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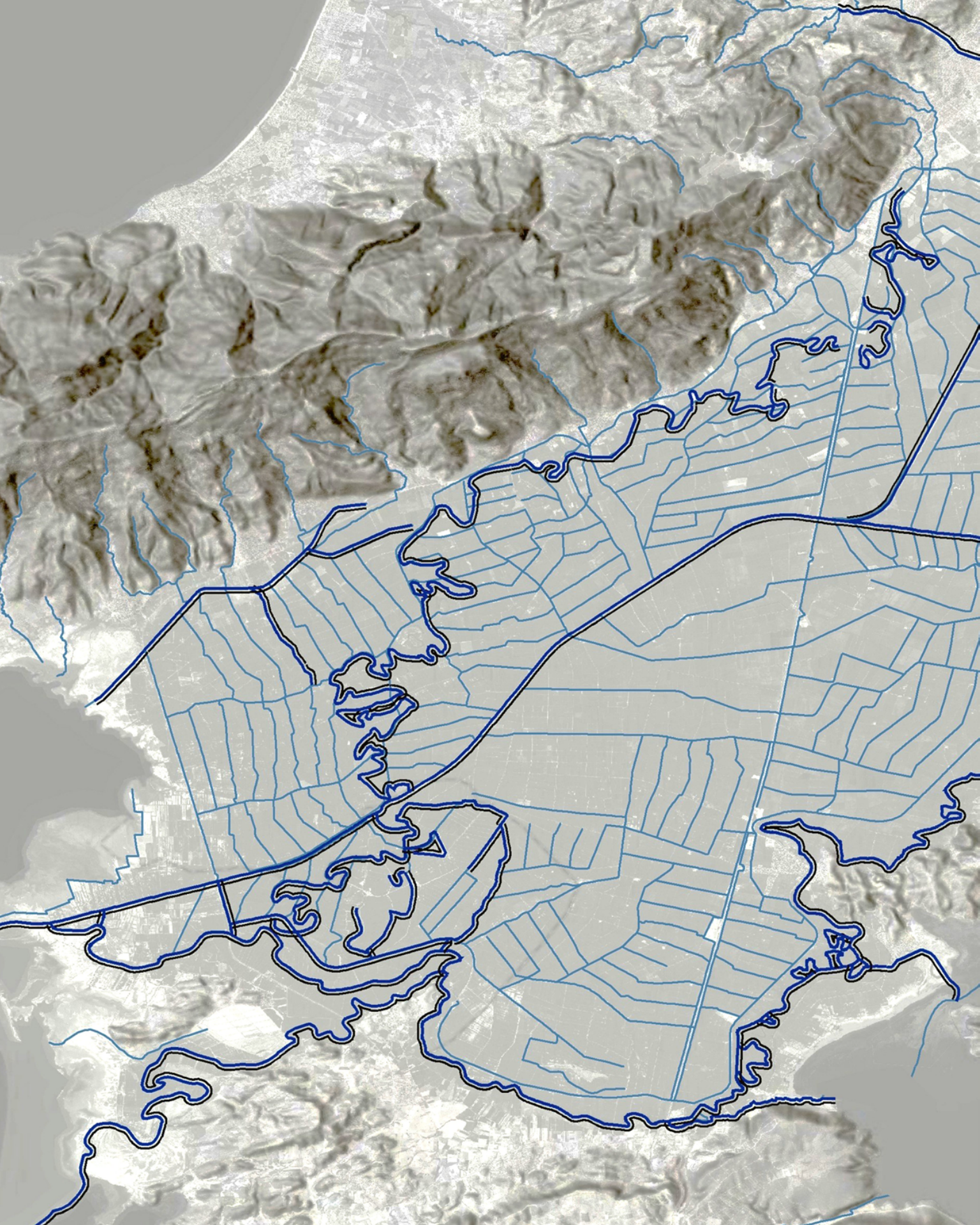
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Reconsidering “Water” as an Initiator and Transformer of River Landscape Heritage: The Case of the Menderes (Maeander) Delta, Türkiye

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Abstract

Historically, the Menderes (Maeander) River has played a crucial role in the development of settlements and cultures, shaping the natural, social, cultural, economic, and governmental dynamics of western Anatolia. Known as the “Valley of Civilizations,” its delta contains water-related heritage, knowledge, and traditions, encompassing agricultural and urban development as well as industrial and technological innovation. Today, the river's layered landscape reflects a centuries-long history of water management and infrastructure. While the river remains critical to the continuity of life in the region, communities along its course have lost many sociocultural connections and meaningful relationships with water and the river. This article reports on research that aims to restore those connections by using water as a unifying element and catalyst, applying a “landscape biography” approach to promote the holistic and sustainable heritage conservation and management of the Menderes River landscape and its communities.

Policy Recommendations

- Water-related and riverine landscape heritage should be identified, and the complex legal and administrative framework for conservation and management should be strengthened.
- Conservation and management approaches should emphasize nature-culture unity and collaboration among actors, stakeholders, and local landscape communities.
- Adopt a holistic approach to challenges: socio cultural and economic issues (e.g., narratives and stories pertaining to river, agriculture, irrigation, and fisheries) should be considered together with ecological and heritage dimensions, and plans for adaptation to climate change should be integrated with heritage management.

KEYWORDS

water-related heritage
heritage conservation
water & landscape ensemble
Menderes (Maeander) Delta
landscape biography

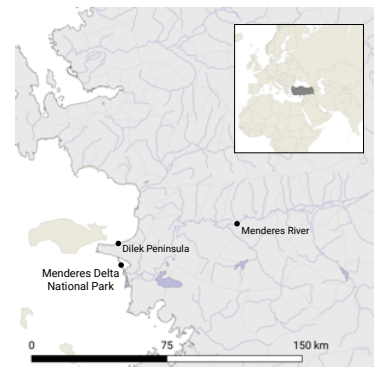
WATER VALUES



CLIMATE



Cfb: Hot-summer Mediterranean climate



< Fig. 1 Map showing the Menderes Alluvial Plain and surrounding settlements, river systems, irrigation canals, and protected areas (Source: Gökhan Okumuş, 2025. © Esri and © OpenStreetMap contributors, licensed under the Open Database License [ODbL]).



Introduction

Water is a fundamental element of human civilization, enabling diverse social, cultural, economic, and political developments across the globe. Throughout history, the need for water and its management have driven societies, shaping their development and prosperity (Hein et al. 2018).

The Büyük Menderes River (historically the Maeander or Meander, from ancient Greek: Μαίανδρος, Maíandros) is located in south-western Anatolia (fig. 2). In ancient times, it became renowned for its winding course and is the source of the English word *meander*, used to describe a bend in a river or the action of moving in a winding fashion. The river played an important role in the birth of civilizations and the continuous settlement history of the region (Başgelen 2010). Many ancient harbor settlements named after the "Maeander" (Miletos, Priene Ad Maeandrum, Tripolis Ad Maeandrum, Nysa Ad Maeandrum, Magnesia Ad Maeandrum, Myous, Heracleia/ Latmus) have been established in the river basin.

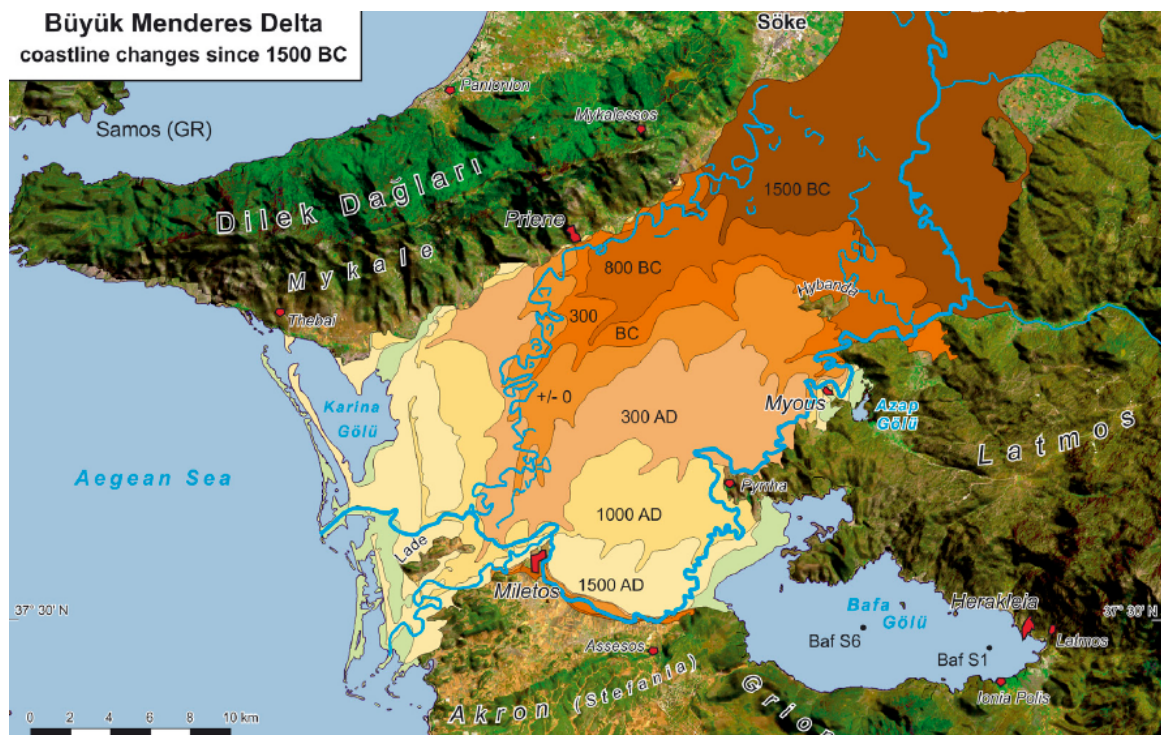
The Menderes River, with the alluvium it has carried over the ages, has created fertile lands that proved a source of great agricultural wealth for the societies in Anatolia (Göney 1975, Brückner et al. 2017). Alluvium shaped the Söke alluvial plain, and consequently, the sea passage gradually closed to form Lake Bafa and the Menderes Delta (fig. 2). This process of progradation resulted in ancient harbor cities losing their importance, but created a river landscape and fertile soils for today's settlements. The Menderes' ongoing progradation has continually altered the relationship between human societies and water, prompting evolving strategies and interventions that have left lasting marks on the landscape.

Current Situation and Approaches to Preserving and Managing the Menderes Delta as a River Landscape and Heritage

Today, the Menderes Delta landscape is home to many water-linked urban and rural settlements, some of which are listed as "natural," "urban," and "urban archaeological" conservation sites. The ancient harbor cities around the Menderes Delta-Alluvial Plain are also protected today as "archaeological" sites, although they have become disconnected from one another and the landscape due to the river's progradation over time. In that sense, the traces of water-related heritage include:

- 1) natural and cultural landscapes, wetlands, agricultural lands, alluvial plains and historic lakes, islands, irrigation canals and networks;
- 2) water-linked urban and rural settlements, delta and historic farm settlements and relevant buildings such as ports and warehouses, waterways, aqueducts, water mills, historic bridges, baths, fountains, dams, cisterns and wells;
- 3) archaeological remnants of ancient cities such as ancient ports and port streets, monuments and gates, port colonnades, city walls, temples, places of worship and sacred roads.

The river basin's natural, ecological, historical, and sociocultural richness has enabled it to become part of the global economy in Türkiye's modern period, with important roles played by its agricultural lands, industrial areas, cultural heritage sites, and tourist destinations. The Menderes Delta and Basin, which was connected to the nearby trading ports with Türkiye's first transportation investments, was one of the places where the first steps of industrialization based on agricultural production were taken in the 1930s (Yaşayan Nehirler Yaşayan Ege Projesi 2012). In the 1970s, the irrigation



^ Fig. 2 Top: Menderes (Maeander) Delta and Basin in southwestern Anatolia (Source: Gökhan Okumuş, based on GIS Maps, 2024); bottom: The progradation process from 1500 BC to the present day of the Menderes Delta and alluvial plain shifts in the shoreline (Source: Brückner et al. 2017, p. 878, fig. 1).

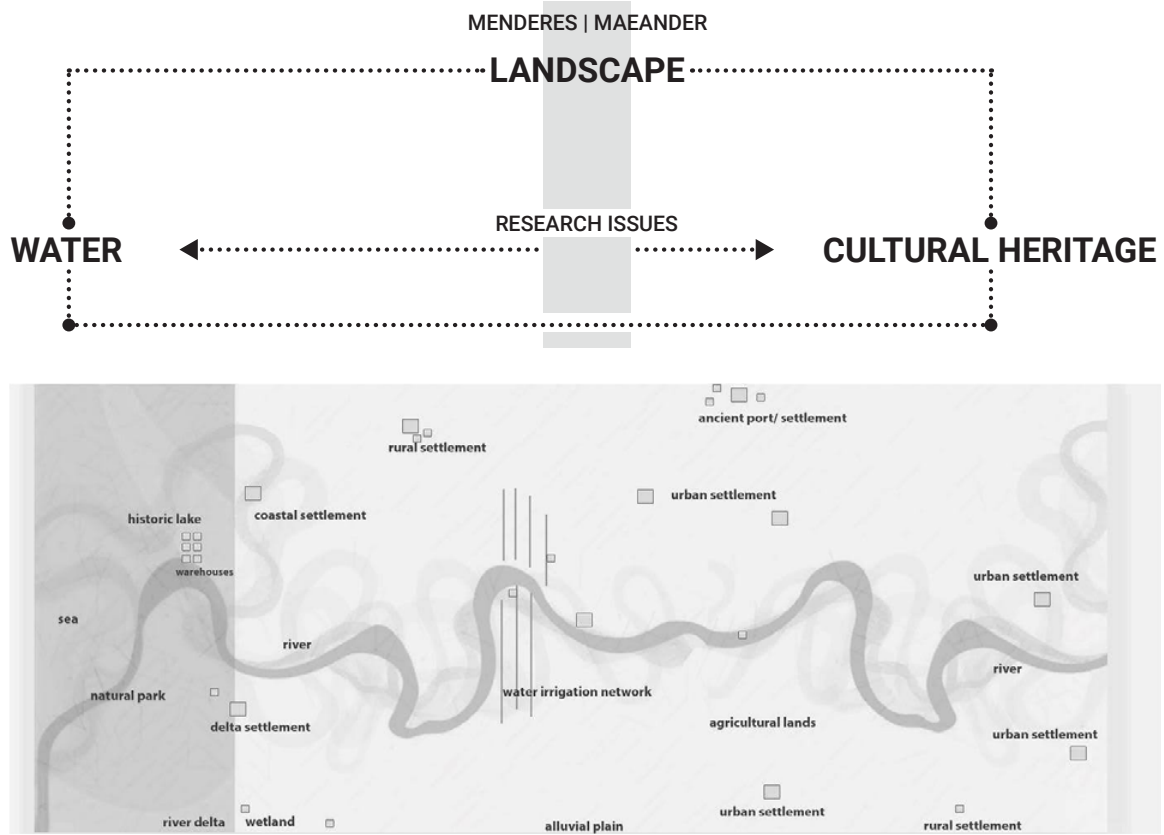


^ Fig. 3 Top: The irrigation system built in the 1970s (Source: Map from Söke Irrigation Association Archive, 2023); bottom: The transformed and reconstructed landscape (Source: Photos by Gökhan Okumuş, 2024).

system was constructed in the entire delta and plain in cooperation with the General Directorate of State Hydraulic Works and relevant institutions from Germany (fig. 3). The system is also protected by the Irrigation Association Law N° 6172.

While the river remains ecologically critical and is the main determinant of the landscape of settlements directly related to water, these settlements' relationships with water have changed due to a combination of natural-ecological dynamics, changes in the shoreline due to the progradation process, changes related to water management and collection of drinking water, human-made alterations to the natural and

physical environment, economic developments and institutional and governmental changes. This transformation has led to the disappearance of water-related toponyms, the abandonment of once-meaningful places within the landscape, and the gradual decline of river-related themes in collective memory. The river, which historically was regarded as a life-giving entity that shaped ancient settlements and functioned as a sacred and regulatory force in spatial planning, settlement patterns, and ritual life, is now perceived primarily as an economic resource and through a technical and utilitarian perspective, framed by concepts such as irrigation management, flood control, and environmental challenges.



^ Fig. 4 A heritage approach to water as a physical and cultural connector and tool for the river landscape heritage (Source: Gökhan Okumuş, 2024).

When water is perceived solely as an agricultural and economic asset and the connections between water and the landscape are lost, communities and heritage sites become disconnected from one another, as well as from their main creator – in this case, the Menderes – which is crucial to the landscape and the network of settlements. Although the river continues to sustain some of the physical layers and functions of the landscape, it is largely perceived today merely as an irrigation channel, a boundary, and a functional corridor. The symbolic and cultural meanings once attached to water have been replaced by industrial and economically driven narratives. In that sense, this research aims to reframe the river as a cultural

and biographical connector with narrative and mnemonic value, and to recontextualize it within the patterns of water-related heritage (fig. 4).

It is helpful to address such a complex landscape with a holistic heritage approach that integrates nature-based solutions, nature-culture interlinkages, and coexistence. A spatio-temporal perspective and a landscape biography approach can provide a basis for the development of relevant policies and future scenarios. In this approach, the Menderes River landscape is perceived through dynamic, multi-layered narratives shaped by interactions between natural processes and human interventions across time and space (Kolen and Renes 2015).



^ Fig. 5. Social surveys and field studies addressing socio-spatial, socio-cultural, and socio-economic issues in the Menderes Delta, using a landscape biography approach (Source: Photos [a-b-c-d-g-h] by Gökhan Okumuş, 2024; Photos [e-f] by Söke Municipality Archive, 2018).

By recognizing the central role of water in cultural heritage and landscape management, this framework aims to combine values, methodologies, and tools in a cohesive and adaptable approach.

The approach was implemented through a three-stage methodological process: archival-historical analysis, field survey, oral history research, and spatial-temporal mapping using GIS. To trace the spatial transformations and reconstruct the diachronic evolution of the Menderes Delta, historical sources and maps were georeferenced and structured. Additionally, fieldwork – including social survey, observation, in-depth interviews and focus group discussions – were conducted with inhabitants of the settlements and relevant economic groups (farmers, fishers and people from related agricultural, industrial and tourism sectors), local authorities, decision-makers, policy-makers and NGOs (fig. 5). Accordingly, field notes were thematically categorized – as pertaining to, e.g., water-related local toponyms, changes in daily life with the river, transformations in land-use and irrigation practices, lost water rituals, floods and their impacts – and geospatially referenced as memory-based data.

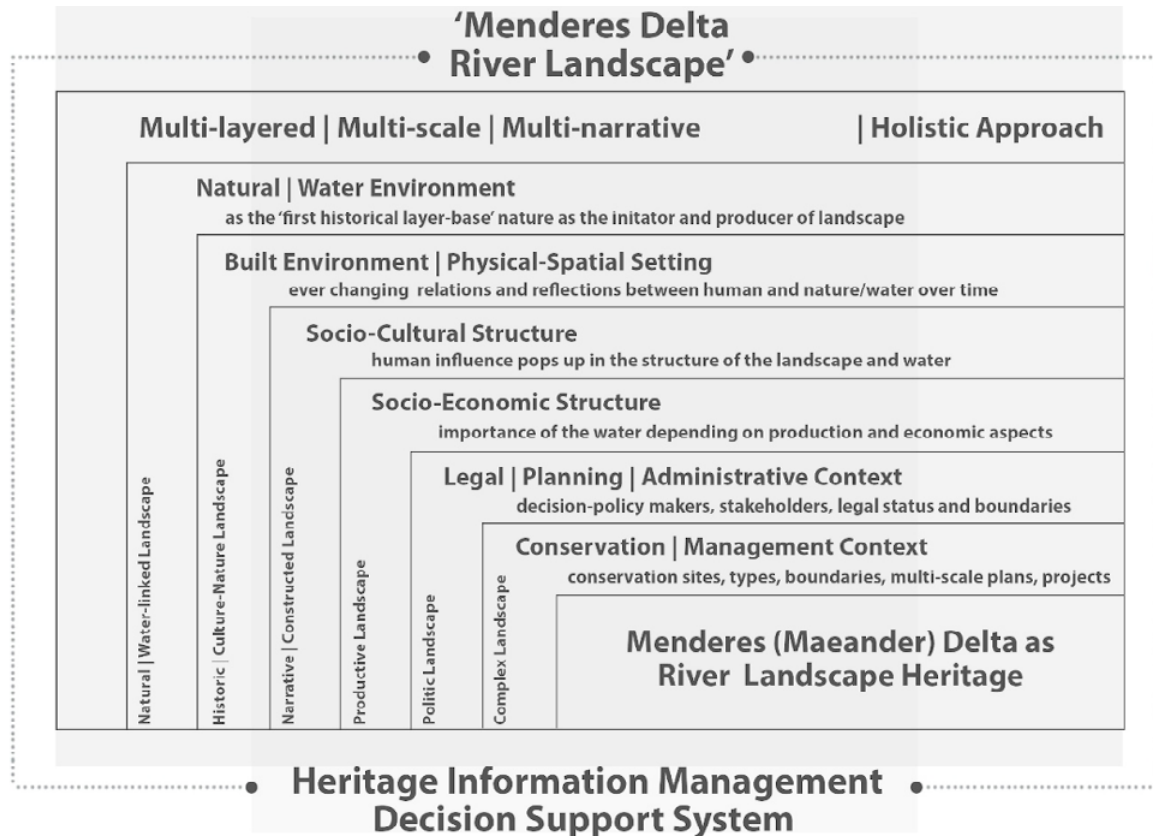
Using place-based multi-layered data, a GIS-based heritage information management and decision-support system was developed to provide a comprehensive understanding of ongoing transformations of the multi-layered river landscape, emphasizing the interaction between natural and cultural components, as well as the key human and more-than-human agents that influence and shape its evolution (fig. 6). The system helps to store, structure, query, present, share, and monitor data regarding the landscape's different layers and components and the interconnections between them. By reconnecting these elements,

the system enables the development of a more integrated, sustainable management approach that honors both the cultural and natural heritage of the region. By integrating multidimensional data, it fosters a holistic perception of the landscape including water-related relationships among communities and stakeholders.

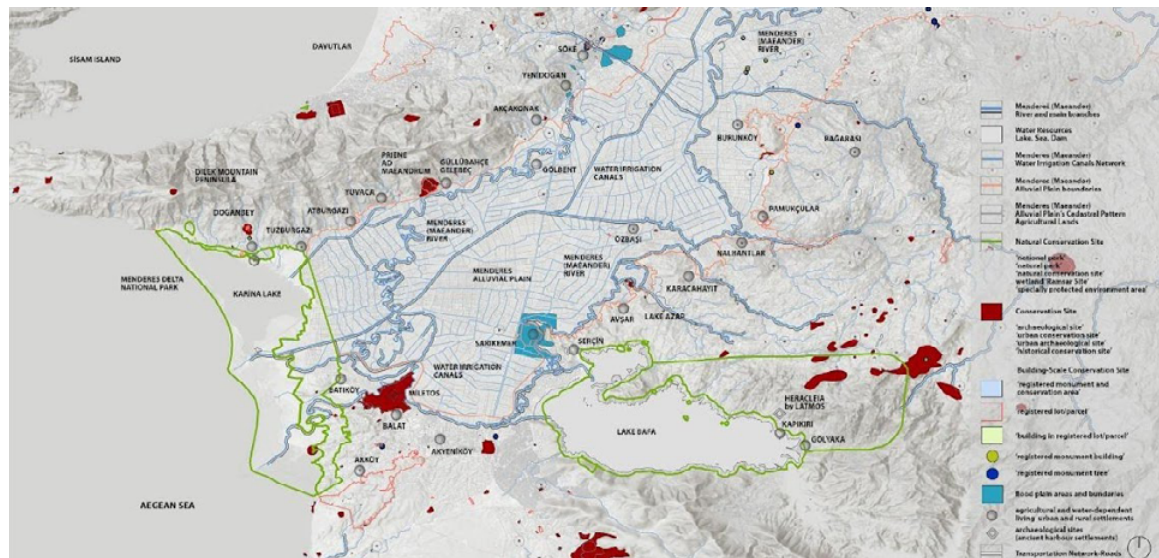
The Menderes River landscape heritage pattern encompasses multi-scale and multi-layered physical transformations, narratives, perceptions and dynamic human and natural forces. To (re)connect water-related links and heritage sites, the components of the natural, historical, cultural and constructed landscape and the network of relationships among them are systematically analyzed with a spatio-temporal, multi-layered, multi-scale and multi-narrative approach referred to as “landscape biography” (fig. 5). This holistic approach offers a comprehensive perspective on how these relationships overlap, correspond and form interconnected networks; it highlights the significance of water not only as a physical resource but also as a cultural and mnemonic agent.

Future Preservation and Management Issues and Challenges to the Menderes Delta

The conservation and management of the Menderes River and its delta involve numerous challenges. One of the most important challenges is the integration of natural and cultural heritage, since both nature and culture are in a state of flux. Furthermore, the delta and its surrounding landscape are increasingly vulnerable to the impacts of climate change, including risks posed by drought, floods, water scarcity and wildfires. Water-linked heritage and holistic management are crucial to the survival of local communities and for a sustainable and climate-compatible landscape.



^ Fig. 6 A holistic approach to the Menderes Delta as river landscape heritage: spatio-temporal, multi-layered, multi-scale and multi-narrative landscape biography (Source: Gökhan Okumuş, 2025).



^ Fig. 7 Menderes River landscape heritage information management and decision-support system (Source: Gökhan Okumuş, 2025. Basemap from Esri © OpenStreetMap, licensed under the Open Database License [ODbL]).

These environmental changes threaten the sustainability of the region's agricultural practices and the ecological integrity of the landscape, making it even more crucial to develop a holistic, climate-compatible approach to its conservation. Therefore, while remembering water as a creator, connector and integrator of various tangible and intangible components of the landscape, water-dependent relationships need to be renewed and enhanced. Reconnecting local communities to the Menderes Delta is only possible by understanding culture-nature coexistence and the values it has created over time.

The ongoing nature-culture divide in heritage conservation adds complexity, as it necessitates addressing differing legal, administrative and practical issues related to the conservation and management of the landscape. In that sense, the Menderes River landscape is a network of relationships connected to water: its presence, absence, scarcity and abundance; its changes in form and type and its overlapping and conflicting values and dilemmas have created new types of heritage. Natural environments, urban and rural settlements and archaeological sites that have been formed and reshaped by water and the Menderes Delta are conserved with different statuses today. These include a wide range, from natural and cultural heritage sites at the upper scale ("national natural park," "natural conservation site," "specially protected environment area," "protected area network" [PAN Parks], "Ramsar (wetland) site," "urban conservation site," "historical conservation site," "archaeological site") to conservation statuses at the building scale ("registered monument," "registered building," "natural monuments and assets," "monumental tree"), depending on different stakeholders and decision-makers at both the national and international level.

Considering contemporary approaches, decisions and plans, cultural heritage and special conservation areas at the site are defined as heritage without establishing a connection to water and the Menderes. Today, it is not possible to understand the water-linked relationships between these conservation sites, heritage places and ancient settlements, which maintain "Maeander" only in their names.

In that sense, the Menderes River landscape, which physically connects geographies, settlements and heritage places of different conservation statuses and characters, makes it possible to connect methodologies and scales of different disciplines with conservation efforts within the scope of this research approach, while also critically questioning the definition and boundaries of cultural heritage. Accordingly, the sustainable conservation and management of this landscape heritage as a water-related system, with the Menderes Delta at the core, is facilitated by remembering and reconnecting water-related heritage places. This research approaches the Menderes River landscape heritage for future preservation and management as a dynamic process shaped by the landscape's multi-layered nature – including natural-ecological dynamics, sociocultural aspects, stories, socioeconomic, institutional and governmental developments – with the 'water' acting as an inter-temporal and inter-scale connector (fig. 7).

Conclusion

The Menderes Delta is a multidimensional, and complex landscape involving many different relationships between humans and the environment. These relationships have been maintained across space and time and have natural, physical, spatial, sociocultural

dimensions. The Menderes River, which was considered sacred, has lost its cultural significance and meaning. However, it remains vitally important to the region, and a fundamental part of the ecosystem and agriculture-based economy. Since the connection to the river has been lost, urban and rural settlements, as well as archaeological sites, have disconnected from one another and from the main creator of the landscape, the Menderes. The landscape biography approach described here provides an understanding of such complex landscapes by revealing how the landscape transforms and changes over time, the components of different layers and the role of various actors in reshaping them. The approach can be helpful in developing a variety of sustainable management approaches. It makes it possible to reconstruct fragmented water-related relationships and use water as a connector to develop principles and strategies to achieve more holistic and effective management of the landscape. In this regard, water-related and river landscape heritage should be identified and the complex legal and administrative framework for conservation should be strengthened. Conservation and management approaches should emphasize nature-culture unity and collaboration among actors and stakeholders. Adopt a holistic approach to challenges: economic issues (e.g., pertaining to agriculture, tourism and fisheries) should be considered together with ecological and heritage dimensions and plans for adaptation to climate change should be integrated with heritage management.

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