



Heritage Mapping and Community Engagement for Water Sustainability Education

Toolkit curated by
the Global Network of Water Museums
(WAMU-NET)



**Co-funded by
the European Union**

Toolkit curated by
the Global Network of Water Museums
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AQUATIK-EU Project

CERV Program Funded by the EU

Project leader:



Project partners:



INTRODUCTION

Different approaches to enhance water heritages

In recent years, a growing number of organizations, researchers, and local communities—sometimes collaborating, other times working independently—have developed diverse methodologies to enhance and promote water heritage in specific regions. These approaches differ considerably, shaped by the type of water body involved, the stakeholders engaged, the goals of each initiative, and the resources at hand. Introducing these methodologies provides an opportunity to explore a wide array of strategies for recognizing, sharing, and celebrating water heritage. They also serve as tools to strengthen the relationship between a water body and the surrounding community, while honoring the knowledge and perspectives of those who inhabit it.

Some of these methodologies intersect, others complement one another, and many can be combined in creative ways. Ultimately, each group committed to valuing a particular water heritage must choose and adapt the tools that best fit their local context. The methodologies outlined below, rather than fixed formulas, offer inspiration: they are flexible starting points designed to spark curiosity and innovation. These approaches encourage dynamic strategies that can evolve and adapt—like the waters and communities they aim to serve.

In this toolkit are outlined the 7 different methodologies curated by WAMU-NET during the Training of Trainers (ToT), titled “Water Heritage and Communities. Enhancing the Cultural and Social Value of Water”, which took place at the Cotonificio IUAV, in Venice, on 17-18 June 2025.

The seven methodologies are organized into two main sections. The first focuses on strategies for mapping and digitizing water heritage, featuring approaches such as digital tours and digital museums. The second section highlights methodologies centered on community engagement, emphasizing ways to value and co-manage water heritage through participatory practices. Each methodology includes a general overview of how it has been applied in a specific context, along with useful tips for adapting and implementing it in your own setting. Additionally, each entry provides useful resources to support the application of the methodology.

1 Mapping and digitizing water heritages: digital tours and museums

1.1 World Inventory of water museums. Toward an inclusive setting of water-related institutions, communities and sites

Eriberto Eulisse

The World Inventory (WIN) of water museums is a project of the Global Network of Water Museums that follows up on the Resolution no.7-XXIV (2021) of the Council of UNESCO-IHP (Intergovernmental Hydrological Programme): a resolution aimed at supporting the development of glo-cal networks of water museums. This resolution aims to identify those institutions which are active in promoting water sustainability education linked to hydraulic heritage (both natural and cultural sites) and strengthen their role in promoting local development focused on water values. The proposed methodology gives the opportunity to spot active institutions on a regional scale and liaise with National IHP Committees. As such, it provides a framework for municipalities to boost water-focused local development and empower communities.

General explanation of the methodology

To explore the various museums, institutions, and communities that are engaged to educate and build a new relationship with water and its heritage (natural and cultural), the Global Network of Water Museums (WAMU-NET) implemented a pilot project linked to IHP Resolution 7-XXIV to define:

(1) an inclusive definition of museum, that is, to understand universally what a 'water heritage' is (and for who is meaningful) avoiding ethnocentric categories and western museological perspectives, and
(2) a taxonomy (classification system) to spot museums, heritage sites and various kinds of water-related good practices which might foster sustainability education

Such an inclusive definition of 'museum' includes heritage sites such as 'extended museums' and open-air museums. It also led to giving a special attention to 'living heritage systems' and communities which keep a special relationship with water.

For the AQUATIK-EU partners, identifying the network of relevant actors at the local, regional and national level and liaise with them to promote water heritage is a basic condition to create greater impact through institutional partnerships and potential interactions with UNESCO. Key results can be considered as a contribution to define a 'new relationship with water heritage' in line with the above-mentioned resolution and the Phase 9 of IHP (priority 2: water education).

The taxonomy

The proposed taxonomy can be applied on a local or regional scale to collect useful data and information not only on water-related museums (archaeological, science, natural history museums etc.) but also on community-based museums, eco-museums, interpretation centers, 'extended' museums, and water heritages managed by local communities.

Categories for classifying water museums and heritage sites

Six categories are grouped into three main typologies to distinguish between existing or future 'museums' or good practices, as follows:

a) Type 1: Existing institutions

1. MUCD - Museums, Collections, and Documentation Centers
2. IDEM - Interpretation and Visitors' Centres, Digital Museums, Eco-Museums, Community-based Museums, Extended Museums, Open-air museums

b) Type 2: Potential (future) institutions

3. WASH - Waterscapes (Cultural Landscapes), Sites, and water-related Heritage Assets
4. ANTE - Ancestral Hydro-Technologies, Community-based practices, and Citizens Observatories
5. INTL - Intangible Heritage and the Heritage of "Living Waters"

c) Type 3: Good practices to achieve the SDGs

6. GOOD - Local good practices to manage water heritage and propose solutions that contribute to climate adaptation

The toolkit

To implement the proposed methodology at local, regional or national scale, a practical toolkit including (1) the taxonomy and (2) two pilot case studies was created and made available by WAMU-NET. Two pilot projects in Italy and the Netherlands (Po River and the Rhin Delta) applied the taxonomy and identified approx. no. 40 institutions, heritages, and good practices providing a useful map of actors at regional level. In both cases it was possible to identify various types of water-related museums, institutions, hydraulic heritages, archival collections, research centres, etc. Both case studies encompass numerous natural and human-made water-related features, including nature reserves, major trade routes, rivers and canal networks, water monuments as well as various infrastructures for drinking water, irrigation, or draining.

Useful tips to implement this methodology

- 1_ Use the WIN taxonomy working in cooperation with universities and research centres to start mapping the main 'water museums', heritage sites and good practices of your region to improve sustainable management of scarce water resources
- 2_ Use the WIN mapping thus produced and share your strategy with the IHP National Committee or UNESCO Commission of your country, explaining it on the basis of the above-mentioned resolution and, thus, giving national and international visibility to your project
- 3_ Strengthen your network: establish contacts and create synergies with some key local actors identified through the taxonomy to avoid duplications and best promote the uniqueness of your water-related project

Useful resources

- <https://www.watermuseums.net/activities/world-inventory>

- <https://www.watermuseums.net/assets/Uploads/World-Inventory/+Description-of-the-WIN-Taxonomy.pdf>

- https://www.watermuseums.net/assets/Uploads/World-Inventory/+Pilot-Case_World-Inventory-of-Water-Museums.pdf

1.2 Capturing water, heritage and culture through mapping and participatory engagement

Matteo D'Agostino

This toolkit of three methods draws on the Value Case Approach, developed by the PortCityFutures research group, the UNESCO Chair on Water, Ports and Historic Cities, and Delft University of Technology. It is designed to equip participants with ready-to-use and participatory methodologies to begin identifying and mapping the heritage of their territories across time and space, and from the perspective of diverse actors. At its core, the approach is based on a simple yet powerful premise: heritage is what we value about the past. These values, however, are not fixed or universal—they shift depending on context, culture, history, and actors. That is why the tools presented are meant to be inclusive and dialogic, enabling multiple stakeholders to reflect on what is important, to whom—considering also non-human actors— and why.

General explanation of the methodology

The toolkit focuses on natural, cultural, tangible, and intangible forms of heritage, helping participants identify heritage-related spaces, practices, experiences, infrastructures, and imaginaries. It emphasizes a multistakeholder process that engages local communities, acknowledges marginalized voices, and considers the evolving values linked to water systems, landscapes, and practices.

The proposed tools encourage participants to consider how water systems—rivers, canals, ports, reservoirs, seas, etc.—are interconnected socio-cultural and ecological systems that extend from source to sea. They embed values and functions across time, many of which persist even after their original use has faded.

Water heritage—material and immaterial—can foster a sense of identity, place, and belonging. Through heritage, we can uncover lessons and lived experiences that provide a foundation for sustainable water governance. It can also serve as a platform for dialogue, resilience, and innovation—provided that participatory processes are inclusive and critically aware.

Importantly, not all heritage is celebrated equally. Some sites and practices remain unrecognized, or are considered “dark heritage”—remnants of histories marked by inequality or exploitation. Yet even these may carry important warnings or reflections, reminding us of

what to avoid as we shape future development. Thus, heritage must be approached not as a static legacy but as a dynamic and negotiated resource—one that supports the co-creation of more just and sustainable futures.

By blending historical analysis, spatial mapping, and community engagement, this training module aims to support transformative water initiatives that are rooted in place, history, and shared values.

Mapping perspectives and experiences – Mental Mapping

Mental Mapping is an exercise to visualize individual experiences and visions related to a particular space, object or practice. It takes about 5 minutes to draw and another 10 minutes of discussion.

You can ask a person to think about the water heritage you want to protect, and to draw what comes to their minds. It can be about physicality, but often also ideas, sensorial experiences – smell, sights, sounds – will be represented, providing a deeper and more personal dimension to the water heritage in question.

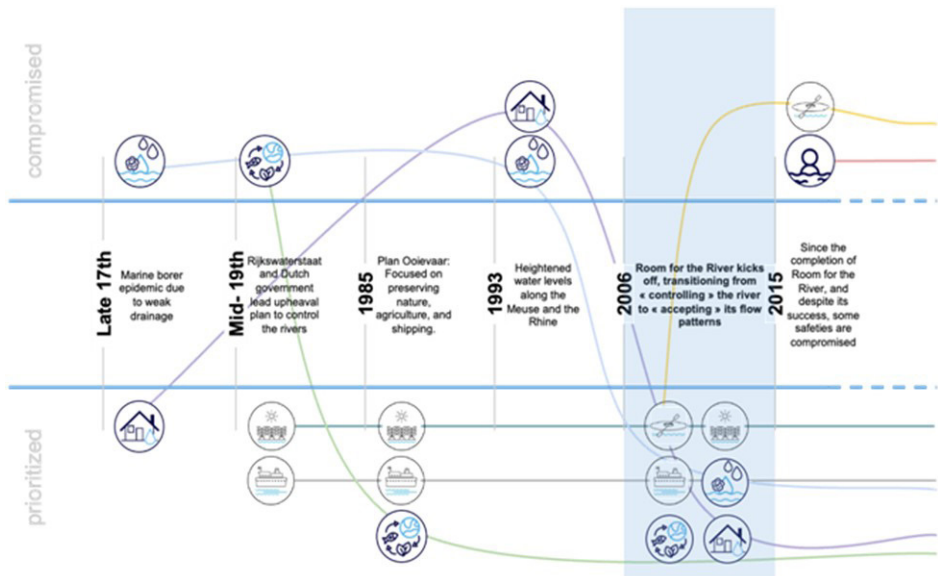
Another option, useful when you want to identify what heritage(s) to protect, is to ask participants to think about their city or territory, and to draw what is important to them. By asking to explain what they drew you will also understand the reasons behind their choices and interests. By collecting these impressions you will discover what different people value about your territory or water heritage, and collect visual representations showing tensions and underline values associated with the subject of the exercise. These visual materials can become part of your exhibition, or used to stimulate multi-stakeholder discussions.

Many people do not draw in their daily life and might be skeptical about this exercise. Try to make them feel comfortable, it's not about creating a masterpiece and there is no right or wrong, you are genuinely interested in understanding their perspective.

Mapping histories – Value Timelines

Values and perspectives shift through time. Their change often entails a hierarchy: something is considered important and will be prioritized, while something else will be compromised in the process. Timelines of historical development can highlight this process and unveil “hidden” trends that shaped the current situation.

You can work with your time to create a value timeline of your territory – what changed, when, who took the decision and who was affected – focusing on what was prioritized and what was compromised, uncovering what heritage has been valued over the years, and what has been forgotten.



Example of a value timeline for the city of Nijmegen, The Netherlands @ Lea Kayrouz, 2024.

With a more participatory approach, you can gather stakeholders to create a shared timeline of your territory, fostering discussions about what has been prioritized and comprised – if that was the right or wrong decision etc. – according to their perspectives. In this way you can understand personal or group opinions about what is important to preserve about their history and what they would like to see in the future.

Try not to focus on major historical events only, but to dive into the history of your territory. This can take from 30 minutes to 1 hour.

Mapping spaces, practices and functions – Spatial Mapping

Heritage, of any kind, plays out in spaces, practices and functions. Combining different types of (qualitative)spatial mapping creates an overview of what spaces and practices surrounding the heritage you are interested in and are valued by your interlocutors, how they play out within the territory and if there are missing connections that could be created.

As we did during the workshop in Venice, you can gather with your team and draw a map of the territory you are interested in and start adding water infrastructures, rivers, lakes, water functions, heritage structures and then also how people related to all of these – where do they gather and for what activities.

Another option is to do community mapping. You can try to gather groups of citizens – for example, rowers, hikers, etc. or the youth and then older citizens – and ask them to do the same exercise. It could be to add to what you already prepared, or it can be an aerial view of your territory taken from Google Earth. You will see that each group will add something different, populating your map with many insights that speak about how your territory and its heritage is lived by different communities. A useful tip is to use tracing paper over the original map, so that each group can add information without making the map too messy. Then you can overlap all tracing papers to compare between groups and have a general overview.

This exercise can take between 20 minutes and 1 hour, or even more depending on the discussions going on. It can also involve memories and past practices and functions within the territory you are mapping, and is particularly useful to create itineraries connecting different areas and types of heritage.

Mapping network and flows – Stakeholder Mapping

Heritage(s) is embedded in a network of spaces, practices, flows, institutions and different stakeholders. Stakeholders mapping allows to write down all sorts of human and non-human actors and organisations connected with the heritage you are interested to protect. It can be a physical person, a physical object, a tradition, or a trade related with the heritage you are interested in.

This exercise helps in understanding the complexity of networks surrounding heritage, the type of connections – material, cultural, social, environmental, administrative etc. – linking different human and non human actors. It helps highlight potential threats and synergies within the system and think of missing connections that could be created to valorise your heritage and all the system surrounding it.

Alternatively, you might want to reconstruct these networks with community members, through a workshop. This can be particularly useful as often different groups perceive these connections differently. Depending on how much time you have these maps can become very detailed or remain a bit more generic. Nevertheless, they will shed light on how communities connect with heritage and other actors.

The exercise usually takes between 45 minutes and 1 hour and a half. Try to think how your territory and heritage connects at the territorial, regional, national and international level and to categorize the different types of connections. It is important to think about the links – existent or missing – between different actors and not just how do they connect with your heritage.



Example of the stakeholder map surrounding the Rhine river @ Lea Kayrouz, 2025.

Useful tips to implement this methodology

- 1_ Use the maps you created to have conversations with colleagues and community members.
- 2_ When you create maps with other people, reassure them that there is no right or wrong answer, but that you are looking for understanding their perspective.
- 3_ You are not expecting an art masterpiece! People can be very shy at the beginning, but with a bit of encouragement and by asking questions to make them explain what they are drawing or writing - and why - will reveal a lot of information.
- 4_ If you have a workshop reserve a bit of time to discuss the results with the participants.
- 5_ Use the water icons we prepared to stimulate conversations and reflections around water values, practices and functions. This can be very useful especially at the beginning of the exercise. Adapt these icons to your needs!

Useful resources

- Water Icons, first version:

Hein, C., D'Agostino, M., Donkor, C., Lin, Q., & Sennema, H. (2022). Capturing Water, Culture and Heritage through Icons: A First Attempt. Blue Papers, 1(1). <https://doi.org/10.58981/bluepapers.2022.1.wcht>

- Water Icons, second version:

1) Hein, C., Kayrouz, L., Sliwinska Z., D'Agostino, M. (2025). Icons as a Tool to Connect Water Practices, Functions and Values across Space and Time: A Second Attempt. Blue Papers, 4(1). <https://doi.org/10.58981/bluepapers.2025.1.wicon>

2) Hein, C., Kayrouz, L., Sliwinska Z., D'Agostino, M. (2025). A Taxonomy of Water Practices, Functions and Values across Space and Time: Water Icons 2.0. Blue Papers, 4(1). <https://doi.org/10.58981/bluepapers.2025.1.taxo>

- More on the value case approach:

1) D'Agostino, M., & Hein, C. (2024). Design-Based Solutions for Water Challenges: The Value Case Approach. Blue Papers, 3(1). <https://doi.org/10.58981/bluepapers.2024.1.06>

2) Hein, C. (2025). Toward a Value-Case Approach for Designing Sustainable Water Systems. Blue Papers 4(1). (upcoming)

3) Hein, C. (2025). Water System Design: Connecting and Developing Methods for the Value Case Approach. Blue Papers, 4(1). (upcoming)

- Only Open Course (gratis) with some methods explained in more detail:

[Water Works Activating Heritage for Sustainable Development](#)

- Professional education course with all methods explained in more detail:

[Water Systems Design: Learning from the Past for Resilient Water Futures](#)

1.3 How to build digital tours: promoting our common water heritage

Lucio Bonato

Water heritage represents one of the most important elements of the inherited landscape and includes valuable resources such as natural areas, wetlands, river corridors and a wide range of architecture and historical and cultural facilities connected to water.

This heritage, which we define as “common” because it belongs to the collective memory of the local community, can be enhanced by digital itineraries, designed for slow mobility.

The creation of a digital tour includes several actions, developed involving local stakeholders: in this way it will be possible to draw an itinerary, featured with an audio-guide and other contents, that can describe and enhance the territory, highlighting projects that promote the protection of water heritage and the recovery of traditional knowledge.

General explanation of the methodology

Geographical contexts related to water, from river environments to lagoons, from reclaimed lands to towns and villages located along rivers and canals, are marked by the presence of areas of great natural and landscape value and preserve precious historical and cultural excellences settled over the centuries.

The inherited heritage includes both tangible elements and intangible ones. The first set includes historical architecture and landscapes linked to water. The second set consists of water memories, iconographies and traditional knowledge.

All this heritage, which not only represents an important historical and cultural resource, but is also part of the collective memory of the local community, can be comprehensively enhanced by digital tours, focused on hiking practices on foot, by bicycle or small boats.

In the preliminary phase of building a digital itinerary, it is important to carry out a proper recognition of the landscape, to identify water-related cultural heritage, with the help of local associations and institutions.

As already said, we can recognise tangible and intangible assets by analysing the territorial heritage.

Tangible items refer to everything that is directly recognisable when observing the landscape: hydraulic artefacts (artificial canals and canalised rivers, mills and forges, locks, bridges, small river ports, water pumps), historical architecture (villas and castles along waterways,

farms and vernacular dwellings, abbeys and religious buildings), natural and artificial waterscapes.

Intangible items refer to the “liquid memory” settled over the centuries: oral history and water-related memories, literary landscapes (linked to novels, poems and films), cultural representations (paintings, pictures, postcards) and traditional knowledge (for instance, the art of building boats or fishing gear).



Historical architecture along waterways in Padua, Veneto Region

Getting to the heart of how to build a digital tour, five different steps can be outlined. The several phases that will be described are linked to the platform chosen to build the itineraries: izi.Travel is a versatile open-source web platform designed to build digital audio-guides, which allows interviews and other media to be included and can also be consulted from the website.

The steps identified are as follows:

- 1) General survey and identification of Points of Interest (POI): after the described recognition of the area, made with the collaboration of the local community, a general outline of the trail is drawn. This is crucial to identify the main Points of Interest (between 12 and 20 points for a visit of 2-3 hours);
- 2) Tour design: in this phase we first proceed to create a digital map and the storyboard. As a second step we select contents and photos and upload the POIs. The last step is to charge the draft tour on the platform;

3) Production and publication: in this phase we enrich all POIs and check further the tour, then we publish (off line) the tour for field monitoring;
4) Dissemination: this is a crucial aspect, because the target audience will not find the water-heritage tour unless we make a plan for disseminating the itinerary. So it's important to outline optimal marketing and promotion strategies involving key partners and stakeholders;
5) Maintenance: it is essential to keep the tour running and updated, following a few guidelines, like repeating the field check on a yearly basis to find gaps, using izi.Travel statistics to improve the tour and, last but not least, considering the feedback from users.

Useful tips to implement this methodology

- 1_ Use an open source platform (e.g. Izi Travel, etc) to finalize your work and do easy maintenance of the digital tour.
- 2_ Start identifying and mapping the heritage of a chosen area, including both natural and cultural, tangible and intangible water-related legacies.
- 3_ Look for interconnections with other local water resource valorisation programmes, and include them into the tour.
- 4_ Involve students and associations to co-design the tour or collect interviews.
- 5_ Create a POI (Point of Interest) for each heritage of the tour by digitizing all relevant materials.
- 6_ Outline a circular tour including at least 8-10 POIs and start geomapping the tour.
- 7_ Use an innovative storytelling to capture attention on the value of water heritages

Useful examples of digital tours implemented by Civiltà dell'Acqua International Centre

- ["Explore Forgotten Venice"](#)
- ["Explore the Liquid Heritage of Venice's Inland Waterways"](#)

2 Methodologies of community involvement to value and co-manage water heritages

2.1 Community participation at the heart of eco-museums

Edo Bricchetti

We often wonder why projects do not produce the desired results. This happens, most of the time, when the community doesn't support the project. The project gradually decreases in intensity and ends up getting into a "cul de sac" from which it is difficult to get out. For a project to be felt by all people, everyone must participate with conviction from the start to the end. And who better than a community can develop it, propose it and accompany it in all its phases? For us, to talk about a community, we need people really involved, being, however, deeply convinced of what they are doing, convinced that they are working for the well-being of all people, respecting their own history, their own experience, their own identity values.

General explanation of the methodology

The Ecomuseum is a cultural institution, made up of local entities such as individual, associations, foundations and other private non-profit institutions, which ensure - within a defined territorial area and with the active participation of the population, local communities, cultural, scientific and scholastic institutions, local entities and associations - the functions of:

- care, management, enhancement and protection of the local cultural and landscape heritage representative of an environment, ways of life and transformations in order to:
- promote and support the living cultural heritage and the intangible cultural heritage of certain territories;
- promote sustainable development processes starting from the local heritage;
- safeguard the typical Lombard landscapes;
- enhance the cultural diversity of places;
- encourage the development of network activity.

P.S. In reference to: “Lombardy Regional Law 7 October 2016, n. 25. Regional policies on cultural matters - Regulatory reorganisation”. Art. 19 Ecomuseums.

The Ecomuseum is a cultural model of social aggregation

The ways of aggregating and involving individuals, association networks, local authorities, cultural and educational institutions, economic and tourist operators, are different. The ecomuseum has proved, in recent years, to be particularly effective precisely because of its statutory commitment and the community pact between all territorial actors, no one excluded. The founding themes of ecomuseums activities are:

- the care of places, things, people;
- the protection of identity values, memories, anniversaries, uses and customs;
- the sustainable development;
- the defense of the environment in the context of the climate challenge;
- the care of the landscape (natural and anthropic);
- the pursuit of community well-being.

“*Oïkos*” for the Greeks was synonymous with a social, collective organism. Hence the definition of ecomuseum as “home of all”.

The community is certainly more demanding than the individual client, being it a municipality or another private subject, precisely because it is not satisfied with partial results, but accompanies the project by completing it with shared, concrete, structured actions, and correcting it when parochial tendencies intervene (always hard to die!).

Why, then, an ecomuseum?

Because it is the expression of the participation of the community.

Because it is a cultural project engaged in enhancing its cultural and social heritage (material, immaterial, landscape assets).

Because it is based on a community pact between all territorial actors:

Because it promotes permanent processes of active citizenship (whether they are public or private entities).

Because it involves everyone in a free and consensual way to enhance its cultural and social heritage.

Because it establishes relationships with the entities of the territory with which it establishes a community pact to carry out cultural and social activities according to methods expressly indicated in the foundation statute of the ecomuseum.

Because it suggests good practices for a model of subsidiary, sustainable, responsible participation of public and private entities through the implementation of shared, concrete, structured, “intelligent” good practices.

Community Pact

In the vision of the Ecomuseum, which is increasingly becoming a community development body, the Community Pact among all the interested parties takes on a central role.

The community pact, signed formally or as a “de facto” practice with the relevant territorial civil society, is the founding piece of an aggregative, social and cultural process based on the comparison between the different stakeholders and on the sharing of subjective profiles and future expectations.

The orientation that the ecomuseum will be able to give itself as cultural governance is very important in order to promote eco-sustainable development of the territory, also seeking together the resources necessary for its implementation.

Community Maps

Community maps are a transversal reflection that promotes the comparison between the different stakeholders.

The community map is not just a product nor a photograph of the territory, but a cultural path with which a community sees, perceives, attributes value to the places, things, people, memories, of their own territory.

In this way a “new” concept of territory is made explicit that includes values and facts closer to the feelings of the people than to the geography of the territory. It is the subjectivity of the territorial actors that makes each map unique and special.

Permanent Observatories

Permanent observatories are an important database to start a real process of knowledge and sharing of one’s cultural heritage with the aim of acquiring a common 360° degree vision of cultural aspects as well as related issues.

In conclusion

Projects such as the permanent observatory and community maps would allow the aggregation of institutions, local authorities, associations, promoting bottom-up “governance” of the territory. In this case, municipalities would have at their disposal concrete, participatory tools and, above all, virtuous paths and processes of active citizenship. Furthermore, ecomuseums could play an important role as democratic expressions of civil society capable not only of listening, but of making people talk to each other as well.

Useful tips to implement this methodology to your context

- 1_ Start designing an Ecomuseum as a registered non-profit cultural institution.
- 2_ Active citizenship. Involve the local community(ies) and municipality(ies): the Ecomuseum is a virtuous process of active, responsible and vigilant “citizenship”.
- 3_ Listening tables. Use listening tables to outline indications and suggestions on how to proceed in the process of safeguarding all collected histories and experiences.
- 4_ Permanent observatories. Permanent observatories are an important tool to start collecting knowledge and sharing different perspectives on cultural heritage related to water.
- 5_ Community pact. The ecomuseum is based on a ‘community pact’ between all territorial actors: it is a document to be signed formally by all local actors as a community practice.
- 6_ Community maps. Community maps are useful tools to represent the different perspectives of local stakeholders and visualize water heritages creating links among them.

Useful resources

- Ecomuseo Valle Spluga <http://ecomuseovallespluga.it>
- Ecomuseo Martesana <https://www.ecomuseomartesana.it>
- Ecomuseo della Valvarrone <https://www.ecomuseodellavalvarrone.it>
- Ecomuseo del paesaggio di Parabiago
<https://ecomuseo.comune.parabiago.mi.it>
- Ecomuseo della Valvestino
<https://www.visitvalvestino.it/ecomuseo-della-val-vestino/>
- Ecomuseo della risaia dei fiumi e del paesaggio rurale mantovano
<https://www.ecomuseomantova.it>
- Ecomuseo della Prima collina
<http://www.ecomuseodellaprimacollina.it>

2.2 Enhancing human-aquatic heritage relationships through urban river engagement methodology

Yixin Cao

Rapid urbanization has disconnected communities from rivers and their aquatic heritage.

This module introduces the Human-River Encounter Sites framework—six guiding principles (health, safety, functionality, accessibility, collaboration, awareness) to harmonize urban life with river ecosystems. It blends theory and practice: a survey of Chinese water museum visitors revealed strong public appreciation for urban rivers' ecological and recreational roles (alongside scenic, economic, and emotional values), while a new global survey highlights diverse cultural relationships and restoration preferences. Building on these insights, participants gain a toolkit to design local surveys and engagement strategies, informing urban water planning and reconnection efforts.

General explanation of the methodology

1. Context: Urbanization and Waterway Disconnect

Urban development has long confined rivers, reducing natural features and public access, and eroding river heritage. Today, many cities are trying to reverse this trend by restoring rivers as green-blue infrastructure that revives ecosystems while inviting people back to the water. Such projects aim to rehabilitate ecological functions and rebuild meaningful human-river relationships in urban areas.

2. Human-River Encounter Sites Framework

To guide these efforts, the Human-River Encounter Sites concept outlines six interlinked principles for harmonizing urban life with river ecosystems: Health, Safety, Functionality, Accessibility, Collaboration, and Awareness. These principles guide urban river projects to provide healthy, safe environments for people and nature, maintain high ecosystem functionality, ensure equitable public access to the riverscape, foster collaboration among stakeholders, and promote education and awareness of urban water ecology.

3. Case Study: Public Perceptions of Urban Waterways in China

A recent survey in China revealed strong appreciation for urban rivers' environmental and recreational roles and showed that childhood experiences often shape adult perceptions of rivers.

Respondents favored restoring natural ecological functions (while keeping physical access), but many worried that recent riverfront projects prioritize aesthetics and leisure over ecological health.

This shows the need for greater public awareness of urban river ecology. Analysis of participants' photographs of favorite river sites identified five key river values: ecological, recreational, scenic, economic, and sentimental. These findings indicate that urban rivers have cultural and emotional significance and are highly valued for clean water, while public biodiversity knowledge remains limited.

They also reveal a tension between recreational use and conservation needs; planners must balance human enjoyment with ecological integrity.

4. Global Survey on Human–Water Relationships

In 2022, the Global Network of Water Museums (WAMU-NET) launched a global survey to compare how people engage with urban rivers in different cultures. Early findings indicate that recreation along urban rivers is common worldwide, but priorities for river restoration differ: some communities emphasize recreation and access, others focus on ecological rehabilitation, and many seek a balance.

These differences often reflect local cultural norms and personal experiences, underscoring the need for context-specific river management approaches.

5. Toolkit for Local Aquatic Heritage Surveys

A practical toolkit guides stakeholders to develop a local survey on human–river relationships. Key steps include defining clear survey objectives and identifying the target population. Participants then design a concise questionnaire with a mix of closed-ended questions (covering demographics and personal river experiences and values) and a few open-ended prompts (for example, describing a favorite river site) to capture personal narratives. They also plan how to deploy the survey: distributing it through local institutions (with on-site digital tools) and considering incentives to boost participation.

Finally, the toolkit addresses ethical responsibilities—obtaining informed consent, protecting data privacy—and guides participants on using and sharing the results with the community.

Useful tips to implement this methodology

1_ Design public survey by defining clear objectives and target audiences, craft concise closed- and open-ended questions; deploy via digital tools and social media with incentives; ensure consent and data privacy.

2_ Engage the community with the proposed questionnaire: survey residents about their watery experiences, expectations, values, and memories to inform planning.

3_ Adopt a holistic approach: Integrate ecological restoration, recreational use, and cultural heritage goals in urban waterscape restoration/planning projects.

4_ Balance use and conservation: Design waterfront spaces to provide recreation while protecting biodiversity.

5_ Leverage local institutions: Partner with local institutions (e.g. water museums) to promote aquatic heritage awareness and public education.

Useful resources

- WAMU-NET Webinar(2022): Introduction to the global survey tool for water museums: <https://www.watermuseums.net/activities/webinars/water-culture-society-2/>
- Global Human-River Survey Questionnaire (ArcGIS, 7 languages): <https://arcg.is/1OHDG00>
- Cao, Y., Chen, W.Y. & Wantzen, K.M. Human-river relationships in Chinese cities: evidence from highly educated water museum visitors. *Urban Ecosystem* 27, 203-217 (2024). <https://doi.org/10.1007/s11252-023-01441-w>
- Zingraff-Hamed, A., Bonnefond, M., Bonthoux, S., Legay, N., Greulich, S., Robert, A., Rotgé, V., Serrano, J., Cao, Y., Bala, R., Vazha, A., Tharme, R. E., & Wantzen, K. M. (2021). Human-River Encounter Sites: Looking for Harmony between Humans and Nature in Cities. *Sustainability*, 13(5), 2864. <https://doi.org/10.3390/su13052864>.

2.3 Felt experiences of place: co-production through public programmes

Lucrezia Gigante

This presentation will address how using participatory approaches for local community engagement can help to mobilise felt experiences of place and understand communities' sense of belonging towards their local cultural environment. First, we will examine how place-based practice moves through spatial, relational and, ultimately, political dimensions, and how it is important to tend to all three to connect with local communities in ways that are sustainable, relevant and inclusive. Then, through a series of examples and methodologies, we will explore how participatory practice and collective meaning making can be carried out on the ground, ethically and effectively.

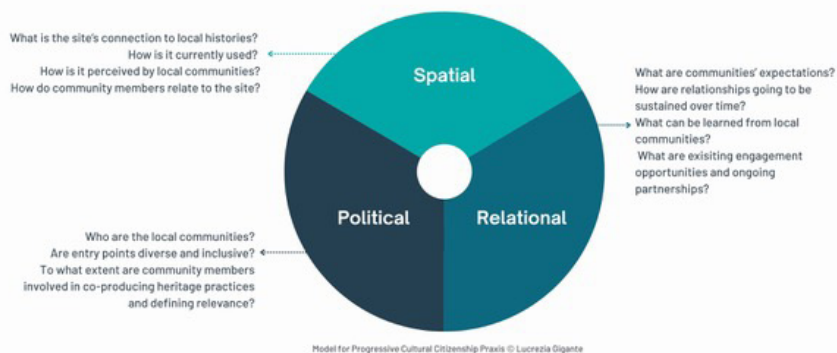
General explanation of the methodology

Studies show that heritage facilitates an emotional connection to place which makes a geographic location invested with meaning, memories and feelings – defined as the felt experience of place (Madgin and Howcroft 2024). Understanding this connection, asking communities how and why their local heritage is meaningful to them is the first step to create people-centred place-based practices.

Often overlooked in favour of object-based practices, relational and participatory practices are crucial in providing structures to socialise cultural heritage and offering safe spaces for critical thinking and collective meaning-making. In doing so, place-based cultural practice emerges as a site for cultural citizenship, intended as people's agency over their cultural environment through situated and collective forms of culture (Gigante 2024). To unpack place-based cultural practices it is useful to understand them as moving across three interlocking and equally important dimensions: the spatial, the relational and, finally, the political (Gigante 2024).

However, engaging communities in participatory practices is an extremely delicate process, even when it is born of good intentions. It requires a careful consideration of risks, a certain degree of openness to failure and the willingness to engage in genuine dialogue over the long term. While local government faces funding and capabilities challenges (Janchovich, Gigante and Burnill-Maier, 2024), it is also uniquely placed to act as anchor for local culture and involve communities in decisions about their local cultural environment (Culture Commons, 2024).

A MODEL FOR CULTURAL CITIZENSHIP THROUGH PLACE-BASED PUBLIC PROGRAMMES



Creative methods offer a range of ways to facilitate this conversation:

- The use of visual media offers participants a way to express their unique perspectives on local heritage through imageries. The visual prompts can be either provided to participants to build a conversation about perception, value, relevance, hopes for change or fears of loss. Or community members can be asked to produce their own and, in doing so, curate a visual representation of their sense of place.

- Embodied approaches such as community-led tours empower communities to act on their local expertise and share it with others. Studies show that everyday engagement with heritage is often what communities value most. The social value of heritage is where the emotional connection resides, whether through memories of the past, individual experiences of heritage or collective meaning-making.

- Finally, an original strategy tool is offered here – Show Your Cards (Gigante, forthcoming) – to support conversations about the value of local heritage, the experience of engaging with it and the impact of this participation on community members. This tool is designed to help practitioners engage in meaningful critical conversations with their constituencies and move beyond the limited possibilities afforded by exit questionnaires and feedback forms, which are most commonly used. The tool – inherently relational and dialectic – aims to foster a two-way, open and honest conversation between all constituencies involved in place-based cultural practices.

Participants are presented with a set of cards and the task of sorting them based on how much they agree with them. The activity should be carried out individually first, to allow time for personal reflection and meaning making, and followed by a collective discussion, to verbalise

the choices made and explore different perspectives or patterns. The statements build on the three interlocking dimensions of cultural citizenship praxis and explore their 'scales', 'modes' and 'structures'.

Useful tips to implement this methodology

1_ If you want to be relevant to communities, be ready to listen to what they have to say: meet them with curiosity and provide diverse entry points.

For example, organisations could organise off-site pop-ups to engage with communities in a local park or public square. Diverse programming is also another important strategy, offering activities for different age groups and an array of interests.

2_ Try different approaches (co-creation, co-curation, participatory budgeting, etc) until you find what works for your organisation and your communities: each tool will achieve different outcomes and suit different contexts.

3_ Be clear about expectations – both what you hope to achieve and what they can expect to take away: to build trust with communities it is important to be clear about the longevity, resources and outcomes of the engagement activities.

4_ Start small but be consistent: even small pots of money can help test ideas and build momentum.

5_ Embed evaluation practices from the start: plan evaluation early and make it part of an iterative process of learning about, from and with the communities you are trying to reach. For example, you might want to 1) talk with participants about how they engage with local heritage before you develop a project to build a baseline or co-design the project with them, 2) check in with them again half-way through the project and make adjustments based on feedback, and 3) finally conclude the project with exit interviews to evaluate if you delivered on the expected objectives, or capture unexpected outcomes.

Useful resources

- Jancovich, L., Gigante, L., Burnill-Maier, C. (2024), 'How do we define effective public involvement in cultural decision making', Culture Commons. Available at: <https://www.culturecommons.uk/publications/how-do-we-define-effective-public-involvement-in-cultural-decision-making>
- Gigante, L., 'Progressive Cultural Citizenship Praxis Toolkit', Forthcoming
- Madgin, R. and Howcroft, M. (2024) Advancing People-Centred, Place-Based Approaches, University of Glasgow. Available at: <https://eprints.gla.ac.uk/342111/1/342111.pdf>
- Culture Commons, (2024), 'The Future of Cultural Devolution in the UK' Available at: <https://devolution.culturecommons.uk>
- De Sousa, S., (2021), 'A tapestry of participation: revisiting Arnstein's ladder', Glasshouse, Glasshouse, Available at: <https://theglasshouse.org.uk/glass-house-opinion-pieces/a-tapestry-of-participation-revisiting-arnsteins-ladder/>
- Of By For All, (n.d.), 'Free Resources', Available at: <https://www.ofbyforall.org/resources>

2.4 Douiret-Sbâa: a hidden ecomuseum in plain sight – case example

Vladimiro Andrea Boselli

Founded in 1565 around a sacred Sufi zawiya, Douiret-Sbâa's water system makes it an accidental ecomuseum. Its lifeblood is Aïn Sbaâ spring, purchased at the time for 50 gold dinars, where introduced fish still purify waters under strict sacred rules - no pollution, timed access. A genius irrigation system divide nighttime-stored water into fractions as precise as 1/192, with shares timed to minutes. Four water-elders enforce this with fines for violations.

Many initiatives aim to preserve while providing livelihoods. Douiret-Sbâa is a 500-year-old water management masterpiece offering urgent lessons in sustainability for our drying world.

The local association and the wealth of human and cultural heritage make the village an ecomuseum unaware of being an ecomuseum.

General explanation of the methodology

In Morocco's arid Figuig province, the village of Douiret-Sbâa stands as a remarkable testament to how traditional knowledge creates sustainable systems that endure for centuries. This isn't just a 16th-century relic, but a living community where water management practices function today with the same precision and communal spirit as when first established. The village operates as an organic ecomuseum - its exhibits aren't behind glass but flow through the daily lives of its inhabitants.

At its heart lies the sacred Aïn Sbaâ spring, acquired in 1565 by Sufi scholar Sidi Mhamed Sbâa for what would today equal €22,000. Recorded on gazelle leather, this transaction established more than ownership - it created a sacred covenant between community and resource. The spring is protected by strict ecological taboos: washing clothes nearby is forbidden, and generations-old fish still purify its waters. Access follows spiritual rhythms, with women collecting only at dawn/dusk and livestock drinking at appointed times. In 2019, when pollution killed all the sacred fish after a taboo violation, the community responded by intensifying awareness efforts, replacing the fish, and burying the deceased with Islamic rites - demonstrating their deep reverence for this living system.

The water distribution showcases ingenious engineering. Each night, 189 cubic meters fill the reservoir. By day, allocation begins through a notched wooden trunk with nails and strings that divides water into

precise $\frac{1}{192}$ fractions - where $\frac{1}{8}$ equals 90 minutes of irrigation, and $\frac{1}{24}$ means just thirty minutes. The system automatically reduces autumn rations by a third, adapting to seasonal scarcity.

Four elders serve as absolute water custodians, enforcing rules with fines for violations like tampering with measurement nails or ignoring the mosque's authoritative clock. This governance blends spiritual and practical management, supplemented by centuries-old khattaras (underground tunnels) and mizabes (rain gutters).

The local development association sustains this heritage by documenting oral histories, training youth, and pursuing UNESCO recognition as intangible cultural heritage. Facing climate change (just 145mm annual rainfall) and youth migration, their work keeps ancient practices relevant. Douiret-Sbâa offers vital lessons for our thirsty world. It shows how spiritual values and practical governance can merge, how ancient systems can adapt to modern challenges, and how communities can maintain traditional knowledge as living solutions rather than museum relics. Here, every drop tells an ongoing story - not of a preserved past, but of wisdom continually flowing into the future.



The valley of Douiret-Sbâa and its well managed and preserved oasis system

Useful tips to implement this methodology to your context

- 1_ Document oral water governance: Record elders' water management practices and uses before they fade.
- 2_ Engage youth as “water scribes”: Work with schools and train students to map traditional systems digitally.
- 3_ Micro-measurement: Develop educational programmes to monitor the quality of water and aquatic ecosystems.
- 4_ Protect local ecology: Organize meetings and workshops to ensure the quality of water and prevent the source pollution.
- 5_ Community-led advocacy: Use local associations to push for heritage status.
- 6_ Organize regular activities to involve local schools and associations, like e.g. a youth contest (drawing, videos) to represent natural and cultural water heritages from the perspective of the youths

Useful resources

[- Errachidia Declaration and guidelines for the sustainable development of oasis ecosystems](#)