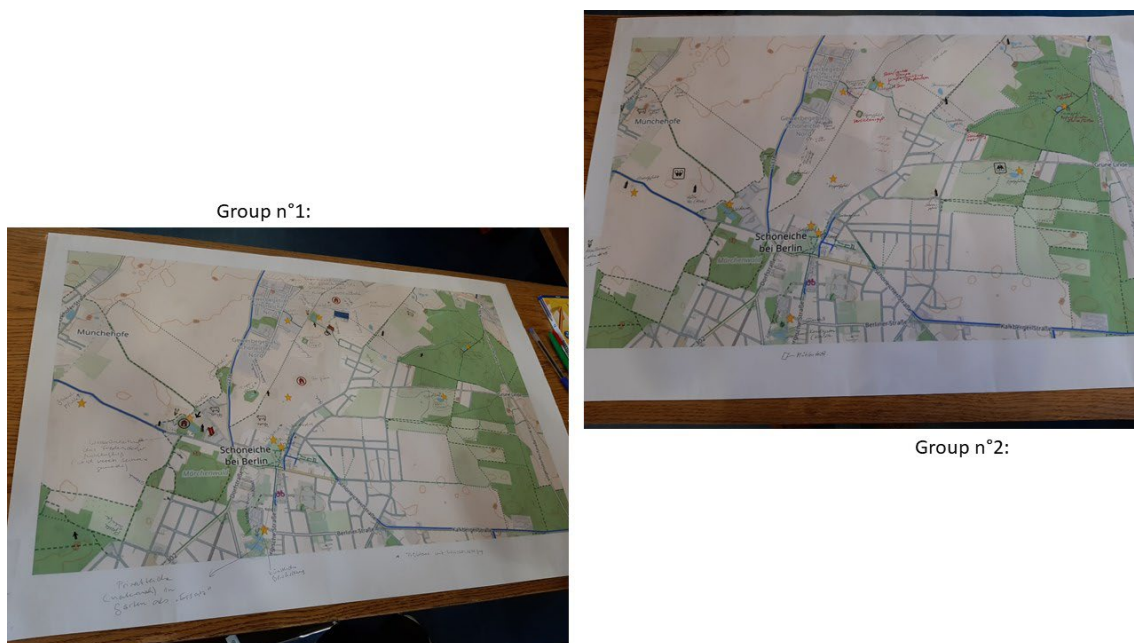
- Three different scales were highlighted (pond, pondscape and municipality level);
- Finding an efficient way to collect and retain rainwater to feed the ponds should be given priority (through infiltration in the soil and retention/storage);
- Recognition of the ecosystem services provided and development of policies on ponds in landscape planning to improve water-use efficiency;
- Time scale: urgent nature of the current situation.

Table 96: Selection of NBS by stakeholders during the German workshop

	Measure(s) selected	Level of importance	Preferred scale
Pondscape Schöneiche	PAST		
	Groundwater pump was installed to keep the water level high and transferring the water flowing from the roofs of the buildings of an industrial area to a pond.	moderate	Municipality scale and pond scale
	FUTURE		
	Ask the municipality or the Land Brandenburg to punctually restore flowbeds by removing concrete	moderate	Municipality scale
Increase the connection between the pond and the source of water in order to increase pond water supply. It might be an option to connect small ponds to the ground water level. This implies deepening them.	pondscape scale		

- **Exercise n°2: participatory mental map**

Here below are the maps produced by the stakeholders:



Map 3: Example of participatory maps from the German workshop

Key lessons:

- Attention is drawn not only on the ponds but also on the land use, the water quantity of the ponds, the species (including exotic species);
- The hope was expressed to reach greater convergence between the ponds and the land use planning to enhance the water connectivity and water transfer;
- Proposals of creation of ponds with their locations.

- **Exercise n°3: NCPs assessment**

Key lessons:

- Two NCPs were clearly identified: ‘regulation of water quantity’ and ‘regulation of climate’;
- The NCP ‘biodiversity’ disappears because of the growing concerns for lack of water in the future;
- There was a widespread demand for the mobilization of energy of local actors;
- Maximising the potential of water in the pondscape (gather rainwater);
- Ponds provide ecosystem services such as water retention.

Table 97: Selection of NCPs by stakeholders during the German workshop

	NCP #1	NCP #2	NCP #3	Justification
Pondscape Schöneiche	PRESENT			
	Habitat creation and maintenance	Regulation of water quantity	Regulation of climate	Improve the microclimate and regulate the climate
	FUTURE			
	Regulation of water quantity	Regulation of climate	supporting identities	Water retention, avoid seepage

4.3.3. Turkey

- **Exercise n°1: NBS measures**

Key lessons:

- Missing data from stakeholders on NBS measures of Gölbası pondscales because of the delay during the workshop;
- No stakeholder feel comfortable thinking about Dikkuyruk;
- Previous projects have been carried out but with limited success;
- The NBS measure of restoration was preferred as it allows systemic changes in the pondscales

Table 98: Selection of NBS measures by stakeholders during the Turkish workshop

Pondscape	Measure(s) selected	Level of importance	Preferred scale
PAST			
<i>Imrahor</i>	project on the land use to change the pond morphometry and improve biodiversity = not successful	strong	many ponds
<i>Gölbası</i>	Project with the civil society (no detail has been provided)	moderate	intermediate scale (between pond and pondscape)
FUTURE			
<i>Imrahor</i>	Current and forthcoming restoration and management measures to enhance biodiversity, water quality and quantity	moderate	pondscape

- **Exercise n°2: participatory mental map**

Here below are the maps produced by the stakeholders:

Key lessons:

- Attention is drawn not only on the ponds but also on vegetation and habitat species in all the pondsapes.
- Determination to fight against the “People’s Garden Project” and against a change in urban planification (Imrahor and Dikkuyruk)
- Launch projects to contribute to the improvement of water quality and biodiversity thanks to measures regarding the habitats, vegetation and buffer zone.



Map 4: example of participatory maps from the Turkish workshop

- **Exercise n°3: NCPs assessment**

Key lessons:

- Missing data from stakeholders on NbS measures because of the delay during the workshop;
- Three NCPs were identified for all the pondsapes: ‘regulation of water quality’, ‘regulation of water quantity’ and ‘habitat creation and maintenance’.

Table 99: Selection of NCPs by stakeholders during the Turkish workshop.

Pondscape	NCP #1	NCP #2	NCP #3	Justification
PRESENT				
<i>Imrahor</i>	Regulation of water quality	Physical and psychological experiences	Regulation of water quantity	Change the land use to mitigate the urban spread risk
Göl basi	Regulation of water quantity	Regulation of water quality	/	Preservation of the integrity of the hydrological cycle in addition to the underground water
Dikkuyruk	habitat creation and maintenance	Learning and inspiration	/	flora diversity
FUTURE				
Imrahor	habitat creation and maintenance	Regulation of water quality	/	

4.3.4. England

- **Exercise n°1: NBS measures**

Key lessons (Table 100):

- Three different scales were highlighted (pond, pondscape and larger scale);
- Stakeholders were focused on biodiversity (species and habitats) and water quality;
- Regarding WFF, it is a matter of reconciling agriculture with the environment.

Table 100: Selection of NBS measures by stakeholders during the English workshops

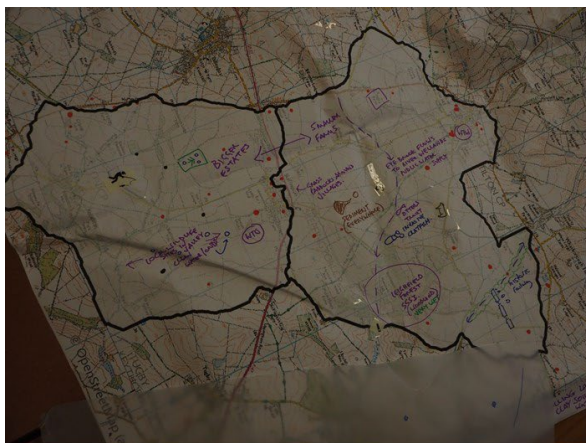
Pondscape	Measure(s) selected	Level of importance	Preferred scale
PAST			
Pinkhill Meadows	Creation of ponds in the 1990' for biodiversity and water quality	strong	pondscape scale
Water Friendly Farming	Clean water ponds and creation of silt trap	strong	pond scale
FUTURE			
Pinkhill Meadows	Extend the area of the pondscape and enhance connectivity with meadow and flood plain	moderate	beyond the pondscape (larger scale)
Water Friendly Farming	More clean water ponds in the 'right' place to maintaining agricultural productive landscape	/	pondscape scale

- **Exercise n°2: participatory mental map**

Here below are the maps produced by the stakeholders:

Key lessons:

- Attention was focused on the surrounding areas of each pond;
- In both pondscales exist the determination to maintain grazing and increasing habitat creation with new ponds.



Water Friendly Family



Pinkhill Meadows

Map 5: Example of participatory maps from the English workshops.

- **Exercise n°3: NCPs assessment**

Key lessons (Table 101):

- ‘Habitat creation and maintenance’ is the priority for Pinkhill Meadows whereas the ‘regulation of water quality’ is the preferred NCPs for WFF;
- Discrepancies were found between the present and the future in both pondscales.

Table 101: Selection of NCP by stakeholders during the English workshops

Pondscape	NCP #1	NCP #2	NCP #3	Justification
PRESENT				
Pinkhill Meadows	Habitat creation and maintenance	Learning and inspiration	Pollination + Supporting identities	The pondscape would shelter 20% of the UK biodiversity (connection with Thames river)
Water Friendly Farming		Food and feed	Regulation of water quality	
FUTURE				
Pinkhill Meadows	Habitat creation and maintenance	Regulation of water quantity	Regulation of water quality	Tradition of scientific experimentation
Water Friendly Farming	Regulation of water quality	Regulation of climate	Pollination + Food and feed + Physical and psychological experiences	

4.3.5. Spain

- **Exercise n°1: NBS measures**

Table 102: Selection of NBS measures by stakeholders during the Spanish workshops.

Pondscape	Measure(s) selected	Level of importance	Preferred scale
PAST			
Albera	- Restoration of “Prat dels Rosers” pond. - Construction of underpass systems (tunnels under roads) for amphibians (“Cardonera” and “Pous” ponds).	moderate	Ponds and pondscape scale
La Pletera	A Life Nature restoration project was developed to recover the ecological values of the salt marsh and their effectiveness to buffer the effects of marine intrusion during sea storms	strong	Pondscape scale
FUTURE			
Albera	- Increase pond protection (e.g., increasing Nature 2000 network area, creating a Natural Park) to ensure connectivity among ponds. - Improve more public management to guarantee the conservation of ponds. - Maintain the land uses around the ponds but control and manage cattle to avoid overgrazing, extra nutrient supply and soil compaction.	moderate	Pondscape scale
La Pletera	- Connection between the two banks of the Ter river for pedestrians. - Educational actions in collective spaces priority. - Installation and recovery of information boards restricting the use of space. - Implementation of a monitoring system for adaptive management.	weak	Pondscape scale

Key lessons (Table 102):

- Two different scales were highlighted (pond and pondscape). The inputs on the present are more focused on the pond scale and the proposals for the future specifically pointed the pondscape scale;
- The stakeholders were focused on biodiversity (amphibians), land use, renaturalization and connectivity in both pondscales;
- Regarding Albera, it is a matter of reconciling agriculture with the environment.

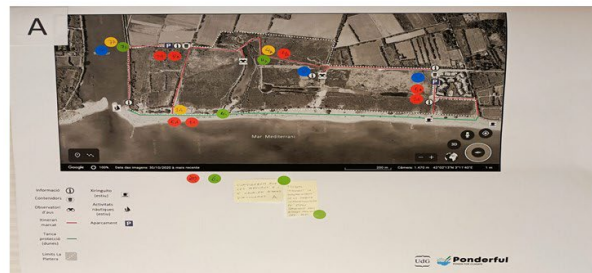
• **Exercise n°2: participatory mental map**

Here below are the maps produced by the stakeholders. Key lessons:

- Attention is focused on the ponds but also on the landscape elements (road, phone cable etc);
- In both pondscales, determination to limit human uses and increasing habitat creation;
- Willingness to maintain or increase the protection of the pondscape.



2 examples of maps on Albera pondscape



Example of map on La Pletera pondscape

Map 6: Example of participatory maps from the Spanish workshops.

• **Exercise n°3: NCPs assessment**

Key lessons (Table 103):

- Two NCPs were particularly identified in both pondscales: ‘habitat creation and maintenance’ and ‘learning and inspiration’.
- Some differences between the present and the future are visible.
- Despite their short distance, there are some differences between the two pondscales.

Table 103: Selection of NCP by stakeholders during the Spanish workshops

Pondscape	NCP #1	NCP #2	NCP #3	Justification
PRESENT				
Albera	habitat creation and maintenance	physical and psychological experiences	maintenance of options	Heritage for later generations
La Pletera	physical and psychological experiences	learning and inspiration	habitat creation and maintenance + regulation of hazards	
FUTURE				
Albera	habitat creation and maintenance	learning and inspiration	maintenance of options	Environmental education

La Pletera	regulation of hazards	learning and inspiration	habitat creation and maintenance	
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4.3.6. Belgium

- **Exercise n°1: NBS measures**

Key lessons (Table 104):

- Previous projects have been carried out but with limited success.
- Issues of water availability has been addressed as the major current problem, both in terms of a water shortage and water excess.
- Collaboration with new types of actors (municipality, business) is required to achieve new projects.

Table 104: Selection of NBS measures by stakeholders during the Belgian workshop.

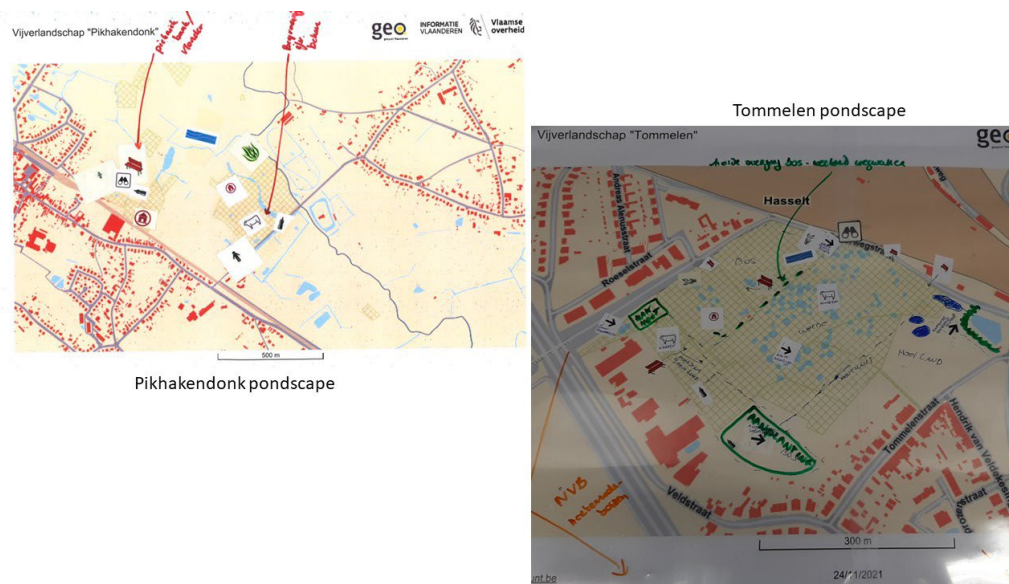
Pondscape	Measure(s) selected	Level of importance	Preferred scale
PAST			
<i>Tommelen</i>	Current management is largely targeting biodiversity/Great Crested Newt.	Strong	Pondscape scale
<i>Pikhakendonk</i>	Ponds have been actively restored and created over the last decade, and active pond creation is still ongoing.	Strong	Pondscape scale
<i>Gete Vallei</i>	/	/	/
FUTURE			
<i>Tommelen</i>	- Rotation management involving systematic dredging of ponds. - Collaboration with Fluvius (build and maintains distribution networks for electricity and gas) and municipality 'Hasselt' to better retain rainwater by enhancing water storage capacity and prevent afforestation of the pondscape.	Strong	Pondscape scale
<i>Pikhakendonk</i>	Expand the pondscape and increase variation in water depth between and within ponds to allow the development of extensive shoreline vegetation.	Strong	Pondscape scale
<i>Gete Vallei</i>	- Management in the future should not only focus on biodiversity conservation, but should be part of a larger picture at the landscape scale and related landscape infrastructure.	Moderate	Pondscape scale

- **Exercise n°2: Participatory mental map**

Here below are the maps produced by the stakeholders:

Key lessons:

- Attention is drawn not only on the ponds but also on elements of landscapes (coppice, hedge, meadow) in all the pondscales;
- It is necessary to launch projects contributing to the improvement of water quantity and biodiversity.



Map 7: Example of participatory maps from the Belgian workshop

• **Exercise n°3: NCPs' assessment**

Key lessons (Table 105):

- Three NCPs were identified for all the pondscape: ‘habitat creation and maintenance’, ‘learning and inspiration’ and ‘physical and psychological experiences’;
- Biodiversity is the biggest issue according to the stakeholders;
- The territorial dimension is often highlighted (education, access and share the data, heritage, collaboration).

Table 105: Selection of NCP by stakeholders during the Belgian workshop.

Pondscape	NCP #1	NCP #2	NCP #3	Justification
PRESENT				
Tommelen	habitat creation and maintenance	Learning and inspiration	Physical and psychological experiences	
Pikhakendonk	habitat creation and maintenance	Physical and psychological experiences	Regulation of water quantity	Environmental education
Gete Vallei	habitat creation and maintenance	Learning and inspiration	Supporting identities	Environmental education
FUTURE				
Tommelen	habitat creation and maintenance	Learning and inspiration	Physical and psychological experiences	
Pikhakendonk	habitat creation and maintenance	Regulation of climate	Physical and psychological experiences	
Gete Vallei	habitat creation and maintenance	Regulation of water quality	Regulation of water quantity	

4.3.7. Uruguay

- **Exercise n°1: NBS measures**

Key lessons (Table 106):

- Three different scales were highlighted (pond, various ponds and pondscape). The input on the present are more focused on the pond scale and the proposals for the future are more focused on the pondscape scale;
- Stakeholders were focused on the land use, renaturalization and connectivity;
- It is a matter of reconciling agriculture with the environment.

Table 106: Selection of NBS measures by stakeholders during the Uruguayan workshop

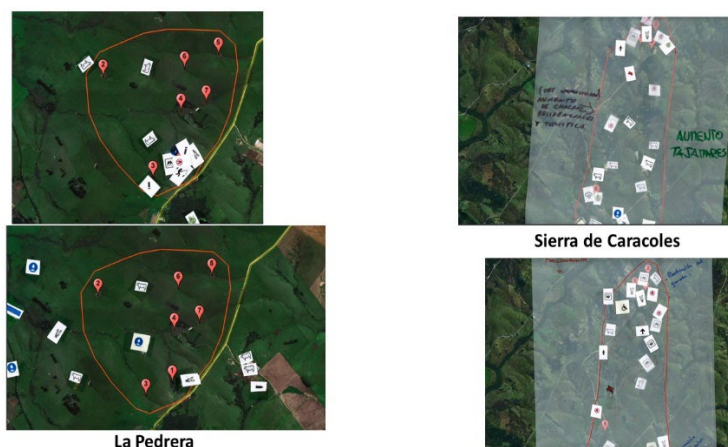
Pondscape	Measure(s) selected	Level of importance	Preferred scale
PAST			
Sierra de Caracoles	- Limit the area that can be accessed for cattle to protect the banks and the water quality	Moderate	Various ponds
La Pedrera	- Creation of ponds - Change of land use by cattle breeders	Strong	Ponds and various ponds
FUTURE			
Sierra de Caracoles	- Excavate the floor to reduce water loss by infiltration - Full access restriction - Restoration of the banks	Moderate	Pondscape scale
La Pedrera	- Create a buffer zone - Create small fenced spaces for natural reforestation for the benefit of bird and animal - Enhance connectivity between ponds - Access restriction	Moderate	Pondscape scale

- **Exercise n°2: Participatory mental map**

Here below are the maps produced by the stakeholders.

Key lessons:

- Attention is focused on the threats (increase in sales of land for recreational uses, lack of land planning in the area, invasive species).
- Willingness to maintain or increase the protection of the pondscape (access limitation, restoration of riparian zones, connectivity).



Map 8: Example of participatory maps from the Uruguayan workshop

- **Exercise n°3: NCPs assessment**

Key lessons (Table 107):

- Four NCPs were particularly identified in both pondscales: ‘regulation of water quantity’, ‘food and feed’, ‘maintenance of habitats’ and ‘regulation of water quality’
- Livestock is at the centre of the issues

Table 107: Selection of NCP by stakeholders during the Uruguayan workshop.

Pondscape	NCP #1	NCP #2	NCP #3	Justification
PRESENT				
Sierra de Caracoles	Food and feed	Regulation of water quantity	habitat creation and maintenance	Livestock watering
La Pedrera	Regulation of water quantity	Food and feed	Regulation of water quality	Providing water to cattle, drought issue
		Regulation of hazards	Physical and psychological experience	
FUTURE				
Sierra de Caracoles	Food and feed	habitat creation and maintenance	Regulation water quantity + Learning and inspiration	
La Pedrera	Regulation water quantity	Maintenance of options	Regulation of water quality	

4.3.8. Denmark

- **Exercise n°1: NBS measures**

Key lessons (Table 108):

- No data from the Lystrup pondscape because the stakeholders felt too unfamiliar with this pondscape;
- The creation of ponds is the preferred solution at pondscape scale.

Table 108: Selection of NBS measures by stakeholders during the Danish workshop.

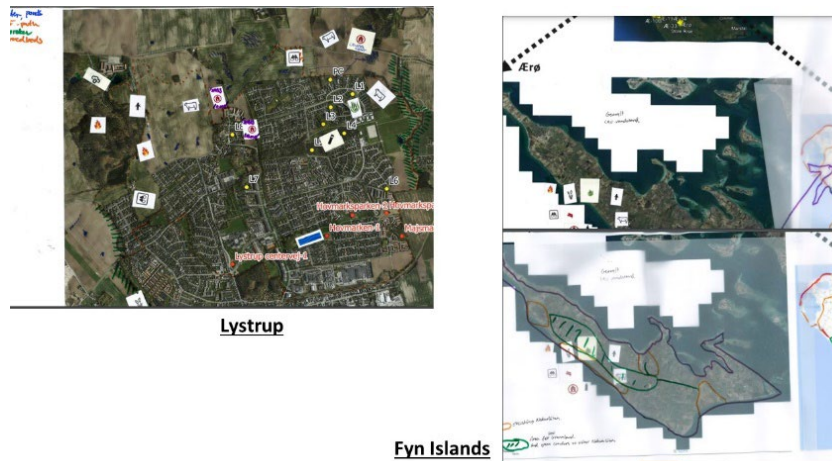
Pondscape	Measure(s) selected	Level of importance	Preferred scale
PAST			
Lystrup	/	/	/
Fyn	Creation of ponds	Strong	Pondscape scale
FUTURE			
Lystrup	/	/	/
Fyn	Creation of ponds	Strong	Pondscape scale

- **Exercise n°2: participatory mental map**

Here below are the maps produced by the stakeholders:

Key lessons:

- Regarding the Fyn pondscape, they expressed the wish to create a new area for grassland and green corridor to other existing NatureSites;
- Concerning the Lystrup pondscape, they want to create new ponds and hiking paths.



Map 9: example of participatory maps from the Danish workshop

- **Exercise n°3: NCPs assessment**

Key lessons (Table 109):

- Five NCPs were particularly identified in both pondscaapes: ‘habitat creation and maintenance’ as first and ‘then regulation of water quantity’, ‘physical and psychological experiences’, ‘learning and inspiration’ and ‘supporting identities’;
- There is a reversal of priorities between the present and the future but the same NCPs were selected.

Table 109: Selection of NCP by stakeholders during the Danish workshop.

Pondscape	NCP #1	NCP #2	NCP #3	Justification
PRESENT				
Lystrup	Regulation of water quantity	Physical and psychological experience	habitat creation and maintenance	/
Fyn	habitat creation and maintenance	Supporting identities	Learning and inspiration	/
FUTURE				
Lystrup	habitat creation and maintenance	Physical and psychological experience	Regulation of water quantity	/
Fyn	Learning and inspiration	Supporting identities	habitat creation and maintenance	/

4.4. Cross-analysis between the pondsapes

Workshops were held to discuss the issues of the pondsapes. Our objective was to weight the data resulting from the questionnaire, which is why this section does not offer an analysis of smaller details.

We briefly compared the NBS priority measure amongst the pondsapes and the subtle difference of NCPs between present and future perspective. The color scheme discloses the similarities (Table 110). Each color represents a different NCP.

Table 110: Comparison of NBS measures selected by stakeholders during the workshops

DEMO-site	NBS measure already implemented in the past	NBS priority in the future
Switzerland <i>Bois de jussy</i>	Restoration	Connectivity
<i>Rhône verbois</i>	creation of ponds	Connectivity
Germany <i>Schöneiche</i>	water transfer	Increase pond water supply (water connectivity and/or water transfers)
Turkey <i>Imrahor</i>	change the pond morphometry and improve biodiversity	enhance biodiversity, water quality and quantity
England Pinkhill m.	creation of ponds	Extend the pondscape + connectivity with flood plain
Water fr. Fam.	Clean water ponds	More clean water ponds
Spain <i>Albera</i>	Restoration	Connectivity
<i>Pletera</i>	Restoration	restricting the use of space
Belgium <i>Gete vallei</i>	/	landscape infrastructure
<i>Pikkakend.</i>	creation of ponds	increase variation in water depth
<i>Tommelen</i>	Biodiversity	retain rainwater by enhancing water storage capacity
Uruguay <i>Sierra de c.</i>	access limitation	reduce water loss, access restriction, banks restoration
<i>La pedrera</i>	creation of ponds	create a buffer zone, access restriction
Denmark <i>Fyn</i>	creation of ponds	creation of ponds

One lesson is the importance of the creation of ponds and restoration for improving the environment. Analysis of the data at intervention level indicated (weak, moderate, strong), showed that there were no significant difference between the past and future: it remains the same or become less important over time. This would suggest that a major effort (creation or restoration) should be made to significantly improve the pondsapes. Further steps are being taken to manage as best as possible the changing environment.

Stakeholders made little mention of water quantity issues (deep blue) regarding the measures taken in previous years. But, further ahead, it is an emerging issue for many pondsapes, as well as the connectivity for biodiversity and access restriction.

This is our interpretation of the data. Over time, the ponds management requires a change of scale to create more connection with other freshwater ecosystem. The impact of climate change is expected to be large leading to different consequences such as increasing evapotranspiration, water temperature and drought.

Another interesting point from the workshops is that the changing priorities on NCP are quite unusual. The NCPs 'regulation of water quantity', 'regulation of hazards' and 'regulation of climate' are higher ranked in the future than in present.

5. Results from the questionnaire to general public

5.1. General intent

Our objective is to obtain a global overview of the perceptions on all the pondscapes from the general public.

Each question group in the survey has a specific purpose, such as to:

- Obtain the profile of all inhabitants (gender, age group, level of education, distance of their homes from the pondscape);
- Learn more regarding their relationship to the ponds and pondscapes (aesthetic tastes, activities, selection criteria for choosing such pondscape, level of knowledge);
- Understand their perceptions about the contributions of pondscapes, about its environmental condition, its threats and impacts;
- Collect stakeholder preferences and expectations concerning the options of NBS measures.

Each case study is presented to highlight the different geographical, ecological, and cultural settings/contexts. A second level of analysis is the comparison between the pondscapes.

5.2. Profile of participants

We collected 703 completed answers from the different inhabitants amongst which 590 from those who have visited the PONDERFUL pondscapes at some point (Table 111).

There are large differences in the number of answers between the seventeen pondscapes studied. We identified four groups of pondscapes with similar number of answers:

- Three pondscapes with more than 80 responses: Rhône Verbois in Switzerland, Albera and La Pletera in Spain;
- Four pondscapes between 30 and 60 responses: Pinkhill Meadows, the German pondscape, Gölbasi in Turkey, Bois de Jussy in Switzerland;
- Four pondscapes between 15 and 30 responses: Pikhakendonk and Tommelen in Belgium, Lystrup in Denmark, Water Friendly Farming in England;
- Six pondscapes between 2 and 12 responses: Fyn in Denmark, the Uruguayan pondscapes, Gete Vallei in Belgium, Imrahor and Dikkuyruk in Turkey.

Reasons identified as to why it was so difficult to collect responses:

The population density in the immediate vicinity for some pondscapes (especially in Uruguay, Turkey Fyn in Denmark) is low;

The poor accessibility (Uruguay, Fyn in Denmark, WFF in England, Turkey) to the pondscapes is a barrier to obtain more responses of people who have actually been able to visit them;

The problem of temporary or permanently disappearance of ponds (in Spain and Germany) leads to misunderstanding of what a pond entails.

The large majority of the pondscapes are 'common pondscapes' i.e local interest pondscapes and not famous and touristic places.

The first conclusion that may be drawn from this numerical result is the difficulty to target the general public. There is a discrepancy between the role and potential contributions of the ponds/pondscapes and the low interest raised among the inhabitants. The dissemination and the visibility of the results represent a challenge to reinforce consideration of ponds and pondscapes.

Regarding the gender gap, the number of answers vary greatly from one pondscape to another. Women outnumber men regarding 5 pondsapes: both in Switzerland, Germany, Pinkhill Meadows in England and Gete Vallei in Belgium. The perfect balance is respected in 3 pondsapes: Sierra de Caracoles and Pedrera (Uruguay), Gölbasi in Turkey. Then men outnumber women on 9 pondsapes. Overall, we obtained 3 answers from non-binary people.

Table 111: respondent profiles from the questionnaire to general public

	Number of answers with site visit	Gender	Dominant education level	Dominant age group	Mean distance from their homes
Switzerland Bois de Jussy	57	33F (58%), 23M (40%), 1 non-binary (2%)	University	51-65	7,4
Switzerland Rhône Verbois	84	45F (54%), 39M (46%)	University	18-35	7,2
Germany Schöneiche	44	25F (57%), 19M (43%)	University	36-50	2,4
Turkey Dikkuyruk	8	3F (38%), 5M (62%)	University	18-35	12
Turkey Gölbasi	41	20F (49%), 20M (49%), 1 non-binary (2%)	University	18-35	9,7
Turkey Imrahor	2	0F, 2M	University	18-35	15
England Pinkhill	32	17F (53%), 15 M (47%)	University	51-65	7,8
England WFF	18	6F (33%), 12M (67%)	University	66-80	6,8
Catalonia Albera	92	34F (37%), 58M (63%)	University	36-50	17,6
Catalonia La Pletera	118	/	University	51-65	19,2
Belgium Gete Vallei	8	6F (75%), 2M (25%)	University	18-35 and 36-50	9,3
Belgium Pikkakendonk	22	9F (41%), 13M (59%)	University	36-50	4,2
Belgium Tommelen	23	9F (39%), 14M (61%)	University	36-50	3,8
Uruguay Sierra de Car.	12	6F (50%), 6M (50%)	University	18-35	18,7
Uruguay La Pedrera	4	2F (50%), 2M (50%)	Secondary and University	18-35	18,8
Denmark Lystrup	17	7F (41%), 9M (53%), 1 non-binary (6%)	University	36-50	2,2
Denmark Fyn	8	2F (25%), 6M (75%)	University	51-65	23,1

The indicator ‘mean distance from their homes’ gives some information on the local or regional attractiveness of the pondsapes. Some pondsapes (>5 kilometers) attract only local residents: Lystrup (Denmark), Tommelen and Pikkakendonk in Belgium, Schöneiche in Germany. By

contrast, other pondsapes arouse great interest among people within a fifteen kilometers radius: Fyn, Uruguay, Spain and Imrahor in Turkey.

5.3. Results by DEMO-site

5.3.1. Switzerland

- **Profile**

The respondents' profile is relatively similar between both pondsapes with balanced profiles in terms of gender and age group (Table 112). The sample comprises a high number of University graduates. Respondents gave relatively high ranking regarding the relationship to the nature and to the pondsapes. It is noteworthy that Bois de Jussy obtained a slightly lower ranking and is deemed somewhat less important, probably because Rhône Verbois is associated with the river Rhône as physical feature of the Canton landscape.

Table 112: Profile of the respondents from the general public in Switzerland

	Bois de Jussy		Rhône Verbois	
Number of answers (completed)	57		84	
Number with 'visit' on the pondscape	57		84	
Gender distribution	33F, 23M, 1 non-binary 57,8 % of female respondents		45F, 39M 53,5 % of female respondents	
Age group distribution	18-35: 22,8 % 36-50: 22,8 % 51-65: 31,5 % 66-80: 19,3 % +80: 3,5 %		18-35: 32,2% 36-50: 20,2 % 51-65: 25 % 66-80: 19% +80: 3,6 %	
Level of education	Primary school: 8,7% Secondary school: 3,5 % University: 87,7%		Primary school: 13,1% Secondary school: 16,1% University: 70,2%	
Favourite landscape and score given to the option 'pondscape'	Forest: 21,1% Pondscape: 11,2%			
Relation to nature (1-5)	4,4		4,5	
Relation to the pondscape (1-5)	3,8		3,9	
Contribution of pondscape to people's quality of life (1-5)	3,5		3,8	

- **On-site activities**

The environmental quality of the pondsapes is the most important motivation to visit the pondsapes to observe the wildlife and do some physical work (hiking, bicycle) (Table 113).

The largest share of the respondents lives quite the pondsapes. Few people come from afar to visit specifically both pondsapes: a very large part come from the Geneva authority or from France.

Nearly half of all respondents visited the pondscape once a month (Figure 6).

Table 113: Replies to the questions on activities in Switzerland

	Bois de Jussy (n=57)	Rhône Verbois (=84)
Most important criteria when choosing a pondscape to go	#1: area with special environmental interest (26,5%) #2: aesthetic scenery (22,8%) #3: accessibility (12,3%)	
Mean distance from their homes (kilometers)	7,4	7,2
Favourite mode of transportation	#1: car (41,8%) #2: on foot (31,4%) #3: bicycle (20,9%)	#1: car (35,9%) #2: on foot (26,5%) #3: bicycle (21,8%)
How did they know the pondscape? (answers selected the most)	#1: I live nearby (32,5%) #2: word of mouth (19,2%) #3: chance (16,8%)	#1: I live nearby (33%) #2: chance (20,3%) #3: family (17,8%)
Favourite activities	#1: wildlife watching (29,9%) #2: hiking (27,3%) #3: relaxation (11,4%)	#1: hiking (29,3%) #2: wildlife watching (27,4%) #3: relaxation (11,4%)

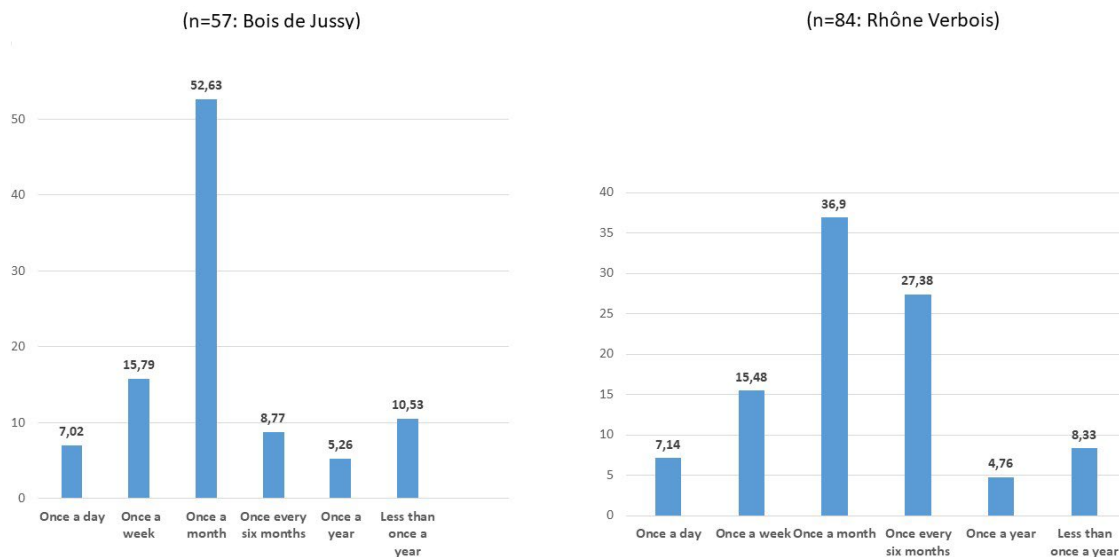


Figure 6: Frequency of visits of the general public to Bois de Jussy and Rhône Verbois in Switzerland (%)

- **Knowledge issues**

According to the inhabitants, it is clear that both pondsapes are covered by nature reserve and host emblematic species.

Table 114: Replies to the general knowledge questions in Switzerland from the inhabitants' perspective

	Bois de Jussy	Rhône Verbois
Response about the pondscape origin	humans: 43,8 % natural processes: 35,1% no opinion: 21,1%	humans: 51,1 % natural processes: 28,5% no opinion: 20,2%
Dominant response about the existence of nature reserve	Yes: 94,7%	Yes: 92,8%

Dominant response about the existence of emblematic species	Yes: 70,1% such as ‘kingfisher’, European pond terrapin, beaver, reptiles and frogs	Yes: 73,8% such as ‘kingfisher’, European pond terrapin, beaver, reptiles and frogs
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Figure 7: Word cloud for both Swiss pondsapes on the emblematic species according to the general public

- **Change perceptions and environmental conditions of pondsapes**

The results are similar between the two Swiss pondsapes (Table 115). A slight majority think that change have occurred during the last ten years. The same changes have been highlighted in both pondsapes. The score given to the environmental condition of the pondscape is relatively high. Biodiversity is the first criterion chosen to explain the environmental condition of these two pondsapes.

Table 115: Replies to the questions on the changes observed and the environmental condition in Switzerland from the inhabitants' perspective

	Jussy	Rhône Verbois
Have you observed significant changes in this pondscape during the last ten years?	Yes: 50,8%	Yes: 51,1%
Type of change emphasized	#1: colonisation of new plant species (13,5%) #2: colonisation of new animal species (12,1%) #3: increase of pondscape surface area (12,1%)	#1: colonisation of new plant species (17,6%) #2: colonisation of new animal species (14,1%) #3: increase of pondscape surface area (13,7%)
Environmental condition of the pondsapes	3,8	3,9
Criteria selected in determination of the environmental conditions	#1: animal species composition (23,4%) #2: plant species composition (22,9%) #3: number of ponds (10,5%)	#1: plant species composition (20,2%) #2: animal species composition (19,3%) #3: water level/ presence of rubbish (10,4%)

About NCP (Table 116), the ranking between the two pondscaapes is similar except for ‘regulation of water quantity’. The options ‘biodiversity’, ‘physical and psychological experiences’ and ‘maintenance of options’ obtained the highest ranking.

Table 116: Results on the NCPs according to the inhabitants in Switzerland (average, score from 1-5)

Type of NCP (present)	top-3	
	Jussy	Rhône Verbois
food and feed (productivity of food : fish, waterfowl, livestock)	2,8	2,6
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	4,5	4,4
pollination (diversity of plants to be pollinated)	3,9	3,9
regulation of water quality (water purification)	3,4	3,4
regulation of water quantity (reservoir of irrigation, water supply)	3	3,9
regulation of hazards (flooding regulation, fire protection)	3,3	3,1
regulation of climate (carbon storage, maintaining an acceptable temperature)	3,7	3,8
physical and psychological experiences (calm, freshness, sociability, activities)	4,1	4,1
learning and inspiration (aesthetic, art, education, science)	3,7	3,8
supporting identities (cultural heritage, local identity)	3,5	3,5
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3,8	4

The major threat perceived is climate change, then tourism, with main impacts on biodiversity and water quality (Table 117). About NBS, the prioritised measure is to improve environmental education.

Table 117: Replies to the questions on the threat assessment and the NbS measures in Switzerland from the inhabitants’ perspective

	Bois de Jussy	Rhône Verbois
Threats ranking (1-5)	#1: climate change (4) #2: tourism (3,9) #3: invasive species (3,6)	#1: climate change (4,2) #2: tourism (3,8) #3: pollution (3,8)
Impact threat ranking (1-5)	#1: on biodiversity (4,4) #2: on water quality (3,7) #3: on water temperature (3,7)	#1: on biodiversity (4,4) #2: on water quality (3,7) #3: on landscape (3,7)
Favourite NbS measures (1-5)	#1: better/more environmental education (4,4) #2: increasing biodiversity (4,2) #3: creating new ponds (3,9)	#1: better/more environmental education (4,7) #2: increasing biodiversity (4,2) #3: restoration (3,9)

- **Gender aspects**

The significant differences (criteria: difference of more than 0,5 points or 10%) between the answers of female and male are shown in Table 118.

These differences are very slight in comparison to other PONDERFUL pondsapes.

Table 118: Results of gender research on inhabitants' data in Switzerland

	Bois de Jussy (33F, 23 M, 1 NB)	Rhône Verbois (45 F, 39 M)
Mean distance (kilometres)	Female have a mean distance from their home of 9 kilometers whereas men have only 5 kilometres.	No significant difference
Activities -nature watching	32,9 % F, 25,3 %M	
Perception about the changes occurred during the last ten years	No significant differences	60% of the female versus 40 % of men have chosen 'yes'

- **Brief general assessment**

The respondents have a balanced and diversified profiles except the low number of senior respondents. The sample encompasses a high number of University degree people. It is probably more than the average of Geneva canton inhabitants according to local demographic statistics⁴. Therefore, the sample is not representative of the local population.

In terms of regional attractivity, both pondsapes draw visitors from over 5 and 10 km radius by car, bicycle or by foot.

The pondsapes have been considered as areas for leisure and recreation with an average frequency of visitation of 2 times per month for Bois de Jussy and every 2-3 months for Rhône Verbois.

Respondents to the questionnaire confirmed the existence of emblematic species.

The data reveal contrasting perceptions about the changes found the last ten years. About half said that some positive changes occurred. This may explain, at least partly, why respondents gave good ratings on the environmental conditions with selection preferred criteria focused particularly on the species composition.

According to NCP ranking, the swiss pondsapes are perceived as areas for biodiversity (habitat, pollination) and non-material contributions (activities, contemplation).

Gauging local levels of concern about different threats and potential impacts gave rise to moderate levels of concern regarding threats except regarding climate change and its effects on biodiversity and water quality. This anxious response concerning the future is associated with the high average of the NCP 'maintenance of options'.

The respondents identified actions to implement with objective to improve environmental education and raise awareness and information for the public.

There were no significant differences in responses depending on gender of the respondents.

⁴ Union des villes suisses, 2019, Statistiques des villes suisses,

5.3.2. Germany

- **Profile**

The respondent profile encompasses a high proportion of middle-aged people and graduated from university (Table 119). The sample has a relative balanced representation in terms of gender with a slight majority of females among respondents. Respondents gave high ranking regarding their relation to the nature. There is a real difference with lower ratings on the relation to pondscape and the contribution of pondscape to people's quality of life.

Table 119: Profile of the respondents from the general public in Germany

	Schöneiche
Number of answers (completed)	45
Number with 'visit' on the pondscape	44
Gender distribution	25 F, 19 M 56,8 % of female respondents
Age group distribution	18-35: 15,9 % 36-50: 43,1 % 51-65: 25 % 66-80: 9 % +80: 6,8 %
Level of education	Primary school: 27,2% Secondary school: 20,4 % University: 52,2%
Favourite landscape and score given to the option 'pondscape'	Forest: 32,5% Pondscape: 10%
Relation to nature (1-5)	4,2
Relation to the pondscape (1-5)	3,6
Contribution of pondscape to people's quality of life	3,2

- **On-site activities**

The environmental quality of the pondscape and the location are the most important motivation to visit the pondscape to relax, observe the wildlife and do some physical work (hiking, bicycle) (Table 120).

A large majority of the respondents live nearby the pondsapes. It's a gathering place for local people on the municipal scale. Very few people come from afar to visit specifically the pondscape: a very large part enjoy this 'Sunday outing' or 'month drive' (Figure 8).

Table 120: Replies to the questions on activities in Germany

	Schöneiche (n=44)
Most important criteria when choosing a pondscape to go	#1: area with special environmental interest (21,1%) #2: accessibility (ease of access) (16,9%) #3-4: aesthetic scenery <u>and</u> freedom of movement (14,4% each)
Mean distance from their homes (kilometers)	2,4
Favourite mode of transportation	#1: on foot (48%) #2: bicycle (33,3%) #3: car (16%)
How did they know the pondscape? (answers selected the most)	#1: I live nearby (61,4%) #2: word of mouth (10,5%) #3: chance (10,5%) #4: family (8,7%)
Favourite activities	#1: relaxation (25,2%) #2: wildlife watching (22,7%) #3: hiking (19,5%)

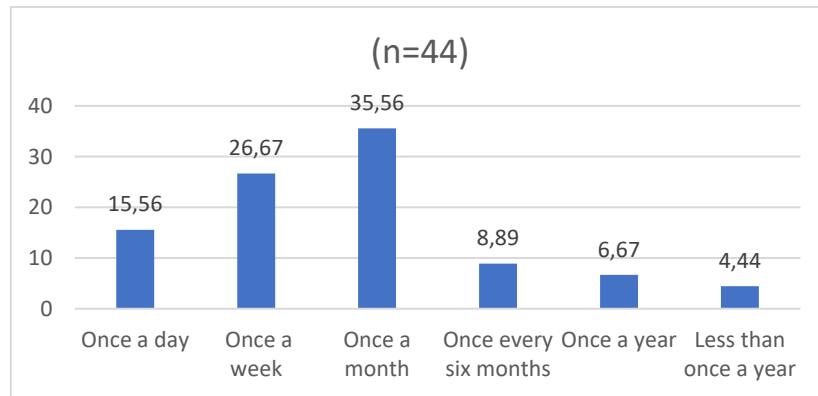


Figure 8: Frequency of visits of the general public to Schöneiche (Germany, %)

- **Knowledge issues**

According to the inhabitants, it is clear that the pondscape (Table 121, Figure 9):

- was created by natural processes
- does not have emblematic species
- is not easily linked to a specific nature reserve

Table 121: Replies to the general knowledge questions in Germany from the inhabitants' perspective

	Schöneiche (n=44)
Response about the pondscape origin	natural processes: 63,6% humans: 18,2 % no opinion: 18,2%
Dominant response about the existence of nature reserve	No opinion: 43,2 % Yes: 31,9% No: 25%
Dominant response about the existence of emblematic species	No: 65,9% People said 'yes' have proposed for example 'orchids and 'amphibians',



Figure 9: Word cloud on the emblematic species according to the general public from Schöneiche

- **Change perceptions**

A wide majority have observed significant changes (Table 122). A quarter of the answers are focused on the ‘decrease of the pondscape surface area’, then changes concerning temporary drying of ponds. This selection of criteria illustrates the concern regarding the disappearance of ponds

Table 122: Replies to the questions on the changes observed and the environmental condition in Germany from the inhabitants’ perspective

	Schöneiche
Have you observed significant changes in this pondscape during the last ten years?	Yes: 84%
Type of change emphasized	#1: decrease of pondscape surface area (22%) #2: more frequent drying of ponds (18,4%) #3: lower pond water level (17,8%)
Environmental condition of the pondscape	2,3
Criteria selected in determination of the environmental conditions	#1: water level (26,6%) #2: surface area (14,2%) #3: number of ponds (13%)

About NCPs, the options ‘biodiversity’, ‘pollination’, ‘physical and psychological experiences’ and ‘regulation of climate’ have been selected with the highest scores (Table 123).

Table 123: results on the NCPs according to the inhabitants in Germany (average, score from 1-5)

Type of NCP (present)	top-3
food and feed (productivity of food : fish, waterfowl, livestock)	2,4
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	4,5
pollination (diversity of plants to be pollinated)	4,1
regulation of water quality (water purification)	3,4
regulation of water quantity (reservoir of irrigation, water supply)	3,7
regulation of hazards (flooding regulation, fire protection)	3,1
regulation of climate (carbon storage, maintaining an acceptable temperature)	4
physical and psychological experiences (calm, freshness, sociability, activities)	4,1
learning and inspiration (aesthetic, art, education, science)	3,6
supporting identities (cultural heritage, local identity)	3,5
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3,9

The selected threats illustrate the concern regarding the disappearance of ponds, with impacts on biodiversity and water quantity and quality.

Table 124: Replies to the questions on the threat assessment and the NBS measures in Germany from the inhabitants’ perspective

	Schöneiche
Threats ranking (1-5)	#1: climate change (4,5) #2-3-4: tourism <u>and</u> over-exploitation <u>and</u> urbanization (3,1 each)
Impact threat ranking (1-5)	#1: on biodiversity (4,5) #2: on water quantity (4,2) #3: on water quality (4)
Favourite NbS measures (1-5)	#1: increasing the volume of water (4,5) #2: restoration (4,1) #3: better/more environmental education (4,1)

- **Gender aspects**

The significant differences (criteria: difference of more than 0,5 points or 10%) between the answers of female and male are shown in Table 125.

Women are likely to prefer the pondscape whereas men attach a greater importance to the accessibility to go to the pondscape. Women live closer to the pondscape and gave higher marks than men for two NCPs: ‘regulation of climate’ and ‘learning and inspiration’.

Table 125: Results of gender research on inhabitants' data in Germany

Schöneiche (25 F, 19 M)	
Importance given to pondscape as favourite landscape	13,7% F, 5,1 M %
Preferred criteria for choosing the pondscape -accessibility	13% F, 22,4% M
Mean distance (kilometres)	Female respondents have a mean distance from their home of 1,5 kilometers whereas men have 3,5 kilometres.
Activities -hiking	16,6 % F, 24 % M
Threats -urbanization	3,6 F, 2,8 M
NCPs: - regulation of climate: - learning and inspiration:	4,4F, 3,5M 3,9F, 3,2M

- **Brief general assessment**

- The respondents have balanced and diversified profiles except the low number of senior respondents and people approaching their retirement years. The sample encompasses a high number of University degree people.
- Schöneiche draws only local visitors with a radius of 1 to 5 km. This pondscape is perceived to be mainly an area for biodiversity (habitat, pollination) and non-material contributions (activities, contemplation).
- The average frequency of visitation is twice a month.
- Respondents to the questionnaire think that the pondscape does not host emblematic species.
- The data reveal unanimous perceptions about changes in the last ten years.
- A large majority have observed a decrease of the pondscape surface area and less water in the ponds. This is clearly an illustration of the concern regarding the disappearance of ponds. This may explain, at least partly, why respondents gave low ratings on the environmental condition of the pondscape.
- Major threats cited by people are ‘climate change’, with direct effects on biodiversity and the water quantity. This anxious response concerning the future is correlated with the high score of the NCP ‘maintenance of options’.
- The respondents have identified actions to implement with an objective to solve water quantity problem.
- There are very few significant gender differences. Generally, women gave higher marks for each NCPs than men (score of 3,8 for female versus 3,4 for men).

5.3.3. Turkey

- **Profile**

The very low number received about Imrahor does not allow us to take on lessons from the survey. The profile is relatively similar between the pondscape but absolutely not representative for all the age groups. The respondents are relatively young and are mainly University graduated. The Gölbası pondscape has an almost gender balance whereas the others pondscape have a predominantly male sample.

The Turkish pondscape reached strong scores as being favourite landscapes, probably due to the association with the famous site Mogan Gölü.

Respondents gave high ranking regarding the relation to nature but they provided a slight lower rating concerning their relation to the pondscape.

Table 126: Profile of the respondents from the general public in Turkey

	Dikkuyruk	Gölbası	Imrahor
Number of answers (completed)	8	42	2
Number with 'visit' on the pondscape	8	41	2
Gender distribution	3F, 5M 37,5 % of female respondents	20F, 20M, 1 non-binary 48,7 % of female respondents	0F, 2M 0% of female respondents
Age group distribution	18-35: 87,5 % 36-50: 12,5 % 51-65: 0 % 66-80: 0 % +80: 0 %	18-35: 68,3% 36-50: 22% 51-65: 7,4 % 66-80: 2,5% +80: 0%	18-35: 100% 36-50: 0 % 51-65: 0 % 66-80: 0% +80: 0%
Level of education	Primary school: 0% Secondary school: 0 % University: 100%	Primary school: 7,3% Secondary school: 31,7% University: 61%	Primary school: 0% Secondary school: 0 % University: 100%
Favourite landscape and score given to the option 'pondscape'	Lake: 24,7% Pondscape: 14,7%		
Relation to nature (1-5)	4,5	3,9	3,5
Relation to the pondscape (1-5)	4,2	3,8	3
Contribution of pondscape to people's quality of life (1-5)	3,8	3,7	3,5

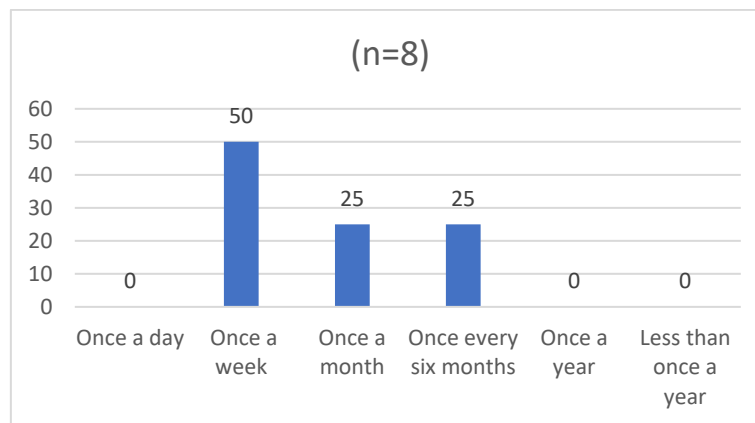
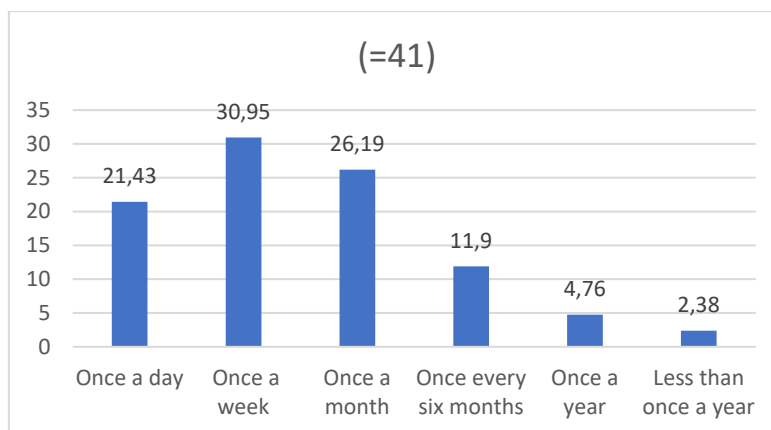
- **On-site activities**

Respondents do not live in the immediate vicinity of the pondscape – they require a car, public transport and bicycle to reach them (Table 127).

The environmental quality of the pondscape is not the only motivation to visit the pondscape. The public is attracted to pondscape to get a breath of fresh air, for picnicking, walking and cycling.

Table 127: Replies to the questions on activities in Turkey

	Dikkuyruk (n=8)	Gölbasi (n=41)	Imrahor (n=2)
Most important criteria when choosing a pondscape to go	#1: aesthetic scenery (20,7%) #2: possibility to practise a desired activity (18,2%) #3: accessibility (ease of access, convenient facilities) (17%)		
Mean distance from their homes (kilometers)	12	9,7	15
Favourite mode of transportation	#1: car (77,8%) #2: on foot (11,1%) #3: bicycle (11,1%)	#1: car (36,8%) #2: public transportation (29,8%) #3: bicycle (21,8%)	#1-2-3-4 : car <u>and</u> boat <u>and</u> bicycle <u>and</u> public transportation (25% for each)
How did they know the pondscape?	#1: professional network (44,4%) #2: family (22,2%) #3-4: word of mouth, I live nearby, social media (11,1%)	#1: word of mouth (25,9%) #2: family (23,3%) #3: I live nearby (19,4%)	#1: I live nearby (50%) #2-3 : chance <u>and</u> social media (25% for each)
Favourite activities	#1: wildlife watching (22,2%) #2: hiking (16,6%) #3-4: cycling <u>and</u> picnic (11,1% each)	#1-2: hiking <u>and</u> relaxation (22,8% each) #3: picnic (21,1%)	#1-2-3-4: cycling <u>and</u> fishing <u>and</u> hunting <u>and</u> wildlife watching (20% each)


Figure 10: Frequency of visits of the general public to Dikkuyruk (Turkey, %)

Figure 11: Frequency of visits of the general public to Gölbasi (Turkey, %)

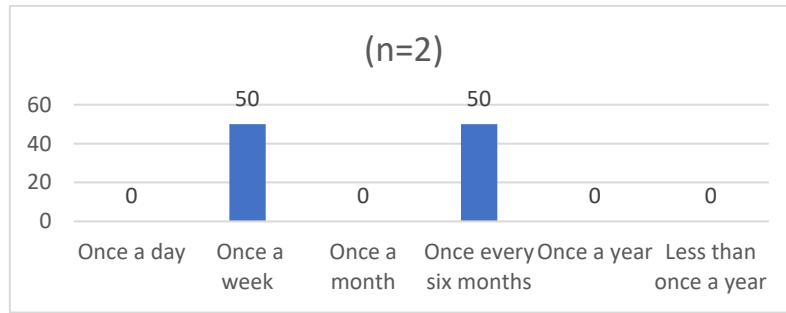


Figure 12: Frequency of visits of the general public to Imrahor (Turkey, %)

For the Dikkyuruk and Gölbası sites, the frequency of visits varies between a week and a month. People live within a 10-12 km radius around pondsapes and can relax and go for walks (Figure 10, 11, 12).

- **Knowledge issues**

Analysing the responses, it is clear that people are aware that Dikkuyruk was created by humans, is covered by nature reserve and harbours emblematic species. The other pondsapes are not considered as biodiversity reservoirs (Table 128).

Table 128: Replies to the general knowledge questions in Turkey from the inhabitants' perspective

	Dikkuyruk	Gölbası	Imrahor
Response about the pondscape origin	humans: 87,5 % natural processes: 0% no opinion: 12,5%	humans: 58,5 % natural processes: 2,4% no opinion: 39,1%	humans: 50 % natural processes: 0 no opinion: 50%
Dominant response about the existence of nature reserve	Yes: 75%	No opinion: 43,9,8% (yes= 41,4%)	No: 100%
Dominant response about the existence of emblematic species	Yes: 62,5% with white-headed duck	No: 73,1%	No: 100%



Figure 13: Word-cloud for the Turkish pondsapes on the emblematic species according to the general public

- **Change perceptions**

A majority of respondents believe that negative changes have occurred during the last ten years in Dikkuyruk (Table 129). The data on the other pondsapes do not draw conclusions. The same criteria explaining changes are highlighted for two pondsapes, with a degradation of water quality due to pollution. That demonstrates the limited concern of the environmental condition of the pondsapes with low marks despite a greater score for Gölbası.

Table 129: Replies to the questions on the changes observed and the environmental condition in Turkey from the inhabitants' perspective

	Dikkuyruk	Gölbası	Imrahor
Have you observed significant changes in this pondsape during the last ten years?	Yes: 75%	No: 56,1%	Yes: 50%
Type of change emphasized	#1: deterioration of water quality (17,2%) #2: lower pond water level (17,2%) #3: more rubbish (13,7%)	#1: deterioration of water quality (18,9%) #2: increase of bad odours (16,2%) #3: more rubbish (14,8%)	/ inconclusive result because of the low number of answers
Environmental condition of the pondsapes	2,8	3,4	1,5
Criteria selected in the determination of the environmental conditions	#1-2-3: presence of rubbish <u>and</u> pollution <u>and</u> colour of water (17,6%)	#1: pollution (19,6%) #2: colour of water (17,3%) #3: presence of rubbish (16,5%)	Inconsistent data because of the low number of answers

About NCP ranking (Table 130), the data on Imrahor are very different from the others likely due to the small sample size. The value of the NCP 'food and feed' is high in comparison of the other PONDERFUL pondsapes. In Dikkuyruk, except for 'habitat creation and maintenance', the ratings are close for the majority of the different NCPs options. Concerning Gölbası, the non-material contributions (physical and psychological experiences, supporting identities, maintenance of options) are very well appreciated with a score above 4,1.

Table 130: Results on the NCPs according to the inhabitants in Turkey (average, score from 1-5)

Type of NCP	top-3		
	Dikkuyruk	Gölbası	Imrahor
food and feed (productivity of food : fish, waterfowl, livestock)	3,8	4,1	2,5
habitat creation and maintenance	4,5	4,1	3
pollination (diversity of plants to be pollinated)	3,2	3,7	3,5
regulation of water quality (water purification)	3,3	3,7	3,5
regulation of water quantity	3,1	3,8	3,5
regulation of hazards	2,5	3,6	2
regulation of climate (carbon storage)	3,7	3,9	2,5
physical and psychological experiences	3,6	4,3	3,5
learning and inspiration (aesthetic, art, education, science)	3,3	4,1	5
supporting identities (heritage, local identity)	2,8	4,2	4
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3,8	4,3	3,5

Respondents gave similar ranking for each pondscape when focusing on threats for the future (Table 131).

Urbanization and tourism are the most important threats according to the respondents. The biodiversity, the water quantity and quality are perceived as matters of concern. People speak also of human health linked to water quality degradation, which is quite original compared to the other pondsapes. The favourite NBS measure consists of improving the water quality by restoration measures.

Table 131: Replies to the questions on the threat assessment and the NbS measures in Turkey from the inhabitants' perspective

	Dikkuyruk	Gölbasi	Imrahor
Threats ranking (1-5)	#1: urbanization (4,2) #2-3-4: tourism <u>and</u> pollution <u>and</u> climate change (4,1)	#1: pollution (4,1) #2: tourism <u>and</u> urbanization <u>and</u> deforestation <u>and</u> climate change (4 each)	#1: urbanization (4,1) #2-3: extraction of materials <u>and</u> over-exploitation (3,5)
Impact threat ranking (1-5)	#1-2: water quantity <u>and</u> biodiversity (4,3) #: landscape (4,1)	#1: water quantity (4,2) #2-3-4: human health <u>and</u> water quality <u>and</u> biodiversity (4,1)	#1: landscape (4,5) #2: biodiversity (4) #3-4: water temperature <u>and</u> water quality (3 each)
Favourite NBS measures (1-5)	#1-2: improving water quality <u>and</u> limitation of certain uses (4,5 each) #3: restoration (4,3)	#1-2-3: better/more environmental education <u>and</u> improving water quality <u>and</u> restoration (4,3 each)	#1-2 : improving water quality <u>and</u> restoration (3,5 each)

- **Gender aspects**

With the criteria of rate differential of more than 0,5 points and 5%, the significant differences between the answers of female and men are proposed in Table 132. The low number of answers for the Dikkuyruk pondscape with 8 respondents (3 women and 5 men) can explain the important differences.

Table 132: Results of gender research on inhabitants' data in Turkey

	Dikkuyruk (3F, 5M)	Gölbasi (20F, 20M, 1NB)	Imrahor (0 F, 2 M)
Importance given to pondscape as favourite landscape	10% F, 23,5% M	10,9%F, 19,4%M	No data analysis because of the sample comprised only male
Contribution of pondscape to the quality of life criteria	3,3F, 4,2M	3,5 F, 4,1M	
-comfort	11,1% F, 0% M	/	
NCPs (1-5)			
-food and feed:	2,6F, 4,6 M	/	
- water quality:	3F, 3,6M		
- water quantity:	4F, 2,6M		
-regul. of hazards:	2F, 2,8M		
-learning and insp.:	2,6F, 3,8M		
- maint. of options:	3F, 4,4M		
Threats	climate change 3,6F, 4,4M urbanization:3,6F, 4,6M	/	
Impacts	Not the same order	Not the same order	
NbS measures	Not the same order	Not the same order	

- **Brief general assessment**

The participant sample does not show balanced and diversified profiles due to the important number of men, young and educated people.

In terms of regional attractiveness, the pondsapes draw visitors from over a 10km and 15km radius thanks to the use of cars, bikes and public transportation.

The pondsapes have been considered as areas for leisure and recreation with an average visiting rate of up to once a month.

Respondents do not believe that no emblematic species are present, except for Dikkuyruk.

The data reveals unanimous perceptions about the changes found the last ten years for Dikkuyruk but not for Gölbasi. Respondents gave low rating on the environmental condition with selection preferred criteria focused particularly on the identified problem (pollution, rubbish).

Pondsapes are perceived to be mainly for area for biodiversity (habitat, pollination), 'food and feed', and 'regulation of water'. The non-material NCPs obtained also good ratings. They have to face up to future challenges. The main identified threats are linked to urbanization, tourism, and pollution of the water cycle, with direct impacts on water quality. The biodiversity is also perceived as a matter of concern.

The respondents identified actions to implement with the first objective to solve water quality problems.

There are some significant gender differences on Dikkuyruk but the small sample can partly explain that. No gender differences are found in Gölbasi.

5.3.4. England

- **Profile**

Twice as many responses have been collected in Pinkhill Meadow compared to Water Friendly Farming. Pinkhill Meadows' answers have an almost balanced sample in terms of gender whereas the WFF is largely dominated by men (Table 133). The age group distribution is also different between the two pondsapes. Elderly people respondents are absent in both pondsapes and young adults have also a smaller representation in WFF. The sample includes mainly a very high number of University graduates. Scores are higher for the relation to the nature compared to the relation to the pondscape. For this general question about nature, the general public from WFF gave higher ratings than those from Pinkhill Meadows.

Table 133: Profile of the respondents from the general public in England

	Pinkhill Meadows	Water Friendly Farming
Number of answers	35	18
Answers with 'visit' on the pondscape	32	18
Gender distribution	17F, 15M 53,1 % of female respondents	6F, 12M 66,7 % of male respondents
Age group distribution	18-35: 21,9 % 36-50: 9,4 % 51-65: 43,7 % 66-80: 25 % +80: 0 %	18-35: 5,6% 36-50: 33,3 % 51-65: 22,2 % 66-80: 38,9% +80: 0 %
Level of education	Primary school: 0% Secondary school: 25 % University: 75%	Primary school: 0% Secondary school: 5,5% University: 94,5%
Favourite landscape and score given to the option 'pondscape'	River: 26,3% Pondscape: 8,3%	
Relation to nature (1-5)	4,4	4,7
Relation to the pondscape (1-5)	3	3,3
Contribution of pondscape to people's quality of life	3,1	3,7

- **On-site activities**

The environmental quality of the pondsapes and the location (average distance from home around 7 miles) are the most important motivation to visit the pondsapes and observe wildlife (Table 134). The private car is the preferred mode of transportation for a large majority of respondents. The absence of convenient public transport could be part of the explanation.

Table 134: Replies to the questions on activities in England

	Pinkhill Meadows (n=32)	Water Friendly Farming (=18)
Most important criteria when choosing a pondscape to go	#1: aesthetic scenery (19,5%) #2: located close/far to your home (18,8%) #3: area with special environmental interest (15,7%)	
Mean distance from home (miles)	7,8	6,8
Favourite mode of transportation	#1: car (60%) #2: on foot (37,1%) #3: bicycle (2,9%)	#1: car (61,9%) #2: on foot (28,5%) #3: bicycle (9,5%)
How did they know the pondscape? (answers selected the most)	#1: I live nearby (56,7%) #2-3: word of mouth <u>and</u> professional network (16,2%)	#1: professional network (36,3%) #2: word of mouth (31,8%) #3: I live nearby (27,2%)
Favourite activities	#1: wildlife watching (24,2%) #2: relaxation (21,4%) #3: hiking (20%)	#1: wildlife watching (39%) #2: relaxation (24,3%) #3: professional use (14,6%)

The frequency of visits (twice a month) is fairly regular for both pondsapes (Figure 14, 15). Some people do so in their professional capacity (research, conservation, catchment managers...), which is likely the reason why the option ‘once a day’ was often selected.

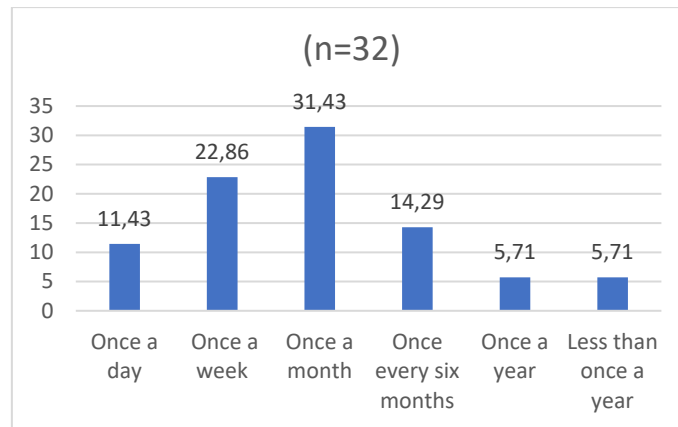


Figure 14: Frequency of visits of the general public to Pinkhill Meadows (%)

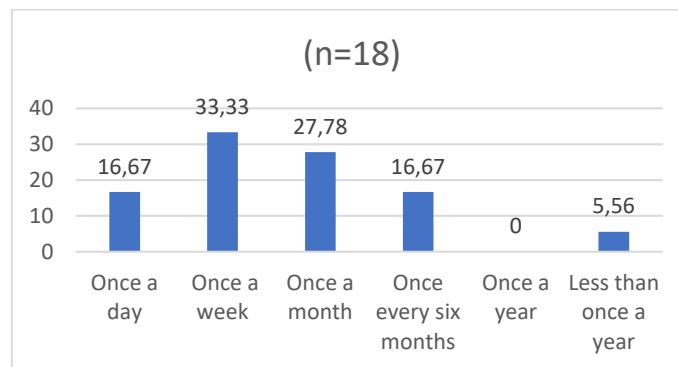


Figure 15: Frequency of visits of the general public to Water Friendly Family (%)

- **Knowledge issues**

The general public appears aware that the pondscape Pinkill Meadows is classified as a nature reserve and that WFF was created by humans (Table 135). More than 50% of respondents are unaware whether the pondsapes host emblematic species. Here below are the names of species given by those who responded positively (Figure 16, 17).

Table 135: Replies to the general knowledge questions in England from the inhabitants’ perspective

	Pinkhill Meadows (n=32)	Water Friendly Farming (n=18)
Response about the pondscape origin	humans: 37,5% natural processes: 21,8% no opinion: 40,6%	humans: 83,3 % natural processes: 5,6% no opinion: 1,1%
Dominant response about the existence of nature reserve	Yes: 71,8%	Yes: 38,8% (no: 33,3% and no opinion 27,7)
Dominant response about the existence of emblematic species	No: 62,5%	No: 55,5%



Figure 16: Word cloud for Pinkhill Meadows on the emblematic species according to the general public

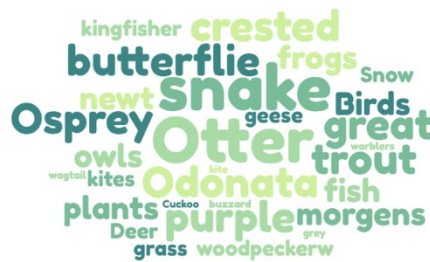


Figure 17: Word cloud for Water Friendly Farming on the emblematic species according to the general public

- **Change perceptions**

A majority of people think that changes have occurred during the last ten years in the pondscape WFF (Table 136). This is less clear cut for Pinkhill Meadow. Unlike the majority of the other pondsapes, the changes perceived by people are positive, with colonisation of new species and improvement of water quality.

Table 136: Replies to the questions on the changes observed and the environmental condition in England from the inhabitants' perspective

	Pinkhill Meadows	Water Friendly Farming
Have you observed significant changes in this pondscape during the last ten years?	Yes: 47,3% Here below are the changes given by the minority who responded positively	Yes: 66,6% Here below are the changes given by the majority who responded positively
Type of change emphasized	#1: improvement of water quality (17,1%) #2: colonisation of new animal species (14,2%)	#1: colonisation of new plant species (20,9%) #2: colonisation of new animal species (13,9%) #3: extinction of local animal species (9,3%)
Environmental condition of the pondsapes	3,9	3,7
Criteria selected in the determination of the environmental conditions	#1: plant species composition (22,5%) #2: animal species composition (17,5%) #3: number of ponds (16,2%)	#1: plant species composition (27,7%) #2: animal species composition (18,5%) #3: number of ponds (16,6%)

The NCP ranking differs slightly between the two pondsapes, except for the mark given ‘habitat creation/biodiversity’ as first ranking and ‘physical and psychological experiences’ as second ranking (Table 137).

Table 137: Results on the NCPs according to the inhabitants in England (average, score from 1-5)

Type of NCP	top-3	
	Pinkhill	WFF
food and feed (productivity of food : fish, waterfowl, livestock)	3,1	2,8
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	4,3	4,6
pollination (diversity of plants to be pollinated)	3,9	3,6
regulation of water quality (water purification)	3,3	3,4
regulation of water quantity (reservoir of irrigation, water supply)	3,1	2,9
regulation of hazards (flooding regulation, fire protection)	2,7	2,8
regulation of climate (carbon storage, maintaining an acceptable temperature)	3,4	3,1
physical and psychological experiences (calm, freshness, sociability, activities)	3,8	4,1
learning and inspiration (aesthetic, art, education, science)	3,8	3,8
supporting identities (cultural heritage, local identity)	3	3
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3,7	4,1

Similar results are found between both pondsapes when looking at threats (Table 138). The water quality and the problem of invasive species seems to be the most important threats for the respondents.

Table 138: Replies to the questions on the threat assessment and the NbS measures in England from the inhabitants’ perspective

	Pinkhill	WFF
Threats ranking (1-5)	#1: climate change (4,4) #2: pollution (3,7) #3: invasive species <u>and</u> over-exploitation (3,3)	#1: climate change (4,2) #2-3 pollution <u>and</u> invasive species (3,8)
Impact threat ranking (1-5)	#1: on biodiversity (4) #2: landscape (3,8) #3: water quality (3,6)	#1: on biodiversity (4,5) #2-3: water quality <u>and</u> landscape (3,8)
Favourite NBS measures (1-5)	#1-2-3-4: better/more environmental education <u>and</u> creating new ponds <u>and</u> increasing biodiversity <u>and</u> improving water quality (4)	#1-2: increasing biodiversity <u>and</u> creating new ponds (4,6) #3: improving water quality (4,3)

- **Gender aspects**

The only significant differences (criteria: difference of more than 0,5 points or 10%) between the answers of female and male respondents are shown in Table 139.

These gender data are not easy to analyse with different propensities. It is clear that both pondsapes are selected by women as the favourite landscape. Moreover, women are likely to assign a better mark than men when they assess the different NCP options.

Much harder to explain is the difference of results with the indicator of the mean distance which is contradictory between both pondsapes.

Table 139: Results of gender research on inhabitants' data in England

	Pinkhill Meadows (17F, 15M)	Water Friendly Farming (6F, 12M)
Pond as favourite landscape	16,6% F, 8,3% M	5,5% F, 0 M
Mean distance from their homes	3,3F, 7,5M	18,8F, 7,6M
Perceptions on change the last ten years (option 'yes')	35,2% F, 53,3 M	/
Environmental condition	4,3 F, 3,6 M	/
Perception on NCPs		
Pollination	4,2 F, 3,6 M	
Regulation of water quality	3,5 F, 2,8 M	4F, 3,3 M
Regulation of water quantity	3,6 F, 2,5 M	
Regulation of hazards	3,1 F, 2,4 M	
Learning and inspiration	4,1 F, 3,5 M	4,3 F, 3,6 M
Supporting identities	3,4 F, 2,6 M	3,5 F, 2,7 M
Physical and psycho. experiences		4,3 F, 3,6 M

- **Brief general assessment**

The samples are of different sizes between both pondsapes. If the major respondents are university graduates, the gender and age group distribution differ.

In terms of regional attractiveness, the pondsapes draw visitors within a radius of 5 to 15 miles thanks to the car and bicycle.

The pondsapes have been considered as areas for nature, leisure and recreation with an average frequency of visitation of 2 times per month roughly.

A majority of respondents think that there is no emblematic species.

The data reveal ambivalent perceptions about the changes found the last ten years for Pinkhill Meadows. It is more clear for WFF with positive changes identified on biodiversity and water quality. Respondents gave good ratings on the environmental condition by focusing particularly on the species composition.

Both pondsapes are perceived to be an area for biodiversity (habitat, pollination), non-material NCPs.

About threats and potential impacts, respondents are concerned about climate change and pollution, the impact of pondscape biodiversity as main issue. The respondents identified actions to implement with an objective to improve water quality and increase biodiversity.

Significant gender differences exist with higher ratings on NCPs for women.

5.3.5.Spain

- **Profile**

There are different numbers of answers between the pondsapes but the total number is very high in comparison with other PONDERFUL countries (Table 140).

The sample at La Pletera is more balanced in terms of gender whereas Albera pondscape respondents are mostly composed of men.

The age group distribution is similar between the two pondsapes. Younger and elderly people are almost absent and young adults are poorly represented.

The sample includes a high number of University graduates.

Regarding the favourite landscape, the Albera pondscape earned a high score because it is probably associated with historical sites (Albera mountains). The presence of the Mediterranean Sea near La Pletera could enhance the attractiveness of the pondscape.

The ratings on the relation to nature and the relation to the pondscape are high and very similar. The vicinity of both pondsapes with attractive locations (nature reserve and coastal lagoon) could be an explanation.

Table 140: Profile of the respondents from the general public in Spain

	Albera	Pletera
Number of answers (completed)	93	223
Number with 'visit' on the pondscape	92	118
Gender distribution	34F, 58M 60,5 % of Male respondents	114F, 109M It was impossible to disaggregate the data accurately because of the data format (ISARA was not in charge strictly speaking). That's why the gender analysis is not presented and the profile information include all the 223 respondents and not only the 118 visitors.
Age group distribution	18-35: 13 % 36-50: 42,4 % 51-65: 39,1 % 66-80: 4,3 % +80: 1 %	18-35: 18,8% 36-50: 30 % 51-65: 37,2 % 66-80: 13,9% +80: 0 %
Level of education	Primary school: 4,3% Secondary school: 21,7 % University: 73,9%	Primary school: 8,1% Secondary school: 17,9% University: 74%
Favourite landscape and score given to the option 'pondscape'	Mountain: 20,7% Pondscape: 14,6%	Ocean/sea: 28% Pondscape: 7,6%
Relation to nature (1-5)	4,5	4,1
Relation to the pondscape (1-5)	3,8	3,9
Contribution of pondscape to people's quality of life	4	4,1

- **On-site activities**

The environmental quality of the pondsapes and the location are the most important motivation to visit the pondsapes to observe wildlife and participate in outdoor activities like hiking and cycling (Table 141).

The private car is the preferred mode of transport for a large majority of respondents. The relatively high mean distance from the respondent's home justifies this preference.

Table 141: Replies to the questions on activities in Spain

	Albera (=92)	La Pletera (223)
Most important criteria when choosing a pondscape to go	#1: area with special environmental interest (27,2%) #2: aesthetic scenery (21,6%) #3: located close/far to your home (10,2%)	#1: area with special environmental interest (32,5%) #2: aesthetic scenery (24,1%) #3: accessibility (16,2%)
Mean distance from home (kilometers)	17,6	19,2
Favourite mode of transportation	#1: car (54,8%) #2: on foot (27,7%) #3: bicycle (17,3%)	#1: car (63,9%) #2: on foot (26,1%) #3: bicycle (9,4%)
How did they know the pondscape? (answers selected the most)	#1: I live nearby (26,3%) #2: word of mouth (21,8%) #3: professional network (20,3%)	#1: I live nearby (31,8%) #2: family (18,3%) #3: tourist information (17%)
Favourite activities	#1: wildlife watching (28,1%) #2: hiking (24%) #3: relaxation (17,2%)	#1: hiking (56,2%) #2: cycling (15,9%) #3: wildlife watching (10,7%)

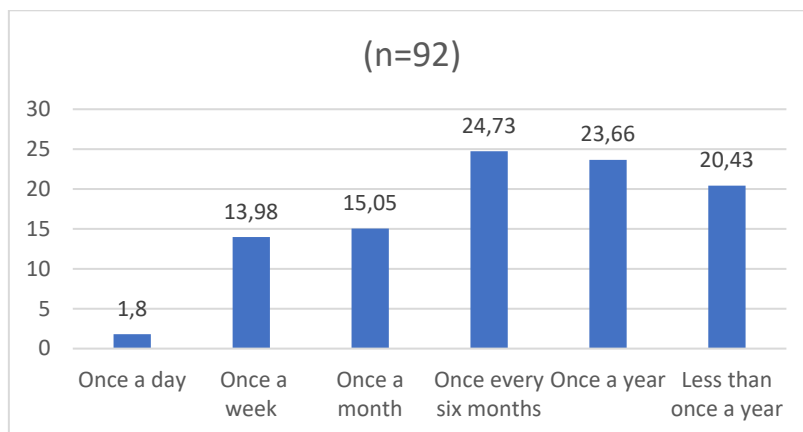


Figure 18: Frequency of visits of the general public to Albera (%)

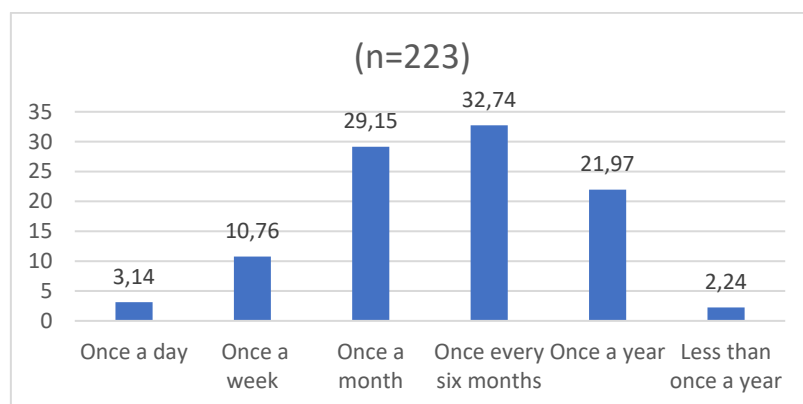


Figure 19: Frequency of visits of the general public to La Pletera (%)

- **Change perceptions**

A large majority of respondents believe that changes have occurred during the last ten years in the La Pletera pondscape with colonisation of new organisms and a better management of rubbish (Table 143). There is more undecided concerning Albera, with negative evolution linked to the lack of water. The fairly low ratings on the environmental condition of the Albera pondscape suggests that these changes are worrisome for respondents.

Table 143: Replies to the questions on the changes observed and the environmental condition in Spain from the inhabitants' perspective

	Albera (n=92)	La Pletera (n=116)
Have you observed significant changes in this pondscape during the last ten years?	Yes: 50% Here below are the changes given by half of the respondents	Yes: 92,2% Here below are the changes given by the majority who responded positively
Type of change emphasized	#1: lower pond water level (22,8%) #2: more frequent drying of ponds (19,7%) #3: decrease of pondscape surface area (12,9%)	#1: colonisation of new plant species (36,6%) #2: colonisation of new animal species (18%) #3: less rubbish (11,4%)
Environmental condition of the pondscales	3,1	3,8
Criteria selected in the determination of the environmental conditions	#1: plant species composition (19,3%) #2: animal species composition (18,6%) #3: water level (17,3%)	#1: plant species composition (32,9%) #2: animal species composition (28,2%) #3: water level (19,8%)

The marks are all very high for NCP ranking at the La Pletera pondscape with only one score below 4. The ranking between the two pondscales is different except for the mark given to 'habitat creation/biodiversity' as first ranking. All in all, the non-material NCPs ('physical and psychological experience', 'learning and inspiration', 'supporting identities') and 'pollination' obtained higher scores in Spain than in the other pondscales.

Table 144: Results on the NCPs according to the inhabitants in Spain (average, score from 1-5)

Type of NCP (present)	top-3	
	Albera	La Pletera
food and feed (productivity of food: fish, waterfowl, livestock)	2,4	/(not included in the UDG questionnaire)
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	4,6	4,7
pollination (diversity of plants to be pollinated)	4	4,5
regulation of water quality (water purification)	3,5	4,1
regulation of water quantity (reservoir of irrigation, water supply)	2,9	3,9
regulation of hazards (flooding regulation, fire protection)	3,1	4,2
regulation of climate (carbon storage, maintaining an acceptable temperature)	3,5	4,1
physical and psychological experiences (calm, freshness, sociability, activities)	3,7	4,8
learning and inspiration (aesthetic, art, education, science)	3,9	4,6
supporting identities (cultural heritage, local identity)	4	4,5
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	4	4,4

There are similar results between both pondscaapes on future threats (Table 145). Climate change and invasive species seem to be the most important threats for the respondents. But the preferred NBS measures are different with strong measures (restoration and limitation of certain use) for Albera.

Table 145: Replies to the questions on the threat assessment and the Nbs measures in Spain from the inhabitants' perspective

	Albera	La Pletera
Threats ranking (1-5)	#1: climate change (4,4) #2: invasive species (3,8) #3: over-exploitation (3,6)	#1: climate change (4,4) #2: invasive species (3,5) #3-4: pollution <u>and</u> tourism (3,3)
Impact threat ranking (1-5)	#1: on biodiversity (4,5) #2-3-4: landscape <u>and</u> water quality <u>and</u> water quantity (4,2)	Question and answer options not similar in the UDG questionnaire #1: on biodiversity (20,6% of all the answers selected)
Favourite NBS measures (1-5)	#1: restoration (4,4) #2: better/more environmental education (4,3) #3: limitation of certain use (4,2)	#1: better/more environmental education (4,7) #2-3: improving the water quality <u>and</u> increasing the volume of water (4,1)

- **Gender aspects**

The only significant differences (criteria: difference of more than 0,5 points or 10%) between the answers of females and males are shown in Table 146. Women are likely to assign a better mark than men when they assess the different NCP options. However, women do not perceive the same level of changes during the last ten years.

Table 146: results of gender research on inhabitants' data in Spain

	Albera (34 F, 58 M)	La Pletera
Activities		
-wildlife watching	23,7%F, 30,9% M	
-relaxation	22,5%F, 14,3 %M	
Perceptions on change the last ten years (option 'yes')	41,1% F, 55,1% M	
Perception on NCPs		Analyse not performed because of the questionnaire format
-Pollination	4,5 F, 3,7 M	
-Regulation of hazards	3,6 F, 2,8 M	
-Learning and inspiration	4,2F, 3,7 M	

- **Brief general assessment**

As the major respondents are university graduates and the age group distribution is quite close, the gender balance is not relevant for Albera, with a large majority of men participating.

In terms of regional attractivity, the pondscaapes draw visitors from over 5 km and 30 km radius thanks to access to a car and bicycle. The general public is therefore diversified with a high frequency of local inhabitants and catalan tourists.

The pondscaapes are considered as areas for nature, leisure and recreation with an average frequency of visitation of once every six months for Albera and once a month for La Pletera.

Respondents to the questionnaire think that both pondscaape are covered by nature reserve and have a natural origin. Both pondscaape are perceived to be mainly for biodiversity areas (habitat, pollination), non-material NCPs and have potential to face up to future challenges.

The data reveal ambivalent perceptions concerning the changes observed during the last ten years for Albera. These changes are often negative with the problem of water availability and recurring drying out. Albera obtained a rather low rating on environmental condition with 3.1 on 5. For La Pletera, people note a positive evolution toward the development of biodiversity and a good score on the current environmental condition of the pondscape. For respondents, both pondsapes are concerned by the same risks with first ‘climate change’ and ‘presence of invasives species’. Drastic solutions are demanded for Albera with first the restoration of the pondscape. There are some significant gender differences with higher scores on NCPs for women.

5.3.6. Belgium

- **Profile**

The number of answers is similar between Tommelen and Pikhakendonk with roughly the same gender distribution and the same age group distribution (Table 147). A lower number of responses is obtained for Gete Vallei with a sample principally composed of female and young people. Respondents gave high scores regarding the relationship to nature and pondsapes but Pikhakendonk have the lowest scores, probably because of its environmental condition.

Table 147: Profile of the respondents from the general public in Belgium

	Gete Vallei	Pikhakendonk	Tommelen
Number of answers (completed)	8	22	24
Number with ‘visit’ on the pondscape	8	22	23
Gender distribution	6F, 2M 75 % of female respondents	9F, 13M, 40,9 % of female respondents	9F, 14M 39,1% of female respondents
Age group distribution	18-35: 37,5 % 36-50: 37,5 % 51-65: 25 % 66-80: 0 % +80: 0 %	18-35: 18,1% 36-50: 45,4% 51-65: 22,7 % 66-80: 13,6% +80: 0%	18-35: 21,7% 36-50: 47,8 % 51-65: 17,3 % 66-80: 8,7% +80: 4,3%
Level of education	Primary school: 0% Secondary school: 25 % University: 75%	Primary school: 4,5% Secondary school: 31,8% University: 63,6%	Primary school: 0% Secondary school: 17,4 % University: 82,6%
Favourite landscape and score given to the option ‘pondscape’	Forest: 30,8% Pondscape: 8,9%		
Relation to nature (1-5)	4,3	4,2	4
Relation to the pondscape (1-5)	3,8	3,5	3,9
Contribution of pondscape to people’s quality of life (1-5)	3,8	3,2	3,8

- **On-site activities**

Data collected reveal that all the three pondsapes are familiar and known as a local place for the inhabitants (Table 148). The average distance travelled is more important for Gete Vallei. The

mode of transport used is first by foot or bicycle with a frequency of visit between once a week and once a month (Figures 22 to 24). The motivations to come to the pondsapes are first for hiking and relaxation, and third for wildlife watching.

Table 148: Replies to the questions on activities in Belgium

	Gete Vallei (n=8)	Pikhakendonk (n=22)	Tommelen (n=23)
Most important criteria when choosing a pondscape to go	#1: #2: #3: #4:	aesthetic scenery (20,6%) area with special environmental interest (18,6%) located close/far to the home (17,9%) accessibility (16,5%)	
Mean distance from their homes (kilometers)	9,3	4,2	3,8
Favourite mode of transportation	#1: bicycle (33,3%) #2-3: on foot <u>and</u> car (26,6,1% each)	#1: on foot (63%) #2: bicycle (29,6%) #3: car (7.4%)	#1: on foot (67,9%) #2: bicycle (21,4%) #3: car (10,7%)
How did they know the pondscape? (answers selected the most)	#1: I leave nearby (38,4%) #2-3-4: chance <u>and</u> social media <u>and</u> word of mouth (15,3%)	#1: I leave nearby (72%) #2-3: family <u>and</u> chance (12%)	#1: I live nearby (50%) #2: chance (18,7%) #3: family (12,5%)
Favourite activities	#1: hiking (22,5%) #2: cycling picnic (16,1%) #3: wildlife watching (12,9%)	#1: hiking (45,6%) #2: relaxation (13%) #3-4: wildlife watching <u>and</u> cycling (10,8% each)	#1: hiking (52,2%) #2: relaxation (11,3%) #3-4: wildlife watching <u>and</u> cycling (9,1% each)

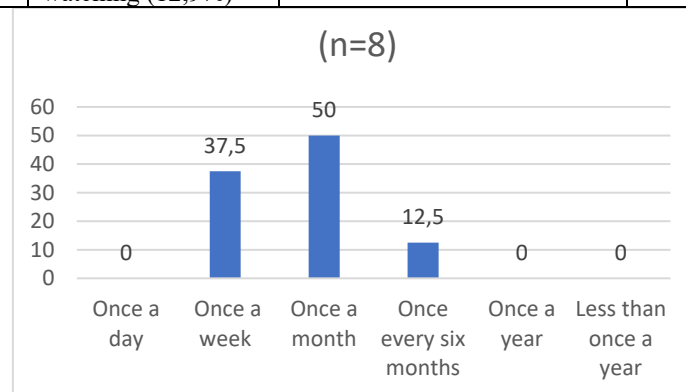


Figure 22: Frequency of visits of the general public to Gete Vallei (%)

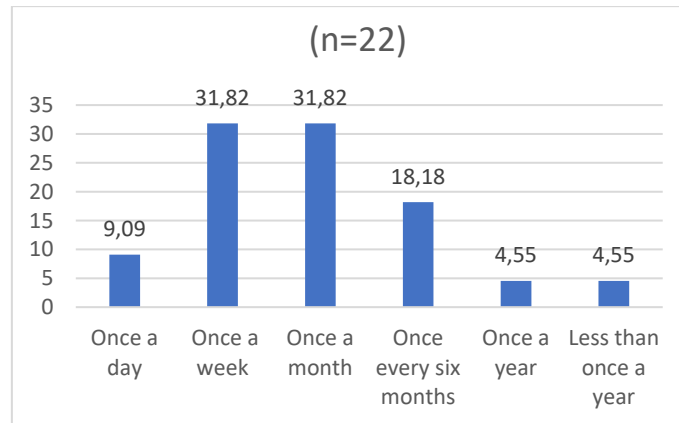


Figure 23: Frequency of visits of the general public to Pikhakendonk (%)

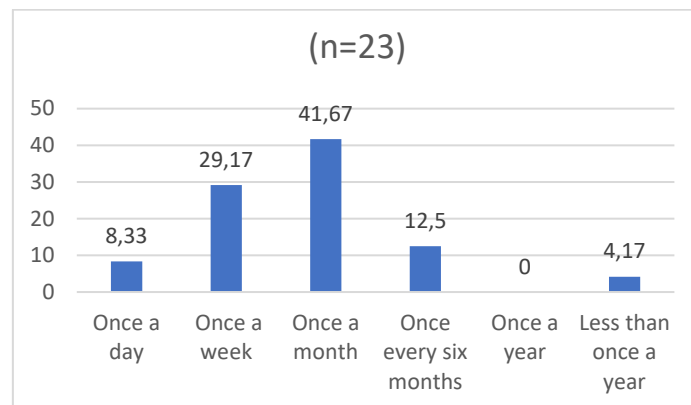


Figure 24: Frequency of visits of the general public to Tommelen (%)




- **Knowledge issues**

It is clear to the respondents that Tommelen was created by humans because of its history (crater left by the explosion of rockets and bombs) (Table 149).

All the pondsapes are perceived as covered by nature reserve and known to host emblematic species, mainly northern crested newt.

Table 149: Replies to the general knowledge questions in Belgium from the inhabitants' perspective

	Gete Vallei (n=8)	Pikhakendonk (n=22)	Tommelen (n=23)
Response about the pondscape origin	humans: 37,5 % natural processes: 37,5% no opinion: 25%	humans: 22,7 % natural processes: 36,3% no opinion: 40,9%	humans: 95,6 % natural processes: 4,4% no opinion: 4,4%
Dominant response about the existence of nature reserve	Yes: 100%	Yes: 91%	Yes: 95,6%

Dominant response about the existence of emblematic species	Yes: 87,5% with crested-newt 	Yes: 68,1% with crested-newt and frogs. 	Yes: 91,3% with crested-newt 
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- **Change perceptions**

A majority of respondents think that positive changes have occurred during the last ten years in the ecological perspective regarding Gete Vallei, with more ponds, more biodiversity and an improvement of water quality (Table 150). This pondscape reaches the highest score on environmental assessment.

No significant change was observed in the other two pondsapes. The same change ‘more frequent drying of ponds’ is highlighted for three pondsapes.

That demonstrates the concern about the future of the pondsapes even if their environmental conditions are still perceived positively with high average marks.

Table 150: Replies to the questions on the changes observed and the environmental condition in Belgium from the inhabitants’ perspective

	Gete Vallei (n=8)	Pikhakendonk (n=22)	Tommelen (n=23)
Have you observed significant changes in this pondscape during the last ten years?	Yes: 75%	No: 59%	Yes: 52,1%
Type of change emphasized	#1-5: colonisation of new animal species <u>and</u> increase of pondscape surface area <u>and</u> increase in the number of ponds <u>and</u> improvement of water quality <u>and</u> more frequent drying of ponds (12% each)	#1-2: more frequent drying of ponds <u>and</u> higher pond water level (16,6% each) #3-4-5: more rubbish <u>and</u> increase in the number of ponds <u>and</u> increase of pondscape surface area (11,1% each)	#1: colonisation of new animal species (20%) #2-3: more frequent drying of ponds <u>and</u> lower pond water level (15% each)
Environmental condition of the pondsapes	3,8	3,6	3,7
Criteria selected in determination of the environmental conditions	#1-2: animal species composition <u>and</u> plant species composition (19,3% each) #3: water quality (12,9%)	#1: plant species composition (18,7%) #2: animal species composition (16,6%) #3: surface area (14,5%)	#1: animal species composition (23,3%) #2: plant species composition (18,3%) #3: surface area (15%)

The selection of the preferred NCPs is similar between the pondsapes, with first “habitat creation and maintenance” and “physical and psychological experience” with score above 4/5 (Table 151). Due to the importance placed on ‘maintenance of options’, the concern for the future seems palpable. Some differences are observed particularly in terms of ‘regulation of water quantity’, ‘water quality’ and ‘regulation of climate’ with highest marks for Gete Vallei and low scores for Tommelen. Another major difference is that Tommelen has low scores with five other NCPs.

Table 151: Results on the NCPs according to the inhabitants in Belgium (average, score from 1-5)

Type of NCP	top-3		
	Gete Vallei	Pikhakendonk	Tommelen
food and feed (productivity of food : fish, waterfowl, livestock)	3,1	2,9	2
habitat creation and maintenance	4,7	4,4	4,6
pollination (diversity of plants to be pollinated)	3,8	3,6	3,1
regulation of water quality (water purification)	3,4	3,5	2,5
regulation of water quantity (reservoir of irrigation, water supply)	4	3,5	2,3
regulation of hazards	3,8	3,8	2,4
regulation of climate	4,1	3,5	3,7
physical and psychological experiences	4,5	3,9	4,4
learning and inspiration	3,7	3,5	3,9
supporting identities (cultural heritage, local identity)	3,3	2,9	3,3
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	4,2	4,1	4

Scores are similar between the pondscapes in relations to threats, with real concerns about climate change, (biodiversity, water quantity) and water quality (pollution) (Table 152). The solutions are similar with propositions of restoration (Pikhakendonk), increasing biodiversity (Gete Vallei) and proposing more environmental education (Tommelen for first NBS measure and others in second choice). Issues on water quality are also selected.

Table 152: Replies to the questions on the threat assessment and the NbS measures in Belgium from the inhabitants' perspective

	Gete Vallei	Pikhakendonk	Tommelen
Threats ranking (1-5)	#1: over-exploitation (4,3) #2: climate change (4,1) #3: pollution (3,6)	#1: climate change (3,8) #2: pollution (3,5) #3-4: invasive species <u>and</u> tourism (3)	#1: climate change (4) #2: urbanization (3,7) #3: tourism (3,4)
Impact threat ranking (1-5)	#1: biodiversity (4,3) #2-3: landscape <u>and</u> water quantity (4)	#1: biodiversity (4,2) #2: water quality (3,8) #3: water quantity (3,7)	#1: biodiversity (4,3) #2: water quantity (3,9) #3: water quality (3,8)
Favourite NBS measures (1-5)	#1: increasing biodiversity (4) #2-3-4: restoration <u>and</u> better/more environmental education <u>and</u> improving water quality (3,7 for each)	#1: restoration (4,1) #2-3: better/more environmental education <u>and</u> improving water quality (3,8)	#1: better/more environmental education (3,8) #2: restoration (3,5) #3: limitation of certain uses (3,3)

Gender aspects:

Table 153: Results of gender research on inhabitants' data in Belgium

	Gete Vallei (6F, 2M)	Pikhakendonk (9F, 13M)	Tommelen (9F, 14M)
Importance given to pondscape as favourite landscape	7,6% F, 0% M	/	20% F, 8,8%M
Relation to the pondscape	3,6 F, 4,5 M	/	/
Criteria accessibility	5,2 F, 0%M	18,1 % F, 24,1% M	/

Criteria comfort	5,2 F, 0 % M	/	18,5 F, 2,2 M
Mean distance	5,4 F, 15 M	6,7F, 2,3 M	2,6F, 4,7M
Activities:			
hiking	19,2% F, 40% M	37,5% F, 54,5% M	45% F, 56% M
nature watching	11,5 F, 20% M		
Changes observed the last ten years (option 'yes')	55,5% F, 50% M	44,4% F, 38,4% M	66% F, 100% M
NCP			
food and feed	2,5F, 5 M		1,6 F, 2,2 M
pollination	3,6F, 4,5 M		
water quality		3,8 F, 3,2M	
water quantity	3,8F, 4,5M	4F, 3,1 M	1,8 F, 2,7 M
regu. of hazards		4,3 F, 3,5 M	
regul. of climate		4,2 F, 3,1 F	
phys. and psych.	4,6 F, 4 M		
Impacts	/		
water quantity		4,3 F, 3,3 M	
water quality		4,2 F, 3,4 M	
NBS measures	3,1 F, 3,7 M	Not the same order	

With the criteria of rate differential of more than 0,5 points and 5%, the significant differences between the answers of females and male participants are shown in Table 153.

For Gete Vallei, the low number of answers and the gender distribution can be part of an explanation in terms of the important number of differences. Women seem to attach more importance to the pondscape than men as their favourite landscape. Men have more selected the option 'hiking' as activities than women. The gender differences are observed for the NCP ranking, with higher scores for several NCP in Pikhakendonk and lower for the two other pondscares. We have been unable to interpret this assessment.

- **Brief general assessment**

The sample comprises mainly young people and university graduates. In terms of the number of answers, gender equity is not achieved. In view of the small number of answers received for Gete Vallei, the study represents only partial results. Respondents have strong relations with nature and pondscape except concerning Pikhakendonk with poor scores compared with others. In terms of regional attractivity, the pondscares draw visitors from over 1 km and 10 km radius thanks to the car and bicycle. The general public is mainly local inhabitants, especially for Pikhakendonk and Tommelen. The pondscares are considered as areas for nature, leisure and recreation with an average visit of twice per month approximately. Respondents to the questionnaire believe that all three pondscares host emblematic species.

The data reveal ambivalent perceptions concerning the changes found during the last ten years between the pondscares: each pondscape is perceived differently. Respondents gave good ratings on the environmental condition with preferred criteria selection focused on the species composition. The pondscares are perceived to be mainly areas to promote biodiversity, outdoor activities, and which have potential to face up to future challenges. The regulation of water quality and quantity are perceived differently between the pondscares: these issues are well rated as major concerns (question on the potential impacts). The main different threats are linked to climate change, pollution with impact on biodiversity and water quantity. The respondents identified actions to implement with objectives to restoring, improving water quality and raising awareness thanks the environmental education. Significant differences are observed between the genders, but the sample is not sufficient regarding Gete Vallei. The gendered trends are varied between the pondscares. It is difficult to deduce a result.

5.3.7. Uruguay

- **Profile**

The number of answers is quite low, which is clearly linked to the remoteness of the pondsapes (Table 154). The sample population has gender equity and is quite young. The relation to nature and to the pondsapes is relatively high.

Table 154: Profile of the respondents from the general public in Uruguay

	Sierra de Caracoles	La Pedrera
Number of answers (completed)	12	4
Number with 'visit' on the pondscape	12	4
Gender distribution	6F, 6M	2F, 2M
Age group distribution	18-35: 58,3 % 36-50: 25 % 51-65: 8,3 % 66-80: 8,3 % +80: 0 %	18-35: 50 % 36-50: 25 % 51-65: 25 % 66-80: 0% +80: 0 %
Level of education	Primary school: 0% Secondary school: 16,7 % University: 83,3%	Primary school: 0% Secondary school: 25% University: 75%
Favourite landscape and score given to the option 'pondscape'	Ocean/sea: 25% Pondscape: 14,2%	
Relation to nature (1-5)	4,5	5
Relation to the pondscape	3,8	3,7
Contribution of pondscape to people's quality of life	3,9	4

- **On-site activities**

The environmental quality of the pondsapes and the accessibility are the most important motivations to visit the pondsapes (Table 155). The professional network provides an important source of responses, probably because respondents work around or in the pondscape. Some of them have selected the option 'professional use' to present their activity: drinking water source for livestock, irrigation and research. Therefore, the sample seems to be a mix between users of water, scientists and inhabitants.

Table 155: Replies to the questions on activities in Uruguay

	Sierra de Caracoles (=12)	La Pedrera (4)
Most important criteria when choosing a pondscape to go	#1: area with special environmental interest (17,3%) #2: accessibility (15,3%) #3-4: aesthetic scenery <u>and</u> workplace (13,4% each)	
Mean distance from their homes (miles)	18,7	18,8
Favourite mode of transportation	#1: car (61,5%) #2-3: on foot <u>and</u> horse (15,3% each)	#1: car (75%) #2: on foot (25%)
How did they know the pondscape? (answers selected the most)	#1: professional network (75%) #2: family (16,7%) #3: I live nearby (8,3%)	#1-2: I live nearby <u>and</u> professional network (40%) #3: word of mouth (20%)
Favourite activities	#1: professional use (37,5%) #2: educational purpose (25%) #3: wildlife watching <u>and</u> hiking (12,5%)	#1: hiking (25%) #2: picnic (18,7%) #3-4-5: wildlife watching <u>and</u> swimming <u>and</u> relaxation (12%)

The frequentation of respondents for Sierra de Caracoles is once a month. Frequency of visits is unclear for La Pedrera, with local inhabitants and other type of visitors (once a year) (Figure 25, 26).

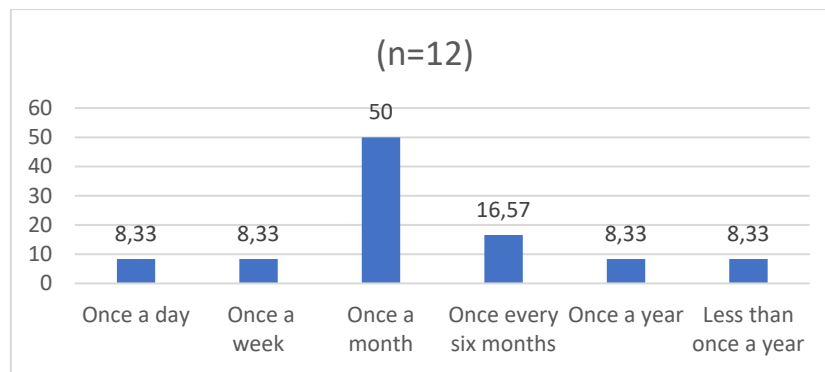


Figure 25: Frequency of vitis of the general public to Sierra de Caracoles (Uruguay, %)

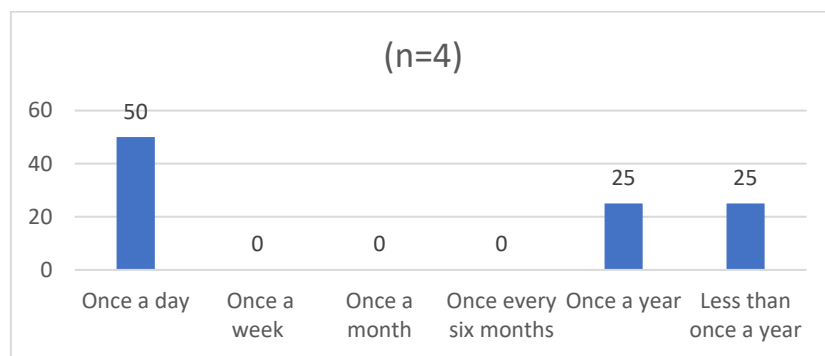


Figure 26: Frequency of visits of the general public to La Pedrera (Uruguay, %)

- **Knowledge issues**

To the general public, it is clear that the pondsapes are created by humans and are not covered by nature reserve (Table 156).

The existence of emblematic species is relevant for the respondents only regarding Sierra de Caracoles with the presence of neotropical otter (*Lontra longicaudis*), wolf fish and amphibians (*Phyllomedusa iheringii*) (Figure 27).

Table 156: Replies to the general knowledge questions in Uruguay from the inhabitants' perspective

	Sierra de Caracoles (=12)	La Pedrera (n=4)
Response about the pondscape origin	humans: 83,3 % natural processes: 8,3% no opinion: 8,3%	humans: 100 %
Dominant response about the existence of nature reserve	Yes: 41,6% No: 41,6% no opinion: 16,6%	No: 75%
Dominant response about the existence of emblematic species	Yes: 66,6% Here below are the names of species given by those who responded positively	Yes: 50% No: 50%



Figure 2Z: Word cloud for both Uruguayan pondsapes on the emblematic species according to the general public

- **Change perceptions**

A very large majority believe that changes have occurred during the last ten years in the Pedrera pondscape with colonisation of new species, but not in Sierra de Caracoles (Table 157). The score for the environmental condition of the pondscape is higher for La Pedrera. The way to analyse the environmental condition of the pondscape is totally different between the pondsapes, with a link with biodiversity for Sierra De Caracoles, and water quality and pollution for La Pedrera.

Table 15Z: Replies to the questions on the changes observed and the environmental condition in Uruguay from the inhabitants' perspective

	Sierra de Caracoles (=12)	La Pedrera (n=4)
Have you observed significant changes in this pondscape during the last ten years?	Yes: 16,6% No: 83,3%	Yes: 75% Here below are the changes given by the majority who responded positively
Type of change emphasized	/	#1-2: colonisation of new plant species <u>and</u> colonisation of new animal species (20% each)
Environmental condition of the pondsapes	3,7	4,2
Criteria selected in the determination of the environmental conditions	#1-2: animal species composition <u>and</u> water quality (20,5%) #3: plant species composition (17,9%)	#1: water quality (26,6%) #2: colour of water (20%) #3-4: water level <u>and</u> pollution (13,3% each)

The marks on NCP ranking are almost all high on La Pedrera pondscape with only one mark below 3 (Table 158).

That between the two pondsapes does not compare, but the NCPs priorities seem similar with 'biodiversity' and 'regulation of water quantity' (water supply).

Table 158: Results on the NCPs according to the inhabitants in Uruguay (average, score from 1-5)

Type of NCP	top-3	
	Sierra de Caracoles	La Pedrera
food and feed (productivity of food : fish, waterfowl, livestock)	3,5	3,7
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	3,8	4,7
pollination (diversity of plants to be pollinated)	2,9	3,7
regulation of water quality (water purification)	2,9	4
regulation of water quantity (reservoir of irrigation, water supply)	4,1	4,7
regulation of hazards (flooding regulation, fire protection)	2,5	4,2
regulation of climate (carbon storage, maintaining an acceptable temperature)	3	4,2
physical and psychological experiences (calm, freshness, sociability, activities)	3,5	4
learning and inspiration (aesthetic, art, education, science)	3,7	4
supporting identities (cultural heritage, local identity)	2,5	2,7
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3	4,2

For future threats, similar results are seen between both pondscaapes (Table 159). Climate change and intensive farming seem to be the most important threats for the respondents, with direct impacts on water quality and quantity. The preferred solutions are also similar for both pondscaapes with strong measures as restoration and limitation of certain use.

Table 159: Replies to the questions on the threat assessment and the NbS measures in Uruguay from the inhabitants' perspective

	Sierra de Caracoles	La Pedrera
Threats ranking (1-5)	#1: climate change (4,4) #2-3-4: over-exploitation <u>and</u> intensive farming <u>and</u> pollution (4)	#1: intensive farming (5) #2-3-4: climate change <u>and</u> over-exploitation <u>and</u> intensive farming <u>and</u> pollution (4,5)
Impact threat ranking (1-5)	#1: water quality (4,3) #2: biodiversity (4,2) #3: 4: water quantity (4)	#1-2: water quantity and water quality (4,7) #3-4: productive purpose <u>and</u> biodiversity (4,5)
Favourite NBS measures (1-5)	#1-2: restoration <u>and</u> limitation of certain use (4,5) #3: better environmental education (4,4)	#1: restoration (5) #2-3: improving the water quality <u>and</u> limitation of certain use (4,7)

- **Gender aspects**

The only significant differences (criteria: difference of more than 0,5 points or 10%) between the answers of female and male participants are shown in Table 160.

Data are difficult to analyse because of the low number of respondents and the different trends between both pondscaapes. Highest scores are given for Sierra De Caracoles by female on threats, NBS and NCP for Sierra De Caracoles. Conversely for La Pedrera, some NCPs are rated lower by females than by males.

Table 160: Results of gender research on inhabitants' data in Uruguay

	Sierra de Caracoles (6F, 6 M)	La Pedrera (2F, 2M)
Importance given to pondscape as favourite landscape	27,7% F, 6,6% M	0 % F, 10 % M
Relation to pondscape	/	2,5 F, 5 M
Contribution of pondscape to the human life quality	/	3 F, 5 M
Criteria accessibility	/	20% F, 11,1 % M
Perceptions on change the last ten years (option 'yes')	20 % F, 0 % M	50% F, 100 % M
Threats Climate change	4,8 F, 4 M	/
Measures restoration	5 F, 4,1 F	/
Perception on NCPs		
Food and feed	4 F, 3M	3 F, 4,5 M
Regul. Water quality		3,5 F, 4,5 M
Regul. Water quantity	4,5 F, 3,8 M	
Regulation of hazards	2,8F, 2,1 M	
Physic. And psycho. Exp		3 3 F, 5 M
Learning and inspiration		4 F, 5 M

- **Brief general assessment**

The sample comprises mainly young people and university graduates. In terms of number of answers, gender equity is achieved. In view of the small number of answers received for both pondscape, the study represents only partial results.

Respondents have strong relations with nature and pondsapes.

In terms of regional attractivity, the pondsapes draw visitors from over 5 km and 30 km radius due to the use of a car. The general public is mainly composed of local inhabitants, pond users and professionals on-site.

The pondsapes have been considered as areas for nature, leisure and professional activities (research, cattle breeding).

There are a lot of differences to be considered for perceptions between the pondsapes in various subjects:

- Intensity of the frequentation;
- Existence of emblematic species;
- Changes identified the last ten years;
- NCP ranking.

Water quality and quality, as well as biodiversity, are particularly matters of concern.

All these results should be put into perspective with the low rate of responses in these pondsapes.

5.3.8. Denmark

- **Profile**

The gender distribution is rather balanced in Lystrup, with a lack of women participants in Fyn (Table 161). The sample is also constituted of graduated people in both pondsapes, with a younger public in Lystrup.

The low number of answers make the respondents profile low diversified in terms of age group, gender and level of education.

The relation to nature and to the pondscape is highly valued for both pondsapes.

Table 161: Profile of the respondents from the general public in Denmark

	Lystrup	Fyn
Number of answers (completed)	18	8
Number with 'visit' on the pondscape	17	8
Gender distribution	7F, 9M, 1 non-binary 38,8F of female	2F, 6M 20% of female
Age group distribution	18-35: 17,6 % 36-50: 41,1 % 51-65: 23,5 % 66-80: 17,6 % +80: 0 %	18-35: 0 % 36-50: 25 % 51-65: 75 % 66-80: 0% +80: 0 %
Level of education	Primary school: 11,7% Secondary school: 11,7 % University: 76,4%	Primary school: 0% Secondary school: 25% University: 75%
Favourite landscape and score given to the option 'pondscape'	Ocean/sea: 21,9% Pondscape: 12,2%	
Relation to nature (1-5)	4,1	4,6
Relation to the pondscape	4,1	3,7
Contribution of pondscape to people's quality of life	3,8	3,5

- **On-site activities**

Table 162: Replies to the questions on activities in Denmark

	Lystrup (=17)	Fyn (8)
Most important criteria when choosing a pondscape to go	#1: located close to your home (19,5%) #2: aesthetic scenery (18,2%) #3: accessibility (15,8%)	
Mean distance from home (km)	2,2	23,1
Favourite mode of transportation	#1: on foot (71,4%) #2: bicycle (19%) #3-4: car <u>and</u> horse (4,7 each)	#1: car (46,1%) #2: bicycle (23%) #3-4: boat <u>and</u> public transportation (15,3% each)
How did they know the pondscape? (answers selected the most)	#1: I live nearby (88,8%) #2-3: chance <u>and</u> professional network (5,5%)	#1: I professional network (50%) #2: I leave nearby (20%)
Favourite activities	#1: wildlife watching (25%) #2: relaxation (22,7%) #3: hiking (15,9%)	#1: hiking (26,2%) #2: wildlife watching (21%) #3: relaxation (15,2%)

The accessibility and the location are the most important motivation to visit these two Danish pondsapes (Table 162). The professional network and the homeplace is an important source of information. Three activities are preferred by respondents when frequenting the pondscape: wildlife watching, relaxation and hiking.

The features of both pondsapes are very different: Lystrup appears to be a local place in an urban setting with daily walking itineraries whereas Fyn Islands seems more distant from inhabited areas with a low visit frequency (once every 6 months) (Figure 28, 29).

Regarding Fyn, the low number of answers and probably the few inhabitants around the place can explain this striking contrast.

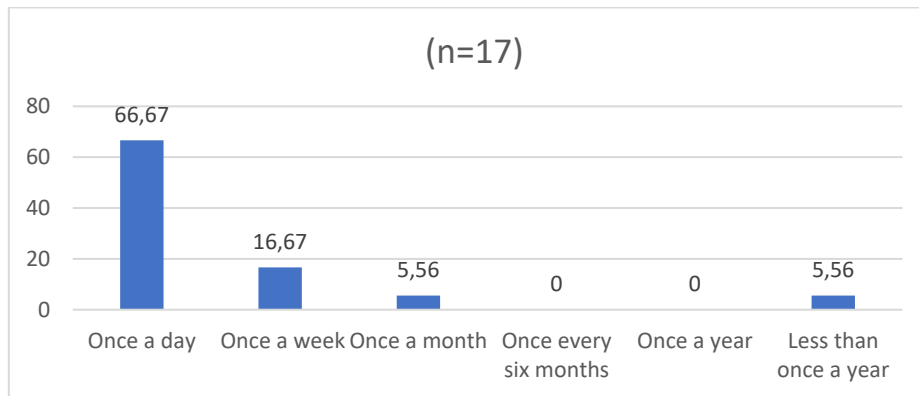


Figure 28: Frequency of visits of the general public to Lystrup (Denmark)

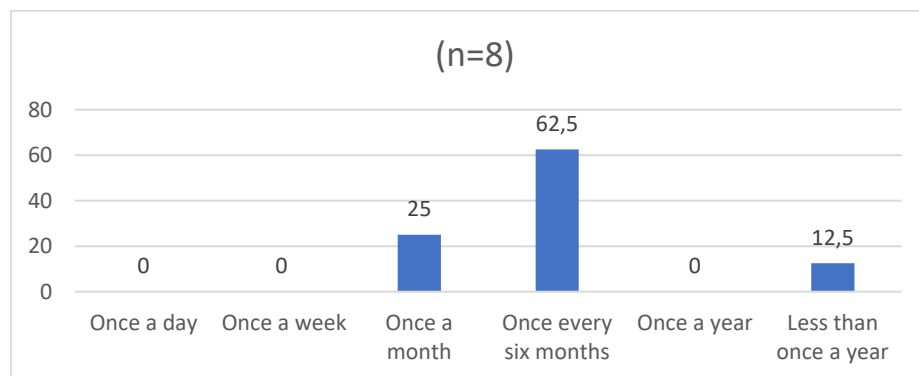


Figure 29: Frequency of visits of the general public to Fyn (Denmark)

- **Knowledge issues**

The general opinion shows that it is clear that the pondsapes are created by humans (Table 163). Respondents are aware that Fyn pondscape is covered by a nature reserve whereas that is not clear in Lystrup.

The existence of emblematic species is confirmed for the respondents of Fyn, with the presence of newt and European fire-bellied toad (Figure 30, 31).

Table 163: Replies to the general knowledge questions in Denmark from the inhabitants' perspective

	Lystrup (=17)	Fyn (n=8)
Response about the pondscape origin	humans: 88,2 % natural processes: 0% no opinion: 11,8%	humans: 62,5 % natural processes: 37,5%
response about the existence of nature reserve	Yes: 17,6% No: 17,6% no opinion: 47,6%	Yes: 75% No: 12,5% No opinion: 12,5%
Dominant response about the existence of emblematic species	No: 53% Here below are the names of species given by those who responded positively	Yes: 87,5%



Figure 30: Word cloud for Lystrup on the emblematic species according to the general public



Figure 31: Word cloud for Fyn on the emblematic species according to the general public

- **Change perceptions**

A slight majority think that changes have occurred during the last ten years in Lystrup but not in Fyn Islands (Table 164).

Nevertheless, the way to assess the environmental condition and analyse the environmental condition of the pondscapes is similar with the same criteria cited: composition of animal species, water quality, and water level.

Table 164: Replies to the questions on the changes observed and the environmental condition in Switzerland from the inhabitants' perspective

	Lystrup (=17)	Fyn (n=8)
Have you observed significant changes in this pondscape during the last ten years?	Yes: 58,9%	Yes: 37,5% Here below are the changes given by the minority who responded positively
Type of change emphasized	#1: colonisation of new animal species (27,2%) #2: others	#1: colonisation of new animal species (37,5%) #2: colonisation of new plant species (25%)
Environmental condition of the pondscapes	3,6	3,6
Criteria selected in the determination of the environmental conditions	#1: animal species composition (27,5%) #2-3-4-5: plant species composition <u>and</u> colour of water <u>and</u> water level <u>and</u> water quality (17,9% each)	#1-2: animal species composition <u>and</u> water quality (20,8%) #3: water level (13,6%)

The ranking between the two pondscapes' NCPs is quite similar except regarding the 'regulation of hazards'. The main NCPs cited are 'habitat creation and maintenance' and 'physical and psychological experience', with a score above 4.

Table 165: Results on the NCPs according to the inhabitants in Denmark (average, score from 1-5)

Type of NCP	top-3	
	Lystrup	Fyn
food and feed (productivity of food : fish, waterfowl, livestock)	2,4	2,2
habitat creation and maintenance (preservation of desired species, for biodiversity conservation)	4	4,6
pollination (diversity of plants to be pollinated)	3	2,7
regulation of water quality (water purification)	2,2	2,6
regulation of water quantity (reservoir of irrigation, water supply)	2,5	2,7
regulation of hazards (flooding regulation, fire protection)	3,8	2,7
regulation of climate (carbon storage, maintaining an acceptable temperature)	2,3	3
physical and psychological experiences (calm, freshness, sociability, activities)	4,3	4
learning and inspiration (aesthetic, art, education, science)	3,3	3,7
supporting identities (cultural heritage, local identity)	2,4	2,7
maintenance of options (potential opportunities offered by nature to ensure resilience in the future)	3,1	3,1

Ratings are low in comparison with other pondsapes for future threats (Table 166), which can be construed as a high degree of satisfaction and a low level of concern, regarding the future. Climate change and pollution seem to be the most important challenges for the respondents. The preferred solutions are similar with strong measures (restoration and creation of new ponds) for both pondsapes.

Table 166: Replies to the questions on the threat assessment and the NbS measures in Denmark from the inhabitants' perspective

	Lystrup	Fyn
Threats ranking (1-5)	#1: pollution (3,1) #2: climate change (2,7) #3: tourism (2,5)	#1: climate change (3,8) #2: pollution (3,2) #3: intensive farming (3,1)
Impact threat ranking (1-5)	#1: biodiversity (3,5) #2: water quantity (3,2) #3: landscape (3,1)	#1: biodiversity (4,3) #2-3: water quantity <u>and</u> water quality (3,5 each)
Favourite NBS measures (1-5)	#1: restoration (3,3) #2: increasing biodiversity (3,2) #3: improving water quality (2,9)	#1: creating new ponds (4,3) #2: improving the water quality (3,8) #3: increasing biodiversity (3,5)

- **Gender aspects**

Table 167: Results of gender research on inhabitants' data in Denmark

	Lystrup (7F, 9M, 1 NB)	Fyn (2F, 6M)
Pondscape as favourite landscape	/	20% F, 7,1 % M
Contribution of pondscape to the human life quality	/	3 F, 3,6 M
Criteria for choosing the pondscape		
-accessibility	23 F, 13,3 M	
-comfort	15,3 F, 10,3 M	0 F, 10,5 M
Mean distance	5,5 F, 0,5 M	30 F, 20,9 M
Activities		
-nature watching	33,3% F, 24% M	16,6% F, 33,3 % M
-hiking	13,3 F, 20% M	33,3% F, 13,3% M
Perceptions on change the last ten years (option 'yes')	57,1 F, 22,2 % M	50 % F, 33,3% M
Threats		
-pollution	2,7 F, 3,4 M	/
-intensive farming	2,5 F, 3,3 M	/
-pollution	2 F, 3,6 M	/
Impacts		
-water quantity	/	4 F, 3,3 M
NBS measures		
-biodiversity	3 F, 3,6 M	/
Perception on NCPs		
-food and feed	/	3 F, 2 M
-pollination	/	2 F, 3 M
-regulation of water quality	/	2F, 2,8 M
-regulation of water quantity	3,2 F, 1,8 M	1,5 F, 3,1 M
-regulation of hazards	/	1,5 F, 3,1 M
-regulation of climate	/	2 F, 3,3 M
-physic. and psych. exper.	4,7F, 4,1 M	3,5 F, 4,1 M
-learning and inspiration	3,7 F, 3 M	3 F, 4 M
-supporting identities	3 F, 1,8 M	/
-maintenance of options	3,8 F, 2,6 M	/

Significant differences (criteria: difference of more than 0,5 points or 10%) between the answers of females and males are shown in Table 167.

We do not discuss the data from Fyn pondscape because of the very low number of answers and the presence of only two female respondents.

Concerning the ratings on Lystrup, three conclusions can be drawn from this gender comparison:

- Women pay more attention to the criteria of accessibility and comfort;
- Women are likely to assign a better mark than men when they assess the different NCP options;
- Men are likely to assign a higher score than women for threat assessment;
- Women have much more responded positively to the perception of change during the last decade.

- **Brief general assessment**

The sample comprises mainly middle-aged people and university graduates. In terms of number of answers, the gender equity is almost achieved for Lystrup.

Respondents have globally strong relations with nature and pondscapes.

In terms of regional attractivity, Lystrup is a well-known pondscape with local inhabitants whereas Fyn Islands draw visitors from over 30 km radius.

The pondscapes are considered as areas for nature, leisure and professional activities (research, cattle breeding).

Lystrup is known as a nature reserve hosting emblematic species such as salamanders.

The recent evolution of the pondscapes is perceived as relatively positive. Threats selected by respondents are linked to pollution and climate change, even if these criteria correspond to low scores. Respondents propose mainly strong action for the future of the pondscapes with restoration or creation of new ponds.

5.4. Cross-analysis between DEMO-sites

The objective of this part is to identify the responses which are similar in the different pondsapes and characterise the specificities of some groups of pondsapes with the goal to propose a global typology of sites.

5.4.1. Favourite landscape

All pondsapes combined, the option ‘pondscape’ was ranked third with 11,5% of all the answers. The options ‘forest’ (17,5%) and ‘ocean/sea’ (13,7%) were ranked #1 and #2. A review of the scientific literature indicates that this choice is dependent on various factors with natural, social, and aesthetic landscape values (Solecka, 2019; Yang et al, 2019). The option ‘pondscape’ obtained different percentages per DEMO-site (Table 168).

Table 168: Comparison of the pondscape as favourite landscape amongst the DEMO-sites

	Option ‘pondscape’ (imputed %)
Switzerland	11,3
Germany	10
Turkey	14,7
England/UK	8,3
Spain Albera	14,6
Spain La Pletera	7,6
Belgium	8,9
Uruguay	14,2
Denmark	12,2

The first findings show that interest in pondsapes is high, but the sample has to be weighted. This comprises people interested in pondsapes and frequenting them (questionnaire online or on-the-spot informative panels), and does not represent the general population. There is no significant difference except with La Pletera. This pondscape is very close to the sea and the public is more attracted by sea (28%) than pondsapes (7,6%).

5.4.2. Relation to nature/pondscape

We can globally observe close scores with better ratings for nature and a little less for the pondscape (Table 169).

In Turkey the relation to nature is clearly below the average at Gölbaşı and Imrahor (4.3). In Switzerland, England, Uruguay and Denmark, the ratings are well above.

Regarding the relation to pondscape, the score for UK sites is clearly below the average of all pondsapes. In Turkey with the three pondsapes, the results are mixed. Concerning the question on the contribution of the pondscape to the quality of life, Pinkhill and Schöneiche obtained the lower scores. Explaining the result is not easy. For the UK, the presence of the Thames river close to the pondscape could justify this rating.

Regarding Schöneiche, the gradual disappearance of the pondscape can explain this score.

Table 169: Results on the value placed on nature and pondscape according to the inhabitants amongst DEMO-sites (average, score from 1-5)

DEMO-site	Relation to nature	Relation to pondscape	Contribution of pondscape to life quality
Bois de Jussy	4,4	3,8	3,5
Rhône Verbois	4,5	3,9	3,8
Schöneiche	4,2	3,6	3,2
Dikkuyruk	4,5	4,2	3,8
Gölbasi	3,9	3,8	3,7
Imrahor	3,5	3	3,5
Pinkhill Meadows	4,4	3	3,1
Water Friend. Far.	4,7	3,3	3,7
Albera	4,5	3,8	4
La Pletera	4,1	3,9	4,1
Gete Vallei	4,3	3,8	3,8
Pikhakendonk	4,2	3,5	3,2
Tommelen	4	3,9	3,8
Sierra de Caracol.	4,5	3,8	3,9
La Pedrera	5	3,7	4
Lystrup	4,1	4,1	3,8
Fyn	4,6	3,7	3,5
TOTAL	4,3	3,6	3,6

5.4.3. Level of familiarity

The highest percentage per pondscape are highlighted in red (Table 170). Half of pondsapes are visited at least once a month and three quarters of pondsapes are visited more than once month.

Table 170: Comparison of the results on the frequency of the general public amongst DEMO-sites (%)

DEMO-site	Once a day	Once a week	Once a month	Once every six months	Once a year	Less than once a year
Bois de Jussy	7	15,8	52,6	8,7	5,2	10,5
Rhône Verbois	7,1	15,5	36,9	27,3	4,7	8,3
Schöneiche	15,5	26,6	35,5	8,9	6,6	4,4
Dikkuyruk	0	50	25	25	0	0
Gölbasi	21,4	30,9	26,2	11,9	4,7	2,3
Imrahor	0	50	0	50	0	0
Pinkhill Meadows	11,4	22,8	31,4	14,3	5,7	5,7
Water Friend. Far.	16,6	33,3	27,7	16,6	0	5,5
Albera	1,8	13,9	15	24,7	23,6	20,4
La Pletera	3,1	10,7	29,1	32,7	21,9	2,2
Gete Vallei	0	37,5	50	12,5	0	0
Pikhakendonk	9,1	31,8	31,8	18,1	4,5	4,5
Tommelen	8,3	29,1	41,6	12,5	0	4,1
Sierra de Caracol.	8,3	8,3	50	16,5	8,3	8,3
La Pedrera	50	0	0	0	25	25
Lystrup	66,6	16,6	5,5	0	0	5,5
Fyn	0	0	25	62,5	0	12,5

We present three types of pondsapes regarding the distance to the pondsape (Figure 32):
 Average distance of less than 5 km (Lystrup in Denmark, Schöneiche in Germany, Pikhakendonk and Tommelen in Belgium);
 Average distance of less than 10 km (both Swiss pondsapes, Gölbasi in Turkey, both British pondsape, Gete Vallei in Belgium);
 Average distance of less than 20 km (Dikkuyruk and Imarahor in Turkey, the Catalan and Uruguayan pondsapes);
 Average distance exceeding 20 km (Fyn in Denmark)

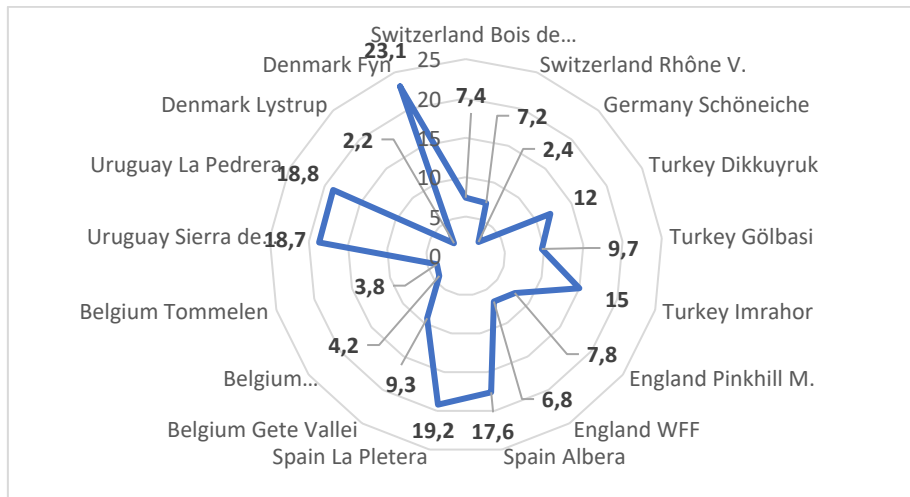


Figure 32: Comparison of the distance from home of the general public (in kilometers)

A majority of the pondsapes receive local visitors (Table 171). Only the pondsapes in Turkey, Spain, Uruguay and Fyn (Denmark) draw visitors from afar (above 20 kilometers). If we perform an integration of these data on distance and frequency, we observe a clear link between local respondents and visit frequency. This is the case for Lystrup, Schöneiche, Pikhakhendonk, Tommelen, Bois de Jussy and Rhône Verbois in Switzerland and the British pondsapes of Pinkhill Meadow and Water Friendly Family. We could call them ‘pondsapes visited by local people’.

Table 171: Comparison of the distance from home of the general public amongst DEMO-sites (in percentage)

DEMO-site	Within 1 km	Within 5 km	Within 10 km	Within 20 km	Within 30 km	more
Bois de Jussy	10,5	31,5	31,5	19,3	1,7	5,2
Rhône Verbois	8,3	28,5	40,4	14,3	5,9	2,3
Schöneiche	54,5	34,1	9,1	0	0	2,2
Dikkuyruk	0	28,5	14,3	28,5	14,3	14,3
Gölbasi	17,1	29,2	19,5	14,6	4,8	14,6
Imrahor	0	0	50	0	50	0
Pinkhill Meadows	9,3	53,1	15,6	6,2	3,1	12,5
Water Friend. Far.	27,7	27,7	22,2	11,1	5,5	5,5
Albera	8,7	16,3	6,5	20,6	13	34,7
La Pletera	14,5	7,5	2,5	9	4,5	62
Gete Vallei	0	62,5	12,5	0	12,5	12,5
Pikhakendonk	31,8	50	9,1	4,5	0	4,5
Tommelen	21,7	60,8	13	0	0	4,3
Sierra de Caracol.	25	8,3	0	8,3	8,3	50
La Pedrera	25	0	0	25	0	50

Lystrup	94,1	0	0	0	0	5,9
Fyn	12,5	0	12,5	0	0	75

5.4.4. Criteria for visiting a pondscape

We posed the following question to our respondents: “What are the most important criteria for you when choosing a pondscape to go to?”. This information might be especially useful for the managers of pondsapes to better respond to the expectations of the general public. This question is being addressed before participants select the preferred pondscape, enabling us to categorise the responses by country/DEMO-site.

It also allows us to identify all the reasons for frequenting the pondsapes. ‘Aesthetic scenery’ and ‘area with special environmental interest’ were the options most commonly selected. The accessibility and the location come also into play before the decision to make the journey (Figure 33).

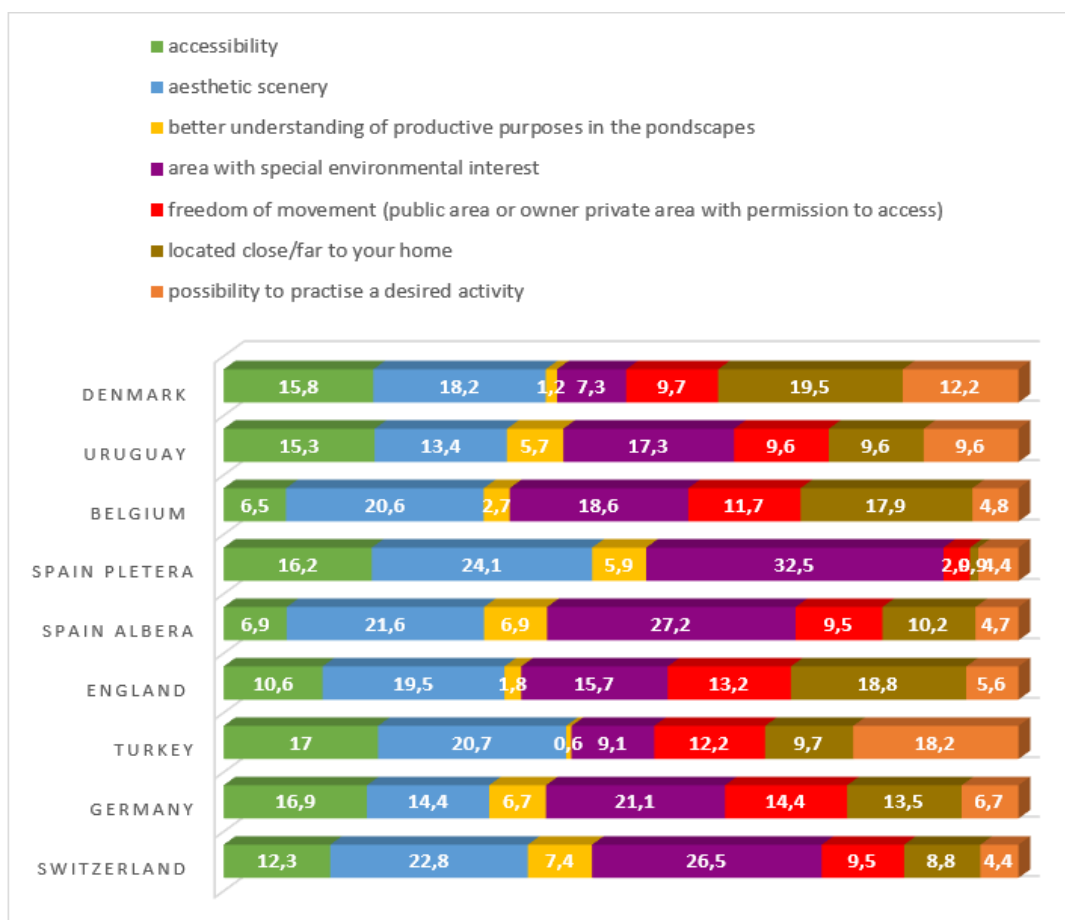


Figure 33: Comparison of criteria for choosing to go to the pondscape according the general public amongst DEMO-sites (%)

5.4.5. Knowledge of emblematic species

As can be seen in Figure 34, more than half of all the pondsapes (9/17) host emblematics species according to the respondents. For the Fyn Islands, Tommelen and Gete Vallei in Belgium and Rhône Verbois in Switzerland, the scores are above 70%. In these pondsapes, the respondents are able to name species or species groups. The more positive answers we received in a particular pondscape, the higher the number of species indicated by the participants in this pondscape.

Conversely, on Gölbaşı and Imrahor in Turkey, and Schöneiche in Germany, it is not thought that the pondscapes host emblematic species. The low scores on their environmental condition (between 1,5 and 3,4 on a scale of 5) could explain these data.

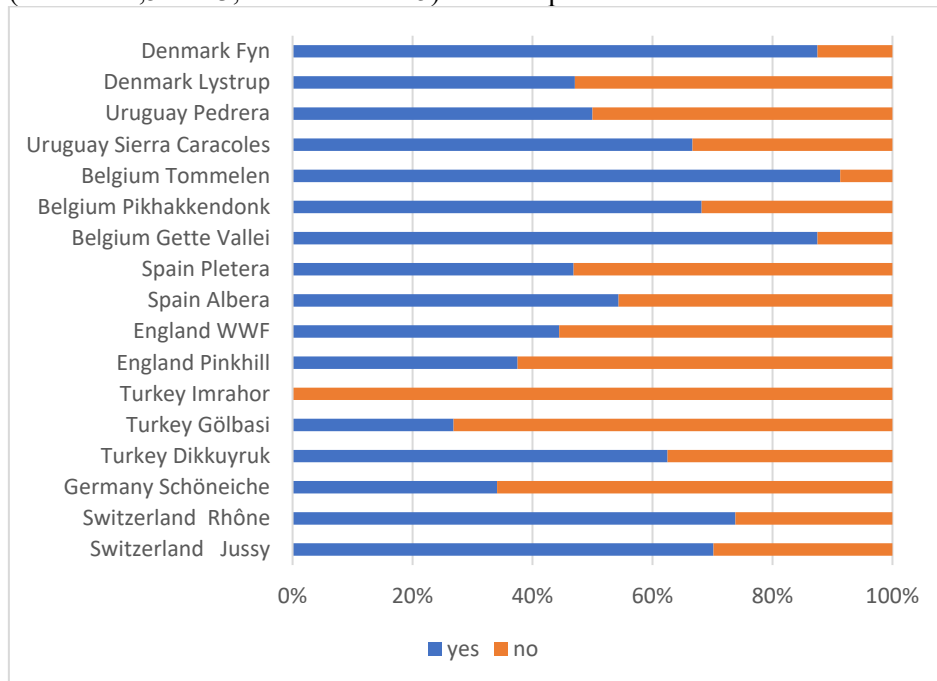


Figure 34: Comparison of the answers on the presence of emblematic species amongst the pondscapes

5.4.6. Changes observed since the last decade

As proposed in Figure 35, changes in pondscapes during the last decade, only five pondscapes obtained a positive response above 70%. For La Pletera in Spain, Gete Vallei in Belgium, and La Pedrera in Uruguay, it may be explained by the implementation of recent restoration measures. In Germany and Turkey – for the Dikkuyruk pondscape - the environmental degradation is an example of negative change because of a lack of water, the extinction of species and the lower water quality.

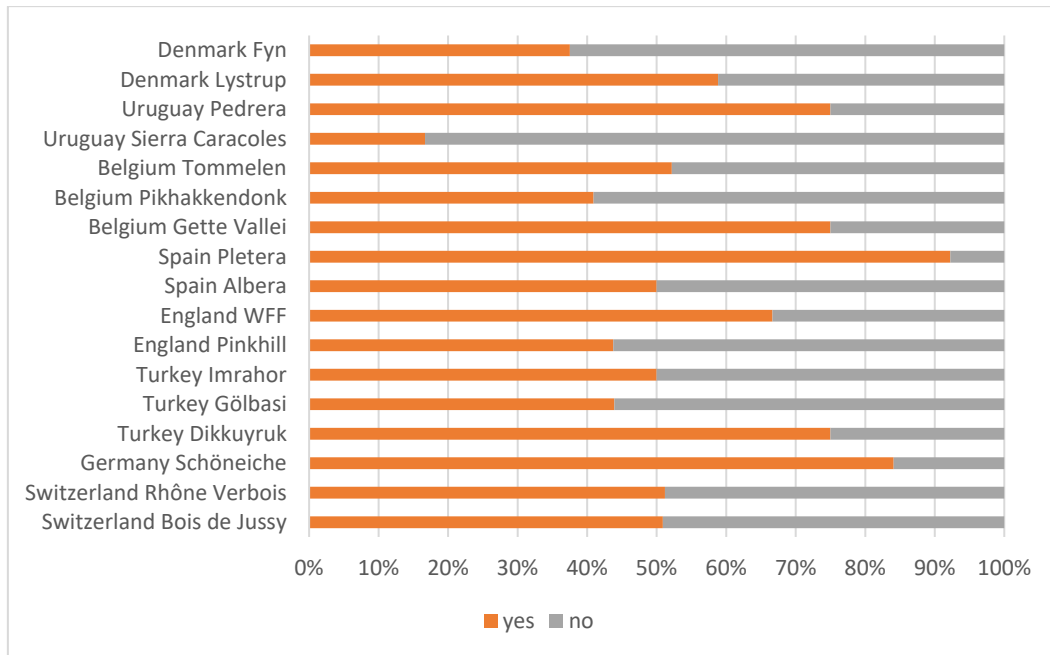


Figure 35: Comparison of the answers on the change found during the last ten years amongst the pondscapes

We analysed the data from the pondscapes (11/17) that obtained positive answers to the question of observed changes. Four main findings emerge from the graph below (Figure 36):

The number of changes is high (between 7 in La Pedrera and 16 in Bois de Jussy on 19 possible options)

The changes (concerning the species - colonisation and extinctions of both animal and plant - and the odours are the most noticeable for the respondents, especially regarding 5 pondscapes. Two senses, sight and smell, are the core of their perceptions.

- The issues of water quantity are particularly highlighted i.e. "more frequent drying of ponds", and "lower pond water level".
- In Germany, Turkey and Albera, the observed changes are particularly negative.

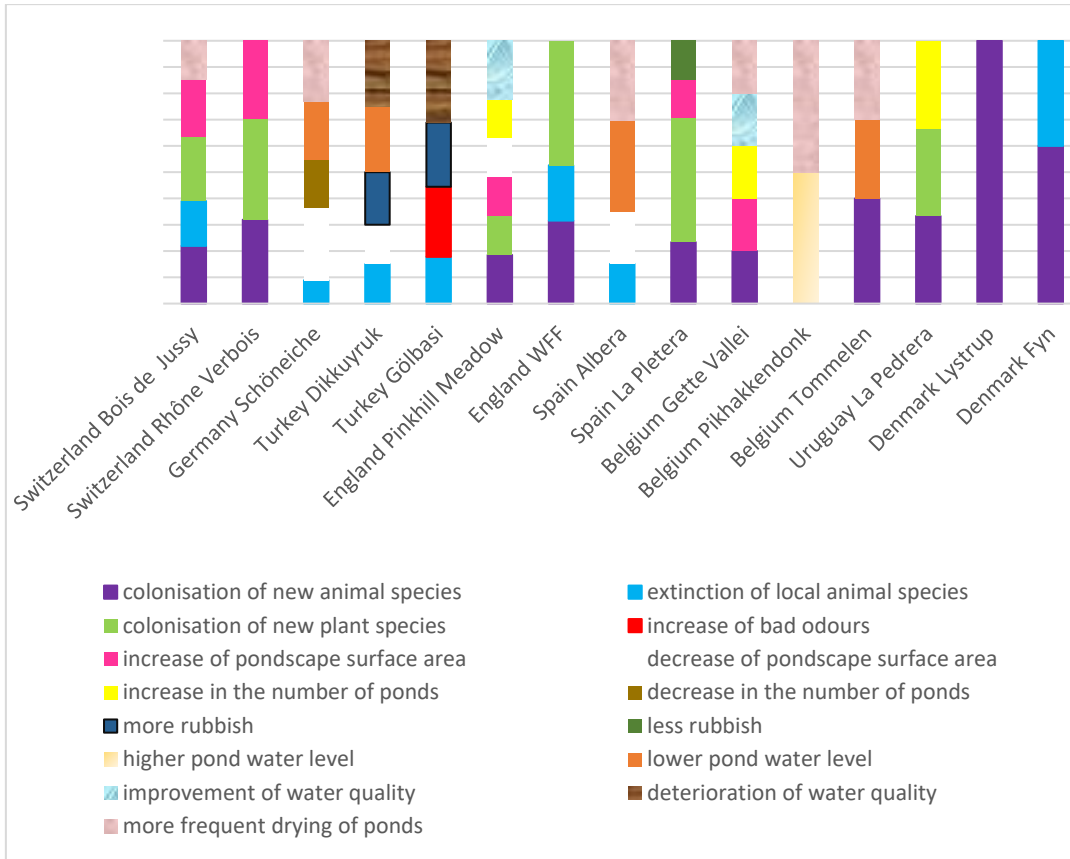


Figure 36: Most important changes selected by inhabitants amongst the pondsapes (raw numbers)

5.4.7. Environmental condition and criteria for judging the status of the pondscape

The German, Turkish and Albera pondsapes are perceived as being in poor condition (<3.5). Eleven pondsapes reach scores between 3,6 and 3,9. Only one pondscape in Uruguay exceeds the ratings of 4 but this result should be put into perspective considering the low number of responses. Based on this data, this calls into question the negative changes perceived and the criteria for judging the status of each pondscape.

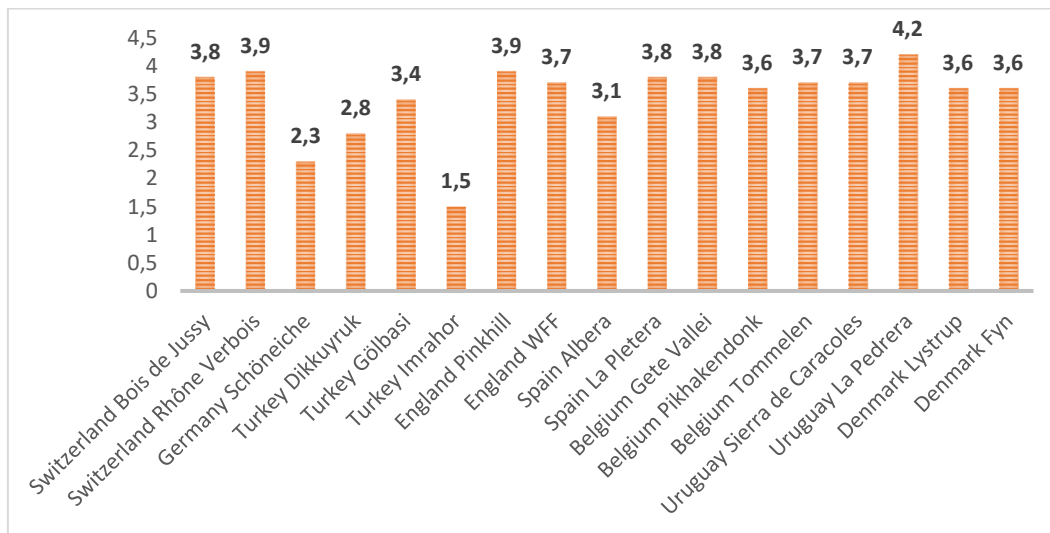


Figure 37: Result on the perception on the environmental condition of pondsapes according to the general public (average, score 1-5)

As a reminder, this does not imply that these perceptions correspond with field measurements. In the light of our data, there are three types of prevailing perceptions among stakeholders:

- Inhabitants dominantly perceive significant changes (+75%): Germany, Turkey (Dikkuyruk);
- Inhabitants with a medium level of agreement about changes (between 50-70%): Switzerland, Turkey (Imrahor), England (Water Friendly Farming), Belgium (Tommelen), Spain (Albera), Denmark (Fyn);
- Inhabitants who do not observe significant changes (-50%): England (Pinkhill Meadows), Turkey (Gölbası), Belgium (Pikhakendonk), Uruguay (Sierra de Caracoles) and Denmark (Fyn).

The most important type of changes highlighted are:

- ‘Colonisation of new plant species’ and ‘colonisation of new animal species’ (selected in 6 and 7 pondsapes);
- ‘More frequent drying ponds’, ‘lower ponds water level’ and ‘increase in the number of ponds’ (selected in 4 different pondsapes);
- ‘Decrease of pondscape surface area’ and ‘deterioration of water quality’ (selected in 3 different pondsapes)

Half of these prevailing perceptions could be considered as negative perceptions of environmental change (Figure 38). This is apparent and reflected in the table above with exception in Gölbası and the Belgian pondsapes. A case-specific analysis would be required to understand better the history of each pondscape, and to grasp how they are modified over the time. Pondsapes experience different trends in improvement and deterioration over a long period, and it will be useful to provide context to the current situation. This long-term vision may affect the understanding of the perceptions.

Bois de Jussy (Switzerland), Pinkhill Meadows (England) and La Pedrera (Uruguay) have been improved in recent years.

It is difficult to prove the causal link between the environmental condition rating and the more selected criteria. Nevertheless, the lower total percentage of species composition, the lower environmental ratings. In other words, when some neutral criteria are particularly selected as ‘colour of water’ and ‘water level’, it is likely that the pondsapes have lower scores regarding environmental conditions. Furthermore, the disadvantageous criteria such as ‘pollution’ and ‘presence of rubbish’ are related to these negative perceptions. It is noticeable that the criterion of ‘number of ponds’ is almost always selected for the pondsapes. The meaning of this selection is still unclear: do the general public link the pond and the pondscape scale? Does the general public think in terms of biological integrity, green infrastructure for biodiversity or hydrological point of view?

The species composition is among the main criteria selected by the respondents to describe the environmental conditions of pondsapes. This represents between 15% (La Pedrera, Dikkuyruk) and 60% (La Pletera) of answers in the pondsapes. On changes, we analysed the main type of changes observed in relation to the environmental condition of the pondscape (Table 172).

	% of agreement with changes	Main type of changes (minimum two occurrences) with colour schemes	environmental condition
Switzerland: <i>Bois de Jussy</i>	50,8	colonisation of new plant species colonisation of new animal species, increase in the number of ponds	3,8
Switzerland: <i>Rhône V.</i>	51,2	colonisation of new plant species colonisation of new animal species, increase in the number of ponds	3,9
Germany: <i>Schöneiche</i>	84,1	decrease of pondscape surface area, more frequent drying ponds lower pond water level	2,3
Turkey: <i>Dikkuyruk</i>	75	deterioration of water quality lower pond water level more rubbish	2,8
Turkey: <i>Gölbasi</i>	43,9	deterioration of water quality increase of bad odours more rubbish	3,4
Turkey: <i>Imrahor</i>	50	decrease of pondscape surface area, deterioration of water quality	1,5
England: <i>Pinkhill M.</i>	43,7	Improvement of water quality colonisation of new animal species	3,9
England: <i>Water Fr. Fa.</i>	66,6	colonisation of new plant species colonisation of new animal species	3,7
Spain: <i>Albera</i>	50	lower pond water level, more frequent drying of ponds decrease of pondscape surface area	3,1
Belgium: <i>Gete Valleï</i>	75	improvement of water quality more frequent drying ponds increase in the number of ponds	3,8
Belgium: <i>Pikhak.</i>	40,9	higher pond water level more frequent drying ponds	3,6
Belgium: <i>Tommelen</i>	52,1	more drying frequent pond, lower pond water level colonisation of new plant species	3,7
Uruguay: <i>Sierra de C.</i>	16,6	colonisation of new plant species	3,7
Uruguay: <i>La Pedrera</i>	75	colonisation of new plant species colonisation of new animal species,	4,2

		increase in the number of ponds	
Denmark: Lystrup	58,8	colonisation of new animal species	3,6
Denmark: Fyn	37,5	colonisation of new animal species	3,6

Table 172: Comparison of results on the observed changes and the environmental condition according to the inhabitants

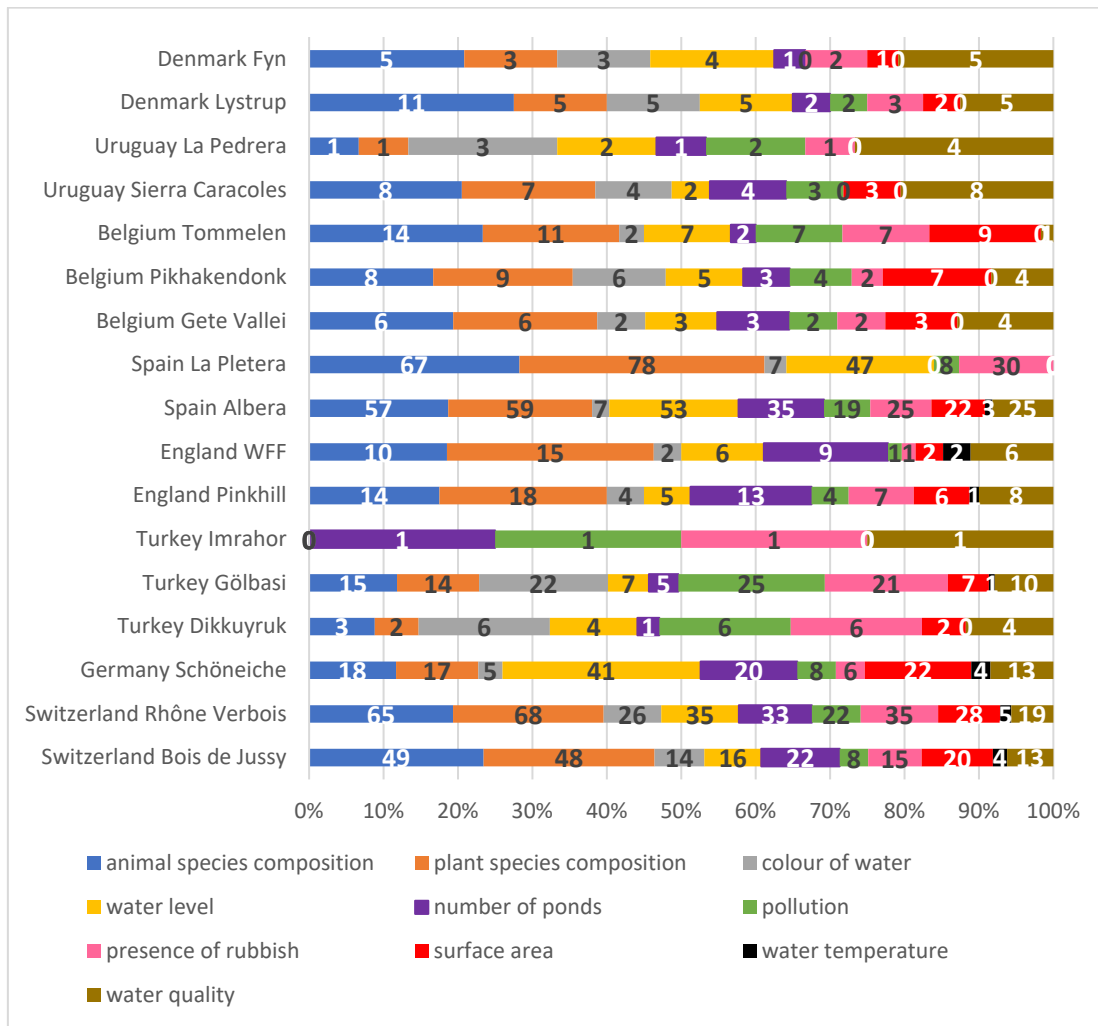


Figure 38: Comparison of the criteria for judging the environmental condition of the pondsapes

5.4.8. NCP assessment

As illustrated in the chart below, several NCPs do have clear preference (Figure 39). A top 3 is composed of ‘creation and maintenance of habitats’, ‘Psychological and psychological experiences’ and ‘maintenance of options’.

The differences between the pondsapes are particularly important when it comes to the regulation of hazards (from 2 to 4,1), the ‘regulation of climate’ (from 2,3 to 4,1) and the ‘regulation of water quality’ (from 2,2 to 4,2). One hypothesis is that in various pondsapes the selection of these three items is quite random due to the lack of meaning for these NCPs by the general public.

Respondents from each pondscape are concerned by several NCPs with high scores (>3.5), like ‘habitat’ and ‘pollination’. Some preferences are easily recognizable but the different contributions are cumulative and not simply rival in the context of this question.

Given the high average ratings, the NCPs with less than 3 on average can be deemed relatively unimportant by respondents which is why we have removed the NCPs with scores below 3 to make reading of the figure below easier.

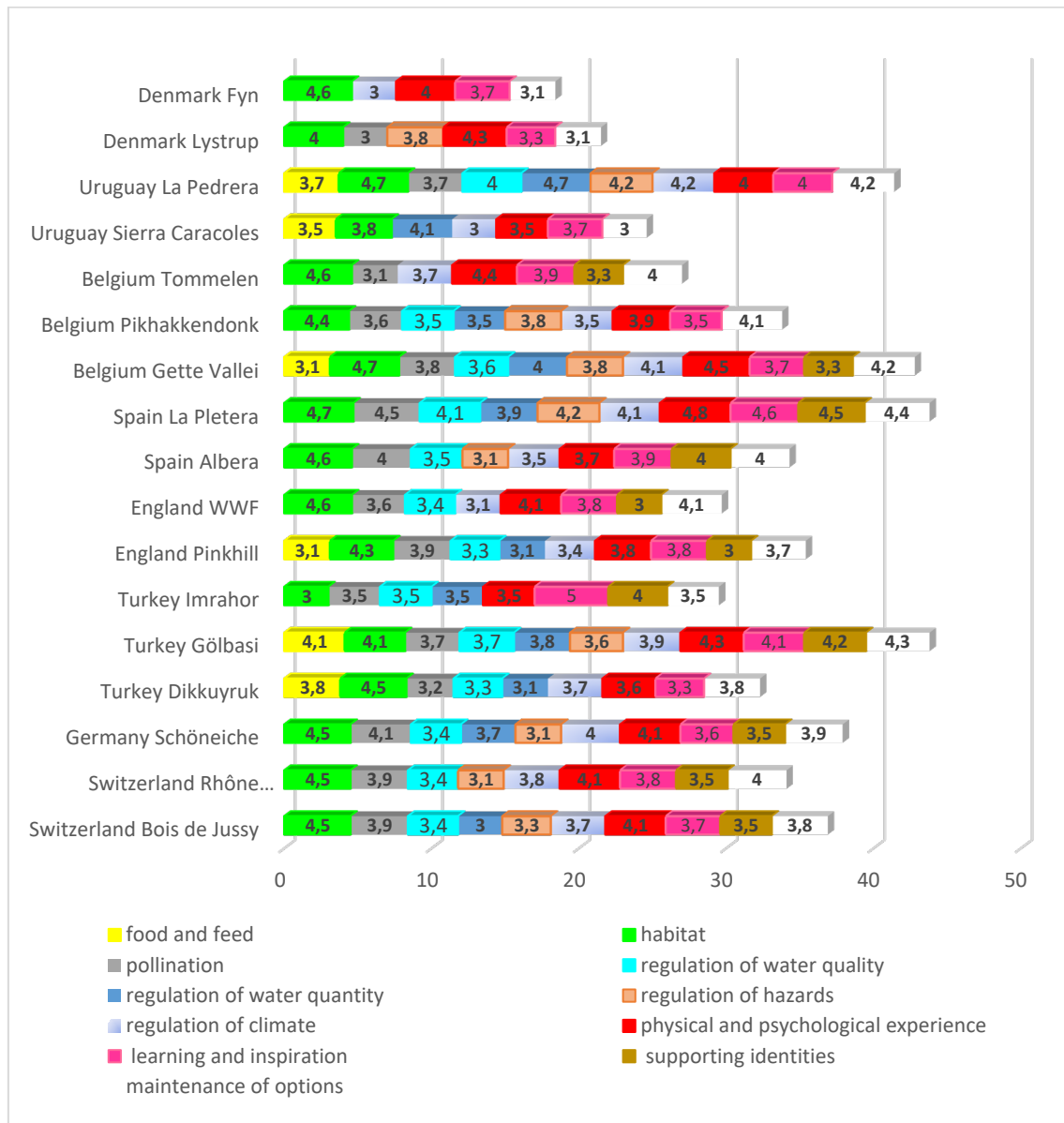


Figure 39: Comparison of the NCPs assessment by inhabitants

5.4.9. Threats

The threats with score below 3 (average) can be deemed relatively unimportant by respondents, which is why we have removed the scores below 3 to make reading of the figure below easier (Figure 40).

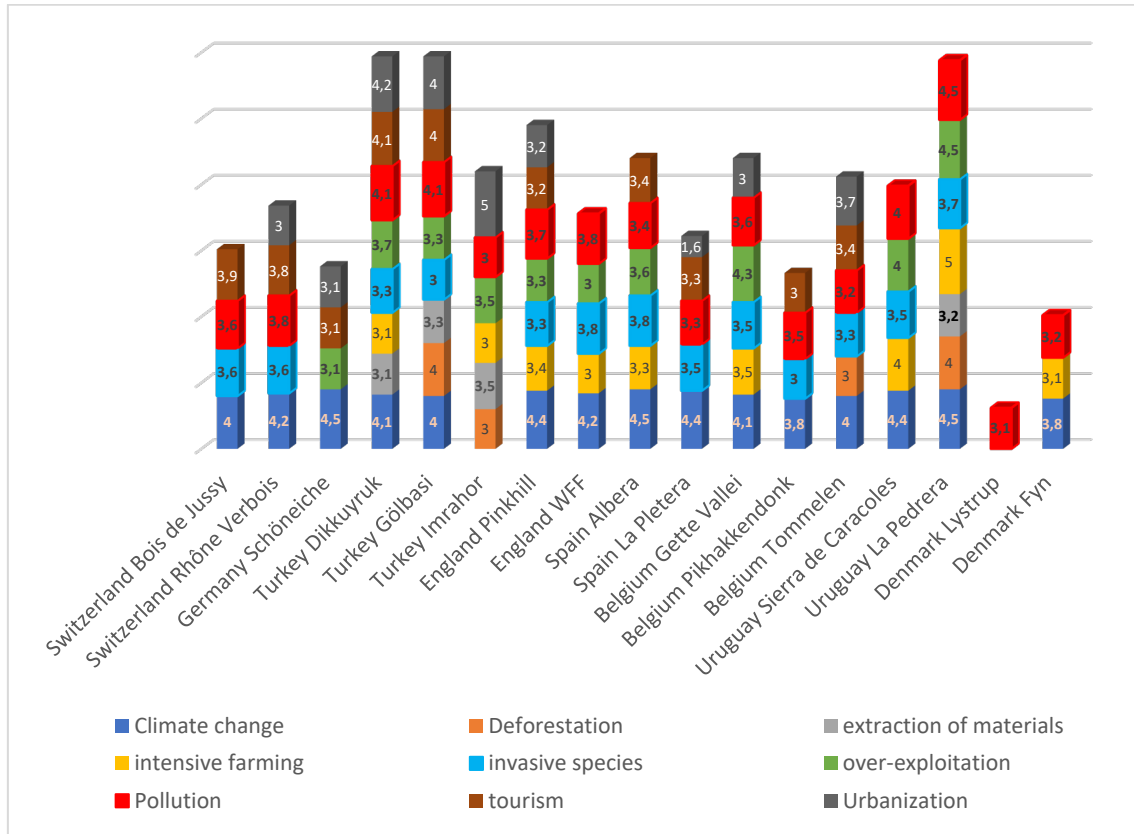


Figure 40: Comparison of the threat' assessment by inhabitants

The higher the bar, the more significant the number of threats are. In Uruguay, Turkey and Albera (Spain), they are all perceived as greater than in the other pondscares. This may be linked to the low scores obtained on the environmental condition of these pondscares. According to the public, they have a rather degraded status.

Climate change is considered as threat n°1 except in Imrahor (Turkey), Gete Vallei (Belgium), La Pedrera (Uruguay and Lystrup (Denmark)). The threats n°2 and n°3 vary across the pondscares probably because they depend on the local stakes. In Turkey, urbanization is a main threat whereas in Spain it is the invasive species and in Uruguay the intensive farming. Pollution remains a matter of concern for half of pondscares.

5.4.10. Impacts of threats

The impact of threats with score above 3 (average) can be deemed relatively unimportant by respondents and are not listed in the figure below to make the reading easier (Figure 41).

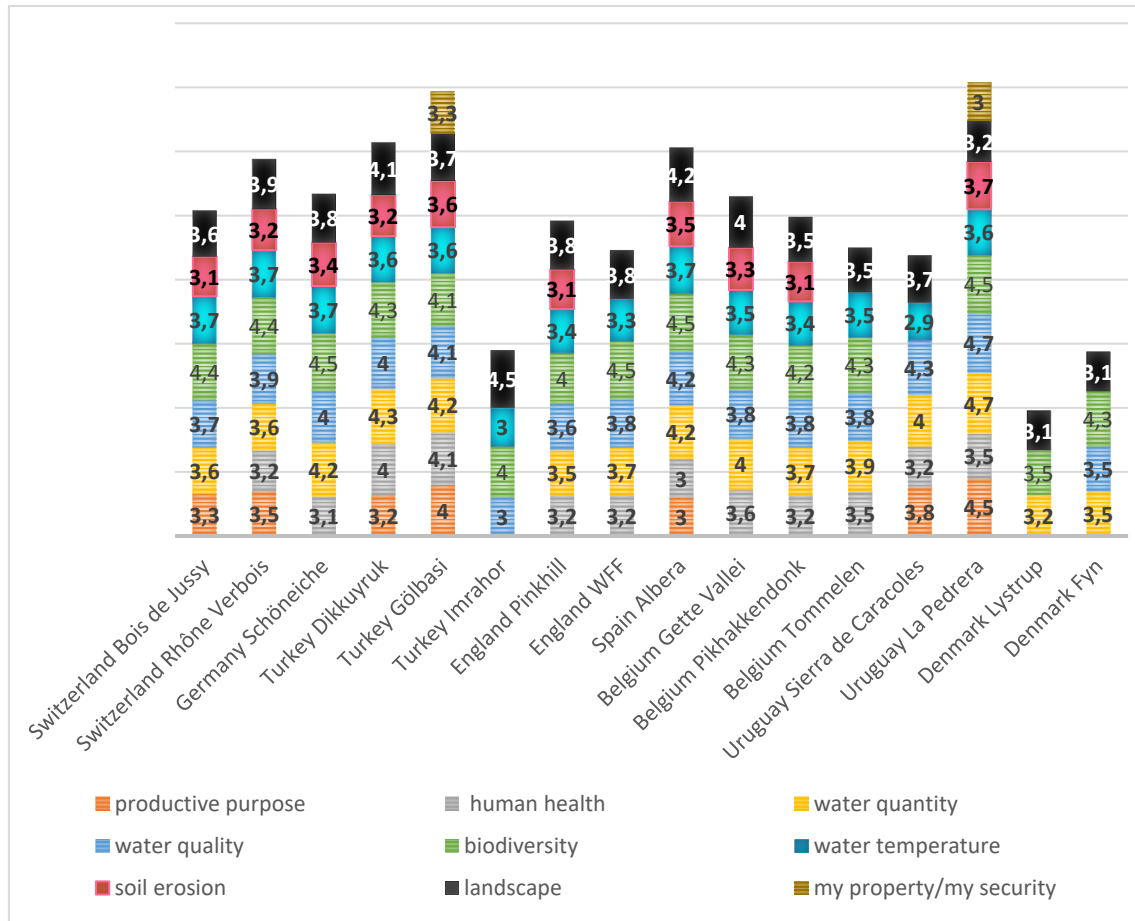


Figure 41: Comparison of the impact of threat' assessment by inhabitants

A clear top-4 perceived threats emerges with: biodiversity (3,5-4,5), landscape as change of scenery (3,1-4,5), water quality (2,7-4,7) and water quantity (2-4,7).

Biodiversity is always ranked in first place in all countries except for Turkey and Uruguay. The high scores obtained for 'water quantity' reveal the concern on water scarcity by the respondents in several pondsapes like in Germany, Spain, Turkey, Belgium, and Uruguay. The impact on productive purpose is only perceived as important in Turkey and Uruguay. The scores on water quantity and water quality are similar in most countries.

5.4.11. NBS measures

The NBS measures with score below 3 (average) can be deemed relatively unimportant by respondents and is not listed in the figure below. That is why we have removed the scores below 3 to make reading of the figure below easier (Figure 42).

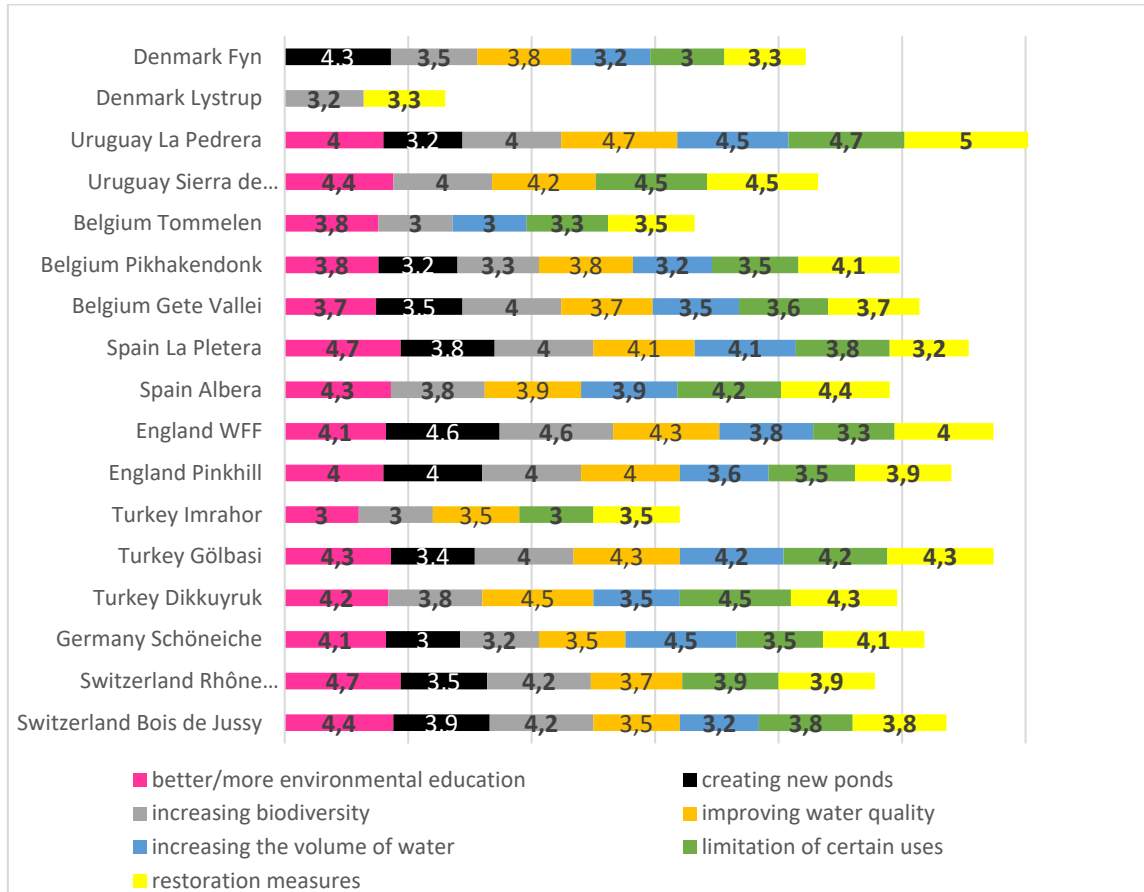


Figure 42: Comparison of the NbS assessment by inhabitants

Except for Denmark, where scores are under 3, a ‘better/more environmental education’ is unanimously supported by the respondents. This item obtained better ratings in half of the countries. The options ‘increasing biodiversity’ and ‘restoration measures’ obtained scores above 3 in all the pondsapes.

5.5. Synthesis of the questionnaire to general public

We received a total of 590 usable responses including answers from 338 women (57,2%), 249 men and 3 non-binary.

5.5.1. relation to pondscape and frequency of visits

None of the DEMO-sites was ever chosen as favourite ‘pondscape’ landscape by the respondents, which came out as third choice among other landscapes with as best result 14,7% in Turkey and lowest outcome of 7,6% in La Pletera (% of all the responses for each pondscape). Nevertheless, the relation to the nature and to the pondsapes obtained high ratings (Table 173).

Table 173: Average of results on the value placed on nature and pondscape according to the inhabitants all pondsapes combined

Average relation to nature	Average relation to pondscape	Average contribution pondscape life quality
4,3	3,7	3,6

These results confirm that pondsapes are important for the quality of life, especially when their proximity to the home promotes frequentation (Figure 43). We conclude that this frequency of visit is in average once a month, even if the frequency is higher in several pondsapes (Bois de Jussy, Schöneiche, Gölbası, Pinkhill Meadows and Water Friendly Farming, Belgian pondsapes, Lystrup). The PONDERFUL pondsapes are familiar places, sufficiently safe places and nice to visit frequently. More than half (55%) of the respondents live in closer proximity (1-10 km) to the pondsapes.

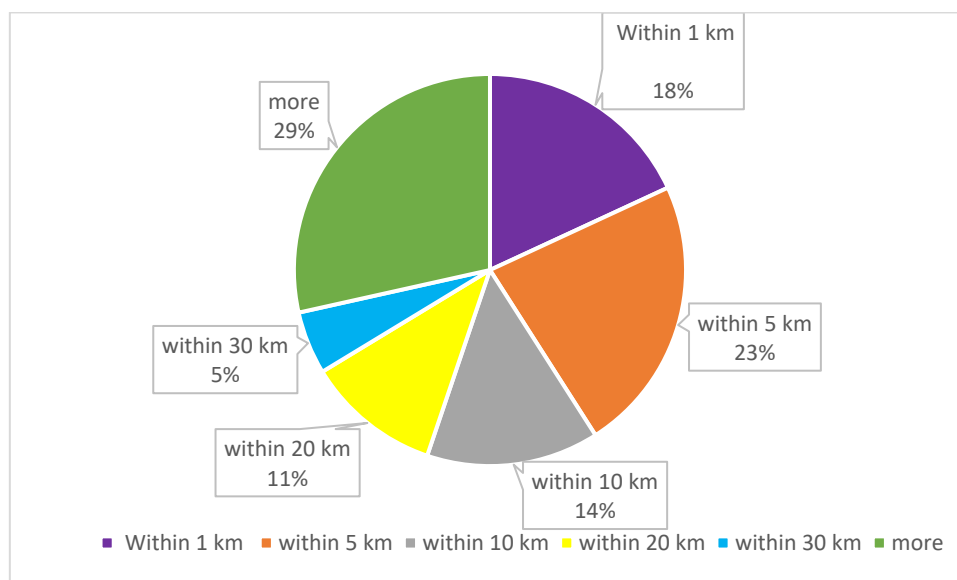


Figure 43: Distance from home (kilometers) of the general public all pondsapes combined (%)

5.5.2. Activities

Respondents frequent pondscape because they liked to stroll and relax in these landscapes (Figure 44). They also select specifically ‘wildlife watching’, which is without doubt linked to the nature of the sample of respondents who are mainly university graduates and probably environmentally conscious.

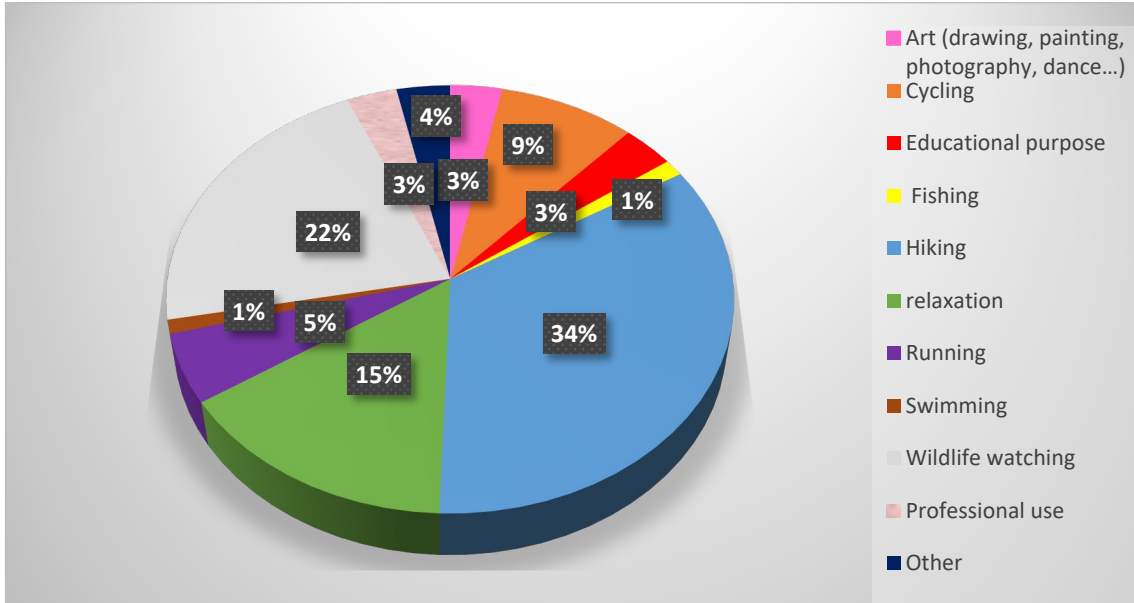


Figure 44: Activities of the general public all pondscape combined

5.5.3. Observed changes in the pondscape

Using all responses, we developed a diagram to highlight the most significant changes observed by the participants of all pondscape combined during the last ten years (Figure 45). The motives for change are ranked from the less to the most selected.

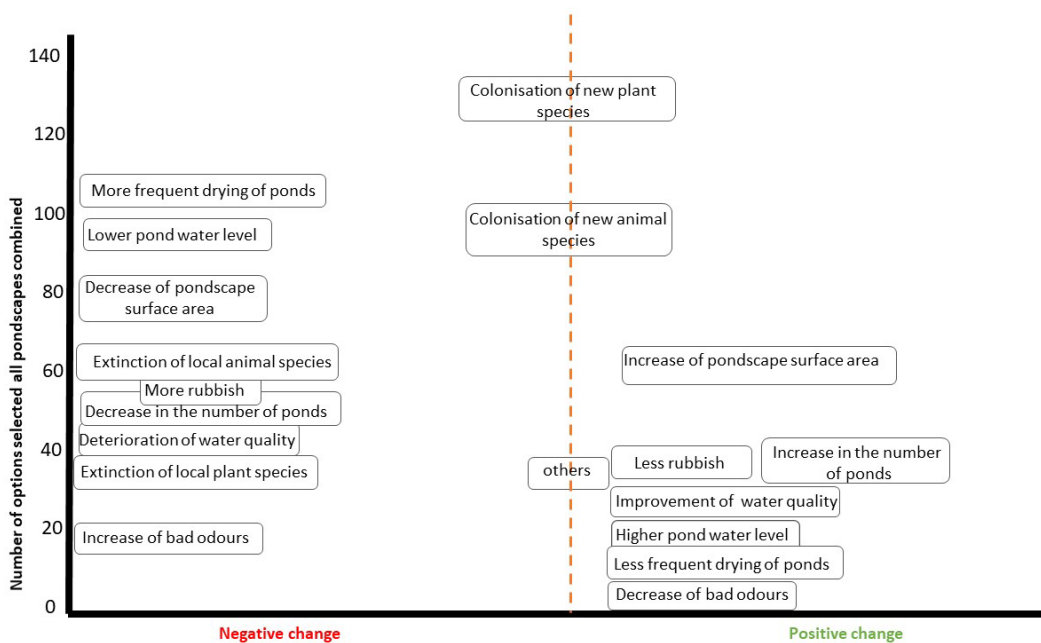


Figure 45: Perceived changes by the general public all pondscape combined

Some changes are perceived as negative:

- Issues around water quantity have become a greater challenge because of the important co-occurrence of aspects like "more frequent drying of ponds" and "lower pond water level";
- Pollution is also often cited (more rubbish', 'degradation of water quality');
- In several pondscales, people note the diminution of the number of ponds.

Some positive changes have been also selected, which are often linked to recent restoration measures applied in the pondscales:

- In these pondscales, people underscore the increase of number of animal or plant species;
- People emphasise also the increase of 'number of ponds' and 'the pondscape surface area' where ponds have been restored;
- The maintenance of some pondscales has also been improved ("less rubbish").

In terms of measures proposed for the future, the land use strategy seems being a driver of action to improve the pondscape ("pondscape surface area" and "number of ponds"). Respondents seem being aware about some previous restoration measures ("increase of the number of ponds", "less rubbish").

5.5.4. NCP assessment

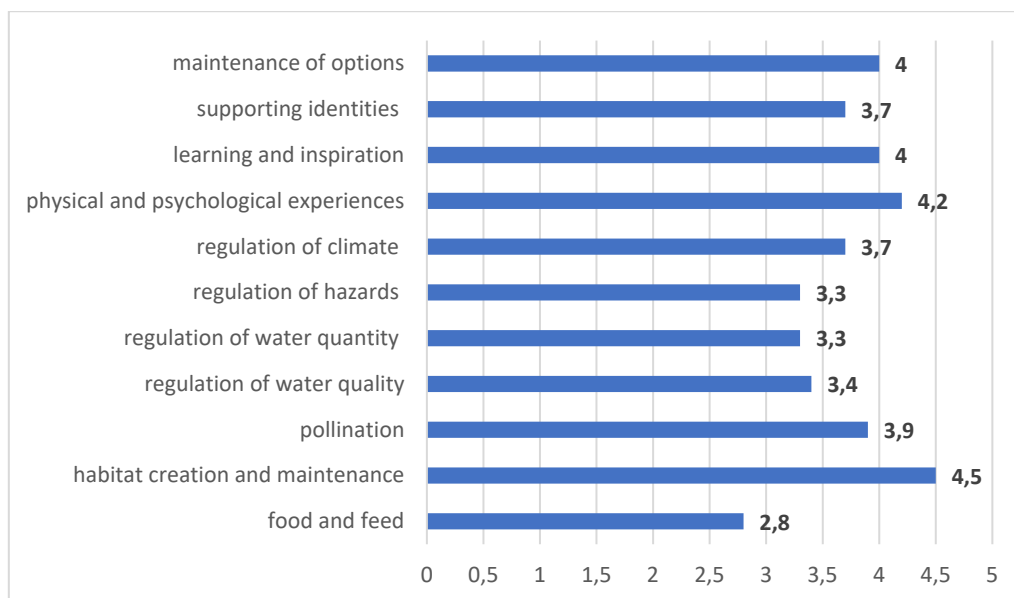


Figure 46: Average of the NCP' assessment by the general public all pondscales combined

As illustrated in the chart above, some NCPs have been preferred. A top-3 is composed of 'creation and maintenance of habitats', 'Psychological and psychological experiences' and 'maintenance of options'. The top-2 composed of 'creation and maintenance of habitats' and 'psychological and psychological experiences' is often the same in the different pondscales except in Turkey and Uruguay. 'Maintenance of options' obtained a high average but it is in the top-3 regarding half of the pondscales.

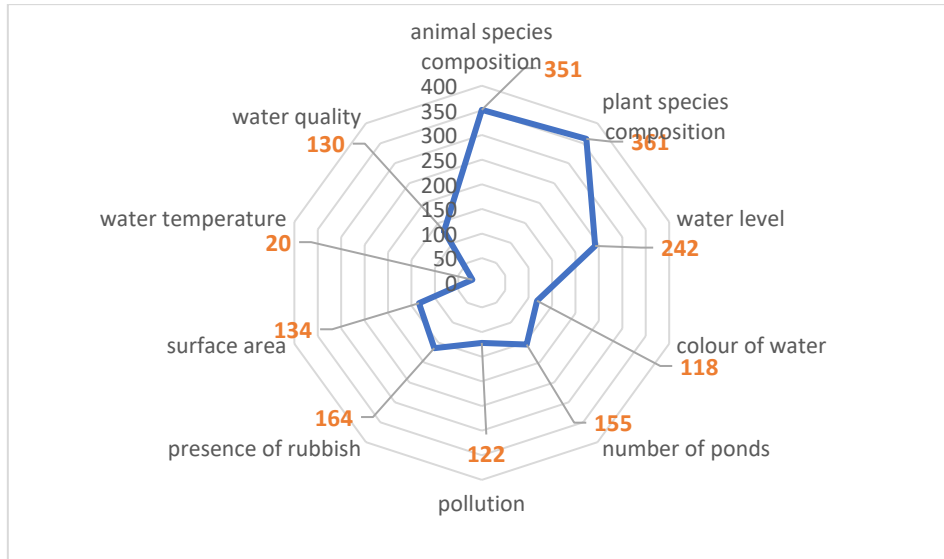


Figure 47: Criteria for judging the environmental condition according the general public (all pondsapes combined with the total number of answers)

As shown in the diagram above (Figure 47), the animal and plant species composition are by far the most important criteria for all the respondents. According to the general public, understanding the pondsapes requires special attention dedicated to the species. The visual dimension and the focus on biodiversity are the basis of their perceptions. The water level is the third criteria selected and could be correlated with the main impacts of the threats identified in another question to put the choice of criteria into perspective.

5.5.5. NBS for the future

Regarding NBS to implement in the future (Figure 48), the data show no clear trends except for ‘better/more environmental education’ which reaches the best scores with 4,3 on 5. All the other options are deemed relevant to the respondents. We underline a positive correlation in each pondscape between ‘restoration measures’ and ‘increasing biodiversity’ with an average score of 3.9. People also proposed the strongest measures ‘limitation of certain uses’.

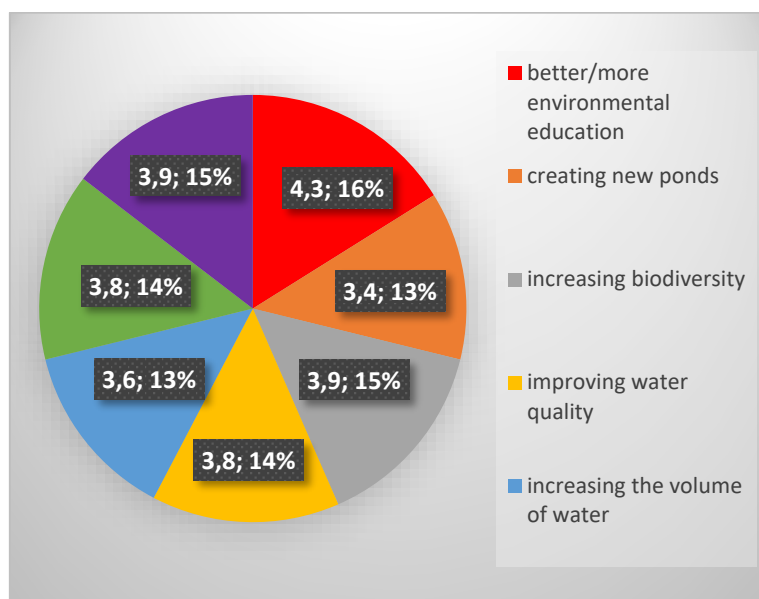


Figure 48: Average and percentage of the NbS measures selected by the general public all pondsapes combined

From these data we can deduce that urgent responses (restoration, limitation of certain uses) to the major threats and their impacts have good scores. But this does not seem to be presently the priority.

6. General assessment of social aspects and perceptions of ponds and pondsapes

In this section, a cross-analysis was conducted between the stakeholder survey and the general public survey. Data from stakeholders and inhabitants have been analysed to determine convergences and divergences between them. It is worth comparing the results to identify common ground and act to manage the pondsapes.

6.1. Relation to nature

Globally, the scores given by inhabitants and stakeholders are always above 4/5 except in the Turkish pondsapes (Figure 49). This confirms that the respondents have a strong connection with the environment around them. Here, they experience their feeling for a need for nature in their living environment. Stakeholders always gave higher ratings than inhabitants (with the Albera exception). This is due to their environmental profiles. The grades are very similar except in Turkey and Lystrup with more than 0,5 points of variation between stakeholders and inhabitants.

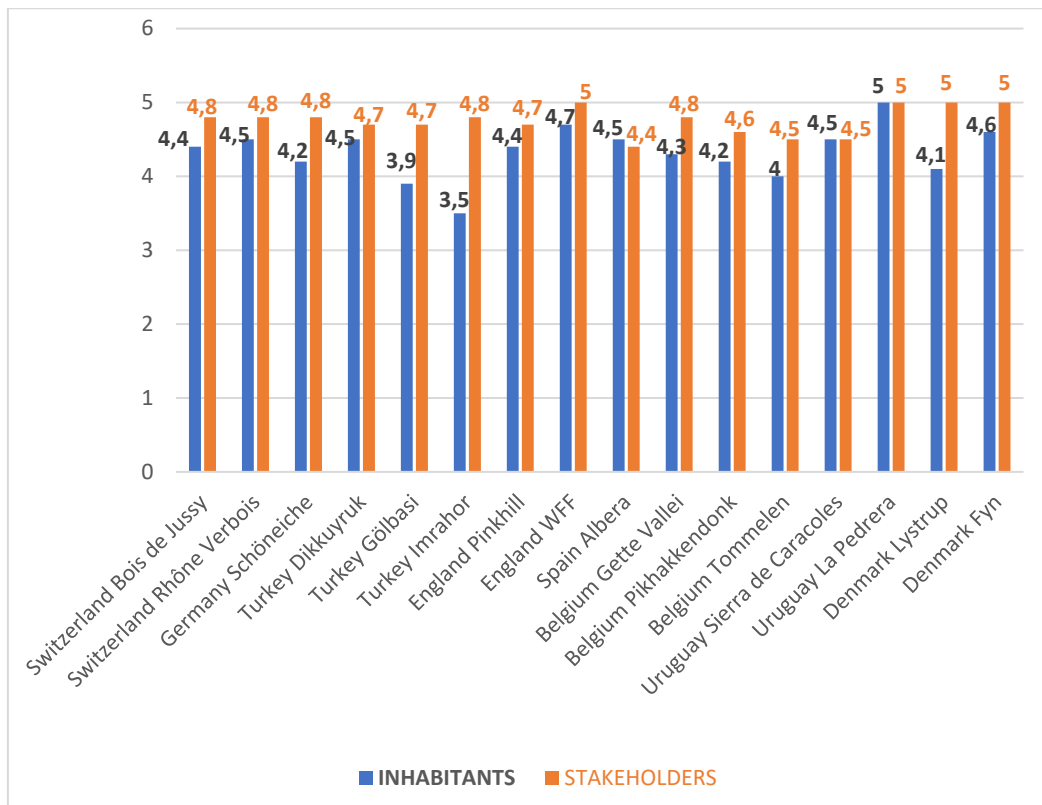


Figure 49: Result of the comparison between inhabitants and stakeholders on their relation to nature

6.2. Relation to pondscape

Stakeholders and inhabitants give high scores to express their pondscape' relations (Figure 50). We note that these scores are lower than those on 'relation to nature'. Indeed, all the scores are higher than 3/5.

As for 'relation to nature', stakeholders gave higher ratings than inhabitants in general with exceptions in Turkey and Uruguay. The higher scores for stakeholders can be explained by the fact that the majority of stakeholders' work in the field of ecology and environmental management and have a stronger connection with ponds and pondsapes. For Turkey and Uruguay, we can hypothesise that these pondsapes are less known by stakeholders than inhabitants.

The grades are quite similar but there is a much greater difference than the last question with more than 0,5 points of difference in England and Belgium. This is a signal that the general public is not an initiated or specialist audience but includes anyone interested in any way in pondsapes. We probably reached the target audience even if the number of responses is not so high in some pondsapes.

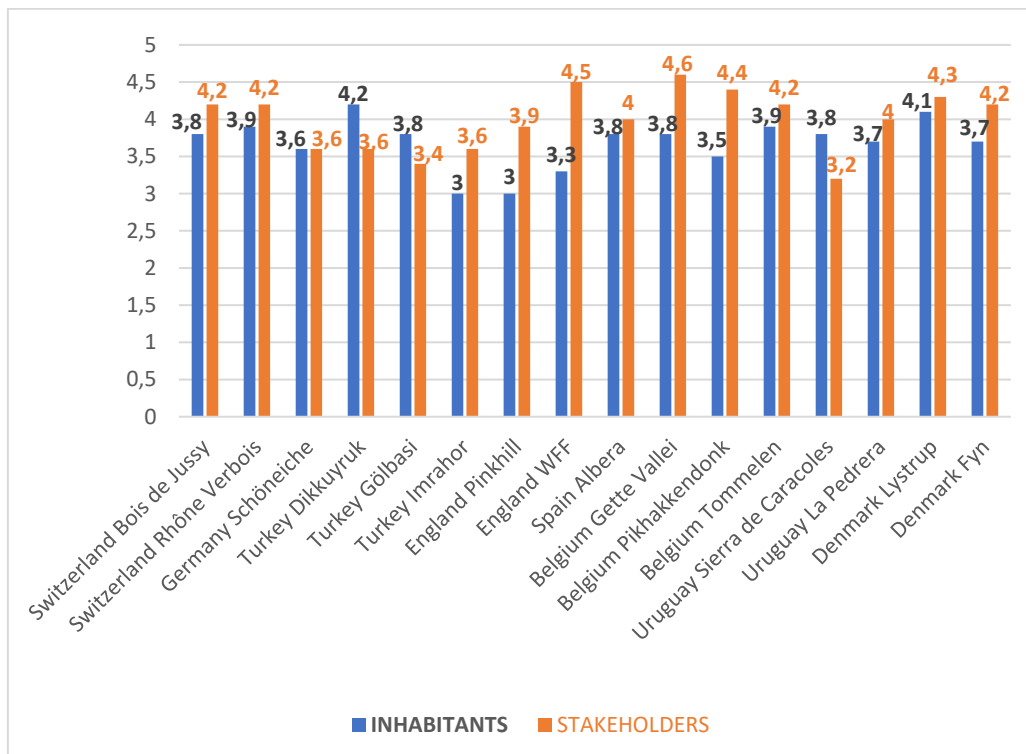


Figure 50: Result of the comparison between inhabitants and stakeholders on their relation to pondscape

6.3. Quality of life

As for previous questions, stakeholders gave higher ratings than inhabitants for the quality of life (with the Uruguayan exception) (Figure 51). The grades given by stakeholders and inhabitants are quite similar in Rhône Verbois (Switzerland), Albera (Spain/Catalonia), Gete Vallei and Tommelen (Belgium).

The discrepancies are exacerbated with this question because the differences between stakeholders and inhabitants exceed 0.5 points for many pondsapes. This teaches us that the expectations of the inhabitants for the pondsapes are less important than those of the stakeholders. It is a matter of perspective and knowledge because it assumes an awareness and appreciation of the contribution of pondsapes in the local environment.

We think that these variations of perception between inhabitants and stakeholders must be tempered with the other answers related to the expectations because these questions may be considered as abstract by the general public.

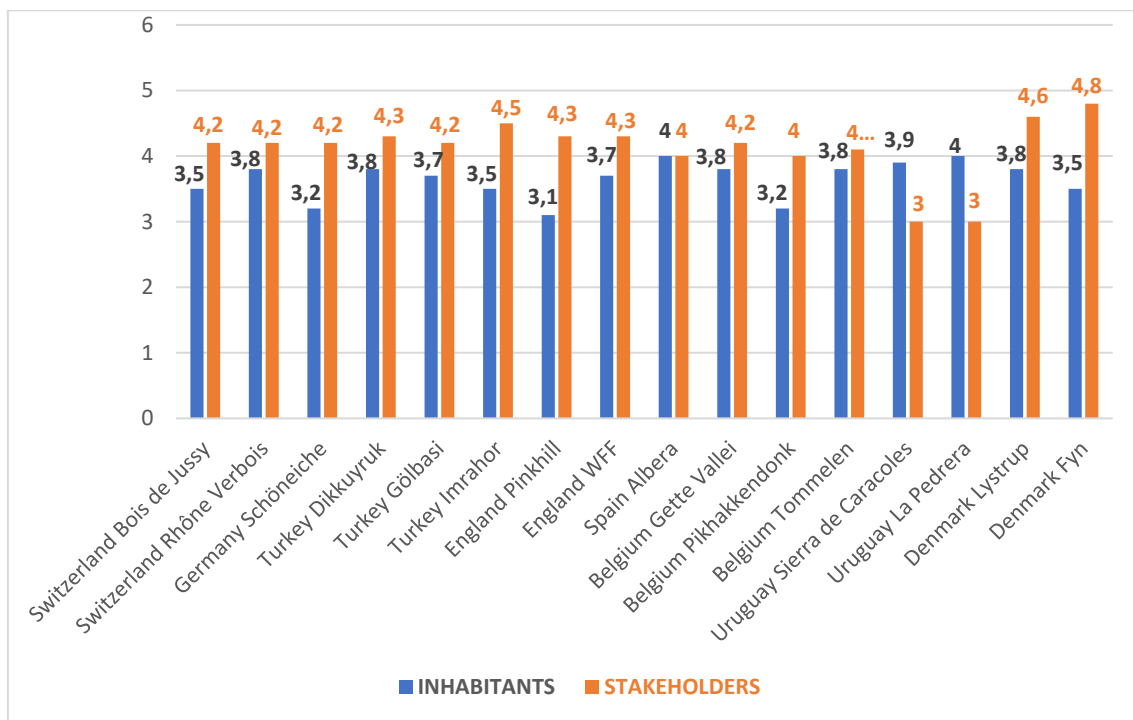


Figure 51: Result of the comparison between inhabitants and stakeholders on the pondsape contribution to the life quality

6.4. Changes observed in the pondsapes during the ten last years

First, we note that the number of answers to the question ‘did you observed significant changes in the pondsape’ from the stakeholders (in Belgium, Uruguay and Denmark) and inhabitants (Imrahor in Turkey and La Pedrera in Uruguay) was low and, as a consequence, the results are probably unreliable (Figure 52).

The results vary a lot between the pondsapes. The perceptions on the changes occurred during the last decade are only similar in Rhône Verbois (Switzerland), in Germany, in Tømmelen (Belgium) but with undecided results around 50%. Therefore, this is not possible to conclude that all the stakeholders and inhabitants have the same feeling about changes observed in the pondsapes.

At the second level of analysis, the same trend is only found at Pinkhill Meadows (England) and Pikhakendonk (Belgium), with common negative answers. It is likely that the changes are not so significant.

For the other pondsapes, the results are inconclusive. At this third level of analysis, stakeholders did not give more positive answers than the inhabitants. Neither the stakeholders nor the inhabitants are always on the top of the diagram. This disparity between the pondsapes is somewhat surprising given the recent timescale. Being unable to infer from the results, we can only guess why the differences between stakeholders and inhabitants are so important, particularly in Fyn (Denmark) and Turkey where stakeholders perceived more change than inhabitants. The low sample size can be an explanation: in some pondsapes, data relies on a few key people. The open interpretation of the word ‘significant (change)’ can lead to serious bias in the perception’ assessment. Furthermore, inhabitants who gave positive answers are not always the people with a regular frequency of visit.

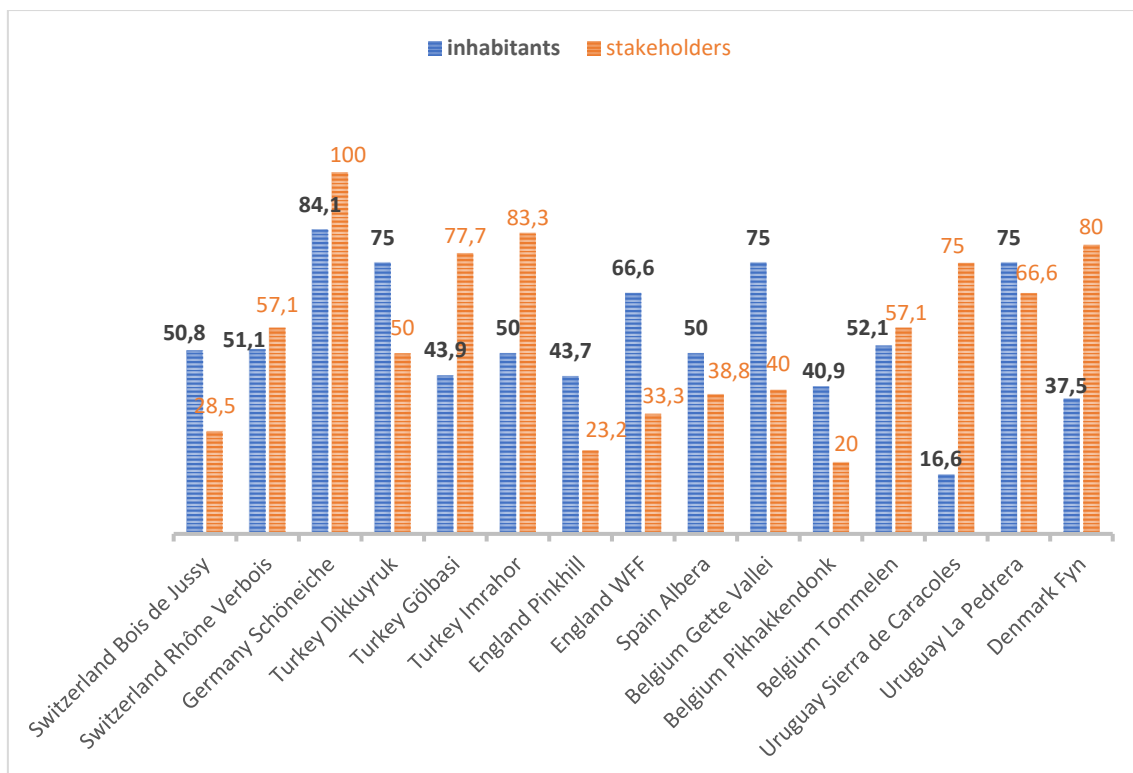


Figure 52: Result of perceptions from inhabitants and stakeholders on the occurrence of significant changes to the pondsapes during the last decade (%)

To go further, we developed the table below to compare the results of the different changes selected amongst the sample. There is an overlap between the perceptions in six pondsapes (Germany, Bois de Jussy, Albera Dikkuyruk, Imrahor, Gete Vallei and Tommelen) with significant changes observed and the same changes highlighted.

Table 174: Comparison between inhabitants and stakeholders on the changes observed during the last decade

	Main type of changes selected by inhabitants	Main type of changes selected by stakeholders	Level of convergence
Switzerland: <i>Bois de Jussy</i>	colonisation of new plant species colonisation of new animal species increase in the number of ponds	colonisation of new animal species increase in the number of ponds	Strong convergence
Switzerland: <i>Rhône V.</i>	colonisation of new plant species colonisation of new animal species increase in the number of ponds	/	/
Germany: <i>Schöneiche</i>	decrease of pondscape surface area more frequent drying ponds lower pond water level	decrease of pondscape surface area more frequent drying ponds	Strong convergence
Turkey: <i>Dikkuyruk</i>	deterioration of water quality lower pond water level	decrease of pondscape surface area deterioration of water quality	Strong convergence
Turkey: <i>Gölbasi</i>	deterioration of water quality increase of bad odours more rubbish	decrease of pondscape surface area, lower pond water level	No convergence but grim picture in common
Turkey: <i>Imrahor</i>	decrease of pondscape surface area deterioration of water quality	decrease of pondscape surface area, deterioration of water quality	Strong convergence
England: <i>Pinkhill M.</i>	Improvement of water quality colonisation of new animal species	colonisation by new plant species increase in the number of ponds	No convergence but positive picture in common
England: <i>Water Fr. Fa.</i>	colonisation of new plant species colonisation of new animal species	/	/
Spain: <i>Albera</i>	lower pond water level more frequent drying of ponds decrease of pondscape surface area	lower pond water level, more frequent drying of ponds	Strong convergence
Belgium: <i>Gete Vallei</i>	improvement of water quality more frequent drying ponds increase in the number of ponds	deterioration of water quality	Limited convergence
Belgium: <i>Pikhak.</i>	higher pond water level more frequent drying ponds	/	/
Belgium: <i>Tommelen</i>	more drying frequent pond lower pond water level colonisation of new plant species	more drying frequent pond, lower pond water level	Strong convergence
Uruguay: <i>Sierra de C.</i>	colonisation of new plant species	colonisation of new animal species, increase in the number of ponds	No convergence
Uruguay: <i>La Pedrera</i>	colonisation of new plant species colonisation of new animal species increase in the number of ponds	/	/
Denmark: <i>Lystrup</i>	colonisation of new animal species	/	/
Denmark: <i>Fyn</i>	colonisation of new animal species	extinction of local animal species, decrease of pondscape surface area, lower pond water level	No convergence

6.5. Emblematic species

We found that the perception of emblematic species are almost always common between stakeholders and inhabitants (Figure 53). Although there are only two exceptions (Imrahor and Sierra de Caracoles) due to the low number of answers.

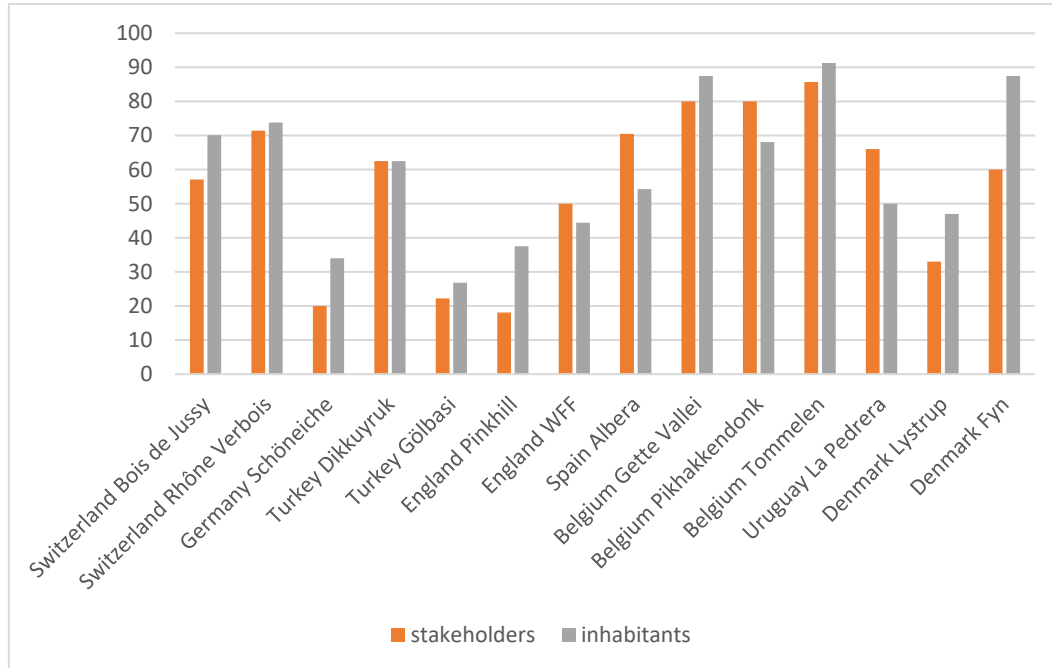


Figure 53: Comparison of the perception on presence of emblematic species between inhabitants and stakeholders

We developed the table below to compare the results of the species selected for the pondsapes with positive and unanimous response.

Table 175: comparison of the emblematic species selected by inhabitants and stakeholders

	Species selected by inhabitants	Species selected by stakeholders	Level of convergence
Switzerland: Bois de Jussy	Kingfisher, European pond terrapin, beaver, reptiles and frogs	European pond turtle (<i>Emys orbicularis</i>), Hydrocharis, Yellow-bellied toad (<i>Bombina variegata</i>)	Limited convergence
Switzerland: Rhône V.	Kingfisher, European pond terrapin, beaver, reptiles and frogs	Northern pike (<i>Esox lucius</i>), swallow, viperine snake (<i>Natrix maura</i>), castor fiber	Limited convergence
Turkey: Dikkuyruk	white-headed duck	Dikkuyruk/ white-headed duck elmabaş patka/common pochard	Strong convergence
Spain: Albera	amphibians isoetes	Pelobates cultriples, Marbled newt (<i>Triturus Marmoratus</i>), Palmate newt (<i>Lissotriton helveticus</i>)	Strong convergence
Belgium: Gette Vallei	northern crested newt	Northern crested Newt (<i>Triturus cristatus</i>)	Strong convergence
Belgium: Pikhak.	northern crested newt	Northern crested Newt (<i>Triturus cristatus</i>)	Strong convergence
Belgium: Tommelen	northern crested newt	Northern crested Newt (<i>Triturus cristatus</i>)	Strong convergence
Denmark: Fyn	newt European fire-bellied toad	European fire-bellied toad (<i>Bombina bombina</i>)	Strong convergence

The number of emblematic species cited is low. Two or three species have been proposed. In Belgium, Fyn (Denmark) and Turkey, inhabitants and stakeholders share the same opinion and have similar knowledge. Concerning the result in Switzerland and Spain, the biodiversity represented in these pondscape is also highly valued by the public, who also expressed their importance for the conservation and protection of threatened species. However, there was a clear gap in public knowledge about the conservation of biodiversity. It is possible to infer that the public has little to no knowledge about the local or regional strategies for biodiversity conservation. Due to this lack of information, the public itself is prone to think that some species are native and endemic despite the fact there are invasive exotic species. This stresses the importance of environmental education, and pondscape could constitute an important tool (knowledge of species, explanation of the functioning of an ecosystem, and pressure experienced).

6.6. NCP assessment

All pondscape combined, the comparison between stakeholders and inhabitants show similar results with a clear top-three: ‘maintenance of habitats/biodiversity’, ‘physical and psychological experiences’ and ‘maintenance of options’ (Figure 54). Furthermore, stakeholders have given the highest ratings for each NCP.

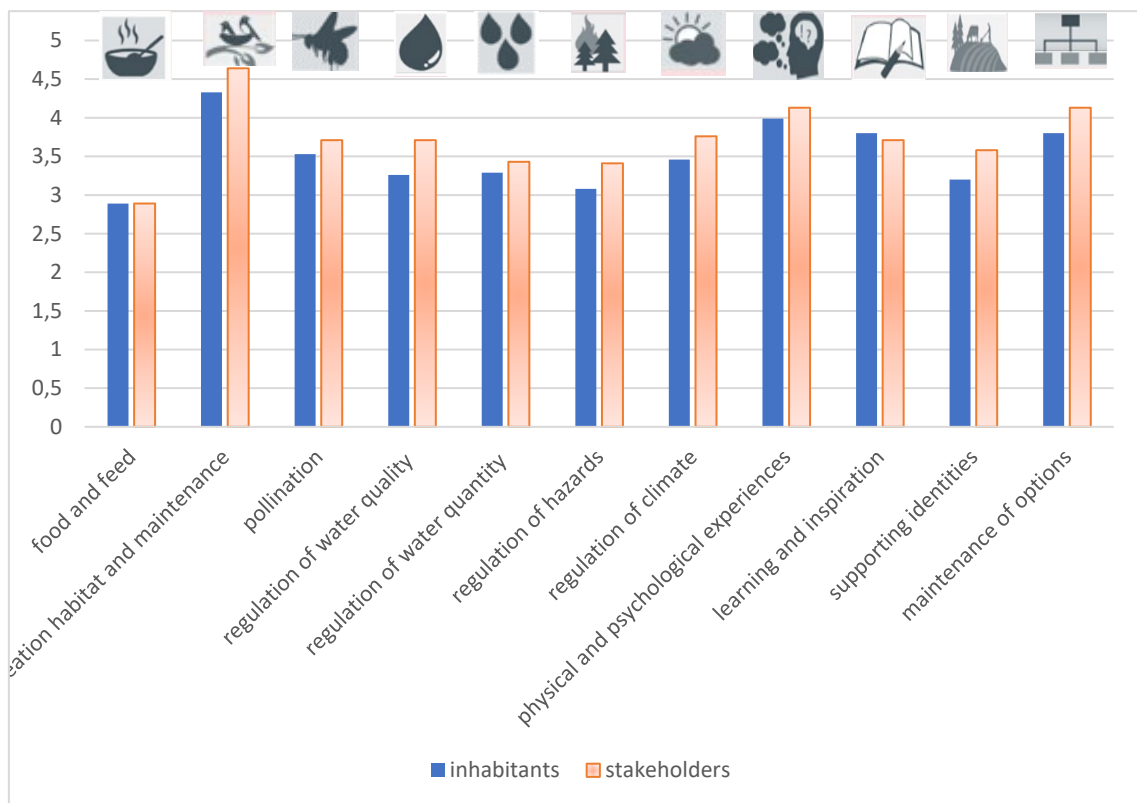


Figure 54: Mean of expected NCPs from all pondscape combined, by stakeholders and inhabitants

Another diagram on NCPs provides data at pondscape level from which lessons can be learned (Figure 55).

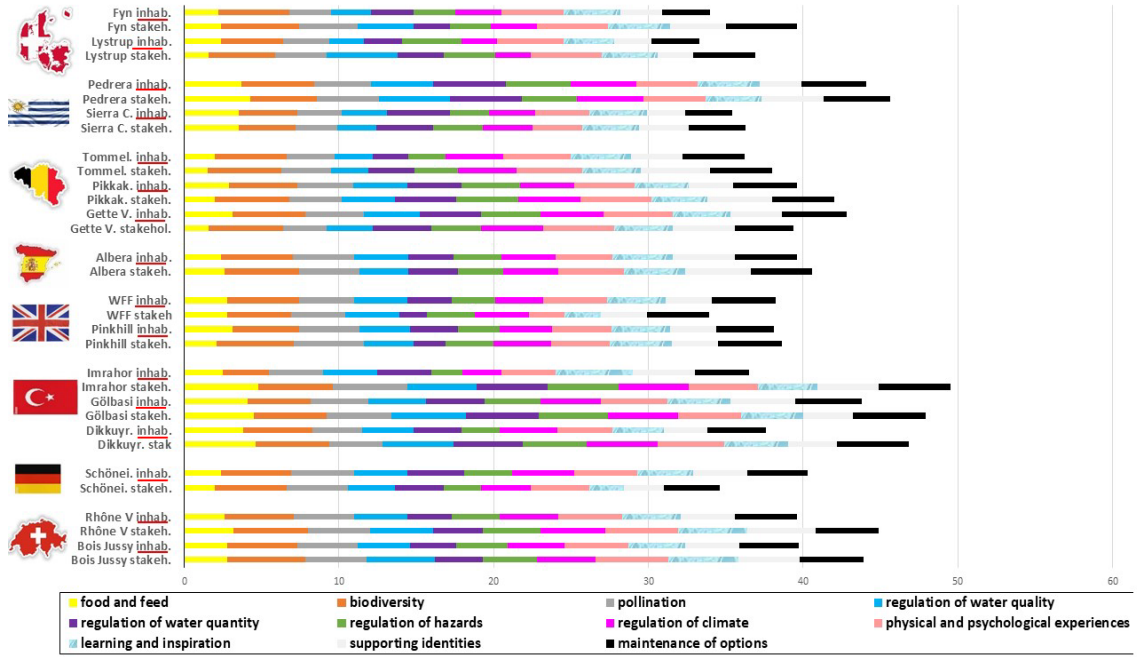


Figure 55: First comparison between inhabitants and stakeholders on NCP' assessment

The overall ratings from the stakeholders are higher than the inhabitants in thirteen of the sixteen pondsapes included. The longer the line, the higher ratings are. Stakeholders assessment on NCPs is very often better than inhabitants. It should be noted that a great difference was observed (more than 5 points in total) with Fyn (Denmark), Water Friendly Farming (England), Imrahor and Dikkuyruk (Turkey), in Germany and Switzerland.

We highlighted others differences with the diagram below:

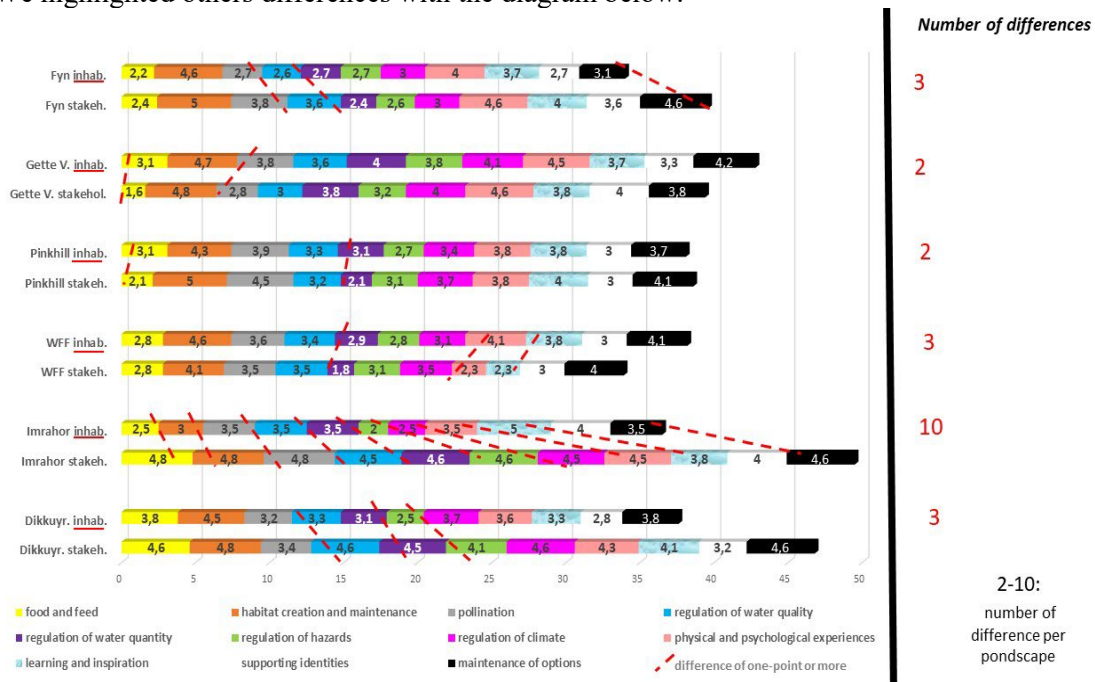


Figure 56: Number of differences on NCP' assessment between inhabitants and stakeholders

Given the differences of less than 1 point (on a scale of 5) are fairly frequent between inhabitants and stakeholders on the same pondscape, we highlighted the differences of one or more points in the pondsapes with two differences⁶. Interestingly, the result reveals a low number of differences between the assessment from inhabitants and stakeholders. Only two pondsapes in Turkey and Water Friendly Family in England obtained three differences or more, probably because of the low number of answers. This means that the NCP expectations are aligned between them despite some slight differences, resulting in homogeneous perceptions on the NCPs, shared between inhabitants and stakeholders.

Of the 23 overall major differences identified between inhabitants and stakeholders, 16 of them are related to the higher ratings given by stakeholders. Or else, a large part of these significant differences is linked to a more positive assessment given by stakeholders. Linked to the previous explanations, the better scores given by stakeholders can be explained by the fact that stakeholders work on pondsapes or water management and have more in-depth knowledge on ecology and biodiversity of these landscapes. They are also a stronger relation to nature and pondsapes.

The study reveals also that for the 23 overall differences highlighted, NCPs with the most divergent views could be identified, which are:

- 'Water quantity' with 4 major differences (WFF, Pinkhill, Imrahor, Dikkyuruk)
- 'Water quality' with 3 major differences (Fyn, Imrahor and Dikkuyruk)
- 'Food and feed' with 3 major differences (Gete Vallei, Pinkhill, Imrahor)
- 'Pollination' with 3 major differences (Fyn, Gete Vallei, Imrahor)

This means that these NCPs are more likely to be disagreed with. These topics are likely to be the most complicated to understand and evaluate as contribution. It seems important to clarify these potential contributions for prioritizing these NCPs. In addition, these differences of perception require specific attention and dedication in the framework of environmental education programs.

⁶ This means that the pondsapes without major differences or with only one major difference based upon the criteria described (Swiss pondsapes, Schöneiche, Golbasi, Albera, Pikkakhendonk, Tommelen, the Uruguyan pondsapes and Fyn) are not included in this diagram. No major variation did not occur.

6.7. Environmental status

The ratings from the stakeholders and the inhabitants on environmental status of the pondsapes are similar (Figure 57). Only in Turkey, Pinkhill Meadows (England), Schöneiche (Germany) and in Belgium, the variations exceed a threshold of 0,5 point.

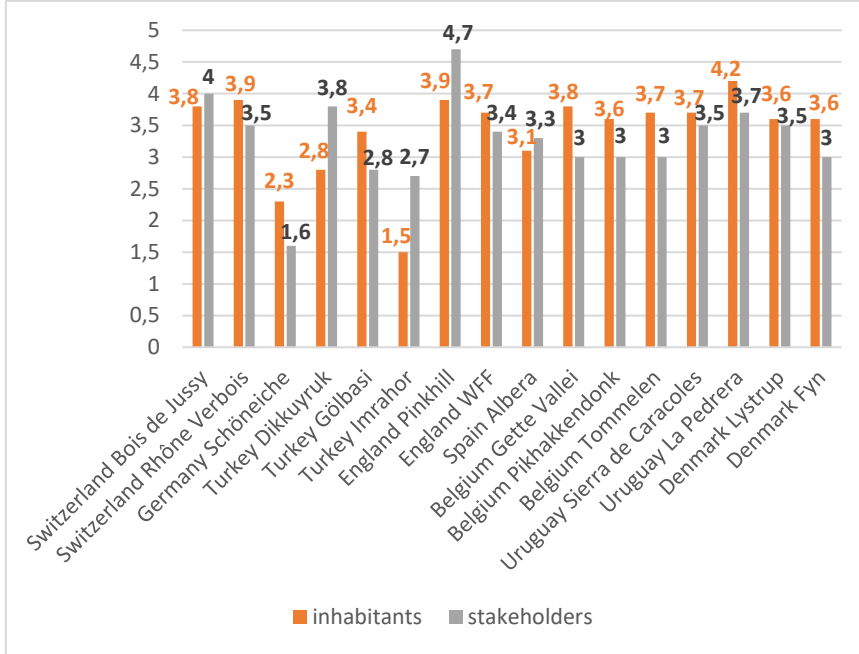


Figure 57: Comparison of the perception of the environmental condition between inhabitants and stakeholders

6.8. Threats

We analyzed the number of differences about threat assessment between inhabitants and stakeholders

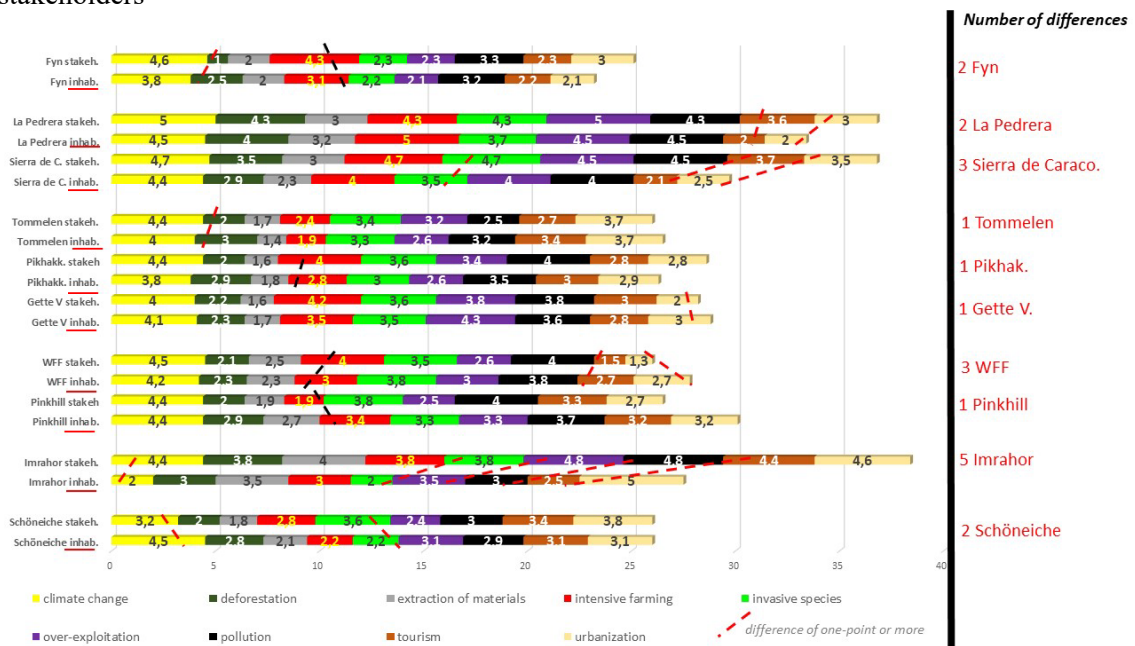


Figure 58: number of differences on threat assessment between inhabitants and stakeholders' responses

Only the pondscales with at minimum one difference⁷ of one-point or more between inhabitants and stakeholders' responses are included in this figure.

All pondscales combined, 'climate change' (2-4.7) and 'pollution' (2.5-4.8) are clearly the threats to be addressed first. This is particularly the case in Uruguay and Turkey with amount of different threats like 'climate change', 'pollution' but also others like 'over-exploitation' or 'urbanization'.

As for the previous analysis, we highlighted the differences between stakeholders and inhabitants of one-point or more. Interestingly, the result reveals a low number of differences between the assessment from inhabitants and stakeholders. Only Imrahor in Turkey and Water Friendly Farming in England obtained three differences and more probably because of the low number of answers. This means that the views are aligned. Therefore, the perceptions about threats are quite common and shared between inhabitants and stakeholders.

Of the 21 overall differences all pondscales combined, 12 of them are related to the higher ratings given by stakeholders. By contrast with the question on NCP assessment, there is no significant trend with a type of respondents more worried than others. The situation is nuanced from pondscape to pondscape: for example, in Turkey, Uruguay and Denmark, the stakeholders are much more concerned by threats than in England.

The research yields further interesting results with most divergent views for the 21 overall differences all pondscales combined. These include 'intensive farming', 'tourism' and 'urbanization' with 4 major differences. The option 'invasive species' obtained 3 major threats. Here, perception of threats linked to land use planning around pondscales are therefore of major interest. These issues would merit extensive debate in the different fields through strategic planning exercises.

We added another question to specify how the threats could materialise in pondscales. The diagram below shows the perceptions on the impact of the specific threats. Only the pondscales with at least one difference⁸ of one-point or more between inhabitants and stakeholders' responses are included in Figure 59.

⁷ This means that the pondscales with no major differences based upon the criteria described (Swiss pondscales, Golbasi, Dikkuyruk, Albera) are not included in this diagram. No major variation did not occur.

⁸ This means that the pondscales with no major differences based upon the criteria described (Swiss pondscales, Schöneiche, Dikkuyruk, Albera) are not included in this diagram. No major variation did not occur.

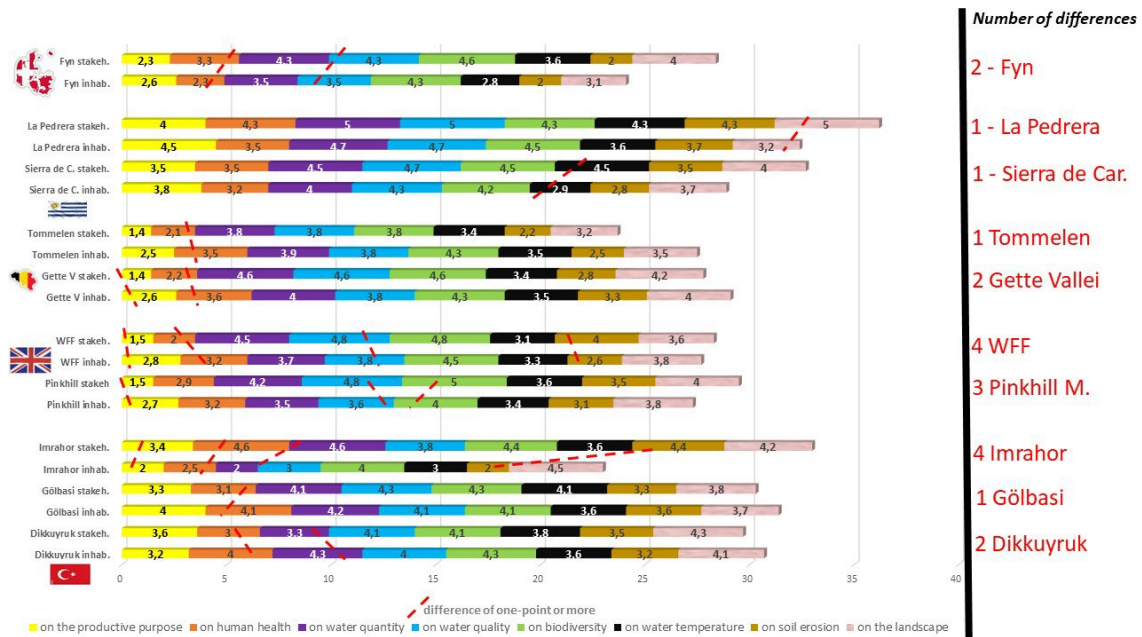


Figure 59: Number of differences on impact threat assessment between inhabitants and stakeholder's responses

‘Water quantity’ (2-5), ‘water quality’ (3-5) and ‘biodiversity’ (3,8-5) are the options with highest ratings. The greatest concerns are among the Turkey and Uruguay respondents (amount of impact threats combined).

We highlighted the differences of one-point or more. There is no significant trend with a type of respondents more worried than others (all ratings combined). The situation is nuanced from pondscape to pondscape. Interestingly, the result reveals a low number of differences between the assessment from inhabitants and stakeholders. Only Imrahor in Turkey and the british pondscaapes obtained three differences and more (productive purpose, human health, water quality, soil erosion). This means that the views are quite aligned between them regarding the other pondscaapes despite some slight differences. As said before for other questions, the perceptions are quite common and shared between inhabitants and stakeholders on the impact on threats.

Furthermore, for the 21 overall differences all pondscaapes combined, we identified the impact of threats with the most divergent views. We may conclude that differences were observed on ‘human health’ with 7 major differences and on ‘the productive purpose’ with 3 major differences. It seems important to clarify these potential impact threats. These issues would merit extensive debate in the different fields through pondscape management strategy. In addition, these differences of perception require specific attention and dedication in the framework of environmental education programs.

6.9. NBS measures for the future

We compared the results from inhabitants and stakeholders about the perception of the NBS measures that should be implemented for the future (Table 176). Several pondscaapes with lack of data were not included in the table below that mentions the level of convergence (color gradation). A strong convergence (in green) is confirmed as two or three common answers on the top-3 of each type of respondents. A limited convergence is defined as one common answer on the top-3 of each type of respondents.

Table 176: Level of convergence on NbS measures between the inhabitants and stakeholders' responses

		N°1	N°2	N°3	
Bois de Jussy	STAKEHD	restoration measures	maintenance of biodiversity	developing public ownership	LIMITED CONVERGENCE
	INHAB	better/more environmental education	maintenance of biodiversity	creating new ponds	
Rhône Verbois	STAKEHD	restoration measures	maintenance of biodiversity	better/more environmental education	STRONG CONVERGENCE
	INHAB	better/more environmental education	maintenance of biodiversity	limitation of certain uses	
Schöneiche	STAKEHD	better/more environmental education	increasing water volume - maintenance of biodiversity - restoration measures		STRONG CONVERGENCE
	INHAB	increasing water volume	restoration measures	better/more environmental education	
Dikkuyruk and Gölbası	STAKEHD	improving water quality	abandonment of certain uses	better/more env. education - developing env. regulation	STRONG CONVERGENCE
	INHAB	improving water quality	better envi. education - limitation of uses	restoration measures	
Pinkhill M.	STAKEHD	maintenance of biodiversity		monitoring of local public ponds	LIMITED CONVERGENCE
	INHAB	maintenance of biodiversity	better/more environmental education	creating new ponds	
Water Fr. Fam.	STAKEHD	improving water quality	creating new ponds	maintenance of biodiversity	STRONG CONVERGENCE
	INHAB	creating new ponds	maintenances of biodiversity	improving water quality	
Albera	STAKEHD	restoration measures	maintenance of biodiversity	limitation of uses - better/more environ. education	STRONG CONVERGENCE
	INHAB	restoration measures	better/more environmental education	limitation of uses	
Gette Vallei	STAKEHD	maintenance of biodiversity - improving water quality - restoration measures			STRONG CONVERGENCE
	INHAB	maintenance of biodiversity	improving water quality	restoration measures	
Pikhakkend.	STAKEHD	limitation of certain uses - creation of new ponds - increasing biodiversity - improving water quality - restoration measures			STRONG CONVERGENCE
	INHAB	restoration measures	improving water quality	better/more environmental education	
Tommelen	STAKEHD	maintenance of biodiversity		increasing the volume of water	NO CONVERGENCE
	INHAB	better/more environmental education	restoration measures	limitation of certain uses	
La Pedrera	STAKEHD	better/more environmental education - monitoring of private ponds - limitation of certain uses			LIMITED CONVERGENCE
	INHAB	restoration measures	limitation of certain uses	improving water quality	
Fyn	STAKEHD	restoration measures	improving water quality - maintenance of biodiversity		STRONG CONVERGENCE
	INHAB	creating new ponds	improving water quality	maintenance of biodiversity	

In the end, the perceptions on NBS are quite similar for a large majority of pondscape. Views of both parties are often aligned. Generally, this is not surprising given the shared understanding of the pondscape that we depicted during the previous pages of this report. But the result on Tommelen is quite unexpected. One would have thought that Tommelen will obtain 'strong convergence' regarding the previous results on the NCPs and the threats. This entails extensive debate in order to map a consistent strategy and action plan out.

Conclusion

The social survey provides an overview of perceptions and preferences regarding the present and the future of the pondsapes. The examination of individual and collective perceptions on a variety of topics (biodiversity, nature conservation, environmental condition, environmental change, threats assessment) gives interesting insights into the role of these small water bodies and their importance. It is important to understand the perception of the contributions of pondsapes in order to accept, conserve and improve them for the benefit of biodiversity and local population, thus contributing to their sense of belonging and quality of life.

We have analysed the data from two different samples: the stakeholders and the general public. Our survey describes and compares perceptions within and across seventeen pondsapes and explores how perceptions vary among local inhabitants and among stakeholder groups. To do this in-depth social study, a qualitative and quantitative approach was selected with online questionnaires and workshops.

As demonstrated in our study, there is evidence that pondsapes are widely valued by the inhabitants and stakeholders because of their benefits for quality of life and biodiversity. The average scores of inhabitants and stakeholders are always above 3 out of 5 with an overall average of about 4 for stakeholders and 3,6 for inhabitants. Stakeholders gave almost always higher ratings than inhabitants. Their professional profile of environmental manager/planner or their degrees in environmental studies might help explain this difference. A wide consensus was found on a range of issues as the environmental condition of pondsapes and the contributions of pondsapes.

We would like to emphasise specifically the convergence of views concerning the NCPs, the threats and the NBS measures. The comparison between stakeholders and inhabitants shows similar results with a clear NCP top-3: 'maintenance of habitats and creation', 'physical and psychological experiences' and 'maintenance of options' (i.e: potential opportunity offered by nature to ensure resilience in the future). The biodiversity represented in these pondsapes is highly valued by all the stakeholders and the general public, who also expressed their importance for the conservation and protection of threatened species. Social, cultural, and recreational activities are also beneficial and offer great diversity (hiking, wildlife watching, relaxation, cycling, education purpose, workplace) to promote wellness and integration to the community. By supporting identities, promoting ponds and pondsapes therefore enhances understanding of the environmental change and social cohesion as places of meeting and environmental education. Some perceptions of all NCPs are more noticeable than others amongst the DEMO-sites: as example we can mention Uruguay and Turkey with highest scores to 'food and feed' and 'regulation of water quantity'. The value of such NCPs is context-dependent of the local uses of every pondsape.

Similar threats are identified by stakeholders and inhabitants. Interestingly, these include a low number of substantial differences between the assessment from inhabitants and stakeholders of the same pondsape. Threat perception depends on the environmental condition, the land-use and the water uses. But results are consistent and research evidence suggests that 'climate change' and 'pollution' are clearly the threats the most rated all pondsapes combined. The situation is nuanced from pondsape to pondsape: in Turkey and Uruguay, the stakeholders are much more concerned with high average scores whereas the reverse is true in Switzerland, England and Spain. By detailing the threats, we identified the effects on 'water quantity', 'water quality' and 'biodiversity' as the one with the most worrying ratings. The respondents from Germany, Belgium, Turkey and Uruguay are particularly concerned about the water quantity. Respondents from Uruguay and Turkey show also great disquiet about the water quality.

We observe a difference of insight into what the changes have occurred the last decade between stakeholders and the general public. The perceptions on the changes observed match in Rhône Verbois (Switzerland), Germany, Tommelen (Belgium), Pinkhill Meadows (England) and Pikhakendonk (Belgium). When combining all pondscares, the negative changes highlighted exceed the positive. The most frequently cited negative changes are “more frequent drying of ponds”, “lower pond water level”, “more rubbish” and “degradation of water quality”. Therefore, the threats perception is congruent with the observed changes perception.

In regards to the various ways of addressing the problems identified, the perceptions on NBS are quite similar for a large majority of pondscares. Views of both parties are often aligned. Generally, this is not surprising given the shared understanding of the pondscares that we depicted previously. The most appropriate NBS measures selected are “restoration”, “connectivity”, “maintenance of biodiversity” and “improving the water quality”. The level of intervention is perceived as moderate. In facing the challenge of water quantity, respondents from the Belgian, German, Turkish and Uruguayan DEMO-sites have selected other options as “increasing water volume” and “limitation/abandonment of certain uses” with action both on the supply and demand of water. In light of this, conservation and maintenance actions should be taken to ensure that these pondscares continue to play a key role in biodiversity conservation and improving people's lives with recreational activities.

Concerning the environmental changes observed, the condition of the pondscares and the level of existing threats give rise to a series of challenges and represent the pivotal moment of the pondscape management. With the help of other WP colleagues, our social data will be useful to develop an analysis of synergies and trade-offs in forthcoming pondscape management and policies. In the light of the discussion and the results, we can infer some points of leverage for facilitating or extending the implementation of NBS measures:

- The provision of focused technical support, as well as supporting broad-based knowledge exchange collaborations, should be available to assist managers in implementing promising strategies to promote enhanced implementation of NBS measures.
- Positive NBS impact on several pondscares has to be shared as “success stories”: demonstrating the potential for NBS measures can be a powerful incentive for other pondscares’ managers to adopt these measures as “best practices”. Demonstration projects can showcase the benefits of sustainable practices and help to build trust and confidence in these approaches. Publish information in a way that enables remote access is also important. This work is developed in WP4 work with a handbook and leaflets disseminated to people and stakeholders.
- Stakeholders call for better ‘networking’ (facilitating knowledge exchange) across the multiple levels (e.g. dissemination to the general public and local actors), meso-level (e.g. regional actors and civil society) and macro-level (e.g. legal and regulatory systems) that together shape management decisions. The idea is to create an environment that is conducive to learning and laying the foundations for linking visitors, inhabitants, civil society, managers, and decision-makers at all levels.
- Educational and dissemination campaigns are needed to raise awareness of the value of pondscares (functional definition, contributions, uses, species, threats).

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Annexes

Annex 1. Template questionnaire to general public

Respondent profile

- 1- What is your gender?
- *Female*
 - *Male*
 - *Non-binary/other*
- 2- What is your age group?
- *18-35*
 - *36-50*
 - *51-65*
 - *66-80*
 - *+80*
- 3- What is your highest level of education?
- *Primary education*
 - *Secondary education*
 - *University education*

General questions about nature

4- What are the different types of landscapes do you visit most frequently?
Please select three proposals.

- *Agricultural landscape*
- *Forest*
- *Grassland*
- *Lake*
- *Mountain*
- *Ocean/sea*
- *Pondscape*
- *River*
- *Urban park*
- *Other*

5- How would you describe your relationship with 'nature'?
Please select a score from 1 to 5, where 1 means 'very weak' and 5 means 'very strong'.

General questions about pondsapes (i.e landscape of ponds)

- 6- Do you visit any pondsape(s)?
- *Yes*
 - *No*

If the answer is 'no', end of the questionnaire

7- How would you describe your relationship with pondscares?
Please select a score from 1 to 5, where 1 means “very weak” and 5 means “very strong”.

8- What are the most important criteria for you when choosing a pondscape to go to?
Check any that apply

- *accessibility (ease of access, convenient facilities)*
- *aesthetic scenery*
- *better understanding of productive purposes in the pondscares*
- *area with special environmental interest*
- *freedom of movement (public area or owner private area with permission to access)*
- *located close to your home*
- *located far to your home*
- *possibility to practise a desired activity*
- *safe and comfortable space*
- *workplace*
- *other*

9- Are pondscares important for your quality of life?
Please respond using the five-point scale, where 1 means “not important at all” and 5 means “very important”.

Social and geographical closeness

In the next question, we are going to ask you about the two pondscares included in our research program
(here is a map of these pondscares)

- 10- What is the pondscape that you visit most frequently?
- *Pondscape A*
 - *Pondscape B*

The following questions will focus only on the pondscape that you selected as visited most pondscape.

11- How often do you visit this pondscape?
Choose one of the following answers.

- *Once a day*
- *Once a week*
- *Once a month*
- *Once every six months*
- *Once a year*
- *Less than once a year*

12- What is the distance between your home and the pondscape chosen?
Choose one of the following answers

- *Within 1 mile*
- *within 5 miles*
- *within 10 miles*
- *within 20 miles*
- *within 30 miles*
- *more*

13- How do you get to this pondscape?

Check any that apply

- *Bicycle*
- *Boat*
- *Car*
- *Horse*
- *On foot*
- *Motorcycle*
- *Public transport*

14- How did you hear about this pondscape?

Check any that apply

- *Advertisement*
- *family*
- *Chance*
- *I live nearby*
- *Professional network*
- *Social media/internet*
- *School visit*
- *Tourist information*
- *Word of mouth*

15- What kind of activities do you practice on this pondscape?

Check any that apply

- *Art (drawing, painting, photography, dance...)*
- *Camping*
- *Cycling*
- *Diving*
- *Educational purpose*
- *Fishing*
- *Hiking*
- *Hunting*
- *Ice sport*
- *relaxation*
- *Picnic*
- *Running*
- *Sailing*
- *Swimming*
- *Wildlife watching*
- *Professional use*
- *Other:*

16- If you ticked the box ‘professional use’, which one’s ?

- *Dairy farming*
- *Drinking water source for livestock*
- *Fish farming*
- *Irrigation (of crops for example)*
- *Peat harvesting*
- *Reed harvesting*
- *Salt production*
- *Other:*

General knowledge about the chosen pondscape :

17- According to your knowledge, was this pondscape created.... ?

Choose one of the following answers

- *by humans*
- *by natural processes*
- *I do not know the origins*

18- Do you know if this pondscape (or parts of its) is a nature reserve and/or nature conservation area?

- *Yes*
- *No*
- *I do not know the answer*

19- Have you observed significant changes in this pondscape during the last ten years?

- *Yes*
- *No*

19- And, if so, which one(s)?

Check any that apply

- *Colonisation of new animal species*
- *extinction of local animal species*
- *colonisation of new plant species*
- *extinction of local plant species*
- *increase of bad odours*
- *decrease of bad odours*
- *increase of pondscape surface area*
- *decrease of pondscape surface area*
- *increase in the number of ponds*
- *decrease in the number of ponds*
- *more rubbish*
- *less rubbish*
- *higher pond water level*
- *lower pond water level*
- *improvement of water quality*
- *deterioration of water quality*
- *more frequent drying of ponds*
- *less frequent drying of ponds*
- *other:*

21- Are there any emblematic or key species (amphibian, bird, fish, invertebrate, mammal, reptile, plant species) occurring in this pondscape?

- *Yes*
- *No*

22- If so, which one(s)?

Assessment of the pondscape chosen

23- In your opinion, what are the contributions provided by this pondscape?

Please rank the following contributions on a scale from 1 to 5, where 1 means “not important at all” and 5 means “very important at all”.

	1	2	3	4	5
<i>Food and feed (productivity of food : fish, waterfowl, livestock)</i>					
<i>habitat creation and maintenance (preservation of desired species, for biodiversity conservation)</i>					
<i>pollination (diversity of plants to be pollinated)</i>					
<i>regulation of water quality (water purification)</i>					
<i>regulation of water quantity (reservoir of irrigation, water supply)</i>					
<i>regulation of hazards (flooding regulation, fire protection)</i>					
<i>regulation of climate (carbon storage, maintaining an acceptable temperature)</i>					
<i>physical and psychological experience (calm, freshness, sociability, activities)</i>					
<i>learning and inspiration (aesthetic, art, education, science)</i>					
<i>supporting identities (cultural heritage, local identity)</i>					
<i>maintenance of options (potential opportunities offered by nature to ensure resilience in the future)</i>					

24- In your opinion, what is the environmental condition of this pondscape?
 Please respond using the five-point scale, where 1 means “very bad” and 5 means “very good”.

25- On which elements is your assessment of the environmental state of the pondscape in the previous question based?

Check all that apply

- *animal species composition*
- *plant species composition*
- *colour of water*
- *water level*
- *number of ponds*
- *pollution*
- *presence of rubbish*
- *surface area*
- *water temperature*
- *water quality*

26- What do you perceive are the most important threats to this pondscape in future?
 Please, rank the following threats on a scale from 1 to 5, where 1 means “not important at all” and 5 means “very important”.

	1	2	3	4	5
<i>Climate change</i>					
<i>Deforestation</i>					
<i>extraction of materials (gravel, sediment, sand...)</i>					
<i>intensive farming (trampling by cattle for example)</i>					
<i>invasive species</i>					

<i>over-exploitation (water abstraction, irrigation)</i>					
<i>Pollution</i>					
<i>tourism (rubbish, damage to vegetation by trampling, disturbance of wildlife)</i>					
<i>Urbanization</i>					

27- For you, what are the impacts of these threats in future?

Please, rank the following impacts on a scale from 1 to 5, where 1 means “minor impact” and 5 means “major impact”.

	1	2	3	4	5
<i>impact on the productive purpose</i>					
<i>impact on human health</i>					
<i>impact on water quantity</i>					
<i>impact on water quality</i>					
<i>impact on biodiversity</i>					
<i>impact on water temperature</i>					
<i>impact on soil erosion</i>					
<i>impact on the landscape</i>					
<i>impact on my property/my security (nuisance species and flooding for example)</i>					

28- In order to mitigate these threats and impacts, what changes would you propose to improving the environmental state of the most visited pondscape?

Tick the following propositions on a scale of 1 to 5, where 1 means ‘not at all important’ and 5 means ‘very important’.

	1	2	3	4	5
<i>better/more environmental education</i>					
<i>creating new ponds</i>					
<i>increasing biodiversity (species, populations, or on a genetic level)</i>					
<i>improving water quality</i>					
<i>increasing the volume of water</i>					
<i>limitation of certain uses</i>					
<i>restoration measures</i>					

You can indicate your e-mail address to receive on an English-only version the results of the questionnaire:@.....

Annex 2. Template questionnaire to stakeholders

Respondent profile

- 1- What is your gender?
- *Female*
 - *Male*
 - *Non-binary/other*

- 2- What is your highest level of education?
- *Primary education*
 - *Secondary education*
 - *University education*

- 3 – In what subject area is your highest level of education?
- *Administration*
 - *Agronomy*
 - *Biology*
 - *Business*
 - *Ecology*
 - *Economics*
 - *Engineering*
 - *Environmental management*
 - *Forestry*
 - *Geography*
 - *Hydrology*
 - *Law*
 - *Humanities/social science*

- 4- Which one of the following categories best applies to your job?
- *Consultancy*
 - *local authority*
 - *regional authority*
 - *national authority*
 - *business (farmer, fish/salt farming...)*
 - *land owner and land owner association*
 - *civil society (NGO, Non-Profit Organization, academic society)*
 - *politics*
 - *research*

- 5- How would you describe your role in the present situation and the future of the pondscales?
- *Counselling*
 - *decision maker*
 - *exploitation and production*
 - *project facilitator*
 - *public policy planners*
 - *technical support*

General questions about nature

- 6- What are the different types of landscapes do you visit most frequently?
Please select three proposals.
- *Agricultural landscape*

- *Forest*
- *Grassland*
- *Lake*
- *Mountain*
- *Ocean/sea*
- *Pondscape*
- *River*
- *Urban park*
- *Other*

7- How would you describe your relationship with ‘nature’?
Please select a score from 1 to 5, where 1 means ‘very weak’ and 5 means ‘very strong’.

General questions about pondsapes (i.e landscape of ponds)

8- How would you describe your relationship with nature?
Please select a score from 1 to 5, where 1 means “very weak” and 5 means “very strong”.

9-How would you describe your relationship with nature pondsapes?
Please select a score from 1 to 5, where 1 means “very weak” and 5 means “very strong”.

10- Are pondsapes important for your quality of life?
Please respond using the five-point scale, where 1 means “not important at all” and 5 means “very important”.

Professional involvement with the pondsapes covered by the Ponderful project

- 11- Have you ever gone to the following pondsapes?
- A
 - B
- 12- How do you rate your professionnal engagement to the following pondsapes? Please respond using the five-point scale, where 1 means ‘no engagement’ and 5 means ‘major engagement’.

General knowledge about the chosen pondsape :

- 13- Have you observed significant changes in this pondsape during the last ten years?
- *Yes*
 - *No*

- 14 - And, if so, which one(s)?
Check any that apply
- *Colonisation of new animal species*
 - *extinction of local animal species*
 - *colonisation of new plant species*
 - *extinction of local plant species*
 - *increase of bad odours*
 - *decrease of bad odours*

- *increase of pondscape surface area*
- *decrease of pondscape surface area*
- *increase in the number of ponds*
- *decrease in the number of ponds*
- *more rubbish*
- *less rubbish*
- *higher pond water level*
- *lower pond water level*
- *improvement of water quality*
- *deterioration of water quality*
- *more frequent drying of ponds*
- *less frequent drying of ponds*
- *other:*

15- Are there any emblematic or key species (amphibian, bird, fish, invertebrate, mammal, reptile, plant species) occurring in this pondscape?

- *Yes*
- *No*

16- If so, which one(s)?

Assessment of the pondscape chosen

17- Are you aware of the concept of ‘Nature’s Contributions to People’?

- *Yes*
- *No*

18- In the following questions, we would like you to rank the current importance of every contribution of each pondscape. For the pondscape, please rank the following contributions on a scale from 1 to 5, where 1 means ‘not important at all’ and 5 means ‘very important’.

	1	2	3	4	5
<i>Food and feed (productivity of food : fish, waterfowl, livestock)</i>					
<i>habitat creation and maintenance (preservation of desired species, for biodiversity conservation)</i>					
<i>pollination (diversity of plants to be pollinated)</i>					
<i>regulation of water quality (water purification)</i>					
<i>regulation of water quantity (reservoir of irrigation, water supply)</i>					
<i>regulation of hazards (flooding regulation, fire protection)</i>					
<i>regulation of climate (carbon storage, maintaining an acceptable temperature)</i>					
<i>physical and psychological experience (calm, freshness, sociability, activities)</i>					
<i>learning and inspiration (aesthetic, art, education, science)</i>					
<i>supporting identities (cultural heritage, local identity)</i>					
<i>maintenance of options (potential opportunities offered by nature to ensure resilience in the future)</i>					

19- For the pondscape, what are your top 3 priorities in terms of their future contributions?

	1	2	3
<i>Food and feed (productivity of food : fish, waterfowl, livestock)</i>			
<i>habitat creation and maintenance (preservation of desired species, for biodiversity conservation)</i>			
<i>pollination (diversity of plants to be pollinated)</i>			
<i>regulation of water quality (water purification)</i>			
<i>regulation of water quantity (reservoir of irrigation, water supply)</i>			
<i>regulation of hazards (flooding regulation, fire protection)</i>			
<i>regulation of climate (carbon storage, maintaining an acceptable temperature)</i>			
<i>physical and psychological experience (calm, freshness, sociability, activities)</i>			
<i>learning and inspiration (aesthetic, art, education, science)</i>			
<i>supporting identities (cultural heritage, local identity)</i>			
<i>maintenance of options (potential opportunities offered by nature to ensure resilience in the future)</i>			

20- In your opinion, what is the environmental condition of pondscape?

Please respond using the five-point scale, where 1 means “very bad” and 5 means “very good”.

21- On which elements is your assessment of the environmental state of the pondscape in the previous question based?

Check all that apply

- *animal species composition*
- *plant species composition*
- *colour of water*
- *water level*
- *number of ponds*
- *pollution*
- *presence of rubbish*
- *surface area*
- *water temperature*
- *water quality*

22- What do you perceive are the most important threats to the pondscape in future?

Please, rank the following threats on a scale from 1 to 5, where 1 means “not important at all” and 5 means “very important”.

	1	2	3	4	5
<i>Climate change</i>					
<i>Deforestation</i>					
<i>extraction of materials (gravel, sediment, sand...)</i>					
<i>intensive farming (trampling by cattle for example)</i>					
<i>invasive species</i>					
<i>over-exploitation (water abstraction, irrigation)</i>					
<i>Pollution</i>					

<i>tourism (rubbish, damage to vegetation by trampling, disturbance of wildlife)</i>					
<i>Urbanization</i>					

23- For you, what are the impacts of these threats in future?

Please, rank the following impacts on a scale from 1 to 5, where 1 means “minor impact” and 5 means “major impact”.

	1	2	3	4	5
<i>impact on the productive purpose</i>					
<i>impact on human health</i>					
<i>impact on water quantity</i>					
<i>impact on water quality</i>					
<i>impact on biodiversity</i>					
<i>impact on water temperature</i>					
<i>impact on soil erosion</i>					
<i>impact on the landscape</i>					
<i>impact on my property/my security (nuisance species and flooding for example)</i>					

24- What specific measures should be taken to limit these threats and these impacts for the pondscape? If you think that a proposed measure is important for the pondscape, please select the box.

- *abandonment of certain uses*
- *accepting that only certain endangered species might survive in the foreseeable future*
- *better/more environmental education*
- *creating new ponds*
- *developing environmental regulation*
- *monitoring of local public ponds*
- *monitoring of private ponds*
- *monitoring of visitor-related damage*
- *developing public ownership*
- *increasing biodiversity (species, populations, on a genetic level)*
- *improving water quality*
- *increasing water volume*
- *limitation of certain uses*
- *maintaining populations of endangered species*
- *pond restoration*
- *reforesting pond catchments*

25- Are you aware of the concept of ‘Nature-Based Solutions’?

- Yes

- No

26- Nature-Based-Solutions (NBS) are solutions that are inspired and supported by nature. There are three main categories of NBS based on natural, restored and new ecosystems.

Given this definition, what is your preference among these types of NBS for the pondscapes A and B which are proposing different levels of intervention?

- weak level of intervention (with a better use of protected/natural pondscape)
- moderate level of intervention (measures of restoration)
- strong level of intervention (creation of new pondscapes)
- no opinion

Annex 3. Workshop exercises



















NbS exercise

Gender of the respondent:	Name of the pondscape:		
	PAST	FUTURE	
	The most important measure in recent years (if exists)	Example of measure n°1 to put in place	Example of measure n°2 to put in place
Project actors (leader, manager, funder)			
Year/timescale			
Where?			
Scale (1 pond, several ponds, whole pondscape) and spot/location of the ponds			
Type of measures (restoration, creation, management actions, pondscape scale land use)			
Perception of level of intervention of the measure (weak, moderate, strong)			
Objective of the measure (biodiversity, quality of water, water quantity, vegetation, banks, morphometry...)			
Description of the benefits of the measure and the value			
Feedback/ obstacles need to be overcome			

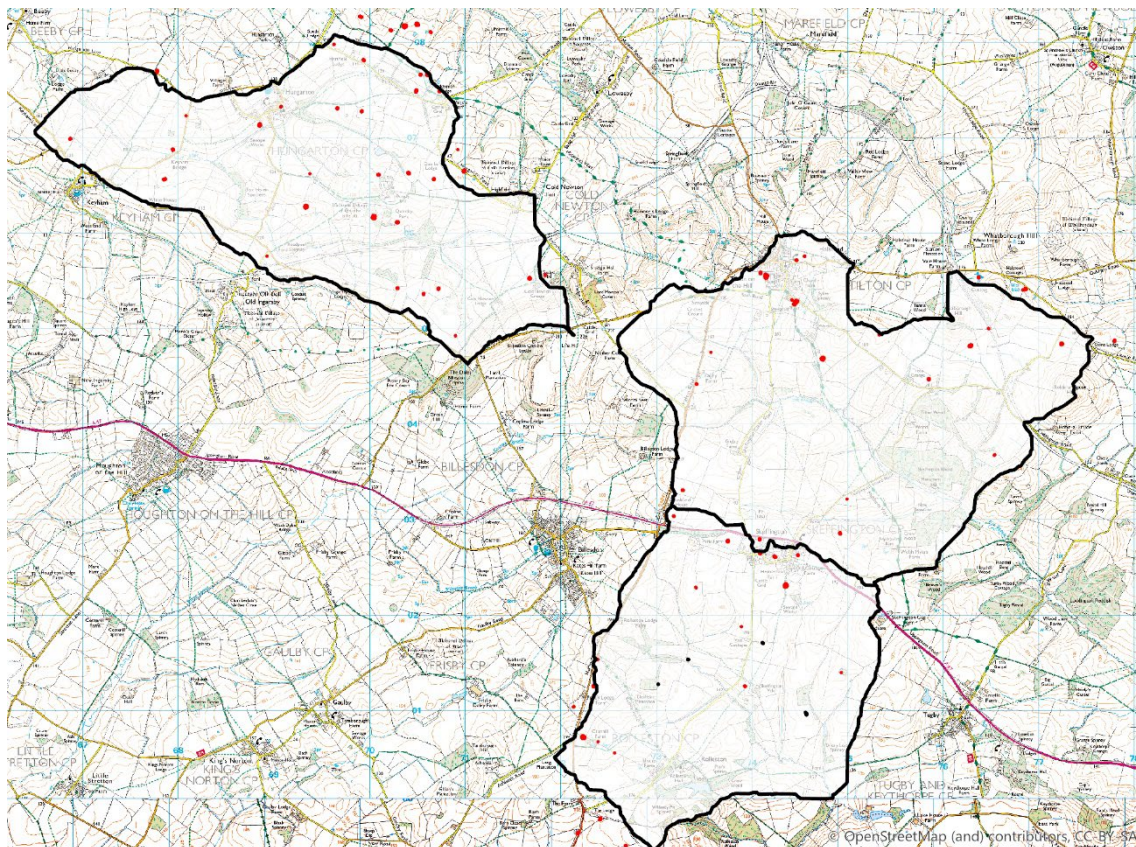
NCP exercise

Gender of the respondent:		Name of the pondscape:	
	Most important contributions in the moment (present) for the pondscape	Contributions to be given priority in the future for the pondscape	
		Key questions: What is your opinion? Why? What do you want to change? What is gained? Who is the beneficiary? In what way?	
First contribution:			
Second contribution:			
Third contribution:			

Mapping exercise

- water 
- *Reed bed* 
- *existing facilities (to specify in writing)* 
- *equipment to be installed (to write down)* 
- *inclusion issue (disability/pushchair)* 
- Land use (frame an area with dotted lines): forest /agriculture /meadow /urban
- *fishing* 
- *hiking trail* 
- *area wildlife watching* 
- *wildlife habitat* 
- *nuisance growth of algae* 
- *invasive species (to specify in writing)* 
- *farm animals (to specify in writing)* 
- *Irrigation* 
- *water pollution* 
- *flood zone* 
- *fire area* 
- *measuring point (water quality)* 
- *Waste* 

Legend of the mapping exercise with an example of base map in England





Ponderful



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Pond Ecosystems for Resilient Future Landscapes in a Changing Climate

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