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H₂O Map

H₂O Map: Innovative learning by hydraulic heritage mapping

E-LEARNING COURSE FOR TEACHERS: *Innovative Educational Tools for Assessment of the Hydraulic Heritage with by ICT Tools.*

PART I: HYDRAULIC HERITAGE

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Nº 3 DE ELVAS
Código: 135292


AGRUPAMENTO DE ESCOLAS DE CAMPO MAIOR

General Structure

Module II: Hydraulic Heritage and its importance

- 2.1 Definition of heritage
- 2.2 Why we preserve heritage?
- 2.3 How we preserve heritage?
 - Great hydraulic scientists
- 2.4 The value of water
- 2.5 The water management



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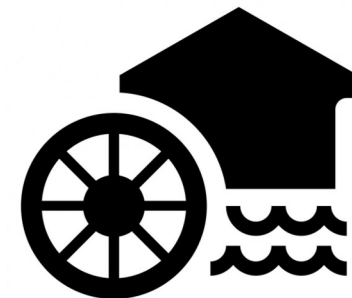


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2.1 DEFINITION OF HERITAGE

HYDRAULIC HERITAGE

Includes all artifacts and works artificial closely related to water: engineering, architectural, and mechanical systems, related to the water resource, are therefore part of the hydraulic heritage, but not the water itself.



WATER HERITAGE

It includes all the waters of the planet, emerged or underground, sweet and salty. It is used to talk about sustainability, climate, and resource depletion.



2.1 DEFINITION OF HERITAGE

The project focuses on **Hydraulic Heritage**. There are two types of heritage: tangible and intangible.

All those elements that belong to the **tangible hydraulic heritage** are connected to the use of canals and waterways for a community. An example is a **bridge**, but also minor works, such as gates or vents, which perform a specific function and therefore are indicators of the current or **historical use** of the given canal on which they insist.

The **intangible hydraulic heritage** includes all those cultural practices typical of a particular watercourse and therefore identifying the community that lives around it. An example is **cultivation techniques** that are based on the controlled use of water such as rice fields or mechanical energy production methods such as mills, which have repercussions on the territory but also on the **economic and social context**.

Heritage poses the challenge of its proper management and conservation. **Europe** and its member states are committed to ensuring its maintenance and being able to pass it on to future generations, through a series of EU laws and treaties (see article 3 of the European Union Treaty).



TANGIBLE



INTANGIBLE



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2.2 WHY WE PRESERVE HERITAGE

Preserving heritage means recovering the **memory** and **identity** of peoples and guaranteeing its perpetuation for generations to come.

UNESCO, United Nations Educational, Scientific and Cultural Organization, is a United Nations agency, founded in 1945 for the promotion of peace and understanding between nations to be implemented through Education, Science, Culture, and Communication.

Among the activities promoted is the **1972 World Heritage Convention** for the protection of the **Cultural and Natural Heritage**.

It is the **first international instrument** that contains the notions of nature protection and the preservation of cultural heritage, recognizing both of them as basic elements for the development of societies all over the world.



2.2 WHY WE PRESERVE HERITAGE

The cultural and natural heritage undergoes different alterations over time, losing its qualities: degradation can depend on climatic, meteorological, biological, and hydrogeological agents, but also environmental pollution and direct damage caused by man.

The natural or cultural sites that are registered on the **World Heritage List** meet specific requirements established by the **Convention** itself, which provides guidelines for their use and management. The nations that sign the Convention, **Member States**, have the duty to protect the assets present on their territory.

All forms of heritage must be considered a shared resource and it is, therefore, necessary to promote a collective sensitivity that strengthens the sense of belonging to a **common European space**. To enable the achievement of the knowledge and promotion objectives, the EU prepares funds to support cultural heritage, inviting the submission of **cooperation projects** under the "Creative Europe", **Erasmus +**, Europe for Citizens, and Horizon 2020 programs.



2.2 WHY WE PRESERVE HERITAGE

Preserving the hydraulic heritage allows:

- to **guarantee its visibility** (or usability if we are talking about intangible hydraulic heritage) **for subsequent generations**;
- to **rediscover and recover the identity characteristics** of a space and therefore of a people.

Rivers and canals become **cultural corridors**, starting from which to undertake **analyses of landscapes and cities** to return the proceduralism of structures and **anthropic relationships**, peculiar to each geographical context.



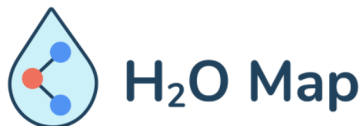
2.3 HOW WE PRESERVE HERITAGE

The growing interest in **heritage conservation and census** has collided in recent decades with two giants of our time: **globalization** and the **digital revolution**.

The safeguarding of world heritage is today managed by decision-making, technical and advisory bodies, specially prepared for it. These include: the **General Assembly of States Parties to the Convention**, the **World Heritage Committee**, the **World Heritage Center**, the **International Union for Conservation of Nature and Natural Resources**, the International Center for the Study of the Preservation and Restoration of Cultural Property (**ICCROM**), and the International Council on Monuments and Sites (**ICOMOS**).

Water is the fundamental resource for life on the planet; during the last fifty years, globalization and the growing demand for production have led to a progressive depletion of this resource.

To protect this heritage, over time specific Orders and Councils have been established at an international level to raise awareness and involve governments, agencies, and companies in promoting policies aimed at the protection and enhancement of the world's water heritage.



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2.3 HOW WE PRESERVE HERITAGE

The contemporary importance of **waterways**, also motivated by their ability to counteract the growing overbuilding, invites us to rethink them as significant spaces for the area and its inhabitants. Among the actions aimed at the conservation, census, and re-appropriation of waterways, UNESCO endorsed the initiative of a worldwide network of water museums.

This, like other activities undertaken on a European or global scale, has the purpose of **improving the management of water resources** through the **dissemination of knowledge relating to water and its use** and to reach as many people as possible through the use of sites and web platforms.

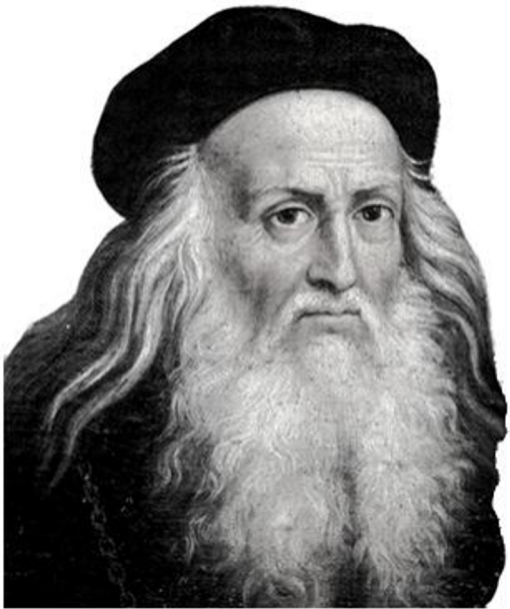
The **digital revolution** allows the use of mass communication tools, but also poses renewed challenges in terms of conservation, knowledge, representation, cataloging, and digital management of water and plumbing systems in the area.

The ability to document heritage, creating **digital duplicates**, is today a fundamental tool for understanding the state of the art of the latter and a means of communicating it and making it **accessible to all**.



GREAT HYDRAULIC SCIENTISTS

Leonardo da Vinci



Jeronimo de Ayanz



Henry Gaspard Darcy



Wilhelm Eduard Weber

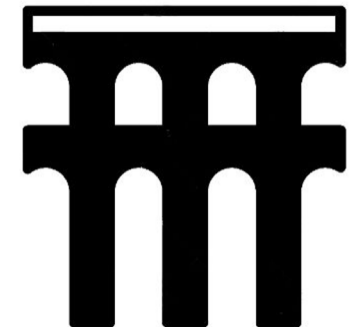


2.4 THE VALUE OF WATER

The first human settlements arose near rivers and freshwater sources, essential for survival. The development of societies and cultures has led to the definition of specific construction processes for the collective **organization and management of water resources** (see agricultural channels in Egypt and Mesopotamia to Roman aqueducts in Europe).

The architectural and engineering works of control and water transport have made it possible to establish residential areas even at a distance from primary water sources.

Today in the world, the diffusion of water networks presents different capillarity in different continents. In **Europe**, in the thirties of the twentieth century, the need to **guarantee universal access to water resources** became a priority, but this is not the case in developing countries. In these, the lack of public economic resources does not allow the right to water to be made effective as fundamental among human rights.



2.4 THE VALUE OF WATER

Water is a resource that renews itself but is not infinite, it cannot be reproduced or replaced. Freshwater makes up about 2% of the planet's water resources and it is estimated that by 2030 the global water demand may exceed actual availability by 40%.

The Resolution of the Assembly of Nations Unite 64/92 of 28 July 2010 recognized that: “the right of drinking water and sanitation is an essential human right to the quality of life and to exercise all men rights”.

Water is a chemical compound whose molecular formula, indicated with the acronym H₂O, indicates the bond between two atoms of hydrogen with an oxygen atom. Such a compound in nature comes in three different forms, liquid, gaseous and solid, vary in temperature and pressure conditions. Commonly, the term "water" is referred to the element in its liquid state, the origin of life on our planet, the fulcrum of natural ecosystems, and regulation climate and an essential resource for humanity from the point of view civil, social, agricultural, and industrial development.

2.5 THE WATER MANAGMENT

The use of water resources by man extends to a wide variety of areas, from agriculture to transport to industry. **Population growth** and the response to the needs of production sectors progressively increase water consumption, while at the same time reducing the **quality of the resource**. To cope with this condition, Europe has operated over the years by implementing **multiple long-term strategies** for the protection of its water resources.

Plan for the protection of European water resources (Brussels, 14.11.2012 - COM (2012) 673 final)

European Framework Directive on Water (Directive 2000/60 / EC - Framework Directive on Water - DQA)



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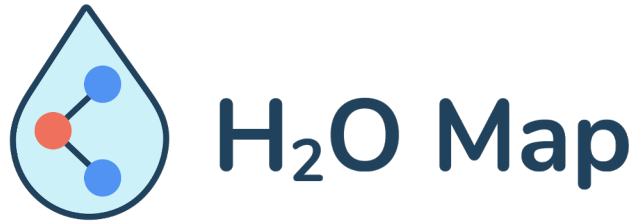
2.5 THE WATER MANAGEMENT

The UNO strategies for the management of water resources

The objective of the **United Nations Organization** is to provide strategies and means to support conflict resolution and the development of suitable policies on issues of global interest. In 2015, a program was drawn up for the prosperity of the planet and the promotion of sustainable practices to be adopted in the conduct of human activities: the **2030 Agenda**. The 2030 Agenda sets 17 **Sustainable Development Goals**: 6 of the 17 total objectives concern water.



Despite the efforts to achieve universal access to water as a human right, economic difficulties, legal shortcomings, and an appropriate cultural approach remain between the will and the actual implementation of the process at a global level.



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