Transnational Toolkit for World Inventory of Water Museums, Interpretation Centres, Eco-museums, Extended Museums, and Water-related Cultural Landscape

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Contributions
Contents of this publication were contributed by Eriberto Eulisse (WAMU-NET Executive Director), Eddy Moors (WAMU-NET President), Alexander Otte (UNESCO-IHP), Francesco Vallerani (UNESCO Chair 'Water, Heritage, and Sustainable Development', Ca' Foscari University of Venice, Italy), Carola Hein (UNESCO Chair on 'Water, Ports and Historic Cities', TU Delft, The Netherlands), Francesca Tarocco (The New Institute – Centre for Environmental Humanities, Ca' Foscari University of Venice, Italy), Edo Bricchetti (ICOM and Network of Eco-museums of Lombardy, Italy), Henk van Schaik, Diederik Six, and Jurn Buisman (ICOMOS Netherlands 'Water and Heritage Committee'), Lucio Bonato (Civiltà dell'Acqua International Centre and Water Museum of Venice, Italy), Endro Martini (Italy Water Forum), Martijn van Staveren (IHP-HWRP Committee, The Netherlands), the WAMU-NET Management Board and the Advisory Committee.

Contributions to Part 2 ('General methodology for quantitative and qualitative mapping') by:
UNESCO Chair 'Water, Heritage, and Sustainable Development', Ca' Foscari University of Venice, Italy; The New Institute – Centre for Environmental Humanities, Ca' Foscari University of Venice, Italy); Network of Eco-museums of Lombardy (Italy); Italy Water Forum; ICOMOS 'Water and Heritage Committee', The Netherlands; UNESCO Chair 'Water, Ports and Historic Cities', TU Delft, The Netherlands.

Contributions to pilot inventories (Part 3) in Italy and the Netherlands by:
UNESCO Chair 'Water, Heritage, and Sustainable Development', Venice University of Ca' Foscari, Italy; Civiltà dell'Acqua International Centre and Water Museum of Venice, Italy; UNESCO Chair 'Water, Ports and Historic Cities', TU Delft, The Netherlands; ICOMOS 'Water and Heritage Committee', The Netherlands.

Contents

Introduction

This toolkit aims to provide National IHP Committees, research centres and institutions with practical tools to implement the World Inventory of water museums, interpretation centres, eco-museums, extended museums, and water-related cultural landscape (UNESCO-IHP Resolution n.7-XXIV), both at regional and national level.

The transnational toolkit (Part 1) is made by two distinct tools which are supposed to be implemented in two different steps, or temporal phases, as follows:

Step 1

- Taxonomy (1st tool: classification system) for the remote survey of existing (and future, or potential) water museums

Step 2

- Questionnaire (2nd tool) for collecting quantitative and qualitative data related to museums and institutions mapped through the 1st step

As explained in Part 2, 'Methodology for quantitative and qualitative mapping', it is expected that any institution interested to implement the world inventory will create an interdisciplinary pool of expert (Steering Board at national or regional level) to manage the survey and the process of data collection. Steering Boards appointed for World Inventories (SBWI) will inform regularly both UNESCO-IHP, WAMU-NET, and other National IHP Committees about progress and the implementation phase. After the general mapping of a specific country or region is made, SBWI will contact the museums and institutions identified with the 1st step to collect more detailed information using a common questionnaire (2nd step).
In Part 3, two pilot case studies in Italy and the Netherlands (Po Delta region and Rhine Delta region) are provided to give practical examples on how to implement the inventory at regional or national level as regards the 1st step.

STEP 1: TAXONOMY (1ST TOOL) FOR THE REMOTE SURVEY

Six different categories of 'museums' are identified to classify both existing and potential (future) museums, as well as solutions for climate adaptation and contributions to SDGs implementation.

The six categories can be divided in three main typologies, as follows:

a) EXISTING Water Museums, Interpretation Centres, etc.

1. **MUCD - Museums, Collections, and Documentation Centers**
2. **IDEM - Interpretation Centres, Digital Museums, Eco-Museums, and Extended Museums**

b) POTENTIAL/FUTURE Water Museums, Interpretation Centres, etc.

3. **CLAS - Cultural Landscapes related to water (including waterscapes) as well as Assets, Sites, and Legacies**
4. **AHCC - Ancestral Hydro-Technologies, Community-based practices, and Citizens' Observatories**
5. **IHLW - Intangible legacies and the Heritage of 'Living Waters'**

c) SOLUTIONS to achieve the 2030 Agenda for Sustainable Development

6. **SASD - Solutions for climate adaptation and good practices to achieve the 2030 Agenda for Sustainable Development**

Detailed description of the taxonomy (1st tool)

1. Museums, Collections, and Documentation Centres (MUCD)

1.1 **Museums** (as defined by ICOM) are permanent institutions exhibiting any significant **collection** and aspect related to humanity's tangible and intangible water heritage for the purposes of education, study and enjoyment. Archaeological museums, natural sciences museums, science museums, history museums … that display any water-related collection fall into this category

1.2 **Documentation Centres** that collect and display archival documentation related to water history (like public and private archives) fall into the 1st category. Historical iconography and artistic expressions related to water (in literature and arts, incl. paintings, images, and movies related to water and waterscapes) are also to be included in this category.

2. Interpretation Centres, Digital Museums, Eco-Museums, and Extended Museums (IDEM)

2.1 Interpretation Centres are institutions aiming to facilitate the interpretation of specific water/hydraulic heritage sites, legacies, and waterscapes. They may include information points for tourists and visitor centres (also including e.g. info centres related to M&B reserves and UNESCO's World Heritage Sites)

2.2 Digital museums are online platforms managed by permanent institutions and associations aiming to link together different small- or medium-size (and often territorially fragmented) water-related sites, legacies and waterscapes. As such, they represent a kind of 'online interpretation centre' focusing on water history and fall into this category

2.3 Ecomuseums are institutions characterised by high degree of involvement of local communities that are engaged through formal agreements ("community's agreements") to preserve and promote the local cultural landscapes related to water). Ecomuseums are, by definition, 'inclusive museums' and today play a key role to rejuvenate local water heritage

2.4 Extended museums are, as defined by ICOM, institutions linking museums to local cultural landscapes "as an essential element of humanity's physical, natural, social, and symbolic environment". They are also defined as 'museums of the 4th generation', as they highlight key relations with local communities and contexts from which water-related collections originate.

3. Cultural Landscapes related to water incl. waterscapes, Legacies, Assets, and Sites (CLAS)

Entries linked to significant water-related cultural landscapes and waterscapes represent a potential for creating new water museums and interpretation centres, when not existing already. As defined by ISCCL (International Scientific Committee on Cultural Landscapes), entries of this type can be divided further into the following sub-categories:

3.1 Natural sites with related landscape – This category includes the natural, organically evolved (relict or fossil) landscape

3.2 Cultural sites with related landscape – This category includes the cultural landscape, that is, the landscape (and in particular the 'waterscape') created intentionally by people; this category includes modified environments associated to traditional livelihoods.

3.3. Mixed sites (both natural and cultural, as well as intangible assets) – This category includes mixed sites that embody special human connotations for local communities incl. water values with religious, artistic, social and cultural connotations.

Practical examples that fall under the 3rd category include: valuable freshwater ecosystems protected by permanent institutions (such as regional or national parks, natural or biodiversity reserves, river parks, oasis, etc). This category also include legacies, assets, and heritage sites located along blue corridors and greenways that are organized with **thematic itineraries and pathways** (e.g.: heritage walks focusing on local history of water management, including

archaeological sites, historical aqueducts, dams, locks, water pumps, wells, cisterns, galleries, reservoirs, fountains, thermal baths, bridges, and other types of hydraulic artefacts).

4. Ancestral Hydro-Technologies, Community-based practices, and Citizens' Observatories (AHCC)

Ancestral hydro-technologies include traditional, adaptive and ingenious responses to cope with problems related to water conservation, irrigation, flood and draught control, as well as biodiversity conservation and food production.

Hydro-technologies typically include **community-based practices**, knowledge, and know-how of specific communities. Today, they are mostly (but not exclusively), located in non-European countries and are aimed at managing water in a given territory through e.g. specific irrigation systems (spate irrigation, water meadows, etc), land drainage techniques, defence water lines, multi-purpose canal systems, flood mitigation techniques, etc.

This category may also include the more recent experiences of social engagement called **citizen's observatories** – that fit within the branch of 'citizen science'. Through these observatories, active citizens collect and share data on water environments and are empowered to participate in environmental management by the information generated by digital tools.

5. Intangible legacies and the Heritage of 'Living Waters' (INLW)

Water-related values and other intangible assets (with religious, artistic, and cultural connotations that are significant for indigenous people and local communities) may form the basis to create new community-based museums concerning water heritage. According to UNESCO's Convention for the Safeguarding of Intangible Cultural Heritage (2003), also the heritage of 'living waters' - linked to the cosmovision of indigenous people – must be taken into account as a potential water museum.

Oral history and storytelling (also including water-related songs and memories) provide important tools and methods to capture vernacular and folk traditions related to wate, and increase the diversity of cultural forms and expressions of different 'water worlds'.

6. Solutions for climate adaptation and good practices to achieve the 2030 Agenda for Sustainable Development (SASD)

The 6th category is designed as a tool to generate profitable connections and inferences with the previous categories. Any social and historical practice, use of water, or ancestral hydro-technology can fit in more than one category. In this frame, the 6th category must be considered to highlight their possible replicability at transboundary level and as a tool to achieve the Agenda 2030 of sustainable development. The 6th category typically shows possible solutions, good practices and best strategies for climate adaptation in rural and urban areas. This category may also highlight opportunities to create new water jobs (water-related *green jobs*)

STEP 2: QUESTIONNAIRE (2ND TOOL) FOR COLLECTION OF DATA

Once the 1st step (desk study) is completed, only the institutions identified through the proposed taxonomy (i.e. museums and institutions that manage interpretation centers, or communities that manage specific cultural waterscapes, etc) will be contacted to get more detailed information as to their features and institutional activities.

Questionnaire

The questionnaire provided below has to be sent to all institutions identified through the 1st step in order to collect homogenous and comparable data.

1. Name of the institution/museum that manages or promotes a specific water-related heritage

……

Postal address: ……

Municipality……Region……State……

Telephone……Mobile……

Email:……

Web site:……

Social Media:……

Director /

Name……Surname……..

Email……...

Contact person [if different]

Name……..Surname……...

Email……

2. Geographical location and physical context

What type of ecological region and climate does the museum/institution/water-related collections belong to? (hydrological system and freshwater ecosystem, also including – if relevant – the main biodiversity features)

[max 300 words] ……

……

……

3. Type of water legacy and asset exhibited (or promoted) by the institution

Describe the main collections and exhibitions (natural, cultural, and/or intangible assets)

[max 300 words] ……

……

……

4. Organisational structure

1. Who manages the museum/institution/water-related site or legacy?

……

……

……

2. What is the organisational chart of the institution?

(list below the professional profiles of the working staff, incl. both permanent and temporary staff)

……

……

……

3.1. Yearly number of visitors in 2019 [ante COVID]:……..

3.2. Yearly number of visitors In 2021 [during/post COVID]……..

5. Strategic competences

1. Is there any Scientific Committee (or Scientific Referee) working for the institution/museum?

Yes/No

2. Who is in charge for managing the web site and the communication strategy?

……

……

3. Are there regular training courses for the museum staff and animators? What kind of?

……

……

6. Relations with local stakeholders, institutions, and communities

1. Does the Municipality/Region/Ministry or any other institution contribute to the museum activities and costs? In what way? (e.g.: financially or in-kind; with fix or occasional contributions)

……

……

……

2. Are other local networks contributing to support the institution/museum to protect / promote local water heritage and/or green/water spaces related to specific collections and exhibitions? Describe the type of activities, services, and projects.

……

……

……

3. Is the local community involved in some activities of the museum? In what way?

……

……

……

7. Project design and management

1. What kind of projects does the museum/institution implement as part of its Charter / statutory mission?

……

……

……

2. Does the museum evaluate its activities and performance? How?

……

……

……

3. Does the museum develop multimedia projects? What kind?

……

……

4. Does the museum participate to calls for project proposals at regional / national / international level?

Yes/No

8. Economic sustainability

1. Does the museum/institution have an annual budget?

Yes/No

2. How many financial, instrumental and human resources can it count on a yearly basis?

……

……

……

3. Is the institution/museum self-sustaining through its activities?

Yes/No

4. Does the museum is active also in fundraising activities?

Yes/No

9. Involvement of young generations

1. What relations has the museum established with local schools? If relevant, describe the type of educational activities implemented on water education and sustainability

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2. Are there other forms of participation for young generations in the museum activities?

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3. What could be done to increase the involvement of young people in the museum activities?

……

……

……

4. Does the museum make use of internships and collaborations with universities, research centres or other institutions?

Yes/No

10. Tourism, cultural landscape, and the 2030 Agenda

1. What type of outdoor, leisure, and/or activity or eco-tourism activity is promoted to engage visitors in valuing better the water-related heritage and the local waterscapes? Describe any heritage site walks, tours, digital itineraries, or other types of similar initiatives promoted

……

……

……

2. How does the museum raise the awareness of the community on climate emergency issues? Describe actions, initiatives, and projects aiming at contributing to a better management / care of local green spaces, etc

……

……

3. Does the museum support directly or indirectly any type of "sustainable" production activity in the territory? If relevant, describe any craft activities, typical food products with “0 km”, etc.

……

……

……

4. Number and type of good practices contributing to better water management to achieve the 2030 Agenda that are managed, exhibited, and/or promoted by your institution/museum [e.g.: as regards sanitarian or food emergency; projects to improve resilience; adaptation to climate impacts; etc. Describe here also the potentiality to replicate your good practices in other contexts.

(max 300 words) ……

……

……

11. Final questions

1. Did you know already about the existence of the Global Network of Water Museums (WAMU-NET) as a flagship initiative of UNESCO-IHP?

Yes/No

2. Would you be interested to know more about WAMU-NET and get in touch with other water-related institutions/museums worldwide?

Yes/No

INTRODUCTION

The goal of the World Inventory of water museums, interpretation centres, ecomuseums, and extended museums is to collect new data and information on the main features, collections (both physical and digital), and activities of water-related museums and institutions at a global level.
A practical Toolkit has been designed to facilitate a 2-step implementation process of the World Inventory at regional and national level, which is as follows:
1 – identification of relevant water-related museums, information centres, and cultural landscapes by means of a specific taxonomy (1st step), and
2 – compilation of additional information on existing institutions as regards their collections, management structures, activities, and projects through a questionnaire (2nd step).

The Toolkit will enable National IHP Committees, universities, and research centres to identify institutions engaged in water sustainability education, preservation and promotion of water-related natural and cultural legacies in order to produce inventories at regional and national levels. The implementation process will be made in cooperation with the Netherlands National IHP-HWRP Committee.
The definition of a general methodology aimed at identifying and mapping water museums is functional to:

- produce a global overview of institutions exhibiting different water heritages and provide a useful inventory of most active organizations on water sustainability education; and
- strengthen cooperation among these institutions and organizations in order to raise major public awareness on the 2030 Agenda for sustainable development. This will give an opportunity to WAMU-NET to further develop its network worldwide (in line with UNESCO-IHP Resolution n.7-XXIV "UNESCO-IHP in support of the Global Network of Water Museums").

In the proposed taxonomy for the World Inventory, a specific set of categories enables the identification of not only the already-existing water museums, interpretation centres, and institutions, but also the future (potential) ones. For this reason, cultural landscapes, social practices, and intangible legacies will also be considered and classified for their role in transmitting the history and the different values related to water in specific cultures and, therefore, for their potential to create new water-related museums.

The Global Network of Water Museums

The Global Network of Water Museums (WAMU-NET) is a non-profit organization founded in 2108 which calls on people and institutions to implement urgent actions to repair our deteriorated relationship with the most precious liquid element on the planet. In 2018, it was acknowledged as a 'flagship initiative' of UNESCO-IHP to support water sustainability education and awareness efforts.[1] WAMU-NET's mission is to promote a new relationship between humanity and water: an ethical perspective which helps to reconnect people with the tangible and intangible heritage of water, including its social, cultural, ecological, artistic, and spiritual dimensions.

DEFINITION OF WATER MUSEUM

As stated by ICOM, a museum is defined as "a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, research, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment".[2]

Therefore, a 'water museum' can be defined as an institution collecting, exhibiting, and interpreting the fundamental heritages related humanity's history of water.

As recent activities implemented by WAMU-NET have demonstrated, water museums display a unique repository of the different forms of humankind's relations with water. They exhibit and interpret the value of hydraulic artefacts, techniques, and traditional knowledge and are active to preserve and promote the world's outstanding variety of water-related legacies that have been passed down through generations. These precious legacies, both natural and cultural, may still inform and influence everyday life and contribute to achieving the 2030 Agenda for sustainable development. Nonetheless, still today in many countries a thorough inventory of water-related museums and institutions is far to be completed.

Water museums affiliated to WAMU-NET

A first-hand analysis of the different types of water museums affiliated to WAMU-NET (72 members at 31/12/2021) is useful to predict some of the main typologies that are reasonably expected to be found during the implementation process of the Global Inventory. Museums currently affiliated to WAMU-NET can be classified tentatively into the following typologies: Archaeological Museums,

[1] http://www.watermuseums.net/wp-content/uploads/2018/08/RESOLUTION-XXIII-5-Global-Network-Water-Museums-EN-final.pdf
[2] ICOM Statute adopted by the 22nd General Assembly in Vienna, Austria, on 24 August 2007.

Museums of Industrial Archaeology, Hydraulic Heritage Museums, Museums of Natural Sciences, Science Museums, Freshwater Aquariums, History Museums, Heritage (water-related) Museums, Historical Hydraulic Sites (and related networks), Extended Museums, National/Regional Parks, Natural Reserves, Eco-museums, Community-based Museums, Digital Museums, Water-Awareness Museums, Sanitation Museums, Information Centres, River Museums, Lake Museums, and Waterways Museums.

Moreover, it must be noticed that among the present members of WAMU-NET there are also institutions (such as municipalities), research centres, NGOs, as well as noteworthy experiences of public participation and social engagement which do not fall within the museum definition of ICOMOS. Rather, their presence and significant contributions to WAMU-NET can be seen as a fundamental basis for the creation of new water museums and interpretation centres also involving local communities and organizations of the civil society.

The 'inclusive museology'

Recent developments of disciplines related to museum studies, museological practices, and scientific debates linked to the notion of cultural landscape, will be duly considered to build a useful taxonomy for the GI of universal value. Recent approaches proposed by eco-museums and the 'inclusive museology' have thrown new light on how the active participation of local communities and social activism are to be considered meaningful aspects to catch a consistent museological discourse. This approach enables to highlight the need of considering also indigenous knowledge systems, ancestral hydro-technologies, and local cultures of water as a significant part of water-related legacies and collections worldwide.

This methodological approach is relevant to detect not only the 'main' water-related heritages, that are often already acknowledged (as in the case of UNESCO's WHL), but also those 'minor' (and often 'hidden') water legacies and assets that – far from having an "outstanding universal value" – are, nonetheless, highly meaningful for local communities and people, to the point that their identity is inextricably linked to local waters and hydrography. Similar 'places of belonging' for local communities (or '*iconemi*', as defined by Turri and Jodice, 2001)[3] are significant in our discourse, as they bring the potential to create new extended water museums and eco-museums. Both of these categories are strongly related to management and preservation of cultural landscapes that involve local communities.

[3] E. Turri and M. Jodice, 2001. Gli iconemi: storia e memoria del paesaggio, Milano.

With this approach, it's possible to link water legacies in a larger spatial and social context.This perspective is functional to consider not only the main water-related museums and institutions in western countries, but also the 'minor' (and often 'hidden') water-related assets and historical hydraulic legacies in the Global South that are still a key concern for local people and communities. In this frame, also the categories of 'living waters' (considered as such by local communities, especially - but not only - in Africa and Latin America) will be considered to detect the potential for building new community-based museums.

In sum, an inclusive definition of museum and an interdisciplinary approach are proposed by the designed Toolkit in order to consider the potential of creating new water museums also in the Global South. With a few additional categories, it will be possible not only to classify water museums but also to reveal comprehensively 'hidden' heritages and water-related values that summarize humanity's past "water worlds" (Teti, 2001),[4] including their unique cultural, historical, anthropological, artistic, and even spiritual dimensions.

Worldwide mapping including potential and future water museums

In addition to existing water museums and interpretation centres, the identification of new possible (future) museums and permanent exhibitions related to any kind of legacy or heritage related to water will be considered in the process of making the GI. Taking into account recent debates and approaches developed by UNESCO, ICOM, and ICOMOS, indeed it seems crucial to develop a taxonomy aimed at identifying also cultural landscapes related to water and the so-called "museums of the 4th generation" (thus including also eco-museums, extended museums, etc). This typology of museum, as highlighted by recent approaches and definitions of ICOM, today are engaged in the protection and preservation of cultural landscapes and waterscapes.[5]

World Heritage cultural landscapes, a category adopted by the World Heritage Committee in 1992, are to be considered definitely as a landmark achievement for more balanced representations of heritage sites in the WHL across the world.[6] However, it was also noticed that representatives from the Global South have struggled to get due recognition of many non-European cultural landscapes.[7]

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[4] V. Teti, 2001. Mondi d'acqua, Milano.

[5] Extended museums and also eco-museums that are engaged to preserve cultural landscapes related to water can be considered as the "museums of the 4th generation". This definition was approved by a Resolution of the 29th General Assembly of ICOM that was held in Milan in 2016 (see: D. Jalla, Cultural Landscapes and Museums, in: Museum International, vol. 69, #273-274, 2017).

[6] N. Mitchell, M. Rossler, and P. Tricaud (eds), World Heritage Cultural Landscapes, UNESCO, 2009.

[7] C. Brumann and A.E. Gfeller, 2021. "Cultural landscapes and the UNESCO World Heritage List: perpetuating European dominance". In: International Journal of Heritage Studies, vol. 28, https://www.tandfonline.com/doi/

In this context, the inclusion in the GI of additional specific categories on 'potential water museums' can be considered as an attempt to take in due consideration also social engagement and public participation to protect water-related legacies and assets. Public engagement and communities' participation in water-management planning are considered today a key component of the so-called 'museums of the 4th generation' (Jalla, 2017). As such, also these institutions can contribute to innovative solutions to climate change adaptation and to achieving the 2030 Agenda for sustainable development.

For these reasons, the taxonomy designed for the GI will include, in addition to specific categories (or 'taxa') aimed at identifying the already-existing water museums and their collections related to water (as regards both the natural and cultural, tangible and intangible water heritage) also additional categories which are functional to detect significant water-related cultural landscapes, as well as legacies, sites and assets that represent the potential to build new water museums.

CATEGORIES TO IDENTIFY POTENTIAL AND FUTURE WATER MUSEUMS

A classification system must incorporate how the theoretical discourse and practice of museums has evolved in time and space. In the last two decades, after the concept of 'post-modern museum' - which is defined by Hooper and Greenhill as the museum of 'polyvocal knowledge' (2000) - also the concept of museum as 'agent of social change' (or 'arena of cultural democracy') and the notion of 'social activism' of local communities have been duly considered and investigated by the discipline of museum studies (Sandell 2002). This is the case, for example, of citizens observatories.

In this frame, it's important to note that the ICOM definition of 'museums' fails to catch the richness and diversity of experiences which today must include – as highlighted by the Faro Convention (2000) - the participation of local communities for the preservation of water heritage sites. In this perspective, it seems profitable that a taxonomy of universal value for the classification of water museums considers, as distinct categories, not only eco-museums and extended museums, but also ancestral hydro-technologies and citizens' observatories.

These categories and their implications for the GI are discussed in the attached Annex n. 2 in order to show their fundamental function in detecting also intangible heritages as well as water-related indigenous world views.

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Eco-museums and community-based museums

In the era of globalization, which is characterized by strong dynamics of transformation that are often detached from local contexts, eco-museums represent a strong potential for bottom-up innovation and regeneration processes in urban and rural areas. Eco-museums are active to create new processes which are 'inclusive' by definition and which are aimed at protecting the local heritage.[8]

An ecomuseum can be defined as a 'process of participation' of local communities aiming to facilitate environmental, economic, and social sustainability of the local heritage. In this sense, an ecomuseum is the expression of the collaborative will of local actors to take care of their own territory and heritage. Through awareness-raising campaigns, educational and research activities, they involve local communities to recognize the value of collective heritage and support the development of new skills for its management and transformation. The ecomuseum marks the transition from the perception of a single theme, or place, to the overall vision of a territory, with special reference to its cultural landscapes (Riva, 2018).[9]

Since ecomuseums are strongly linked to the recognition, care, management, and promotion of cultural landscapes (and water-related heritages, including water-scapes), today they represent a key platform to foster debate on the role of local communities to co-design sustainable local development with other stakeholders.

By definition, the themes dealt with by ecomuseums are cross-sectoral and concern the whole complex phenomenology of tangible and intangible heritage in its dynamic development. Today, landscapes are being transformed in relatively short periods of time. Territorial heritage, and the perception we have of it, changes from day to day and in relation to evolving economic and social dynamics. For ecomuseums, this implies the need to develop new methodologies for interpreting the ongoing transformations and continually refine them.

The activities of ecomuseums can be considered as a combination of sustainable lifestyles, innovative skills, and new sensibilities towards the cultural expressions of local traditions and heritages. In this sense, ecomuseums are 'inclusive' by definition. Their activities are usually implemented through the methodology of "community maps", that represent an original and creative answer from the local community, stakeholders, authorities, institutions, and associations.

[8] Eco-museums were born in France in the 1970s. Today ecomuseums are experiencing a new season of development as they are taking on a leading role on landscape co-design with local communities.

[9] Riva, R. (ed.), 2018. Ecomuseums and cultural landscapes. State of the art and future prospects. Maggioli.

The concept of ecomuseum can be coupled with the one of 'community-based museums'. While ecomuseums are definitely more common and rooted in Europe, in other regions of the globe, like in Africa and Latin America, it's quite common to find rather the practice of 'community-based museums'. These also include significant experiences where local communities and indigenous people co-manage the local heritage with local institutions, thus recalling the participatory practices of eco-museums.

Ecomuseums can play today a key role in redeeming and rejuvenating the water heritage: they are virtuous models to foster sustainable development locally, and especially in marginal areas. For this reason, both ecomuseums and community-based museums deserve a special consideration and must be included in the classification system of the GI.

Extended museums

The concept of extended museum was brought to the attention of experts in 2016 at the 24th General Conference of ICOM that was held in Milan, Italy. The definition of 'extended museum' is the outcome of a Resolution of ICOM which states that both "museums and landscapes are an essential element of humanity's physical, natural, social and symbolic environment". This statement highlights the fundamental relationships among museums, communities, and the territorial context from which their collections originate.[10]

The Resolution approved by ICOM in 2016 states that museums - through their 'extensions' on the territory - incorporate also the concept of 'landscape'. This approach proves to be a useful tool to assess the impact of museums on social, natural, rural, and urban surroundings. With this ICOM Resolution, for the first time the role of museums in the process of protecting the surrounding heritage (both natural and cultural) was strongly emphasized. In this perspective, the ICOM Resolution develops on the concept of 'cultural landscape' and the reasons why cultural landscapes are becoming an inevitable priority for future activities of museums. In 2018, an international seminar organized by ICOM in Poland led to the final definition of extended museums and to a final publication of ICOM.[11]

[10] The 24th General Conference of ICOM held in 2016 with the title "The Responsibility of Museums Towards Landscape" focused on the condition of contemporary museums, in particular as regards the links between museums, culture, and contemporary problems and challenges. Through a new dedicated Resolution, this conference redefined the role of museums concerning their contributions to contemporary democratic states, social participation, and educational activities aimed at shaping new attitudes and behaviors that are crucial for sustainable development.

[11] Folga-Januszewska D., Lehmannová M., Gaburová J., Kellner E., and Jaskanis P., Museums and Identities. Planning an Extended Museum, Muzeologia publishing series n.20, ICOM, 2019.

In emphasizing the new approach of museums towards landscape and their surrounding environment, ICOM refers both to the definition of landscape expressed by UNESCO's World Heritage Cultural Landscapes and to the European Landscape Convention.[12]

In this sense, the concept of extended museums as a specific category of the Global Inventory will be functional to highlight new challenges and opportunities that are (or may become) part of the network of water museums and, more broadly, new ways of protecting and transmitting cultural heritage, including the transformations that museums are to be confronted with in their mission to safeguarding cultural landscapes.

Ancestral hydro-technologies

How is it possible to define ancestral hydro-technologies? Throughout history, different societies designed sophisticated techniques and water management systems based on the observation of the natural hydrological cycle. These 'ancestral hydro-technologies' provided adaptive and ingenious responses to cope with problems related to water conservation, irrigation, flood and draught control, in order to ensure food and security to local communities. These nature-based solutions *ante litteram* also nurtured aquatic biodiversity and its conservation. Good examples of such systems can be found in different countries all over the world and some of them are still in use today: from Mexico to Colombia and Peru, from Iran to India and China, from Morocco to Spain, Italy, and Greece, to name a few.

The rehabilitation (and adaptation) of ancestral technologies may have a strong social and economic impact on both rural and urban communities. If properly identified, mapped, protected, and managed, different traditional technologies can also provide concrete solutions for adaptation to climate change. They can be used as multifunctional tools for preventing further pollution, managing food and health security, as well as droughts and floods, improving simultaneously ecosystem services and biodiversity conservation.

The identification of ancestral hydro-technologies through the taxonomy is functional to identify potential and future water museums managed by local communities and to:

- Recognize the potential of management techniques related to traditional knowledge and know-how as a response to the current climate, biodiversity, health, and food emergencies
- Develop new educational and capacity building programs to support local communities and also researchers to preserve both waterscapes and the built environment

[12] https://whc.unesco.org/en/culturallandscape/; European Convention: https://rm.coe.int/1680080621

- Create awareness, promotion and information on the potential re-use of ancestral technologies, as opposed to their progressive abandonment and replacement by modern technologies
- Explore opportunities to develop pilot project for the rehabilitation/refurbishment of ancestral hydro-technologies as demonstration sites for their replication
- Foster interdisciplinary dialogue among water scientists and social scientists on the opportunity to build new community-based museums and eco-museums

There are multiple advantages in including and identifying these traditional technologies as part of the Global Inventory. Ancient hydro-technologies represent not only a wealth of local and traditional knowledge that deserves to be properly mapped and assessed; they are also models and good practices of managing water-related heritage systems that can stimulate important debates involving local communities towards wise and farsighted use of water.

TRANSNATIONAL TOOLKIT: THE TOOL TO IMPLEMENT THE WORLD INVENTORY IN TWO STEPS

A practical toolkit is developed to support National IHP Committees that are interested to implement the methodology at country/regional level through specific pools of experts (Steering Board for the World Inventory, SBWI).

The toolkit is made by two distinct tools which will be implemented in two different steps, or phases. The Toolkit will be implemented as follows:

1st step (tool 1)

- Taxonomy (classification system) for a quantitative analysis of existing (and potential) water museums

2nd step (tool 2)

- Questionnaire (for additional collection of quantitative and qualitative data of identified institutions).

After the general mapping of a specific country/region is made (1st phase), specific pools of experts coordinated by National IHP Committees will get in touch with the identified museums and institutions to generate more detailed information through the questionnaire (29 questions).

THE TAXONOMY (1ST STEP)

The proposed classification system responds to international standards and its usefulness lies mainly in the simplicity and manageability of the proposed categories (or *taxa*) in the most diverse geographical and cultural contexts.

The definition of a specific taxonomy - intended as a classification system which uses a predefined set of categories - is the starting point for implementing a thorough World Inventory. Any classification system includes a few predefined '*taxa*', as defined by the science of taxonomy. Taxonomy refers to the classification of material objects, but also of concepts and abstract categories. A *taxa* (from the Greek word 'order'), or taxonomic unit, is functional to group together several objects or concepts (e.g.: water-related museums, assets, and legacies, but also social practices and concepts related to the Agenda 2030 and SDGs).

Main '*taxa*' including useful categories to identify potential water museums

Six main categories have been identified to implement the inventory worldwide. Two main categories are proposed to identify and map the existing institutions (according to ICOM definition). Then, three additional categories are added to widen the analysis towards potential (future) water museums, including the concepts of cultural landscapes and the one of museums of the 4th generation. Thus, the classification system that can be used for a taxonomy of universal value for water-related museums also includes the experiences of ecomuseums and extended museums, that is, participatory approaches and community's engagement towards the protection of local water, hydrography, and waterscapes.

A final, 6th category is included to spot and monitor proposed solutions to implement SDGs.

The proposed 6 categories can be grouped in three macro-areas, as follows:

a) EXISTING Water Museums, Interpretation Centres, etc. (2 categories)

b) POTENTIAL/FUTURE Water Museums, Interpretation Centres, etc. (3 categories)

c) SOLUTIONS to achieve the 2030 Agenda for Sustainable Development (1 category)

a) EXISTING Water Museums, Interpretation Centres, etc.

Specific categories of the first group are defined as follows:

7. **Museums, Collections, and Documentation Centers (MUCD)**

8. **Interpretation Centres, Digital Museums, Eco-Museums, and Extended Museums (IDEM)**

b) POTENTIAL/FUTURE Water Museums, Interpretation Centres, etc.

Additional categories which are functional to detect potential (future) water museums (especially, but not only, in LICs) linked to specific water-related cultural landscapes, legacies, and sites, as well as to intangible assets and values are:

9. **Cultural Landscapes related to water (including waterscapes) as well as Assets, Sites, and Legacies (CLAS)**
10. **Ancestral Hydro-Technologies, Community-based practices, and Citizens' Observatories (AHCC)**
11. **Intangible legacies and the Heritage of 'Living Waters' (IHLW)**

c) SOLUTIONS to achieve the 2030 Agenda for Sustainable Development

Institutions and practices identified with the previous categories and that highlight good practices of sustainable development and possible solutions to adapt to climate change can also be associated to the last, 6th category:

12. **Solutions for climate adaptation and good practices to achieve the 2030 Agenda for Sustainable Development (SASD)**

Category 6 is useful in case the pool of experts suggests highlighting any solution/model to achieve the Agenda of Sustainable Development (SASD). This specific category is functional to highlight experiences, activities and communities' practices and engagement that are aimed not only at protecting past water heritages, but at focusing on more farsighted governance as regards the present management of waters for possible solutions to water scarcity. Also, the 6th category is useful to make inferences with the previous categories. Thus, a water museum or cultural landscape can be classified within more than one category.

The implementation of the proposed taxonomy will generate lists of institutions and social practices in different countries and regions. This survey is to be made as a remote exercise (desk study) and implemented by the National IHP Committees and research centres. Once this remote survey is completed, it will be shared with IHP and WAMU-NET to launch the 2nd phase: it is only in the second phase and with the use of a questionnaire that direct contacts with institutions will be made.

THE QUESTIONNAIRE: STEP 2

As regards the 2nd step of the GI – which is an integral part of the Toolkit – a questionnaire will provide the opportunity to collect more specific information concerning existing (or potential) water museums and interpretation centres related to water. The questionnaire will generate valuable data on specific features of managing structures and their activities related to water sustainability education and water awareness efforts (IHP Resolution n.5-XXIII).

The purpose of the questionnaire is to collect additional information in order to assess:

- the type and number of activities implemented by specific institutions
- their strengths, weaknesses, opportunities, and threats in managing any type of water related heritage or cultural landscape
- the degree of engagement of young generations and the public on their activities
- specific aspects related to communication and dissemination, including education and good practices related to water for their transboundary replicability

The 2nd tool consists of a questionnaire made of 29 questions. Through the 2nd step, national/regional pools of experts that produced already the inventory of existing (and potential) water museums and interpretation centers at regional/national level, will contact the institutions identified with the 1st step in order to generate a new dataset of information.
The questionnaire will generate a valuable set of data that will enable IHP to initiate new initiatives on water museums in cooperation with WAMU-NET.

See the attached "Toolkit" for the complete set of questions to be addressed to institutions identified with the 1st step

Pilot inventories of water museums in Italy and the Netherlands

An Italian and a Dutch case study have been made to test the proposed taxonomy in specific regions (desk study) and to assess the possible adaptation and re-calibration of the general methodology. These case studies serve as a pilot to assess the applicability of the taxonomy in two concrete areas and provide a first-hand (desk study) classification of museums, eco-museums, interpretation centers, water-related legacies and sites in the regions of the Po Delta (Italy) and the Rhin Delta (the Netherlands).

IMPLEMENTATION PLAN

The Toolkit which has been designed to implement the World Inventory includes:

a) a taxonomy (tool 1) with operational guidelines on how to classify water-related museums and legacies (step 1), and;

(b) a questionnaire (tool 2) aimed at collecting additional data on specific institutions that will be contacted during the implementation phase (step 2).

The overall implementation plan will proceed by incremental actions and progressive phases according to the planned timeline. A universally applicable taxonomy and methodology (toolkit) will be made available to National UNESCO Commissions and IHP Committees step by step. National IHP Committees will be invited (at different stages for Africa and the rest of the world) to implement the Toolkit at regional / national level and also to establish specific pools of experts to implement the methodology of the GI in line with the two steps.

List of project tasks by step:

- Involvement of National IHP Commissions through invitation letters
- After initial contact is made: definition of role and responsibilities of specific pools of experts at country/regional level

Pools of experts (Steering Board) nominated by IHP Committees will coordinate sub-groups of experts operating at regional scale, in order to produced more detailed and reliable inventories. To guarantee an interdisciplinary approach, several experts from diverse disciplines will be involved to provide a uniform approach at national / country level.

In this process, training will be also provided by the UNESCO Chair on "Water, Heritage and Sustainable Development" (WHSD) that is active in Venice. Tutoring activities will be open to all potential African institutions interested to make thorough and in-depth investigations on water-related heritages and wishing to develop new projects focusing on eco-museums and community-based museums.

Several presentations will be organized incl. both physical, online, and hybrid meetings / seminars at the national and regional level (in the Netherlands, France, Italy, Spain, Marocco, and Senegal). These events will be co-organized by WAMU-NET, the Netherlands IHP-HWRP Committee, and other

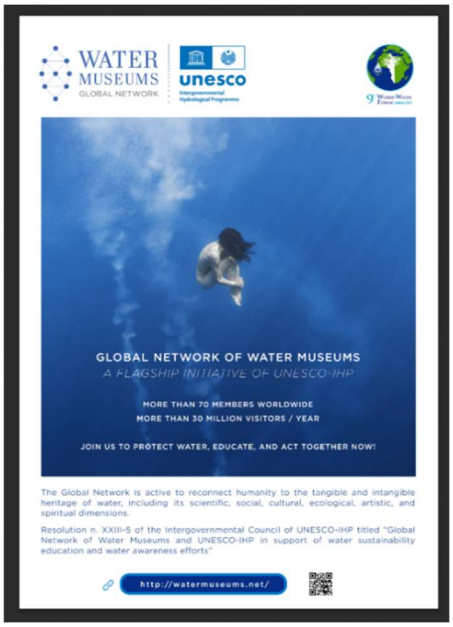
institutions in order to disseminate the project. The concept for the implementation of the GI in the African continent will be expanded further. Through a thematic session organized at the 9th WWF in Dakar on the occasion of the World Water Day.

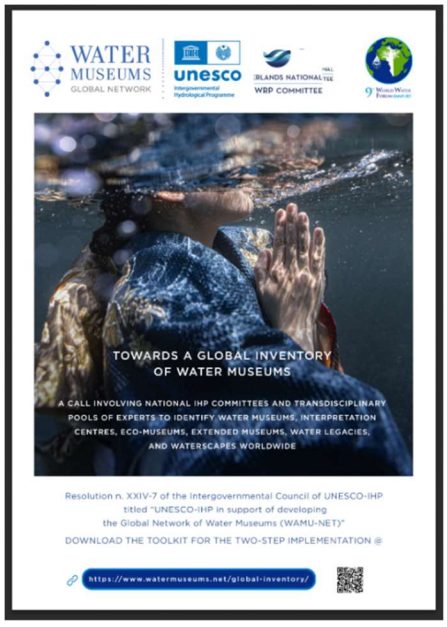
The progressive implementation of the World Inventory will be regularly communicated to the Intergovernmental Council of IHP, to National IHP Committees and other institutions.
Progress of the implementation plan will be measured regularly by a WAMU-NET working group to monitor continually incremental activities and to guarantee adequate follow up to National IHP Committees. Regular progress meetings will be held to analyse the development and make progressive and further adjustments, when needed.

Attractive posters, flyers, and stand-ups will be developed and made available as communication tools for the information package and proper dissemination at main conferences, meetings, and public events. Starting with the 9th WWF, this info package will help visualizing the project of the World Inventory and begin constructive discussion and cooperation with different institutions and stakeholders. These communication materials will facilitate the involvement of institutions and grassroots organizations and associations to take an active role in the process of implementing the inventory at regional/country level.

AVAILABLE VISUAL MATERIALS FOR COMMUNICATION CAMPAIGNS

Available Posters (format 70x100) and Flyers (format A5)





Available stand-ups (format 0,85 x 2 metres, or 1x2 metres)

Institutional logos of involved institutions can be included in the available visual package.

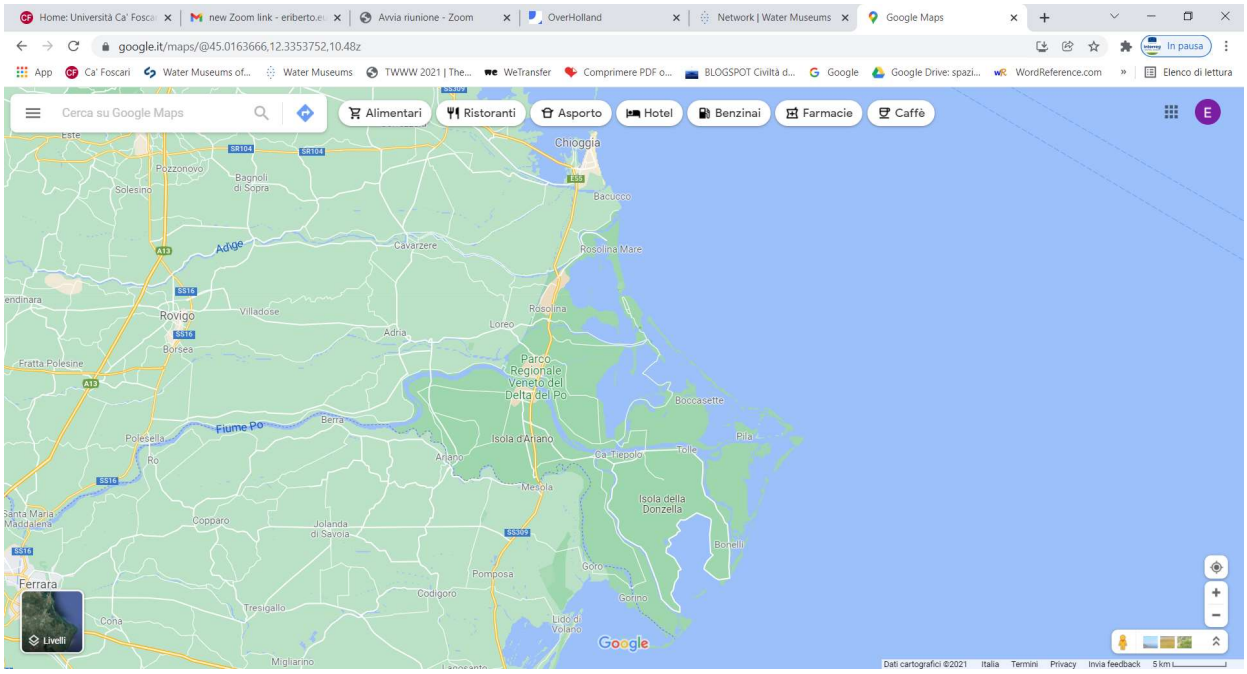
PILOT CASE STUDIES: INVENTORIES IN ITALY AND THE NETHERLANDS

The Italian case study: the Po Delta region

Water museums, interpretation centers, eco-museums, extended museums, and cultural waterscapes in the region of the Po Delta (*)

Motivation for selecting this area for the pilot inventory in Italy (*max 100 words*)

The Delta area of the Po River was selected to test, assess, and calibrate the taxonomy of the Global Inventory of water-related museums and heritage sites in Italy. In consideration of the homogeneous characters of this region, which is deeply shaped morphologically by one of the most prominent rivers in Europe, the Po Delta proves to be an ideal context to apply the proposed classification system for detecting the main characters and types of water museums, heritage sites, and water-related collections in a specific area. Also, the limited extension of the considered area (approx. 1.000 square kilometres) proves to be an ideal setting to apply and test the proposed taxonomy of the world inventory of water museums, interpretation centres, and cultural landscape related to water (as detailed in Part 1).



The map shows the extension of the Italian case study "Po Delta", that is located immediately south of the Lagoon of Venice. The Po Delta considered here includes the dark green area and extends up to the cities of Rovigo, Chioggia, and Ferrara with their surrounding plains. The total area considered extends for approx. 1.000 square kilometers (in dark green: 400 square/km).

(*) Contributions to the pilot inventory in Italy made by: UNESCO Chair 'Water, Heritage, and Sustainable Development', Venice University of Ca' Foscari, Italy; Civiltà dell'Acqua International Centre and Water Museum of Venice, Italy.

THE GEOGRAPHICAL AND HISTORICAL CONTEXT (max 600 words)

The geographical context

The Po River, with a length of 652 kilometers, a catchment area of approximately 71.000 square kilometers, and an average flow at the mouth of 1540 cubic meters per second, is the longest Italian river in Italy and one of the main rivers in Europe. The Po Delta territory extends for an area of approx. 400 square kilometers and is characterized by a peculiar morphology, recognizable by the sizeable river branches into which the river is divided before melting its waters into the Adriatic Sea. Today **the Delta of the Po River is made by seven branches**: the Po di Venezia (the main branch), the Po di Goro, the Po di Levante, the Po di Maistra, the Po di Gnocca and, in the southern part, the Po di Pila and the Po di Tolle.[13]

The Delta region has been shaped deeply over the centuries by layers of gradual accumulation of sediments transported by the river towards the sea: a process that has gradually modified the coastline. It's calculated that, during the last two millennia, the coastline advanced about 20-25 km, as evidenced by the ancient Roman coastal ports which now are 'buried' in the hinterland of the delta.[14] This morphological evolution is well witnessed by the **city of Adria**: an historical city which gave its name to the Adriatic Sea. Today Adria lays in the mainland but in antiquity played with its Etruscan-Roman port a key role, being in a central position of the 'amber road', that is, in the historical commerce between the eastern Mediterranean and Northern European countries which is attested since the 1st millennium BC.[15]

The historical context

River navigation, which represent the first human attempt to explore and deal with an amphibious area characterized by everchanging river meanders and lagoons, is testified here since the antiquity - as referred to in many Roman chronicles. During the Roman era are recorded also the first attempts of artificialization of some river segments in order to facilitate connections among different coastal lagoons and boost river trade. Archaeological excavations have found consistent remains along the waterway system - the so-called *septem maria* ['seven seas'] – that connected the imperial city of Ravenna to Aquileia, in the north-eastern part of Italy. This ancient system is nowadays integrated in the tourist-commercial navigation system that allows to reach through the Tartaro-Canalbianco waterway, several river cities like Mantua, Ferrara, Cremona, and Piacenza.

This navigation system used to connect the eastern and western part of Northern Italy, enabling navigation from the Po Delta up to the city of Milan until the mid-twentieth century, just before large waterwork constructions stopped abruptly the century-old tradition of historical navigation.

One of the most important hydraulic regulations of the Delta area are the gigantic waterworks made in 1601 by the Republic of Venice at Taglio di Porto Viro. Several water engineering management interventions were made to divert the main course of the Po River. These waterworks aimed at diverting the main mighty branch of the Po River away from the Venice lagoon, in order to prevent the silting up of Venice due to continuous and threatening river sediments. Drainage works for land reclamation started in the Middle Ages thanks to the patient work of the Benedictine monks and resumed with impetus during the XIX century, thanks to modern water-scooping systems that have left impressive hydraulic artefacts and drainage structures in the area. These heavy works for full land reclamation contributed significantly to the formation of the

[13] G. Ceruti (ed.), 1983. Il Delta del Po, natura e civiltà. Signum, Padova.

[14] Museum of the Great Rivers: www.comune.rovigo.it/myportal/C_H620/museograndifiumi

[15] Museo Archeologico Nazionale di Adria: polomusealeveneto.beniculturali.it/musei/museo-archeologico-nazionale-di-adria

characteristic Delta landscape. All of these artificial interventions are now deeply integrated into the current 'natural morphology' of the Delta.

NATURAL AND CULTURAL WATER-RELATED LEGACIES OF THE DELTA (700 words)

The natural heritage of the Po Delta

The Po River flows from west to east towards the Adriatic Sea, and its delta preserves unique natural features, including **floodplain wetlands, lowland forests, and unique coastal lagoons and transitional waters**. Over the centuries, human intervention to regulate its waters, land reclamation works, and the construction of new residential and productive settlements has contributed to shaping a specific anthropic landscape, where there is strong evidence of **heritage and museum collections related to water**. Today in the Delta there are interesting museums that interpret and exhibit a long history related control and management of water flows: from the ancient fishing basins of Etruscan-Roman origins to the typical hydraulic structures and architectures (hydraulic locks, boat bridges, drainage plants, etc) and to riverine towns characterized by traditional buildings.

The most significant natural and landscape elements of this area, which since 2015 has been included in the UNESCO Biosphere Reserve (Man and Biosphere Program), are the **long and extensive river corridors, woodland concentrations, lagoon basins and sandy shores that mark the coastline between the mouths of the various river branches**.

The visitors centre built at the premises of the Regional Park Po Delta,[16] invite visitors to enjoy different destinations by promoting 'sustainable mobility', that is by boat, kayak, bicycle, or on foot, in order to discover what can rightly be considered a rich "extended museum" of water.[17]

The available tourist routes make it possible to explore not only a powerful nature constantly shaped by a mighty river, but also human historical interventions that have been made over the centuries, such as the **fishing valleys** (systems of small water ponds for fish breeding dating back to the Etruscan-Roman period) and the sites of land reclamation. L**and reclamation** started as far as the Middle Ages and the Renaissance period, but the radical transformation of the territory was made only at the beginning of the 20th century, with the mechanical support for the 'full reclamation'.[18]

As from the second half of the last century, the Delta area was also rejuvenated by new approaches of writers and intellectuals aiming to re-evaluate the quality of its naturalistic wild areas and freshwater ecosystems.[19]

The combination of naturalistic elements with anthropic interventions has made the Po Delta one of the favorite sets for Italian cinematography since the 1960s. Riverine settings actually boasted over 500 films, including well-known movies played by notorious directors (Michelangelo Antonioni, Luchino Visconti,

[16] See Parco Delta del Po Veneto: www.parcodeltapo.org/centri-visita ; https://www.parcodeltapo.org/emporio.php

[17] Examples of digital tours and audioguides on the Delta can be found on Izi Travel at: izi.travel/en/3d4a-water-museum-of-venice/en

[18] See ANBI Veneto – Land Reclamation Boards of the Veneto Region: www.anbiveneto.it; Veneto Agricoltura: www.venetoagricoltura.org

[19] See: Luigi Salvini, Una tenda in riva al Po. Libreria Universitaria, 1957; Gian Antonio Cibotto, Scano Boa. Rizzoli, 1961; Gianni Celati, Verso la Foce. Feltrinelli, 1989; Gianluca Cappellozza, Boccasette. TG Bbook, 2010; Antonio Pennacchi, Canale Mussolini, Mondadori, 2010; Danilo Trombin, Viaggio nel Delta del Po: Guida sentimentale all'ultima frontiera, Apogeo, 2021. R. Bacchelli, Il mulino del Po, Mondadori, Milano, 2021. See also: I Quaderni dell'Accademia del Tartufo Delta del Po https://www.accademiadeltartufo.org/negozio/

Roberto Rossellini, Carlo Mazzacurati, etc) as well as famous actors (Sophia Loren, Alida Valli, Fabrizio Bentivoglio, etc).[20]

The cultural heritage of the Po Delta

Since the 1st millennium BC, the Po Delta area has always been at the centre of intense commercial traffic, which took place between the Adriatic Sea, the inner river branches in the hinterland, and along the coastal roads – especially along the famous **via Popilia-Annia** (which in Roman times linked the imperial capital of Ravenna to Aquileia, further north). In particular, the **city of Adria** was at the centre of this trade network with its important river port, which was already a fundamental junction on the 'amber route' during the Greek and Etruscan civilisations. The National Archaeological Museum of Adria, the National Archaeological Museum of Fratta Polesine, and the San Basilio Cultural Centre preserve valuable archaeological heritages and remains related to this historical period.[21]

In the Middle Ages the Benedictine order of monks became more and more important, as it was engaged in patient works of land reclamation, The **magnificent Pomposa Abbey** is the main architectural expression of this period in the Delta. The activity of monks on wetlands which were permanently subject to flooding and swamping was definitely crucial for the development of agriculture, an economic sector that is still important in the Delta, together with fish farming. Also fish and especially mussel farming are linked to a rich cultural heritage that characterizes the entire Delta, with its '***valli da pesca'*** (ancient fishing basins of Roman origins), the typical ***casoni*** (vernacular dwellings), and the fishermen ***cavane*** (small yards to repair boats).

Among the main architectures and remains of a territory deeply shaped by the flow of a mighty river are the aristocratic palaces, the rural dwellings, and the historical towns built during the period of the Serenissima Republic of Venice, such as Palladio's Villa Badoer, in Fratta Polesine, the "riviere" (urban waterfronts) of Adria, the river village of Loreo, and the Tenuta Ca' Zen, immortalised by a famous love poem of Lord Byron.[22]

[20] A concise film-making of the Po Delta (more than 500 Italian movies have been made in this suggestive riverine environment) includes: Luchino Visconti, Ossessione, 1943; Roberto Rossellini, Paisà, 1946; Mario Soldati, La donna del fiume, 1954; Michelangelo Antonioni, Il grido, 1957; Roberto Dall'Ara, Scano Boa - Violenza sul fiume, 1961; Carlo Mazzacurati, Notte italiana, 1987; Carlo Mazzacurati, La giusta distanza, 2007. See: P. Micalizzi, Là dove scende il fiume. Il Po e il cinema, Aska, Firenze, 2010.

[21] Museo Nazionale Archeologico di Fratta Polesine (Villa Badoer): https://polomusealeveneto.beniculturali.it/musei/museo-archeologico-nazionale-di-fratta-polesine
Museo Nazionale Archeologico di Adria: https://polomusealeveneto.beniculturali.it/musei/museo-archeologico-nazionale-di-adria

[22] F. Vallerani, Acque a nordest, Cierre, Verona, 2004

APPLICATION OF THE TAXONOMY TO THE PO DELTA AREA

	Museum/Site Name + short caption (max 40 words)	**Type**	**Description** (max 100 words)
1	**Museum of the Great Rivers** An interactive journey to discover the history of the 'liquid civilizations' shaped by the Po River through the centuries (from the Neolithic times up to present days)	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*The Museum of the Great Rivers is located in the city of Rovigo and offers the visitors an engaging experience with an exhibition that includes audiovisual multimedia and suggestive reconstructions of pile-dwelling settlements archaeological sites since the Bronze age. The museum aims to raise awareness on the cultural and natural heritage of the Po Delta area: a region which has always been shaped by the mighty and often unpredictable flows of the mighty rivers that surround it: the Po and the Adige rivers.*
2	**Land Reclamation Museum of Ca' Vendramin** The history of full land reclamation of the Po Delta in the colossal water-drainage pump of early 20th century. The museum is hosted by the suggestive building of the historical drainage pump.	1. **MUCD** 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*Among the wide meanders of the Po River branches, the impressive water-drainage pump of Ca' Vendramin, with its unmistakable chimney on top. This is the largest drainage plant of the Delta: the main player of mechanized land reclamation which was operating in the early 20th century. It is a gorgeous site of industrial archaeology and takes the visitor on a journey through time and space, discovering the radical transformation of this territory.*
3	**The Museum of San Basilio and the Romanesque church** (*small-size museum*) An ancient Roman posting station at the intersection of ancient ship trade between the sea and the everchanging river	1. **MUCD** 2. **IDEM** 3. CLAS 4. AHCC 5. INLW 6. SASD	*The San Basilio station, built along the Via Popilia (the Roman ancient road that connected Ravenna to Aquileia, further north), played a prominent role in trade developments of the Delta area, as a strategic outpost on the waterways that were at the centre of intense commercial exchange between the Mediterranean Sea and the Po Plain hinterland. Today, a small museum tells this story through precious archaeological findings discovered in nearby areas.*
4	**Museum of the Republic of Bosgattìa** (*small-size museum*) The museum exhibits the history of the 'independent and autarchic Republic' built in the 1950s on a riverine island by intellectuals and nature lovers	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. **INLW** 6. **SASD**	*On a small island in the middle of the Po, between the 1940s and 1950s, a 'free State' was proclaimed by a group of intellectuals preaching the need of establishing a 'new human relationship with the river'. This state had its own laws, passports, coins, and stamps made by this group of dreamers leaded by prof. Luigi Salvini. It was created at a time when new forms of modern tourism were emerging. This Republic was suspended between reality and imagination, immersed in a nature where the river marked the daily rhythms of life and the few inhabitants lived in peace, getting everything they needed from the Po river.*
5	**Septem Mària Museum** The museum of the 'seven seas' reconstructs the original settlements of the Delta people which were discovered with the reconstruction of a historic water-drainage pump	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*In the area where one of the oldest Etruscan necropolises of the Po river was built, today the imposing silhouette of the 19th century water-drainage pump of Amolara dominates the surrounding landscape. The pump system hosts the Septem Mària Museum (the "seven seas", according to the name of Roman origins), which recounts, with the help of evocative displays, the water-based civilization of the Po, from the bronze period to contemporary era. The museum tells the "water memories" and the centuries-old history of cohabitation with the mighty river - a coexistence that was never easy.*
6	***Veneto Po Delta Regional Park and Visitor Centre*** *The main entrance to the Po Delta Park provides information on facilities and tours for knowledge and exploration of the area*	1. MUCD 2. **IDEM** 3. CLAS 4. AHCC 5. INLW 6. SASD	*This information point and visitor centre is located in the town of Porto Viro, a short distance from the Romea state road. The Centre provides an exhibition area with an interesting 'technological showcase' of the Regional Park: it hosts large and evocative diorama, touch screens, and multimedia which illustrate the entire Po Delta area. The Centre, which includes also an information point provides tourists with the main routes of the Park and its naturalistic and historical and cultural attractions.*

7	**Memories of the Po Delta** *(interpretation centre)* An interpretation center exhibiting stories and memories from the centuries-old tradition of river navigation through an 'immersive room' (multimedia installation on traditional river sailing)	1. MUCD 2. **IDEM** 3. CLAS 4. AHCC 5. INLW 6. SASD	*The interpretation centre 'Hidden Stories from the Po' (Un Po di Storie), is located near a popular summer beach. It's a multimedia installation created to allow anyone to experience stories, places, and waterscapes that were typical of past river navigation along the river. The Centre also offers digital itineraries for exploring the delta and an interactive 'immersive room', with audiovisuals aiming to promote the abandoned nautical tradition. In the 1940s, just before its decline, river navigation inspired the young film director Michelangelo Antonioni, who dedicated his first film to the Po boatmen.*
8	**Po Ocarina Museum** (*small-size museum*) The river's clay becomes music: an example of unique craftsmanship	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*Clay and sediments carried by the river and worked by craftsmen are transformed into toys, art, and music. On the Ariano island, a family is still the custodian of a centuries-old tradition linked to local craftsmanship of the "ocarinas": singular terracotta musical instruments of various shapes and colours. Local legends and tales link these ancient 'globular flutes' to the four fundamental elements: air, water, earth, and fire.*
9	**The river village of Loreo and its *Antiquarium*** *(municipal museum)* A Roman ancient fluvial port which was active until the period of the Venice Republic in the river village of Loreo	1. **MUCD** 2. **IDEM** 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The characteristic river village of Loreo has been at the centre of intense fluvial traffic for centuries. Despite its current position far from the sea, it has been a crossroad in the history of inland water navigation. Its fortunes were tied to both those of the Roman Empire and of the Venice Republic. The historical centre of Loreo is crossed by a navigable canal that mirrors its multi-coloured, simple, and elegant dwellings, bordered by a small network of picturesque streets and 'calli' (Venetian alleys).*
10	**Adria and its *Riviera*** (*urban waterfront*) An ancient Roman port at the centre of historical river navigation at a time when the 'amber road' used to connect the ancient Easter Mediterranean with the Balkan countries	1. MUCD 2. **IDEM** 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*In the past, the historical port of Adria was so important economically and culturally that this city gave its name to the sea that extends from northern Greece to Italy and Croatia: the Adriatic Sea. The historical city of Adria is located in a strategic position between the Adige River, the Po river, and the sea. As such, it played a key role in the complex network of trading traffic that connected the Po hinterland with the Mediterranean and the Greco-Roman world through a complex navigation system of transitional waters. Today it's characterized by a pleasant Riviera which crosses the city centre.*
11	**The river village of Porto Levante** A typical river village of fishermen is the gateway to discover historic navigation and experience a tour on the Po Delta	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The small river village of Porto Levante is located at the mouth of the Po di Levante, the northernmost branch of the Po Delta, and at a short distance from the island of Albarella. Historically linked to profitable fishing activities, Porto Levante is surrounded by large and suggestive lagoons. Today it's equipped with a dock for pleasure boats and is an excellent starting point for great excursions on the mighty river, in the lagoons, or the sea.*
12	**The villa Ca' Zen in Taglio di Po** An old country villa of the Venetian aristocracy immortalized by the verses of the poet Lord Byron: a historical building with literary references to waterscapes	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. **INLW** 6. SASD	*"River, that rollest by the ancient walls, Where dwells the lady of my love...". The verses of the travelling poet Lord Byron still echo in this historic noble building, immersed in the green, pleasant and silent wetland of the Po River branch of Venice. It was, in fact, from the balustrade of the first floor of Villa Zen that Byron composed the famous poem 'Stanzas to the Po', providing a literary landscape that echoes romantic suggestions in a place where time seems to stand still.*
13	**Sanctuary of the Virgin Madonna del Pilastrello** The Black Madonna and the popular tradition of miraculous waters associated to the sacre	1. MUCD 2. IDEM 3. CLAS 4. AHCC 5. **INLW** 6. SASD	*The church of the Madonna del Pilastrello, in Lendinara, evokes a vast and fascinating heritage of stories and traditions from over the centuries, making it a place that has always been connected to miraculous waters. Here, the historical memory of the local community is expressed in the relationship with the statue of a Black Madonna, which stands in a perfect armony with the powers of the most precious and sacred element of life.*

14	**Punta Maistra Lighthouse** Looking out from the imposing 'guardian of the river mouth' to the horizons that inspired writers and poets	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. **INLW** 6. SASD	*The lighthouse of Punta Maistra is located near the mouth of the Po di Pila and is one of the most evocative places in the Po Delta. White and slender, nestled between the sea and the bright lagoon, the lighthouse is located in an area of great naturalistic interest and fascinating waterscapes. At the centre of boundless and evocative horizons, it has been the source of poetic and literary inspiration for well-known Italian writers.*
15	**Boat bridges** The traditional floating structures that historically connected communities across the mighty river	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The pontoons, which are made of hundreds of boats linked together, are one of the most characteristic and original architectures of the Po Delta. In an area crossed by mighty waters, the pontoons of Gorino, Santa Giulia, and Boccasette still allow the daily crossing of the river and are a true experience. For travellers who choose to walk along it for the first time, the bridge recalls the difficulties and hardships encountered to keep in contact people and villages of opposite shores.*
16	**Floodplain naturalistic area of Ca' Pisani** Marshy areas and fishing basins of Roman origin in the Delta of the wild Po di Maistra	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. **SASD**	*The floodplain of Ca' Pisani is a natural habitat shaped by the mastery and ingenuity of man in the wildest branch of the Po River, the branch of Maistra. Here, along a series of suggestive and important wetlands, the visitor can discover the favorite places of different bird species that inhabit the Delta for nesting. Also, some traditional fishing basins of Roman origins still attest a millennia-old practice of breeding fishes, in a perfect symbiosis between man and river. A tradition that today is endangered by excessive industrial fish farming.*
17	**The Coastal Botanic Garden of Porto Caleri** The ancient coastal landscapes of the Adriatic sea still protected in a genuine ancient coastal forest with a unique biodiversity, where the river meets a coastal lagoon	1. MUCD 2. **IDEM** 3. **CLAS** 4. AHCC 5. INLW 6. **SASD**	*The Botanical Garden of Porto Caleri is located on the coastline in rare wild beach area. Its visit discloses a fascinating journey immersed in the silence and scents of an ancient and now disappeared nature. The walking itinerary winds through the coastal dunes, the dense original pine forest, and the inner part of the lagoon. It offers a fascinating journey for scholars, young, and old visitors interested in learning about the evolution of natural coastal environments and discovering its superb bio-diversity.*
18	**Scano Boa Island** A sandy island at the mouth of the Po immersed in wild nature and in the middle of nowhere: the ideal scenario for many Italian movies and literary references	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. **INLW** 6. SASD	*The fluvial sediments of very fine sands are called 'scanni' (sandbars) and stretch out towards the sea with elegant shapes at the eastern end of the Po Delta. Today the scanni are a waterscape of great naturalistic value, immersed among uncontaminated coastlines and luxuriant marsh vegetation. Scano Boa is a wild island and perhaps the best known of these ephemerous land formations in the wild. For this reason, Scano Boa was often taken as a scenic theatre of different films dedicated to the boundless, majestic, and ever-changing Delta.*
19	**The Island of Balutìn** The pleasant and wild river waterscapes which gave birth to the legendary Republic of Bosgattìa	1. MUCD 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*The island of Balutìn stretches between the bends of the great river that slowly flows towards the sea. It's an unspoiled river environment, immersed in the silent and placid flows of water and characterized by lush woods. The fluvial amenity of this place led the scholar Luigi Salvini to declare it in the 1940s as the 'Tamisiana' Republic of Bosgattìa - the utopian autonomous state founded by a group of dreamers to inspire new human relationships with the river.*
20	**The floodplain naturalistic area of Ca' Mello** The new projects to shape the Delta as a naturalistic oasis to protect aquatic biodiversity	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. **SASD**	*This naturalistic oasis is characterized by waterscapes of unique beauty and high environmental value. The amphibious context lies between the Po di Venezia and the Sacca degli Scardovari and is the result of a redevelopment project made in the 1990s. Today it is crossed by suggestive itineraries to be made by boat and kayak. Through reeds and aquatic plants, here it's possible to explore the typical birdlife of marshlands, an ideal habitat for breeding.*

21	**Volta Grimana Oasis** A historical navigation lock that has been rewilded and transformed into a marshy area of great naturalistic value	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. **SASD**	*Volta Grimana is an area of great natural importance and is located on a historical waterway for river navigation. Today it is a valuable wetland originated from the gradual and spontaneous reforestation of an old navigation lock. The oasis (now a popular area for birdwatching enthusiasts) can be reached by using accessible walkways immersed between water and a thick vegetation that recalls the forests that once covered large areas of the Delta.*
22	**Abbey of Pomposa** The Benedictine monastery of the Middle Ages at the centre of patient and century-old land reclamation work	1. MUCD 2. **IDEM** 3. CLAS 4. AHCC 5. **INLW** 6. SASD	*Between the branches of the Po di Goro and the Po di Volano, in the lands of the ancient island called in Latin 'Insula Pomposia', we find the important Abbey of Pomposa: one of the most remarkable examples of medieval religious architecture in Italy. This Benedictine Abbey was at the centre of important land reclamation works since the Middle Ages. Also, it has been for centuries an important cultural centre for manuscripts and preservation of ancient knowledge. The music theorist Guido d'Arezzo (XI cent.) invented here and used to practice the Seventh Note of the musical scale within the Abbey's walls and cloister.*
23	**Sacca degli Scardovari** The lagoon landscape of the Delta with its century-old tradition of aquaculture	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The Sacca degli Scardovari is made by a vast stretch of waters between the mouths of the Po di Gnocca and the Po delle Tolle. Due to its complex morphological and hydrological conditions, today it's an ideal place for the proliferation and cultivation of mussels, clams, and oysters, making it one of the most intensively farmed areas of the region. However, the Sacca also offers some of the most fascinating scenic values of the Po Delta, with its sandy beaches between the lagoon and the sea.*
24	**The pathway of Roman Fishing Basins** Discovering the ancient Roman '*piscinae piscariae'* among wetlands, lagoons, and the '*casoni'* (typical vernacular dwellings of the Delta)	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*Between the Adige and the Po rivers, in the northern part of the Delta, one of the most ancient areas for fishing (preserved by the traditional Fishing Basins of Etruscan origins) is located. It's an evocative environment created by man as far back as the Roman times and which today can be explored along the pathway of Via delle Valli. The route develops between the Adriatic shores and the hinterland, allowing visitors to explore vast expanses of water, precious wetlands, and the typical environments for traditional fish farming that survives despite growing industrial fishing practices.*
25	**The pathway of historical water pumps** An itinerary of industrial archaeology to understand the titanic challenge of land reclamation	1. MUCD 2. **IDEM** 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*At the beginning of the 20th century, this area of the Delta which has been always subject to flooding and swamps, was radically transformed by the pharaonic project of 'full land reclamation'. The protagonists of this transformation were some of the most powerful water pumps of the period: mechanical lifting systems aimed at draining the amphibious areas and at guaranteeing hydraulic security and safety. A new museum itinerary allows visitors to admire some impressive water pumps of industrial archaeology 'en plein air'.*
26	**The Procession of the Vow in Pontelongo** The river as a symbol of faith, prosperity and social cohesion	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. **INLW** 6. SASD	*The terrible plague that struck the river town of Pontelongo in 1676 is re-enacted each year in one of the most popular historical processions of the Paduan region: the Vow Procession. To mark this special occasion, the opposing riverbanks of the Bacchiglione river are united by a specially designed wooden bridge which is crossed by all participants, giving the event a spectacular liquid magic.*
27	**Remada a Seconda** Historical commemoration of traditional rowing techniques to safeguard and rediscover Medieval navigable waterways	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. **INLW**	*A historical commemoration dedicated to wooden barges and 'barcari', the traditional freshwater sailors, merges with recent environmental activism in this event which every year moves from inland navigable waterways towards the Adriatic coast. Flag flyers, folklore, and by passers animate this fun wacky boat race that is becoming increasingly popular.*

The Dutch case study: the Rhin Delta region

Water museums, interpretation centers, eco-museums, extended museums, and waterscapes in the region of the Rhin Delta (*)

Motivation for selecting this area for the pilot inventory in the Netherlands (*max 100 words*)

The Rhine Delta - chosen for the Dutch case study - is of great importance on the national and international scale of The Netherlands for geographic, ecological, political, economic, social and cultural reasons. The Dutch delta is a complex case study as it encompasses numerous natural and human-made water-related features, institutions and interests, including nature reserves, major trade routes, polders, rivers, and canal networks, as well as diverse infrastructures for drinking water, irrigation, or draining to facilitate the growth and development of densely populated areas.

The map shows the extension of the Dutch case study "Rhine Delta". It includes the Dutch Low Lands from Nijmegen/Arnhem/Apeldoorn/Deventer/Zwolle/Kampen along the IJssel in the East, to the Randstad in the West with Dordrecht/Rotterdam in the South-West. It encloses the densely populated urban areas of Utrecht/Amersfoort/Amsterdam. The total area considered includes approximately 140 kilometers East-West and 70 kilometers North South. It extends for approx. 9.000 square kilometers.

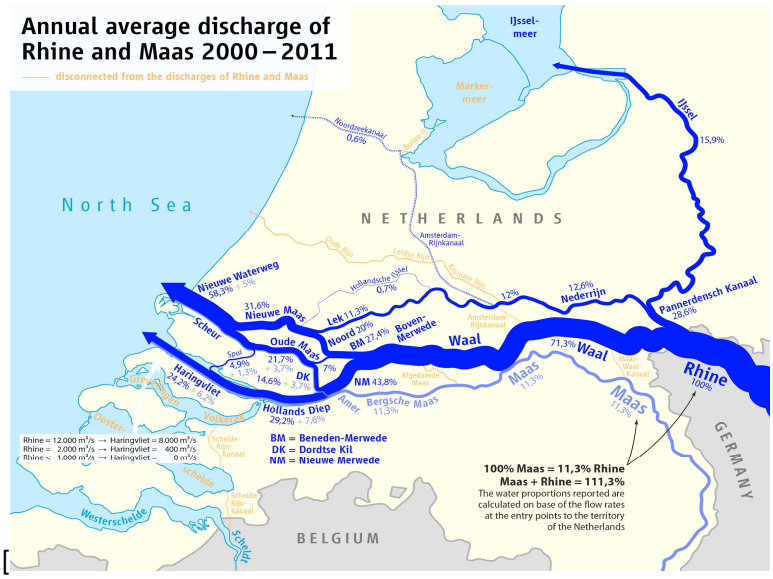
(*) Contributions to the pilot inventory in the Netherlands made by: UNESCO Chair 'Water, Ports and Historic Cities', TU Delft, The Netherlands; ICOMOS 'Water and Heritage Committee', The Netherlands.

THE GEOGRAPHICAL AND HISTORICAL CONTEXT (max 600 words)

The geographical context

The Rhine delta is understood here as the area between and around the river network that starts at the division of the Rhine at the German border. Here the Rhine splits into the Nederrijn/Lek, the Waal and the IJssel. The Maas can also be counted as part of the Rhine delta because of the many connections with the Waal and the shared river mouth in the North Sea. The water in the delta flows into the North Sea, mostly via the Nieuwe Waterweg and the Haringvliet passing Dordrecht and Rotterdam. A part of the water also flows into the North Sea via the North Sea Canal passing Amsterdam. Another part of the Rhine water flows through the IJssel river into the IJsselmeer, a water body that has been closed off from the North Sea by the Afsluitdijk since 1932. In the low-lying areas surrounded by these various arms of the Rhine, the Dutch Delta is home to a large part of the population of the Netherlands: approximately. 9,5 million people [23]people living in the so called Dutch Randstad.

The Dutch Delta has been shaped and reshaped by floods and human interventions over some eight hundred years. A recent book captures the different stages of water based transformation.[24]



The complex system of Rhine, Maas and IJssel and its average annual discharge. https://commons.wikimedia.org/wiki/File:Map_of_the_annual_average_discharge_of_Rhine_and_Maas_2000-2011_(NL).png *CC-BY-SA 2.5 Maximilian Dörrbecker*

[23] 9,5 million (in 2021) in total in the COROP areas: Veluwe, Arnhem/Nijmegen, Zuidwest-Gelderland, Utrecht, Agglomeratie Haarlem, Zaanstreek, Groot-Amsterdam, Het Gooi en Vechtstreken, Agglomeratie Leiden en Bollenstreek, Agglomeratie 's-Gravenhage, Delft en Westland, Oost-Zuid-Holland, Groot Rijnmond, Zuidoost-Zuid-Holland, Noordoost-Zuid-Holland, Noordoost-Noord-Brabant (CBS; https://opendata.cbs.nl/statline/#/CBS/nl/dataset/70072NED/table?fromstatweb)

[24] Abrahamse, J.E., Kosian, M., Rutte, R., Diesfeldt, O., Pané, I., van Mil, Y., van den Brink, T., & de Waaijer, A. . (2021). Watersysteem en stadsvorm in Holland : Een verkenning in kaartbeelden: 1575, 1680, 1900 en 2015. *OverHolland*, *13*(21), 47-121. https://www.overholland.ac/index.php/overholland/article/view/227

The historical context

The history of the Rhine Delta can be traced back two thousand years, when the Rhine was considered the border for the Northernmost Roman Empire, called the Limes.[25] In the Middle Ages, due to peat digging and agricultural development, the delta changed considerably, with important events such as the avulsion of the IJssel,[26] and the St. Elizabeth's flood, which led to the disappearance of a farming area and the creation of the Biesbosch freshwater wetlands, a nature reserve near Dordrecht.[27] Flooding also increasingly occurred at local level as a result of land use change. To cope with these floods, farmers initiated digging drainage canals in the eleventh/twelfth centuries that led to the water boards in the twelfth thirteenth century in the western provinces of The Netherlands. In the centuries that followed, mainly man-made interventions have changed the delta, such as the construction of the Pannerdens Canal,[28] serving the water distribution throughout the Netherlands, the Nieuwe Waterweg,[29] the Amsterdam Rhine Canal,[30] which facilitate shipping, and the expansion and deepening of floodplains to create more room for floodwaters as a coping measure to climate change.

Human intervention in the delta has multiple functions: regulating the outflow of large amounts of water that enters the Netherlands, especially from the Rhine, to the sea, draining large parts of agricultural land and to manage water from urban areas. Over the centuries, this water system of polders, reservoirs, dikes, locks and pumping stations, has become increasingly complex. The history of water regulations and poldering can be traced back to the eleventh, twelfth and thirteenth centuries, when large-scale peat extraction took place. The peat extraction led to subsidence, which created a drainage problem. In order to be able to control the water level and to create agricultural lands, the Dutch created polders low-lying areas surrounded by dikes and quays, within which the water level can be managed by means of windmills and later oil or electricity fueled pumping stations. If the water in the polders threatens to be high, it is drained to the drainage basins, and via there to the rivers. The growth of the polder system and the reclamation of various (inland) waters has placed increasing pressure on the delta.[31] Climate related challenges of sea-level rise and increased flooding require new resilient practices, such as the Room for the River Program.[32]

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[25] Geschiedenis van Zuid Holland, *Hoe liep de grens van het Romeinse Rijk?* https://geschiedenisvanzuidholland.nl/verhalen/verhalen/hoe-liep-de-grens-van-het-romeinse-rijk/;

[26] Makaske, B.; Maas, G.J.; Smeerdijk, D.G. van (2008(, The age and origin of the Gelderse IJssel, Netherlands Journal of Geosciences 87, p. 323-337, https://www.wur.nl/en/Publication-details.htm?publicationId=publication-way-333738323838

[27] 600 Jaar Elisabeths Vloed, https://600jaarelisabethsvloed.nl/; Biesbosch Museum Island, https://hollandnationalparks.com/en/things-to-do/biesbosch-museum-island

[28] Ministerie van Infrastructuur en Waterstaat, Het Pannerdensch Kanaal, https://www.rijkswaterstaat.nl/water/vaarwegenoverzicht/pannerdensch-kanaal

[29] Ministerie van Infrastructuur en Waterstaat,Nieuwe Waterweg https://www.rijkswaterstaat.nl/water/vaarwegenoverzicht/nieuwe-waterweg

[30] Ministerie van Infrastructuur en Waterstaat, Amsterdam-Rijnkanaal, https://www.rijkswaterstaat.nl/water/vaarwegenoverzicht/amsterdam-rijnkanaal

[31] Abrahamse, J. E. ., Kosian, M., Rutte, R., Diesfeldt, O., Pané, I., van Mil, Y., van den Brink, T., & de Waaijer, A. . (2021). Watersysteem en stadsvorm in Holland : Een verkenning in kaartbeelden: 1575, 1680, 1900 en 2015. OverHolland, 13(21), 47-121. https://www.overholland.ac/index.php/overholland/article/view/227

[32] Rijkswaterstaat, https://www.rijkswaterstaat.nl/water/waterbeheer/bescherming-tegen-het-water/maatregelen-om-overstromingen-te-voorkomen/ruimte-voor-de-rivieren

THE NATURAL AND CULTURAL WATER-RELATED LEGACIES OF THE RHINE DELTA

Parallel to these physical interventions also the water boards developed from small scale professionally simple local organizations to larger scale professionally complex regional organisations with a democratically chosen Board and its own taxation system. The natural water-related heritage in the Rhine Delta is very diverse. The Biesbosch and the Veluwe are important examples of the natural heritage in the delta. The **Biesbosch** is a freshwater tidal area, a unique phenomenon which has emerged due to the open connection with the North Sea. This, coupled with a peaty soil, creates a swampy landscape with reeds and grass.[33] The **Veluwe** has a different character, with hilly heaths, sand drifts and forests with streams.[34]

The cultural heritage related to the delta evolved in time. Poldering techniques, which made it possible to create usable land with the help of dykes and windmills, today are replaced by steam and fuel pumping stations. Both are a key feature of the Dutch water heritage.[35]

The cultural legacy of the Rhine Delta

Commercial activities, in which the functioning of the inland waterways is crucial to put the Netherlands on the map as a trade route from the North Sea and Baltic Sea to the rest of Europe, has also had an influence on the shaping of the delta. In addition to the more tangible heritage, also the intangible cultural heritage is of importance in the context of the Rhine delta. For centuries people have fought along this delta against the water[36], but also used the water as a weapon for protection[37]. Dealing with this complex water network has created a strong bond between humans and water that found expression in paintings, stories, literature, rituals and our language but also in water diplomacy to address transboundary conflicts with riparian and neighboring countries including Germany, France, Belgium and even Switzerland such as about upstream pollution or the discharge of flood waters.

The Rhine Delta, which is today the Netherlands, used to have vast bog areas, which formed a natural protection against invading armies. In addition, for ages up to the 20th century, peat was one the main energy sources. Today it has been fully consumed; hardly any fen lands remain. However, the peat excavation lots are still visible in the landscapes. Nearly all raised bogs disappeared too, as these were dehydrated by ditch systems to develop farmlands. The Veluwe consists of glacial tills, which form natural underground water reservoirs. Besides natural streams, since the late Middle Ages, man-made spring and brook systems on the edge of the Veluwe tapped these waters for water mills. More recently, the clear water of these man-made water systems was used for laundries and paper industries.

The Kinderdijk area in Ablasserdam is an example of how to lift water out of the polder with windmills. In addition to various types of mills, dykes and locks, the Water Board Assembly Houses have also been preserved in this area.[38] The Schokland area speaks to the capacity of gaining land from water. The island is now barely visible as an irregular shape in the landscape.[39] The Beemster polder is an example of early large-scale land reclamation, done by draining the Lake Beemster in 1612.[40]

[33] Nationaal Park De Biesbosch, De Biesbosch; https://np-debiesbosch.nl/de-biesbosch/
[34] Stichting Het Nationale Park De Hoge Veluwe, Nature & Landscape; https://www.hogeveluwe.nl/
[35] Stichting Werelderfgoed Kinderdijk, Kinderdijk History; https://www.kinderdijk.com/
[36] Watersnoodmuseum, Watersnoodramp; https://watersnoodmuseum.nl/
[37] UNESCO, Dutch Water Defence Lines; https://whc.unesco.org/en/list/759/
[38] UNESCO, Mill Network at Kinderdijk-Elshout; https://whc.unesco.org/en/list/818/
[39] UNESCO, Schokland and Surroundings; https://whc.unesco.org/en/list/739/
[40] UNESCO, Droogmakerij de Beemster (Beemster Polder); https://whc.unesco.org/en/list/899/

APPLICATION OF THE TAXONOMY TO THE RHIN DELTA AREA (NL)

	Museum/Site Name + short caption (max 40 words)	Type	Description (max 100 words)	Sources
1	**Aquarama** An educational and interactive water exhibition where you come into contact with many different aspects of water	**1. MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	***Aquarama*** *is a water exhibit where one can discover a wide variety of aspects about water, including sewage, wastewater treatment and water safety. The exhibition also addresses the cultural-historical heritage by highlighting the importance of water in the context of the Drecht cities (Drechtsteden), a number of cities bordering each other in the Dutch delta.*	https://www.weizigt.nl/aquarama
2	**Biesbosch Museumeiland** The history of how the Netherlands has dealt with water over the centuries	**1. MUCD** 2. IDEM **3. CLAS** 4. AHCC 5. INLW 6. SASD	*This museum is located in the heart of the* ***Biesbosch****, one of the last extensive freshwater tidal wetlands in Northwestern Europe. It provides information on how the Netherlands has struggled with water as well as exploited its opportunities over the centuries. In the permanent exhibition visitors discover how the freshwater tidal area was created after the* ***Saint Elisabeth flood*** *of 1421. The exhibition discusses nature, the inhabitants, their economic activity, and their crafts.*	https://biesboschmuseumeiland.nl/
3	**Broekerveiling Water Museum** The first and last sail-through vegetable auction in the world	1. **MUCD** 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The* ***Broekerveiling Water Museum*** *shwocases the story of an area that was once made up of over 15,000 islands in North Holland. The first and last sail-through vegetable auction house in the world was located among these islands. In 1973, it became a museum, where both this unique auction method, as well as the horticultural practices of the last century in the region are exhibited.*	https://broekerveiling.nl/en
4	**Haarlemmermeer Museum de Cruquius** The museum that tells the story about the history and development of the Haarlemmermeer	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*The* ***Haarlemmermeer,*** *a municipality in a polder reclaimed from an area of lakes, had a unique and productive function for cities such as Leiden, Haarlem and other large cities between the 17th and early 19th century. The risk of flooding outweighed the gains from the water, and in 1836 the decision was taken to start reclamation of the area. This museum tells the story of the Haarlemmermeer land reclamation works.*	https://www.haarlemmermeermuseum.nl/en
5	**Koele Wateren** An exhibition of paintings featuring water in the Gouda Museum	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. **INLW** 6. SASD	*In the Cool Waters (****Koele Wateren****) exhibition, 38 paintings are on display that have water as the main theme. This selection of 4 centuries of art includes works by great artists such as Jan van Goyen, Hendrik Willem Mesdag and Isaac Israels. In addition to showing how water has been a friend and enemy in the Netherlands, the aim of the exhibition is also to create awareness for the rise in sea level, by means of a short film.*	https://www.museumgouda.nl/nl/nu-te-zien/tentoonstellingen/34/koele-wateren
6	**Maas Binnenvaartmuseum** Exhibition about the largest inland port in the Netherlands, which shows the history of inland and recreational shipping that took place via Maasbracht	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*The Maas Inland Navigation Museum (****Maas Binnenvaartmuseum****), located along the Maasbracht harbour, aims to communicate the history and different aspects of Maasbracht's inland navigation in an educational way. One of the historical moments that the museum exhibits is the attack of September 30, 1944, which destroyed 240 ships in the harbor. Another theme is sand and gravel extraction, an important economic activity in 7the region, which has also acquired great cultural importance over the years.*	https://www.maas-binnenvaartmuseum.nl/

7	**Maritiem Museum Rotterdam** A broad collection that exhibits the naval heritage of the past and present, connecting the sea to rivers and estuaries	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*The **Maritime Museum Rotterdam** contains a broad collection with a wide variety in themes, from shipping technology, to living on the water, to the commercial importance of shipping. The exhibition shows how shipping has always connected the Netherlands to countries beyond the coast, and explores the influences of this important industry on the port.*	https://www.maritiemmuseum.nl/en
8	**Museum Geelvinck at Kolthoorn House and Gardens** Walks, which tell the story of the changing history of the 15th century manmade springs and brooks, which used to power watermills and paper-industry.	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. **SASD**	***Museum Geelvinck** located at Kolthoorn House & Gardens, a cultural hub created by the late-19th century painter Jan Kleintjes on the edge of Veluwe and IJssel River Valley, presents community stories. The country-estate encompasses manmade brooks and springs for watermills and paper-industry from the 15th century. The mansion sits on top of a glacial till; it's gardens and ponds are surrounded by former fen lands, today in agricultural use. The museum aims to create public awareness of the impact of climate change on this tangible and intangible water-related heritage.*	https://geelvinck.nl/en/
9	**Nationaal Baggermuseum** Shows in an interactive way how dredging, a practice for which the Netherlands is known, has been carried out over the years	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. **SASD**	*The National Dredging Museum (**Nationaal Baggermuseum)**, located in Sliedrecht, uses models and interactive exhibits to show how dredging has developed over the years. This practice, for which the Netherlands is famous, is used both to retrieve submerged soil so that waters remain accessible, and to move soil to create new plains.*	https://www.nationaalbaggermuseum.nl/
10	**Nederlands Watermuseum** A genuinely interactive museum about all aspects of water where you can learn about sluices, pumping stations and sewers	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*The Dutch Water Museum (**Nederlands Watermuseum**), located along the Jansbeek in Arnhem, is housed in the St. Agnieten-Begijnenwatermill, a building that is more than 600 years old. Over 50 interactive presentations show how sluices and pumping stations prevent floods, how much of the human body consists of water and how our sewage system works. Visitors can conduct experiments in the water lab and watch movies in the water cinema.*	https://watermuseum.nl/
11	**Watersnoodmuseum** Tells the story of the flood disaster in 1953 and the reconstruction that followed	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*The Flood Museum (**Waternsnoodmuseum**) is located in four caissons, constructions that help to carry out works under water, for example to close dikes. This museum tells the story of how the Netherlands withstood the flood of 1 February 1953 and how reconstruction followed after that. The exhibitions contain educational pieces about, among other things, the delta works, an extensive flood protection system consisting notably of dams, dikes, sluices, and a storm surge barrrier.*	https://watersnoodmuseum.nl/
12	**Grachtenmuseum Amsterdam** An exhibition that tells the 400 year history of Amsterdam's canal belt	1. **MUCD** 2. IDEM 3. CLAS 4. AHCC 5. INLW 6. SASD	*Located on the Herengracht, the **Grachtenmuseum Amsterdam** tells the history of Amsterdam's 17th-century canal ring through maps, artwork, models, and multimedia. The ring of canals was created to allow draining of the wetlands to further expand the city. It is a unique example of large-scale urban planning which is made possible by hydraulic works.*	https://grachten.museum/
13	**Deltapark Neeltje Jans** The park where you can learn everything about	**1. MUCD** **2. IDEM** **3. CLAS** 4. AHCC	*The **Deltapark Neeltje Jans** is a theme park that offers information on the largest storm surge barrier in the world, the Delta Works, and offers information about the flood disaster of 1953. Due to the open connection with*	https://www.neeltjejans.nl/park/

	the largest flood barrier in the world	5. INLW 6. SASD	*the North Sea, this area also has a special flora and fauna, including seals and porpoises, which can be seen in the Oosterschelde National Park.*	
14	**Visitor Center De Grote Rivieren** Learn by bike or on foot about the surroundings of the Waal and Maas	1. MUCD 2. **IDEM** 3. CLAS 4. AHCC 5. INLW 6. SASD	*The **De Grote Rivieren visitor center** makes various walking and cycling routes where you can learn about activities that take place along the Waal and Maas. Various industries are active in this area, such as the fishing and stone industry, but you can also find forts, which are of historical importance. The routes also pay attention to natural landscapes and water.*	https://bcdegroterivieren.nl/
15	**Information Center IJssel Den Nul** A place where you can actively get acquainted with the area around the IJssel	1. MUCD 2. **IDEM** 3. CLAS 4. AHCC 5. INLW 6. SASD	*The **Information Center IJssel Den Nul**, located in the Duursche Waarden along the river IJssel. It is a location where one can gather information about nature, water and cultural history in the area. This is done through exhibitions, but also activities in which one can discover the area with the help of guided tours.*	http://www.infocentrumijssel.nl/
16	**Amsterdam Defense Line** The fortifications around Amsterdam that were intended to flood the country	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The **Amsterdam Defense Line** is a 135 km long defense system around Amsterdam, built between 1880 and 1920. It consists of 46 forts and a complex of locks and dikes. The main idea is to use the water as a defense. Pieces of land can be flooded in a controlled manner, making it impassable. The Dutch Water defense lines--the **Waterline** and the Amsterdam Defense line--consisting of a network of forts, dikes, sluices, pumping stations, canals and inundation polders are a UNESCO World Heritage site since 1996*	https://www.stellingvanamsterdam.nl // https://whc.unesco.org/en/list/759
17	**Beemster** The first polder in the Netherlands, where windmills drained a lake in the early 17th century	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The **Beemster** in North Holland, which was completely submerged between the 12th and 13th centuries, was reclaimed from the sea from 1607, using windmills to pump out the water, eventually containing 50 windmills. This polder area is both an agriculturally highly developed area thanks to the fertile soil, and rich in country estates built in the Golden Age. A UNESCO World Heritage Site since 1999, it is also a tourist area, which is a beautiful representation of the typical Dutch landscape. Due to climate change, contemporary protection of the site can also require pumping water back into the polder to maintain a stable water level.*	https://www.beemster.net/content/droogmakerij-de-beemster // https://whc.unesco.org/en/list/899/
18	**Kinderdijk** World Heritage Site: A village in South Holland where 19 windmills from the 18th century facilitated the drainage of the polder	1. MUCD 2. IDEM 3. **CLAS** 4. **AHCC** 5. INLW 6. SASD	***The Mill Network at Kinderdijk-Elshout** in South Holland is an area with the highest concentration of old windmills in the Netherlands. Here 19 windmills from the 18th century facilitate the drainage of the polder. Although the polder is now mainly drained by a diesel pump, active mills can still be seen. Windmills have also been transformed into museums, providing an indoor-outdoor open-air museum experience. The site has become a UNESCO World Heritage Site in 1997*	https://www.kinderdijk.com https://whc.unesco.org/en/list/818/
19	**Schokland** An archaeological site where evidence of habitation and a battle against water can be found	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	***Schokland,** located in the Noordoostpolder, is a unique location where both nature and culture come together. This location has been a UNESCO World Heritage Site since 1995, due to the fact that there is evidence here about the inhabitation of the Noordoostpolder from prehistoric times to its reclamation. The excavations range from objects to houses, from graves to waterworks. The cultural importance of this location is*	https://schokland.nl/en/worldheritage // https://whc.unesco.org/en/list/739/

			not only the aspect that this location was inhabited, but also that they took up the battle against the water, as still takes place in the region.	
20	**Wouda Pumping Station** The largest steam-pumping station ever built in the Netherlands	1. **MUCD** 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The **Woudagemaal**, located in the province of Friesland, represents the pinnacle of Dutch engineers in protecting the people from the water. It is the largest and most advanced pumping station of its kind, which is still functioning. The function of the pumping station, together with the sea dike, drainage canals and locks, is to protect the lower Friesland against flooding from the IJsselmeer. The pumping station opened in 1920 and has been a UNESCO World Heritage site since 1998.*	https://whc.unesco.org/en/list/867/
21	**Loevestein Castle** A particularly situated castle with a relationship to the water that has changed over the years	1. **MUCD** 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	***Loevestein Castle** was built in the 14th century on a strategic location between Maas and Waal. The protection the waters later provided also made it a suitable location as a state prison. Now, however, rising water threatens this UNESCO landmark, which can be seen in the 'Thinking of water' exhibit. The castle houses a museum and several options for events and overnight stays.*	https://www.slotloevestein.nl/
22	**Muiderslot** A strategically located castle that has both benefited from water trade and played a national role in the defense of the capital	1. **MUCD** 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	***Muiderslot** is a castle along the river Vecht and the IJmeer, which used to be the Zuiderzee. This location was strategic because tolls could be collected from boats that traded and had to use the route to and from the Zuiderzee. Visitors can learn more about the castle's relationship to the water in the Waterschild Pavilion, which discusses whether water is friend or foe. The castle is part of the New Dutch Waterline and is a UNESCO World Heritage Site.*	https://muiderslot.nl/
23	**Waddenzee** The largest tidal flats system in the world	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*North of the Rhine delta is the **Wadden Sea**, the largest tidal flats system in the world. This area is unique for its ecological and geological values, making it a UNESCO World Heritage Site. The winds and tides shape the diversity and dynamics of habitats, which are of global importance.*	https://www.waddensea-worldheritage.org
24	**Amsterdam World Heritage Visitor Center in the CIty of Amsterdam** A UNESCO World Heritage Site consisting of the city center of Amsterdam	1. MUCD 2. **IDEM** 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The historic center of the City of Amsterdam has been a UNESCO World Heritage site since 2010. Several institutions display the history and interpret this heritage. It is not only unique because it was the largest urban expansion of its time, but also because of the iconic urban design, consisting of the canal belts, the associated waterworks and the coherent architecture. The **Amsterdam World Heritage Visitor Center** offers visitors the opportunity to gather more information about the city center of Amsterdam through an interactive exhibition.*	https://whc.unesco.org/en/list/1349/ // https://www.amsterdam.nl/kunst-cultuur/grachtengordel-werelderfgoed/bezoekerscentrum/
25	**Castle Duurstede** A historic place to experience the unique relation with water	1. MUCD 2. **IDEM** 3. **CLAS** 4. AHCC 5. INLW 6. SASD	***Castle Duurstede**, located south of Wijk bij Duurstede, is a medieval castle which is now a national monument. The castle's history dates back to the 13th century. The structure has undergone both expansion and decline in the centuries that followed. The unique relationship to the water is not only due to its location along the Nederrijn, but also because the moats around the castle ensure that the castle can only be reached via the*	https://kasteelduurstede.nl/historie.html // https://www.vvvkrommerijnstreek.nl/nl/locaties/2163514436/kasteel-duurstede

			drawbridge, which was of strategic importance for the defence.	
26	**City of 's-Hertogenbosch** A city that has been greatly influenced and shaped by the water still displays unique urban waterfronts	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The relationship between the **City of 's-Hertogenbosch** and water is very close, both in its origin, its development and today. The city is originally located in a swampy area where the rivers Dommel and De Aa meet. The city developed as a fortified city using the water as a defense structure. The connection with the water is also very strong in the more recent expansions of the city, with waterways and ponds intertwined with the neighbourhoods.*	https://www.denbosch-cultuurstad.nl/Categorie/Geschiedenis_van_Den_Bosch
27	**Waterline Museum Fort Bij Vechten** A fortress of the New Dutch Water Line, where you can learn everything about how water became a weapon through an interactive exploration	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The **Dutch Waterline** is a unique and typically Dutch defense system consisting of contiguous submerged polders and fortifications. The Fort bij Vechten is one of the largest forts of the New Dutch Waterline. Its strategic location at the intersection of the Roman Limes and the New Dutch Waterline make the fort an the icon of the Waterline. In this museum the unique story is told about the defense of the Netherlands by important figures from the 16th to the 19th century.*	https://waterliniemuseum.nl/
28	**Gouda** A city that has flourished by inland shipping	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	***Gouda** is a city with strong ties to water. It lies along the main north-south connection of Dutch inland shipping, which has determined the prosperity of the city for centuries. Today, water has both a cultural-historical value and a recreational function. In addition, water management is an important theme in the city because of ground subsidence, the rise of reservoir waters and associated foundation problems.*	https://www.gouda.nl/wp-content/uploads/2021/01/Erfgoedvisie-2013-Werken-met-Erfgoed.pdf
29	**Waterloopbos** An impressive forest with test set-ups of waterworks that have made important contributions to Dutch knowledge about dealing with water	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The **Waterloopbos**, located just north of the mouth of the IJssel, is a special location where remnants of test rigs for waterworks can be found. This publicly accessible forest serves as an open-air museum, where visitors can learn how knowledge about hydrotechnology has been developed in the Netherlands. The pre-marked routes showcase the various installations and monuments.*	https://www.natuurmonumenten.nl/natuurgebieden/waterloopbos
30	**Bekenstichting** The foundation that is committed to preserving the Veluwe springs and streams	1. MUCD 2. IDEM 3. **CLAS** 4. AHCC 5. INLW 6. SASD	*The **Bekenstichting** has been active for 40 years to preserve and restore the springs and streams in the Veluwe. They do this because 150 watercourses are threatened with water extraction, desiccation and climate change. In addition to ecological interest, there is also a cultural importance. The Sprengenbrooks are man-made waterways that were intended to power factory watermills. This is unique in the European context.*	https://sprengenbeken.nl/