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Icons as a Tool to Connect Water Practices, Functions and Values across Space and Time: A Second Attempt

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Humans have shaped water systems for millennia, creating complex networks of physical structures, institutions and cultural practices. These systems reflect locally embedded yet globally influenced values that evolve over time. From infrastructure and landscapes to rituals and laws, human engagement with water is both tangible and intangible, deeply influenced by societal preferences, climate conditions and historical choices. To better understand this diversity, we developed a set of icons to represent various water spaces, functions, practices and values. Rather than offering a fixed taxonomy, these icons are intended as tools for discussion – making visible the multiple dimensions of water and the meanings knowledge holders assign to it.

Originally introduced in 2022 (Hein et al. 2022), the icons were used by authors in our journal to highlight key themes in their work. While we envisioned them as a way to map specific water-related elements across time and geography, they also served as visual keywords, helping to reveal prominent aspects of water heritage and practice. This goal has guided our ongoing efforts to enhance the icons' interpretive and comparative value, stimulating deeper cross-contextual reflection (Hein et al. 2025). In our second attempt to build a taxonomy of water practices, functions and values, we have introduced new icons and revised others, notably by adding representations of aesthetic and economic aspects and refining examples.

Ultimately, these categories are suggestions – not exhaustive or mutually exclusive – designed to illuminate how water has been managed, valued and lived with across different times and places, and how the past continues to influence the present and shape our future.

As we make the water icons open source (CC-BY) available for download on the *Blue Papers* website, we invite readers to build on the current set and expand it to fit their own context. The goal is to foster a dialogue around water values, invite collaborative engagement and spur new insights.

To represent situations where multiple water functions, values, and practices are considered together, we use a circle to group the corresponding icons.

< Fig. 1 Water icons (Source: Carola Hein, Lea Kayrouz, Zuzanna Sliwinska and Matteo D'Agostino, 2025).

Tangible



Drinking Water
Access to and provision of fresh, potable water is a universal need. Humans employ many different techniques and infrastructures to transport, store, filter, pump, redistribute and use drinking water. Examples include the use of reservoirs and pipelines for storage and distribution, both above and under the ground, as well as filtration systems that ensure water quality meets safety standards.



Agriculture and Irrigation
A wide range of strategies and technologies are used to harness water for food production, such as by irrigating crops and providing water for livestock. Agriculture and irrigation practices vary across different contexts ranging from agroforestry to terrace farming, including techniques that leverage seasonal water changes like flood agriculture.



Drainage Water and Sanitation Systems
The removal of excess and sewage water, including rainwater, runoff, black water and gray water, requires extensive infrastructure and treatment systems. Sanitation systems are essential for public health and environmental sustainability. Examples include wastewater treatment plants that recycle water, formal and informal sewer networks, and waterless solutions such as composting toilets.



Protection of Human Settlements
Humans have created architectural, urban and landscape structures to adapt to their environments and address challenges posed by water, animals and enemies. Responses to rain, snow, floods and droughts include canals, dikes and moats. Water has also been used defensively through fortification walls and floodable landscapes designed to deter or delay potential threats.



Water and Health
Access to clean water is essential for human well-being, with water quality playing a critical role in individual, public and ecosystem health. The purification of water for human consumption, for example, through boiling, filtration or adding chemicals, has influenced the development of public health, planning and environmental policy and has sparked private and public interventions.



Energy and Industry
Water management systems play a critical role in supporting energy production and industrial processes, often facing challenges related to resource efficiency, environmental impact and sustainability. Examples include the use of dams for hydroelectric power generation, water-cooling systems in machinery and factories, and water-intensive industries like mining and breweries.



Shipping
Water bodies, including seas, rivers and canals, are vital for moving people and goods, supporting daily mobility, tourism and commerce. Natural and manmade waterways are linked to the boats and ships they serve. Specialized infrastructure such as quays, cranes, warehouses, ports and dredging operations enables navigation, transport and the storage of goods.



Places of Leisure
Water bodies, natural and man-made, serve leisure practices in multiple ways. The tangible aspect of water leisure focuses on physical spaces and infrastructure designed for recreational activities at the intersection of land and water. Examples include waterfront promenades, swimming pools, water parks and beaches, which serve as functional features that facilitate human interaction with water.



Sacred and Spiritual Spaces
Humans have long created sacred spaces to honor water, using it as a medium for spiritual connection or reverence for the divine. Religious architecture often includes elements like fountains, baptismal fonts, ablution facilities and temple tanks. These features not only symbolize purity and renewal but can also play a role in local water management.



Aesthetic Water Sites
Physical spaces and structures, whether permanent or temporary, serve as tangible manifestations of cultural and artistic connections to water, often becoming sites of community significance. Examples include architectural interventions such as squares and fountains, as well as the urban design of coastlines, waterfront parks and promenades that celebrate water and encourage interaction with it.



Food from Water Bodies
Natural and artificial water bodies, such as rivers, lakes, seas and ponds, support diverse ecosystems and provide vital food sources through a wide variety of traditional and modern practices, from seashell collection to large-scale aquaculture and industrial fishing. These waters are home to a wide range of plant and animal species, sustaining local livelihoods and global food systems.

Intangible



Daily Water Practices
Daily water practices are fundamental to human well-being, woven into routines that sustain health and hygiene. These include sourcing water for cooking and drinking, communal laundry, bathing and showering practices. Such everyday habits highlight water's essential role in both practical needs and sociocultural practices across communities.



Preservation, Adaptation, Reuse
Diverse traditional and contemporary practices aim at preserving or strategically changing water bodies, related ecosystems and the social customs connected to them. Examples include the use of local knowledge in cultural heritage protection, wetland conservation, modern techniques of river restoration and community efforts to maintain traditions, rituals and structures tied to water.



Knowledge Systems and Capacity Building
Socialization and education are key to healthy and sustainable living with water. This can occur through community engagement, school curricula, capacity-building initiatives, the preservation of traditional wisdom about local water systems and sustainable practices, and all initiatives aimed at exchanging or transmitting knowledge and raising water awareness.



Laws, Policies and Planning
Water management, access and use have long been regulated through governmental policies, customary law and land use planning. These frameworks, implemented by state, corporate or traditional authorities, determine rights and responsibilities through tools like zoning regulations, land ownership policies and infrastructure planning that affect how water is distributed, accessed and controlled.



Language and Idioms
People's connection to water is expressed through diverse cultural and artistic forms, reflecting its deep symbolic and practical importance. This shapes how communities understand and relate to water. For example, language often includes words and proverbs about water, embedding traditional wisdom and values that arise from close daily interaction with water in different environments.



Economic Value of Water
The economic value of water is often realized through its exploitation for agriculture, industry and energy production, such as intensive irrigation in agribusiness, dam-based hydropower, and mining operations that rely heavily on water access. These practices can generate significant income and infrastructure but also raise questions about equity, environmental impact and long-term resilience.



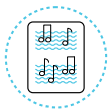
Institutions, Organizations and Governance
Water management involves diverse institutions and governance structures across local, national and cross-border levels. Formal entities like ministries and water boards, informal groups such as activist movements and community alliances, and customary bodies like traditional councils all play key roles. They set and enforce rules, guide social behavior and enable public participation in water governance.



Leisure Practices
Water-related leisure practices encompass activities and traditions that highlight the interaction between land and water. Examples include water sports, cultural events like fishing festivals, seasonal celebrations, informal gatherings for picnics or swimming at local rivers and recreational practices that bring communities together at waterfronts.



Rites, Rituals and Ceremonies
Water holds deep cultural, religious and spiritual significance, reflected in many practices and traditions. These include purification rites, blessings, baptisms, water festivals, and rituals that commemorate historic water events or celebrate the opening of new water structures. Such ceremonies highlight water's vital role in faith, community identity and cultural heritage across societies.



Music, Arts and Dance
Various cultural and artistic forms reflect the deep symbolic and practical importance of water. Examples include dance, spoken and written words, music, visual arts and other creative expressions. These forms offer insights into how communities relate to and understand landscapes shaped by water, highlighting its central role in human life and culture.



Water Access and Equity
Water infrastructures serve different users in different ways, with their social, environmental and economic impacts varying widely across contexts. These variations often reflect deeper inequalities of gender, ethnicity or economic background, which are at the heart of water justice and the power dynamics shaping access to and control over water.

References

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