



Restore4Life

RESTORING WETLANDS
FOR A SUSTAINABLE FUTURE



IGB

Leibniz Institute of Freshwater Ecology
and Inland Fisheries

Reviving River Heritage through Education, Storytelling and Community Engagement along the Danube

Toward the Extended Museum of the Acheron
River, Greece – Valorising water heritage, engaging
communities and developing innovative practices
for extended water museums.

Webinar, 10 June 2026



WATER
MUSEUMS
GLOBAL NETWORK



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(RCSES), University of Bucharest



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RESTORE OUR OCEAN & WATERS

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Co-funded by
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Management challenges in the Danube River basin

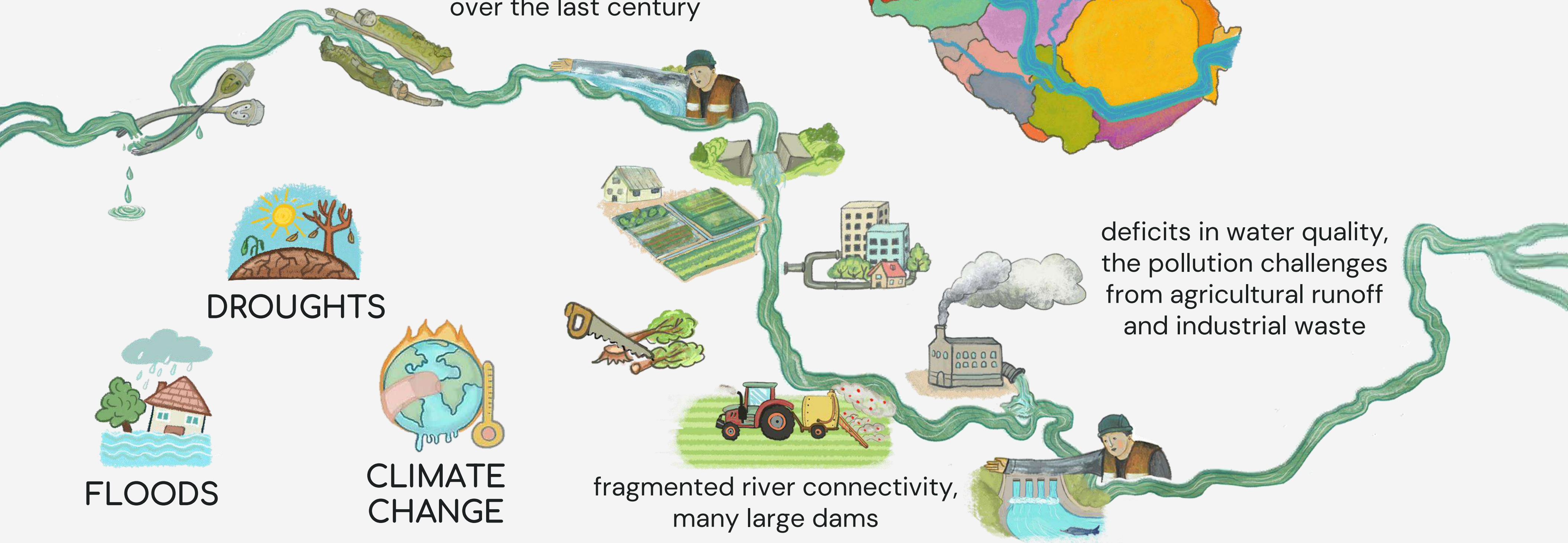
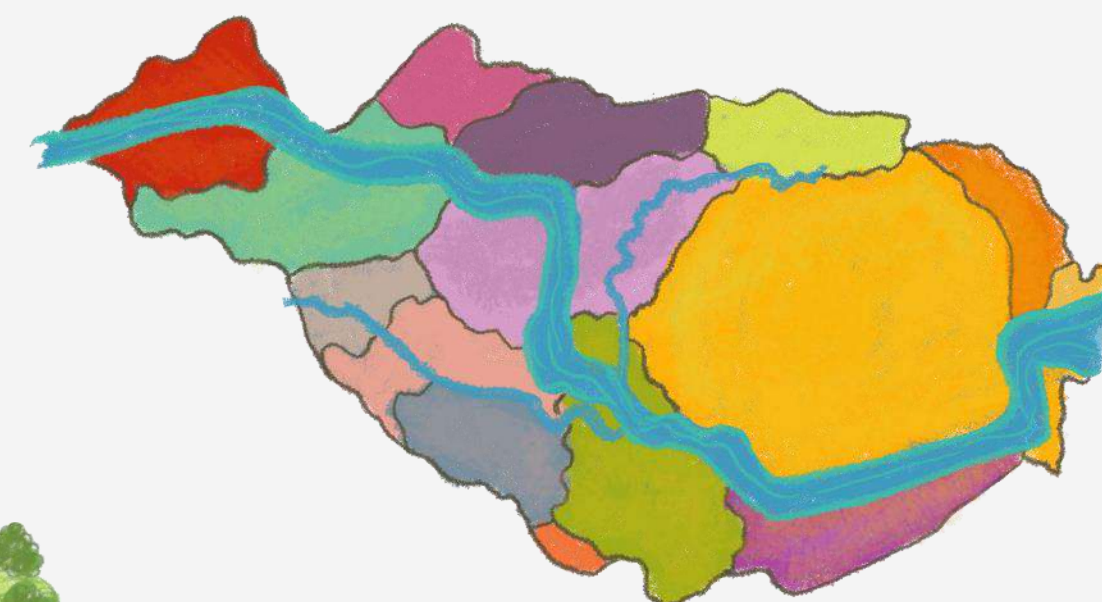


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INTERNATIONAL COMMUNICATION

80% reduction in floodplain areas
over the last century



Knowledge–action gap:

Paradox:

More knowledge does not automatically lead to better environmental protection

(Dupont et al., 2025)

→ *There is a gap between knowledge on environmental problems, and actions to mitigate them. Why?*

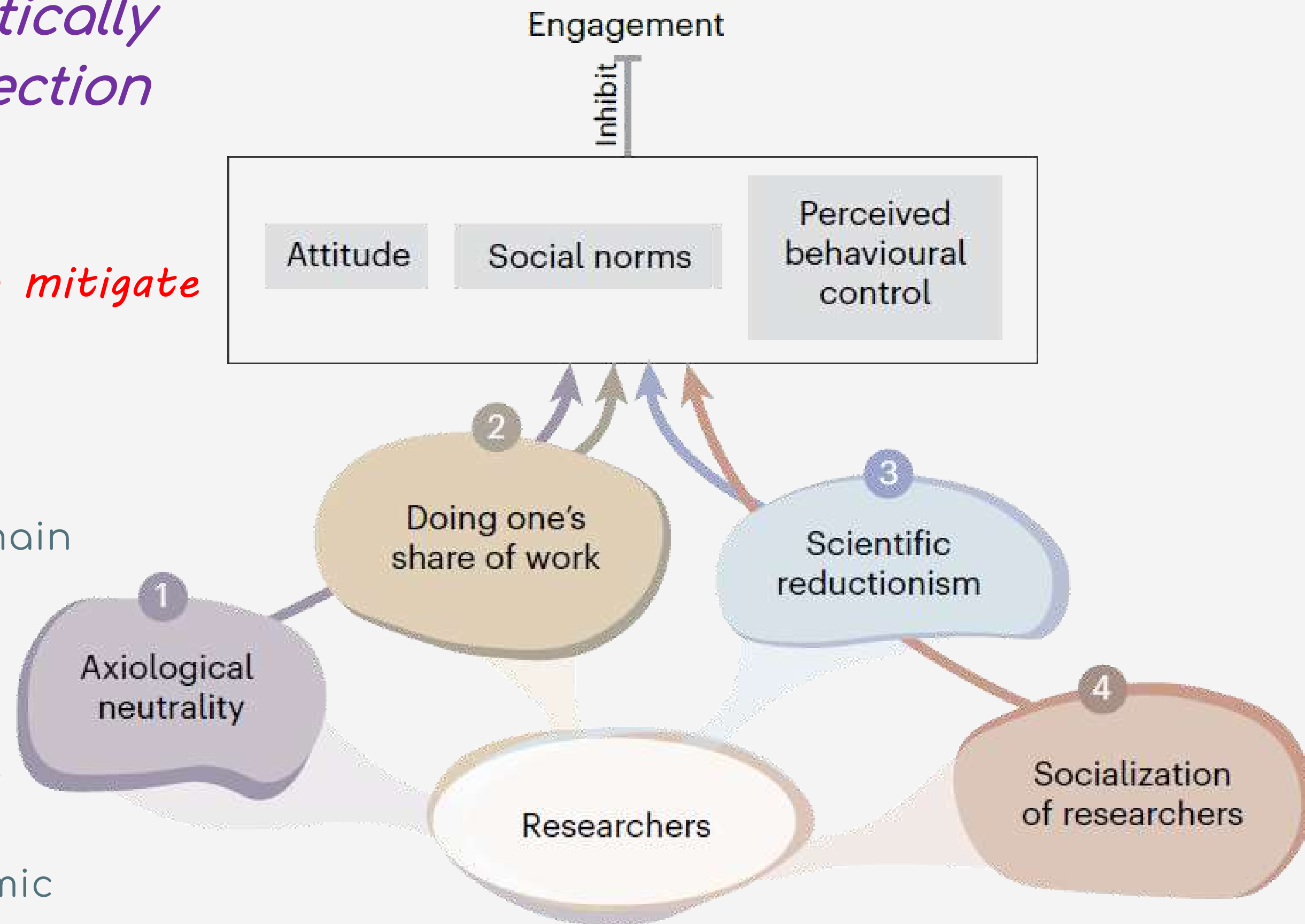


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Obstacles preventing scientists from taking action:

- Axiological neutrality –science should remain value-free, discouraging advocacy.
- Doing one's share of work –producing knowledge is the primary contribution
- Scientific reductionism –specialized fields research
- Socialization of researchers – The academic system fosters individualism and conformity



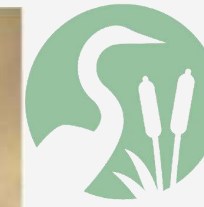
Four special challenges may impede engagement (Dupont et al., 2025)

Knowledge–action gap:

How can scientists help to bridge the knowledge-action gap?

→ Needed: A shift from a knowledge-centric approach to one focused on action and systemic change

(Dupont et al., 2025)



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- Widespread scientist engagement with the public can create a **tipping point**, establishing public outreach as a valued norm in scientific culture
- Educational programs that **actively involve communities** and **promote hands-on participation** can train scientists to bridge the knowledge-action gap
- Environmental education going beyond facts and figures, but involving **more engaging approaches, as social, psychological, and political perspectives**, may encourage real-world engagement rather than just scientific understanding.

Dupont, L., Jacob, S. & Philippe, H. Scientist engagement and the knowledge–action gap. Nat Ecol Evol 9, 23–33 (2025).

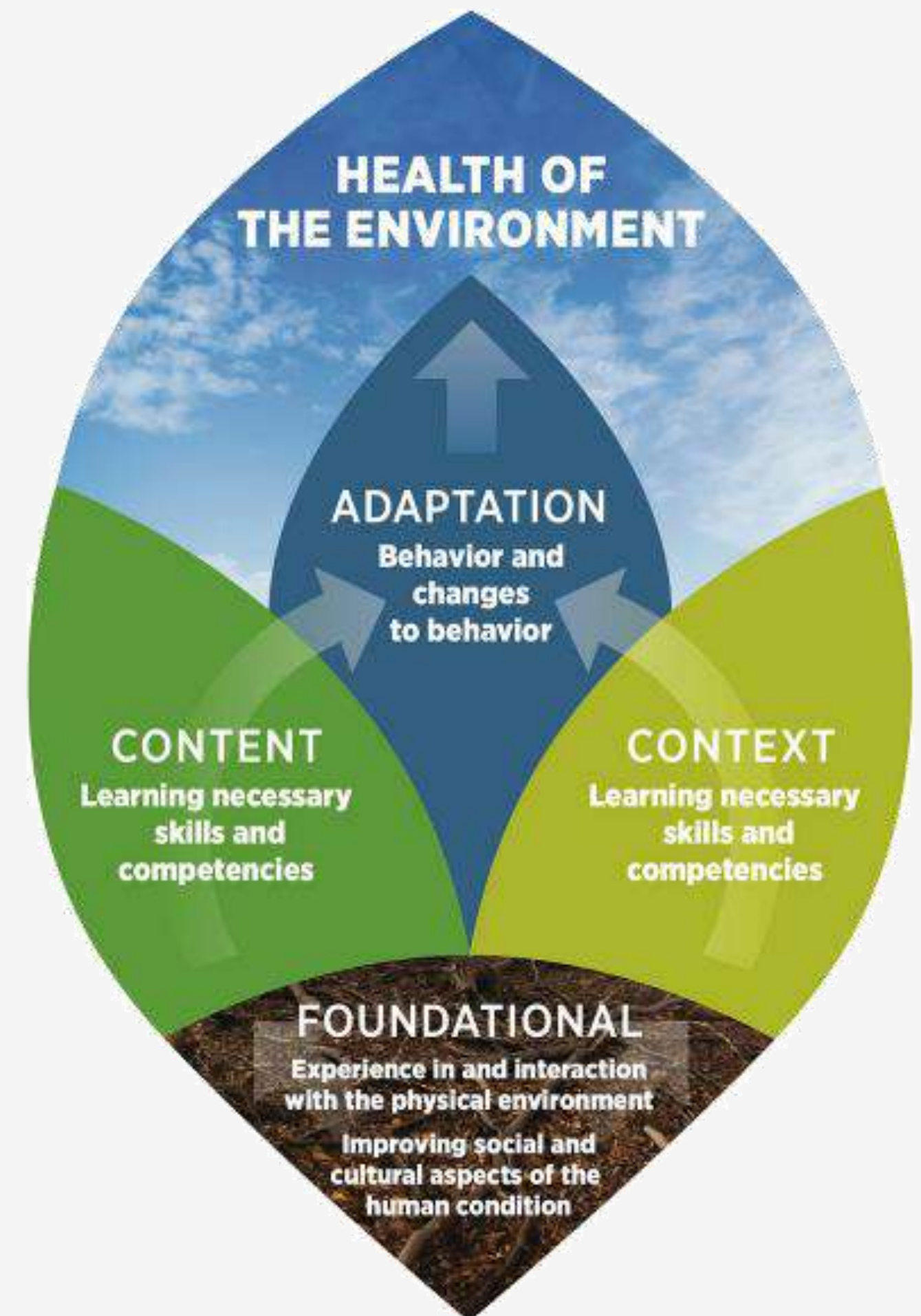
Environmental Education - the need to reimagine, recreate, and restore

Reimagine, Recreate, Restore the EE
The theme of World Environment Day 2021

Social Responsibility
The environmental crisis cannot be addressed by science alone.
It requires collaboration between science, arts, social sciences, and society.

Need for Action
Education must promote transformative, interdisciplinary learning methods, enabling people to actively contribute to solving environmental problems.

Reid et.al., 2020



EE as a cornerstone of social change in solving environmental problems and ensuring the health of the environment. (Source: Clark et al. 2020, 381)

Emotions as catalysts for transformation



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Emotional disconnect with Europe's aquatic environments:

Report for the European Commission's Mission Board
for Healthy Oceans, Seas, Coastal and Inland Waters

EU Mission Restore our Ocean and Waters by 2030
Implementation Plan

EU COM aims to re-establish emotional linkages
of citizens to freshwater ecosystems

„The Mission will seek to create a stronger emotional connection between society and aquatic ecosystems, which constitutes a barrier to catalysing the scale of change required as well as welcome or elicit interest in taking action.“

„To change hearts as well as minds on this issue, communication actions will seek to inspire awe and wonder, and connect with the things people deeply value.“ (p. 54)



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Emotions as catalysts for transformation

Kals, Schumacher, & Montada, 1999 -
newly conceptualized construct:
emotional affinity towards nature play
an important role in the prediction of
environmentally significant behavior
(environmental psychology
questionnaire study, N = 281)

Emotions drive pro-nature
behavior
More concrete, frequent
meaningful experiences in
nature strengthen
emotional affinity

Transformative learning is
crucial for fostering sustainable
behaviors and mindsets



Overview of specific emotions relevant to the 5 phases of transformative learning.
Black words inside the circle = phases of transformative learning,
Gray words = descriptions of emotions from the 20 in-depth reviewed article
(Grund, Singer-Brodowski & Büssing, 2024)

Emotions as catalysts for transformation

Emotional engagement directly addresses several key barriers identified in the knowledge-action gap (Grund, Singer-Brodowski & Büssing, 2024):

Abstract knowledge can feel distant and impersonal

emotional connections create immediacy and relevance

Information alone may overwhelm or paralyze

emotional investment generates motivation and resilience

Knowledge alone is often not enough to change perspectives

emotional experiences can trigger profound perspective transformation

Stories of hope - Educational approaches that can bridge the gap

EE is taught in schools, communities, visitor centers, parks, zoos, museums, and Horizon Europe Projects



ENGAGING VARIOUS TARGET AUDIENCES WITH THE DANUBE: DANUBE4ALL'S INTERACTIVE COLLABORATIVE PUZZLE WALL



Information panel in a play tower Isarmündung Information Centre – Dr. Georg Karl Haus, Germany

WHY

One-night Playback Theatre performance for social workers and social pedagogues
Budapest - Hungary 2024

One-night Playback Theatre performance at the 8th International Sociodrama Conference
Budapest - Hungary 2024



Ecopsychological Playback Theatre in EU Horizon Project Danube4all

WHERE

International project with the Panta Rhei Association, Interview with the Earth
Sfântu Gheorghe - Romania 2022

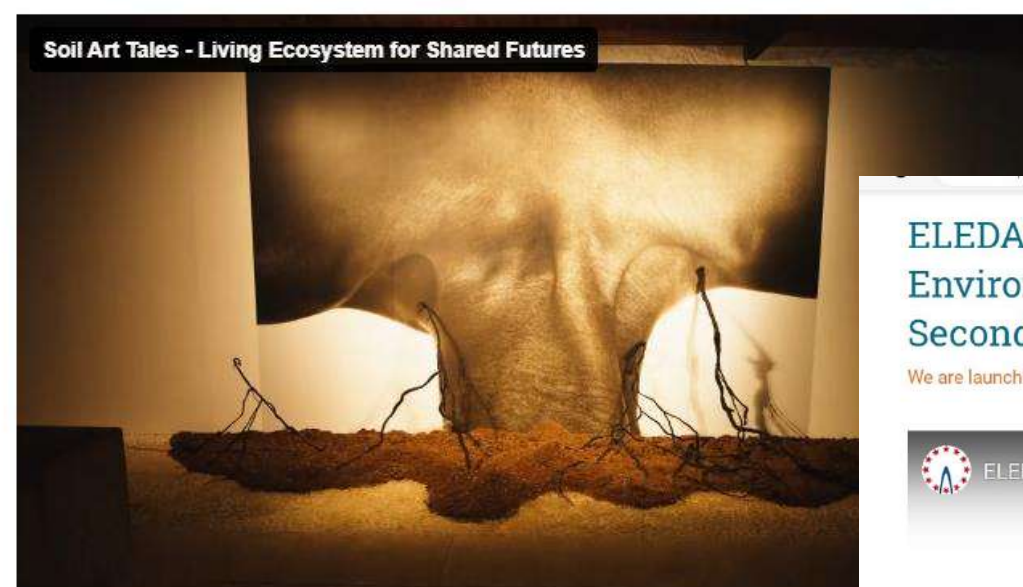
International project with the Panta Rhei Association, Interview with the Earth
Gödöllő - Hungary 2023



@ Anett Wierzicky

Soil Art Tales

Living Ecosystems for Shared Futures



ELEDAN - Developing an E-learning tool for Environmental Education for Primary and Secondary School in the Lower Danube Region

We are launching the application this month.



4 Artenvielfalt und Forschung

Biodiversity and Research

@ museumfrankfurt.senckenberg.de



Museums now are focusing on the mission of connecting with their local communities



New trends in popup experiences to create new opportunities to create a museum that is more distributed throughout its community



@ “Thermal Alchemy” by Sara Bonaventura in the WAMU-NET “Water Dream Memory” Exhibition



@ www.heritagemuseumsandgardens.org



Stiftung Herzogtum Lauenburg
@Sebastian Knorr / HA



@ www.exploratorium.edu



July 2025

EU MISSION: RESTORE OUR OCEAN AND WATERS

WHAT ARE THE EU MISSIONS?

EU Missions are large-scale initiatives under Horizon Europe designed to tackle major global challenges, such as climate change, cancer, soil health, ocean restoration, and the development of climate-neutral and smart cities. They set clear, time-bound goals and bring together research, policy, and stakeholders to drive innovation and deliver concrete solutions for societal benefit.

MISSION RESTORE OUR OCEAN AND WATERS BY 2030

The Mission provides a systemic approach to the protection and restoration of the ocean and Europe's seas and waters by 2030, fostering a sustainable marine and freshwater environment.

Driven by research and innovation and aligning with the European Green Deal targets, the Mission is addressing three specific objectives with clear 2030 targets for:

- **Protecting** and **restoring** marine and freshwater ecosystems and biodiversity.
- **Preventing** and **eliminating** ocean, sea and water pollution.
- Ensuring a **sustainable, carbon-neutral** and **circular blue economy**.

KEY ACHIEVEMENTS

- To accelerate progress toward achieving the Mission's objectives, four **Mission Lighthouses** have been launched as regional hubs. These hubs structure **cooperation** and drive the development and deployment of **transformative, innovative solutions** across the Atlantic and Arctic basins, the Mediterranean Sea basin, the Baltic and North Sea basins, and the Danube River basin, including the Black Sea.
- The Mission is actively **engaging, supporting, and mobilising** a diverse range of stakeholders. More than **1,000 actions** have already been endorsed under the **Mission Charter** for Ocean restoration, supported by a budget exceeding **EUR 7.7 billion**. This includes commitments from 179 countries, over 50 regions, and 90 municipalities, and the number continues to grow. The Mission is also mobilising through **public participation initiatives**, including the Blue Parks Community, the Coalition of Island Regions and Waterfront Cities, the Blue School Network and the EU4Ocean Coalition.

Example from the EU Restore4Life project

EU MISSION: RESTORE OUR OCEAN AND WATERS

HORIZON Projects



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RESTORE4LIFE SHOWCASES THE REMARKABLE SOCIO-ECONOMIC BENEFITS DERIVED FROM A COMPREHENSIVE AND INTERDISCIPLINARY APPROACH TO RESTORING FRESHWATER AND COASTAL WETLANDS IN THE DANUBE BASIN.

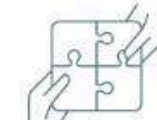
PROJECT GOALS



Develop a Wetland Restoration Decision Support System



Support local revenue and business activities in restored ecosystems



Empower stakeholders and the community



Support the implementation of holistic wetland restoration solutions

Restore4life is part of the EU Mission: Restore our Ocean and Waters which aims to protect and restore the health of our ocean and waters through research and innovation, citizen engagement and blue investments.

The project engages in 4 demonstration sites and 6 monitoring sites all across the Danube basin to make evident that increased delivery of key ecosystem services, as water and pollutant retention, carbon sequestration and tourism opportunities as well as improved resilience of water-dependent habitats will produce multiple socio-economic synergies that also provide opportunities for sustainable businesses and investments.

4

IMPLEMENTATION
SITES

6

MONITORING
SITES

31

PARTNERS

48

MONTHS



RESTORING WETLANDS FOR A SUSTAINABLE FUTURE



restore4life.eu



Institute of
Hydrobiology and Aquatic
Ecosystem Management



KATHOLISCHE UNIVERSITÄT
EICHSTÄTT-INGOLSTADT



IGB
Leibniz Institute of Freshwater Ecology
and Inland Fisheries



MINISTRY OF ENVIRONMENT,
WATERS AND FORESTS



viadonau



HELMHOLTZ
Centre for Environmental Research



T Institute
E for Water of
KE the Republic
IE of Slovenia



Univerzitet Crne Gore



SOFIA UNIVERSITY
"ST. KLIMENT OHRIDSKI"



NORTH-HUNGARIAN
WATER DIRECTORATE
MISKOLC



INSTITUTE FOR NATURE CONSERVATION
OF VOJVODINA PROVINCE



Institute of Landscape Ecology
Humboldt University of Berlin

Restoration of wetland complexes as life supporting systems in the Danube Basin

Develop an online Restore4Life Wetland Restoration Decision Support System that will allow large-scale wetland restoration activities in the Danube basin and Europe through co-creation with multiple actors.



Develop a Restore4Life
Wetland Restoration
Decision Support System



Empower the
community



Support local revenue &
business activities in
restored ecosystems



Support the
implementation
of holistic wetland
restoration solutions

Participatory environmental learning

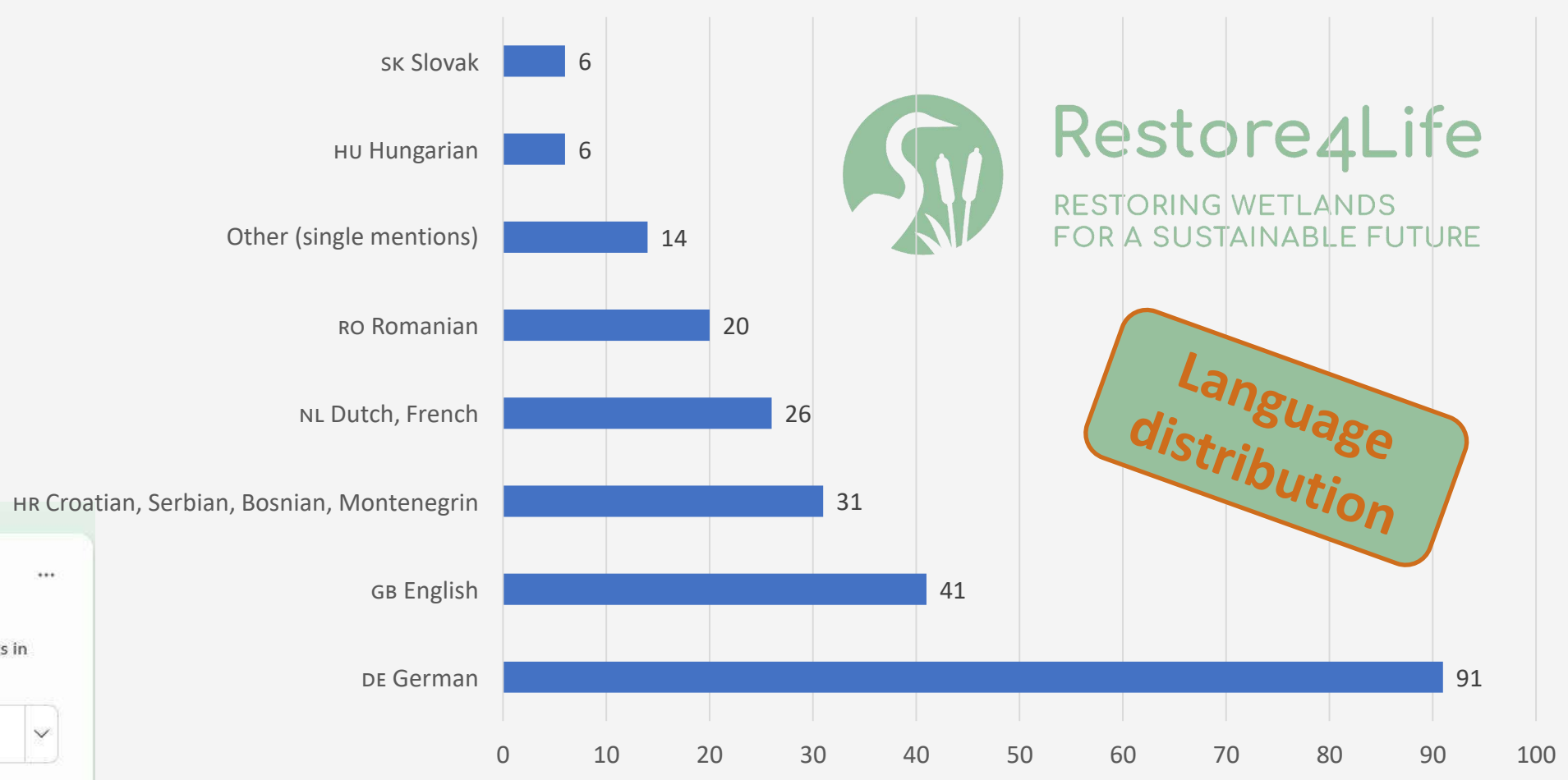
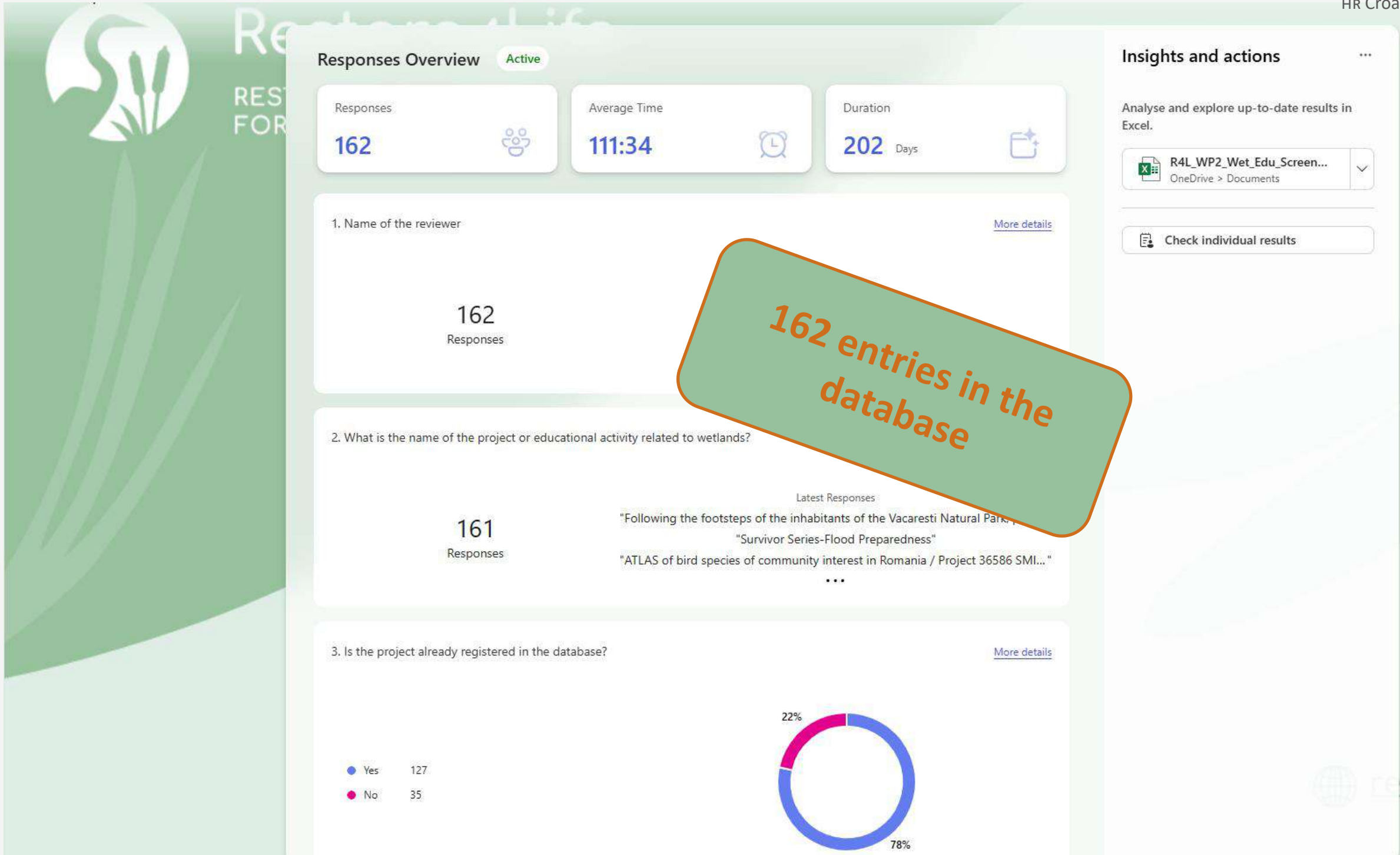
(citizen science + environmental education)



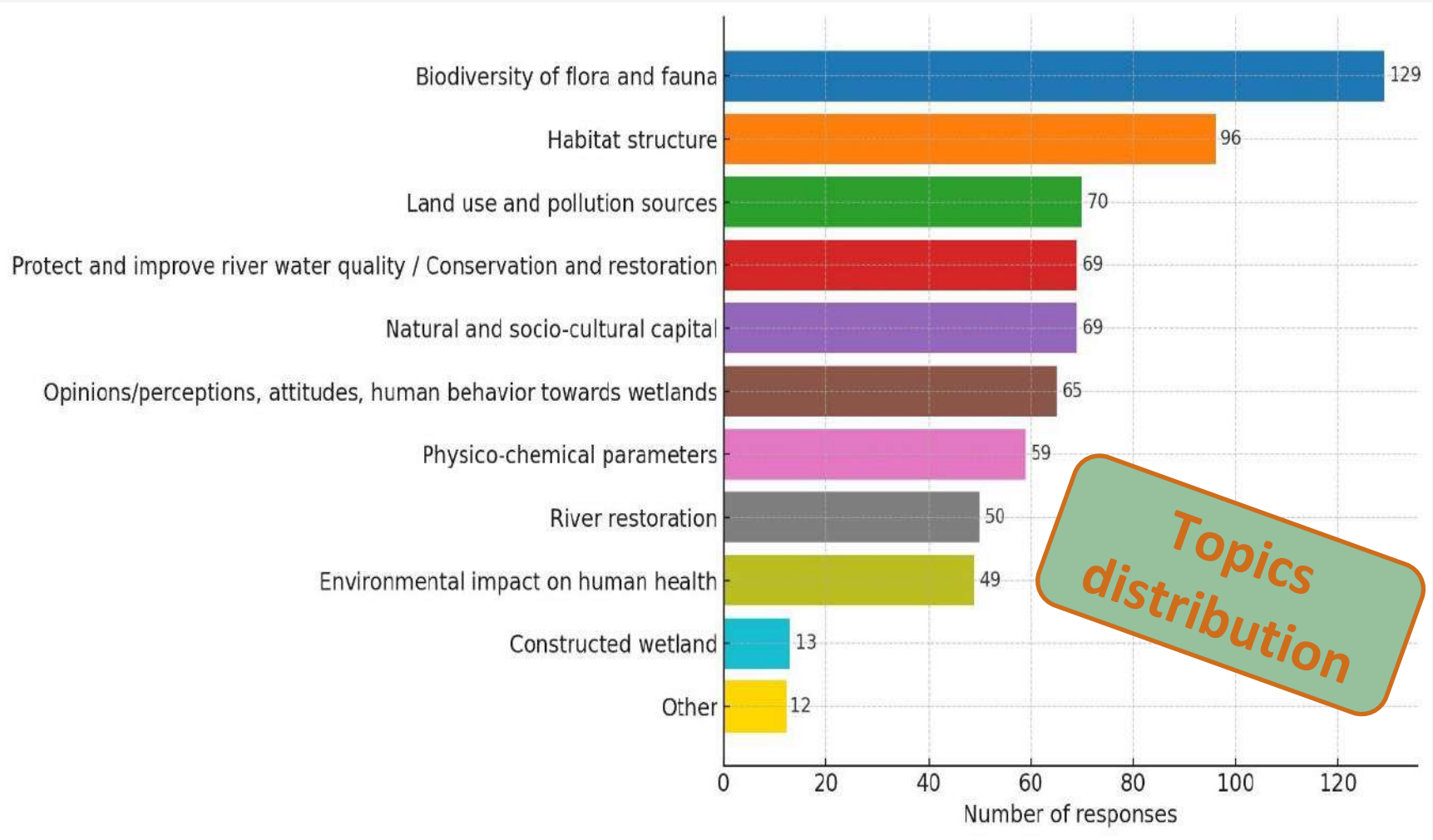
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DATABASE OF EXISTING EDUCATIONAL RESOURCES



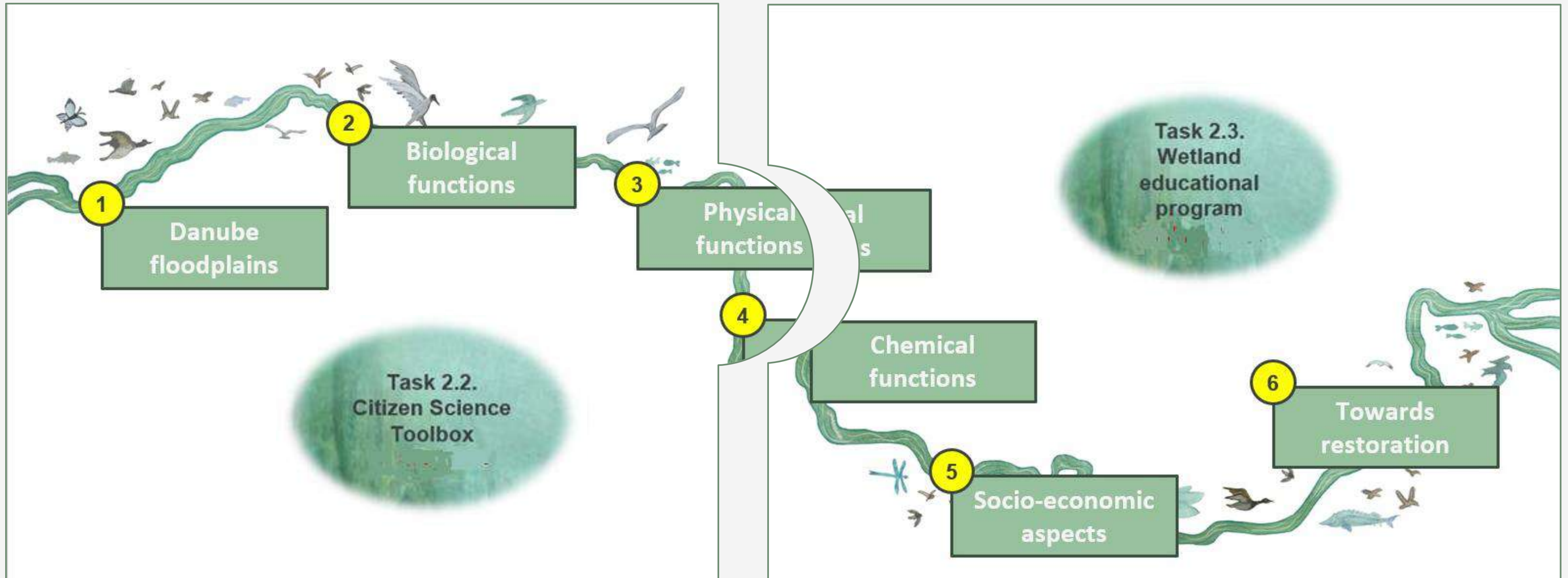
Languages of educational projects and activities on wetlands and rivers identified through the Restore4Life questionnaire



Environmental themes addressed in collected educational projects — comparison of structural, functional, and socio-ecological topics

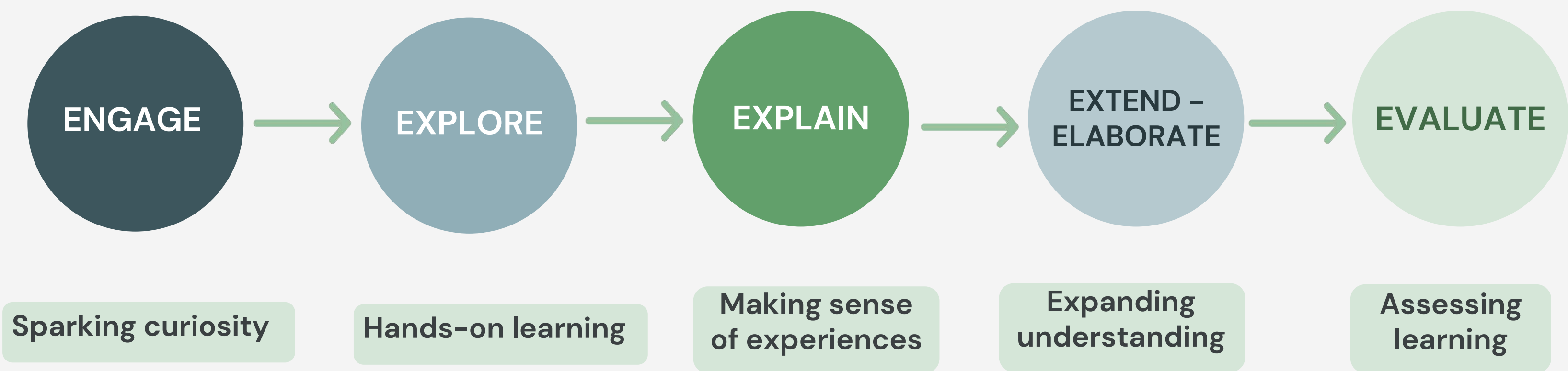
Living Floodplains:

A joint toolbox for education and citizen science on floodplain functions and Nature based Solutions



Pedagogical foundation:

5 E Instructional model approach:



LEARNING EXPERIENCE DESIGN	a provocative question, an intriguing scenario, an outdoor experience or a hands-on experience	activities or experiments	teachers provide explanations	apply their newfound knowledge to different contexts deepening their understanding and refining their skills.	involves both teachers and students assessing understanding and skills.
TEACHER SUPPORT	Essential and guiding questions for each step	Student learning objective	Materials	Vocabulary	Suggested assessment tasks
STUDENT MATERIALS	Student worksheet				
	https://teachers.institute/learning-teaching/constructivist-lesson-planning-5-e-model/				

R4L Teaching Protocol following the „5 E“ Learning experience Framework



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EXPLORING THE HABITAT OF A STREAM

TEACHING PROTOCOL

GRADE LEVEL: Secondary - High School

DURATION & LESSON STRUCTURE

Engage (90-120 min)
Explore (30-45 min)
Evaluate (30-45 min)

INSTRUCTIONS FOR STUDENTS

A habitat is the living environment of plants, animals, and other organisms. It is shaped by both abiotic (non-living) and biotic (living) factors, such as sand, nutrients, and sunlight, while biotic factors include plants, dead wood, and detritus, as well as the interactions between organisms.

The typical habitats provided by rivers and streams are dynamic and hence often changing across time and space. They support a wide variety of diverse organisms living there cannot survive in a static environment. The clarity, vegetation, or stream bed form —

Understanding how physical characteristics of a habitat affect the biological features (e.g., invertebrate or plant species) and human impacts, and also supports identifying the health of the habitat.

In this lesson, students will assess the ecological health of a stream by evaluating physical and biological parameters, develop human impacts on aquatic habitats through field data collection, and propose restoration measures for the stream.

LEARNING OBJECTIVES:

Students will be able to:

- 1 Identify and describe key abiotic and biotic factors of a habitat.
- 2 Assess the physical characteristics of a habitat.
- 3 Evaluate how human activities affect the habitat.
- 4 Interpret field data to conclude about the health of the habitat.
- 5 Propose restoration measures for the habitat.

TEACHING FRAMEWORK

THE 5E INST

1. ENGAGE - Spatial

AIM: To raise students' curiosity about the habitat and how human activities can alter them.

ACTIVITY 1 - VISUAL DISCOVERY: "HEALTHY HABITAT"

PURPOSE OF THE ACTIVITY: To stimulate students' natural recognition of human impacts on the habitat.

INSTRUCTIONS FOR STUDENTS:

GUIDING QUESTIONS

- What differences can you observe between the two habitats?
- Which one do you think supports more diverse organisms?
- What signs show human alteration of the habitat?

TEACHER SUPPORT

- Use the Restore4Life Habitat Worksheet
- Highlight the flow and structure of the habitat
- Use a mix of visual aids and field data

ACTIVITY 2 - LOCAL CONNECTIONS: "OUR STREAM"

PURPOSE OF THE ACTIVITY: To connect students' local knowledge of the stream to the concepts learned in the previous activity.

INSTRUCTIONS FOR STUDENTS:

GUIDING QUESTIONS

- Have you noticed some features of the stream that are different from the ones in the video?
- Are there signs of pollution, waste, or other human impacts on the stream?
- Why do you think stream health is important?

KEYWORDS:

sinuosity, meanders, lateral migration, deposition, riparian vegetation

- How do human activities affect the habitat?

Guide students to explore connections:

- Flow affects substrate distribution
- Bank vegetation influences stream flow
- Shading impacts water temperature
- Sinuosity affects flow patterns
- How vegetation affects habitat quality
- How flow affects: substrate composition, diversity

MEASUREMENT TOOLS AND TECHNIQUES

- PHYSICAL MEASUREMENTS:
 - Depth stick/meter for flow measurement
 - Flow meter/floating object
 - GPS/maps for location
- DOCUMENTATION TOOLS:
 - Field notebooks
 - Habitat Worksheet
 - Cameras
- ASSESSMENT METHODS:
 - Visual surveys
 - Transect measurements
 - Photo documentation

TEACHER SUPPORT

- Brief students on the importance of the habitat
- Demonstrate the Stream Habitat Worksheet
- Assign roles: observer, recorder, reporter
- Ensure each student has a role in the activity

STUDENT ACTIVITIES

- Evaluate over a distance of 100 meters the extent to which the habitat is altered
- Collect data on the worksheet



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EXPLORING THE HABITAT OF A STREAM

WORKSHEET

To assess habitat quality, specific parameters are evaluated downstream of the sampling site. For each parameter, assign a score from 1 to 3. This will help you evaluate how natural and dynamic the habitat is.

1. Analyzed parameter: HUMAN ALTERATION OF THE SINUOSITY

How much has the river/stream been altered by humans?

HABITAT QUALITY

1 → VERY GOOD

Natural floodplain, unaltered.

2 → GOOD

Partial presence of straightening or alteration works such as dredging, agriculture, concrete embankments, bridge construction activities.

SCORE:

4. Analyzed parameter: THE DEPTH OF THE PROFILE

How much of the profile is artificially deep in relation to the area of the river bed?

HABITAT QUALITY

Transverse profile: very natural, very wide, with high dynamics.

Transverse profile: moderately modified. Dike present on one bank.

Highly modified cross profile and deepened. Dikes present on both banks; regularization and channel regularization.

Transverse profile 1 → VERY GOOD

Transverse profile 2 → GOOD

Transverse profile 3 → POOR

SCORE:

5. Analyzed parameter: THE STRUCTURE OF THE RIVER BANK

How is the structure of the bank?

HABITAT QUALITY

1 → VERY GOOD

Meandering river - intact free-flowing rivers exhibit a dynamic steady state of their river bed: Bank erosion in one place is balanced by sediment deposition elsewhere. Vegetation on river banks prevents massive erosion, provides shade for some stream sections. Erodes, overhanging banks are often used by fish for shelter.

2 → GOOD

Moderately meandering watercourse with only local bank stabilization made up from natural materials, as stones and wood.

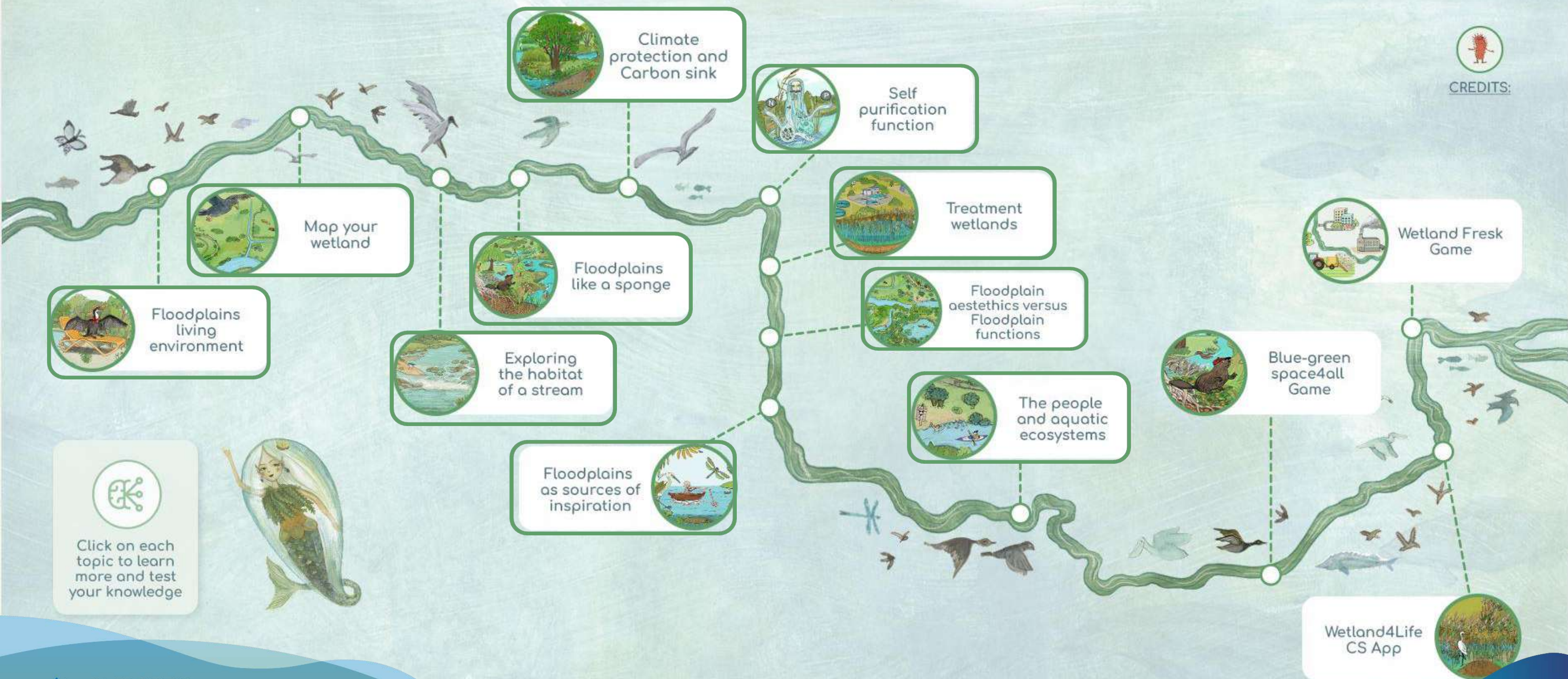
3 → POOR

Straight watercourse with fully and uniformly stabilized banks.

SCORE:

3

LIVING FLOODPLAINS: LEARN, EXPLORE, RESTORE4LIFE TOOLBOX



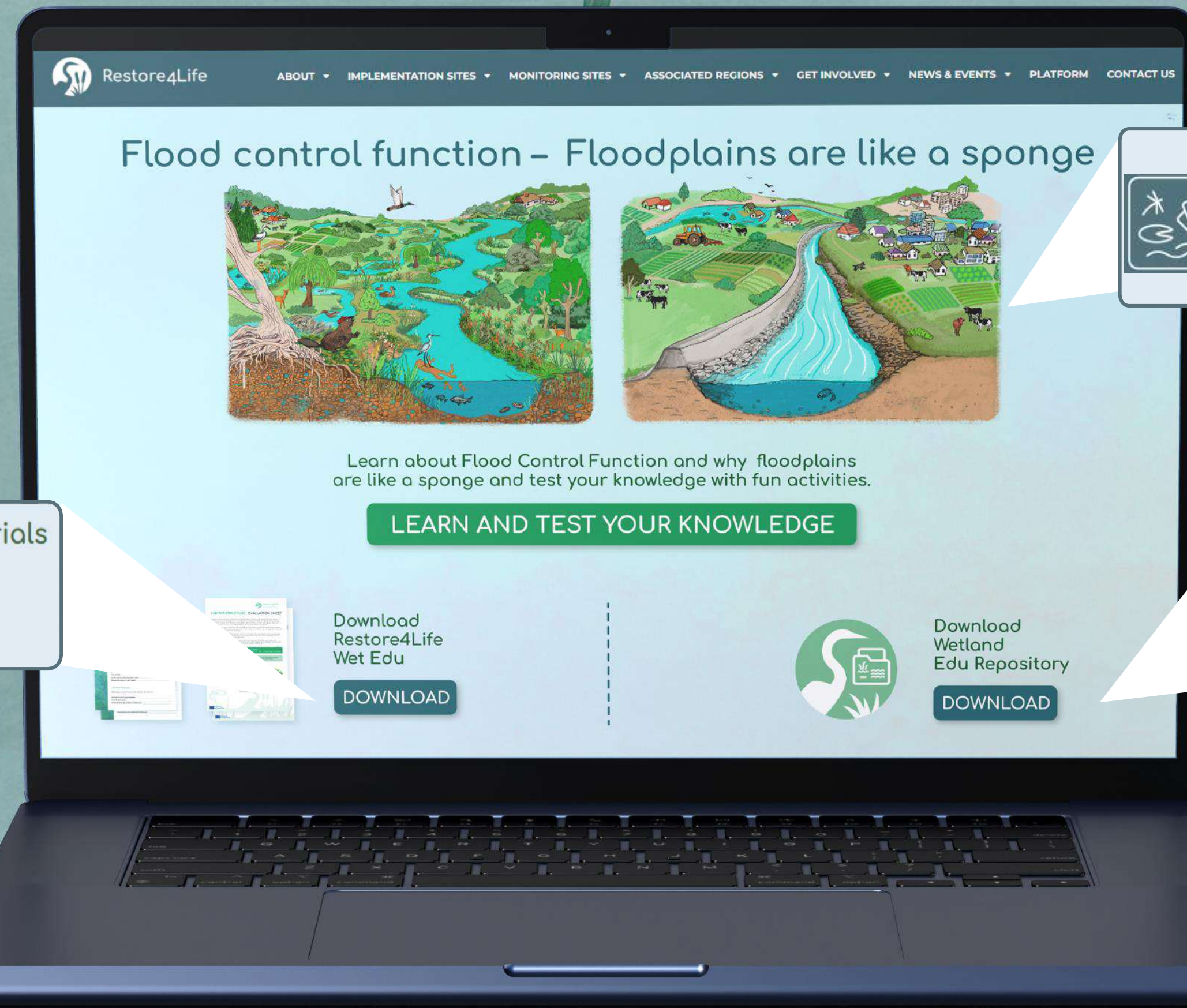
CREDITS:



Click on each topic to learn more and test your knowledge



For each topic – Multiple learning entry points



Interactive Illustrations that captures users' attention

EXPLORE

Access Teaching Materials

OPEN PLATFORM

Opens new tab: Zenodo

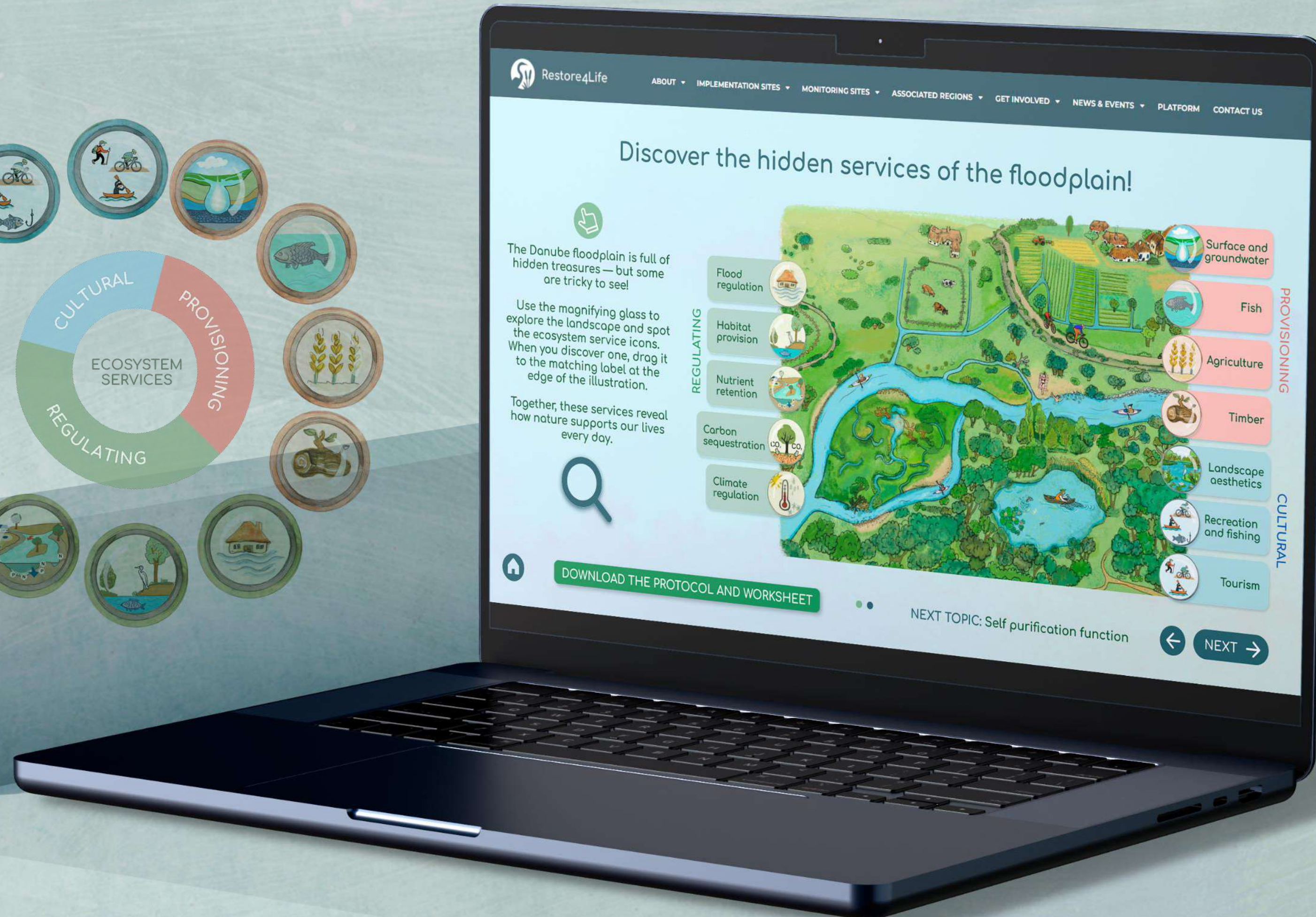
Data-base with collected existing educational activities for the topic

EXPLORE



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Example of Interactive Illustrations from R4L Toolbox





Restore4Life



Access Teaching Materials

OPEN PLATFORM

Opens new tab: Zenodo



Example of 5E Teaching Materials
from R4L Toolbox

Open acces & Reusability

TEACHING MATERIALS - 5E INSTRUCTIONAL MODEL (ENGAGE –EXPLORE –EXPLAIN –ELABORATE –EVALUATE)

1. FLOODPLAIN LIVING ENVIRONMENT –INTRO
(WWF & FVB-IGB) (Gheorghiu, C., Costea, G., 2025)

2. MAP YOUR WETLAND
(UNSA) (Drešković, N., Radulovic, S., Djug, S., 2025)

3. EXPLORING THE HABITAT OF A STREAM
(FVB-IGB) (Costea, G., Pusch, M., 2025)

4. FLOODPLAINS LIKE A SPONGE
(UNIOS) (Mikuska, A., & Čerba, D., 2025)

5. CLIMATE PROTECTION AND CARBON SINK
(BOKU) (Weigelhofer, G., Feldbacher, E., & Rosenberger, C. 2025)

6. SELF-PURIFICATION FUNCTION
(UNSFA & FVB-IGB) (Grabić, J., Srđević, Z., & Costea, G., 2025)

7. TREATMENT WETLANDS
(UNSFA & BOKU) (Ilić Paunić, M., Srđević, Z., Grabic, J.,
Langergraber, G., & Schobert, J., 2025)

8. FLOODPLAIN AESTHETICS VS. FUNCTIONS
(BOKU) (Feldbacher, E., Rosenberger, C., & Weigelhofer, G., 2025)

9. FLOODPLAINS AS SOURCES OF INSPIRATION
(ILESAS) (Miklósová, V., 2025)

10. PEOPLE AND AQUATIC ECOSYSTEMS
(FVB-IGB & UB) (Costea, G., Dinu, V., Adamenscu, M.C., Pusch, M., 2025)

ZENODO LINKS

<http://doi.org/10.5281/zenodo.17494367>

<https://doi.org/10.5281/zenodo.17476800>

<https://doi.org/10.5281/zenodo.17484378>

<https://doi.org/10.5281/zenodo.17472524>

Carbon sequestration in floodplain forests

<https://doi.org/10.5281/zenodo.17463283>

Carbon sequestration and storage in soils

<https://doi.org/10.5281/zenodo.17453839>

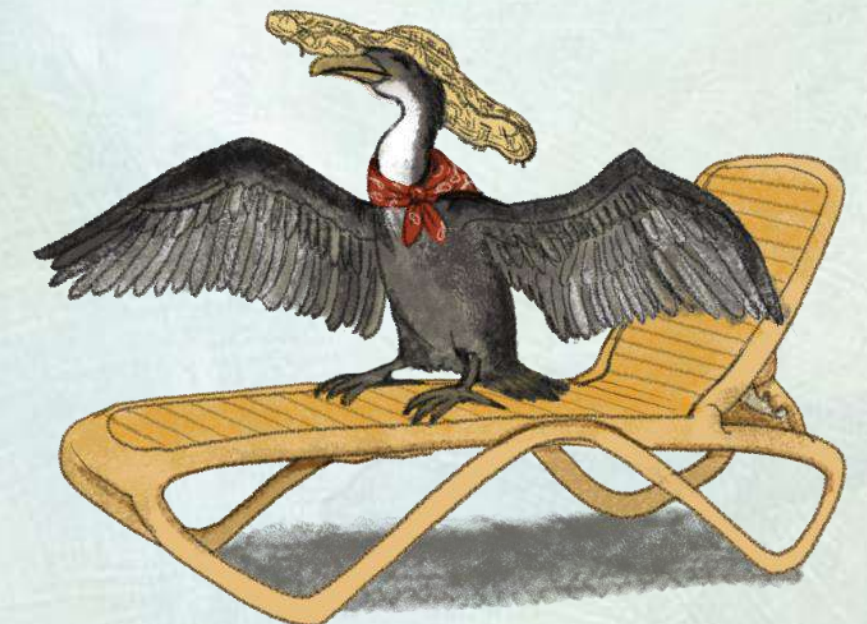
<https://doi.org/10.5281/zenodo.17474269>

<https://doi.org/10.5281/zenodo.17478432>

<https://doi.org/10.5281/zenodo.17453699>

<https://doi.org/10.5281/zenodo.17478184>

<https://doi.org/10.5281/zenodo.17477839>



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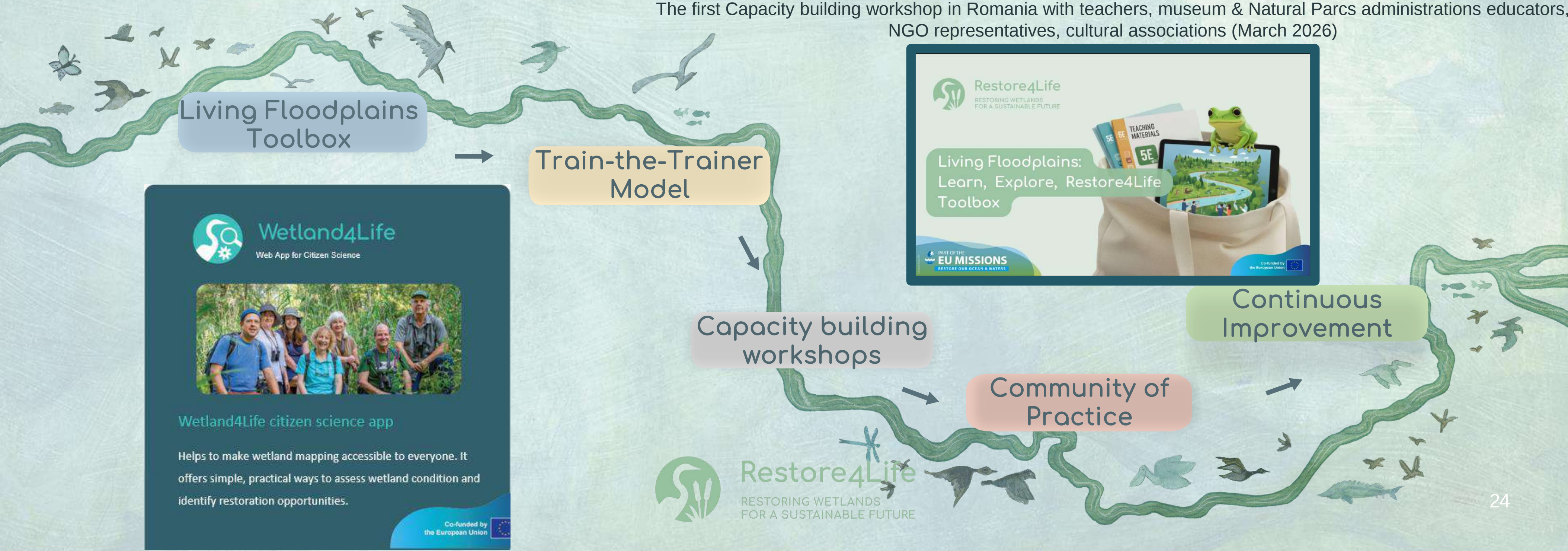
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Implementation & Uptake

From development to practice:
Capacity building and outreach

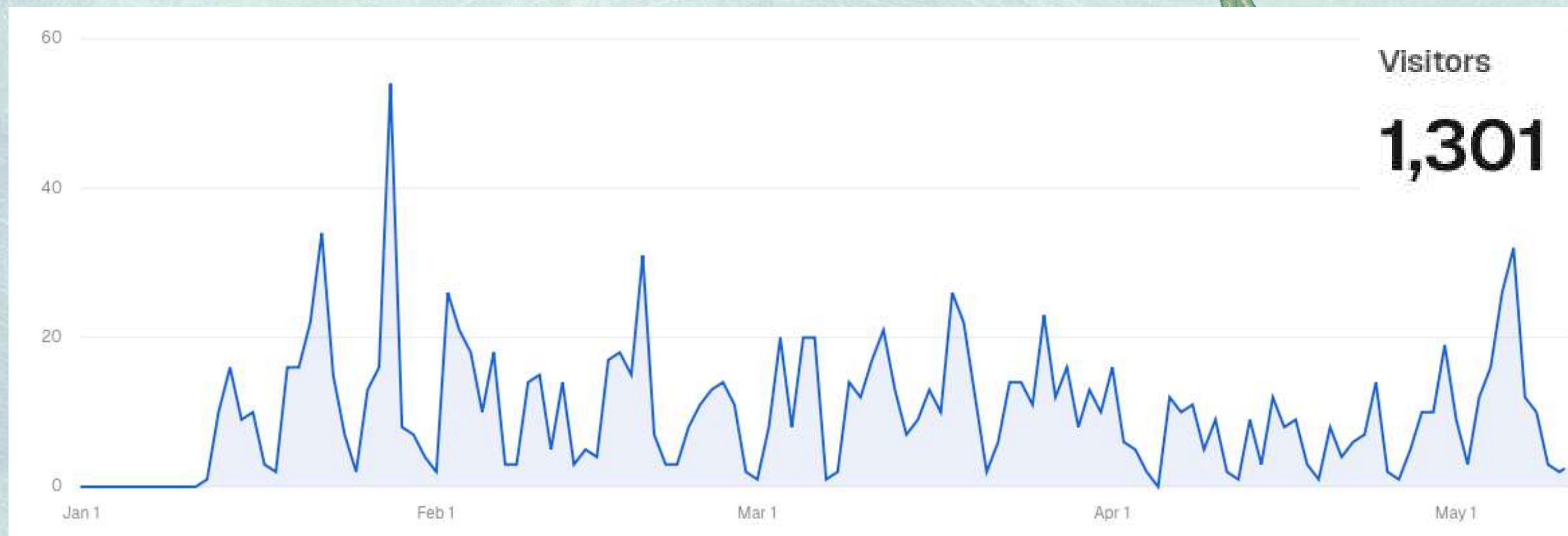


The first Capacity building workshop in Romania with teachers, museum & Natural Parcs administrations educators, NGO representatives, cultural associations (March 2026)



Impact & Reach

- Steady number of visitors since launce.
- Expected increase in the coming months with the implementation ahead, including school curricula.
- Users are from expected countries (Danube area) and beyond.



 Romania	17%	224
 Austria	13%	164
 Germany	12%	156
 Bulgaria	8%	102
 United States of America	7%	93
 Portugal	6%	72
 Netherlands	5%	70
 Serbia	5%	69
 Greece	3%	38
 Ireland	3%	38

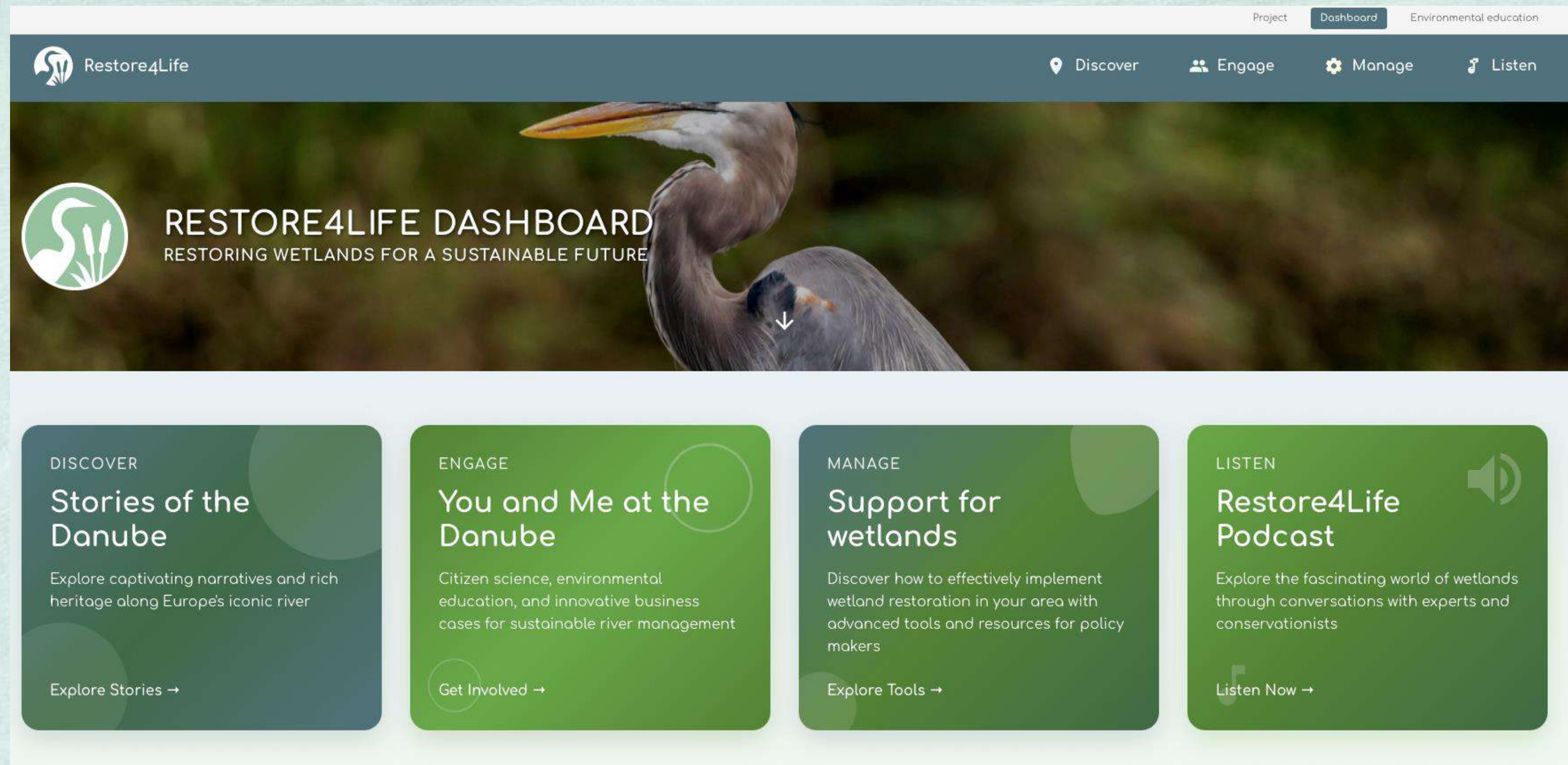


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Integration into the Restore4Life Restoration Platform

Upcoming dashboard for stakeholders of wetlands, with stories, management support toolkits, educational content, everything to get a bottom-up and top-down restoration cycle going!



Thank you for your interest!

Contact data:

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Tim Grandjean: t.grandjean@archipelago.gr

CREDITS:



Concept and text for interactive illustrations
Gabriela Costea – IGB



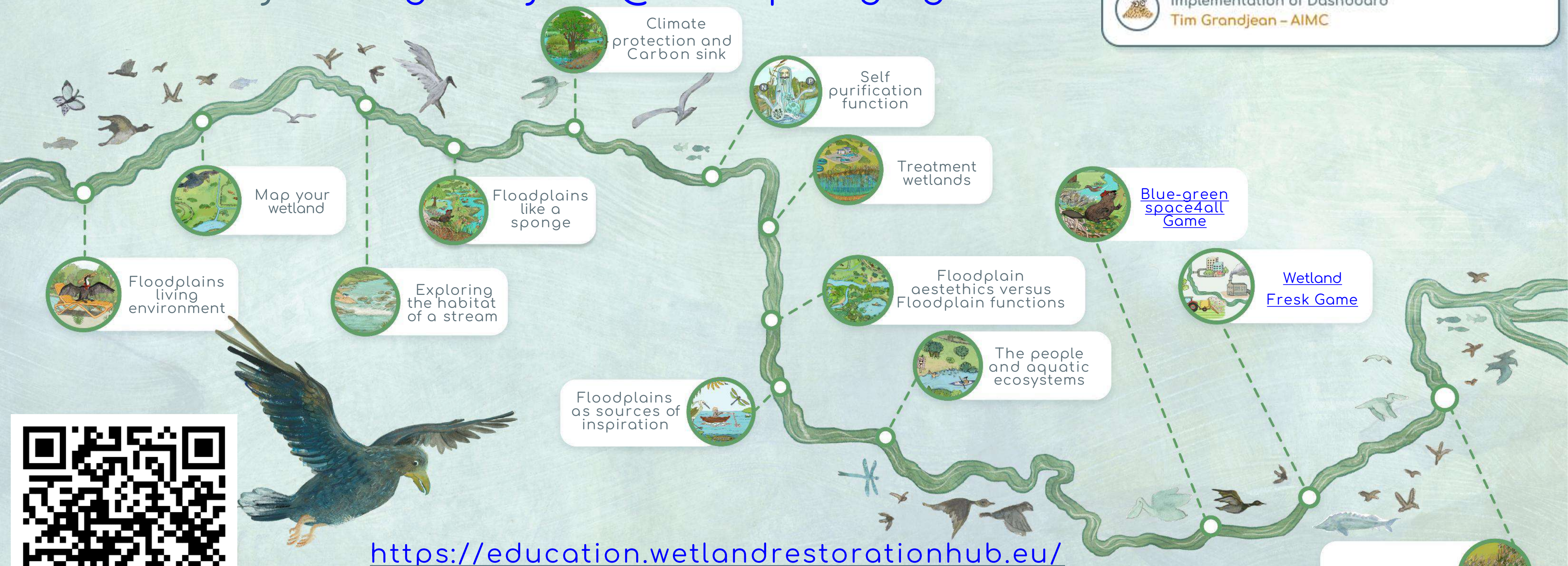
Illustrations
Anca Smărăndache



Graphic and UI/UX Design
Marina Gabriela Soare – Daydream Creative Studio



Implementation of Dashboard
Tim Grandjean – AIMC



<https://education.wetlandrestorationhub.eu/>



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Solution4Life
CS App



STORYBOOK FOR CHILDREN AND FAMILIES: 'LAU LAUGHS AGAIN - A STORY FROM THE DANUBE'

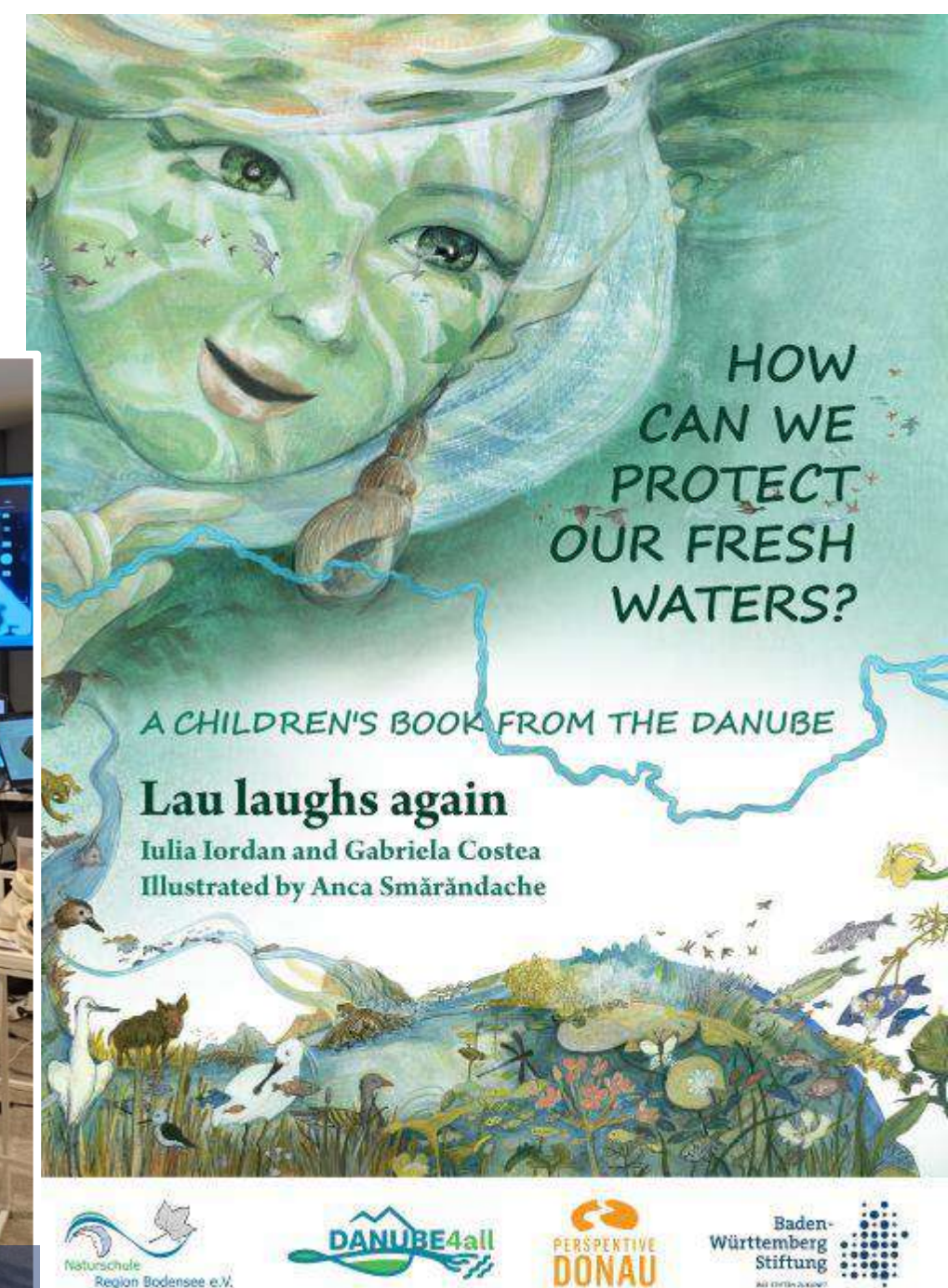
Book available in Romanian, German and English



German version presentation in Danube Floodplain National
Parc Austria, Oct. 24



English version presentation in EU Mission Ocean Forum,
Brussels Mar. 25



- The river mermaid has an adventurous journey from the springs to the mouth of the Danube
- On her way she learns about the diversity of life and functions of the Danube, as well as its threats and possible solutions
- The river mermaid Lau connects different cultures, countries and projects.
- The children book written in a fairytale-like tone motivates the reader to observe and take action.



English version presentation in
IAD Conference Sofia Apr. 25