UNIVERSITAT POLITÈCNICA DE CATALUNYA BARCELONATECH
UNESCO Chair on Sustainability

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WATER MUSEUMS GLOBAL NETWORK

unesco Intergovernmental Hydrological Programme

International Conference

Ancestral Hydrotechnologies as a Response to Climate, Health and Food Emergencies

Good practices in the Mediterranean and Latin America

"Use of Cultural Heritage to Rescue the Future"

PROGRAMME

16 – 17 February 2023

Salón de Actos
Vertex Building – UPC North Campus
Barcelona, Spain

Organized by

With the support of:

Organizing Committee

Intergovernmental Hydrological Programme of UNESCO (UNESCO-IHP)
UNESCO Chair on Sustainability (UNESCOSOST), Universitat Politècnica de Catalunya (UPC)
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Rationale and objectives of the International Conference

Our existence as human beings, as well as the biological diversity of the planet, are intimately linked to water resources. For human beings, water does not only represent a basic need for survival, but rather it can be considered as a key factor in the development of humanity in its different geographical and climatic contexts. The world's rich cultural diversity can undoubtedly be related to the different realities of access to water. This reality has been highlighted, even more, in the context of the health emergency due to COVID-19 that we are experiencing, since access to water and adequate and safe sanitation systems are the basis of hygiene. In addition, water is a critical input for agricultural production and plays an important role in food security. In the years to come, appropriate adaptation measures built upon known land and water management practices will be needed to foster resilience to future climate change, thereby enhancing water security.

Throughout history, ancestral civilizations designed and built sophisticated water systems based on the natural hydrological cycle. These "hydrotechnologies" provided an adaptive response to cope with issues such as water conservation, irrigation or flood and draught control but also with biodiversity conservation and local/regional sustainable development. Good examples of such systems, some of them still in use today, can be found all over the world: the Zenu Channels or "camellones" in Colombia, the Incas Hydraulic Wonders in Peru, the Persian Qanat in Iran or the different ditches for agriculture irrigation in the east of Spain, to name a few.

These ancestral hydro-technologies can be analyzed from a present-day viewpoint to assess their viability as appropriate technologies in a global climate, health and food emergency context. If properly managed, these technologies could become an effective solution for adaptation and inclusion as multifunctional tools for the management of diffuse pollution, food and health security, flood and drought control, ecosystem services, biodiversity conservation and economic development, among others.

From a cultural perspective, these technologies represent a wealth of ancient local and traditional knowledge that should be preserved and valued as cultural heritage. The rehabilitation and adaptation of these technologies will have enormous social and economic impacts on the local rural and urban communities which will be responsible for their management and will benefit from their services.

Objectives

It is in this global context of climate, food and health emergencies, which is also a challenge in the Mediterranean and in Latin America and the Caribbean regions, that it becomes crucial to bring water practitioners, water institutions, national and local authorities and academia together to discuss the potential of ancestral hydro-technologies as integrated solutions for adaptation and transformation. The objectives of this conference are to:

- Recognize and **value the potential** of ancestral hydro-technologies to be a response to the current climate, biodiversity, health and food emergencies.
- **Share examples and good practices and cases** of ancestral hydro-technologies around the Mediterranean basin and in Latin America and the Caribbean, to be included in the Global Inventory from Global Network of Water Museums (a flagship Initiative of UNESCO-IHP).
- Organize **interdisciplinary dialogues** with water scientists, social scientists and cultural and traditional knowledge experts around ancestral hydro-technologies and the value of eco-museums.
- Create **awareness, promotion and information** on the potential of ancestral technologies, transfer of knowledge and experiences, and dissemination of good practices.
- Identify elements to develop **specific educational and capacity building programmes** to support researchers as well as local communities to properly preserve and manage these systems.
- Explore the opportunities to **develop project proposals** for the rehabilitation/refurbishment of ancestral hydro-technologies as demonstration sites for replication at the global level.

Day 1 – Thursday 16 February *[conference available online - see link on back cover]*

08.00 – 09.00 **Registration**

09.00 – 9.45 **OPENING SESSION – WELCOME SPEECHES**

Chair: **Jordi Morató**, Director UNESCO Chair on Sustainability at UPC, Spain

***Abou Amani,** Director of the Division of Water Sciences and Secretary of the Intergovernmental Hydrological Programme
Miguel Doria, Regional Hydrologist for LAC, UNESCO-IHP LAC, Montevideo
***Fadi Comair,** Director Energy, Environment, Water and Research Centre (EEWRC) Cyprus Institute
Josep Canals-Molina, Secretary General MedCities/MedCites
Conchita Marcuello, General Directorate for Water. Ministry for the Ecological Transition and the Demographic Challenge, Spain.
Octavi Quintana, Director of the Partnership for Research and Innovation in the Mediterranean Area (PRIMA) Foundation Secretariat
Miquel Royo, Foreign Affairs and EU Secretary. Generalitat de Catalunya.
Daniel Crespo Artiaga, Rector Universitat Politècnica de Catalunya

9.45 – 10.45 **KEYNOTE SPEAKER**

Chair: **Jordi Morató**, Director UNESCO Chair on Sustainability, Universitat Politècnica de Catalunya

Thierry Ruf, IRD, Montpellier, France. *The lively khettaras of Morocco, history and perspectives. Marrakesh, Tafilelt, Todgha and Skoura*

10.45 – 11.30 Coffee break

11.30 – 13.30 **SESSION 1 – ANCESTRAL HYDROTECHNOLOGIES AS A RESPONSE TO CLIMATE EMERGENCIES**
Chairs: **Eddy Moors,** President of the Global Network of Water Museums, ***Guillermo Penagos***, UNESCO Chair on Sustainability, Universitat Politècnica de Catalunya

Jordi Morató, UNESCO Chair on Sustainability, Polytechnic University of Catalunya, Barcelona, Spain
Ancestral hydrotechnologies to increase resilience to climate change

Jose Maria Martín Civantos. University of Granada, MEMOLab
Historical irrigation channels as examples of sustainability, resilience and governance. Experiences in documentation, recovery and dimanization from South-East Spain"

Sergio Martos, IGME-CSIC, Spain
Water Sowing and Harvesting in Iberoamerica

Elisabet Lictevout, International Groundwater Resources Assessment Centre, Delft, The Netherlands.
Reviving ancestral (ground) water knowledge and techniques in the North of Chile for water security

Abdullah Al-Ghafri, UNESCO Chair on Aflaj Studies and Archaeohydrology, University of Nizwa- Oman
The traditional water technologies of Oman, aflaj and Zajirah

***Nikos Mamassis**, National Technical University of Athens, Greece
Exploring the operation of Athens' Hadrianic aqueduct

13.30 – 15.00 Lunch

*Presentation by Videoconference

15.00 – 15.30 **'THE CHILDREN OF WATER'** - A documentary film by **Joy Penroz** and **Sylvain Grain** Projection of "***The miracle of oasis***" (26', episode n.5 in Tafilalet, Morocco; Raki Films and Senal Colombia production) and discussion with the producer, **Sylvain Grain**. *Children from all over the world discover the knowledge of ancient cultures to protect the most important treasure they have inherited: water.*

15.30 – 16.30 **SESSION 2 - CAPACITY BUILDING PROGRAMMES ON ANCESTRAL HYDROTECHNOLOGIES**

Chairs: **Simos Malamis,** National Technical University of Athens (NTUA), Greece, and **Leonardo Martin Perez,** UNESCO Chair on Sustainability-UPC.

Eddy Moors, President of the Global Network of Water Museums
Capacity development and cultural heritage

Eriberto Eulisse. EXECUTIVE DIRECTOR of Global Network of Water Museums (a flagship Initiative of UNESCO-IHP)
Towards a World Inventory of water-related Museums and Heritage Values to Promote Sustainability Education

16.30 – 17.30 **SESSION 3 – PANEL DISCUSSION ON WATER-ENERGY-FOOD-ECOSYSTEMS NEXUS APPROACH USING ANCESTRAL HYDROTECHNOLOGIES**

Chairs: **Ali Rhouma**, Project Officer, PRIMA Program; **Tadej Stepisnik Perdih**, National Technical University of Athens (NTUA), Greece

Guillermo Penagos, UNESCO Chair on Sustainability, Polytechnic University of Catalunya, Barcelona
Rachid Mrabet, Institut National de la Recherche Agronomique-INRA, Morocco
Simos Malamis. National Technical University of Athens (NTUA), Greece
Elpida Kolokytha, AUth UNESCO Center, Aristotle Univ of Thessaloniki, Greece
Francesco Fatone, Polytechnic University of Marche, Italy

17.30 – 18.30 **SESSION 4 – PANEL DISCUSSION ON ANCESTRAL HYDROTECHNOLOGIES IN THE LATINAMERICAN AND THE CARIBBEAN COUNTRIES (IN SPANISH)**

Chairs: **Miguel Doria,** Regional Hydrologist for LAC, UNESCO-IHP LAC, Montevideo; **Javier Taks**, UNESCO Chair on Water and Culture from Udelar, Montevideo, Uruguay.

Sergio Martos & Jose María Martin Civantos. IGME-CSIC & University of Granada.
A special remembrance to Luciano Mateos

Jorge E. Celi, UNESCO Chair on Tropical Freswater Management, Universidad Regional Amazónica IKIAM
Introduction on "albarradas" in Ecuador

Zamora Gómez, Instituto Nacional de Tecnología Agropecuaria (IPAF NOA - INTA) / Instituto Geológico y Minero de España (IGME - CSIC) / Laboratorio de Arqueología Biocultural (MEMOLab - UGR) / Siembra y Cosecha del Agua en Áreas Naturales Protegicas (Red SYCA - CYTED).
Historical and ancestral irrigation in the province of Granada and northwestern Argentina: tools for responding to the climate challenge

***Marco Albarracín**, Universidad Politécnica Salesiana, Quito, Ecuador (videoconference)
Eco-hydrological approach in the ancestral management of water by pre-inca Paltas culture in Ecuador

Day 2 – Friday 17 February *[conference available online - see link on back cover]*

08.00 – 09.00 **Registration**

9.00 – 10.30 **SESSION 5A - SOLUTIONS AND BEST PRACTICES FOR WATER RESILIENCE: THE CONTRIBUTION OF ANCESTRAL HYDROTECHNOLOGIES**

Chairs: **Elisabet Lictevout,** International Groundwater Resources Assessment Centre, Delft, The Netherlands and **Elpida Kolokytha,** AUth UNESCO Center, Aristotle Univ of Thessaloniki, Greece

Luis Pablo Martinez. Cultural heritage inspector at the Generalitat Valenciana, Spain.
Ancestral water wisdom of global significance: heritage values and environmental services of acequia irrigation systems in the Valencia region (Spain)"
Manfredi Leone, Landscape Architecture at the University of Palermo, Italy.
Q*anat in Palermo: an ancient hydraulic network for the understanding of cultural heritage*
Kostas Voudoris, Elpida Kolokytha, Andreas Angelakis. AUth UNESCO Center, Aristotle Univ of Thessaloniki, Greece
Water-mills: Their history and evolution in Greece through the centuries
***Mohammed BACHRI.** Director of Strategy and Partnerships of The National Agency for the Development of Oasis and Argan Zones (ANDZOA)
Traditional system of irrigation and water harvesting in Morocco: case of the khetaras and the Matfias

10.30 – 11.00 Coffee break

11.00 – 12.30 **SESSION 5B - SOLUTIONS AND BEST PRACTICES FOR WATER RESILIENCE: THE CONTRIBUTION OF ANCESTRAL HYDROTECHNOLOGIES**

Chairs: **Elisabet Lictevout,** International Groundwater Resources Assessment Centre, Delft, The Netherlands and **Elpida Kolokytha,** AUth UNESCO Center, Aristotle Univ of Thessaloniki, Greece

Majid Labbaf, UNESCO Chair on Aflaj Studies and Archaeohydrology, University of Nizwa- Oman
The Historical Mechanism of Water Cooperation in the Middle East".
Mario Mesquita, Parque Patrimonial das Aguas de Porto, Portugal, and **David R. Pujol**, Museu de les Aigües de Barcelona, Spain
Industrial water heritage: a worldwide inventory and exhibition project
***Laura Dierksmeier,** Universität Tübingen, Germany
Ancestral hydrotechnologies on mediterranean islands as a response to water scarcity.
***Hanane Benqlilou**, National Office of Electricity and Drinking Water, Morocco
Water education, heritage, and knowledge sharing to face water scarcity and climate change in Morocco and Africa. A contribution to the World Inventory of water museums

12.30 – 13.00 **SESSION 6 – INTERCOONECTA COURSE AWARD**
Chairs: **Javier Taks,** UNESCO Chair on Water and Culture from Udelar, Montevideo, Uruguay, and **Jordi Morató**, Director UNESCO Chair on Sustainability, Universitat Politècnica de Catalunya

Lorena Grana, Ágata Alcaraz, Carmen Paiva, HéctorGenaro, José Vicente Villegas, Laura Pallero, Lorena S andoval, Thomas Zakaluk. *Revaluation of ancestral hydrotechnological knowledge to face the climate-environmental crisis in Antofagasta de la Sierra (Argentina)"*
Fiorella Macor in collaboration with Lida Borello, Rosana Hammerly, María Verónica Lanzaro, Viviana Martínez, Mariana Romanatti, Juan PabloZamora. Ancestral Techniques of the Shincal de Quimivil: Channels excavated in rocks
Ameyalli Bernal Gómez, Adriana Saldaña Espejel, ArnoldoDíaz Olavarrieta, Ismael Hernández, Santo T. Ál varez. Las Jollas. Hydrotechnologies as a basis for agroecological practices in the Valley of Mezquital Hidalgo, Mexico

13.00 – 14.30 Lunch

14.30 – 16.00 **SESSION 7 – SELECTED BEST PRACTICES FOR WATER RESILIENCE: THE CONTRIBUTION OF ANCESTRAL HYDROTECHNOLOGIES II**

Chairs: **Guillermo Penagos,** UNESCO Chair on Sustainability, Polytechnic University of Catalunya, Barcelona, Spain and **Jose Maria Martin Civantos,** University of Granada, Spain

Georges Gharios, UNESCO Centre for Water Law, Policy and Science. Univ. of Dundee, Scotland.
Sustainable Development and Indigenous Knowledge: What is the Role of Ancestral Communal Pools -Birket- in South Lebanon?
Jaume Campos Masip, Equip d'Estudi i Exploració de Mines d'Aigua
The water mines of Sant Feliu de Llobregat: the underground landscape and the ancestral use of water. Inventory, current status, utilization, risks, opportunities and value of water mines.
Juan Carlos Loaiza.Universidad Nacional de Colombia - Universidad Nacional del Altiplano Puno
Ancestral water management system in the circum-lacustrine ring of Titicaca Lake
César Redrado Tambo, Geological Survey of Spain (IGME-CSIC)
The Recharge Channels of Sierra Nevada Range (Spain) as Ancient *Nature-Based Solutions*
Soha Sayed Mohammad Mostafa, Soils, Water and Environment Research Institute (SWERI), Agricultural Research Center (ARC), Egypt (videoconference)
Developing historical rainwater harvesting techniques in the northwest coast of Egypt to ensure Agri-food sustainability and combat climate changes
Stefano Barontini (a), Alberta Cazzani (b), Enrica Agosti (c), Hiba Mohammad (a), Marco Peli (a), DICATAM Università degli Studi di Brescia, (b) DAStU Politecnico di Milano, (c) Slow Food Lombardia, Italy
The traditional irrigation technique of Lake Garda lemon houses (Northern Italy)
Kevin Lane, CONICET-Universidad de Buenos Aires
Past Water Futures: rehabilitating ancient dams for present use

16.00 – 17.30 **SESSION 8 – PANEL DISCUSSION ON ANCESTRAL HYDROTECHNOLOGIES GOVERNANCE: USE OF CULTURAL HERITAGE TO RESCUE THE FUTURE**

Chairs: **Jose Luis Martín Bordes,** UNESCO Paris consultant and UNESCO Chair on Sustainability, Polytechnic University of Catalunya, Barcelona and **Josep Canals,** Secretary General MedCities

Stefano Burchi, Water Law Expert, Italy
The interface of formal water laws with the customary/ancestral rights and practices of traditional communities
Toufik Ftaita, University of Nice, France
The hydraulic heritage of Morocco between disappearance and safeguarding
Ramiro Martinez. General Coordinator of the Mediterranean Network of Basin Organizations (REMOC)
Miguel Polo, President of Jucar Basin Confederation
Javier Lizarzaburu. Heritage and communications expert, The Netherlands (videoconference)
The ancient canals of Lima, lessons for a water-stressed city

17.30 – 18.00 **SESSION 9 – GENERAL CONCLUSIONS AND CONTRIBUTIONS TO UN 2023 WATER CONFERENCE**

Chairs**: Jordi Morató,** UNESCO Chair on Sustainability, Polytechnic University of Catalunya, Barcelona**, Jose Luis Martín Bordes,** UNESCO Paris consultant and UNESCO Chair on Sustainability, Polytechnic University of Catalunya, Barcelona and **Nicola Tollin,** UNESCO Chair on Urban Resilience, Southern Denmark University

Links available for attending the conference

Day 1 – Thursday 16 February (from 09:00 am CEST) Zoom link:
https://us02web.zoom.us/j/84601397792?pwd=aG9KVmFtanVjZmluVldVRVFsVHA4Zz09
Meeting ID: 846 0139 7792 - Passcode: 896708

Day 2 – Friday 17 February (from 09:00 am CEST) Zoom link:
https://us02web.zoom.us/j/86577079889?pwd=U0Z4OC9LNDg2SExoaDYzNTNHT09VUT09
Meeting ID: 865 7707 9889 - Passcode: 703842

Venue

Salón de Actos of the Vertex Building – UPC North Campus Barcelona, Spain
Plaça d'Eusebi Güell, 6, 08034 Barcelona