The Role of Citizen Science for Delivering Nature Based Solutions

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Citizen Science

- Citizen science – the active involvement of members of the public in scientific research
- Citizen science projects often have impacts across multiple 'domains':
  - Environment
  - Society
  - Science & Technology
  - Governance
  - Economy
- Increasingly popular as a means of tackling complex issues

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Citizen Science in Nature Based Solutions (NbS)

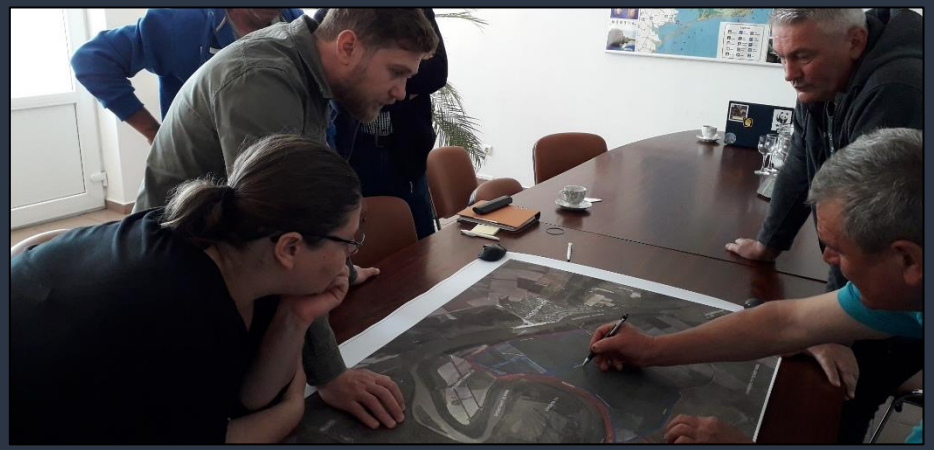
- NbS: involve suitable management practices and use of nature for tackling complex socio-environmental issues
- Mutually beneficial relationship between NbS and citizen science
- Benefits for NbS
  - Data gathering
  - Maintenance and management
  - Wider acceptance and support
- Benefits for citizen scientists:
  - Increased sense of community
  - Develop new skills
  - Empowerment - involvement in decision making

Citizen Science – Is It Worth It?

- Given the resources required to initiate projects… are they worth it?

YES!

- Like any project there are successes and failures
- We need ways to predict and measure the impact of citizen science projects to increase their efficiency and effectiveness



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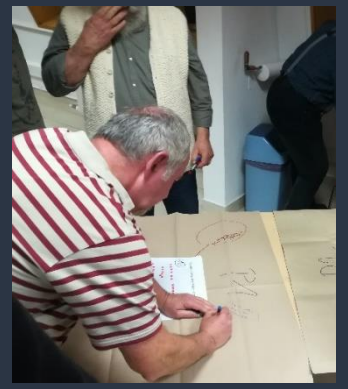
The MICS Project: Background

- MICS - www.MICS.TOOLS - aims to develop tools for measuring impact of citizen science
- Tools and metrics will be available through an online platform
- Allow project coordinators to measure evolving impact
- Why measure impact?
  - Increase efficiency and effectiveness
  - Provides information on a projects sphere of influence
  - Supports funding bids
  - Encourage the wider use of citizen science



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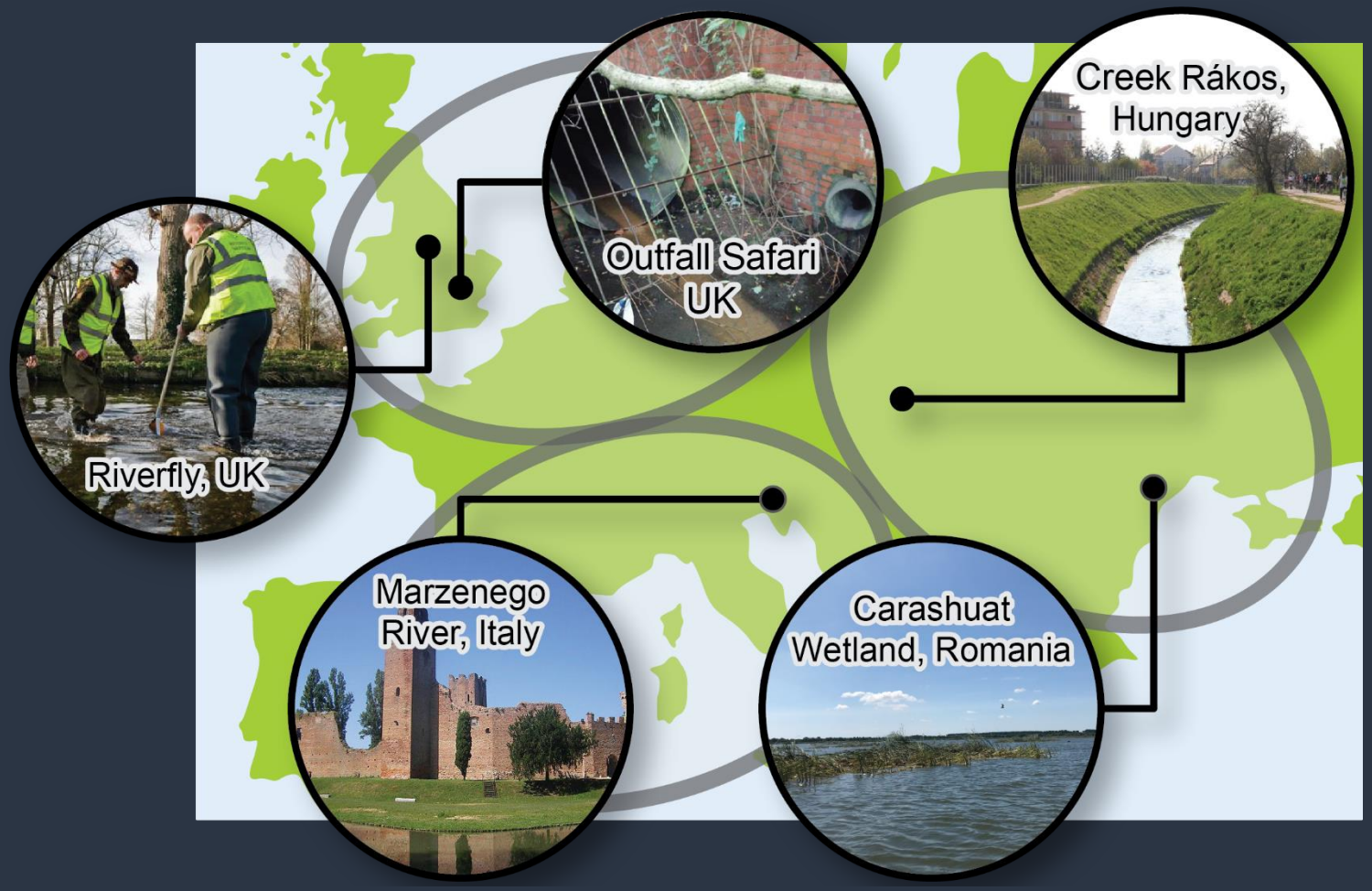
Background to the MICS Case Studies



- Focus on citizen science projects incorporating NbS
- Case studies selected from 3 distinct regions
- Regions defined based on their differing needs, contexts and approaches to environmental management
- Varying levels of citizen science application
- Opportunity to evaluate the different citizen science approaches

Assessing NBS Application Across Europe

- Alongside developing the online platform we've been considering…
  - What does impact mean from the point of view of NbS?
  - What are the facilitating factors and barriers to NbS uptake?
  - How can citizen science mitigate barriers and increase impact of NbS
- We have engaged with practitioners of NbS through an online survey to gain a more in-depth understanding
- Results from this are being used to develop policy briefs

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Living Nature: Adopting Nature-Based Solutions for Safeguarding Freshwater in Europe

What are nature-based solutions?

Nature-based solutions (NBS) are defined by the IUCN as "*actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits*".

- NBS are increasingly seen as a crucial part of the green recovery programme because they can address the climate, biodiversity, economic inequality and human health crises in a more integrated and therefore cost-effective way;
- Water is a key strategic resource in Europe; by managing our land and water differently, we can address the challenges affecting our water environment simultaneously;
- European countries have made progress towards addressing the loss of aquatic biodiversity, poor water quality and water security, but more work is needed;
- NBS can help us tackle these issues and achieve more sustainable and cost-effective management of freshwater environments;
- Working with local citizens when designing NBS ensures their needs and aspirations are interwoven into schemes, engendering a sense of ownership that helps with maintenance and management over the long term.

Role of policy makers

More work is required to mainstream NBS and increase their scale; policy and decision makers at all levels have a significant role to play in achieving this. At the level of European Institutions this includes:

- Increasing ambition, setting targets and deadlines;
- Establishing strong monitoring frameworks;
- Developing clear legal frameworks such as paying for environmental goods so that key stakeholders (for example water utilities and consumers) can identify actions that enable them to invest in NBS and save money.

Many NBS practioners do not believe NBS are adequately supported in policy

Case Study - NBS for River Restoration

River Isar, Munich, Germany

To help tackle the problem of flooding in Munich, the 'Isar Plan' uses NBS rather than building more walls and embankments. Above the city, armoured banks and weirs were removed, the river was reconnected to the floodplain and the channel widened. The banks were planted, and paths constructed within the new inspirational greenspace.

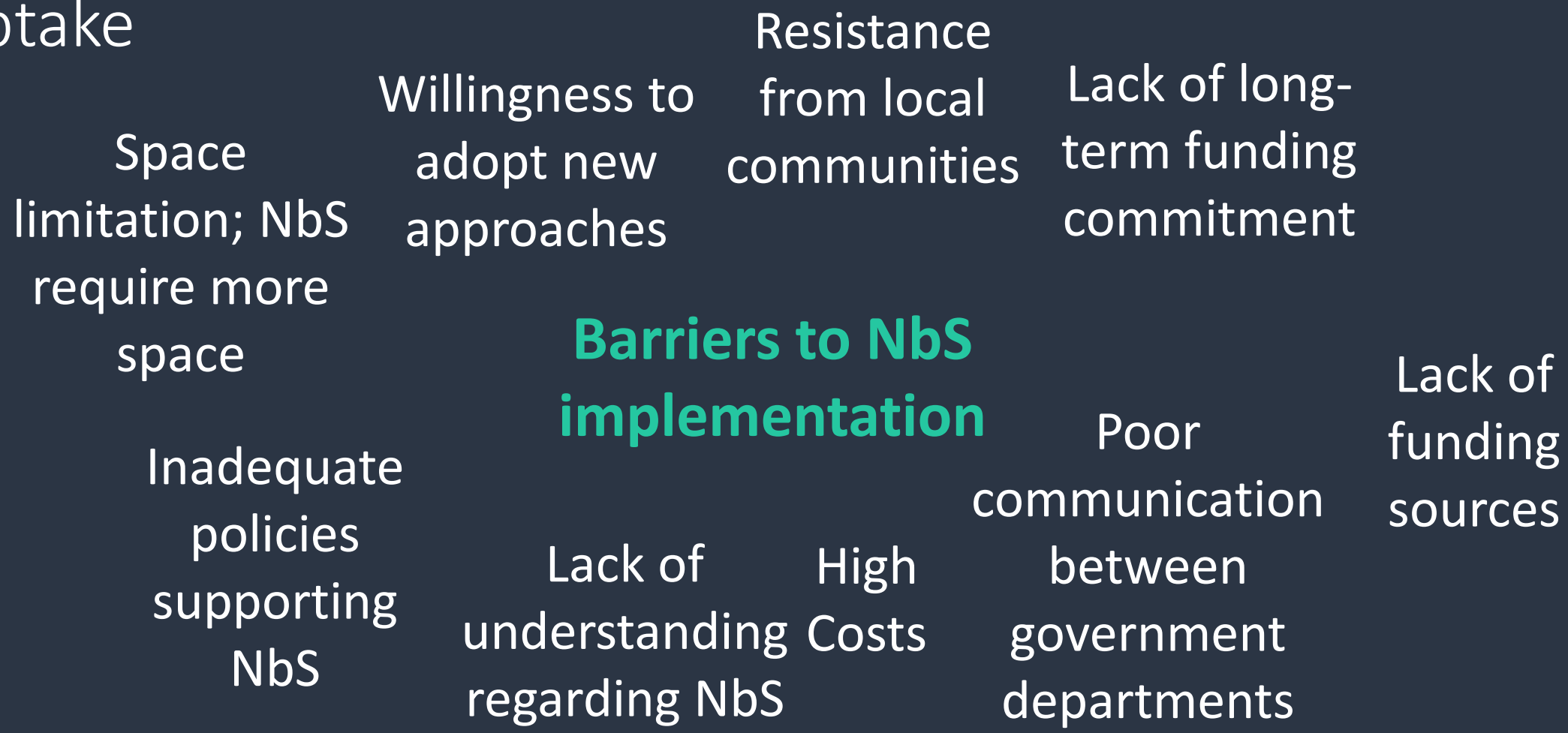
The benefits included:

- Reduced risk of flooding;
- Community involvement in design, giving a sense of ownership;
- Improved public access and quality of life;
- An improved landscape and park which becomes the summer beach;
- Improved water quality;
- Free passage for fish.

*"The urban river concept combines nature-oriented design of an urban river with an urban lifestyle. it goes beyond simple cost benefit analysis and is of immeasurable value to the population"

(Urban river restoration in Munich, Arzei and Joven)

We asked Practitioners of NbS: Rank the Barriers to NbS Uptake



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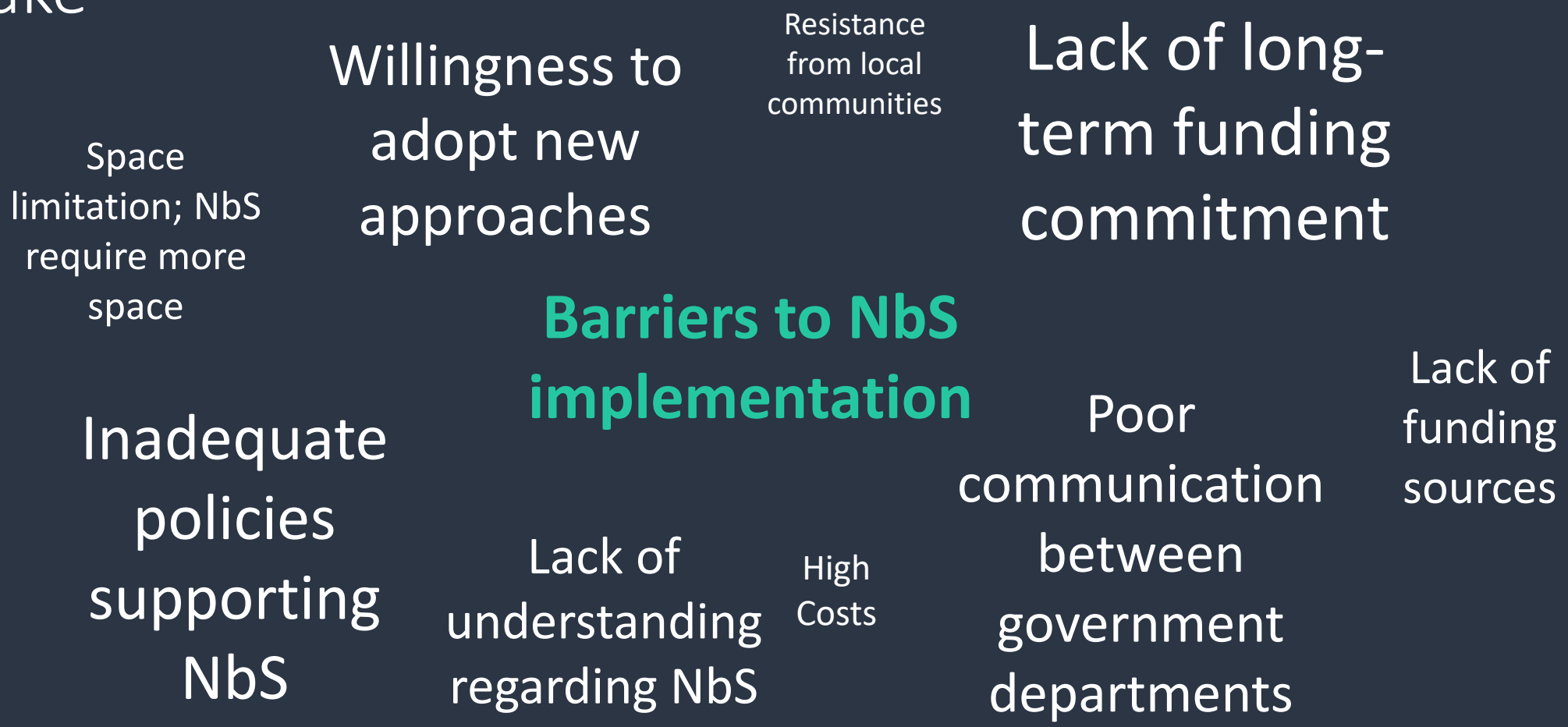

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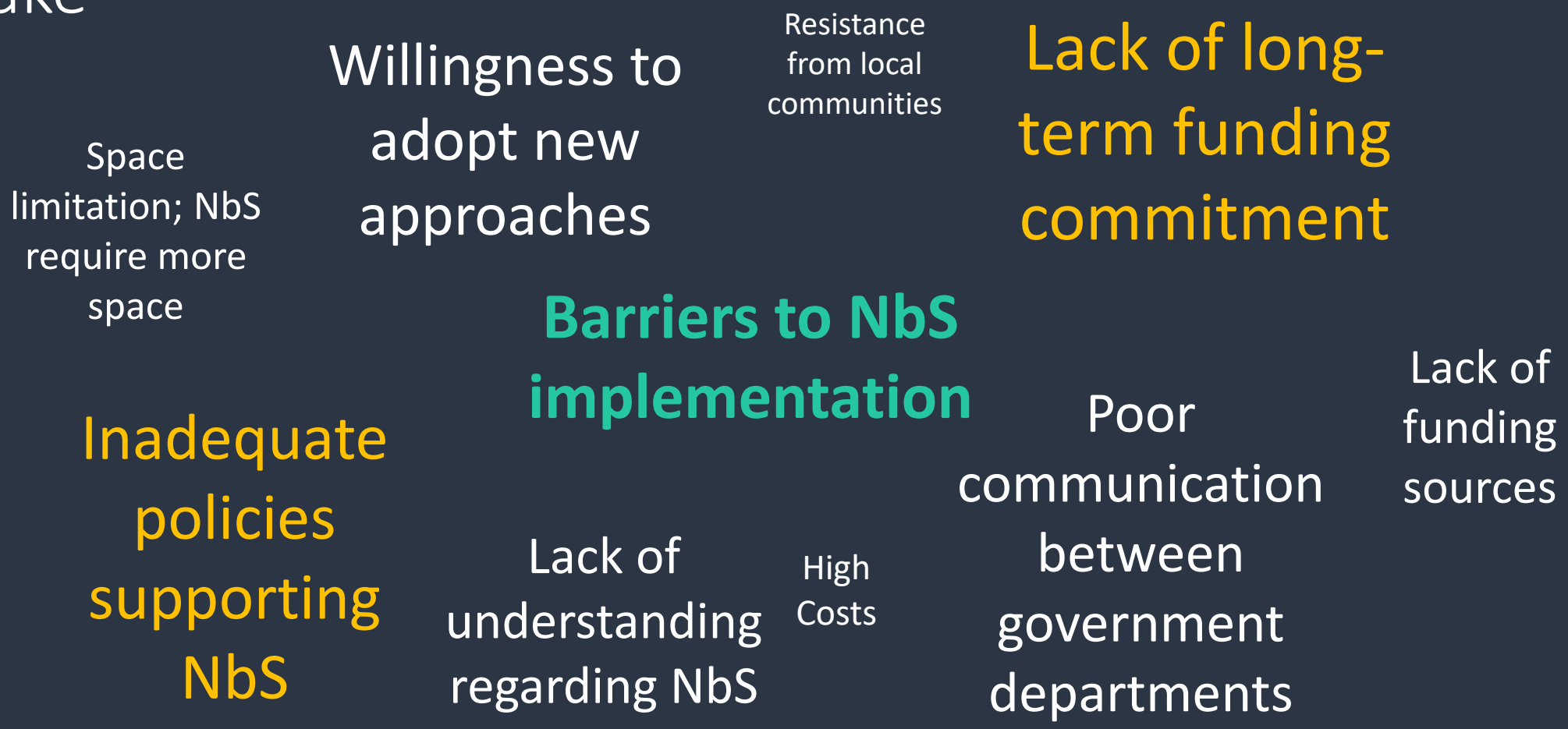

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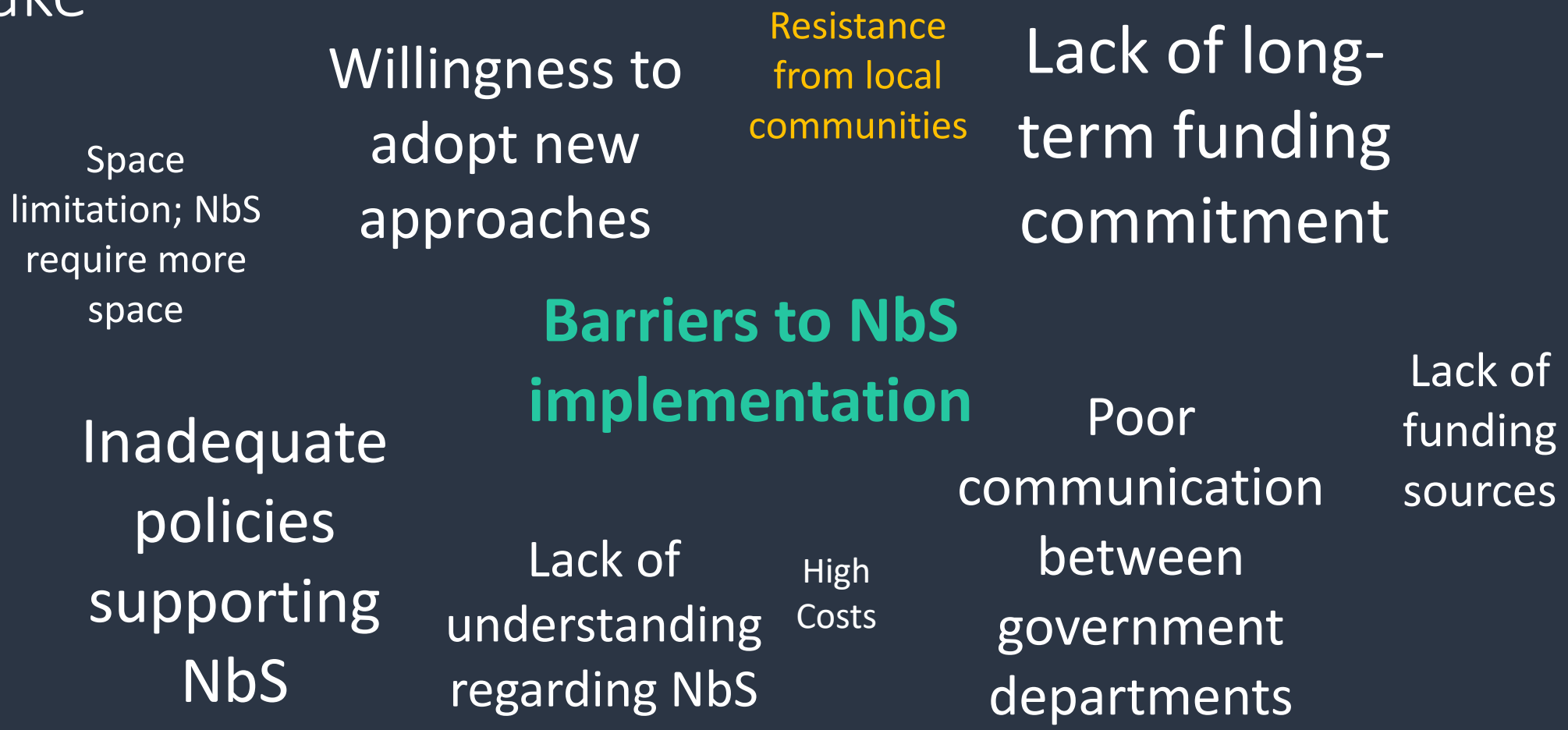

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We asked Practitioners of NbS: How Important was Local Involvement

- 80% respondents believed the involvement of local communities in NbS to be either important or very important

"NbS are [also] designed to solve societal issues…

"…increases the knowledge and awareness about the potential of NBS…"

"…[Urban area] are often relatively small and used by diverse stakeholders…"

"…they have local knowledge that can improve the effectiveness of NbS…"

"…civilians can put a pressure on decision makers…"

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Levels of Citizen Science Engagement

Level of engagement

Contributory

Citizens are only involved in carrying out activities (e.g. data collection, restoration work)

Collaborative

Citizens contribute data and may also help in project design, but aims decided by managers

Co-created

Citizens are engaged in all stages of project, working alongside project coordinators to identify the aims, agree activities and collect data

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Contributory and collaborative Citizen Science Projects: Outfall Safari and Riverfly

- Outfall Safari and Riverfly two examples from the UK case study
- Contributory projects can become more collaborative over time
- In collaborative projects volunteers have more input into designing project activities
- Lincolnshire Chalk Stream Project:
  - Riverfly hub applying established ARMI methodology
  - Volunteers wanted to expand the methodology
  - This led to the development of the Extended Riverfly survey

Co-designing Citizen Science

- Co-design focuses on generating CS activities that are purpose-driven by jointly agreed societal challenges (*Wehn 2020)
- Co-design methodology developed by Ground Truth 2.0 project (H2020, 2016-2019) adopted for MICS case studies
- Best practice in the set up of hands-on citizen science helping to sustain longer-term citizen science involvement

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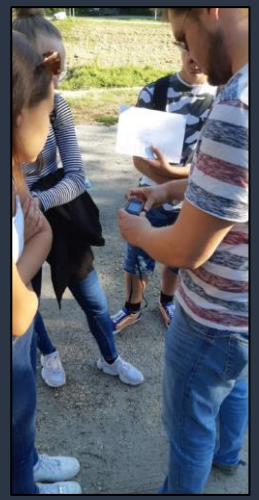
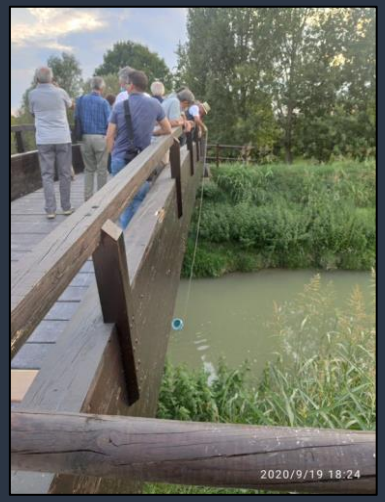
Wehn, U. (2020). D4.6 *Guidance for co-design of citizen science activities in the MICS case-study sites*, deliverable report of project H2020 MICS (grant agreement No 824711)

Co-created Citizen Science Projects



- The MICS case studies in Hungary, Italy and Romania are co-designed
- Creek Rákos, Budapest, Hungary
  - Issues related to flood risk and urban pollution
  - Increase engagement and local support
  - Data collection to identify sites suitable for NbS

- Marzenego River, Venice Lagoon, Italy
  - Flood management
  - NbS previously implemented in form of wetlands
  - Citizen science activities to monitor success of NbS
  - Maintenance and management of wetlands



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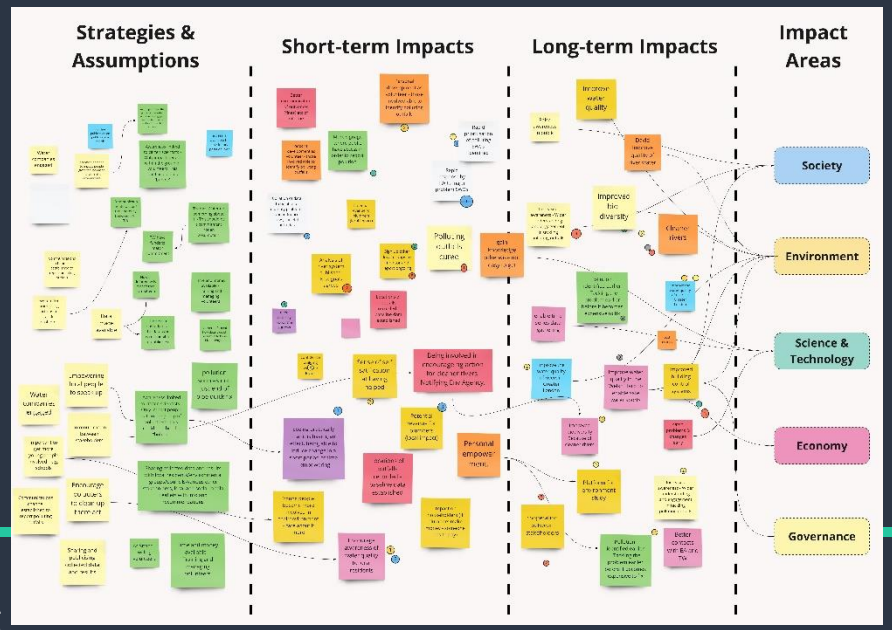
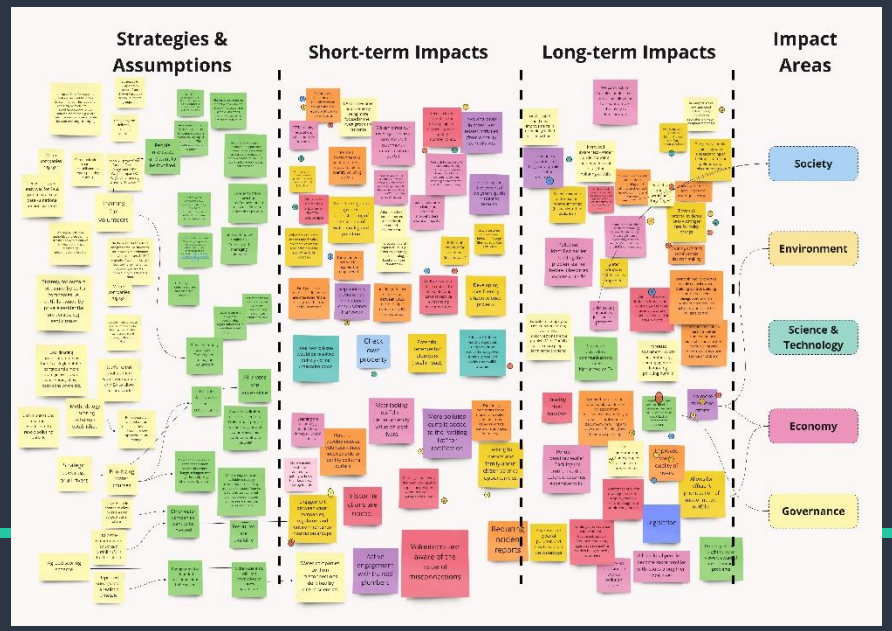
Online Workshops to Gauge Impact

- Online workshops with volunteers and project managers to ask them to discuss their impact
- Create Impact Journey Maps





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Concluding remarks

Citizen science can help to deliver and support NbS

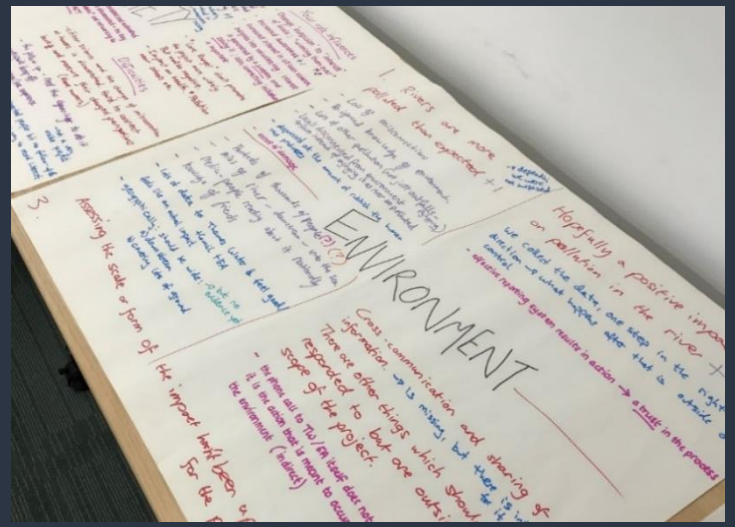
Citizen science can help overcome or tackle many of the barriers commonly identified as impeding NbS uptake

Co-design offers a powerful approach that brings together different stakeholders and puts them on the same footing as project managers

Next Steps

- Develop impact indicators and test in case studies
- Deliver citizen science impact assessment workshops
- Develop and test the online platform

If you'd like to find out more visit us: www.MICS.TOOLS



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Assessing NBS application across Europe - Have Your Say!

- Help us to understand NbS in practice and how citizen science can be used to support and facilitate NbS
- Fill in our questionnaire!
- https://docs.google.com/forms/d/1r72Q5yDzSHWHXV0ABM4qe2yxr_dcG-F0huTFBzlxrno/edit

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