



# OPERANDUM

## Nature-based Solutions for hydro-meteorological hazards

Training 2: Stakeholder Engagement and Co-creation



EU funded project  
GA no. 776848

# About OPERANDUM



## OPERANDUM

OPEn-air laboRAtories for Nature based solUtions to Manage hydro-meteo risks

- 4-year, European project, with 26 international partners
- Sustainable solutions based on nature - Nature-based Solutions - to adapt to extreme weather events
- Demonstrate the tools and methods for the validation of these solutions in 10 open air labs

**10 OPEN AIR LABS**  
Austria, Finland, Germany, Greece, Ireland, Italy, Scotland (UK), Australia, China, China (Hong Kong).



Flood



Storm surge



Coastal erosion



Seawater intrusion



Eutrophication



Landslide



Soil erosion



Drought

## Part I: Nature-based Solutions and Co-creation

- What is co-creation?
- Why do we need collaborative approach/co-creation for NBS?
- The benefits of using a co-creation approach
- OPERANDUM co-creation approach in a nutshell



ALMA MATER STUDIORUM  
UNIVERSITÀ DI BOLOGNA

## Part II: How to engage stakeholders

- What should you consider
- A step-by-step approach



## Part III: Co-creation in practice

- Co-creation in practice - visiting OPERANDUM OALs
- What have we learnt so far



*After completing this training unit, you should be able to understand:*

- What co-creation and stakeholder engagement is
- Why it is important in the context of Nature-based Solutions
- How this can be applied to realise Nature-based Solutions, and considering sustainability aspects
- OPERANDUM's approach to stakeholder engagement and co-creation



# What is special about Nature-based Solutions?

Nature based solutions are:

- Inspired and supported by nature;
- Cost-effective;
- Provide environmental, social and economic benefits;
- Help build resilience;
- Through locally adapted, resource-efficient and systemic interventions.

For innovative, locally adapted and accepted solutions, it is needed to:

- Understand local environmental/natural processes;
- Understand people's relation to their environment/ place and motivation to make a change;
- Have access to land.

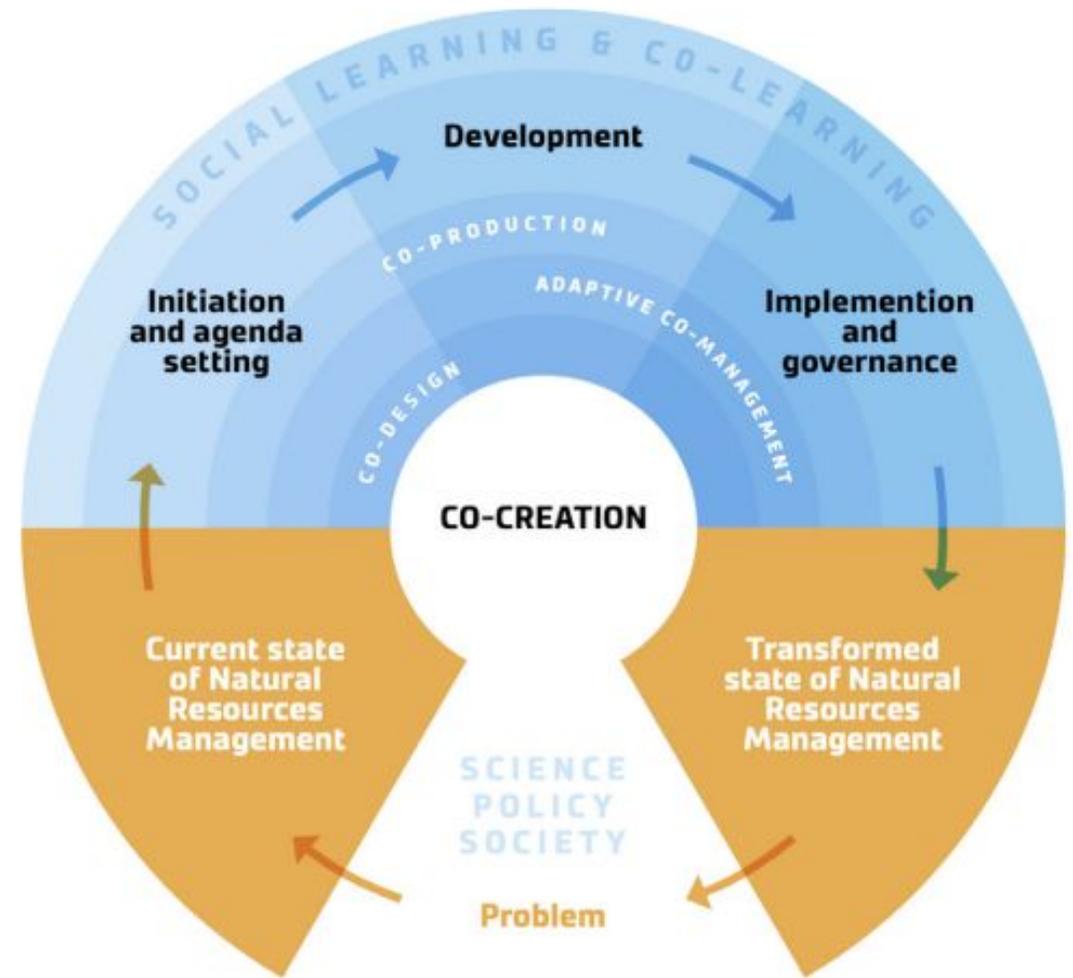
A need to collaborate with the stakeholders



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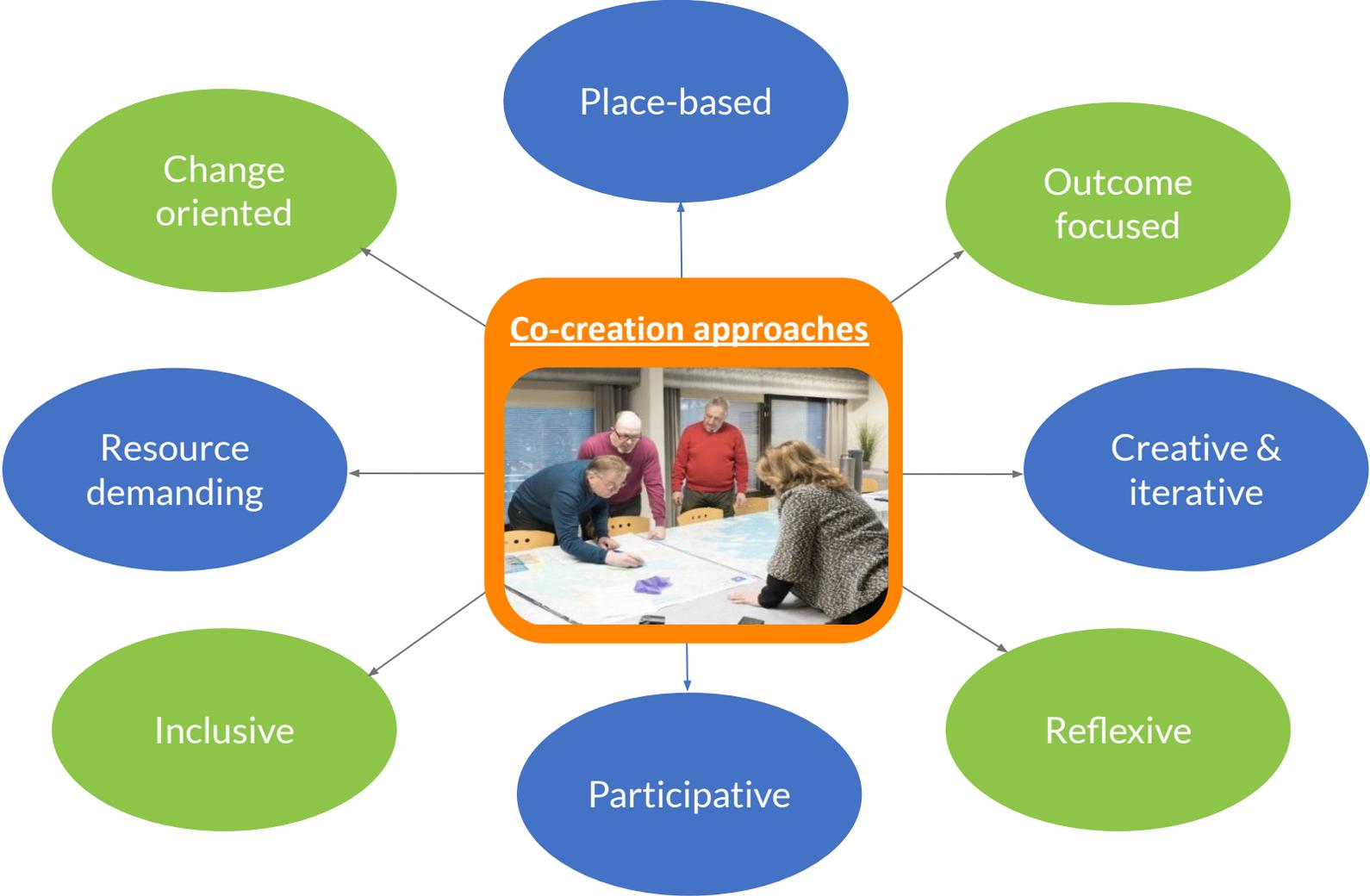
# What is co-creation?

- Co-creation is “a **process** where a group of actors (i.e. **stakeholders**) engage in developing shared understandings and novel ideas of how to intervene in social-ecological systems”
- It is an umbrella term for different, and interlinked concepts such as co-design, co-production, co-learning and adaptive co-management
- It refers to transdisciplinary **collaboration** for producing new types of knowledge, leading for innovation, learning and societal change



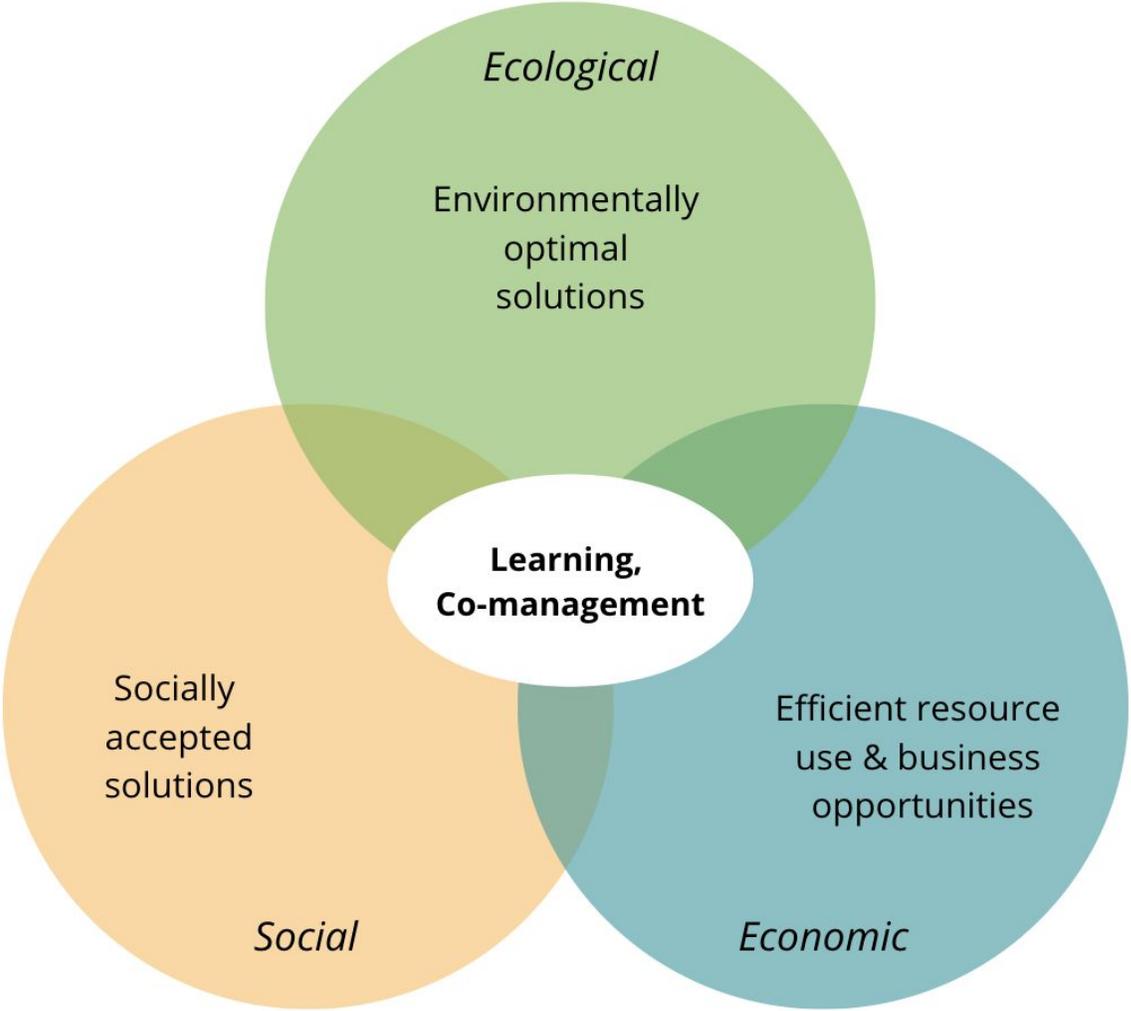
Source: *Hakkarainen et al. (2021)*

# Characteristics of co-creation approaches



Source: *Soini (2020)*

# Co-creation approaches & Sustainability



Source: Soini, 2020

# Benefits of co-creation approaches



Research teams

- |  |                                       |                                   |
|--|---------------------------------------|-----------------------------------|
| Higher profile, improved reputation                            | Useful contacts for future engagement | Improved dissemination of results |
| Higher research impact & support                               | Improved chances of funding success   | Opportunities for learning        |
| Better quality data, potential to improve methods and analysis | Increase potential to leave a legacy  | More resources provided           |



Stakeholders

- |   |  |  |
|---|--|--|
| Better access to knowledge                    | Improved decision-making                                 | Improved policies                            |
| Access to better technologies                 | Opportunities for learning                               | Business opportunities                       |
| Sense of inclusion, involvement and ownership | Opportunities to be paid for providing data or resources | Opportunities to influence or drive research |



Wider society

- |   |  |   |
|---|--|---|
| Better knowledge applied in policy and practice | Reduced barriers between science and society | Improved trust and respect                |
| Access to opportunities                         | Better evidence                              | Shared responsibility and decision-making |
|   | More relevant and more inclusive research    |   |

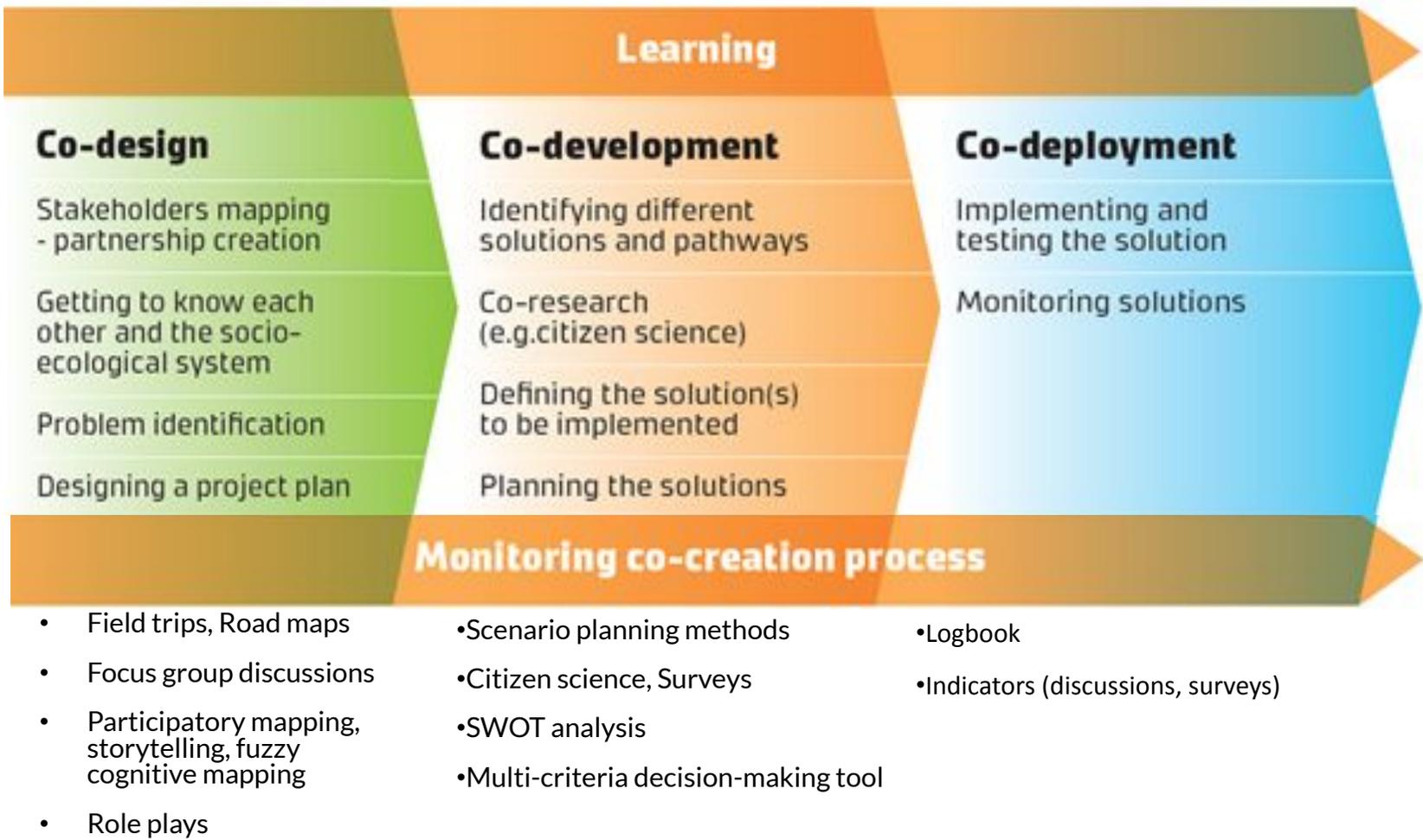
Source: Durham et al. 2014

## Aim



- To keep the stakeholders informed and updated
- To have their views and feedback throughout the process in order to improve it
- To increase ownership and responsibility

## Process



- Sustainable NBS solutions through real-life experiments with stakeholders
- Science-based approach (including e.g. modelling, monitoring, risk assessment)
- Parameters considered :
  - **Area / territory:** Large areas, Natural landscapes, Proximity of researchers
  - **Socio-economic aspects:** Low number and density of population, Ageing population, Nature dependent livelihoods
  - **Governance:** Private landownership, 'Traditional' planning culture, Ownership of the problem
  - **Nature-based Solutions:** Large-scale solutions, Diversity of hazards, Good fit with the surrounding environment



# Nature-based Solutions and Co-creation

- 1) Nature-based Solutions to societal challenges are innovative locally adapted and accepted solutions. Engaging stakeholders through co-creation processes is therefore crucial.
- 2) Co-creation approaches are place-based, outcome-focused, resource demanding, and change-oriented, reflexive, and important pillars are inclusivity, creativity, iteration, and participation.
- 3) The OPERANDUM process to co-creation aims to engage and inform stakeholders throughout - this process consists of co-design, co-development, co-deployment, and monitoring.

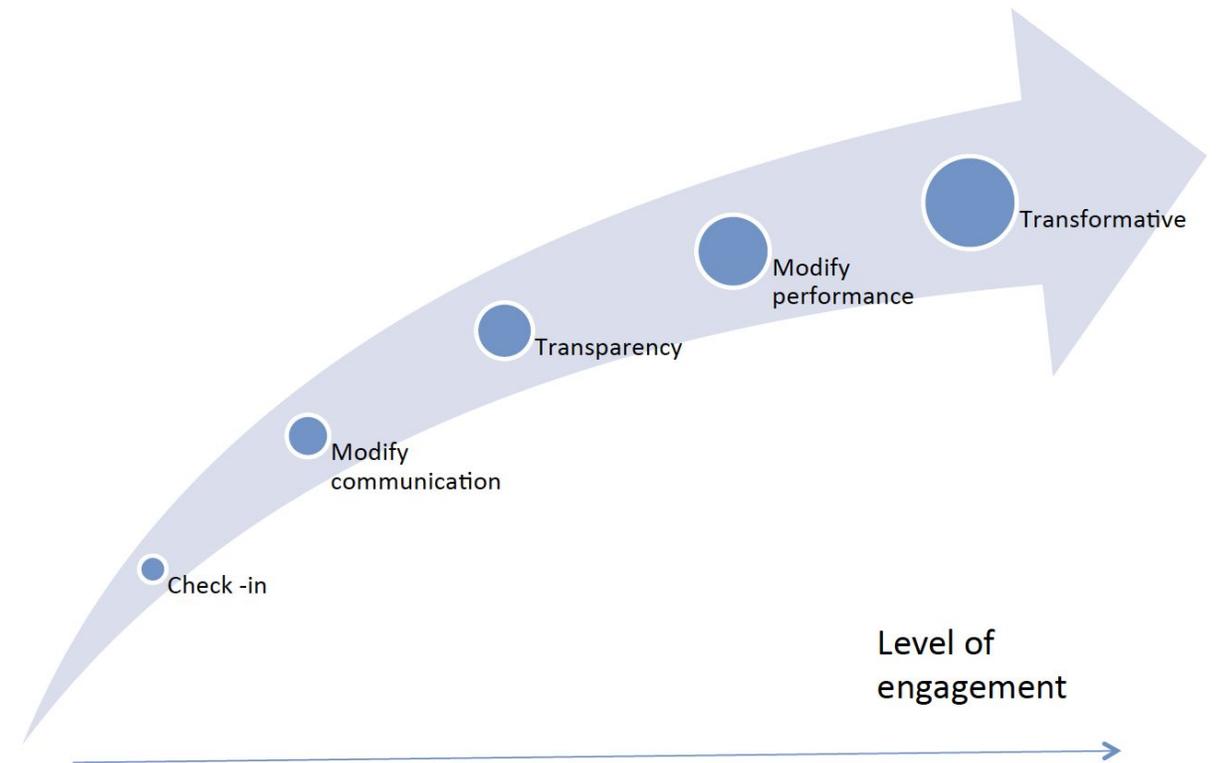
# Stakeholder engagement: the why & how

## Aim

- To increase diversity of knowledge in design and development of Nature-based Solutions;
- Improve the social relevance and acceptance;
- Take care of the efficient use of resources;
- Enhance the learning of all the stakeholders involved.

## Values

- Inclusivity
- Credibility
- Accessibility
- Respect and sensibility for stakeholders diversity and human rights



## Nature-based solutions for hydro-meteorological risks in different socio-ecological systems

### Stakeholders

- Companies
- NGOs
- Financies
- Decision makers
- Landowners
- Local residents

### Transdisciplinary collaborative research and knowledge integration

### Interdisciplinary research

- Social Sciences
- Arts
- Economics
- Physics
- Meteorogy
- Ecology
- Engineering

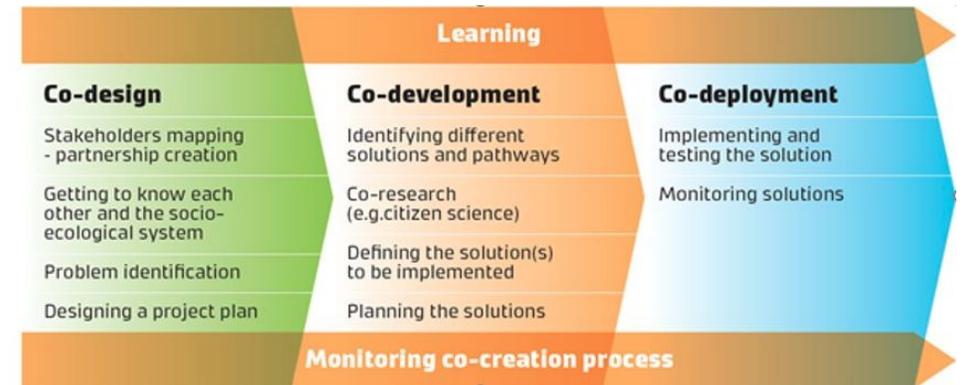
# OPERANDUM approach to stakeholder engagement

## Objectives of NbS and the stakeholder engagement process

Each phase of the project has **“its own” set of stakeholders** that has to be engaged and involved according to the role played in co-design, co-development, and co-deployment stage.

## Steps per project phase

- 1) Identify the relevant stakeholders
- 2) Identify the role of stakeholders
- 3) Identification of stakeholder groups according to their needs and requirements
- 4) Assess needs and requirements for the OAL
- 5) Define the stakeholder engagement strategy
- 6) Monitoring engagement activity

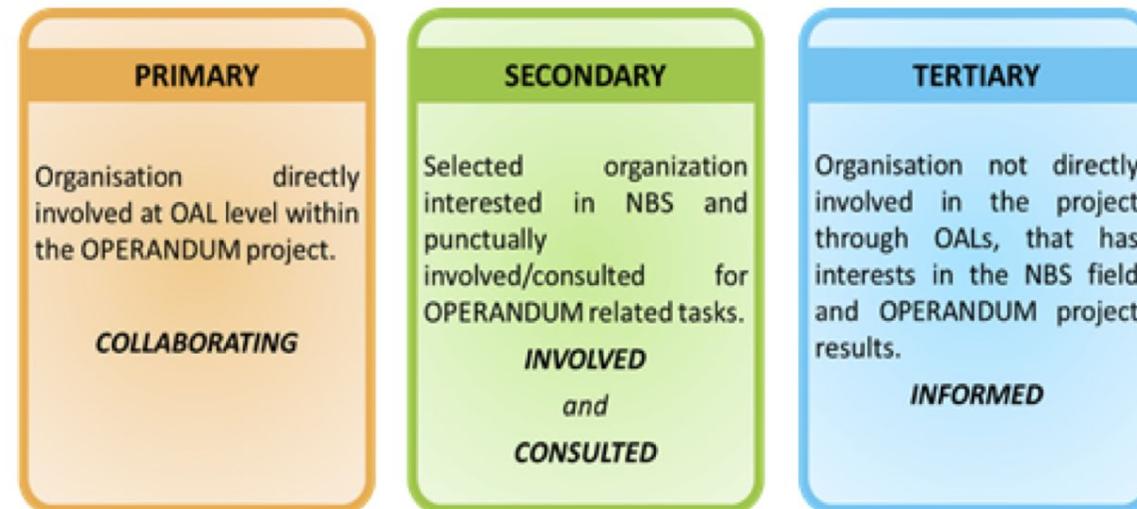


# 1. Identify the stakeholders

- Geographical

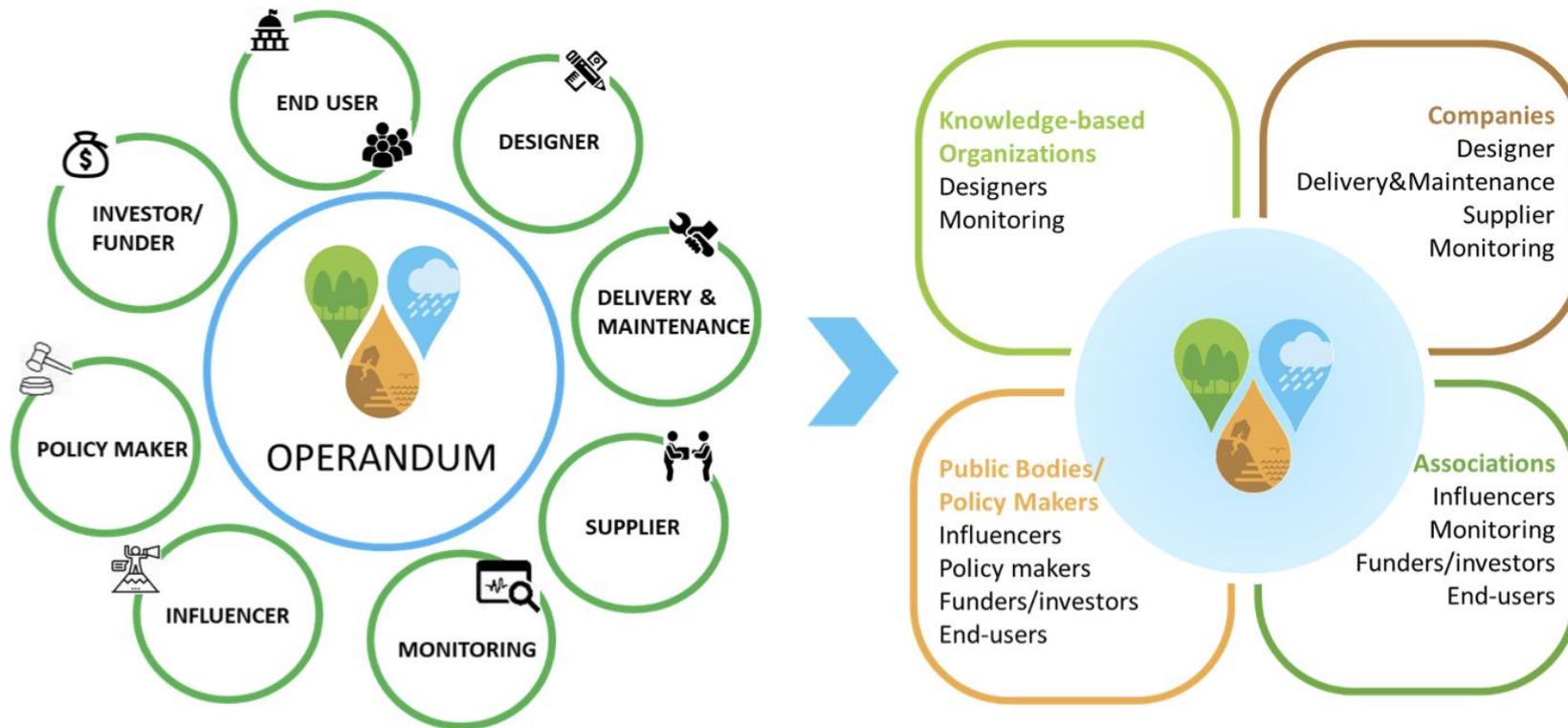


- Level of engagement & tactics



## 2. Identify the role of stakeholders

- Based on the OPERANDUM value chain (left), the geographic location and level of engagement (previous step), stakeholders are grouped into target categories.



# 3. Identify the stakeholder's needs and requirements

- The analysis of **needs and requirements** of the stakeholders in the context of the OAL is a fundamental step in the stakeholder engagement

- Survey

*What could you provide to OPERANDUM?*

*Why are you interested in OPERANDUM?*

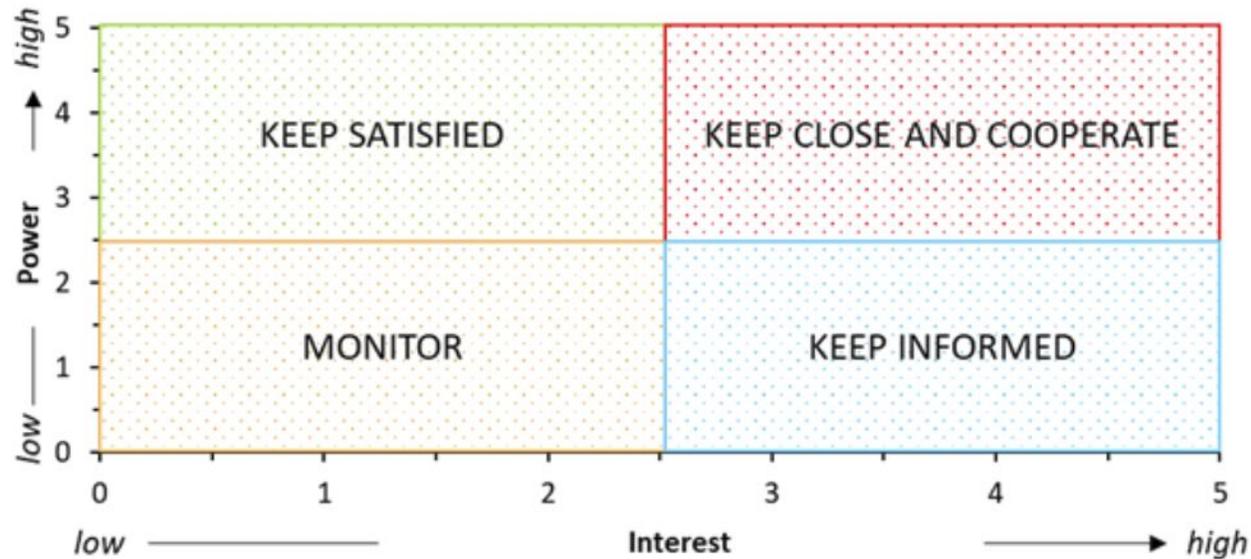
*What is your motivation?*

*What do you expect the result of the project to be?*

*What direct benefit do you expect to get from the project?*

# 4. Assess needs and requirements for the OAL

- Prioritizing OPERANDUM stakeholders using the Power-Interest matrix



**ENGAGE:** they are essential for a successful project

**KEEP SATISFIED:** they can hinder/derail the project

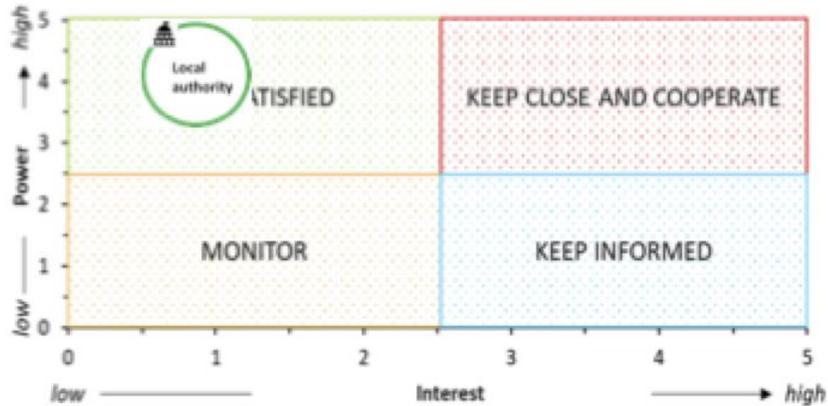
**KEEP INFORMED:** they can create high influence.

**MONITOR:** they can become more powerful and affect the project in the future.

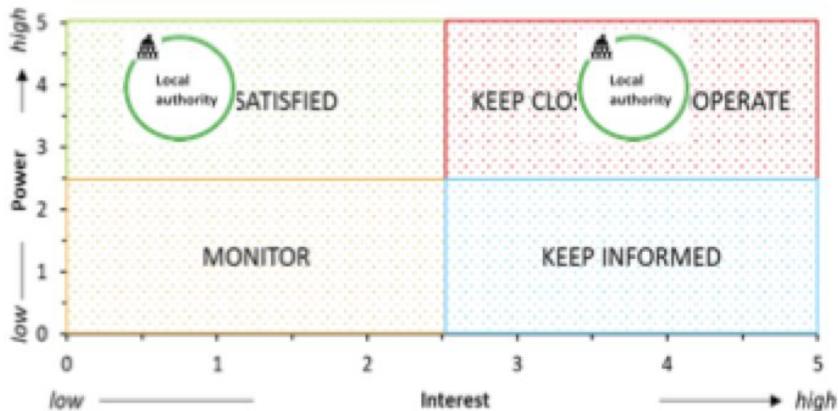
# 4. Example: Assess needs and requirements for the OAL



High power  
Medium interest



Engage with  
local authority



*What happens if we need permission from the local authority to proceed with the NBS implementation?*



*Increase their interest!*

Co-creation guidelines might help prevent the raise of issue, problems and challenges linked to stakeholder engagement and help the realization of methods and tools discussed.

# 5. Define the stakeholder engagement strategy

## REASONS FOR ENGAGEMENT

- Developing **synergies**
- Experimental data on the area of interest.**
- Collaborate** in developing technical standards and guidelines

## NEEDS AND REQUIREMENTS

- Exchanges of **scientific knowledge**

## EXPECTATIONS

- New scientific **knowledge on environment**
- New **knowledge on socio-economic issues and participatory methods**
- Scientific publications, broaden **networks**, follow-up research grants

## REASONS FOR ENGAGEMENT

- National and EU environmental strategies** (incl. NbS)
- Develop and enforce rules, laws and regulations**
- Provide data, permits, authorizations, and institutional support;** Owner and manager of area

## NEEDS AND REQUIREMENTS

- Opportunity to develop **better policies and management interventions**
- Performance-based **evidence**

## EXPECTATIONS

- Innovative solutions and guidelines** to support environmental policies and management strategies
- Public awareness



## REASONS FOR ENGAGEMENT

- Driving force **behind socio-economic development**
- Collaborate and test** the solutions and technologies
- Provide professional expertise**

## NEEDS AND REQUIREMENTS

- Increase of their business opportunities
- New collaborations and synergies with different authorities and companies

## EXPECTATIONS

- Evidence data, new standards** for deployment and operationalisation of NBS
- Guidelines** for future implementations
- Contacts** with possible future clients

## REASONS FOR ENGAGEMENT

- Joint effort towards cooperation, dissemination and exploitation
- Promote the participatory approach
- Collaborate in operationalising NBS and provide support to data collection activities

## NEEDS AND REQUIREMENTS

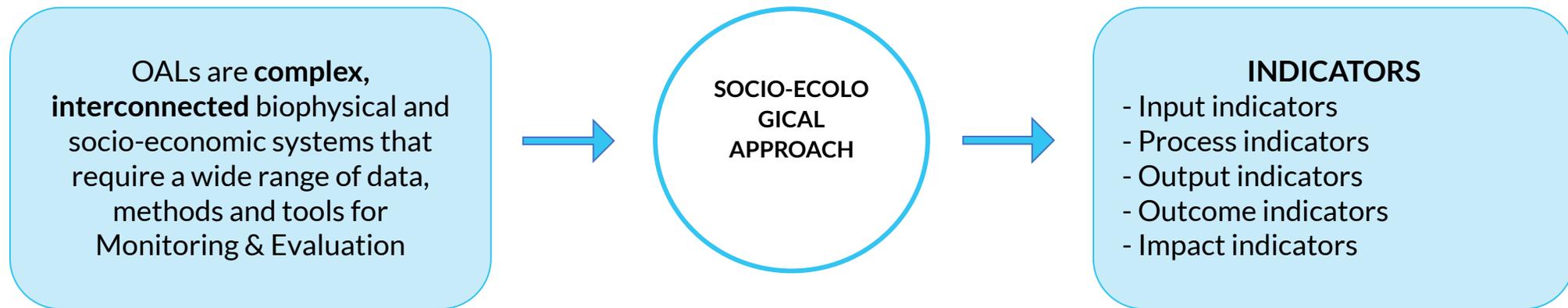
- Enhancing the quality of the territory and landscape
- Public awareness and citizen participation

## EXPECTATIONS

- Evidence-based data on the efficacy of the local NbS
- New management practices for the area, with citizen participation

# 6. Monitoring engagement activity

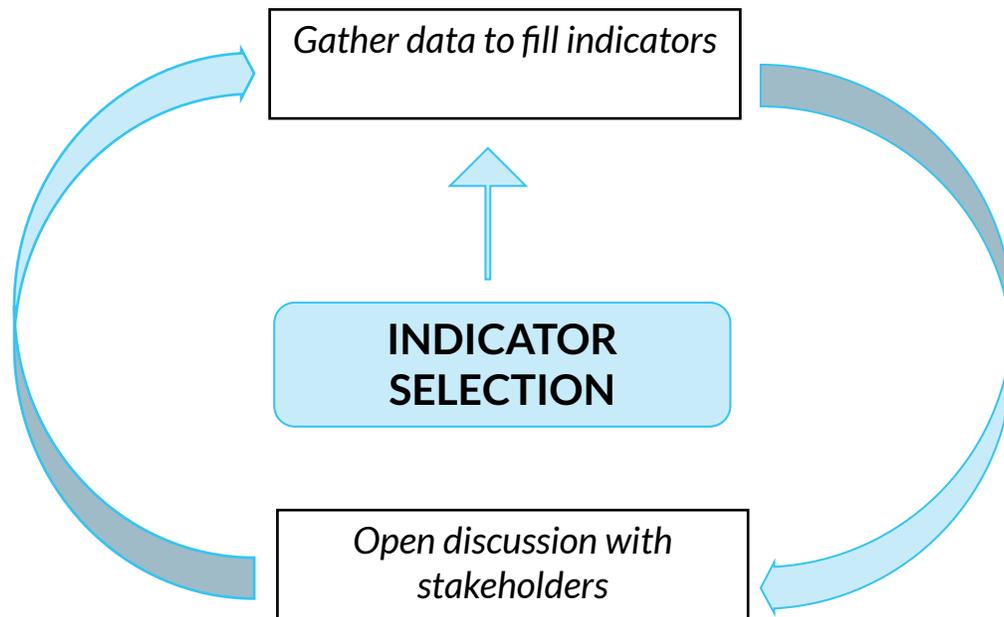
**Valid context-based monitoring strategy:** together with stakeholders, select indicators that reflect the socio-ecological system and project objectives (NbS acceptance and sense of ownership)



*This strategy should be integrated with the technical and performance measurement activity, identifying a balance in the number of indicators that could be used to evaluate changes directly attributable to the project (Getler et al., 2016)*

# 6. Monitoring engagement activity

**Participatory procedure to set up a co-monitoring action path (reiterative and bottom-up)**



## INDICATOR SELECTION

**Input:** Interest, Trust, Time, Capabilities, Physical access, Communication channel, Composition of research team and stakeholder group, Understanding and agreement of goal

**Process activities:** Participants (different social/cultural groups), Communication (formal and informal), Integration, Equity, Inclusiveness (vulnerable groups), Tools for monitoring

**Output:** Dissemination - activities to promote and inform about the project results and main, Commitment, Responsibility, Leadership

**Outcome:** Learning, Up-scaling, Social cohesion, Impact of NbS on the quality of life, Networking of stakeholders

**Impact:** Capacity building of different parties through integrated, Strengthened technology innovation - prevalence of NbS over grey infrastructure, Improved acceptance, Increased market demand and competitiveness of NbS, Adoption of new policies

# How to engage stakeholders

- 1) **Stakeholder engagement** is a crucial pillar of the co-creation of nature-based solutions that address hydro-meteorological risks and results in: diversity of knowledge in design and development of NbS, an improvement of their social relevance and acceptance, better use of resources, and enhances the learning of all the stakeholders involved.
- 2) Stakeholders and their roles can differ for each of the 3 NbS project phases: co-design, co-development, and co-deployment stage.
- 3) The steps per project phase are:
  - Identify the relevant stakeholders
  - Identify the role of stakeholders
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# Stakeholder Forum – OAL Italy

The stakeholder FORUM has been designed for the specific needs of the OAL-Italy, that is a **large OAL with multiple sites, collecting geographically disperse stakeholders.**



**Po di Goro**  
Experts and technical stkh

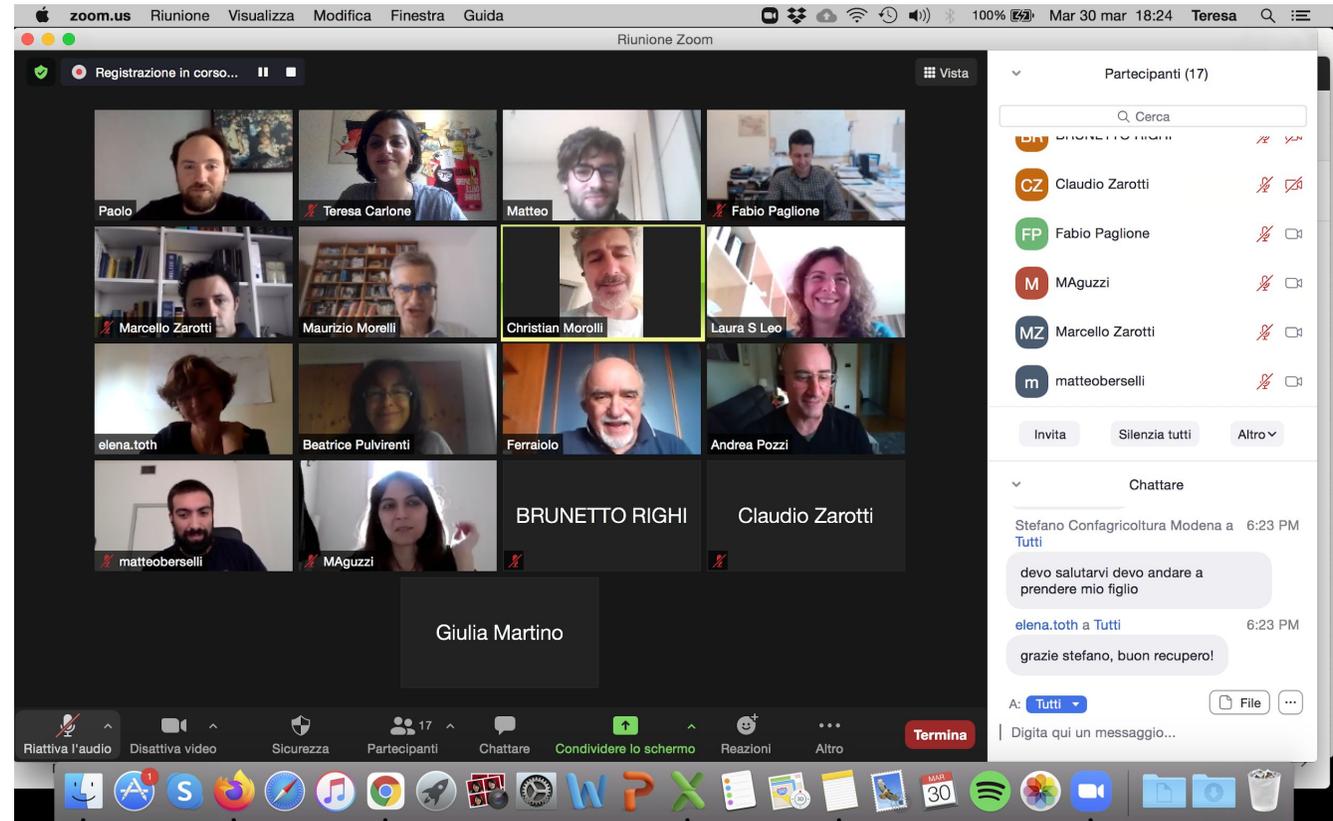
**Panaro**  
PA, Civil protection volunteers

**Lido di Volano/Bellocchio**  
Citizen and association + Tourism-related Stkh

Given that specificity it seemed appropriate, together with the stakeholder engagement activity that each site was carrying on, to **create a permanent working group** that could reinforce the sense of unity of the OAL as a whole

Social scientists coordinated and carried out, in agreement with the OAL members, an **in-depth stakeholder mapping**, integrating the stakeholder database already in our possession, in order to identify other potential partners among the local communities, including **ecological Associations, local forestry association, fishery association, students, newspapers, and local committee.**

Thereafter a "**Stakeholder Forum**" composed by representatives of each group was established, organizing periodical meetings in which technical experts consult and refer to local actors in order to **share knowledge, thought and solutions to improve the outcome of the NBS experimentation.**



**Forum Objectives:** Increase acceptance, NBS upscaling in HM risk reduction.

Link to SO5 explicitly wants to impact policy and have long-term scalability and sustainability. Ensure that the knowledge gained through the OPERANDUM project is not lost but has a multiplied impact over time.

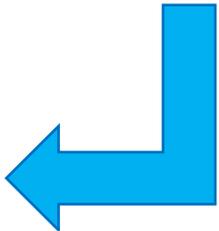
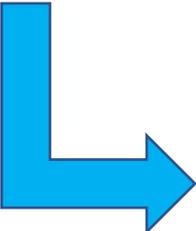
## The Forum purposes:

- identify **best practices and lesson learnt** of the OAL co-creation process;
- serve as a **periodic monitoring** tool providing a rather continuous feedback loop;
- help in the **development of policy recommendation**;
- test platform for OPERANDUM's ICT instruments --> **GeoIKP**

Nbs social acceptance

Knowledge and capacity building

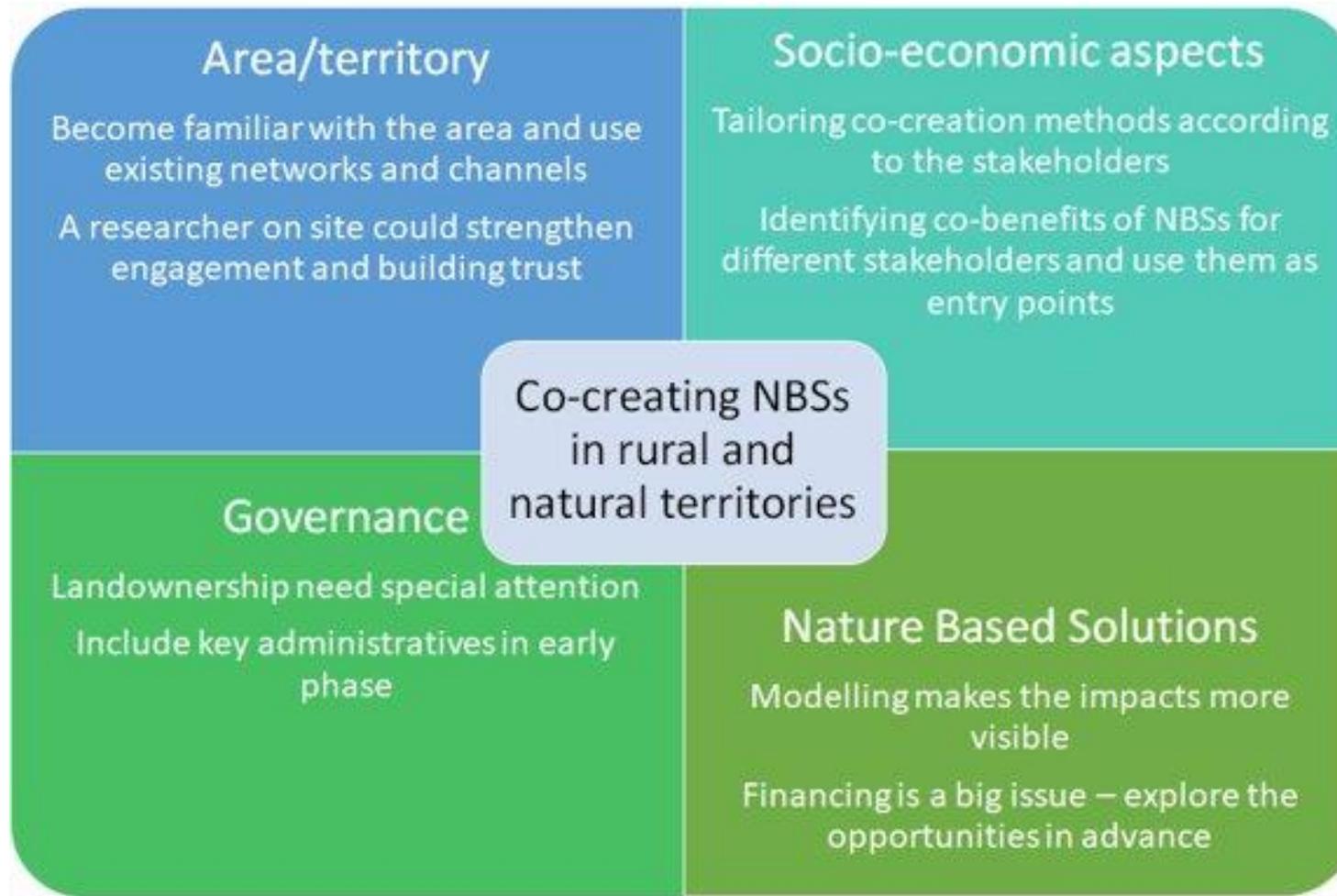
Mainstreaming



Knowledge and capacity building	Knowledge/awareness about the NBS
	Knowledge/increased awareness about the hydro-meteo risks in the area
	Knowledge on other stakeholders' interests, <u>motivations</u> and roles
	DRR governance, <u>policy</u> and procedure
	Tools and techniques for NBS evaluation and cost/benefit analysis
	Integration of different knowledge
NBS Acceptance	Trust in implementers
	Competing societal interests (priority to DRR and NBS)
	Perceived effectiveness of NBS
	Sense of personal responsibility
	Acceptance of NBS cost
	Perception of co-benefit
Mainstreaming	All relevant stakeholder included
	Willingness to increase funding for NBS
	Lobbying/advocacy activities for the inclusion of NBS in planning and policies
	Implementing and maintaining NBS
	Willingness to engage in future NBS project

- Diverse and conflicting interests between the stakeholders
- Awareness, attitudes
- Trust
- Commitment and motivation
- Physical environment
- Financial environment
- Lack of resources (time) or expertise in OPERANDUM to deal with stakeholder processes





# Take home messages

- 1) Nature-based Solutions to societal challenges are innovative locally adapted and accepted solutions. Engaging stakeholders through co-creation processes is therefore crucial.
- 2) Co-creation approaches are place-based, outcome-focused, resource demanding, and change-oriented, reflexive, and important pillars are inclusivity, creativity, iteration, and participation.
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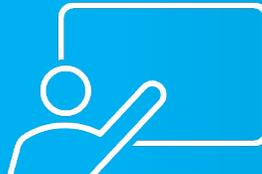
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- Unit 3: Assessing Risks in Socio-Ecological Systems
- Unit 4: NbS Selection and Engineering
- Unit 5: NbS Policy Context and Permitting Paths
- Unit 6: NbS Modelling and Monitoring
- Unit 7: Promoting NbS Uptake and Public Acceptance
- Unit 8: Replication and Business Uptake
- Unit 9: GeoIKP – NbS Platform
- Unit 10: Good Practices from OALs





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Thank you! 

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