On-line proceedings of National Workshops v3

Deliverable D6.14

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Contributors: DA1, DA2, DA4, DB3, DB4, EC2, EC3, EC4, EC5, EC6, INTC1

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Disclaimer

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Abstract (for dissemination, 100 words)	D6.14 includes the reports from 9 RECONECT national workshops, held respectively in Germany, Denmark, Italy, Switzerland, Poland, Croatia, Bosnia&Herzegovina, Serbia, Thailand). A series of national workshops have to be organized in Demonstrators and Collaborators, with the aim to enforce the stakeholder's engagement at regional/national level and to increase their awareness on NbS potential and applicability. RECONECT workshops are not to be considered just as a "RECONECT information corner", but they want to represent a robust contribution to upscaling and exploitation strategies. The RECONET national workshops aim to drive the target audience towards a change in their mindset and to build a new culture of land planning and risk mitigation.
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Executive Summary

The deliverable 6.14 includes the reports from RECONECT national workshops held in 2023 and 2024 both in Demonstrators A and B and in Collaborators. The deliverable refers also to the RECONECT web site session where the on-line proceedings of each workshop are included and are publicly available.

RECONECT national workshops are not to be considered just as a "RECONECT information corner", but they want to represent a robust contribution to upscaling and exploitation strategies. The RECONET national workshops aim to drive the target audience towards a change in their mindset and to build a new culture of land planning and risk mitigation.
National workshops are organized in Demonstrators and EU/Int Collaborators, with the aim to enforce the stakeholder's engagement at regional/national level and to increase their awareness on NbS potential and applicability. This deliverable report about the main outcomes of National Workshops held in 2023 and 2024 offering an overview of general knowledge and NbS policy framework around different countries, hence putting the basis for an exploitation of RECONECT results.

The present deliverable is, on the one side, addressed to an internal audience (RECONECT Consortium and RECONECT Demonstrator and Collaborator clusters) in order to get feedback and share outcomes from the organized National Workshops and to assess the general knowledge around NbS and the replication and upscaling potential. Outcomes from the workshops can be used by the partners also to inspire their exploitation policies beyond the project end.
On the other side, reports and on-line proceedings are open to a wide public, addressed in particular to regional and national governments, practitioners and scientific community, representing an important repository of reflections and considerations on a different approach to risk mitigation and climate change adaptation.

The deliverable 6.14 is the last of a series of 3 deliverables. Due to the COVID-19 restrictions the majority of national workshops were organized with a small delay with respect to the original plans. A comprehensive idea of the overall key findings and lessons learned from National Workshops can be get by reading also D6.7 and D6.13. In any case, National Workshops are considered as a fundamental opportunity for a deep analysis of local and national perception and knowledge of NbS and for addressing and streamlining future exploitation activities and maximizing impacts and changes.

The main outcome from these workshops is the strong interest by the institutional and private stakeholders and the need to engage them with the aim to capitalize the RECONECT results and exploit them at national level. There is strong need of technical guidelines and standards for NbS in order to make applicable the recommendations by EU and national policy frameworks, and RECONECT can be profitably used to address this issue.

Link to the on-line proceedings of National Workshops:
http://www.reconect.eu/national-workshops/

Contents

1 Introduction

Scope of this deliverable

The Deliverable 6.14 is the third and the last of a series of public deliverables collecting on-line proceedings from RECONECT National Workshops. Other versions are the Deliverable D6.7 and D6.13.

This series of deliverables is composed of two parts:

1) a document, including a plan and the detailed reports of the workshops and
2) an online session, available at www.reconect.eu/national-workshops, including a rough description of the workshop objectives and the proceedings in a digital format.

The present deliverable D6.14 has the purpose to collect into a single document and harmonise the outcomes from nine RECONECT National Workshops held in Demo A and B (Italy, Germany, Denmark and Switzerland) and in EU and INT Collaborators (Poland, Croatia, Serbia, Bosnia&Herzegovina, Thailand). Other National Workshops have been organized both in Demonstrators and Collaborators, but the reports are not available.

According to the RECONECT Communication & Dissemination Strategy and Plan a series of national workshops were to be organized along the project in Demonstrators and EU Collaborators, with the aim to enforce the stakeholder's engagement at regional/national level and to increase their awareness on NbS potential and applicability. A specific task under WP6 (Task 6.6), leaded by GISIG, was dedicated to manage the organization of these workshops. Due to COVID-19 pandemic, the task was a bit delayed due to the impossibility to organize in person meetings; in fact, RECONECT Consortium decided not to turn soon the workshops organization into virtual events since it strongly believed that stakeholders' engagement was better performed if carried out in face-to-face events. The past deliverables of the series defined also a strategy and a plan to re-schedule the Task 6.6 activities, taking also into consideration the 1-year project extension and the evolution of the pandemic and related rules at EU level.

As detailed in past deliverables, the organization of the workshops was supported by standard guidelines and instructions to ensure that scope, target audience and follow up were properly achieved. In fact, National RECONECT workshops are not to be considered just as a "RECONECT information corner", but they want to represent a robust contribution to upscaling and exploitation strategies.
Based on sound scientific data and examples from each demonstrator and collaborator, the RECONET national workshops aimed to drive the target audience towards a change in their mind-set and to build a new culture of land planning and risk mitigation. The use of a standard project identity and of branded dissemination material was also recommended, in order to create awareness around the RECONECT logo.
A final round table was organized at the end of each workshop in order to discuss about NbS perception by target audience, to identify drivers and barriers for the NbS implementation helping, in such a way, to better address future strategy and activities of RECONECT.

Plan of National Workshops organization in Demonstrator and Collaborators

According to the Description of Activities (DoA) for Task 6.6, each demonstrator and collaborator cluster is requested to organize **national workshops**, in order to maximize dissemination and awareness, as well as to foster the adoption of RECONECT solutions and their up-scaling. Relevant **institutional and technical stakeholders** should be involved in these events. According to the implementation plan of WP6 – Task 6.6:

- Each **Demonstrator** cluster has to organize, along the project, **two workshops** at national level.
- Each **EU Collaborator** cluster has to organize **one workshop,** starting from August 2020 (M24) to the project end.
- Joint workshops can be organized in countries having more than one Demo or Collaborator cluster (e.g. Denmark and France).

Some modifications have been made to the original plans, in particular:

- Danish cluster (composed by the Odense Demo A and Aarhus Demo B) decided to organize only one national workshop lasting two days instead of two separate ones.
- Thailand, Malaysia and Colombia, even if they were not asked to organize a workshop, decided to do as well.
- Some Demonstrators and Collaborators (The Netherlands, Austria, France, Spain. Bulgaria) couldn't manage to organize the second national workshop by the end of the project, but they are already fully committed with stakeholders for a national exploitation of RECONECT results.

In the following table, a detail of the workshops organized in 2023 and 2024 by RECONECT Demonstrators and Collaborators is provided.

Table 1: second round of national workshops organized in RECONECT Demonstrators

Demonstrators	**Date of the second workshop**	**Report available**
DA1 Elbe Estuary (DE)	19 June 2024	Yes
DA2 & DB3 Odense and Aarhus (DK)	24 – 25 August 2023	Yes
DA3 Tordera River (ES)	NA	No
DA4 Portofino Park (IT)	19 June 2024	
DB1 Ijjssel River (NL)	NA	No
DB2 Inn River (AT)	NA	No
DB4 Thur River (CH)	18 April 2023	Yes
DB5 & DB6 Var River and Les Boucholeurs (FR)	NA	No

Table 2: single round of national workshops organized in RECONECT Collaborators

Demonstrators	Date of the second workshop	Report available
EC1 Kamchia River (BG)	NA	No
EC2 Pilica River (PL)	17 May 2024	Yes
EC3 Bregana River (HR)	17 May 2024	Yes
EC4 Vrbanja River Basin (B&H)	17 May 2024	Yes
EC6 & EC6 Jadar & Tamnava River (SRB)	3 April 2024	Yes
INTC1 Chao Phraya River (Thailand)	3 May 2024	Yes
INTC of Colombia	17 November 2023	No

2 Report of the Second RECONECT National Workshop in Elbe River Basin - Vier- and Marschlande (Demo A), Germany

RECONECT

RECONECT Workshop of DA 1 Elbe Estuary, Vier- and Marschlande

Ministry of Environment, Climate, Energy and Agriculture, Conference Center, June 19th 2024, 14.00 – 18.00

Workshop rationale and outlines

On June, 19th 2024 the second national workshop in the demonstrator DA1 Elbe Estuary took place. Because of the regional to rather local scale of the demonstrator area (Vier- and Marschlande) and the invited local participants (see section *Target Audience, Event Outcomes and Follow-ups*), the workshop will be referred to as 2. regional workshop hereafter.

The Ministry of Environment, Climate, Energy and Agriculture (BUKEA) of the FHH was in charge of organisation and conduction of the regional workshop. The project members of the Hamburg University of Technology (TUHH) and the State Agency Roads, Bridges and Waters (LSBG) supported the organisation and the conduct of that workshop, especially by providing expert presentations on the different topics covered in the workshop (see section *Agenda*).

The second regional workshop, organised as invitation event, aimed at the discussion and rating of the upscaling and replication potential of the hybrid nature-based solution in further low-lying drainage areas (marsh land) along the tidal Elbe located behind the main dike line. For this purpose, the audience was introduced to the project in general, the project activities of the Hamburg project partners with focus on inland drainage for flood protection purposes. The discussion and analysis on the aforementioned upscaling and replication potential were done in a dedicated discussion session during the second part of the regional workshop. The table in the following section *Programme* provides an overview of the workshop agenda. A more detailed description of the workshops content can be found in section *Agenda*.

After a brief welcome by the host, the project representative by the TUHH introduced the project RECONECT. An overview of the project´s rationale and objectives as well as the basic integrative and holistic approach was given. The network of demonstrators and collaborators and the corresponding activities aiming at the evaluation of the benefits and co-benefits of NBS were presented. The introduction of the project ended by outlining the experiences and lessons learned gained during the project lifetime. In order to provide the audience with a broader understanding of the conceptual approach of of NBS, the host briefly introduced the case study areas in Denmark and the Netherlands. Main contribution of the first section of the regional workshop was given the by LSBG explaining the project activities related to the case study area Vier- and Marschlande and the discussion of the results and the proof of concept (application of the developed optimised operation rules of the dike lock Tatenberg in 2 major flood events). After a brief coffee break the second sectioned focused on the discussion of the upscaling and replication potential of the developed hybrid approach to NBS for flood management. For this purpose, the representative of the LSBG initially discussed the critical flood event on Christmas 2023 in the area of Alte Süderelbe in Hamburg. Lack of drainage in combination with high precipitation led to critical water level causing threats to urban infrastructure. To conduct the semi-structured discussion session selected pre-defined questions were asked to start an exchange of expertise. The last session in that section of the regional workshop should be used to elaborate cornerstones for improving inland flood protection with nature-based solutions together with the participants based on the outcomes of the moderated discussion and exchange of expertise before. The 2. Regional workshop was closed by providing some final thoughts by the host.

For a more detailed description of the sessions and presentations refer to the section *Agenda*.

For a more detailed description of the target audience see section *Target Audience, Event Outcomes and Follow-ups*.

Programme

RECONECT Regional Workshop

PROGRAMME

Time	Title of the speech, speaker
Information about the EU-Horizon Project RECONECT	
14:00	**Welcome by the host**, Christian Ebel (BUKEA)
14:05	**Brief Overview of the EU-Project RECONECT**, Natasa Manojlovic (TUHH)
14:20	**Case Studies from Denmark and the Netherlands**, Christian Ebel (BUKEA)
14:35	**Results from the Vier- and Marschlande**, Dieter Ackermann (LSBG)
14:50	**Coffee Break**
Discussion and Exchange of Expertise regarding the Replication of the Project Results in further Drainage Areas along the Tidal Elbe	
15:25	**Case Study Alte Süderelbe Flood Event Christmas 2023**, Dieter Ackermann (LSBG)
15:40	**Moderated Discussion and Exchange of Expertise**, All
16:35	**Coffee Break**
16:55	**Cornerstones for improving inland flood protection with nature-based solutions**, All
17:25	**Closing**, Christian Ebel (BUKEA)
17:40	**End**

RECONECT

Horizon 2020 Research and Innovation programme

List of participants

N	Surname	Name	Company - Association
1	Ackermann	Dieter	Project Member, LSBG
2	Bartels	Peter G.	Local Interest Group „Zukunftswerkstatt Altes Land"
3	Bedey-Leube	Pascal	Dike Board, Water and Land Association, Waster Water Association Dithmarschen, Marsh Board Schleswig-Holstein
4	Brandt	Stephanie, Dr.	Ministry of Environment, Climate, Energy and Agriculture (BUKEA), Department for Water Management and Geology
5	Busch	Arne	Sluice Board Viersielen
6	Ebel	Christian	Project Member, Ministry of Environment, Climate, Energy and Agriculture (BUKEA), Department for Water Management and Geology
7	Friedrich	Boy, Dr.	Local Interest Group „Zukunftswerkstatt Altes Land"
8	Fröhle	Peter, Prof. Dr.-Ing.	Project Member, Hamburg University of Technology
9	Gruhn	Angelika	Project Member, Ministry of Environment, Climate, Energy and Agriculture (BUKEA), Department for Water Management and Geology
10	Hagenah	H. Arno	Local Interest Group „IG Este"
11	Knopp	Julius	Project Member, Helmholtz Center for Environmental Research (UFZ)
12	Köpke	Jörg	Sluice Board Francop
13	Manojlovic	Natasa, Dr.-Ing.	Project Member, Hamburg University of Technology
14	Meyns	Michaela, Dr.	Ministry of Environment, Climate, Energy and Agriculture (BUKEA), Department for Water Management and Geology
15	Nicolai	Robert	Maintenance Board Kehdingen
16	Podbielski	Rainer	Local Interest Group „IG Este"
17	Quast	Rolf	Summerdike board Rosengarten and Sluice Board Hohenwisch
18	Raydt	Hans-Joachim, Dr. med.	Local Interest Group „Zukunftswerkstatt Altes Land"
19	Reisberg	Frauke	Ministry of Environment, Climate, Energy and Agriculture (BUKEA), Department for Water Management and Geology
20	Schäfermeyer-Gomm	Stefanie	Ministry of Environment, Climate, Energy and Agriculture (BUKEA), Department for Water Management and Geology
21	Scholze	Olaf	Project Member, Ministry of Environment, Climate, Energy and Agriculture (BUKEA), Department for Water Management and Geology
22	Schrader	Matthias	Water Board Boberg-Heidhorst
23	Storm	Peter	Water Board Nettelnburg
24	Supper	Heidi	Borough of Harburg
25	Uphoff	Henning	Water and Landscape Board Herzogtum Lauenburg
26	Veithen	Corine, Dr.	Sluice Board Neuenfelde

RECONECT

Agenda

Welcome by the host
Christian Ebel
The hosts warmly welcomed the participants to the second regional workshop in the RECONECT project in the conference center of the Ministry of Environment, Climate, Energy and Agriculture. Christian Ebel explained the overall aim and purpose of the workshop briefly.

Brief Overview of the EU-Project RECONECT
Natasa Manojlovic
The speaker started her presentation by introducing herself and talking about the increasing threats caused by hydrometeorological extreme events and the exacerbation by ubiquitous climate change. She raised the question of the efficiency of existing protection infrastructure and explained the changing mind set from using only traditional protection infrastructure to solutions, which do also serve further goals (e.g. ecological and human well-being) apart from the mere hydraulic engineering purpose, so called nature-based solutions. She explained, that there only few examples for such solution at present, that could serve as a proof of concept or reference for replication and upscaling. Thereupon, the speaker defined the term nature-based (NBS) solution and the differences between large scale and regional/small scale NBS and presented few first examples of NBS measures. This leads her to the introduction of the project RECONECT mentioning the aim and the basic project information. Furthermore, she explained the integrative and holistic approached followed in the project aiming at development of individual solutions adjusted to social, geographical, technical, institutional and political conditions and its application in the demonstrator and collaborator sites. With regard to the demonstrator and collaborator site Mrs. Manojlovic also explained the differences in the level of implementation of NBS. Towards the end of her presentation she briefly indicated the concept of evaluation of benefits and co-benefits for the indicator Water, Nature and People as well gave examples for the experiences and findings made within the project. The presentation finished with a summary and an outlook.

Case Studies from Denmark and the Netherlands
Christian Ebel
Before the representative of the LSBG presented the project activities and results of the Hamburg demonstration site, the host of the regional workshop showed briefly two more case study areas from the RECONECT network of cases. On the one hand, he talked about

the case study area in Denmark being Odense i.e Seden Strand a demonstrator A site. It was explained, that in this demonstrator area the municipality of Odense relocated a dike to reduce coastal flood risk and enhance coastal biodiversity. Approx. 54 ha of diked grassland were transformed allowing for a more natural development of the coastal riparian ecosystem and flooding during winter storm surges. On the other hand, the host presented the project "Room for the river" in the Netherlands as an example of largescale project on restoration of river's natural flood plains to reduce the risk of flooding. He explained the difficulties the project faced and the lack of acceptance by residents and how their mind set changed over time.

Results from the Vier- and Marschlande

Dieter Ackermann

Dieter Ackermann presented the project activities and the related results carried out by the LSBG (State Agency Roads, Bridges and Waters) within the RECONECT project. His presentation was entitled "Results from the Vier- and Marschlande".

First the speaker outlined the project activities of the LSBG covering i) development and implementation of a concept for flood management with the use of storage areas on bodies of water (hybrid solution) and ii) development and implementation of a monitoring concept for the "water" indicator in accordance with the requirements of the RECONECT project.

Following that, Mr. Ackermann explained the characteristics of inland drainage of the project areas and threads arising from floods. It was stressed, that a significant risk of flooding of low-lying areas occurs in cases of storm surges and high precipitation events leading to high water levels in front and behind the flood protection dikes. In cases of higher water levels in the Tidal Elbe (= outside of the flood protection dikes) the dike lock Tatenberg will be closed. The dike lock Tatenberg provides the regular gravity drainage of the Vier- and Marschlande. If extreme rainfall events occur in the catchment area of the Bille river (which flows into the Dove-Elbe river) leading to high water levels in the Dove-/Gose-Elbe and connected ditches the risk of flooding increases significantly. Furthermore, the speaker showed a schematic diagram of the river system respectively drainage system (including the water management facilities) to illustrate the complexity of the given hydrological and hydraulic situation in the focus area. This area is meant to store flood water during extreme events and lastly drain it into the Tidal Elbe.

In order to reduce the flood risk in that area, a concept of a preventive flood management was implemented. Based on forecast and real time meteorological and hydrological data the development of the discharge and water levels within the river system can be assessed using a complex hydrodynamic-numerical model of the river system. Resulting from different scenario simulations the operation of the infrastructure (i.e. Tatenberg dike lock) can be optimized as required in order to use the natural retention volume of the river system. Furthermore, the preventive flood management was extended to an operational flood forecast and management system implemented by means of the Delft-FEWS Software.

From the numerical models the following operation rules were determined which are to be

applied in case a flood event is forecasted:

- Lowering of the water level in the Dove-Elbe by 20 cm prior to the event
- Drainage through 3 dike lock openings at water levels of NHN +110 cm in the Dove-Elbe
- Extension of the drainage duration by allowing a higher permitted water level difference of 1,9 m (current state 1,6 m) between the Tidal Elbe and Dove-Elbe

The application of the operation rules leads to a lowering of the water level by 15 cm during a flood event with blocked drainage. More impressive: in case of flood situations without blocked drainage a water level lowering by 50 cm. In addition, an increase of the drainage capacity by approx. 350 Mio m³ per Tide compared to the current state of dike lock operation could be achieved.

Mr. Ackermann showed two examples of the enhanced flood management concept as visualised in Delft-FEWS.

In the end of his presentation, the speaker addressed the developed monitoring concept to assess and proof the efficiency the hybrid NBS approach. He explained the special key point of the monitoring concept, that as assessment of the efficiency can only be made by comparing the measured water levels (during the event) with the water levels simulated using the traditional operation rules and showed an overview of the data used for monitoring purposes.

As an example, the speaker used the flood event that occurred in February 2022. This extreme event (worst event ever recorded) was characterized by a series of severe storm surges in the Tidal Elbe leading to the closure of the dike lock Tatenberg, impeding the drainage of the Vier- and Marschlande, in combination with heavy rainfall events over the catchment areas of the Dove- and Gose-Elbe as well as in headwaters of the Bille, leading to an increased discharge in the river system of the demonstrator area. This combination of unfavourable conditions led to a serious flood event in the Vier- and Marschlande during which the officials successfully applied the newly developed operating rules for the dike lock Tatenberg, whereby the flood situation could be successfully eased. Pictures of the impact of that flood event completed the impression.

A summary concluded the presentation of the representative of the LSBG.

Case Study Alte Süderelbe Flood Event Christmas 2023

Dieter Ackermann

After a short break with snacks and beverages, the interactive session on "Discussion and Exchange of Expertise regarding the Replication of the Project Results in further Drainage Areas along the Tidal Elbe" was conducted. The session started by a brief talk of Dieter Ackermann on the flood event in December 2023 in the area of the Alte Süderelbe. He characterised hydrometeorological conditions of that flood event and explained key issues of the development of the flood situation. Subsequently, the characteristics of the catchment area was examined to discuss the replication potential of the hybrid NBS approach for the

Alte Süderelbe.

Moderated Discussion and Exchange of Expertise

All, Moderator: Christian Ebel

The session aimed at the discussion of the replication potential of the conceptual hybrid approach. To begin with, results from a short preparatory survey (see the following figures) circulated prior to the workshop were presented. That survey covered the following topics i) brief description of the drainage area, ii) potential consternation with regard to flood events, iii) awareness of the term NBS, iv) open-mindedness regarding the implementation of NBS and v) goals for the future-oriented flood management.

Name	WBV Dellvenau-Stecknitz und weitere E2G (Herzogtum Lauenburg)	Wasserverband Nettelnburg	Sielverband Hohenwisch Sommerdeichverband Rosengarten
Flächengröße	6.200ha	125ha	122ha
Lages des und Entwässerung in welchen Vorfluter	Elbe-Lübeck-Kanal / Elbe	Gräben in Nettelnburg führen in das Fleetsystem Neuallermöhe und dann in die Dove-Elbe	Moorwettern, Hohenwischer Schleusenfleet, Verbindungsgewässer Neuenfelde
Zuflüsse von außen in das Gebiet	E2G der Stecknitzniederung (SH/MV)	Regen von oben	Elbe, Alte Süderelbe
Welche wasserwirtschaftl. Anlagen betreiben Sie? Sind diese tideabhängig? Werden diese automatisch betrieben?	u.a. Schöpfwerk Lauenburg Tide bei hohen Sturmflutwasserständen relevant automatisiert	Alle Gräben sind im Besitz der Anlieger, von den sie in Ordnung gehalten werden müssen. Der Wasserverband überwacht die Reinigung und Pflege durch die Anlieger.	Entwässerungspolderpumpen (nicht tideabhängig)
Haben die hydrometeorologischen Extremereignisse in den letzten Jahren in ihren Gebieten zu Problemen geführt? Wenn ja, worin bestanden die Defizite?	Ja, zeitgleich Binnen- und Elbehochwasser, Risiko bisher unberücksichtigter Szenarien	Das Grabensystem ist von 1930 und der heutigen Versiegelung und den heutigen Starkregen nicht mehr gewachsen. Jeder Starkregen führt zu Problemen.	Verbandsflächen sind bei 780 Süderelbe vollgelaufen
Sind Ihnen naturbasierte Lösungen für den Binnenhochwasserschutz ein Begriff?	Ja	Ja	Ja
Können Sie sich vorstellen, naturbasierte Maßnahmen in das Hochwasserschutzmanagement zu integrieren?	Bei absehbarer Effizienz: Ja	Das wird schwierig, denn alle Gräben sin dim Besitz der Anlieger und der Wasserverband hat über 1000 Mitglieder. Dennoch wird versucht, die Verbandsmitglieder zu Rückhaltemaßnahmen zu motivieren, teilweise sogar zu verpflichten.	Nein
Was sind ihre Ziele für ein zukunftsorientiertes Hochwassermanagement?	Integriertes E2G-Management, Retentionsoptimierung, HW-Poldermanagement	Es gibt beim Wasserverband Nettelnburg einen Maßnahmenplan, der mit Hilfe eines Ingenieurbüros aufgestellt wurde. Siehe hierzu: www.nettelnburg.com/grabenschauen/verbesserung-der-leistungsfaehigkeit-des-grabensystems/	Schöpfwerk Storchennestsiel, ausbaggern der jetzt verlandeten Süderelbflächen, Elbesperrwerk

Figure 1: Results from a preparatory survey circulated prior to the workshop

Name	Schleusenverband Francoop	Unterhaltungsverband Kehdingen	Deich- und Hauptsielverband Dithmarschen
Flächengröße	550ha	27.000 ha	102.699 ha
Lages des und Entwässerung in welchen Vorfluter	Moorwettern/Nordwettern, Alte Süderelbe	LK Stade, Entwässerung in die Elbe und Oste	Eider, Elbe, Nordsee, Nord-Ostsee-Kanal
Zuflüsse von außen in das Gebiet	Nein	Nein	Ja
Welche wasserwirtschaftl. Anlagen betreiben Sie? Sind diese tideabhängig? Werden diese automatisch betrieben?	Marschentwässerung, 14 Polderpumpen, 1 Hauptpumpe (automatisiert und tideabhängig)	160 Siel- und Schöpfwerke, 95 % automatisiert, ca. 12 Siele sind tideabhängig	Schöpfwerke und Mitteldeichsiele, teilweise tideabhängig
Haben die hydrometeorologischen Extremereignisse in den letzten Jahren in Ihren Gebieten zu Problemen geführt?	Wasserstand der Alten Süderelbe zu hoch, vorausschauendes Wassermanagement fehlt	Leistungen der Schöpfwerke zu gering, es kam partiell zu Überflutungen, Schäden traten nicht auf	Ja, hydraulische Überlastung auch in Kombination mit Nordsee-Sturmfluten
Sind Ihnen naturbasierte Lösungen für den Binnenhochwasserschutz ein Begriff?	Ja	Ja	Ja, Böschungsabflachungen umgesetzt, Niederungsstrategie 2100 in Planung
Können Sie sich vorstellen , naturbasierte Maßnahmen in das	Nein. Wohnbebauung, hochwertige Obstflächen	Ja	Ja, zur Bewässerung und Renaturierung
Was sind Ihre Ziele für ein zukunftsorientiertes Hochwassermanagement?	Ständige Erneuerung und Optimierung der Polderpumpen aus eigenen Mitteln, Instandhaltung und Erneuerung der Vorflutleistung ist aus eigenen Mitteln nicht möglich, aber im Zuge des Klimawandels unbedingt nötig	Leistungserhöhung der Schöpfwerke, Vergrößerung der Vorflut, Wassermanagement KI-basiert.	Klimafolgen bestmöglich mit den landw. Geprägten Strukturen in Einklang bringen

Figure 2: Results from a preparatory survey circulated prior to the workshop – continued

The tool Mentimeter was used to conduct the discussion in a semi-structured manner among the participants. The following figures present the questionsthat were asked and the corresponding answers given. The questions were phrased in German as the the workshop was held in the mother tongue of all attendees.

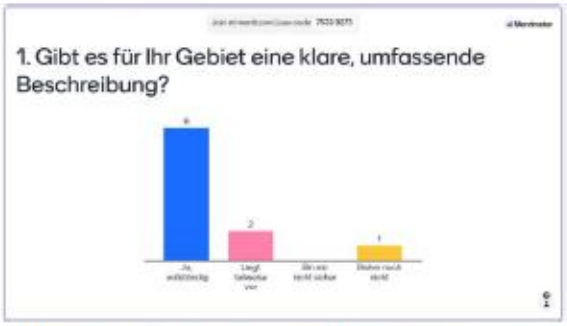

Figure 3: Question 1 - "Is there a clear, comprehensive description for your area?"

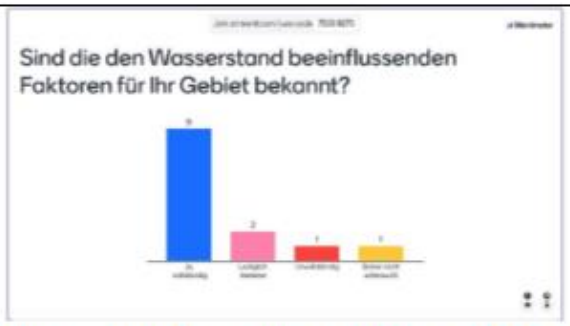

Figure 4: Question 2 – "Are the factors influencing the water level in your area known?"

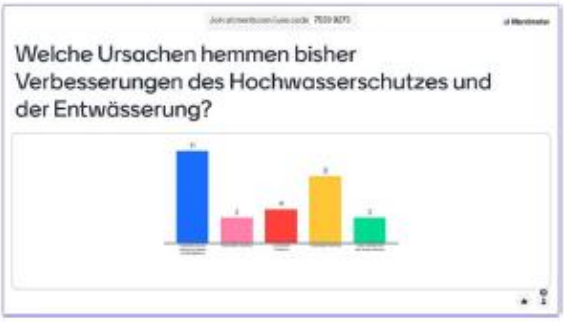

Figure 5: Question 3 - "What causes have so far hindered improvements in flood protection and drainage?"

Figure 6: Question 4 - "Ranking the causes of the obstacles"

Figure 7: Question 5 - "Looking at the examples: Is the situation similar in your area?"

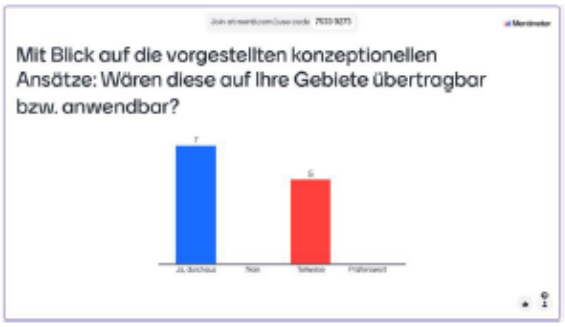

Figure 8: Question 6 - "With regard to the conceptual approaches presented: Would these be transferable or applicable to your areas?"

Figure 9: Question 7 - "How do you rate the acceptance of nature-based solutions for inland flood protection in your region?"

Figure 10: Question 8 - "How do you assess the willingness of stakeholders/residents to participate in nature-based measures?

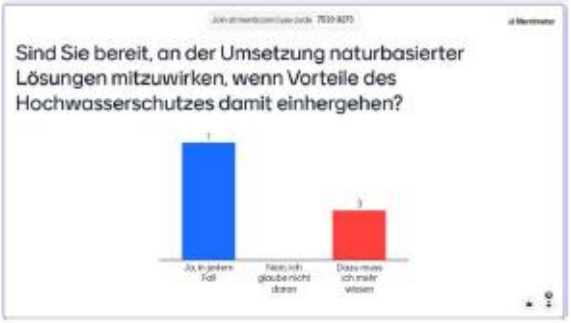

Figure 11: Question 9 - "Are you willing to contribute to the implementation of nature-based solutions if they offer flood protection benefits?"

Cornerstones for improving inland flood protection with nature-based solutions

All, Moderator: Christian Ebel

Initially, that session aimed at the development of cornerstones for the development and implementation of NBS measures for improving inland flood protection and should be conducted in an open discussion format, in which the host together with the participants elaborate a roadmap for NBS implementation. The following figure shows the finished roadmap. The elements of the depicted road map are given in German as it was the workshop language.

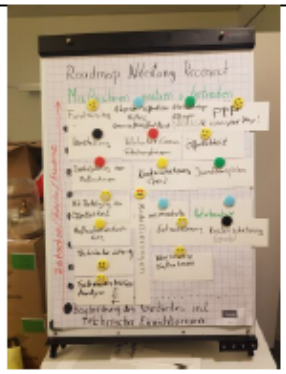

Figure 12: Finished roadmap implementation of NBS for improvement of inland drainage

As the discussion with the audience was very vivid and lively all throughout the previous sessions as well and time was running out, the hosts decided to skip that last session. The hosts didn't want to exceed the time either, as the German national team was playing in the European Football Championship that Wednesday evening.

Closing

Christian Ebel

At the end of the event, the speaker summarised what has been heard and what had happened during the evening.

The speaker thanked those present for the lively discussion, the open exchange and the pleasant evening.

Target Audience, event outcomes and follow-ups

Target Audience

This second regional workshop can be regarded as a follow-up of the first regional workshop held in July 2022 in the project area Vier- and Marschlande. The target audience for this second workshop focussed on representatives from water boards and dike associations as well as professionals from the field of flood protection, flood and water management from directly neighbouring municipalities and such located along the tidal Elbe as it was the aim of assessing the upscaling and replication potential of the hybrid NBS concept. A list of the participants can be found in the section *List of participants*.

Outcomes

In the course of the workshop the EU project RECONECT was introduced and the Hamburg partners presented project activities with regard to improving inland drainage by application of hybrid nature-based solutions to mitigate flood risks. The presented conceptual approach of improving flood protection by nature-based solutions was so well received, that a vivid and fruitful discussion developed after each presentation.

In the end, the discussions took a large amount of workshop time, so that the host decided to skip the last item on the agenda in favour of an extended discussion with the participants.

The following findings could be derived.

1. The participants agreed upon the potential to replicate the conceptual results of the Hamburg demonstration area in other regions of similar hydrological and water management settings in marsh areas the Elbe river.
2. It was stressed that the found results (proactive lowering of water levels) should be applied given priority to the drainage area of the Alte Süderelbe, which also drains through a dike lock. In this drainage area critical water levels can be observed in case that drainage by gravity is not possible. The representatives of the public administration were urged to apply the conceptual approach as soon as possible. The administration promised to follow this recommendation after a thorough analysis of the given situation.
3. Public awareness should be raised and information campaigns should be intensified to educate about the threat of flooding due to precipitation in combination with a lack of drainage in urban areas in the Elbe marshes in addition to regular storms surges, against which areas are protected by sea dikes. Many people are unaware of this setting and are somewhat taken by surprise if such events occur.
4. Communication and coordination of measures during the flood event of Alte Süderelbe in December 2023 were identified as a weak point which need improvement for the future.

5. All participants agreed that formats like the workshop run by the RECONECT team help considerably to provide input by third parties and should be institutionalised by the BUKEA.

6. BUKEA announced that the directorate in charge of flood protection will create a new permanent position for a coordinator to enhance cooperation and information between the stakeholders related to flood protection starting in the year 2025. This should be understood as a further result beyond what was achieved by RECONECT.

Follow-Ups

Based on the positive experiences and fruitful discussion BUKEA will facilitate further workshops to promote the acceptance of NBS in conjunction with flood protection and to facilitate an enhanced public participation process.

The communication of the project results will be intensified and updated with the replication of the conceptual approach at Alte Süderelbe area.

The new position of the coordinator for flood hazard management in the directorate for flood protection of BUKEA will seek to implement NBS in further flood protection measures of the City of Hamburg whenever feasible.

On-line proceedings

PDF files of the presentations (in German) and the results of the quality questionnaire are attached to this document.

On-line proceedings: http://www.reconect.eu/national-workshops/second-elbe-estuary-workshop/

3 Report of the RECONECT National Workshop in Denmark of DA-2, Seden Strand Odense and DB-3 Egå Engsø & Lystrup Aarhus

Karen Blixens Boulevard 7, 8220 Brabrand
Aarhus, 24-25.08.2023

Workshop rationale and outlines
The workshop was organised by 4 partners: Aarhus Municipality, Odense Municipality, Rambøll and Amphi International representing together Danish Demonstrators: DB-3 and DA-2.

The purpose of the workshop was:

- to disseminate results of the RECONECT project with focus on Demonstrator Seden Strand (DA-2) and Egå Engsø/Lystrup (DB-3),
- to discuss how to create synergy between nature, climate adaptation and mitigation in NBSs
- to discuss possibilities of up scaling solutions used in RECONECT
- to network and exchange knowledge with other projects as e.g. H2020 project,Ponderful (POND Ecosystems for Resilient Future Landscapes in a changing climate, https://ponderful.eu/),

The workshop was organised as 2 days (24-25.08.2023) face-to-face event in the Aarhus Municipality office.

During the first day the results of the RECONECT project were presented during 3 sessions:

Session I: Introduction to the Reconect Demosites in Aarhus and Odense,

Session II: Presentation of the results from monitoring of ‘water’, ‘people’ and ‘nature’.

Session III: Field trip to Egå Engsø and Lystrup.

Day two has given input to discussion on upscaling of NBS solutions. There were organised 3 sessions with input from both external experts and partners from the Reconect project, relevant for the discussion on the NBS upscaling:

Session I: Climate mitigation, with two presentations about balance in climate gas emissions from wet coastal habitats and from freshwater habitats.

Session II: How Aarhus Municipality implements climate adaptation programme to achieve synergies.

Session III: Workshop – how to achieve synergies in NBSs? The workshop was facilitated by Rambøll and contained groupwork, where the participants discussed solutions for climate adaption challenges in a coastal location with a river outlet. The discussion was divided into three parts, and the participants discussed possible NBS solution, possibilities for multifunctionality (water, nature people) and prioritization between different solutions.

Programme

Håndtering af klima- biodiversitetskrisen gennem naturbaserede løsninger med plads til vand, natur og mennesker

Hvordan skaber vi synergi mellem klimatilpasning, natur og rekreativ anvendelse? Erfaringer fra tre forskellige demosites

INVITATION TIL WORKSHOP

Dato: 24. og 25. august 2023
Sted: Karen Blixens Boulevard 7, 8220 Brabrand

Deltagelse er gratis.
Tilmelding senest den 15. august via:
ivservice.nemtilmeld.dk/536/

Aarhus Kommune og Odense Kommune har siden 2018 deltaget i det EU-finansierede Horizon 2020 projekt RECONECT. RECONECT er et internationalt forsknings- og udviklingsprojekt med deltagere fra lande i Europa, Asien og Sydamerika.

Projektet undersøger bl.a., hvordan naturbaserede klimatilpasningsløsninger skaber værdi for natur og mennesker, samtidig med at de reducerer risikoen for oversvømmelse. Aarhus Kommune har i projektperioden undersøgt, om og hvordan Egå Engsø og udvalgte klimatilpasningslokaliteter i Lystrup har bidraget til mere natur og flere rekreative værdier. Odense Kommune har i regi af projektet etableret tilbagetrukne, naturbaserede diger og skabt mere plads til strandeng, kystdynamik og mennesker ved Seden Strand.

I dette arrangement kan du høre om resultaterne fra Aarhus og Odense, og om søer og kysthabitaters effekt på tilbageholdelse af kulstof og emission af klimagasser. Endelig får du mulighed for at diskutere, hvordan man skaber synergier mellem bl.a. natur, klimatilpasning og klimagas-reduktion i naturbaserede klimatilpasningsløsninger.

Session	Indhold	Oplægsholder	Start	Slut
	Kaffe og registrering		9.30	10.00
Velkommen	Velkommen og introduktion til dagens program.	Aarhus Kommune og Odense Kommune	10.00	10.10
RECONECT og naturbaserede løsninger Oplæg på engelsk	Introduktion til EU-projektet RECONECT og projektets definition af naturbaserede løsninger.	Zoran Vojinovic - Associate Professor of Urban Water Systems på IHE Delft	10.10	10.40
Session I - Intro til demosites - Aarhus	Kort præsentation af Egå Engsø og klimatilpasningsprojekterne i Lystrup	Signe Iversen og Nicolai Munk, Aarhus Kommune	10.40	11.00
Session I - Intro til demosite - Odense	Kort præsentation af projektet ved Seden Strand - Hvordan har vi tænkt de forskellige funktioner ind i projekterne, og hvordan kunne det gøres bedre? Hvilke forventninger havde vi?	Lars Kildahl Sønderby, Odense Kommune	11.00	11.20
	Kort pause		11.20	11.30
Session II - Mennesker: Hvordan værdisætter borgerne de tre NBS'er?	Præsentation af RECONECTs resultater fra spørgeskemaundersøgelser. DTU har spurgt borgerne omkring de tre demosites, hvordan de bruger, oplever og værdisætter de naturbaserede løsninger. Med udgangspunkt i svarene har DTU beregnet borgernes villighed til at betale for naturbaserede løsninger.	Martina Vitti, Rambøll / Roland Löwe, DTU	11.30	12.00
	Frokost		12.00	13.00
Session II - Vand: Har de tre NBS'er reduceret risikoen for oversvømmelse?	Præsentation af RECONECTS resultater fra vandmonitering. Aarhus og Odense Kommune har monitoreret de tre demosites' evne til at reducere oversvømmelsesrisikoen fra hhv. vandløb, regn og hav.	Nicolai Munk, Aarhus Kommune / Lars Kildahl Sønderby, Odense Kommune	13.00	13.15
Session II - Natur: Er der skabt mere natur og biodiversitet?	Præsentation af RECONECTs resultater fra naturmonitering. Amphi Consult og Grøn-consult har monitoreret fugle, planter, padder, og pattedyr i de tre demosites. Resultaterne giver indblik i, hvordan natur og biodiversitet har udviklet sig efter etablering af NBS'erne.	Marzenna Rasmussen, Amphi Consult / Per Nissen Grøn, Grøn-consult	13.15	14.00
Session III - Følttur	Præsentation af følturen.	Signe Iversen, Aarhus Kommune	14.00	14.15
Session III - Følttur	Vi kører i bus til Egå Engsø og udvalgte klimatilpasningslokaliteter i Lystrup. Her fortæller vi mere om hvordan vi har tænkt synergi mellem vand, natur og mennesker ind i projekterne, og der bliver mulighed for at gå i dybden med resultaterne fra RECONECT, samt dialog om, hvordan man eventuelt kunne have indrettet de naturbaserede løsninger, så man kunne opnå endnu større performance på natur og biodiversitet.		14.15	17.00
Afslutning dag 1	Afslutning og teaser til dag 2.	Lars Kildahl Sønderby, Odense Kommune	17.00	17.00
Fælles spisning	Mulighed for at deltage i selvbetalt fælles spisning centralt i Aarhus		18.30	20.30

Klimatilpasning, klimaafbødning og natur - hvordan kommer vi videre

Program dag 2.

Session	Indhold	Oplægsholder	Start	Slut
	Kaffe og registrering		9.30	10.00
Velkommen	Velkommen og præsentation af dagens program.	Signe Iversen / Lars Kildahl Sønderby	9.30	9.45
Session I: Klimaafbødning - søer Oplæg på engelsk	Udledning af drivhusgasser fra vandhuller og potentiale for lagring af CO_2 (Ponderful) EU-projektet Ponderful undersøger, hvordan søer, vandhuller og regnvandsbassiner bidrager til biodiversitet og økosystemtjenester, især med fokus på balancen mellem kulstoflagring og emissioner af drivhusgasser. Thomas Davidson fra Aarhus Universitet vil fortælle om måling af udledning af drivhusgasser fra vandhuller i DK og Europa. Derefter vil vi også fokusere på vandhullerne i Lystrup og vurdere, om de samlet set er kilder til udledning eller reduktion af drivhusgasser, samt om vi kan identificere årsagerne til de observerede forskelle.	Seniorforsker Thomas Davidson, Aarhus Universitet - Institut for Ekoscience - Søekologi	9.45	10.15
Session I: Klimaafbødning - kyster Oplæg på engelsk	Lagring og emmisioner af klimagasser fra kysthabitater (Blue Carbon). Kysthabitater, herunder strandenge, har et stort potentiale ift. at lagre CO_2 og styrke biodiversiteten samtidig med at de - sammen med tilbagetrukne diger - kan afbøde, oversvømmelser fra havet.	Associate Professor Cintia Organo Quintana, Syddansk Universitet	10.15	10.45
	Kort pause		10.45	11.00
Session II: Sådan arbejder vi med synergier i Aarhus Kommunes klimatilpasningsprogram	Programleder fra Aarhus Kommunes Klimatilpasningsprogram fortæller om, hvordan kommunen arbejder med prioriteringer af klimatilpasningsløsninger og med synergier mellem klima, natur og mennesker.	Birgit Sønderskov Weber, programleder for klimatilpasning, Aarhus Kommune	11.00	11.30
Session III: Workshop - præsentation	Introduktion til workshoppen.	Rambøll	11.30	11.45
	Frokost		11.45	12.45
Session III: Workshop	På workshoppen skal vi undersøge, hvordan vi kan arbejde med synergier og opskalering af naturbaserede løsninger i forbindelse med klimatilpasning. Hvilke muligheder og hvilke problemer støder vi ind i? Og hvordan får vi mest mulig natur ind i vores klimatilpasningsprojektet? Disse spørgsmål og mange flere, kommer vi til at vende i eftermiddagens workshop.	Rambøll	12.45	14.30
Session III: Workshop - opsamling	Opsamling.	Rambøll	14.30	15.00
	Afslutning	Rambøll	15.00	

Kontaktpersoner:
Signe Iversen, Århus Kommune (sliv@aarhus.dk)
Lars Kildahl Sønderby, Odense Kommune (lkis@odense.dk)

List of participants

Deltagerliste:	RECONECT workshop om naturbaserede løsninger - august 2023			
Fornavn	**Efternavn**	**E-mail**	**Mobilnummer**	**Firma eller Organisation**
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birgitte	knudsen	bibk@nyborg.dk	23666873	Nyborg Kommune
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This workshop is a part of the RECONECT project. This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grand agreement No 776866.

Deltager liste

National Workshop

Aarhus Kommune og Odense Kommune

24. and 25. august 2023

Agenda

Day 1 - Welcome by the hosts

1. **Title: Welcome by the hosts**

Speakers: Signe Iversen (Aarhus Municipality) and Lars Kildahl Sønderby (Odense Municipality)

The hosts welcome the participants and set the scene for the 2-day workshop.

2. **Title: Introduction to RECONECT and Nature Based Solutions**

Speaker: Zoran Vojinovic (IHE Delft) – Coordinator of RECONECT

Zoran introduces the concept of NBS, presents the RECONECT project and shows how the partners of the project work with NBS solutions across the world.

Day 1 - Session 1: Introduction to the demo sites

1. **Title: Introduction to the demo site in Aarhus**

Speakers: Signe Iversen (Aarhus Municipality) and Nicolai Andres Munch (Aarhus Municipality)

Signe introduces the part of RECONECT demo site in Lystrup and describes the different functionalities of the subsite. She describes the NBS in the area and introduces very briefly the monitoring activities in the nature and people pillar financed by RECONECT. Nicolai introduces the project subsite Lake Egå and presents selected people, nature, and water monitoring results from the sub- site.

2. **Title: Introduction to the demo site in Odense**

Speaker: Lars Kildahl Sønderby (Odense Municipality)

Lars introduces the RECONECT demo site Seden Strand. He describes the measures and NBS that has been financed by the RECONECT project in the area. He also presents the monitoring results for the water indicators, and gives some reflections on upscaling to kick off and inspire a discussion that will be a part of the day 2 workshop. He also explains challenge of finding and balancing synergies between water, nature and people in nature-based solutions.

Day 1 – session 2: RECONECT monitoring results

Results - People

Martina Viti (Rambøll) and Roland Löwe (DTU)

Martina and Roland present the RECONECT financed results from the people survey based on questionnaires, DTU has carried out in Aarhus and Odense. They introduce the survey, the respondents, their preferences, perceived risks, willingness to pay and they compared the results to results from surveys in other European RECONECT demo sites.

In this presentation the results of the RECONECT surveys in Aarhus and Odense were shown, together with an overview how they can be used for further analyses. Martina presented the citizens' use of, their experiences around, and their valuation of the three NbS in Aarhus and Odense, as well as the way they are influencing each other. Roland showed how the results of these and other similar studies can be used to create valuation models to scale up NbS valuations to other areas.

Results – Nature

Speakers: Marzenna Rasmussen (Amphi International), Kristoffer Hansen (Amphi International), Per Nissen Grøn (Grøn-Consult)

Marzenna Rasmussen introduces the monitoring programmes for Odense and Aarhus Demo-sites that has been carried out in Seden Strand, Lystrup and Lake Egå. She also presents results of monitoring of vegetation as well as amphibians. Kristoffer Hansen presents results from monitoring of birds, that he has carried out in the Odense Demo- site in Seden Strand.

Per Nissen Grøn introduces the results from his monitoring in 2020 of vegetation, birds, mammals, insects and small lake animals in and around Lake Egå. He also couples the results to former monitoring activities in Lake Egå, thus being able to show how the nature and biodiversity has developed in and around Lake Egå since the establishment in 2006.

Day 1 – session 3: Field Trip

The participants visit the demo-sites in Lystrup and Lake Egå

Speakers: Signe Iversen (Aarhus Municipality) and Nicolai Andres Munch (Aarhus Municipality)

Signe Iversen and Nicolai Andres Munch present the nature-based solutions implemented in Lystrup and Lake Egå (Aarhus Demo-sites) during the field trip.

Day 2 – Welcome by the hosts

Title: Welcome to day two and introduction to the program

Speakers: Lars Kildahl Sønderby and Signe Iversen

Day 2 – Session 1: Climate mitigation

Title: Carbon storage and climate gas emmision from fresh water ponds (Ponderful).

Speaker: Senior Researcher Thomas Davidson, AU (Aarhus Univeristy)

Thomas Davidson presents research and results from another Horizon 2020 project - Ponderful. He takes us through theory and observations of carbon sequestration and emission of methane and nitrous oxides from ponds. Some of the observations has been carried out in the same ponds in Lystrup that are part of the RECONECT project.

Title: Carbon storage and climate gas emmision from marine araes (Blue Carbon).

Speaker: Associate Professor Cintia Organo Quintana, SDU (University of Southern Denmark)

Cintia takes us through theory and observations of carbon sequestration and emission of methane and nitrous oxides from coastal marine waterbodies and the effect of salinity on methane emissions. Some of the observations has been carried out in Seden Strand.

Day 2 – Session 2: Climate Adaptation Program in Aarhus Municipality

Title: How we work with synergies in climate adaptation in Aarhus

Speaker: Birgit Sønderskov Weber (Head of the climate adapttion program in Aarhus)

Birgit presents the climate adaptation program in Aarhus Municipality and describes how the municipality works with synergies between risk reduction, nature and people benefits. She tells about the different possibilities for financing of climate adaptation solutions and of the necessity of coordination between different parts of the municipality. She also talks about the concept of landscape based water planning and about the great complexity of projects when different agendas area to be taken into consideration.

Day 2 – Session 3: Workshop – Upscaling of nature-based solution

Title: Introduction to workshop

Speaker: Martina Viti and Dorthe Pinholt (Rambøll)

Matina and Dorthe introduces the coming workshop.

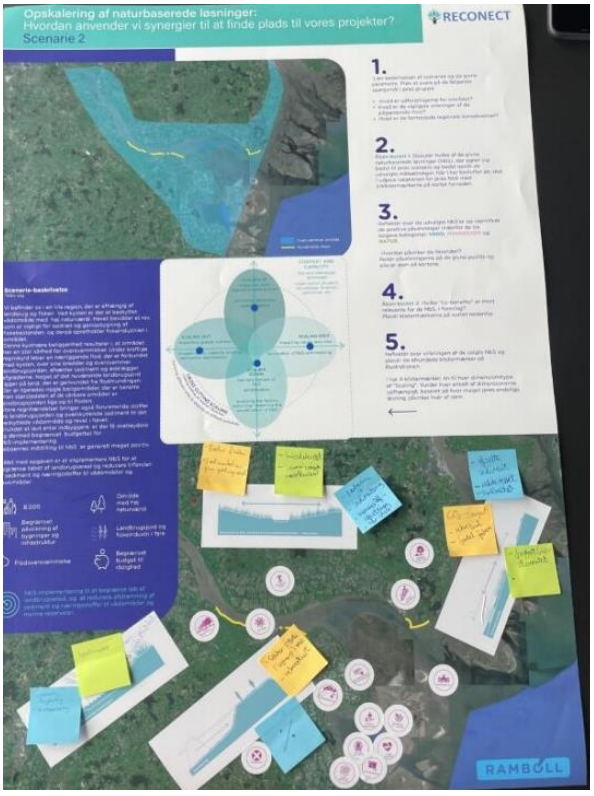
Title: Workshop

Moderator: ***Martina Viti, Dorthe Pinholt, Caroline Egemose Høgfeldt (Rambøll)***

The focus of the workshop was to reflect on the lessons learned from the Danish RECONECT case studies (and other NbS projects) regarding the synergies between different challenge areas (i.e., how water, people and nature benefits of NbS interact with each to create more effective solutions), and how can they be upscaled to other/new projects. The discussion was facilitated by dividing the participants in smaller groups, each of which was presented with one of two fictive scenarios with different hydro-meteorological risks. The participants had to choose which NbS to implement to reduce the risk in the scenario, and then analyze which benefits and synergies were produced as a result. As a last task, the groups compared their solutions with each other.

The participants are divided into 4 groups and each group are getting a case area with risk of flooding. The workshop is facilitated in 4 different steps, and the participants are going to

find solutions (nature based), that fits the specific case area and the characteristics and challenges of the area. The participants are also forced to reflect on the impact (water, nature, people) of the solutions they choose



Title: Workshop - reflections

Moderator: Dorthe Pinholt (Rambøll)

Dorthe reflects with the participants about the outcome of the workshop.

Target Audience, event outcomes and follow-ups

The audience

The target audience for the workshop was professionals and administrators working with NBS in Danish municipalities and water utility companies. Some of the participants worked primarily with nature and some worked primarily with water and climate adaption, and some with areal planning. Thus a large variation of perspectives were present.

The discussion topics

The audience brought their own experience working with climate adaption and nature into the discussion, and they were in general very engaged in posing questions to the speakers and going into discussions especially about the possibilities of creating synergies and the challenges of prioritizing between different measures and objectives when choosing the optimal NBS for a specific challenge. This was evident both during the session with presentation, the field trip and especially during the workshop on day two.

It was evident from the discussions, that often there are no easy solution when you need to identify an optimal NBS for a given challenge on a given location, and therefore you sometimes need to do some trade-offs between risk reduction, nature improvement, climate mitigation and recreative possibilities. It became evident, that in Denmark important factors for these decisions are – apart from financial/funding possibilities and restrictions – how decision making among local politicians, local planning frames and national legislation are crucial factors that can both limit and support the possibilities for optimizing a specific NBS. Stakeholder engagement was also discussed, especially during the workshop on day two, where it was a part of the case-setup, that local stakeholders had specific impact on the possible solutions.

Outcomes of the workshop activities

Reconect know-how concerning NBS build up during the project have enabled full achievement of the aims set up for the workshop and contributed to the dissemination of the project on the national scale.

The workshop supported and enforced discussion that allowed the audience to reflect on the possibilities and challenges of creating synergies between climate adaption, nature, climate mitigation and social aspects.

Also the workshop has introduced new knowledge and enforced discussion about e.g. climate gas balances in different kinds of wet NBS, since this topic in recent years has become very relevant because of governments effort to reach national climate goals. E.g. in Denmark new public subsidy schemes are now also focusing on climate gas reduction in NBS and many local governments have increased focus on supporting NBS-projects, that also reduce emission of climate gasses.

Outcomes for the participants were among others: increased knowledge on NBS projects (e.g., lessons learned before and during construction of the NBS, methods and result of monitoring, available tools to tackle barriers, good understanding of NBS synergies), new ideas to put into practice in their field/work, increased understanding of upscaling, inspiration to implement NBS.

Outcomes for the organizers: feedback on their own projects from “external” experts (if there were missed opportunities as well as other perspectives), knowledge on other projects’ barriers and/or successes, knowledge gaps in terms of NBS synergies (is there something that is still not clear? what could be improved?), proof of successful dissemination of their learnings from planning to implementation and monitoring of NBS.

On-line proceedings: http://www.reconect.eu/national-workshops/danish-demonstrators-workshop/

4 Report of the Second RECONECT National Workshop in Portofino Demo A, Italy

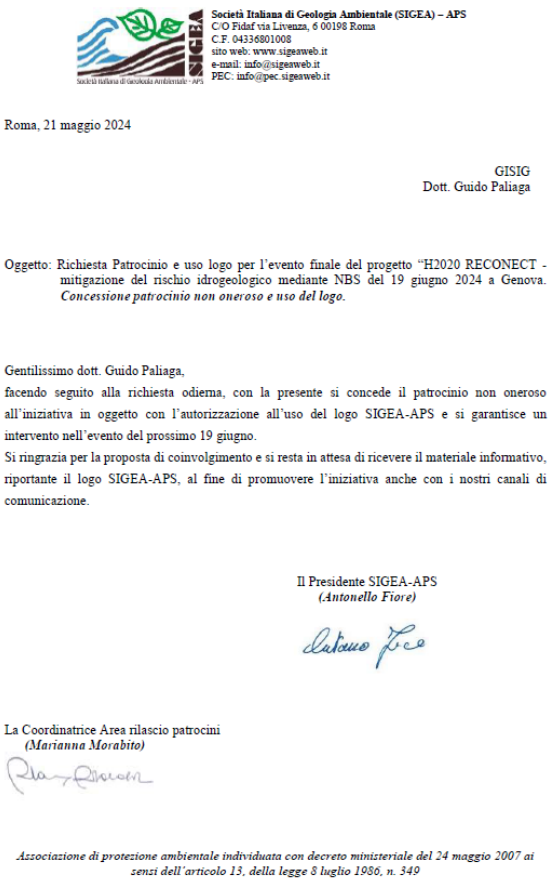
REGIONE LIGURIA, VIA FIESCHI, 15 – GENOVA, SALA DI RAPPRESENTANZA LIGURI NEL MONDO (plus ON-LINE)
Genova (Italy), 19th June 2024

Workshop rationale and outlines

The Second Italian Workshop was organized by the cluster of the Italian partners such as GISIG, Parco di Portofino and University of Genoa. In addition, the workshop received the patronage by the Italian Society of Environmental Geology (SIGEA) as from the attached letter (Fig. 1). The Workshop was hosted and promoted by the Ligurian Regional Authority, having in the NbS a strong interest, as detailed in the following paragraphs.

The second Italian Workshop of RECONECT wanted to represent an opportunity for a meeting between the project partners and the stakeholders to share current experiences on NbS and the vision on the future for their application and promotion at national level. The workshop was also an occasion to take stock of national policies on NbS and their current requirements for an effective implementation and discuss on how the RECONECT results and outcomes can influence and contribute to regional and national policies.

The participating speakers provided also an overview of techniques and technologies to implement and monitor NbS, as well as a status of training and skills needs.



Società Italiana di Geologia Ambientale (SIGEA) – APS
C/O Fidaf via Livenza, 6 00198 Roma
C.F. 04336801008
sito web: www.sigeaweb.it
e-mail: info@sigeaweb.it
PEC: info@pec.sigeaweb.it

Roma, 21 maggio 2024

GISIG
Dott. Guido Paliaga

Oggetto: Richiesta Patrocinio e uso logo per l'evento finale del progetto "H2020 RECONECT - mitigazione del rischio idrogeologico mediante NBS del 19 giugno 2024 a Genova. *Concessione patrocinio non oneroso e uso del logo.*

Gentilissimo dott. Guido Paliaga,
facendo seguito alla richiesta odierna, con la presente si concede il patrocinio non oneroso all'iniziativa in oggetto con l'autorizzazione all'uso del logo SIGEA-APS e si garantisce un intervento nell'evento del prossimo 19 giugno.
Si ringrazia per la proposta di coinvolgimento e si resta in attesa di ricevere il materiale informativo, riportante il logo SIGEA-APS, al fine di promuovere l'iniziativa anche con i nostri canali di comunicazione.

Il Presidente SIGEA-APS
(Antonello Fiore)

La Coordinatrice Area rilascio patrocini
(Marianna Morabito)

Associazione di protezione ambientale individuata con decreto ministeriale del 24 maggio 2007 ai sensi dell'articolo 13, della legge 8 luglio 1986, n. 349

Figure 1: the letter with the patronage of SIGEA

The programme of the workshop was divided into three parts: the first part was an introduction to RECONECT project and to the achievements by the Portofino Demonstrator A in terms of risk mitigation and upscaling potential; the second one was dedicated to the presentations by the institutional stakeholders about their experiences on NbS policies and implementation. The final session was dedicated to a debate on how to exploit and capitalize the RECONECT results at national and regional level, to cope with current needs and trends of hydro-meteo risk mitigation.

The workshop, hosted by Liguria Regional Authority, was jointly organized by the local RECONECT partners that are GISIG (responsible for Communication and Dissemination in RECONECT, and also responsible for the organization of National Workshops in all Demonstrators and Collaborators), Parco di Portofino (institutional partner connected to Liguria Regional Authority in charge for the NbS implementation works in the Portofino Demo A) and the University of Genoa with the involvement of the Strategic Centre for Security, Risk and Vulnerability.

The promotion of the workshop was carried out through different channels such as:

- National Environmental Agency (ISPRA)
- Liguria Regional Authority and Liguria Regional Environmental Agency
- SIGEA (Italian Society of Environmental Geology)
- Environmental Association in particular the WWF
- CIRF (Italian Center for Fluvial Requalification)
- NbS Italy Hub (https://www.linkedin.com/posts/nbs-italy-hub_reconectproject-naturebasedsolutions-rischioidrologico-activity-7204424307266011139-84KF?utm_source=share&utm_medium=member_desktop)
- RECONECT social media (https://www.linkedin.com/feed/update/urn:li:activity:7203405539756662785) and national mailing lists
- Regional Innovation Pole for Environment and Energy (EASS)
- Professional associations of geologists and engineers

Programme

SECOND NATIONAL WORKSHOP OF RECONECT PROJECT

"NATURE-BASED SOLUTIONS FOR THE MITIGATION OF HYDRO-METEO RISKS: APPLICATIONS AND PERSPECTIVES"

PROGRAMME

Time	Title of the speech, speaker
09:00	Welcome to the participants
Session 1: RECONECT at a glance	
09:10	RECONECT Project: results and impacts (Alessandra Marchese, GISIG)
09:30	RECONECT pilot site in the Portofino Park (Guido Paliaga, GISIG)
Session 2: the experiences of regional and national stakeholders on the NbS	
09:50	NbS and the Plan for the Flood Risk Management (Roberto Boni, Regione Liguria)
10:10	NbS as win-win measures for the objectives of the Water Framework Directive and the Flood Directive (Andrea Picollo, Regione Liguria)
10:30	The morphological quality of water bodies in Liguria: current state and future perspectives (Luigi Martella, ARPAL)
11:10	River restoration and flood risk mitigation (Andrea Mandarino, UniGe and CIRF)
11:30	Intense events, morphological processes in natural and cultural heritage areas and use of NbS (Daniele Spizzichino, ISPRA)
11:50	Citizen science and NbS, a joint response to the challenges of a changing climate (Antonio Parodi, Fondazione CIMA)
12:10	NbS in curricular training. Transdisciplinary or non-transdisciplinary? (Enrica Roccotiello, Distav – UniGe)
Session 3: debate	
12:30	NbS and hydrogeological risk mitigation: what application perspective?
13:00	End of works

SECONDO WORKSHOP NAZIONALE DEL PROGETTO RECONECT

- *19 GIUGNO 2024*
- *ORE 9:00 - 13:00*
- *REGIONE LIGURIA,VIA FIESCHI, 15 - GENOVA*
- *SALA DI RAPPRESENTANZA LIGURI NEL MONDO E ON-LINE*

RECONECT

NATURE-BASED SOLUTIONS PER LA MITIGAZIONE DEL RISCHIO METEO-IDROLOGICO: APPLICAZIONI E PROSPETTIVE

Il progetto **RECONECT** (**09/2018 – 08/2024**) contribuisce a migliorare il quadro di riferimento europeo delle **Nature-based Solutions** (**NbS**) per la riduzione del rischio meteo-idrologico in aree naturali e rurali. Il progetto si fonda su una rete di siti pilota, EU ed extra EU, che si confrontano allo scopo di innovare la gestione del territorio, perseguendo obiettivi sia di riduzione del rischio meteo-idrologico che di sviluppo locale e regionale e tutela della biodiversità.

RECONECT vuole dimostrare l'efficacia di un approccio sostenibile alla mitigazione del rischio meteo-idrologico attraverso interventi NbS per la prevenzione delle alluvioni e la stabilizzazione dei versanti, integrato con attività di monitoraggio ambientale e di coinvolgimento degli stakeholders. Il **Parco Regionale di Portofino** (nella foto) rappresenta il sito pilota di progetto per l'Italia.

Il **Secondo Workshop Italiano di RECONECT** vuole essere un'occasione di incontro tra partner di progetto e stakeholders per condividere le esperienze attuali e le visioni future sull'applicazione delle NbS a livello nazionale.

PROGRAMMA

09:00	Saluti di benvenuto ai partecipanti
	Sessione 1: uno sguardo al progetto RECONECT
09:10	Il progetto RECONECT: risultati e impatti (***Alessandra Marchese, GISIG***)
09:30	Il sito pilota RECONECT nel Parco di Portofino (***Guido Paliaga, GISIG***)
	Sessione 2: le esperienze degli stakeholders regionali e nazionali in tema NbS
09:50	NbS e Piano Gestione Rischio Alluvioni (***Roberto Boni, Regione Liguria***)
10:10	Le NbS quali misure win-win tra gli obiettivi della Direttiva Quadro Acque e la Direttiva Alluvioni (***Andrea Picollo, Regione Liguria***)
10:30	La qualità morfologica dei corpi idrici in Liguria stato attuale e prospettive future (***Luigi Martella, ARPAL***)
10:50	*Coffee Break*
11:10	Riqualificazione fluviale e mitigazione del rischio alluvione (***Andrea Mandarino, UniGe e CIRF***)
11:30	Eventi intensi, processi morfologici nelle aree del patrimonio naturale e culturale ed impiego delle NbS (***Daniele Spizzichino, ISPRA***)
11:50	Citizen science e NbS, una risposta congiunta alle sfide del clima che cambia (***Antonio Parodi, Fondazione CIMA***)
12:10	Le NbS nella formazione curricolare. Transdisciplinare o non transdisciplinare? (***Enrica Roccotiello, Distav - UNIGE***)
	Sessione 3: dibattito
12:30	NbS e mitigazione del rischio idrogeologico: quali prospettive di applicazione?
13:00	*Fine Lavori*

REGISTRAZIONE

Il workshop prevede la partecipazione sia in presenza sia da remoto.
Registrazione al link: http://www.reconect.eu/national-workshops/secondo-workshop-nazionale-progetto-reconect/
A chi sceglie l'opzione da remoto verrà inviato via mail il link per il collegamento il giorno precedente all'evento

EVENTO ORGANIZZATO DA

Parco di Portofino · GISIG · DISTAV Dipartimento di Scienze della Terra, dell'Ambiente e della Vita – Università degli Studi di Genova · UniGe SRV

CON IL PATROCINIO DI

SIGEA Società Italiana di Geologia Ambientale - APS

Il progetto RECONECT (Regenerating ECOsystems with Nature-based solutions for hydro-meteorological risk rEduCTion) è finanziato dal programma dell'Unione Europea per la ricerca e l'innovazione Horizon 2020, contratto No. 776866.

Reconect Project · www.reconect.eu · @H2020Reconect · RECONECT Project

Figure 2: The agenda of the second Italian RECONECT workshop with stakeholders

List of participants

#	NAME	ORGANIZATION	Online	In presence
1	Stefano Coppo	ARPAL		X
2	Mauro Traverso	ARPAL	X	
3	valentina civano	ARPAL		X
4	Anna Maria Risso	ARPA LIGURIA	X	
5	Simone Donati	ARPA LIGURIA		X
6	Elena Lucia Scarpa	Regione Liguria	X	
7	daniela caracciolo	ARPAL	X	
8	Sara biancifiori	Eurac	X	
9	Francesca Battini	Regione Liguria		X
10	Gianluca Poggi	Comune di Rimini	X	
11	Andrea Nencioni	REgione Liguria	X	
12	Luigi Martella	ARPAL		X
13	GIULIANO ANTONIELLI	ordine Geologi Liguria n. 156	X	
14	Valentina Rastelli	ISPRA	X	
15	margherita bonamico	ordine dei geologi puglia	X	
16	Francesco Faccini	Università degli Studi di Genova		X
17	Andrea Ferrando	Unige Distav	X	
18	Dott. Mario Leanza - Geologo	Idrogeologia		X
19	Valentina Coscia	ARPAL	X	
20	Alessandra Marchese	GISIG		X
21	Guido Paliaga	GISIG		X
22	Roberto Boni	Regione Liguria		X
23	Andrea Picollo	Regione Liguria		X
24	Daniele Spizzichino	ISPRA		X
25	Antonio Parodi	Fondazione CIMA		X
26	Enrica Roccotiello	Distav - UNIGE		X
27	Raffaella Bonferroni	Regione Liguria	X	
28	Sara Sticca	Università	X	
29	lorenza casale	Regione Liguria		X
30	marinella relandini	Arpal	X	
31	Silvia Gorni	GISIG	X	
32	Sara Costa	ARPAL	X	
33	Stefano Pintus	CAI	X	
34	Marta Ballerini	Regione Liguria	X	
35	Clara Conte	Università degli studi di Genova	X	
36	Federica Ciamberlano	Regione Liguria - Settore VIA	X	
37	Beatrice Zerega	Regione Liguria		X
38	Sofia Odone Sampietro	IRETI	X	
39	Bruno Orsini	Regione Liguria		X
40	Federico Pittaluga	Arpal	X	
41	Salvatore Valletta	SIGEA	X	
42	Giorgia Merletto	Anci Liguria	X	
43	Augusto Astengo	ANCI Liguria	X	
44	Giacomo Pepe	UNIGE		X
45	Francesca Lupino	Regione Liguria	X	
46	Andrea Balbi	Regione Liguria	X	
47	Piero Mandarino	G.E.V. Provincia di Alessandria	X	
48	ELENA GOLLO	ARPAL	X	
49	Andrea Mandarino	UNIGE- CIRF		**X**
50	ghirardo stefania	REGIONE LIGURIA	X	
51	Leoni Gabriele	ISPRA	X	

Agenda

A summary of the speeches and presentations delivered during the national Italian workshop is provided hereby:

Welcome by the Portofino Park director (Federico Marenco)

The workshop is opened by Federico Marenco, director of the Portofino Park Authority. In his welcome speech he highlights the peculiar geomorphology of the park and the fragility of its territory in front of extreme hydro-meteorological events. In addition, being the park an area where natural and cultural heritage need to be preserved and restored, there is strong need to intervene in a sustainable way against natural risks, to enhance the biodiversity and the natural processes and regenerate the ecosystem services. RECONECT experience will remain as a legacy for the park communities, and they will work very hard to consolidate into the Park management plan these practices to be seen as preferable solutions to be adopted against natural hazards.

Session 1: RECONECT at a glance

The RECONECT Project: results and impacts (Alessandra Marchese, GISIG)

After a short overview of the project context and achieved results, the presentation introduces the conclusions by a policy review study carried out in the C&D work package and aimed at investigating if and how the NbS concept is addressed by the EU green and water policies. Almost all the analysed policies address the concept of sustainable planning, ecosystem-based approach and NbS. On the other hand, there is a tremendous gap in technical guidelines, indicators and standards, to put into practice and demonstrate the objectives by the policies above. In such a context, RECONECT and its demonstration activities, can play a crucial role both at national and EU level.

RECONECT pilot site in the Portofino Park (*Guido Paliaga, GISIG*)

This speech provides important details on the research activities carried out in the RECONECT Demonstrator A of Portofino Park and in particular on its terraced landscape, seen as the main areas where landslides are triggered. In particular, the presentation explains how the slopes instability of terraced landscapes, combined with other causes of instability, exacerbates the landslides generation and represents a risk for people and infrastructures. The analysis of sediment volumes than potentially can move, carried out through the Lidar data, and the comparison between the two acquisitions before and after the NbS works in the park, allows to define how effective are the interventions done and assess their replication potential in the park area.

Since the terraced landscapes, and associated problems, are quite common in Mediterranean area but also on the mountains, the upscaling and replication potential of this research work is very high.

Session 2: the experiences of regional and national stakeholders on the NbS

NbS and the Plan for the Flood Risk Management (*Roberto Boni, Regione Liguria*)

According the Flood Directive, each River Basin District has to draft and implement a Plan for the Flood Risk Management, describing the measures to undertake in order to preserve human lifes, territory, goods, natural and cultural heritage. The plan must cover all the phases of risk management from prevention to preparation. In the last update of this plan, the NbS concept has been introduced, recalling to the experience of PHUSICOS project (one of the two sister's project of RECONECT, together with OPERANDUM). The plan doesn't contain any technical guidelines on how to implement the NbS for flood risk mitigation, hence a big work is needed in this direction, starting from the experience and the demonstration activities of research projects.

NbS as win-win measures for the objectives of the Water Framework Directive and the Flood Directive (*Andrea Picollo, Regione Liguria*)

This speech offers an overview on the national and regional policy framework for water management, deriving from the sisters' directives 2000/60 and 2007/60. On the other side, the plans are starting to address NbS and an ecosystem-based approach, such as to leave room for the big rivers and to use trees in the seabed for making shadow, by limiting the evaporation and preserve the aquatic ecosystems. In general, in Italy, the planning instruments are good, but technical rules and guidelines are missing, and this represent a big barrier to do works.

The morphological quality of water bodies in Liguria: current state and future perspectives *(Luigi Martella, ARPAL)*

The morphological quality of water bodies is regulated by current policies that introduce the IQM (morphological quality index). This index describes the shape of the river and its evolution along the time, including its artificial elements. It is really helpful to make an assessment of natural and artificial water bodies and prioritize NbS interventions and find a good balance between quality of the water body and risk mitigation.

River restoration and flood risk mitigation (*Andrea Mandarino, UniGe and CIRF*)

The speech introduces the approach of last decades that brought to simplify river route and the related flood plain, increasing year by year the conflicts between man and river. The new trend is the fluvial requalification, restoring their natural functions and ecosystems keeping also their anthropic functions. The policy framework in Italy for the adoption of NbS for river restoration is provided by the Law 113/2024 and the DPCM of 27th September 2021.

Intense events, morphological processes in natural and cultural heritage areas and use of NbS (*Daniele Spizzichino, ISPRA*)

In Italy there are 220.000 sites of cultural heritage, included the Natura 2000 sites. Ecosystems restoration represents a priority, particularly if we consider the tropicalization of Mediterranean areas generating imbalance of local ecosystems. Important is the monitoring of such areas over the time, that can be carried out at high level through the use of satellite data and imagery. It is important to generate a value chain of data and monitoring information that starts from the university and the research centres.

Referring to RECONECT, the project results are very important to demonstrate how to implement and monitor NbS and technical guidelines and standards can be used at national level to fill the gaps in the policies about the NbS application and hence draft technical guidelines and annexes.

Citizen science and NbS, a joint response to the challenges of a changing climate (*Antonio Parodi, Fondazione CIMA*)

One of the steps to do for the green transition and the climate adaptation is to increase the awareness of citizens and involve them into a participated process useful also to collect data on the environment. The presentation talks about i-Change project “citizens actions on climate change and environment”.

Citizens science events are really important for the following reasons:

- Importance of data collection as an awareness raising tool
- Understanding of phenomena related to climate change as a starting point for NbS
- Involvement of new generations

NbS in curricular training. Transdisciplinary or non-transdisciplinary? (*Enrica Roccotiello, Distav – UniGe*)

In Italy the training on NbS is very fragmented. There are several courses to choose from
• Master with specific modules
• Specialist courses offered by public and private bodies and associations
• Different disciplines: architecture, engineering, chemistry, biology, natural sciences, ..., geology, etc.
The reason is that NbS require a holistic approach and currently there is no specific courses in Italy that can cover the entire aspects and disciplines required by NbS.
At the university of Genoa the NbS are taught in particular in the earth science and engineering courses. The EU projects (like RECONECT and UNALAB) cover great importance since provide teaching material, experiences and scientific publications useful to carry out the courses.
An important experience that UniGE is carrying out is the project Nature4Cities (https://greenskills4cities.eu/) that is going to train on NbS workforce of the future and also provide training for trainers.

Target Audience, event outcomes and follow-ups

The audience was unexpectedly participated by more than 70 people, in presence and on-line, from all over Italy but in particular from our region.

The audience was quite heterogeneous but composed in particular by public servants and technical officers and managers from public administrations such as Regione Liguria, ARPAL (Liguria environmental agencies), ISPRA (Italian Environmental Agency), ANCI (the Italian Associations of Municipalities), and other PAs from different Italian regions. Some participants were also from academy and research (university of Genoa, CIMA Foundation) and from professional associations (in particular geologists).

Liguria Regional Authorities officially recognised the workshop as internal training event for its employees.

Participants from the regional and national environmental agencies (ARPAL and ISPRA) asked for a certificate of participation.

The big and unexpected number of participants (KPI related to participants in the National Workshop is between 30 and 40 participants) revealed the strong interest around the NbS topics and in particular the need by officers and managers from PAs to have access to technical documentations and direct experiences on NbS implementation works.

As already mentioned, current Italian legislation introduces the concepts of NbS, reflecting what is the trend of EU policies, but such a legislation is lacking technical annexes and real examples on how an NbS can be designed, implemented, monitored and decommissioned. On the other side, standards to demonstrated that NbS are effective against certain types of natural water-related risks are strongly needed.

During the workshop the interested of ISPRA (national environmental agency and operational branch of the Italian ministry of the environment) demonstrated strong interest in accessing and using the RECONECT results and main outputs to draft technical guidelines and annexes for the design of NbS. This interest can represent an opportunity to further exploit RECONECT and to continue in the framework of other projects or activities.

Another important aspect that was discussed during the debate is the lack of workforce skilled on the NbS, and hence the need for awareness raising and training addressed in particular to practitioners but also civil society to influence the policy makers.

The monitoring through EO techniques and satellite data is getting great importance due to the possibility to have a comprehensive vision of the areas and with relatively low-cost (sometimes from free). It is important tha PAs enforce the use of satellite data technologies and the implementation of services that can support the identification of areas where NbS can be implemented.

Finally, it is important to network with entities at national level that are promoting the NbS or are involved in some NbS projects, fundamental to generate the desired change in land planning and risk mitigation sectors. To this purpose, Portofino Park announced that was going to undertake all the administrative steps to become partner of the NbS Italy Hub and invited all the institutional organizations present in the workshop to do the same.

On-line proceedings

http://www.reconect.eu/national-workshops/second-portofino-natural-park-workshop/

Pictures from the event

Figure 3: Welcome by Federico Marenco, Portofino Park Director

Figure 4: Participants in the National Italian Workshop

Figure 5: Francesco Faccini (chairman) and Roberto Boni (Regione Liguria)

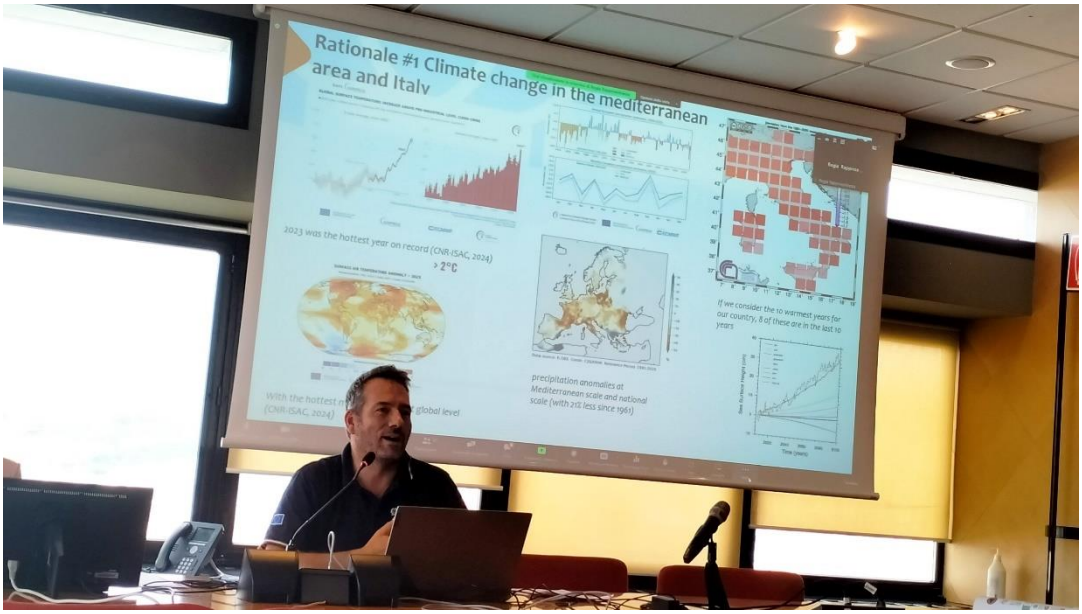


Figure 6: Daniele Spizzichino (ISPRA)

5 Report of the Second RECONECT National Workshop in Thur River Basin, Demo B, Switzerland

Hybrid – in person event was held at Eawag, Dübendorf.
18.04.2023

Workshop rationale and outlines
The Eawag based team within the RECONECT project organized the “Second Swiss National Workshop on Nature-Based Solutions for meteo-hydrologic risk mitigation”. As a follow-up of the first workshop held online on 8.6.2022, the focus of this workshop was to foster exchange of state-of-the-art knowledge, present active projects and to discuss barriers in the design and realization of NBS together with possible solutions to overcome them. The workshop was organized in a hybrid format both online and at Eawag Dübendorf, Switzerland. The workshop consisted of six presentations of about 20-30 min duration, each followed by five minutes Q&A sessions. The on-site program included a 45 minute, guided visit of a recently restored stretch of the River Glatt prior to the presentations.

Programme

"Second Swiss National Workshop on Nature-Based Solutions"

PROGRAMME

Time	Title of the speech, speaker
13:00-13:05	Welcome, Dr. Daniele La Cecilia (Eawag, Water Resources & Drinking Water)
13:05-13:50	Glatt River Restoration: site visit, Dr. Carl Robert Kriewitz-Byun (Kanton Zürich, AWEL)
14:00-14:25	Cost-effective adaptation strategies to rising river flood risk in Europe, Dr. Francesco Dottori (CIMA Foundation, via Zoom)
14:25-14:50	Flood policy and relations to other issues on national and cantonal levels, Dr. Manuel Fischer (Eawag, Environmental Social Sciences)
15:00-15:25	Overcoming barriers to the realization of urban BGIs, harmonizing purpose, tools and dialogue, Dr. Peter Bach (Eawag, Urban Water Management)
15:25-15:50	The intentional design of urban blue-green infrastructure for multiple objectives, Dr. Lauren Cook (Eawag, Urban Water Management)
16:00-16:35	Flood protection Rhine River International section Austria Switzerland, Dr. Markus Schatzmann (Internationale Rheinregulierung)
16:35-17:00	How to deal with rising groundwater temperatures? An approach to groundwater temperature management in the Thur aquifer, Dr. Lina Tyroller (Kanton Thurgau, Amt für Umwelt, via Zoom)

List of participants

N	Surname	Name	Company - Association	Attendance
1	Maier	Marie-Sophie	Eawag - W+T	In person
2	Dölker	Julie	Eawag - ESS	In person
3	Schorr	Johannes	Eawag - UChem	In person
4	Zinn	Natascha	Eawag - ESS	In person
5	Buruiana	Cristian	Eawag – ESS	In person
6	Benkirane	Myriam	Eawag - W+T	In person
7	Joshi	Prabhat	Eawag - SWW	In person
8	Fappiano	Fabrizia	Eawag - SWW	In person
9	Brennwald	Matthias	Eawag - W+T	In person
10	Binz	Christian	Eawag - ESS	In person
11	Leitao	Joao P.	Eawag - SWW	In person
12	Torres	Natascha	Kanton Zürich, AWEL	In person
13	van den Brandeler	Francine	Eawag - ESS	In person
14	Schilling	Oliver	Eawag - W+T	In person
15	Rodriguez	Mayra	Eawag - SWW	In person
16	Cavadini	Giovan Battista	Eawag - SWW	In person
17	Raman Vinna	Love	Uni. Basel	In person
18	Vogt	Liliane	ETHZ	In person
19	Dietzel	Andreas	Eawag - SWW	In person
20	Schirmer	Mario	Eawag - W+T	In person
21	la Cecilia	Daniele	Eawag - W+T	In person
22	Kriewitz-Buyn	Carl Robert	Kanton Zürich, AWEL	In person
23	Fischer	Manuel	Eawag - ESS	In person
24	Bach	Peter	Eawag - SWW	In person
25	Cook	Lauren	Eawag - SWW	In person
26	Schatzmann	Markus	Internationale Rheinregulierung	In person
27	Shanshan	Li	Eawag - SWW	Online
28	Todorovic	Andrijana	University of Belgrade, Faculty of Civil Engineering (Serbia)	Online
29	Kvesic	Drazenka	Proning DHI (Croatia)	Online
30	Ramuscak	Ratko	Proning DHI (Croatia)	Online
31	Izydorczyk	Katarzyna	European Regional Center for Ecohydrology, PAN (Poland)	Online
32	Seitz	Karlotta-Franziska	Landesbetrieb Strassen, Brücken und Gewässer, Hamburg (Germany)	Online

N	Surname	Name	Company - Association	Attendance
33	Raths	Johannes	Eawag - UChem	Online
34	Iversen	Signe Marie	Aarhus Municipality (Denmark)	Online
35	Mardi	Kristiina	Aarhus Municipality (Denmark)	Online
36	Müller	Matthias	Kiefer & Studer AG	Online
37	Bergmann	Axel	Rheinisch-Westfälische Wasserwerksgesellschaft mbH (Germany)	Online
38	Penny	Jessica	University of Exeter (UK)	Online
39	Ferraresi	Davide	Legambiente Emilia-Romagna NGO (Italy)	Online
40	Sprecher	Lucie	Eawag - Surf	Online
41	Han	Sungju	UFZ (Germany)	Online
42	Chen	Jixuan	Eawag - SWW	Online
43	Randelovic	Anja	University of Belgrade (Serbia)	Online
44	Marino	Raul	Universidad del Rosario (Columbia)	Online
45	Narayan	Abhishek	Independent Researcher (India)	Online
46	Dottori	Francesco	Cima Foundation	Online
47	Tyroller	Lina	Kanton Thurgau, Amt für Umwelt	Online

Agenda

Provide a brief summary of each speech indicated in the programme. If there are different sessions, divide the programme into different tables

Site visit to a revitalized river stretch
1) Glatt River **Dr. Carl Robert Kriewitz-Byun** (Canton of Zurich) Walk along the revitalized Glatt River stretch near Eawag Dübendorf. Using historical and current maps and pictures, Carl Kriewitz-Byun highlighted the concept behind this specific revitalization site that required buying land along the river bank from the private real estate developers, the challenges resulting from the multi-stakeholder involvement in the project, and the multiple public outreach activities that include, for example, the engagement of local school children for tree planting events. In the discussions, Carl raised the problem related to river restoration projects in Switzerland and the opinion of Swiss citizens; these do not see the need for river restoration as it is perceived that rivers are "natural" enough. Carl is keeping track on the motivations of citizens who do not support restoration projects.

From Modelling to Policy
1) Cost-effective adaptation strategies to rising river flood risk in Europe **Dr. Francesco Dottori** (CIMA Foundation) With climate change, river flood risk will increase. Francesco Dottori addressed the cost-benefit-ratio of different mitigation and adaptation strategies across Europe (PESETA IV project[1]), based on a modeling approach. Retention areas are cost-efficient solution but in general demand a large amount of land. Hybrid strategies, which combine flood protectin measures and relocation, were found to be the most promising solutions to maximize benefits depending on local factors. **2) Flood policy and relations to other issues on national and cantonal levels** **Dr. Manuel Fischer** (Eawag) Manuel Fischer presented the paradigm shift in Swiss Flood protection policy from infrastructural flood protection towards an integrated approaches and risk management. He furthermore showed the incongruence of flood exposure, flood risk perception and preference for policies on municipal levels. Cross-sectoral coordination work in Switzerland is low and often in parallel when considering law- and actor-based coordination.

BGI in urban areas
3) Overcoming barriers to the realization of urban BGIs, harmonizing purpose, tools and dialogue **Dr. Peter Bach** (Eawag)

[1] https://adaptecca.es/en/recursos/buscador/adapting-rising-river-flood-risk-eu-under-climate-change-peseta-iv-project

Peter Bach identified issues in small-scale Blue-Green Infrastructure (BGI) planning, implementation and management, e.g. mono-functional purpose or long-term asset management, and suggested strategies to overcome them. These involve adjustments in the planning phase and process (e.g. early stakeholder involvement), proper construction of BGI measures and structural changes of local government organisation to prevent diffusion of responsibility, manifesting for example in bad maintenance. He extrapolated lessons learned in Australia to Switzerland.

4) The intentional design of urban blue-green infrastructure for multiple objectives

Dr. Lauren Cook (Eawag)

The term BGI spans a multitude of measures with different effects. Lauren Cook presented an approach to group and classify BGI elements with respect to different objectives they could help address. She highlighted that a problem with current terminology is the often diverse naming of the same thing. Reduction to BGI elements and design objectives identifies knowledge gaps and can help eventually to develop decision-making tools, necessary to deal with expected paradoxes of choice.

With 70% of the human population living in cities by 2050, urban floods will play an increasing role in the overall hydro-meteorological risk. BGIs not only can contribute to mitigate such risk but also improve well-being and increase the economic value of properties. Thus, their implementation is generally welcomed.

NBS in a rural context

5) Flood protection Rhine River International section Austria Switzerland

Dr. Markus Schatzmann (Internationale Rheinregulierung)

River restoration and flood protection are challenging to implement, specifically across borders. Markus Schatzmann highlighted the planning stages and expected construction periods of the Alpen Rhine river restoration upstream of Lake Constance. This section marks the border between Austria and Switzerland, thereby complicating the legal setting. Furthermore, with 20 years planned in construction time, this project illustrates the often very long realization horizons. Markus identified the issue of different legal definitions of drinking water protection zones between Austria and Switzerland. The issue is relevant when drinking water wells are situated in the floodplain subject to restoration. In fact, river widening decreases travel times of river water to the well, which could make the well not suitable for drinking water production. River widening is also expected to raise groundwater levels, with implications on the surrounding lands. Engineering works were designed to channel shallow groundwater to either infiltration ponds away from urban areas or to the stream. This has implications on the water-energy nexus, with pumps possible consuming high quantities of energy. Compensation for agricultural lands that were in the floodplain remains a problem when it is the only/most important source of income for small local farmers.

6) How to deal with rising groundwater temperatures? An approach to groundwater temperature management in the Thur aquifer

Dr. Lina Tyroller (Canton Thurgau)

Rising temperatures in aquifers are a challenge for drinking water production, as they are affecting biological and chemical characteristics. Lina Tyroller emphasized the need to also consider the effects of river restoration measures on groundwater temperature in the context of the Thur+ project. Lina presented a 2-D model designed to predict the expected changes. In addition, Lina Tyroller pointed out the ongoing potential conflict between river

restoration and drinking water production and elaborated on the ways forward to mitigate this conflict in the Canton of Thurgau.

Target Audience, event outcomes and follow-ups

With 26 participants attending in person, the live audience of this workshop reached the pre-set capacity limits. The live audience consisted primarily of Eawag employees involved in NBS and BGI with backgrounds in environmental science, engineering as well as environmental social sciences and thereby represented four different departments. The audience joining the presentations online was very heterogeneous, with participatns joining from different European countries, South America and India. Their fields of work ranged from universities to NGOs and municipalities. So all in all, there was a broad mix of expertise in the audience, as intended from the onset of the preparation of the workshop.

There was consensus among the invited speakers and the audience that NBS would greatly benefit if the various stakeholders, decision makers, and persons involved in the implementation would work more closely together during all stages of the project. Specifically, participants suggested that:

- Supportive legislation is key. State-level planning policies should be aligned with current visions of sustainable and liveable cities, and local governments need flexibility to implement solutions best adapted to their individual local needs.

- Planning and design of NBS and BGI needs to involve experts, but also asset management and maintenance teams at an early stage to ensure the longevity of the implemented measures. This issue seems to be most pressing with small-scale measures.

- Faults in design need to be identified and caught early in the process and the proper construction of assets is needed including as-constructed drawings for later maintenance.

- Design of solutions should be guided by the dominant function or primary goal of the NBS, but additional functions and effects need to be explicitly considered and planned to ensure that the potential multi-functionality of these systems is fully taken advantage of. Decision-making tools (to be developed) could support this process when confronted with paradoxes of choice.

- The interplay between urgency and opportunity determines the prioritization of different projects and certain flexibility can enhance synergistic effects. In particular, flood risk perception is low. However, public investments for flood protection are understood, whereas those for river restoration per-se are not.

- Engaging the local inhabitants in activities related with the NBS implementation raises awareness and acceptance.

To continue the interdisciplinary exchange achieved during this workshop, we plan to continue the workshop in its hybrid format yearly.

On-line proceedings

http://www.reconect.eu/national-workshops/second-thur-river-basin-workshop/

6 Report of the National Workshop of Pilica River Basin (EC Collaborator), Poland

17 May 2024
Warsaw, Poland

Workshop rationale and outlines

The National Workshop was organised by the European Regional Centre for Ecohydrology, Polish Academy of Sciences (ERCE) and PGW Polish Waters Regional Water Management Board in Warsaw (Warsz), which was responsible for the Collaborator case in Poland. The workshop brought together a diverse group of stakeholders, including representatives from national and regional levels, as well as other interested parties.

The objective of the workshop was to enhance awareness of NBSs and their potential for implementation in water retention. The workshop included a presentation of experiences from the implementation of NBS. The project activities and results of the Pilica river basin case studies, developed by ERCE PAN andWarsz, were presented to the participants. A significant amount of time was devoted to a discussion on the barriers to the implementation of NBS and potential enablers for their overcoming.

The workshop was conducted in the local language in order to facilitate communication among the participants and to foster involvement of local communities. There were approximately 38 participants.

Programme

RECONECT National Workshop

Workshop summarising

of the RECONECT project in Poland

17 May 2024, Warsaw

Headquarters of PGW Polish Waters Regional Water Management Board in Warsaw, Zarzecze 13a

Agenda

9.30 Registration of Participants

10.00 **Welcome to the Participants**

- Welcome by the Host - *representative of the Polish Water Authority*
- Introduction of participants
- Objective of the meeting - *Katarzyna Izydorczyk, Director of the European Regional Centre for Ecohydrology PAN*

10.30 **RECONECT - Nature Based Solutions (NBS) for Reducing the Effects of Hydrometeorological Events**

Katarzyna Izydorczyk, ERCE PAN

10.50 **Using modelling to assess the effectiveness of the cumulative effect of using a variety of NBS at the catchment scale. The case of the Pilica River catchment**

Marzena Rutkowska-Filipczak, Agnieszka Wojcieszak,

PGW Wody Polskie Regionalny Zarząd Gospodarki Wodnej w Warszawie

11.20 **Selecting the type of NBS activities and their location in a small agricultural catchment using the natural potential of the catchment for water retention. The case of the catchment area of the river Bogdanovka**

Marta Puzdrowska, ERCE PAN

12.00 Coffee break

12.30 **Analysis of factors favouring overcoming barriers to the implementation of nature-based solutions in Poland**

Część warsztatowa metodą world cafe

Workshop part using the world cafe method

Discussion around the barriers identified in the earlier stages:

- Barrier 1: Lack of funding for NBS
- Barrier 2: Lack of political will and long-term commitment
- Barrier 3: Lack of public understanding of NBS
- Barrier 4: Lack of awareness of NBS

Group facilitators: Kinga Krauze, Martyna Kuzior, Renata Włodarczyk, Katarzyna Izydorczyk (ERCE PAN)

14.30 **Workshop summary and conclusion**

List of Participants

No	Name	Surname	Institution	Sector
1	Joanna	Anczarska	Polish Waters National Water Management Board	Authority
2	Robert	Banaszek	Marshal's Office of the Mazovian Voivodeship	Authority
3	Wiktor	Cichecki	Polish Waters	Authority
4	Gabriela	Dąbrowska	Polish Waters Regional Water Management Board in Warsaw	Authority
5	Agnieszka	Gontarz	Ministry of Climate and Environment	Authority
6	Robert	Górzyński	Polish Waters Regional Water Management Board in Warsaw	Authority
7	Sylwia	Grzędzińska	Regional Directorate for Environmental Protection in Łódź	Authority
8	Joanna	Gumula	Ministry of Agriculture and Rural Development	Authority
9	Katarzyna	Izydorczyk	European Regional Centre for Ecohydrology	Academia
10	Karolina	Jakubowska	Polish Waters Regional Water Management Board in Warsaw	Authority
11	Marek	Kamiński	Polish Waters	Authority
12	Ignacy	Kardel	Warsaw School of Life Sciences	*Academia

13	Marta	Kostecka	Ministry of Agriculture and Rural Development	* Authority
14	Kinga	Krauze	European Regional Centre for Ecohydrology	Authority
15	Kamil	Kryński	Mazovia Agricultural Advisory Centre	* Authority
16	Martyna	Kuzior	European Regional Centre for Ecohydrology	Academia
17	Andrzej	Langowski	General Directorate for Environmental Protection	Authority
18	Łukasz	Laskowski	Agricultural Advisory Centre Brwinów	Authority
19	Ilona	Ligocka	Ministry of Climate and Environment	Authority
20	Karolina	Mańk	Polish Waters Regional Water Management Board in Warsaw	Authority
21	Piotr	Markiewicz	Regional Directorate for State Forests in Warsaw	Authority
22	Marta	Matusiak	Polish Waters Catchment Board in Piotrków Trybunalski	Authority
23	Jakub	Miksa	Polish Waters	Authority
24	Marcin	Mikulski	National Fund for Environmental Protection and Water Management	Authority
25	Alicja	Mińczuk	Polish Waters National Water Management Board	Authority
26	Sandra	Napieralska	Polish Waters Regional Water Management Board in Warsaw	Authority
27	Sylwia	Oleksiewicz	Polish Waters	Authority
28	Marta	Puzdrowska	European Regional Centre for Ecohydrology	Academia
29	Marzena	Rutkowska-Filipczak	Polish Waters Regional Water Management Board in Warsaw	Authority
30	Łukasz	Sil	Regional Directorate for Environmental Protection in Łódź	Authority
31	Monika	Sobańska	Polish Waters Catchment Board in Piotrków Trybunalski	Authority
32	Veranika	Stopczyk	Ministry of Climate and Environment	Authority
33	Beata	Szymczyk	Polish Waters Catchment Board in Piotrków Trybunalski	Authority
34	Damian	Tobiasz	Polish Waters	Authority
35	Renata	Włodarczyk-Marciniak	European Regional Centre for Ecohydrology	Academia
36	Agnieszka	Wojcieszak	Polish Waters Regional Water Management Board in Warsaw	Authority
37	Marta	Zimny	Ministry of Climate and Environment	Authority
38	Marcin	Żerański	Polish Waters Regional Water Management Board in Warsaw	Authority

* application via form but did not participate

Target audiences and proceedings of the meeting

The national meeting was dedicated to main groups:

(1) national level stakeholders:

- Ministry of Infrastructure, Water Management Department
- Ministry of Climate and Environment, Department of European Funds
- the Ministry of Climate and Environment, Department of Nature Conservation
- the Ministry of Agriculture and Rural Development, Department of Common Agricultural Policy
- the Ministry of Agriculture and Rural Development, Department of Real Estate and Rural Infrastructure
- the National Fund for Environmental Protection and Water Management
- General Directorate for Environmental Protection

(2) Representative of the state water management authority Wody Polskie (Polish waters) from organizational units at 3 levels (national, regional, catchment).
(3) Regional stakeholders from the Pilica River basin
(4) Academia, NGOs, and private companies

There are 35 participants in the workshop, including speakers and moderators from 12 institutions. Of particular importance was the participation of representatives from the Ministry of Climate and Environment (4 people) and the Ministry of Agriculture and Rural Development, the National Fund for Environmental Protection and Water Management and the General Directorate for Environmental Protection. In addition, representatives of Polskie Wody from the National Water Management Board were present, as well as the President of Wód Polski for a while during the workshop part.

The first part of the meeting focused on the presentation of the nature-based solution, the results of the Reconect project in general, and also the activities in the Pilica and Bogdanówka river basins carried out within the Reconect project. Presentations were made by Katarzyna Izydorczyk (ERCE PAN), Marzena Rutkowska-Filipczak (RZGW), Agnieszka Wojcieszak (RZGW), and Marta Puzdrowska (ERCE PAN). At the end there was a discussion on the results presented.

The second part was dedicated to workshop work. Kinga Krauze introduced the workshop. She presented the main results of the Polish case study from the previous steps (identification of barriers). Then the participants were divided into four groups and worked under the guidance of a specific facilitator. After the allotted time for one cycle had elapsed, the group changed tables and thus the topic of the workshop work, i.e. the barrier discussed. And so on, until each group had had the opportunity to talk about each barrier. By changing tables, the facilitators reported on the work of the previous group and the following groups were able to add their comments.

Event outcomes

Following fruitful discussions and group work on specific barriers and enablers, the participants reached conclusions that could contribute to a deeper understanding of NBSs and facilitate the identification of solutions for their implementation.

Barrier 1: Lack of funding for NBS

We asked ourselves how we could combine private and public money. We wondered if, apart from prestige, what else would companies gain and if they would want to invest. And we have

an example of how a company can 'adapt' a green space, so this is happening. We also talked about the need to show the intangible benefits. We also talked a lot about the fund that finances the preparation of the project. We have two examples: the FENiKS, which finances urban adaptation plans, and the KPO, which finances the development of documents, expertise for small-scale conservation in rural areas. So it seemed to us that there are such instruments. As for other instruments, I think all the tables agreed that as long as we have grants, even loans are not welcome, not attractive, let alone other services. In terms of other instruments that could work, we came up with: property tax relief, compensation for not changing the areas where, for example, NBS is located, earmarked funds for municipalities.

Barrier 2: Lack of political will

The assessment was balanced between: the political will is there and only a long-term commitment will make a difference. Whether the political will is definitely there. And who actually represents it. But perhaps it is the case that the NBS as such has not been defined, has not been clarified, and it is quite difficult to put it into policy to be able to account for some actions when local governments are taken to court, it is very difficult to prove that something has been done right with such vague definitions. We have said that there is a need to combine sectoral policies for the NBS, but that this need should be linked to the removal of the legal barriers that already exist. In other words, look first at the regulations that already exist. We said that as long as there is no more personal accountability for political, official decisions, it is very difficult to hold politicians accountable for what they have done or not done, difficult to attribute the end result. What also works is that politicians are reluctant to get involved in something that, in the long run, will take time and the benefits, even in the media, will go to someone else. Perhaps linking people to decisions, to lines of action, would be a good solution here. We talked about creating an NBS lobby that would bring together all the stakeholders, ministries, activists, maybe expressions, so that this issue really takes off. The last group also mentioned that NBS is a broad concept and solves many aspects of life, but here we are talking about water and maybe the link between NBS and water is still too weak - it doesn't capture the imagination of people, whether they are decision makers, politicians or water users, so there is no cause and effect between what you do and the end result. We have talked about the fact that an agent of change would be such joint actions, petitions, multi-sectoral meetings that lead to decisions. And a great agent of change is the European Commission, provided it doesn't produce rubbish that makes us lose the bigger picture just because of some shortcomings. We said that if we want to combine NBS and politics and business, then perhaps business would like to see very concrete investments with its own money, that the money flow should be like this, which means that we don't put money into a common bag in the form of taxes, but into a bag called NBS to fight drought in community X, and that community gets the money, and the investor can build his media image, or a politician, on a concrete action with concrete money.

Barrier 3: Lack of public understanding of the NBS

In the case of school programmes and general education, we have heard that interesting and necessary initiatives are emerging, but unfortunately they are not widespread. We are also moving away from basic knowledge that used to be obvious (milk comes from a cow, does a goat give warm or cold milk). The proposal is that NBS should be part of climate education. In the second enabler, media campaigns, there is a big role for the internet, but the last group also said TV and radio, in contrast to the earlier groups. We also talked about the big role of celebrities, youtubers, influencers, but also the right mix of them, that content should be selected, especially for a specific audience. There was the idea of short videos on public transport. The idea of a third group: there should be an NBS logo. That is, actually a short form to introduce the NBS, because now they don't tell us much. Another enabler third: apps is the most important thing is attractive graphics, it is the visual solutions that come to the fore and all the solutions that were eye-catching and kept attention. Involving the public - the idea of a citizens' budget and the idea that those who submit ideas will also implement them is an additional point. If we combine NBS with eco-activists, who are not well received, then we

have a problem. In the enabler five pilot projects we have the idea of study visits. To approach the issue in a practical way. The information about ongoing competitions, programmes, opportunities to get funding is also very important. That is, not only information about having projects that introduce NBS, but also how to apply for funding. From other enablers: there was the idea of business interest in NBS, i.e. spreading the use of NBS in business ideas and educational homesteads.

Barrier 4: Lack of Awareness of NBS - *among decision-makers, professionals and the general public*

The agents of change are certainly the ministries. When we considered whether they are the agents of change by themselves, no. Obviously they need an initiator, a connecting actor. It could be academics, local leaders, NGOs. In other words, people who are aware of the fact that they are in a position to bring about change and thus make it a general need in the ministry. We also talked about what language we should use to talk about the NBS, whether it be financial language or the language of benefits, other outcomes. The financial language is so much more problematic because one day the funding might run out, it might not be enough, it might not be sustainable. We also talked a lot about public opinion, the role of local government, organising training and showing best practice.
Potential conflicts may arise from different investment objectives and plans of different ministries, so it seems necessary to set the NBS as a priority everywhere. Suggestion to teach from an early age, then it is possible that future decision makers will priorities this. The public has been identified as the initiator of many changes. However, when asked who should be the initiator: the public or the decision-makers, participants indicated that Top-down and bottom-up approaches are complementary.
Discussed and pointed in addition:

- Necessity for legal/financial responsibility for decisions taken,
- Educating children as future decision-makers,
- Society as initiator of change. Citizen initiative and European Commission imposes changes (with compensation, subsidies),
- Appropriate language of benefits and effects - reference to appropriate values - financial issues work as long as there are finances,
- Economic calculation of NBS inputs vs. inputs for stopping negative effects, juxtaposition and demonstration of one with the other,
- Long-term nature of the tasks,
- Immune to political change at any level.

Links to the media that published info on the National Workshop

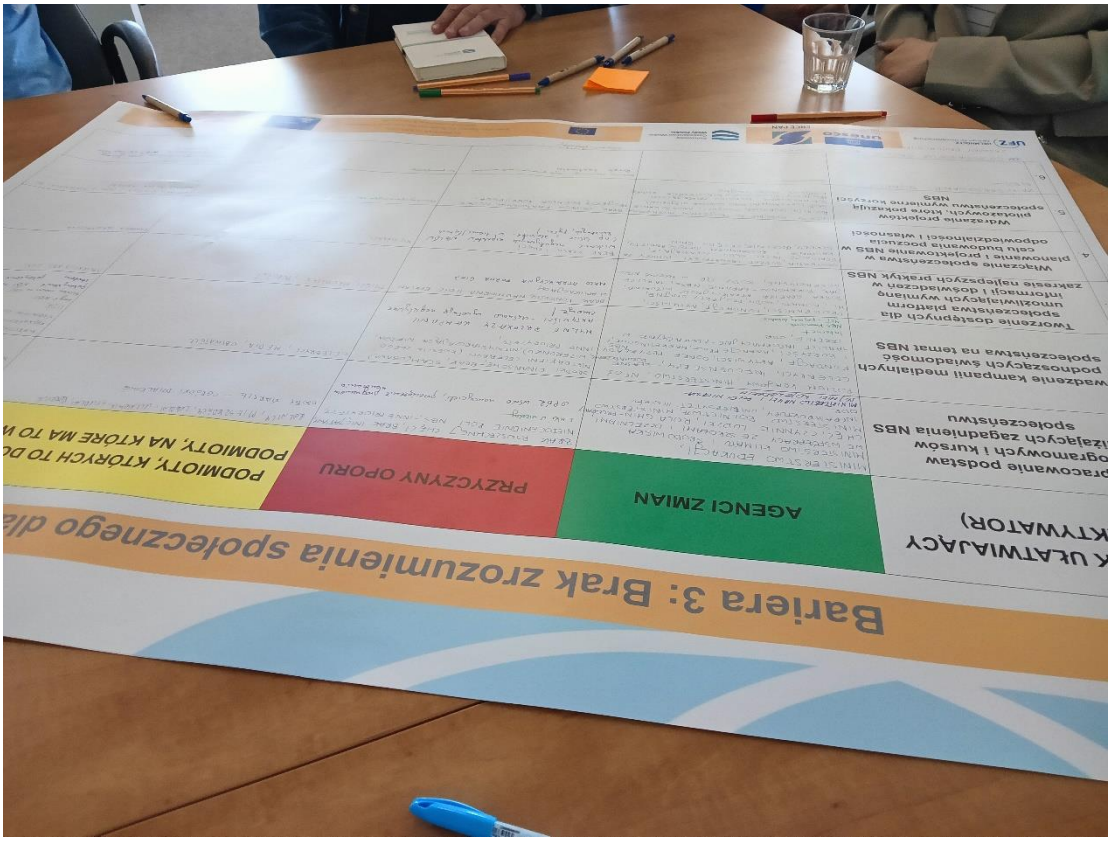
https://www.facebook.com/ERCEPAN , 03/06/2024

https://www.facebook.com/RZGWwWarszawie, 04/06/2024

Presentations from the meeting are available at the link:

http://www.reconect.eu/national-workshops/national-workshop-in-poland/

Photo documentation


Bariera 3: Brak zrozumienia społecznego dla
AGENCI ZMIAN
PRZYCZYNY OPORU

7 Report of the RECONECT National Workshop in Collaborator cases EC-3a Bregana, Croatia

17th May 2024
Zagreb, Croatia

Workshop rationale and outlines

The national workshop was organized by PRONING DHI d.o.o. (PRONING), responsible for the case in Croatia. The workshop brought together stakeholders from the national level, as well as other interested parties, including experts. The aim of the workshop was to raise awareness of NBS and their potential for use in flood and other hydrometeorological risk protection. Experiences from the already implemented NBS were presented, indicating the already visible effects on nature and people. Project activities and results of the case study prepared by PRONING, Bregana river basin, were presented to the participants.

Considerable time is devoted to the discussion of barriers to the implementation of NBS and possible factors to overcome them. Through discussion and work on individual barriers and enablers, the participants come to conclusions that could contribute to a better understanding of NBS and finding solutions for their faster and more frequent implementation.

The workshop was held in Croatian language in order to facilitate communication between the participants. There were 12 participants, although over 30 were invited.

Information about the national workshop was published on the PRONING DHI website, as well as in other media.

Programme

National Workshop

Nature Based Solutions for Flood Risks Reduction

Agenda

Date

Friday, 17th May 2024

Meeting Venue

Dvokut ECRO d.o.o.

Trnjanska cesta 37, Zagreb, Croatia

Agenda

9:15 – 9:45 Registration

Moderator: Draženka Kvesić, co-coordinator of the PRONING DHI d.o.o. team for the RECONECT project

Part 1: Welcome and Introductions

9:45 – 10:15 Welcome note
(Dario Ban, CEO, PRONING)

Project RECONECT beginnings, implementation and what to expect later
(Božidar Deduš, coordinator of the PRONING DHI d.o.o. team for the RECONECT project, PRONING)

Presentation of the network of demonstrators and collaborators on RECONECT project and examples of good practices
(Draženka Kvesić, deputy Croatian team leader, PRONING)

Why NBS?
(Ema Svirčević, Dvokut ECRO)

Part 2: Project Results

10:15 – 10:35 Bregana River Basin (Ratko Ramuščak, PRONING)

Discussion

10:35 – 10:50 Coffee break

Part 3: Barriers and Enablers

10:50 – 13:00 Analysis of barriers and recommendations for their overcoming – presentation of project results (Draženka Kvesić, PRONING)

Joint work on prioritization of recommendations for overcoming barriers

Discussion and conclusions

13:00 Workshop closure

13:00 – 13:30 Lunch

List of Participants

Name	Surname	Organisation
Dario	Ban	PRONING DHI
Božidar	Deduš	PRONING DHI
Sanja	Filipan	CROATIAN WATERS
Andrea	Galić	INSTITUTE FOR SPATIAL PLANNING OF ZAGREB COUNTY
Draženka	Kvesić	PRONING DHI
Ana Marija	Majdak	INSTITUTE FOR SPATIAL DEVELOPMENT, MINISTRY OF SPATIAL PLANNING, CONSTRUCTION AND STATE PROPERTY
Tina	Miholić	CROATIAN WATERS
Ratko	Ramuščak	PRONING DHI
Ema	Svirčević	DVOKUT ECRO
Antonija	Trlaja Magdić	DVOKUT ECRO
Davor	Varga	CROATIAN FORESTS
Luka	Vukmanić	CROATIAN WATERS

Description of the Agenda

Part 1: Welcome and Introductions
Speakers: Dario Ban (PRONING), Božidar Deduš (PRONING), Ema Svirčević (DVOKUT ECRO) The general director of Proning DHI, Dario Ban, welcomed the workshop participants on behalf of the organizers. He said he was extremely pleased to host all the participants and organize a workshop focused on nature-based solutions. Božidar Deduš, the leader of the Croatian RECONECT project team, presented the RECONECT project from it's very beginning, explained how PRONING became involved in the project, presented the goals of the projects and stated how he sees the future of nature-based solutions in Croatia. He noted that such projects are our bright future and that he believes that NBS solutions will be increasingly applied and replicated in Croatia, as well as in other parts of Europe and the whole world. Then, Draženka Kvesić presented the network of Demonstrators and Collaborators of the RECONECT project, presented their examples of good practice and explained the methodology of the RECONECT project. She especially emphasized the importance of benefits for WATER, PEOPLE and NATURE, and stated that throughout the implementation of the entire project, the emphasis was on co-creation, that is, the inclusion of different stakeholders in the process of creating NBS. She also stated that, in addition to the usual benefits of NBS, co-benefits also play an important role. At the end, Ema Svirčević gave an overview of the advantages of using NBS in order to reduce hydrometeorological risks.

Part 2: Project Results
Speaker: Ratko Ramuščak (PRONING) The Bregana river basin, a case study for which PRONING is preparing a pre-feasibility study, was presented by Ratko Ramuščak. He presented how the hydrological-hydraulic model was developed and also how the NBS measures were selected and modeled. He presented flood hazard maps for the Basleline scenario as well as scenarios with NBS measures. For both scenarios, the impacts of climate change were analyzed for the near future climate and for the long-term future climate. He presented the assessment of vulnerability according to the method of potential average annual damage as well as an index-base vulnerability assessment method. He explained how the RECONECT tool (Measure selector tool) can be used to select optimal measures for risk reduction. He presented the selected NBS measures in the Bregana River basin and how much they ultimately contributed to the avoided annual damage.

Part 3: Barriers and Enablers
Speakers: Draženka Kvesić and Ratko Ramuščak (PRONING) and the Workshop participants Draženka Kvesić presented the results of the workshops held in Croatia at the end of 2022 and the beginning of 2023 on the topic of barriers and enablers for the implementation of NBS. She introduced the 4 barriers previously recognized as most important. These barriers hinder, slow down or even prevent the implementation of NBS in Croatia. The identified barriers were as follows:

Part 3: Barriers and Enablers

- Barrier 1: Lack of sense of urgency,
- Barrier 2: Lack of political will and long-term commitment,
- Barrier 3: Social and cultural barriers to land acquisition from private owners,
- Barrier 4: 'Untouched Nature' Aspect of Nature-Based Solutions.

For each barrier, a minimum of 5 enablers are listed that would help to overcome the identified barriers. As a result of the Survey, joint proposals and through discussion, the participants of the workshop singled out the following as the most significant enablers.

- To overcome barrier 1: Creating incentive schemes and highlighting quick-win NBS projects that demonstrate immediate benefits, encouraging early adoption and investment.
- To overcome barrier 2: Unlocking public and private funding to enable NBS investments, merging complementary funding streams into single programs that prioritize NBS, and promoting innovative financing mechanisms such as payment for ecosystem services.
- To overcome barrier 3: Developing innovative compensation mechanisms that go beyond financial payments, such as land-for-land exchanges, land pooling, or long-term benefit-sharing arrangements that allow landowners to maintain a connection to their ancestral land.
- To overcome barrier 4: Implementing demonstration projects that showcase the successful integration of NBS into human-dominated landscapes, emphasizing their aesthetic appeal and functionality.

If we look at all four barriers and their enablers, it can be seen that two enablers have the greatest influence on overcoming the barrier. These are:

- Developing innovative compensation mechanisms that go beyond financial payments, such as land-for-land exchanges, land pooling, or long-term benefit-sharing arrangements that allow landowners to maintain a connection to their ancestral land;
- Implementing demonstration projects that showcase the successful integration of NBS into human-dominated landscapes, emphasizing their aesthetic appeal and functionality.

Financing of NBS seems to be a crucial problem. Secured financing would overcome the majority of the initial barriers of implementing NBS. Finding common understanding among all the stakeholders isn't always possible, but educating them could help them come to a mutually beneficial solution.

Educating of all the involved stakeholders at different levels of NBS implementation on the benefits of NBS will certainly help with the acceptance of future proposed NBS projects. If the stakeholders in the decision-making positions were more knowledgeable on NBS, they might be inclined to accept the proposed NBS projects over similarly priced grey infrastructure projects. Educating engineers/designers in the private sector on the benefits of NBS would boost the number of proposed and subsequently accepted NBS projects. Finally, educating the local communities as the beneficiaries of the NBS would make them more inclined to accept an NBS over the "conventional" grey measures they are already familiar with.

In regard to the education, it was agreed that the universities would play a crucial role by implementing more NBS related topics in their curriculums, but also organizing conferences and seminars for engineers and practitioners as well as workshops and presentations for local communities.

Similarly, the media covering more NBS related topics, especially successful NBS stories is key to raising awareness amongst all stakeholder groups. Information regarding NBS

projects is, of course, available online, but in order for people to find it, they have to already be familiar with the concept and the term itself. More mainstream coverage (TV, online news outlets etc.) of the NBS topic would raise awareness and could also incite people to look up more information themselves.

One can conclude that barriers for implementing NBS exist and will remain in the future, despite their unquestionable long-term profits for human wellbeing, security of economy, security of ecological systems and social impacts. In all these aspects, the government, alongside the local communities, play a key role. Such an attitude comes from our cultural and historical circumstances. The government must exercise social justice and react when natural disasters like flooding occur, especially in times of severe climate changes like we are currently experiencing. Local communities have their own tasks to handle in order to enable realization of the NBS approach. This covers activities like taking part in planning and design activities alongside measures taken by local authorities and state agencies responsible for implementation of NBS.

Stricter deadlines are needed when discussing the implementation of NBS measures once their projects get approved.

Lastly, having NBS as an EU Directive would open the doors for timely implementation of logical and long-term sustainable measures for flood risk management based on the NBS approach.

At the end of this part of the workshop, Draženka Kvesić and Ratko Ramuščak moderated the final discussion and workshop closure.

Figure 1 - Participants fill out a survey

Figure 2 - Creation of posters

Part 3: Barriers and Enablers

Figure 3 - Barrier 1: Lack of sence of urgency

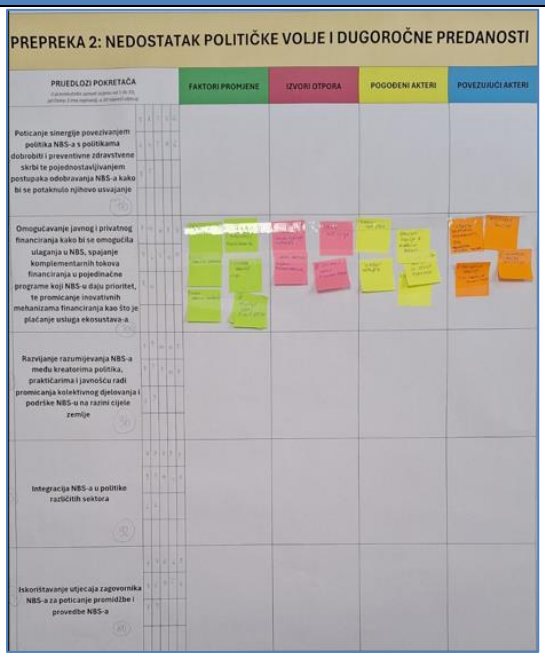


Figure 4 - Barrier 2: Lack of political will and long-term commitment

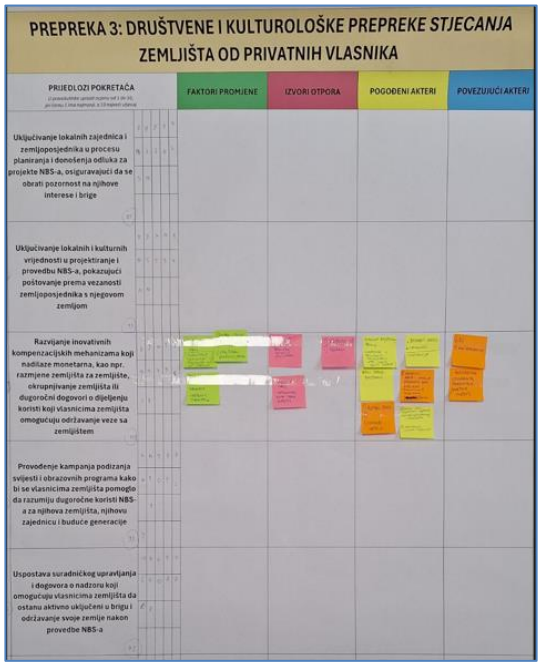


Figure 5 - Barrier 3: Social and cultural barriers to land acquisition from private owners

Figure 6 - Barrier 4: 'Untouched Nature' aspect of Nature-Based Solutions

Target audiences, event outcomes and follow-ups

Unfortunately, the turnout to the workshop was significantly less than the number of invited people. Although we expected more participants, all the present participants accepted all the activities presented at the workshop very well.

The workshop was attended by representatives of several institutions and companies, such as public water management authorities, forest management, representatives of spatial planning and the private sector.

As part of the RECONECT project, several workshops, various presentations, meetings and discussions on the application of NBS in reducing hydrometeorological risks were held prior to this workshop. Although the participants come from different professions and different management structures, the common impression is that NBS are recognized as risk mitigation solutions with great potential and benefits, not only for the population, but also for nature and the environment.

The workshop's key outcomes are:

1. Participants understood the aim of the workshop very well and were good partners in reaching conclusions, despite the fact that not all were decision-makers.
2. High level of understanding and common sense in defining enablers next to agents of change, sources of resistance, affected actors and bridging actors.
3. The value of the stakeholders mapping activity provided a better understanding of the best path towards implementing NBS in the coming future in Croatia.

Overall, the most influential enablers that would significantly help with overcoming all selected barriers were either regarding financing, raising awareness and education or showcasing implemented examples of NBS.

At the end of the Croatian national workshop, all participants agreed that it would be very useful to organize such workshops more often, so that other stakeholders and the general public would become more familiar with the results of the project, as well as the advantages of NBS in general.

Consequently, various events are already planned to present the benefits and possibilities of NBS planning in other locations in Croatia. One of the very recent events is planned in a framework of RECONECT project, Nature-Based Solutions for Water Security and Climate Adaptation Conference that will be held in Belgrade from 3rd to 5th of July 2024. The Conference will bring science and practice together and is further opportunity for spreading ideas and information on implementation of NBSs. Several participants from Croatia will take part in the conference.

Links to the media that published info on the National Workshop

On-line proceedings:

Information on the Croatian National Workshop is published in the following media:

Proning DHI media:

- The company's website:

  https://www.proning-dhi.hr/News.html

- Linked-in:

  https://www.linkedin.com/feed/update/urn:li:activity:7197156522320125952/

A news site for sustainable development and a successful community:

- Website:

  https://www.ekovjesnik.hr/clanak/7397/reconect-odrzana-radionica-o-nbs-rjesenjima-za-smanjenje-rizika-od-poplava-na-slivu-rijeke-bregane

8 Report of the RECONECT National Workshop in Banja Luka (Collaborator EC-3d, Vrbanja River Basin), Bosnia and Herzegovina

"Nature-based solutions for flood and drought risk reduction"

Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka
Banja Luka, May 17th 2024

Workshop rationale and outlines

National workshop titled "Nature-based solutions for flood and drought risk reduction" was jointly organized by University of Belgrade (UNBELGR) Faculty of Civil Engineering, a partner in the RECONECT project, the Institute for Water Management Ltd. Bijeljina, and the Faculty of Architecture, Civil Engineering and Geodesy in Banja Luka, the local host. The workshop brought together stakeholders from both the national and local levels, as well as other stakeholders, including experts from various fields and representatives of scientific institutions. The goal was to raise awareness about NBS and their potential for flood protection, positive impacts on ecosystems, people well-being, and better preparation for climate change. In this regard, in addition to presenting project results, guest presentations focusing on the application of NBS in rural basin were also planned.

The workshop coincided with the 10th anniversary of the catastrophic floods that hit Bosnia and the region in May 2014. Therefore, a part of the workshop was dedicated to summarizing the scale of this flood, as well as the activities undertaken in the past years in order to protect against the harmful effects of water.

The closing part of the workshop was a session on barriers for the implementation of NBS and factors for overcoming them (enablers). Through discussion and group work, participants reached conclusions that could contribute to a better understanding of NBS and finding solutions for their application in Bosnia and Herzegovina.

The event was organized as hybrid, with some participants joining online.

Programme

NATURE-BASED SOLUTIONS FOR FLOOD AND DROUGHT RISK REDUCTION

PROGRAMME

Time	Title of the speech, speaker
9:30 – 10:00	**Registration**
10:00 – 11:30	**Welcome note by the representative of the host, Faculty of Architecture, Civil Engineering and Geodesy**, Saša Čvoro (dean) **Welcome note by the representative of the Ministry of Agriculture, Forestry and Water Management, Department of Water Management**, Milan Gavrić

Time	Title of the speech, speaker
	Welcome note by the representative of the Faculty of Civil Engineering in Belgrade, Andrijana Todorović **RECONECT project and future potentials**, Nataša Manojlović (TUHH) **German experience: Hamburg flood protection**, Nataša Manojlović (TUHH) **The flood of 2014 - causes and consequences**, Vujadin Blagojević (Institute for Water Management Ltd. Bijeljina) **Flood risk reduction - structural measures for flood protection in the territory of the Republika Srpska**, Milan Gavrić, Marko Krneta and Marko Cupać (Ministry of Agriculture, Forestry and Water Management of the Republika Srpska)
11:30 – 12:00	**Coffee break**
12:00 – 13:00	**Non-structural measures in the Vrbas River Basin**, Goran Bosankić (UNDP B&H) **Forest management and nature-based solutions in Bosnia and Herzegovina,** Marijana Kapović Solomun (Faculty of Forestry, University of Banja Luka) **Pre-feasibility study for the application of NBS - Vrbanja River Basin in Bosnia and Herzegovina**, Tamara Sudar (UNBELGR) **Discussion**
13:00 – 14:30	**Analysis of barriers and recommendations for their overcoming**, Tamara Sudar (UNBELGR) **Joint work on prioritization of recommendations for overcoming barriers** **Discussion and conclusions**
15:00	**Lunch**

List of participants

N	Surname	Name	Company - Association
1	Todorović	Andrijana	Faculty of Civil Engineering, University of Belgrade
2	Vujović	Duško	Hydroelectric power plants on the Trebišnjica River, Department for Hydrology and System Management
3	Bosankić	Goran	UNDP B&H, Sarajevo
4	Blagojević	Vujadin	Institute for Water Management Ltd. Bijeljina
5	Davidović	Zlatko	Institute for Water Management Ltd. Bijeljina
6	Sudar	Milica	Institute for Water Management Ltd. Bijeljina
7	Sudar	Goran	Institute for Water Management Ltd. Bijeljina
8	Praštalo	Petar	Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka
9	Nikolić	Marija	Ministry of Spatial Planning, Civil Engineering and Ecology of the Republika Srpska
10	Dražić	Stojanka	Ministry of Spatial Planning, Civil Engineering and Ecology of the Republika Srpska
11	Nurković	Anel	Agency for watershed of the Adriatic Sea, Mostar

N	Surname	Name	Company - Association
12	Bakula	Emil	Agency for watershed of the Adriatic Sea, Mostar
13	Đurić	Ines	Republic Hydrometeorological Institute of the Republika Srpska
14	Mijatović	Milka	City of Banja Luka
15	Tošić	Radislav	Faculty of Natural Sciences and Mathematics, University of Banja Luka
16	Sudar	Nedeljko	Institute for Water Management Ltd. Bijeljina
17	Milanović	Anica	Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka
18	Cupać	Marko	Ministry of Agriculture, Forestry and Water Management of the Republika Srpska
19	Krneta	Marko	Ministry of Agriculture, Forestry and Water Management of the Republika Srpska
20	Glogovac	Gordana	Banja Luka Water Supply System
21	Gavrić	Milan	Ministry of Agriculture, Forestry and Water Management of the Republika Srpska
22	Vranić	Marinko	Ministry of Agriculture, Forestry and Water Management of the Republika Srpska
23	Kapović Solomun	Marijana	Faculty of Forestry, University of Banja Luka
24	Barić	Marko	Agency for the Water Area of the Sava River in Federation of B&H, Office in Jajce
25	Babić	Miodrag	Gradiška Water Supply System
26	Mandić	Siniša	Municipality of Čelinac
27	Dražić	Srđan	Public Enterprise „Šume Republike Srpske''
28	Toljević	Sanja	City of Banja Luka
29	Ilić	Dragana	City of Banja Luka
30	Borojević	Darko	Republic Hydrometeorological Institute of the Republika Srpska
31	Daničić	Vanja	Faculty of Forestry, University of Banja Luka
32	Čvoro	Malina	Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka
33	Mijatović	Stamenko	Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka
34	Čvoro	Saša	Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka
35	Kovaćević	Aleksandra	Public Institution „Vode Srpske"
36	Obradović	Vesna	Public Institution „Vode Srpske"
37	Latinović	David	Public Institution „Vode Srpske"
38	Jandrić	Boris	Center for Hydrotechnics „Hidropoint" Ltd. Banja Luka
39	Milić	Gostimir	Municipality of Kotor Varoš – civil protection
40	Đurić	Danijel	Municipality of Kotor Varoš – fire unit
41	Jakšić	Milan	Faculty of Architecture, Civil Engineering and Geodesy, University of Banja Luka
42	Pašalić	Boris	Faculty of Agriculture, University of Banja Luka
43	Sudar	Tamara	Faculty of Civil Engineering, University of Belgrade
Online participants			
44	Manojlović	Nataša	Hamburg University of Technology (TUHH)
45	Plavšić	Jasna	Faculty of Civil Engineering, University of Belgrade

Agenda

Welcome by the hosts
Tamara Sudar, a representative of the UNBELGR team, welcomed the participants and briefly went through the agenda. Following that, dean of the Faculty of Architecture, Civil Engineering and Geodesy, Saša Čvoro, addressed the attendees on behalf of the local host and expressed satisfaction that the workshop was organized at this faculty. Throughout the RECONECT project, significant support and interest have been shown by

the Ministry of Agriculture, Forestry and Water Management. Mr. Milan Gavrić, assistant of the Minister for water management, greeted the workshop participants and expressed the need to keep pace with the rest of the world in flood protection through the application of NBS. Andrijana Todorović, a representative of the Faculty of Civil Engineering at the University of Belgrade, explained the role of the faculty in the project, the link between the faculty and the case study of the Vrbanja River, and particularly emphasized the significance of the final part of the workshop, i.e. the session related to barriers and enablers in the implementation of NBS.

Technical session

RECONECT project and future potentials

Nataša Manojlović (TUHH)

The concept and methodology of the RECONECT project were presented, with a focus on the existing context of hydro-meteorological risks, as well as climate change and increased risks which are expected to become more pronounced. This indicated the need to reevaluate the existing infrastructure and strategies. There is an increasingly dominant idea that such solutions should be considered, that not only achieve the primary goal (such as flood protection) but also have a positive impact on the ecosystem and the well-being of the population.

The RECONECT project aims to develop a framework for finding appropriate and sustainable measures to reduce hydro-meteorological risks, focusing on measures called nature-based solutions. The concept and methodology of the project were presented as follows:

- an integrated/holistic approach to the entire defined system, where NBS are just one element
- demonstrating solutions and transferring experience to other areas (network of Demonstrators and Collaborators).
- analysis of the NBS benefits.

The presenter briefly reviewed examples of Demonstrators, such as the Dove Elbe in Germany, as a smart solution for optimal use of existing retention basins, and the example of the Tamnava River basin in Serbia as one of the Collaborators. The presentation showcased databases and models, an ICT platform, as well as experiences and solutions within the project. Examples of some solutions that were in function during the project's duration (e.g., in Germany and the Netherlands) which showed satisfactory results during the floods that occurred during that time were mentioned.

German experience: Hamburg flood protection

Nataša Manojlović (TUHH)

Flood defence in Hamburg and the Elbe River estuary presents a significant challenge. In addition to the extensive hydrographic network and the influence of North Sea fluctuations, climate change poses a significant challenge for the city, which is intensively urbanized and continues to grow. Apart from the expected increase in water levels due to storm surges, there are risks of inland flooding due to heavy rainfall events and fluvial floods. The major flood of 1962 served as a factor for restructuring and prioritizing flood defences, making flood defence an element in the city's urban development. The speaker showed how Hamburg is protected from floods with levees, walls, and other elements, but how the unprotected area of Hafen City, a district located in the former port area, was designed to “live with floods” by building flood-resistant buildings (with doors and windows that can be

hermetically sealed), without basements, with detailed evacuation plans, etc. The focus was on citizen awareness, which is continually evolving in Hamburg.

The flood of 2014 - causes and consequences

Vujadin Blagojević (Institute for Water Management Ltd. Bijeljina)

The presentation focused on the catastrophic flooding event that occurred in May 2014, which affected the Sava River basin in Serbia, Bosnia and Herzegovina, and Croatia. The speaker started by addressing the water sector in the Republika Srpska (entity in Bosnia and Herzegovina), which, with insufficient budget, faces the complex task of maintaining existing systems in functional condition while also upgrading and completing systems for flood protection. The flooding event in May 2014 in the Republika Srpska resulted in 88,986 hectares of flooded areas, 35,331 flooded households, and 116,090 flooded residents, causing immense damage. The watershed of the Bosna River was particularly highlighted, where approximately 60% of the total damages in the Republika Srpska occurred. This was due to:

- extreme climatological conditions
- significant anthropogenic influence in the basin
- incompleteness of water damage protection systems
- incompleteness of early warning and alert systems.

Examples were given from the Drina River basin, including the city of Bijeljina, and the Vrbas River basin, as well as other characteristic areas. All of this points out a need to change the approach to sustainable flood risk management and the need for synergistic action of the water sector with other sectors such as forestry, agriculture, ecology, spatial planning, etc. The potential application of NBS was emphasized, which should start immediately by demonstrating their positive effects in pilot areas and gradually introducing their mandatory inclusion in strategic planning documentation. In the near future, the implementation of combined measures (structural and non-structural) is needed, but in the long term, there is a need to increase the contribution of non-structural measures, including NBS.

Flood risk reduction - structural measures for flood protection in the territory of the Republika Srpska

Milan Gavrić, Marko Krneta and Marko Cupać (Ministry of Agriculture, Forestry and Water Management of the Republika Srpska)

More intensive activities of relevant institutions regarding flood protection began after the floods of 2010 and 2014. Representatives of the Ministry of Agriculture, Forestry and Water Management acquainted participants with the activities of the Government of the Republika Srpska related to investments in the water sector from various funding sources: the Solidarity Fund of the Republika Srpska, loans from the European Investment Bank (EIB), World Bank (WB), grants, and the budget of the Republika Srpska. Investments in water management facilities were realized at over 300 locations in all parts of the Republika Srpska. Works included: raising and building levees, urban river regulation, shoreline rehabilitation, canal network reconstruction and cleaning, etc. This has significantly increased the flood defense level compared to 2014. It is necessary to continue constant investment in both structural and non-structural measures and ensure a sustainable flood risk management system. The opportunity lies in the application of nature-based solutions.

Non-structural measures in the Vrbas River Basin

Goran Bosankić (UNDP B&H)

The topic of the presentation was non-structural measures in the Vrbas River basin. Activities under these measures were financed by the Global Environmental Facility (GEF) and implemented from 2015 to 2020. During this time, hazard and risk maps for the Vrbas basin were created, the water information system was harmonized among institutions, and existing databases were updated. As part of civil protection, an alert system was established (alarm sirens with accompanying equipment), a radio communication system was implemented (fixed and mobile radio stations) etc. The hydrometeorological station system was upgraded, and new hydrological, meteorological, and precipitation stations were installed. A flood forecasting model was developed for the entire basin, and a functional flood forecasting and early warning system was established, providing advance flood forecasts to implement preventive activities aimed at reducing flood risk.

Forest management and nature-based solutions in Bosnia and Herzegovina

Marijana Kapović Solomun (Faculty of Forestry, University of Banja Luka)

At the beginning of the presentation, the speaker gave an overview of the complex administrative structure of Bosnia and Herzegovina, composed of two entities (Republika Srpska and the Federation of Bosnia and Herzegovina) and the Brčko District, resulting in e.g. a total of 13 Ministries of Agriculture, Forestry and Water Management in B&H. It covered the climate and natural characteristics of the area, available forest and land categories. A particular problem that was highlighted was the migration of the population to larger urban centers. Soil degradation is highly prevalent, with main factors including: population decline in 75% of local communities (resulting in abandoned agricultural land and households), floods/erosion/droughts/fires, failed reforestation, landmines covering 2.2% of the territory, pesticide/herbicide use, and deforestation. Nature-based solutions (NBS) and reforestation measures were particularly emphasized.

Forest management is crucial as preserved forests contribute to maintaining clean water sources, reduce erosion, regulate infiltration, enable retention, prevent floods, provide oxygen, support biodiversity, and serve social functions, among others. The diversity of environments in Bosnia and Herzegovina (sub-Mediterranean, Mediterranean-high Herzegovina, mountainous and hilly areas, peri-Pannonian and Pannonian regions) presents an opportunity for the implementation of NBS. The forestry sector faces numerous challenges such as illegal deforestation, low implementation of legal frameworks, an inefficient control system, economic constraints, low awareness of the ecological functions of forests, etc. It is crucial to implement previously known measures supported by nature and to conduct research and projects like RECONECT.

Pre-feasibility study for the application of NBS - Vrbanja River Basin in Bosnia and Herzegovina

Tamara Sudar (UNBELGR)

The methodology for planning NBS implemented by Collaborators in the RECONECT project was demonstrated through a case study of the Vrbanja River basin. This basin was chosen because it has had a dominant influence on flood hazards and risks in the past 10-15 years. The runoff coefficient has significantly changed (almost doubled) after 1990, presumably due to changes in land use and the influence of climate change. In recent years, the basin's retention capacity has been significantly reduced, primarily under dominant anthropogenic influences (mainly deforestation and urbanization processes), resulting in increased peak flows and decreased infiltration and evaporation components in the water balance. Frequent floods, extensive damages, and high recovery costs in the past indicate the need for the application of measures for the runoff control in the upper parts of the basin.

The presenter showcased activities in the pre-feasibility study development, which included the selection of measures and their locations as well as the technical aspects such as flood

and risk mapping, development of hydrological and hydraulic models, forming scenarios with return periods, and possibly incorporating other scenarios: climate change and land use changes. The proposed NBS include: widening of water bodies, removing obstacles, floodplain restoration, retention basins, and reforestation.

The results of the models showed that in the downstream part of the basin, flood wave peaks were delayed by 2-3 hours depending on the return period (which is crucial for avoiding superposition with the Vrbas River) and reduced by 15-20%. Flooding was reduced, and risk maps showed a trend of shifting from higher to lower risk classes.

An assessment of the costs of the NBS implementation and the evaluation of all benefits were conducted. Cost-benefit analysis showed satisfactory results for the planned implementation of NBS, indicating favorable economic parameters. The development of this prefeasibility study involved significant collaboration with stakeholders in the basin, thus raising awareness among stakeholders about the applicability of NBS.

Workshop on barriers and enablers

Analysis of barriers and recommendations for their overcoming

Tamara Sudar (UNBELGR)

In the context of the acceptability and feasibility of NBS in the European partners case studies, a series of workshops were organized with local stakeholders in the previous phases of the project. Participants of the national workshop were informed about the results of the workshops for the Vrbanja River basin, held in Banja Luka and online. The results showed that stakeholders generally support NBS if the process is transparent and fair, if they are involved from the beginning, and if they understand the benefits of these solutions.

The workshops also resulted with a list of barriers to implementing NBS as identified by stakeholders. At the top of the list of barriers characterizing the system, social barriers were predominant - factors related to knowledge and awareness of NBS, combined with other barriers, including institutional (financial resources, lack of operational capacity) and political (political will and long-term commitment). According to the conducted analysis, the most significant barriers for NBS implementation are: lack of financial resources, lack of knowledge about NBS, lack of public understanding, and lack of awareness of NBS. Factors for overcoming these barriers (enablers) have been identified, and for each of them, it was necessary to identify key actors (agents of change, sources of resistance, affected actors, and bridging actors), which was the goal of the last part of the workshop.

Joint work on prioritization of recommendations for overcoming barriers

Tamara Sudar and Andrijana Todorović (UNBELGR), workshop participants

This session started when the participants were divided in two groups (one group for each barrier). Barriers regarding lack of awareness, knowledge and understanding of NBS were merged into one, so there were two barriers in total:

1. lack of financial resources for NBS
2. lack of awareness, knowledge and understanding of NBS.

The participants were free to choose the group according to their interests and professional experience. Two posters (one for each barrier) were prepared for the corresponding proposed enablers and put up on the panels. The stakeholder mapping started with the group participants gathering around the selected poster, where the process of stakeholder mapping was once again briefly explained. The moderators provided the participants successively with brief descriptions of each proposed enabler throughout the discussion.

Regarding barrier 1, the main enablers were:

- facilitating NBS projects with technical and financial planning support
- enhancing investment in NBS through combined public and private funds
- utilizing financial tools like green bonds and payments for ecosystem services to support NBS
- developing insurance products that de-risk the project risks
- introducing financial products that back NBS projects, such as resilience bonds.

The government and government institutions, including relevant ministries, have been identified as the main agents of change, influencing other stakeholders involved in financing NBS through activities such as technical and financial planning, issuing green bonds and resilience bonds, as well as supporting combined public and private funds and insurance products. Conflicts and sources of resistance may arise at various levels, between private landowners, private companies, and local communities, but the fundamental problem lies in the absence of systemic activities aimed at resolving these conflicts, i.e. the lack of appropriate legislation regulating the implementation of NBS and any incentives that implementation may bring. The task of the academic community and scientific institutes, as holders of knowledge and experience, is to convey the benefits of NBS for all three main aspects of social development: economic, ecological, and social, through public education programs, with the support of experts, practical experience from the EU, government support, and legislative framework (as well as the media). The academic community is perceived not only as an actor helping bridge the differences between identified agents of change and sources of resistance but also as an actor that should draw the attention of government institutions to their responsibility in overcoming barriers to NBS implementation.

Regarding barrier 2, the main enablers were:

- implementing highly visible pilot projects that showcase the tangible benefits of NBS to communities
- enhancing NBS monitoring and evidence collection to support effective implementation
- implementing and showcasing successful NBS projects to build awareness and inspire replication
- creating new knowledge and expertise on NBS through targeted educational initiatives
- providing NBS training for professionals across sectors to build awareness and skills.

The participants added one more enabler to the list above:

- inclusion of NBS-related topics in school syllabus to enable education of children from the early age.

The discussion among the group participants was rather constructive, although they did not agree on the role of all stakeholders considered. For instance, the participants had opposite opinions about the role of (conventional) media and social media on awareness building. Throughout the discussion it was noted that affected actors often represent the sources of resistance, whereas educational institutions (especially academia) were recognised as a credible actor that can increase awareness on NBSs. Education is essential for raising awareness, and it is a long-term process that should take place at several levels. Specifically, it is important to include water-related hazards in the formal education process, but also to initiate education and raising awareness at a local scale (e.g., in a local community or through small campaigns initiated by environmental NGOs). Gaining knowledge about NBSs and raising awareness on them requires showcasing

examples of good practice (added as additional enabler), but presented in an appropriate way taking into account local mentality. The role of academia is recognised as decisive, since academia has the credibility to outspeak „noise" and disinformation, and is recognised as credible by the general public.

Participants agreed that the selected barriers are the dominant ones. They also agreed that the selected enablers are appropriate for overcoming the barriers, with addition of one newly proposed enabler for the barrier of lack of awareness, knowledge and understanding of NBS. Improving the existing legal framework, i.e. the introduction of NBS implementation and raising knowledge and awareness, have been identified as the most important enablers. The main agent of change is the government with its ministries. Resistance factors include many known barriers such as the lack of a legislative framework defining NBS. The entire community is affected, and participants have recognized the academic community as the main bridging factor that should initiate the rationalization process of NBS.

Target Audience, event outcomes and follow-ups

The workshop brought together participants from various institutions, including authorities, local authorities, academia, and the private sector (consultants). This workshop was a continuation of several meetings and workshops held during the RECONECT project, where stakeholders had the opportunity to exchange experiences and opinions regarding the possibilities of implementing NBS. Despite discussions involving participants from different professional backgrounds, there is a sense that NBS have been recognized as promising solutions for mitigating the consequences of hydro-meteorological risks and improving living conditions and the environment. Participants acknowledged that there are many basins similar to the Vrbanja River basin where the use of NBS could be replicated, representing the right path towards sustainable development in Bosnia and Herzegovina.

Participants have listed the following key actions that could be taken to promote the adoption of NBS in Bosnia and Herzegovina/entity of Republika Srpska (based on an online survey and workshop discussion):

- Public education, especially working with decision-makers.
- Institutions must incorporate NBS into their strategic documents and laws as mandatory.
- Sectoral cooperation (horizontal and vertical), especially among water management, forestry, agriculture, construction, and spatial planning is very much needed.
- Implementation of pilot projects with visible effects of NBS application, which will demonstrate the benefits of NBS to the public and decision-makers. It is important to provide an adequate monitoring and maintenance system.
- It is up to professionals and academic community to present NBS to decision-makers in an appropriate manner. Good Cost-Benefit Analysis (CBA) and practical examples can promote the implementation of NBS.
- Invest in research in this field through funding for scientific research projects, especially those dedicated to NBS projects.
- Introducing these measures into the curriculum.
- Prepare programs for the education of professionals, and testing in this field can be included as a condition for obtaining approval to work/renew their licenses.
- Provide financial resources.
- Ensure transparency in the use of financial resources.

The next event planned within the RECONECT project is the conference "*Nature-Based Solutions for Water Security and Climate Adaptation*", scheduled to take place in Belgrade

from July 3rd to July 5th, 2024. The conference will bring together science and practice and represents an additional opportunity to disseminate ideas and information about the application of NBS. Participants from the workshop in Bosnia and Herzegovina are warmly invited to participate in this conference.

Links to the media that published information about the workshop

Faculty of Architecture, Civil Engineering and Geodesy:

https://aggf.unibl.org/sr/vesti/2024/05/reconect-nacionalna-radionica

https://aggf.unibl.org/sr/vesti/2024/05/na-aggf-u-odrzana-nacionalna-radionica-prirodom-inspirisana-rjesenja-za-smanjenje-rizika-od-poplava-i-susa

On-line proceedings

http://www.reconect.eu/national-workshops/national-workshop-in-bosnia-and-herzegovina/

Photo: Main channel of the Vrbanja (Source: Institute for Water Management Ltd. Bijeljina)

9 Report of the RECONECT National Workshop in Serbia (Collaborator cases EC-3b Jadar and EC-3c Tamnava)

3rd April 2024
Belgrade, Serbia

Workshop rationale and outlines

The National Workshop was organized by the University of Belgrade, Faculty of Civil Engineering (UNBELGR), responsible for two Collaborator cases in Serbia. The workshop gathered both stakeholders from national and local levels as well as other interested parties, including professionals and representatives of scientific institutions. Aim of the workshop was to raise awareness of NBSs and their potentials for implementation in flood protection. Experiences from already implemented NBS were presented, indicating effects on nature and people that are already noticeable. Projects activities and results of the case studies developed by UNBELGR, the Tamnava river basin and the Likodra river basin (Municipality of Krupanj) were presented to the participants.

Significant time was devoted to the discussion on barriers for implementation of NBS and potential enablers for their overcoming. Through fruitful discussions and work in groups on particular barriers and enablers, the participants come up to the conclusions that could contribute to better understanding of NBSs and to finding solutions for their implementation.

The workshop was held in local language in order to facilitate communication among the participants and to foster involvement of local communities. There were about 60 participants.

Information on the workshop was published on the web site of the Faculty of Civil Engineering and the University of Belgrade, as well in several media.

Programme

National Workshop
Nature Based Solutions for Flood and Drought Risks Reduction

Agenda

Date
Wednesday, 3rd April 2024

Meeting Venue
Faculty of Civil Engineering, University of Belgrade
Main Hall
Bulevar kralja Aleksandra 73, Belgrade

Agenda

9:30 – 10:00 Registration

Part 1: Welcome and Introductions
Moderator: Jasna Plavšić, coordinator of the Faculty of Civil Engineering team for the RECONECT project
10:00 – 11:30 Welcome note
(Aleksandar Djukić, vice dean, UNBELGR)
Project RECONECT and future potentials
(Zoran Vojinović, IHE Delft)
The German experience: Hamburg flood protection
(Christian Ebel, BUKEA)
Activities of PWC Srbijavode related to harmful water effects
(Darko Janjić, PWC Srbijavode)
11:30 – 12:00 Coffee break

Part 2: Project Results
12:00 – 13:00 Tamnava River Basin (Nikola Rosić, UNBELGR)
Municipality of Krupanj (Andrijana Todorović, UNBELGR)
Urban NBS in Belgrade – project euPolis
(Anja Randjelović, UNBELGR)
Discussion

Part 3: Barriers and Enablers
13:00 – 14:30 Analysis of barriers and recommendations for their overcoming – presentation of project results (Jasna Plavšić)
Joint work on prioritization of recommendations for barrier overcoming
Discussion and conclusions
14:30 Workshop closure
14:30 Lunch

List of Participants

Name	Surname	Organisation
Merita	Borota	Republic Directorate for Water, Ministry of Agriculture, Forestry and Water Management
Darko	Janjić	PWC Srbijavode
Jugoslav	Jovanović	PWC Srbijavode
Vladimir	Beljinac	PWC Srbijavode
Branko	Čanković	PWC Srbijavode
Sandra	Lazić	Ministry of Environmental Protection
Ana	Repac	Ministry of Environmental Protection
Dragana	Vidojević	Agency of Environmental Protection
Dejan	Vladiković	Republic Hydrometeorological Service of Serbia

Name	Surname	Organisation
Ratko	Ristić	Faculty of Forestry, University of Belgrade
Mirjana	Ocokoljić	Faculty of Forestry, University of Belgrade
Ranka	Erić	Faculty of Forestry, University of Belgrade
Katarina	Lazarević	Faculty of Forestry, University of Belgrade
Tijana	Vulević	Faculty of Forestry, University of Belgrade
Natalija	Momirović	Institute of Forestry
Ružica	Stričević	Faculty of Agriculture, University of Belgrade
Marija	Jevtić	Faculty of Medicine, University of Novi Sad
Zvonimr	Baković	PC Srbijašume
Aleksandar	Vukalović	E-sigurnost
Nataša	Đokić	Dvoper
Ivan	Radišić	Energoprojekt
Jovana	Vićanović	Energoprojekt
Marija	Glavonjić	Energoprojekt
Marija	Ković	Energoprojekt
Jelisaveta	Miladinović	Energoprojekt
Ivana	Dmitrović	Energoprojekt
Dragan	Vučićević	Energoprojekt
Milan	Stanimirović	Energoprojekt
Zoran	Vojinovic	IHE Delft, Holandija
Christian	Ebel	BUKEA
Slobodan	Đorđević	89niversity of Exeter, UK
Jelena	Batica	UNSA
Slavica	Đotunović	Municipality of Krupanj
Svetlana	Milovanović	Municipality of Krupanj
Pavle	Pavković	Advanced Cyber Security
Vanja	Damjanović	Jaroslav Černi Water Institute
Vojislav	Antonić	Jaroslav Černi Water Institute
Jasmina	Moskovljević	Delta Inženjering

Name	Surname	Organisation
Tina	Dašić	Faculty of Civil Engineering, University of Belgrade
Marko	Ivetić	Faculty of Civil Engineering, University of Belgrade
Sanja	Jocković	Faculty of Civil Engineering, University of Belgrade
Divna	Pekić	Spotter
Djordje	Djajić	Faculty of Civil Engineering, University of Belgrade
Marina	Radović	Faculty of Civil Engineering, University of Belgrade
Aleksandra	Jerinić	Faculty of Civil Engineering, University of Belgrade
Tomka	Zlatić	Faculty of Civil Engineering, University of Belgrade
Jovana	Poluga	Faculty of Civil Engineering, University of Belgrade
Julijana	Janković	Faculty of Civil Engineering, University of Belgrade
Nikola	Stevanović	IHE Delft
Milena	Raković	Faculty of Civil Engineering, University of Belgrade
Jelena	Kovačević-Majkić	Geographical Institute Jovan Cvijić, Serbian Academy for Arts and
Jasna	Plavšić	Faculty of Civil Engineering, University of Belgrade
Dušan	Prodanović	Faculty of Civil Engineering, University of Belgrade
Aleksandar	Đukić	Faculty of Civil Engineering, University of Belgrade
Andrijana	Todorović	Faculty of Civil Engineering, University of Belgrade
Nikola	Rosić	Faculty of Civil Engineering, University of Belgrade
Anja	Randjelović	Faculty of Civil Engineering, University of Belgrade
Filip	Stanić	Faculty of Civil Engineering, University of Belgrade
Tamara	Sudar	Faculty of Civil Engineering, University of Belgrade
Ljiljana	Janković	Faculty of Civil Engineering, University of Belgrade
Miodrag	Jovanović	Faculty of Civil Engineering, University of Belgrade
Jovan	Despotović	Faculty of Civil Engineering, University of Belgrade
Jasmina	Njegovan Popović	Faculty of Civil Engineering, University of Belgrade

Description of the Agenda

Part 1: Welcome and Introductions
Speakers: Aleksandar Djukić (UNBELGR), Zoran Vojinovic (IHE Delft), Christian Ebel (BUKEA), Darko Janjić (PWC Srbijavode) Vice dean of the Faculty od Civil Engineering, Aleksandar Djukic, welcomed the participants, as a local host. Zoran Vojinovic, coordinator of the RECONECT project, presented the project highlights and aims of the projects. He gave an overview of the main characteristics of Nature-Based Solutions and possibilities for application, through presentation of already developed project in The Netherlands, Room for the River. Christian Ebel showed an example of NBS implementation in the Hamburg Demonstration Region that resulted in increased resilience of Hambur to flooding caused by both rains and tides. Darko Janjić, executive director for protection from harmful water effects in PWC Srbijavode, presented activities of PWC Srbijavode related to reduction of flood risks. The activities include planning and construction, maintenance and management, implementation of flood protection and rehabilitation of flood consequences.

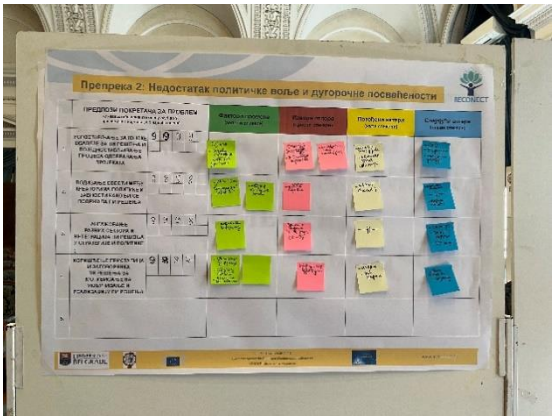
Part 2: Project Results
Speakers: Nikola Rosić, Andrijana Todorović, Anja Randjelović (all from UNBELGR) Case studies developed by UNBELGR, the Tamanava river basin and Municipality of Krupanj (The Likodra river basin) were presented by Nikola Rosić and Andrijana Todorović. Development of case studies included vast cooperation with stakeholders, especially local community. As a results, following the development of the hydrological-hydraulic mathematical models, assessment of vulnerabilities and risks were done, and further measures for flood protection were selected. Anja Randjelovic presented the H2020 project euPolis – Integrated NBS-based Urban Planning Methodology for Enhancing the Health and Well-being of Citizens. The project aims in improvement of resilience on climate changes in cities using NBS, and two project demo sites are located in Belgrade.

Part 3: Barriers and Enablers
Speakers: Jasna Plavšić (UNBELGR) and the Workshop participants Jasna Plavšić gave an overview of the selected barriers and potential enablers, that arose following in-depth consultation with stakeholders and wokrshops held previously in local communtities. Four barriers stood up as the biggest obstacles for implementation of NBSs: 1. Lack of financial resources for NBS 2. Lack of political will and long-term commitment 3. Lack of knowledge of NBS 4. Lack of adequate legal frameworks for land acquisition, compensation and incentives The Workshop participants divided in four groups, according to their interests and professional experiences, for discussion on the selected barriers and potential enablers. The potential enablers were divided on agents of change, sources of resistance, affected actors and bridging actors.

Part 3: Barriers and Enablers
Regarding barrier 1, the participants agreed that main enablers are: - Support of NBS projects through technical-financial planning, and - Introduction of financial products that support NBS projects. Main agents that could contribute to changes selected by the participants are line ministries, and financial institutions, respectively. Potential sources of resistance are other ministries and mistrust of communities from areas not threatened by floods, respectively. Local communities and investors were selected as affected actors, and academic community was assessed as a bridging actor for barriers overcomming. Enablers considered for overcomming of Barrier 2 were: - Establishing legal mandates for NBS and streamlining project approval processes; - Enhancing awareness among policymakers and the public to foster support for NBS; - Engaging various sectors and integrating NBS into strategies and policies; - Leveraging the advocacy of NBS proponents to motivate engagement and implementation. Agents of change that were recognised are domestic and EU regulations, Governent of Serbia, professional society and well-paid experts, as well as public service media and ecological associations. Existing legislation was identified as a main source of resistance, while local goverment, residents and environment were selected as affected actors. Several bridging actors could help in barriers overcomming – educational institutions, international institutios, NGOs, well-paid experts, EU legislation and extreme flooding events. Barrier 3 could be overcome through several enablers: - Conducting campaigns to increase public and stakeholder awareness of NBS; - Involving diverse stakeholders in NBS planning and implementation to ensure relevance and support; - Creating new knowledge and expertise on NBS through targeted educational initiatives; - Enhancing NBS monitoring and evidence collection to support effective implementation. Agents that could enable change are educational institutions, from kindergarten, throuh primary, secondary and higher education and academic institutions, local communities, public water companies and NGOs. Sources of resistance are local goverment, Ministry of education, investors, uniformed residents, etc. Residents and investors are recognized as affected actors. Bridging actors are knowledge, research projects and visibility in media. Selected enablers that were discussed for overcoming barrier 4 are: - Creating detailed legislation and regulations to streamline land acquisition for NBS; - Implementing legally binding targets for NBS and streamlining the approval process; - Amending EIA directives to prioritize NBS over grey infrastructure; - Establishing dedicated bodies to oversee NBS promotion, funding, and implementation. Government and relevant Ministries were recognized as agents of change. Main sources of resistance are implementation of legislation, unresolved property-legal relations, lack of understanding and lack of human resources. Entire community is identified as affected actor, while academic comunity is foreseen as bridging actor for all potential enablers.

Part 3: Barriers and Enablers
The panels used for work are shown hereinafter.

Barrier 1: Lack of financial resources for NBS



Barrier 2: Lack of political will and long-term commitment

Barrier 3: Lack of knowledge of NBS

Barrier 4: Lack of adequate legal frameworks for land acquisition, compensation and incentives

At the end of this part of the workshop, Prof. Ratko Ristic, Ms. Natasa Djokic and Prof. Jasna Plavsic moderated the final discussion and workshop closure.

Target audiences, event outcomes and follow-ups

The Workshop gathered participants from various institutions, including public authorities from local and national level, interested stakeholders, representatives of academia and research organizations, engineering companies, NGOs, and others. In total more 63 participants took part in the workshop. This workshop was a follow up of several meetings and workshops held during the RECONECT projects in which interested parties had an oportunity to exchange experiences and opinions related to posibility for implementation of NBSs. Even that participants from various professional backgrounds discussed about the problems and oportunities, common impression is that NBS are recognized as promising solutions for mitigation of the consequences of floods and improving the living conditions of people and the environment.
Outcomes from the RECONECT National Workshop held in Belgrade can be summarized as follows:

- Overcomming of barriers in implementation of NBS in Serbia is veasible only if relevant authorities are being involved in the process through adaptation of related legislation and forcing of legislation implementation;
- Education of people of all levels, from residents and project developers to decision makers, is essential for improvement of understanding of NBS;
- Academia is recognized as an essential bridging actor for overcomming barriers through improving of knowledge and understanding of importance and effects of NBSs and connecting interested parties from all society levels.

Next event planned in a framework of RECONECT project is Nature-Based Solutions for Water Security and Climate Adaptation Conference that will be held in Belgrade from 3rd to 5th of July 2024. The Conference will bring science and practice together and is further opportunity for spreading ideas and information on implementation of NBSs.

Links to the media that published info on the National Workshop

Information on the National Workshop was published in the following media:
Daily newspaper Novosti:https://www.novosti.rs/c/obrazovanje/vesti/1355533/nacionalna-radionica-gradjevinskom-fakultetu-kako-spreciti-rizik-poplava-susa
New Radio Sombor: https://noviradiosombor.com/nacionalna-radionica-o-riziku-od-poplava-i-susa/
University of Belgrade media:

- Internet site: https://www.bg.ac.rs/reconect/
- Instagram (University of Belgrade): https://www.instagram.com/p/C5p2XlltQMS/

Faculty of Civil Engineering media:

- Internet sites: https://hikom.grf.bg.ac.rs/aktuelnosti.php

https://hikom.grf.bg.ac.rs/aktuelnosti.php

- Twiter: https://twitter.com/Grf_Beograd
- Instagram: https://www.instagram.com/p/C5f2vfsoMaY/
- Facebook: https://www.facebook.com/bg.grf?locale=sr_RS,
- YouTube: https://www.youtube.com/watch?v=1dmPVlQz4LQ
- Tik-Tok: https://www.tiktok.com/@gradjevinskifakultet/video/7355447271854558470

On-line proceedings:
http://www.reconect.eu/national-workshops/national-workshop-in-serbia/

10 Report of RECONECT National Workshop in Thailand (International Collaborator IC-1)

Pathum Thani Province
3 May 2024

Workshop rationale and outlines

The Hydro-Informatics Institute (HII), in collaboration with Water Resource Management Committee Canal No. 8-9-10 and Rangsit Community Network, jointly organized a practical seminar on the topic of "Community Water Resource Management for Nature-Based Solutions in Thailand" The objective was to outline the overall progress and strategies of the RECONECT project, focusing on the concept of Natural-Based Solutions (NBS) implemented in Rangsit community area. This aimed to promote community water resource management approaches capable of adapting to climate change. The practical seminar included presentations on the project's progress and strategies, risk assessments in hydrometeorology, local water infrastructure, collaborative problem analysis, and obstacles encountered in the Rangsit community area. These discussions aimed to inform future climate change adaptation and management plans.

Programme

National Workshop

"Community Water Resource Management for Nature-Based Solutions in Thailand"

Agenda

Date

Friday, 3rd May 2024

Meeting Venue

Sukboontharikaram School meeting room,
Nong Suea District, Pathum Thani Province,
Thailand

Agenda

Time	Title / Speaker
9.00 – 9.30 Hrs.	Register
9.30 – 9.50 Hrs.	Welcome Remarks *and RECONECT introduction* *By Dr. Royboon Rassameethes, Director of Hydro–Informatics Institute (HII) - 20 mins*
9.50 – 10.10 Hrs.	RECONECT project insight and NBS implementation in Rangsit Community *By Dr. Sutat Weesakul, Advisor of HII – 20 mins*
10.10 – 10.30 Hrs.	Hydro-meteorological risk assessment for Rangsit Community *By Dr. Winai Chaowiwat, HII Researcher - 20 mins*
10.30 – 10.40 Hrs.	Coffee Break
10.40 – 11.00 Hrs.	Water management in the North Rangsit Irrigation Project Area, under the supervision of the 11th Irrigation Office *By Mr. Anusak Thongprung, Head of the Water Management and Irrigation Improvement Branch, Royal Irrigation Department - 20 mins*
11.00 – 11.30 Hrs.	Discussion on obstacles and barriers for future collaboration - *30 mins*
11.30 – 11.45 Hrs.	Summary & Group Photo
12:00 Hrs.	Lunch

List of Participants

Speakers

Name-Surname	Position	Organization
1. Dr. Sutat Weesakul	Advisor	Hydro-Informatics Institute
2. Dr. Royboon Rassameethes	Director	Hydro-Informatics Institute
3. Dr. Winai Chaowiwat	Researcher	Hydro-Informatics Institute
4. Mr. Anusak Thongprung	Head of the Water Management and Irrigation Improvement Branch	Royal Irrigation Department

HII attendance

Name-Surname	Position
1. Ms. Jittiporn Chantarojsiri	Director of Special Project, Collaboration and Corporate Communicat Division
2. Mr. Manorot Tangsaveephan	Director of Technology and Digital Division
3. Mr. Mongkol Ngmjarearnwong	Director of Community Water Resource Management Division
4. Ms. Piyanoot Thasanhod	Community Water Resource Management Analyst
5. Ms. Narinrat Kalampabut	Community Water Resource Management Analyst
6. Ms. Kanitta Ngamcharoen	Community Water Resource Management Analyst

7. Ms. Sumaporn Puengpo	International Collaboration Officer

Stakeholders

Name-Surname	Organization
1. Mr. Suvech Hanchaowong	Coca-Cola (Thailand) Limited
2. Ms. Chalintra Wasita Kukiatkulchai	Coca-Cola (Thailand) Limited
3. Ms. Nutticha Chaowalit	Coca-Cola (Thailand) Limited
4. Ms. Kittinun Wanichkirati	Coca-Cola (Thailand) Limited
5. Ms. Pimpisa Napakulwong	Coca-Cola (Thailand) Limited
6. Mr. Sa-Nga Kanpetch	Royal Irrigation Department
7. Mr. Aumnoy Kiengkrai	Royal Irrigation Department
8. Mr. Kitti Onreung	Royal Irrigation Department
9. Ms. Parichart Kongdetchchart	Royal Irrigation Department
10. Ms. Tepin Rattana	Agricultural Land Reform Office
11. Mr. Sompong Jeenchukeaw	District Agricultural Extension Office
12. Mr. Pongpan Silpadung	Water Resource Management Committee
13. Mr. Kasem Klamsub	Water Resource Management Committee
14. Mr. Sanom Tang-aun	Water Resource Management Committee
15. Mr. Manus Phuttarattana	Water Resource Management Committee
16. Mr. Saman Aoytan	Head of Village Moo 7
17. Mr. Chalee Kamrak	Head of Village Moo 10
18. Mr. Piemsuk Ponsawang	Head of Village Moo 5
19. Mr. Sompong Chongan	Head of Village Moo 2
20. Mr. Boonnak Borirak	Head of Village Moo 7
21. Mr. Samrit Rombuakeaw	Head of Village Moo 8
22. Ms. Suwanna Buakranonchai	Head of Village Moo 8
23. Mr. Pichet Sonhom	Head of Village Moo 6
24. Mr. Chalermrit Kasemsuk	Head of Village Moo 1
25. Mr. Prasan Homkasem	Head of Village Moo 9
26. Mr. Niwat In-Am	Head of Village Moo 12
27. Ms. Kanyaphat Ngernkrachang	Head of Village Moo 11
28. Mrs. Bung-orn Preekran	Head of Village Moo 9
29. Mr. Montree Paunghiran	Head of Village Moo 6
30. Mr. Wanlop Yeesoonsri	Head of Village Moo 4
31. Ms. Sompron	Head of Village Moo 1
32. Ms. Jen Dissadee	Head of Village Moo 2
33. Mrs. Pimsiri Tammun	Head of Village Moo 3
34. Mr. Panom Meechudetch	Head of Village Moo 3
35. Ms. Wilia Pinpradub	Head of New Theory Agriculture Committee

Name-Surname	Organization
36. Ms. Jaruwan Pendee	New Theory Agriculture Committee
37. Ms. Sompong Keaweuim	New Theory Agriculture Committee
38. Mr. Patum Songprasert	New Theory Agriculture Committee
39. Mr. Sanun Kamrak	New Theory Agriculture Committee
40. Ms. Jutarat Kooytaun	New Theory Agriculture Committee
41. Ms. Thitinan Songkrau	New Theory Agriculture Committee
42. Ms. Pentip Promchareon	New Theory Agriculture Committee
43. Ms. Kanjana Kumsab	New Theory Agriculture Committee
44. Ms. Angwipa Pukpan	Sukboontarikaram School Director
45. Ms. Jutarat Tang-On	Teacher
46. Ms. Kantanat Tamnameung	Teacher
47. Ms. Parawee Hiranrak	Teacher
48. Mr. Tuksakorn Srisuwan	Teacher
49. Ms. Nanticha Prommon	Teacher
50. Mr. Pisud Tabkam	Teacher
51. Mrs. Karuna Tang-On	Teacher

Short summary of Agenda

1. RECONECT introduction

Speaker: Dr. Royboon Rassameethes, Director

Organization: Hydro–Informatics Institute (HII)

Dr. Royboon highlighted the importance of Nature-Based Solutions (NBS) in effectively managing natural disasters. The presentation delivered a comparison of climate change data spanning 46 years and analyzed rainfall anomaly data in Thailand from 1984 to 2023. NBS were highlighted as a sustainable environmental management strategy, with a focus on the involvement of HII in the RECONECT project, which was key to reducing disaster risk. This approach prioritized the harmonization of Water-Nature-People interactions through the implementation of appropriate technologies and infrastructure. Notably, the project's case study in the Rangsit Community demonstrated the application of the Community Water Resource Management concept in line with global NBS standards. The project underscored the importance of inter-sectoral learning for fostering a sustainable future.

2. RECONECT project insight and NBS implementation in Rangsit Community

Speaker: Dr. Sutat Weesakul, Advisor

Organization: Hydro–Informatics Institute (HII)

Dr. Sutat provided insights into HII's involvement in the RECONECT project, with a particular focus on data visualization and the study areas. For the data visualization, HII has integrated the current information in Rangsit area with RECONECT's TelecontroInet system. The study area was selected for its potential to achieve a balance between Water-Nature-People through collaborative processes and the application of appropriate Green-

Blue-Grey solutions. HII, alongside various organizations and universities in the Asia-Pacific region, participates in the project, utilizing the Rangsit community as a case study to analyze NBS measures. Additionally, Dr. Sutat discussed the engagement of stakeholders in the Rangsit community to evaluate various risks, contributing to academic reporting within the project. He also elaborated research demonstrating the effectiveness and outcomes of implemented NBS measures in the area. This research highlights how stakeholder collaboration and risk assessment have contributed to the successful application and positive impact of NBS in enhancing environmental resilience and sustainability in the Rangsit community.

3. Hydro-meteorological risk assessment for Rangsit Community

Speaker: Dr. Winai Chaowiwat, Researcher

Organization: Hydro–Informatics Institute (HII)

Dr. Winai provided the methodology for assessing meteorological and hydrological risks in the Rangsit community. This includes utilizing hydrological models to evaluate the impacts on Nature-Based Solutions (NBS) measures and employing the MIKE11 model to simulate flow conditions and water levels in the main canal, secondary canals, and drainage channels. Moreover, flood and drought risks are evaluated through the Climate Risk and Vulnerability Assessment (CRVA) process. The assessment of risks from climate change involves steps such as evaluating hazards, exposure, vulnerability, resilience, and adaptability. Indicators are designed for each component to assess the risks from climate change, providing insights into future weather conditions and disasters in the Rangsit community area.

4. Water management in the North Rangsit Irrigation Area Project, under the supervision of the 11th Irrigation Office

Speaker: Mr. Anusak Thongprung, Head of the Water Management and Irrigation Improvement Branch

Organization: Royal Irrigation Department

The supervision of the 11th Irrigation Office, Royal Irrigation Department, is responsible for managing the Water Management in the North Rangsit Irrigation Area Project, which encompasses the Rangsit Community area. This project involves constructing waterways and conservation efforts, including building reservoirs and canals to regulate water flow across a vast region, with designated locations for specific water management activities. To manage water quality and mitigate flooding impacts, several measures are implemented, such as monitoring water levels, controlling water discharge, and improving water quality through dilution and wastewater treatment. The office has established criteria and measures to control water quality and address the impacts of flooding and drought. A significant aspect of the project is increasing public awareness and community participation. Measures for wastewater management and water quality monitoring are in place, along with public education efforts aimed at fostering understanding and promoting environmental conservation and preservation. These initiatives are crucial for ensuring sustainable water management and enhancing the resilience of the Rangsit community against environmental challenges.

5. Discussion on obstacles and barriers for future collaboration

Lead by: Dr. Royboon Rassameethes, Director

Organization: Hydro–Informatics Institute (HII)

Dr. Royboon Rassameethes led a session dedicated to brainstorming obstacles and barriers faced by the Rangsit community in relation to disaster risk. The session aimed to enhance collaboration and elevate the community's profile both nationally and internationally, while adhering to the concept of Nature-Based Solutions (NBS). This was achieved through the adaptation of agricultural processes to align with NBS principles, promoting sustainable and resilient practices that mitigate disaster risk and improve overall environmental management.
Target audiences, event outcomes and follow-ups

The workshop titled "Community Water Resource Management for Nature-Based Solutions in Thailand" was hosted at Sukboontharikaram School in Nong Suea District, Pathum Thani Province. The venue was selected to facilitate easy access for local stakeholders in proximity. A total of 51 participants attended, representing three main sectors: Government, Private sector, and Local authorities/people. These stakeholders are actively involved in various aspects of the Rangsit Community. As the coordinator of the RECONECT project, HII sought to engage them in the workshop to update them on project progress and introduce the concept of Natural-Based Solutions (NBS) being implemented in the Rangsit community area. The objective was to promote community water resource management approaches capable of adapting to climate change.

From the government sector, the Royal Irrigation Department was invited as both speaker and participant due to its key role in waterway construction, conservation efforts, and water management regulation. The Agricultural Land Reform Office, responsible for managing agricultural land for food security and productivity enhancement, and the District Agricultural Extension Office, providing agricultural consultations and knowledge transfer, were also invited. These government agencies participated to understand the potential impact of RECONECT on the Rangsit area.

Coca-Cola (Thailand) Limited played a significant role as the main private sector participant. They initiated the "Village That Learns and Earns" project in Rangsit, Pathum Thani province, in 2011. This project aimed to enhance water management by expanding the water management network, dredging natural canals, constructing, and refurbishing clarifiers, and installing watergates. Most of the activities funded by Coca-Cola supported the NBS concepts within the RECONECT project.

Direct stakeholders from the Rangsit Community included members of the Community Water Resource Management Committee Klong 8-9-10, the Group of New Theory Committee, village heads, and schoolteachers. They were invited to study NBS solutions within the area and understand the project's benefit and co-benefit.

During the workshop's final session, participants engaged in a brief brainstorming session to discuss obstacles and barriers related to disaster risk in the Rangsit community. Key points included the need for enhanced collaboration across sectors, clear communication between government and community, intensified efforts in water management, and promotion of New Theory Agriculture (integrated agriculture) concepts for climate change adaptation.

Links to the media that published info on the National Workshop

Information on the National Workshop was published in the following media:

HII homepage: https://www.hii.or.th/

Workshop Materials & Pictures Link: https://drive.hii.or.th/s/tM8Ay9wf7qzisjW

http://www.reconect.eu/national-workshops/national-workshop-thailand/

11 Conclusions and plans for the future

The organization of the National Workshops in RECONECT demonstrators and collaborators revealed the strong interest by the institutional and private stakeholders and actors in the specific theme of NbS for climate adaptation and the mitigation of water-related risks. It is hence expected that networks created at national level by RECONECT and other projects dealing with similar issues will be maintained and increased along the time in order to capitalize knowledge and results to support the change in land planning approach and the current EU green policies.
The engagement of users (in particular the institutional ones) will continue after the project end according to the RECONECT User Engagement and Public Affairs Strategy (Annexed to Deliverable 6.11) where national workshops with stakeholders are recognised as an effective tool to further exploit the project results.