RECONSIDERING ‘RIVERS’ AS INITIATORS, GENERATORS AND TRANSFORMERS OF HERITAGE PLACES: THE RIVERINE LANDSCAPE OF MENDERES (MAEANDER)

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ABSTRACT

RECONSIDERING 'RIVERS' AS INITIATORS, GENERATORS AND TRANSFORMERS OF HERITAGE PLACES: THE RIVERINE LANDSCAPE OF MENDERES (MAEANDER)

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Rivers, as powerful natural agents, have historically been not only sources of life but also creators and connectors of culture. From ancient civilizations that shaped agricultural lands and built cities along riverbanks to modern landscapes, rivers have remained central to the identity and evolution of human societies. This thesis reconceptualises water (-related) and riverine landscapes as heritage by positioning rivers as initiators, generators, and transformers of heritage places. As landscapes evolve, water-related relationships shaped by the river's fluctuating presence, scarcity, and abundance generate new heritage forms and patterns while increasing the complexity of their conservation and management. Moving beyond fragmented understandings of heritage, it develops a holistic framework that understands riverine landscapes as multidimensional, multiscalar, and evolving socio-ecological and socio-cultural systems.

The research examines the Menderes (Maeander) River Delta as riverine landscape heritage, regarding the river as a creator and connector of natural, spatial, cultural,

economic, and managerial relationships. Over time, relationships between settlements and the river have been transformed by natural and ecological processes, delta formation, water management, human interventions, economic development, and institutional changes. Consequently, the river has shifted from being perceived as a life-giving and culturally significant entity to being understood primarily as an economic and technical resource within fragmented conservation, management, and planning approaches.

Accordingly, the thesis develops a holistic heritage definition and approach, providing a conceptual and methodological framework for understanding relationships between rivers, landscape layers, dynamics, driving forces, authors, and heritage values across spatial and temporal dimensions. It repositions the Menderes River as the main creator of the landscape while functioning as a connector that reintegrates ecological, spatial, cultural, and managerial contexts. Beyond its theoretical and methodological contributions, the thesis proposes site-specific recommendations, guideline documents, and a GIS-based heritage information and decision support system, contributing to the understanding, conservation, and management of water heritage and riverine landscapes across diverse geographical and cultural contexts.

Keywords: Water and Landscape Ensemble, Water Heritage, Riverine Landscape Heritage, Sustainable and Holistic Heritage Conservation and Management, Menderes (Maeander) River Delta.

ÖZ

MİRAS ALANLARININ KURUCUSU, ÜRETİCİSİ VE DÖNÜŞTÜCÜSÜ OLARAK 'NEHİRLER' ÜZERİNE YENİDEN DÜŞÜNMEK: MENDERES (MAEANDER) NEHİR PEYZAJI

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Nehirler, güçlü doğal varlıklar olarak, tarih boyunca yalnızca yaşam kaynakları değil, aynı zamanda kültürün yaratıcıları ve bağlayıcıları olmuştur. Tarımsal alanları şekillendiren ve kentlerini nehir kıyılarında kuran uygarlıklardan günümüz peyzajlarına kadar nehirler, insan toplumlarının kimliği ve gelişiminde merkezi bir rol oynamıştır. Bu tez, nehirleri miras mekânlarının kurucuları, üreticileri ve dönüştürücüleri olarak konumlandırarak su ve nehir peyzajlarını miras olarak yeniden kavramsallaştırmaktadır. Peyzajlar zaman içinde dönüşürken, nehrin değişken varlığı, kıtlığı ve bolluğu tarafından şekillenen suyla ilişkili etkileşimler yeni miras biçimleri üretmekte ve aynı zamanda bunların korunması ve yönetiminin karmaşıklığını artırmaktadır. Parçalı miras anlayışlarının ötesine geçen bu çalışma, nehir peyzajlarını çok boyutlu, çok ölçekli ve sürekli dönüşen sosyo-ekolojik ve sosyo-kültürel sistemler olarak ele alan bütüncül bir çerçeve geliştirmektedir.

Araştırma, Menderes (Maeander) Nehir Deltası'nı nehir peyzajı mirası olarak ele almakta ve nehri doğal, mekânsal, kültürel, ekonomik ve yönetsel ilişkilerin

yaratıcısı ve bağlayıcısı olarak değerlendirmektedir. Zaman içinde yerleşimler ile nehir arasındaki ilişkiler; doğal ve ekolojik süreçler, delta oluşumu, su yönetimi uygulamaları, insan müdahaleleri, ekonomik gelişmeler ile kurumsal ve idari değişimler tarafından dönüştürülmüştür. Bunun sonucunda nehir, yaşam veren ve kültürel açıdan anlamlı bir varlık olarak algılanmaktan uzaklaşmış; parçalı koruma, yönetim ve planlama yaklaşımları içinde öncelikle ekonomik ve teknik bir kaynak olarak değerlendirilmeye başlanmıştır.

Bu doğrultuda tez, bütüncül bir miras tanımı ve yaklaşımı geliştirerek nehirler, peyzaj katmanları, dinamikleri, itici güçleri, peyzaj yazarları ve miras değerleri arasındaki ilişkilerin mekânsal ve zamansal boyutlarda anlaşılmasına yönelik kavramsal ve metodolojik bir çerçeve sunmaktadır. Bu kapsamda Menderes Nehri, peyzajın temel kurucusu ve yaratıcısı olarak yeniden konumlandırılırken, aynı zamanda ekolojik, mekânsal, sosyo-kültürel ve yönetsel bağlamları yeniden bütünleştiren bir bağlayıcı işlevi üstlenmektedir. Çalışma teorik ve yöntemsel katkısının yanı sıra alana özgü öneriler, rehber dokümanlar ve CBS tabanlı bir miras bilgi ve karar destek sistemi önererek su mirasının ve nehir peyzajlarının farklı coğrafi ve kültürel bağlamlarda anlaşılması, korunması ve yönetilmesine katkı sağlamaktadır.

Anahtar Kelimeler: Su ve Peyzaj Birlikteliği/Bütünlüğü, Su Mirası, Nehir Peyzajı Mirası, Sürdürülebilir ve Bütüncül Miras Koruma ve Yönetimi, Menderes (Maeander) Nehir Deltası.

To my family

and my beloved wife Esra

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CHAPTER 1

INTRODUCTION

"Water is everywhere before it is somewhere… It is a terrain that challenges assumptions, reminds us of our fallibility, accommodates complexity, and locates our horizon." (Cunha, Mathur, 2014: x–xi)

Rivers, as powerful natural and ecological agents, have historically been sources of life as well as the creators, generators, and connectors of culture. They constitute one of the primary forces shaping human civilization, influencing patterns of agricultural production, urban formation, socio-cultural organization, and economic development. Considering their vital role, rivers have played a crucial part in fostering diverse social, cultural, economic, and political heritage components across different geographies. Throughout history, the need for and management of water resources have acted as decisive driving forces behind spatial transformation, social structuring, and cultural production, fostering diverse forms of heritage across different geographical contexts. From early civilizations that organized agricultural lands and established settlements along river corridors to contemporary landscapes that continue to evolve in relation to fluvial systems, rivers have persistently remained central to the identity, sustainability, and long-term evolution of human societies.

Beyond their material and ecological functions, rivers embody a reciprocal relationship between natural processes and human interventions, continuously shaping and ever-changing landscapes over time. This interaction renders riverine systems inherently dynamic, positioning them as ever-changing and living entities. The role of rivers as mediators of landscape and landscape heritage change becomes particularly evident when examined through the lens of long-term interactions between environmental processes and human responses. Over extended temporal horizons, river dynamics, such as sedimentation, progradation, seasonal variability,

scarcity, and abundance, have directly influenced the orientation of built environments, the location and morphology of settlements, the development of harbors and infrastructures, and the emergence of hydraulic and water management systems. These processes have also catalyzed architectural, technological, and industrial innovations, embedding adaptive responses into the physical fabric of landscapes and the spatial logic of urban forms. As water-related relationships evolved, societies continuously negotiated their engagement with rivers, producing layered landscapes in which ecological, spatial, cultural, and narrative dimensions are inseparably intertwined (Figure 1.1).

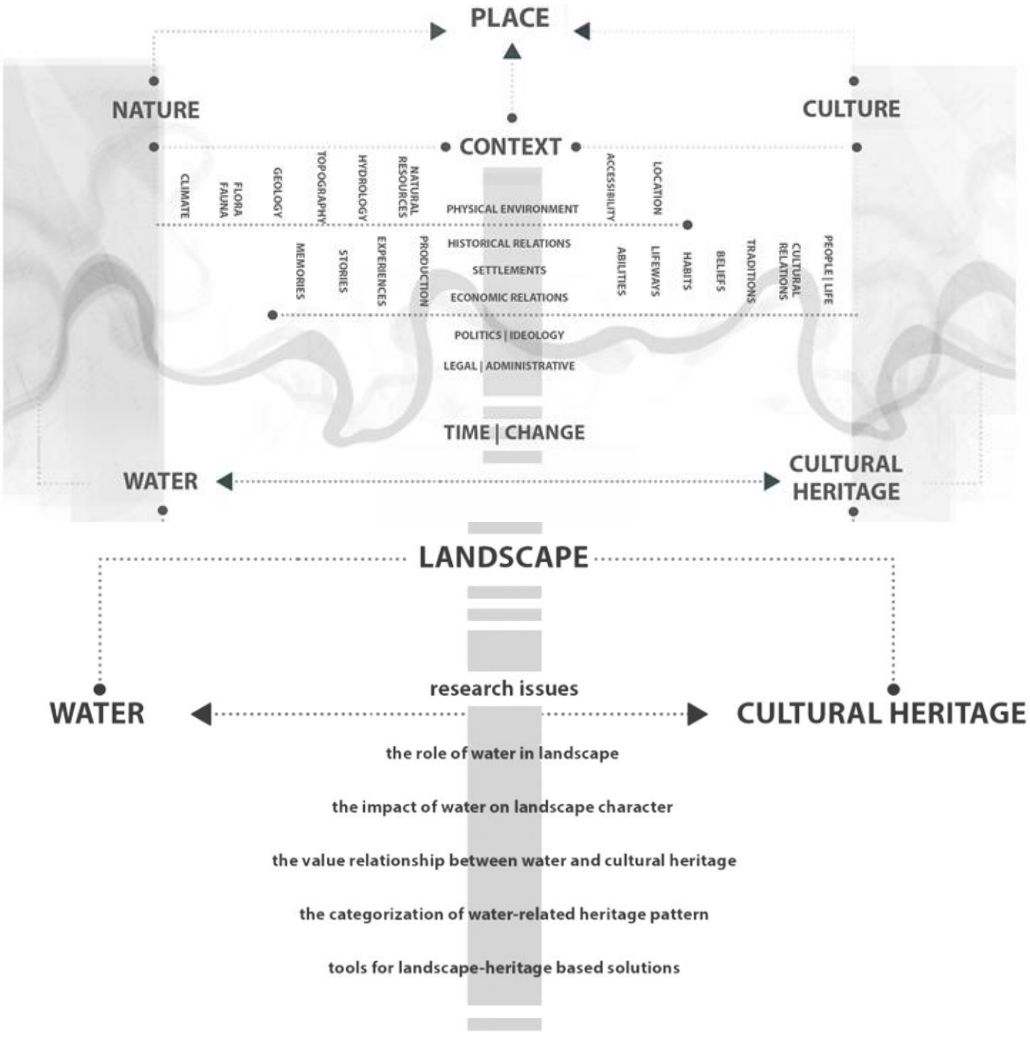


Figure 1.1 The Research Issue of the Thesis: “Water/River” as Initiator, Generator, and Transformer of Heritage and Landscape (Author, 2026)

However, beyond their generative and structuring roles, rivers also act as transformative, disruptive, and at times destructive forces, reshaping landscapes through flooding, erosion, sedimentation, and shifting courses. These processes change land-use patterns and socio-spatial structures, and fragment landscape layers, revealing the dual nature of rivers as both life-sustaining and risk-producing systems. Riverine landscapes as a dynamic ensemble are shaped by traces that are erased, transformed, and forgotten. Floods, channel shifts, sedimentation processes, and human interventions remove certain spatial traces while triggering new processes of transformation; this dynamic continually redefines the landscape. In this context, the river should be understood not merely as a producer of landscape heritage but as an active transformative force through which certain layers are continually inscribed, and others erased. Accordingly, the river is reconfigured as a dynamic transformer that simultaneously accumulates and effaces, remembers and forgets, and operates as both an initiator and generator of the landscape.

Rethinking water/river not as a passive backdrop but as an initiator, generator, transformer, and living mediator agent within landscape and heritage offers a critical shift in perspective. Natural and ecological processes, such as hydrological regimes, sedimentation patterns, and morphological transformations, intersect with historical and physical reflections embedded in settlement structures, infrastructures, and built environments. At the same time, contextual and spatial relations, together with cultural and narrative expressions, continuously reinterpret and reconstruct landscapes, embedding water-related practices, memories, and meanings into the spatial fabric. Such a perspective allows for tracing the reciprocal and cumulative interactions between landscape layers, dynamics, and driving forces, ranging from natural and ecological processes to historical, physical, cultural, and contextual expressions. By foregrounding the connector and integrator role of rivers in shaping landscape heritage, this approach emphasizes river landscapes as multidimensional, multiscalar, multiauthor, and continually reconstituted through the complex interplay of nature, culture, and time (Figure 1.1).

The Menderes (Maeander) River in southwestern Anatolia presents a distinctive example of how a river can shape both natural and cultural landscapes, offering a distinctive case for understanding and approaching riverine landscapes as heritage. The Menderes River (historically the Maeander or Maeander, from Ancient Greek: Μαίανδρος, Maíandros) is renowned for its winding course and gives its name to the common term "maeander", used to describe such characteristic bends in rivers. The river has played a crucial role in the birth of civilizations and in the continuous settlement history of this region. The river has played a crucial role in the birth of civilizations and in the continuous settlement history of this region. From antiquity to the present day, the Menderes has been a determining factor in shaping agricultural production, settlement, trade, and cultural practices, while also revealing the multilayered structure of the landscape as the fundamental element that continuously transforms and reshapes it. This multilayered nature of landscape provides a research ground for understanding both the nature–culture integrity and the dynamics of continuity and change in riverine landscapes as heritage.

In this respect, the Menderes riverine landscape brings together a wide range of values, natural, ecological, urban and architectural, archaeological, aesthetic, socio-cultural, socio-economic, technical, and technological, while simultaneously embodying the ever-changing processes related to water and the river itself. In this regard, the Menderes River and landscape possess a continuous history of water use, water management, and infrastructure that has developed over centuries. As the landscape evolved, its water-related relationships, marked by the river's fluctuating presence, scarcity, and abundance, have given rise to new heritage forms, further complicating management of this multi-layered landscape.

Addressing this complexity is possible through a sustainable and holistic heritage conservation and management framework that is multi-scalar, multi-layered, and multidimensional. In this sense, the research aims to reframe the rivers as 'initiators, generators, transformers, and connectors and catalysts' of landscape heritage and to recontextualise it within the scope of riverine landscape heritage. Within this framework, the thesis seeks to reconsider riverine landscapes as heritage through the

holistic approach developed around the Menderes River Delta. This study presents a holistic heritage framework that integrates the spatial, contextual, temporal, cultural, and biographical dimensions of heritage and landscape ensemble, while critically examining the boundaries and definitions of the concepts of heritage and landscape. Consequently, the riverine landscape heritage approach developed through the Menderes River Delta case aims to provide both theoretical and methodological contributions to the conservation and management of landscape heritage.

1.1 Definition of the Problem

The research structures the problem definition under two main bodies. The first concerns the theoretical and conceptual challenges within heritage and riverine landscape conservation and management. Building upon this reference, it concretizes the conceptual and methodological issues alongside the challenges observed in the conservation and management processes of the Menderes River Delta as a riverine landscape heritage. Within this framework, the central problem addressed by the study is the fragmented landscape heritage approach, both in theoretical and methodological terms. Accordingly, unless a comprehensive understanding of landscape heritage definition and framework is developed that integrates the nature–culture relations, the spatio–temporal layers, dynamics, and the multi-author nature of landscape heritage across scales, riverine landscapes will continue to be approached in a fragmented and disconnected way.

Since the second half of the twentieth century, the field of heritage and landscape conservation has evolved beyond approaches focused only on the conservation of monumental or ‘valuable’ structures, expanding its scope to encompass notions such as integrity, context, and community participation. Despite these advancements, several theoretical and methodological issues remain unresolved today. Above all, conservation literature and practices continue to be shaped under the shadow of the nature–culture dichotomy. This fragmented perspective persists at both institutional and methodological levels: natural areas are governed through environmental

policies, while cultural values are managed through monument- and archaeology-oriented conservation frameworks. Such a division renders invisible the holistic character of landscapes as socio-ecological, socio-spatial, and socio-cultural systems.

The processes of change and transformation over time inherent in landscapes, as well as the evolutionary dynamics generated by natural and social processes, are not sufficiently considered within current approaches. This oversight creates a significant gap, particularly in systems such as riverine landscapes that are characterized by continuous change. The approaches developed within this context tend to be fragmented and one-dimensional: at times they focus on broad spatial scales, rendering local and micro-scale dynamics invisible; at other times they succeed in analytically explaining processes of transformation yet fail to translate them into practical management tools; and in some cases, although they succeed in producing multilayered narratives, they remain limited in generating future-oriented foresight. As a result, the conservation and management of riverine landscapes as heritage continue to show fragmentation, discontinuity, and, in many cases, disciplinary disconnection.

The Menderes River has functioned far beyond providing natural and environmental significance for the history of agriculture, transportation, and settlement; it has served as a cultural generator and connector that embodies symbolic meanings, sustains rituals, and represents the vital relationships between humans and the natural environment, thereby creating a riverine landscape. 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.

Today, it is now perceived primarily as an economic resource and, through a technical and economic perspective, framed by concepts such as irrigation management, flood control, and environmental challenges. 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, the Menderes River, which is crucial to the landscape and the network of settlements. It is largely perceived today merely as an 'irrigation channel', a 'boundary', and a 'functional corridor'. The symbolic and cultural meanings once attached to the river have been replaced by industrial and economically driven narratives. Accordingly, the Menderes River Delta is under multiple pressures. Hydrological interventions (dams, irrigation networks, canals, irrigation regulations), intensive agricultural use (monocultural farming, irrigation systems), urbanization, and tourism pressures have disrupted the river's natural flow and the integrity of the landscape. These threats have transformed environmental and ecological systems and cultural and social aspects, significantly undermining the river's characteristics as a 'landscape heritage'. In this regard, the Menderes River, as the main initiator and generator agent shaping the continuous settlement history of the basin, has largely lost its cultural significance today. With the loss of the landscape heritage ensemble, the landscape heritage has drifted away both from its constituent agent and from the river itself, the original formative entity, producing disconnected stories of its own.

Conservation and management of the Menderes River Delta as a riverine landscape face challenges of contextual and managerial fragmentation as well. Current studies on the Menderes riverine landscape remain largely confined to environmental planning or archaeological research. Investigations focusing on the basin primarily address environmental change processes, agricultural production dynamics, morphological formations in the delta, and the ancient cities or archaeological sites in the region. However, a considerable portion of these studies does not approach the

area's cultural and spatial continuities, the production of local knowledge, or the socio-cultural relationships established with the river from a holistic perspective. Yet, examples that address riverine landscapes, particularly those like the Menderes River Delta, which exhibit both natural and cultural continuity, within an integrated heritage management framework, remain extremely limited. This situation highlights the necessity of developing a new approach and heritage framework that brings together critical, participatory, multilayered, multidimensional, and multiscalar approaches for the conservation of riverine landscape heritage.

1.2 Research Question(s), Aim and Scope of the Thesis

This research aims to develop a holistic approach to the conservation and management of riverine landscapes as heritage by structuring the river as a key connective and catalyst agent, following three main research questions and sub-relevant questions (Figure 1.2):

RQ1. Can water/river, the component that initiates, generates, re-shapes, and transforms landscapes, be utilized as a connective and integrative agent and tool in the conservation and management of landscape and cultural heritage? If so, how?

- In what ways is the reciprocal interrelationship between heritage and the water/river negotiated and manifested in the landscape heritage, and how does this relationship initiate, generate, and connect heritage places across natural, physical, spatial, temporal, socio-cultural, biographical, socio-economic, and managerial dimensions?
- How can water/river (-related) heritage and landscape heritage be conceptually reframed to reveal water/river's role as a connector between natural, cultural, spatial, and social layers and dynamics?
- What kinds of heritage sources, narratives, and legal, managerial, and institutional frameworks are utilized to understand, interpret, and conserve water/riverine landscape heritage?

RQ2. Which methods and tools can be employed within the riverine landscape heritage conservation and management approach? How can landscape and cultural heritage values, approaches, and tools be integrated through water-related heritage places and landscape heritage?

- How is the relationship between natural and cultural heritage negotiated in landscapes shaped by water/river dynamics, and how can the values, challenges, and limits associated with this interplay be identified and interpreted?
- Which analytical, spatial, and participatory tools are most effective in identifying, assessing, and representing the multi-layered values and dynamics of landscape heritage through water/river?
- How can authors, local landscape communities, and everyday practices be incorporated into conservation and management processes for riverine landscapes? How can landscape and cultural heritage approaches be methodologically integrated through water-related heritage and riverine landscape frameworks?

RQ3. How can conservation and management approaches, tools, and strategies be developed within the framework of local landscape communities, relevant decision-makers, decision-making mechanisms, and policy frameworks? During the development and implementation of these approaches, tools, and strategies, how can fragmented decision-makers, mechanisms, and frameworks be effectively integrated?

- How do water/river dynamic processes bring together or separate local people, heritage, and cultural practices? How do authors such as experts, locals, and decision makers interact with these reciprocal relations and interactions?
- What mechanisms and policies can enable the connection and integration of fragmented institutional frameworks and decision-making processes into a coherent and holistic conservation and management approach for riverine landscape heritage?

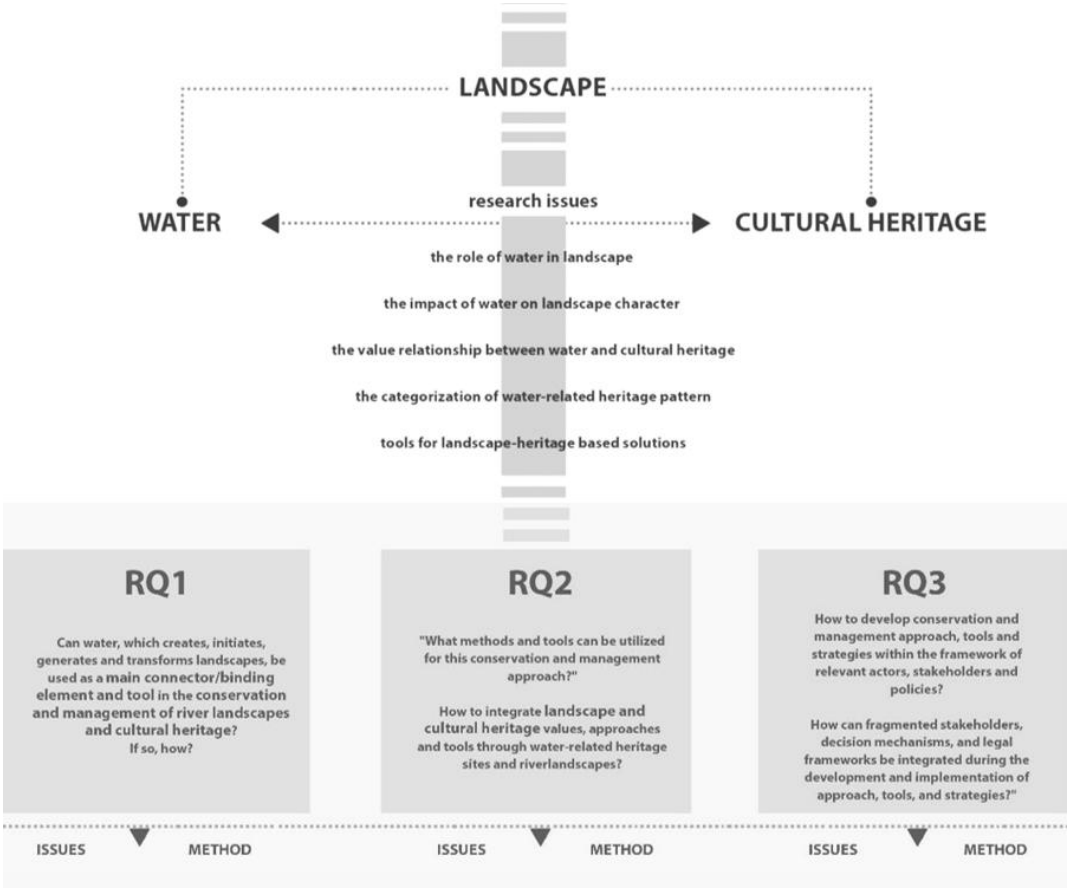


Figure 1.2 The Research Question(s) of the Thesis (Author, 2026)

In that sense, positioning the river as a 'connector agent and tool' requires, at the theoretical level, a heritage redefinition and reframe of the nature–culture integrity and river and landscape ensemble, and, at the practical level, the recontextualization of the fragmented contexts of the Menderes River Delta as riverine landscape heritage within a holistic framework. The research questions which tools can be employed for the understanding and evaluation of riverine landscapes as heritage. In today's era of multiple crises, processes of environmental and ecological change and degradation, unplanned development, fragmented conservation statuses, and lack of holistic managerial processes are intensifying pressures on riverine landscapes, making it increasingly difficult to perceive and manage heritage as a whole. Accordingly, the research conducts multi-scalar and multi-dimensional analyses of heritage places shaped through the interaction between the river's natural flow

regime and temporal dynamism. Examining the contextual and spatial changes in the landscape structure alongside the concept of time allows an understanding of how the structure and patterns of the landscape have changed across historical periods and processes. This analysis enables an exploration of how changes have influenced physical, spatial, socio-cultural, socio-economic, legal, and managerial processes, while also revealing general trends and potential future projections. In this regard, integrating the layers, dynamics, and driving forces of the landscape structure with spatial–temporal datasets holds critical importance.

The thesis offers a critical holistic heritage definition and framework referred to as the '***Riverine Landscape Heritage' Approach***, which is developed by critically thinking four theoretical bases: the Nature–Culture Integrity Approach, the Landscape Approach, the Spatial–Temporal Approach, and the Landscape Biography Approach. Considering the limited number of studies in Türkiye, the riverine landscape heritage approach offers a holistic perspective and framework on conservation by overcoming the nature–culture divide and encompassing the cultural and experiential dimensions of place, addressing an extensive geography through spatial–temporal analyses that integrate natural, environmental, physical, socio-cultural, economic, legal, and managerial components. Accordingly, the thesis presents a multiscalar and holistic heritage definition and framework that critically engages with and integrates different paradigms in the existing heritage conservation and landscape literature. Riverine landscape heritage challenges and reopens the discussion on contemporary heritage definitions, scales, and methodologies.

In that sense, the riverine landscape heritage approach brings together transdisciplinary concepts and approaches to design a multidimensional and integrated proposal for the conservation of riverine landscapes. Furthermore, it enables the sustainable collection, compilation, storage, analysis, presentation, and monitoring of multilayered, multiscalar, and transdisciplinary spatial–temporal data assembled through the designed holistic GIS-based heritage information and management system. This frame provides both scientific and methodological contributions regarding how such a multidimensional and multiscalar heritage place

should be addressed, while also offering a holistic and sustainable understanding and evaluation for decision-making mechanisms. The proposed approach creates transdisciplinary, multiscalar, multidimensional, and holistic research environments by combining disciplines such as geography, natural heritage, landscape, history, archaeology, and cultural heritage. It thus provides both theoretical and practical elaborations of the issues water–river (-related) landscape and riverine landscape heritage, which remain underdeveloped in the planning and conservation literature.

This approach also contributes to several prioritized policy recommendations for decision-making mechanisms: strengthening the understanding and recognition (identifying spatialities, temporalities, authors and landscape components, layers, dynamics, driving forces, indicators and of riverine landscapes); valuation and assessment (analysing the riverine landscape through values, challenges, potentials, and tensions); interpretation and characterization (revealing the distinctive riverine landscape character, character areas, and vulnerabilities and risks and future scenarios of the riverine landscapes) of riverine landscape and holistic heritage, and the fragmented legal, administrative, and managerial framework.

Natural preservation and management areas fall under the responsibility of environmental and agricultural institutions, while cultural areas are managed by heritage and tourism authorities; yet, horizontal and vertical coordination among these institutions is rarely achieved. Furthermore, the participation of local communities and civil society often remains at a symbolic level. In the Menderes River Delta, irrigation unions, municipalities, environmental and forestry departments, museum directorates, universities, and local producer communities act as decision-making and implementing authors at different scales. However, most of these authors operate according to their sectoral priorities, and there is no comprehensive, multi-author management approach. Therefore, in developing conservation and management strategies, establishing participatory mechanisms and ensuring the integration of policies are of crucial importance. Ultimately, the approach aims to reconnect and reintegrate the fragmented contexts and relationships with water, reactivating the lost interconnections, and to use water as a connective

agent and tool for developing principles and strategies toward a stronger and more holistic management of the landscape.

Within this scope, the thesis aims to develop a holistic understanding and evaluation framework and approach to riverine landscapes as heritage, taking the Menderes River Delta as a representative case study through which this approach is articulated and examined. This research proposes a methodological and conceptual approach that can be expanded and adapted beyond the Menderes River Delta, serving as a framework for the understanding, evaluation, conservation, and management of riverine landscape heritage. By applying and exemplifying the riverine landscape heritage approach through the case of the Menderes River Delta, the thesis generates a set of concrete and transferable outcomes. These include, foremost, datasets that critically integrate scientific and methodological approaches through a critical perspective, alongside guideline documents, governance proposals, conservation strategies, and sustainable management policies developed within this framework. In this context, the thesis also introduces the definition and framework of Menderes Riverine Landscape Heritage ***'MeRiScape'*** and heritage information management and decision-support system platform, **'*MeRiΔGIS*'**, structured through a spatial information system and grounded in the empirical and analytical findings of the Menderes River Delta. Furthermore, the thesis articulates a comprehensive vision, a set of principles, strategies, and site-specific proposals and projects, which are designed to serve both local landscape communities and multi-scalar decision-making processes at national and local levels.

1.3 Methodological Framework of the Thesis

The theoretical foundation and methodological framework of the research are based on a critical analysis, interpretation, and evaluation of the four main frameworks in the literature on heritage and landscape, leading to the presentation of a holistic approach. The **'Nature-Culture Integrity Approach'**, which opposes fragmented approaches to natural and cultural heritage, simultaneously evaluates water's role as both the initiator and creator of the natural environment and ecosystem, as well as

the cultural landscape. The **'Landscape Approach'** considers the landscape as an integrated, multi-layered heritage place where natural, ecological, physical, spatial, social, and cultural processes converge. The **'Spatio-Temporal Approach'** examines the historical transformation processes of the landscape, uses and functional changes, and layers of meaning within temporality. Finally, the **'Landscape Biography Approach',** which encompasses these frameworks, emphasises the life history of the landscape in time and its production and reconstruction processes through the perceptions, narratives, stories, experiences, memories, and projections of landscape authors and temporalities.

Firstly, building upon this integrated theoretical background, the research shifts its focus toward the temporal complexity of riverine landscapes, where different layers of time coexist and interact. Riverine landscapes should be understood through the coexistence of multiple temporal layers. In this regard, the concept of longue durée, developed by Braudel, provides a critical theoretical foundation for understanding the long-term, slowly evolving structural characteristics of landscapes. Riverine landscapes, when considered through geomorphological formations, water regimes, and settlement continuities, embody a deep historical depth extending across time and can thus be interpreted through a **longue durée** perspective (Braudel, 1966). However, relying solely on such long-term structures risks overlooking the landscape's dynamic, fragile, and often rapidly changing character.

Therefore, a more comprehensive temporal reading requires the integration of different temporal planes that capture both continuity and change. The emphasis on the multi-temporal structure of the landscape, together with the focus on longue durée, necessitates the incorporation of other temporal planes—**conjonctures** and **l'histoire événementielle**—into the analysis. Accordingly, the different layers of "geographical time, social time, and individual time" are addressed in conjunction (Braudel, 1966). These temporal planes are associated with different types of authors. Macro-scale temporalities are responsible for long-term structural transformations within the landscape, while meso-scale plane, by tracing the histories of major land owners and local decision-making families, represents the

conjuncture plane, understood as the history of groups and social formations (Kolen & Renes, 2015; Crumley et al., 2017; Shakespeare, Russell-O'Connor, 2022) (Figure 1.3).

Extending these temporalities further, the analysis also incorporates micro-scale temporalities to capture everyday and event-based transformations. Therefore, the temporal analysis of riverine landscapes also requires attention to conjuncture, referring to medium-term processes such as economic cycles, agricultural practices, demographic shifts, and regional transformations that reshape the landscape over time. Micro-scale temporalities represent the l'histoire événementielle plane, encompassing local events, mnemonic places, and individual life cycles. In this regard, the short-term temporal layer defined as l'histoire événementielle plays a critical role in understanding discontinuity and fragmentation in the landscape, driven by sudden and high-impact events such as floods, droughts, infrastructure interventions, or political decisions. Considering these temporal layers together enables a more comprehensive understanding of riverine landscapes through (dis) continuities and (dis) connections.

This multi-temporal perspective is closely intertwined with a multi-scalar understanding of landscape authors, who actively shape these processes across different levels (Kolen & Renes, 2015; Crumley et al., 2017; Shakespeare, Russell-O'Connor, 2022). Accordingly, for the multi-layered and multi-dimensional riverine landscapes, **upper-scale authors (macro-scale)** refer to institutions operating at national or international levels. These authors exert a structural influence on the landscape through legislation, governance frameworks, and large-scale interventions such as state planning, infrastructural investments, and land reclamation, and they often shape long-term landscape transformations. **Territorial and regional authors (meso-scale)** occupy an intermediate position, comprising regional and local decision-makers as well as local authors. Although their influence is geographically bounded, they play a critical mediating role by translating upper-level relations into practice and by implementing landscape-related decisions at the local scale. **Local authors (micro-scale)**, by contrast, encompass landscape communities and

everyday user groups whose actions are rarely reflected in formal records, yet whose cumulative practices leave significant material and cultural traces. Agricultural practices, land-use patterns and routines, and settlement characteristics and configurations constitute tangible expressions of lived experience and everyday interaction with the landscape. Accordingly, alongside upper-scale authors and interventions, everyday practices and local decision-making processes are equally decisive in shaping both the form and meaning of the landscape (Figure 1.3).

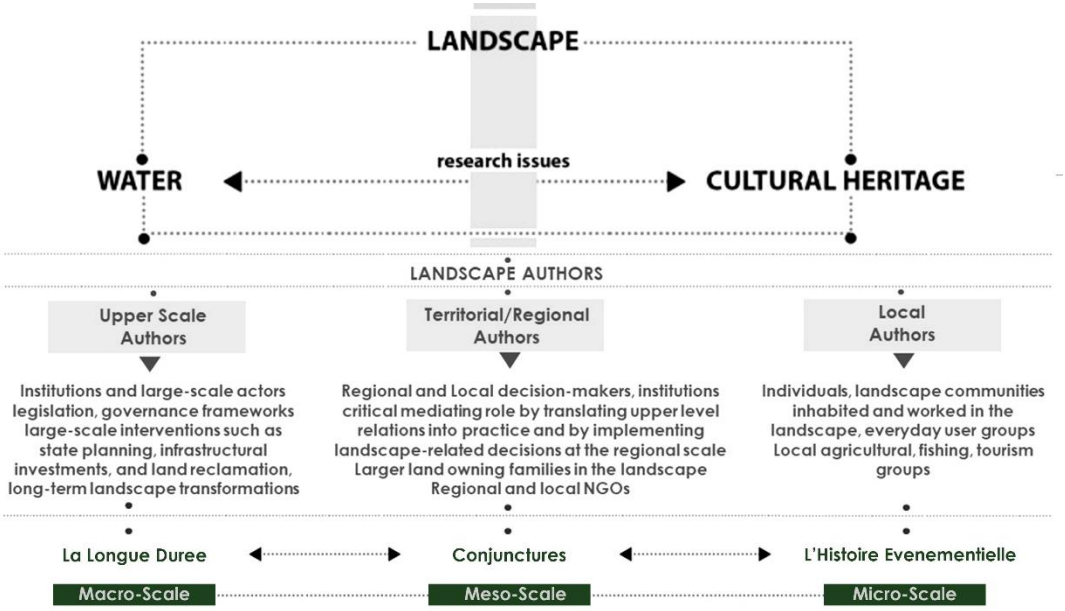


Figure 1.3 Categorization of the Landscape Authors and Temporalities of the Riverine Landscapes as Heritage (Author, 2026)

Within this multi-temporal, multi-scalar, and multi-author framework, the role of the river emerges as an initiator, generator, and transformer agent in riverine landscapes. In this context, the natural processes, historical accumulations, spatial reflections, and settlement patterns, modes of production, narratives, and managerial interventions observed in riverine landscapes clearly demonstrate that the river acts as a fundamental agent that initiates, generates, and transforms the landscape. The 'riverine landscape heritage' framework and approach developed within the scope of this research, as a holistic heritage definition, framework, and approach, provides

a comprehensive conceptual and methodological framework for understanding and managing riverine landscapes. One of the key issues of the approach developed in this research is the reconceptualization of the role of water/rivers within the landscape heritage. Accordingly, rivers are understood as: **initiators**, initiating and generating the emergence of settlements, production systems, and spatial organizations; **generators**, shaping the morphological structure of the landscape, land-use patterns, and spatial relationships; **transformers**, reconfiguring both natural and cultural processes over time.

In line with this perspective, the research further elaborates the multi-dimensional role of water/river within the landscape heritage. In this framework, water/the river is conceptualized as: an **source/entity**, forming the basis of natural, ecological system; a **relational component/interface**, generating human–place interactions, the production of meaning, and the processes of heritage formation and transformation; a **mediator/connector**, linking natural, physical, spatial, and socio-cultural layers within the integrity of the landscape (Figure 1.4). This multilayered role transforms water from being merely a natural resource into a catalyst that connects and integrates the diverse components of landscape and landscape heritage. In this context, water (-related) heritage is redefined not as a category limited to specific objects or structures, but as a relational heritage network shaped through the circulation, use, representation, and experience of water. Accordingly, riverine landscape heritage emerges through multiple water-related interactions, which continuously reproduce one another across natural, spatial, temporal, socio-cultural, and managerial dimensions (Figure 1.4).

To operationalize this conceptual framework, the research introduces an analytical structure based on interconnected agents. The framework ‘riverine landscape heritage’ approach addresses heritage and landscape through water (-related) and **riverine landscape layers, dynamics, driving forces, and indicators.** This structure enables the integrated analysis of the landscape. These layers are not independent; rather, they constitute an integrated landscape ensemble that is

continuously interacting and being reproduced through the water/river. The interactions among these layers generate the dynamics of the landscape (Figure 1.4).

In conclusion, the methodology developed in this research is grounded in a holistic and relational understanding of riverine landscapes as heritage, integrating multiple temporalities and scales into a holistic framework. By combining these, the thesis constructs a multi-scalar, multi-layered, multi-dimensional methodological structure that enables the simultaneous analysis of natural, physical, socio-cultural, narrative, and managerial dimensions of the riverine landscapes. This methodology operates through the identification and interpretation of riverine landscape layers, dynamics, driving forces, and indicators, while incorporating the roles of multi-scalar landscape authors across macro, meso, and micro levels. Within this framework, water/the river is treated as an active initiator, generator, transformer, and connector that structures both the analytical process and the interpretation of riverine landscape heritage. By integrating spatial analysis tools, qualitative data, and participatory methods, the methodology bridges fragmented knowledge systems and governance structures, offering a process-oriented and adaptable approach to conservation and management. In this sense, the proposed methodology provides a comprehensive tool for understanding the complexity of riverine landscapes, and a holistic heritage definition and framework that can be applied to different contexts for the integrated conservation and management of riverine landscapes as heritage.

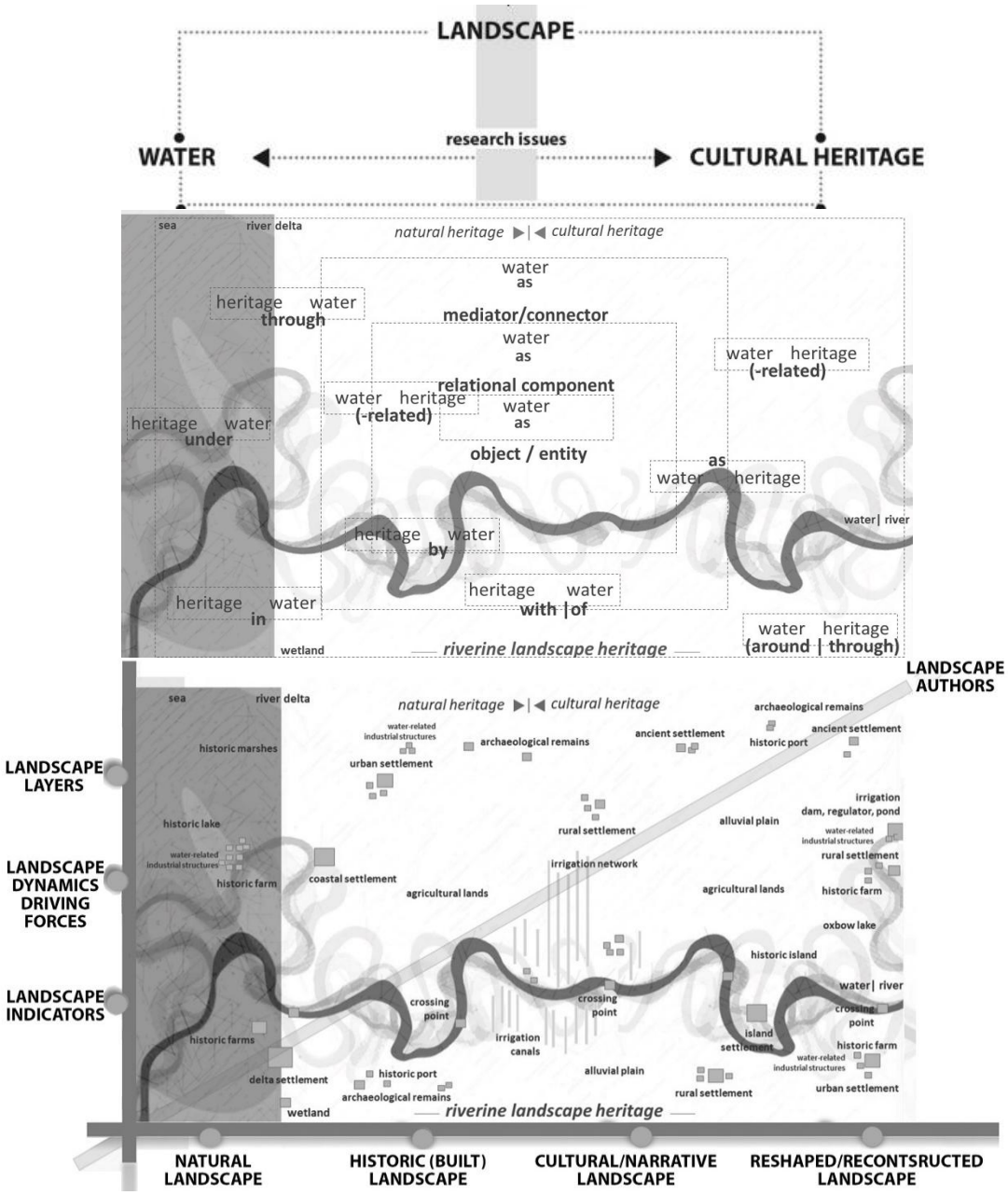
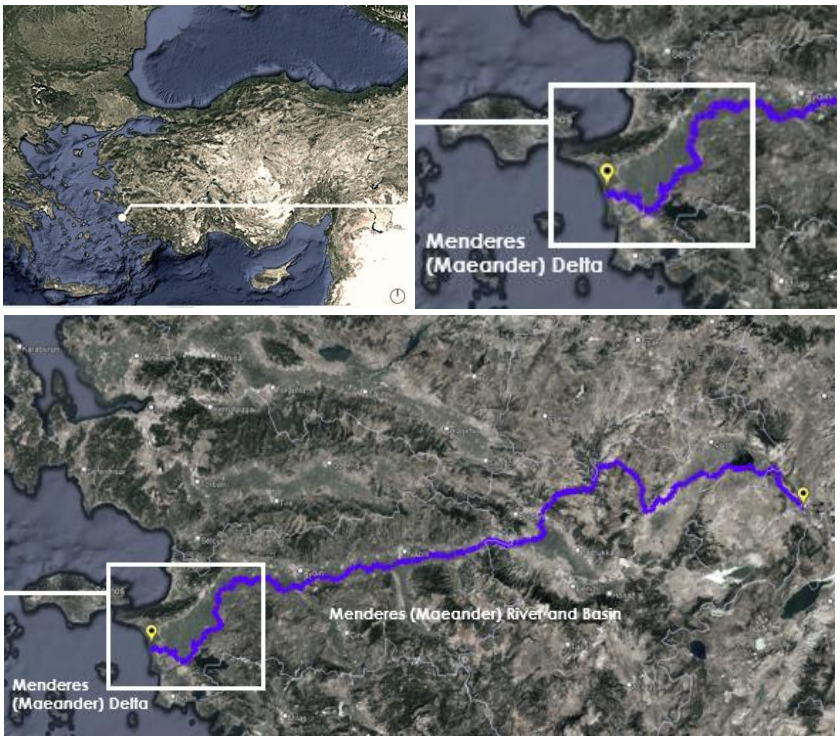


Figure 1.4 Riverine Landscape Heritage Approach: ' Heritage Pattern and Approach' that Addresses 'Water/River' as a Connector and Catalyst Agent/Tool for the Landscape and Heritage (Author, 2026)

The methodological structure of the thesis enables the conceptualization of water (-related) landscape and heritage, as well as riverine landscape heritage, thereby establishing the bases for the research's methodological and conceptual contribution. Furthermore, this chapter fosters an understanding of the multilayered, multiscalar,

multidimensional nature of landscapes, while also revealing the environmental and ecological challenges of today, the limitations of fragmented conservation and management policies, and the inadequacy of current approaches and planning frameworks among decision-making mechanisms. The Menderes[1] (Maeander) River Delta in southwestern Anatolia presents an example of how a river can shape both natural and cultural landscapes, offering a distinctive case for understanding water (–reated) / riverine landscapes as heritage (Figure 1.5).



[1]Throughout the dissertation, the statement "Menderes (Maeander) River Delta" is used to refer to the Büyük Menderes River Delta. However, there are three rivers in western Anatolia historically referred to by the name "Menderes", derived from the Greek Maiandros and the Latin Maeander, meaning "the place where waters bend." The river known as the "Old Menderes", which descends from Mount Ida (Kazdağları) in the northern Aegean, flows into the Dardanelles after feeding the Trojan Plain and gradually displacing ancient Troy away from the coastline, corresponds to the Skamandros of Homer's Iliad. The river later named the "Küçük Menderes", formerly known as Kaystros, originates in the Bozdağlar (ancient Tmolos) rising behind the district of İzmir, and follows a 175-kilometre route to the Aegean Sea. Among these rivers, however, the name "Menderes" in both scientific and historical literature primarily and originally refers to the Büyük Menderes River. As the longest river and the widest basin in western Anatolia, the Büyük Menderes and its basin have long been identified as the river associated with the name Menderes in historical and cultural sources.

Figure 1.5 Menderes (Maeander) River Basin and Delta in southwestern Anatolia in Türkiye (Author, based on Google Maps, 2026)

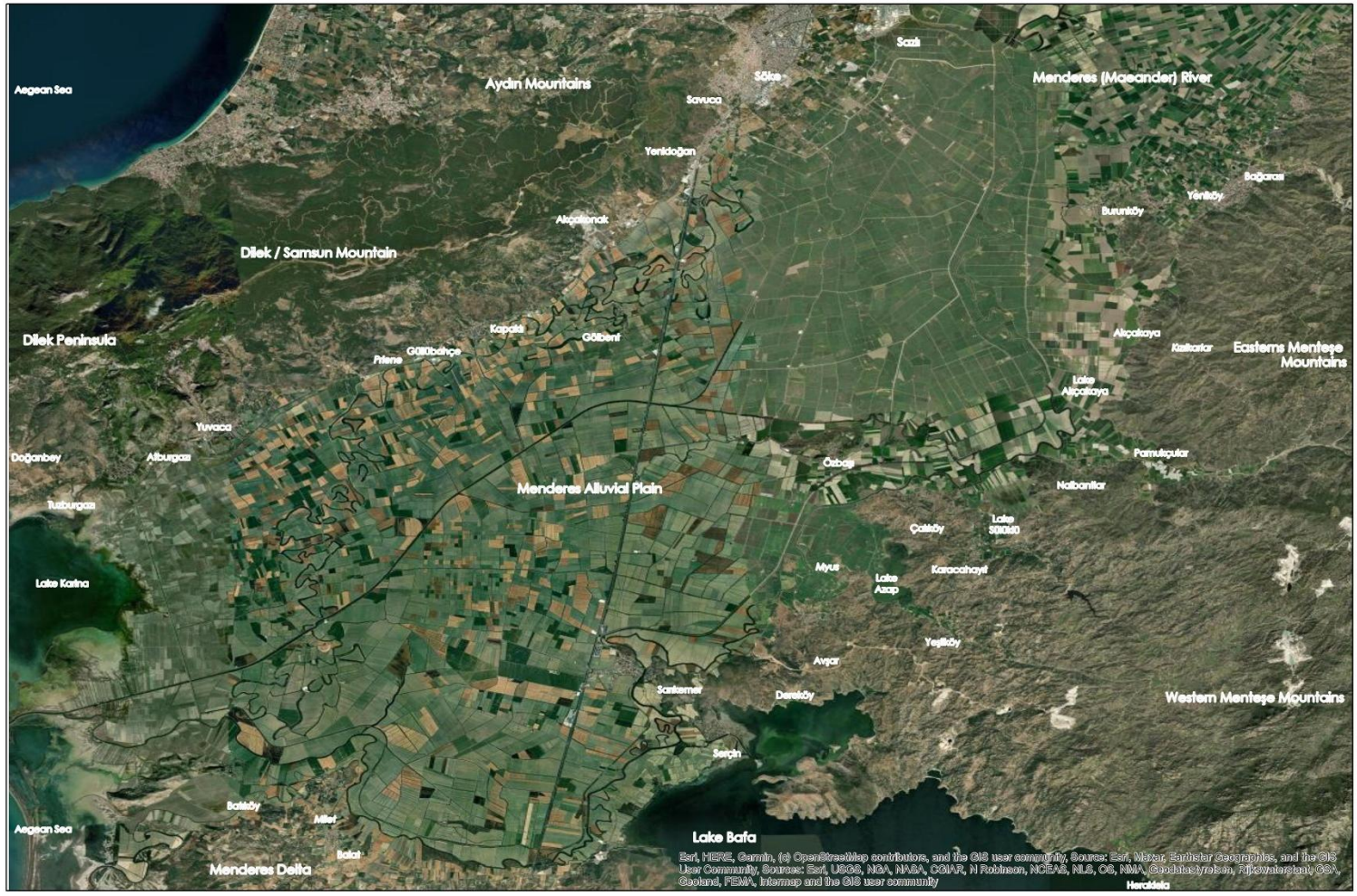
This research focuses on the Menderes River Delta, located within the Menderes River Valley and Basin, covering an area of approximately 800 km² (Figure 1.6). The selection of the delta as the focus study area is associated with the fact that this transitional riverine landscape—where the river reaches the sea from the upper basin—constitutes one of the areas in which natural processes, settlement patterns, cultural practices, and heritage layers intersect most intensively. The delta is bounded to the north by the foothills and mountain ranges of the Dilek/Samsun Mountains, and to the south by the Latmos (Beşparmak) Mountains and the topographic thresholds formed by these ranges. To the east, it extends inland toward Söke and the Söke Plain, where the alluvial transport of the Menderes River within the basin becomes pronounced, and the river regime spreads across the plain. To the west, it terminates along the Aegean Sea coastline, characterized by lagoons, coastal barriers, reed beds, wetlands, and environmental relations (Figure 1.6). Within these geographical boundaries, the delta hosts historical and contemporary settlement networks that have become concentrated. Within the scope of the focus study area, urban and rural settlements, agricultural production zones, and relevant functional units located in and around the delta are included; through their productive, residential, and cultural relationships established with the river, these settlements have become an integral part of the landscape. The spatial configuration of these settlements has largely been shaped in relation to the river's flow regime, floodplains, and irrigation systems; this condition reveals the historical continuity of water-related settlement patterns within the delta.

In this respect, the delta represents one of the heritage places where different conceptualizations of water-related heritage—as a natural source/entity, relational interface, and mediator/connector—can be interpreted together within the landscape heritage. For this reason, the Menderes River Delta offers both a methodological framework for the research's multi-scalar and multi-dimensional heritage approach and a representative case for revealing the multilayered nature of landscape heritage.

The Menderes River Delta, situated within the defined geographical boundaries, is characterized not only as a landscape shaped by natural processes but also by historically continuous settlement networks and multi-scalar heritage places. The delta is interpreted together with the settlements located on the fertile plain system formed through river floods and alluvial progradation processes. Söke is located at the center of the alluvial plain that gives its name to the delta and has historically constituted one of the region's most significant agricultural and settlement focal points. Settlements situated around the Söke Plain—such as Güllübahçe, Sarıkemer, Tuzburgazı, Yenidoğan, Balat, and Özbaşı—reflect the continuity of spatial patterns specific to the delta through agricultural production related to the river, irrigation infrastructures, and rural life practices.

Within the focus study area, on the northern side of the Menderes alluvial plain, the present-day living rural settlements of Sazlı, Yenidoğan, Akçakonak, Kapaklı, Güllübahçe, Yuvaca, Atburgazı, Tuzburgazı, and Doğanbey (administratively affiliated with Söke) are located. On the southern side of the plain are Bağarası, Burunköy, Akçakaya, Nalbantlar, Çalıköy, Karacahayıt, Avşar, Sarıkemer, and Serçin. Within the plain itself are Gölbent and Özbaşı (historical islands before the progradation process). Along the Aegean Sea coast are the living rural settlements of Akyeniköy, Akköy, Balat, and Batıköy (administratively affiliated with Didim). The focus study area also encompasses significant ancient port cities located on both sides of the plain, including Priene ad Maeander, Milet, Myus, Pyrra, Thebai, and Herakleia by Latmos.

The Case of Menderes (Maeander) Delta as Riverine Landscape Heritage: Location and Boundary of the Focus Study Area



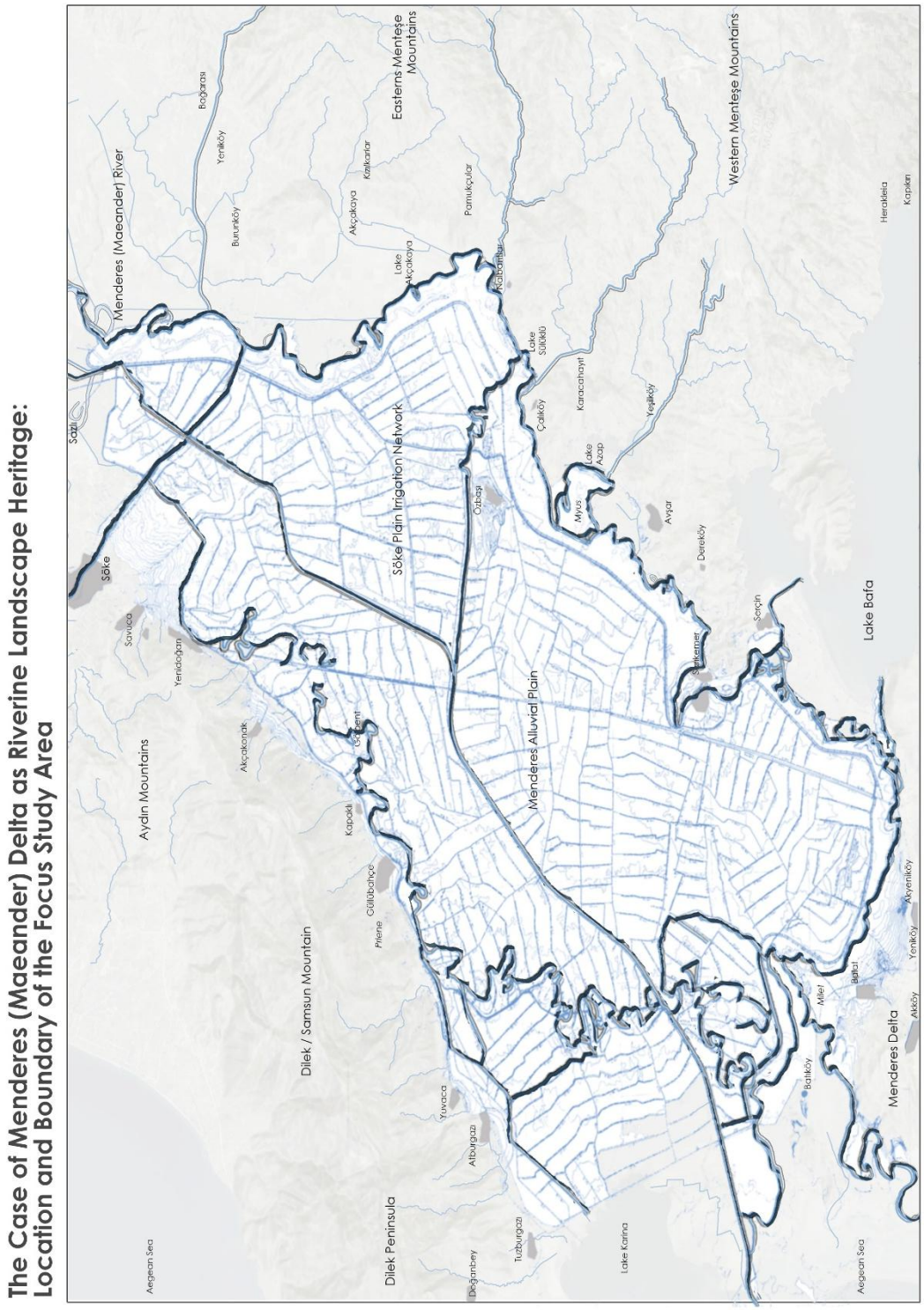


Figure 1.6 The Case of Menderes (Maeander) Delta as Riverine Landscape Heritage: Location and Boundary of the Focus Study Area (Top: Author, based on Google Maps, 2026; Bottom: Author, 2026)

The holistic structure of living urban/rural settlement areas and conservation and management zones, and the delta's character as a continuously negotiated and managed living landscape, make it particularly significant for multi-scalar analysis; it enables the simultaneous reading of basin dynamics at the regional scale, water-based ways of life at the settlement scale, and everyday practices at the intra-settlement scale. In this context, the study area is addressed across multiple scales, including territorial/regional, settlement, and intra-settlement levels. At the territorial/regional scale, the Menderes River Delta is considered together with the river basin and coastal system; the spatial correspondences in the delta of the water, sediment, and cultural practices transported from the upper basin are evaluated. At the settlement scale/focus study area, water-dependent living rural and urban settlements located within and around the delta are examined through their historical and contemporary relationships with water. At the intra-settlement scale, water-related places, everyday practices, background systems, and cultural uses are analyzed.

In conclusion, the methodological structure of this research establishes a comprehensive and multi-layered framework for understanding riverine landscapes by integrating conceptual, spatial, and scalar dimensions within a holistic definition approach to 'riverine landscape heritage'. By conceptualizing water (-related) heritage and riverine landscape heritage through its roles as an object, relational component, and mediator/connector, the thesis moves beyond fragmented interpretations and reveals the interconnected nature of natural and spatial processes, settlement patterns, cultural practices, and heritage and landscape layers, dynamics, and driving forces. The Menderes River Delta, as a dynamic riverine landscape, provides a critical empirical ground through which this methodology is operationalized across multi-scalar landscape authors, macro (upper scale), meso (territorial and regional scale), micro (local scale), and multi-temporalities in the context of natural, built environment, narrative, and managed and reconstructed landscape heritage. Through this multi-scalar and multi-temporal reading, the research demonstrates how river basin and delta dynamics, natural culture

coexistence, spatial reflections, settlement patterns, and everyday practices and narratives are continuously shaped and reproduced through water-related interactions (as: an source/entity, basis of natural, ecological system; a relational component/interface, generating human–place interactions; a mediator/connector, linking natural, physical, spatial, and socio-cultural layers within the landscape ensemble). In doing so, the methodology not only enables a holistic interpretation of the river delta as a living and continuously negotiated landscape heritage but also exposes the limitations of existing fragmented conservation and planning approaches. Accordingly, it offers a holistic and adaptable heritage framework that bridges natural and cultural heritage, links different scales of analysis, and provides a transferable basis for the conservation and management of riverine landscapes in diverse geographical contexts.

1.3.1 Research Method/ Design and Data Collection

The research method integrates spatial–temporal, historical, institutional, and narrative data through a comprehensive approach that combines literature review, archival research, field studies, oral history, and local narrative and story compilations, and GIS-based analyses. Within this framework, the definition, collection, and analysis of data related to the Menderes riverine landscape constitute the first phase of the research. To conceptualize the Menderes River Delta and to establish a spatial–temporal and narrative approach of riverine landscape heritage, comprehensive literature and archival research were conducted using a wide range of primary sources. These include historical maps, aerial photographs, early photographs, institutional archives, official documents, and both national and international academic publications. The research also drew upon resources from national and local libraries, archives of relevant ministries and institutions, local municipalities and decision-makers, as well as the archives of museums and non-governmental organisations, complemented by document and data collections obtained from institutions operating at various scales.

Accordingly, a wide range of materials, such as historical photographs, newspaper archives, aerial photographs/orthophotos obtained since the 1960s, seasonal aerial photos, historical maps, Ottoman archival documents, planning documents from the Republican period, archaeological excavation records, research findings on the region's natural environment, reports, and project documents from governmental and non-governmental organisations, were collected and documented. In this context, several key institutions were visited for data collection, including the Ankara General Directorate of Mapping, Ankara National Library Archives, Middle East Technical University (METU) Library Archives, the Republic of Türkiye Ministry of Agriculture and Forestry Central Library, the General Directorate of Water Management Library, the General Directorate of Fisheries and Aquaculture, the Turkish Water Institute, and the General Directorate of State Hydraulic Works Library.

In addition, a comprehensive literature review was conducted on published studies concerning the Menderes River and Delta. These studies were examined across three scales, namely the Menderes Basin, the River, and the Delta landscape, and categorized under key thematic issues such as: **the natural/environmental characteristics** of the riverine landscape; ecological, geological, and geomorphological and hydrological transformation processes; the region's **physical–spatial setting** and cultural history, ancient civilizations, and settlement history; the relationship between physical and spatial environments and the riverine landscape; **socio-cultural environment and socio-economic structure**; and the frameworks of **conservation, planning, management, and legal–administrative aspects** (Figure 1.7).

In line with the methodological framework of the research, four field study phases were conducted on **30 August–4 September 2023, 17–22 May 2024, 25–31 October 2024, and 18–23 April 2025** in order to define, collect, and compile the relevant data. The field studies and social research were planned across different seasons to observe the relationships among the Menderes River, the riverine landscape, settlements, and agricultural areas, and to monitor the reflections of

ongoing transformation processes. These studies were conducted through observation and survey data forms, spatial mapping and analyses, photographic documentation, oral interviews, and focus group meetings. Through in-depth interviews with multi-scalar landscape authors, multi-scalar perspectives and interventions, legal and administrative definitions and boundaries, as well as everyday life practices, relationships established with water, and the collective memory of the landscape were revealed and documented. Within the scope of the field studies, survey forms and observation/data collection forms[2] were prepared under thematic headings such as natural landscape, settlements, and physical–spatial contexts, ancient cities/archaeological sites, built environment, socio-cultural structure, socio-economic dimensions, and legal–administrative aspects, and were directed toward different landscape authors (Figure 1.7; Figure 1.8). Throughout the process, in addition to direct on-site observations and field-based studies, meetings and interviews were also conducted remotely via online platforms. Accordingly, structured interviews were conducted with public institutions, local governments, academic institutions, non-governmental organizations, professional chambers, economic communities, and local authors operating at different scales (local, regional/territorial, and upper scale) (Table 1.1, Table 1.2, Table 1.3).

[2] All interviews, focus group discussions, field studies and social surveys conducted within the scope of this research were carried out in accordance with ethical approval granted by the Middle East Technical University Human Research Ethics Committee (METU–HREC). The study titled "Reconsidering 'Rivers' as Initiators, Generators and Transformers of Landscape Heritage: The Case of Menderes (Maeander) Riverine Landscape Heritage" was reviewed and approved under protocol number **0418-ODTÜ-İAEK-2023** (approval date: **13 October 2023**). Informed consent was obtained from all participants prior to their participation in interviews and focus group discussions. (For approval certificate and further details, see Appendix A.)

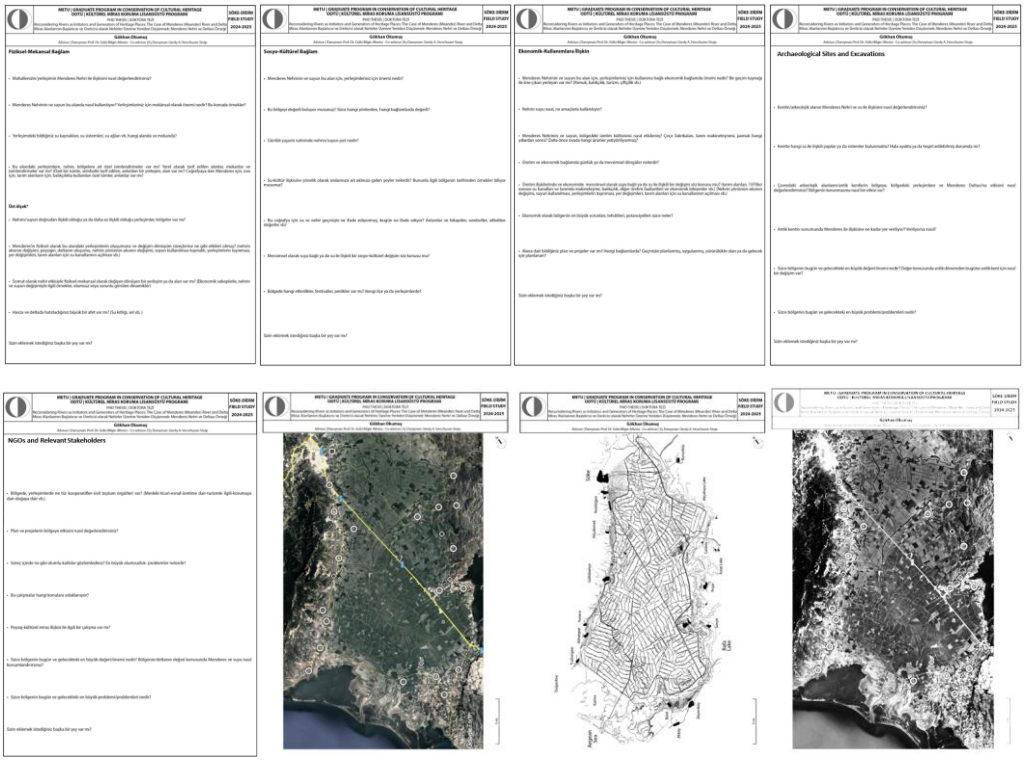


Figure 1.7 Social Survey/ Interview Sheets, Data Collection Forms, and Observation Base Maps Addressing Socio-Spatial, Socio-Cultural, and Socio-Economic Aspects in Menderes River Delta (For further details, see Appendix B. and C.) (Author, 2023; 2024; 2025)

During the field study, meetings were first conducted with representatives of upper scale authors, including the Ministry of Environment, Urbanization and Climate Change, the Ministry of Culture and Tourism, and the Ministry of Agriculture and Forestry, as well as their affiliated bodies such as the General Directorate of Cultural Heritage and Museums, the General Directorate of Nature Conservation and National Parks, the General Directorate of State Hydraulic Works, and the General Directorate of Water Management. These meetings aimed to understand the overarching legislative, institutional, and technical frameworks shaping the management of the Menderes River Delta, particularly in relation to water governance, environmental protection, and cultural heritage conservation. At the regional/territorial scale, meetings were held with the Aydın Provincial Directorate of Culture and Tourism, the Aydın Museum Directorate, and the Aydın Regional

Council for the Conservation of Cultural Heritage. At the upper scale, a total of 29 participants were interviewed, representing institutional authors involved in policy-making, planning, and management processes. These authors include ministries, general directorates, and international organizations that play a key role in shaping conservation, governance, and decision-making processes related to the river and delta system (Table 1.1).

Furthermore, meetings were conducted with Aydın Metropolitan Municipality and the district municipalities of Söke Municipality, Kuşadası Municipality, and Didim Municipality, particularly with their planning, environmental, and conservation departments. These meetings addressed issues such as existing planning decisions related to the delta, coastal and wetland management, urban expansion pressures, and the conservation–use balance. In order to capture the technical and sectoral dimensions of water and land management, additional interviews were carried out with local and regional authors, including the Söke Plain Irrigation Union and the TAYEM – Agricultural Production, Training and Extension Center. These interviews provided insights into irrigation systems, flood control mechanisms, agricultural production processes, and their impacts on the delta ecosystem (Table 1.1, Table 1.2). At the territorial scale, 61 participants were interviewed, including representatives from municipalities, provincial directorates, development agencies, irrigation unions, research institutions, and non-governmental organizations. This scale represents an intermediate level where upper-scale policies are translated into spatial practices and implementation processes, providing critical insights into the operational dynamics of planning and management (Table 1.2).

As part of the field study, meetings were held with representatives of UNDP, WWF-Türkiye, the South Aegean Development Agency (GEKA), the Nature Research Association, the Bird Research Association, the Meandros Culture, Art and Tourism Association, the Mekânda Adalet Derneği – Center for Spatial Justice, and Bayetav Art. The primary objective of these meetings was to examine projects carried out in the delta concerning sustainable development, water management, environmental justice, nature–culture relations, and public awareness, and in particular to evaluate

the initiatives implemented under the “Living Rivers, Living Aegean” project. Through these institutions, the effectiveness of civil networks and local participation mechanisms within the delta was analyzed (Table 1.1; Table 1.2).

Table 1.1 Field Study Interviews: Upper Scale Landscape Authors

Scale	Interviews	Interview Content
Upper scale	Ministry of Environment, Urbanization, and Climate Change (2 persons)	Conservation and planning decisions at the delta scale; conservation–use balance; coastal and wetland management
Upper scale	Ministry of Culture and Tourism (2 persons)	Policies concerning cultural heritage sites; tourism–heritage relationship
Upper scale	General Directorate of Cultural Assets and Museums (3 persons)	Archaeological sites and cultural heritage management
Upper scale	General Directorate of Nature Conservation and National Parks (2 persons)	Protected areas; ecosystem management
Upper scale	State Hydraulic Works (Devlet Su İşleri – DSİ) (4 persons)	River regime; flood control; hydraulic infrastructure
Upper scale	General Directorate of Water Management (3 persons)	Water management policies at the basin and delta scales
Upper scale	Ministry of Agriculture and Forestry (4 persons)	Agricultural production; irrigation systems
Upper scale	UNDP (4 persons)	Sustainable development and river projects
Upper scale	WWF–Türkiye (5 persons)	Ecological conservation; water-based nature–culture relationship

Table 1.2 Field Study Interviews: Territorial /Regional Landscape Authors

Scale	Interviews	Interview Content
Regional / territorial	Aydın Metropolitan Municipality (7 persons)	Regional planning; spatial decisions across the delta as a whole
Regional / territorial	Söke Municipality (6 persons)	Settlement development; agriculture–delta relationship; inter-settlement relations
Regional / territorial	Didim Municipality (2 persons)	River–coast–settlement relationships
Regional / territorial	Aydın Provincial Directorate of Culture and Tourism (2 persons)	Cultural heritage and management of conservation areas

Table 1.2 Continued

Regional / territorial	Aydın Museum Directorate and Milet Museum (2 persons)	Archaeological sites; museology
Regional / territorial	Aydın Regional Council for the Conservation of Cultural Heritage (5 persons)	Conservation decisions and legislation
Regional / territorial	GEKA (South Aegean Development Agency) (2 persons)	Regional development projects
Regional / territorial	State Hydraulic Works (Devlet Su İşleri – DSİ) / Söke Plain Irrigation Union (Söke Sulama Birliği) (4 persons)	Irrigation infrastructure; agricultural production; technical aspects of water management, flood control, agricultural production, and their impacts on the ecosystem within the delta
Regional / territorial	State Hydraulic Works (Devlet Su İşleri – DSİ) / TAYEM (Aydın Söke Directorate of Agricultural Production Enterprise, Agricultural Extension and In-Service Training Center) (6 persons)	Agriculture; education; extension activities
Regional / territorial	Directorate of Archaeological Sites and Excavations (Nysa ad Maeander, Magnesia ad Maeander, Priene ad Maeander, Milet, Herakleia by Latmus (8 persons)	Relationship between ancient cities, archaeological sites, and the river
Regional / territorial	UNDP (4 persons)	Sustainable development and river projects
Regional / territorial	WWF–Türkiye (5 persons)	Ecological conservation; water-based nature–culture relationship
Regional / territorial	Meandros Culture, Art and Tourism Association (Başak Kamacı Budak); Center for Spatial Justice – Mekânda Adalet Derneği; Bayetav Art (6 persons)	Sustainable development; water management; environmental justice; “Living Rivers, Living Aegean” project; civil networks and local participation mechanisms
Regional / territorial	Nature Research Association and Bird Research Association (2 persons)	Ecological research: biodiversity and habitat monitoring

At the local scale, fieldwork was conducted across the settlements of the Söke Plain and the Menderes riverine landscape to reveal the everyday life cycles of the landscape and the interactions between people and place. The study primarily engaged with local landscape communities and economic groups, including local residents, neighborhood headmen (muhtars), former mayors of settlements that previously held municipal status, local service units, and community organizations, as well as occupational groups directly associated with the landscape such as

farmers, agricultural workers, agricultural credit cooperatives, fishermen and fisheries cooperatives, local tradespeople, and tourism associations (Table 1.3). In total, 192 participants were interviewed, of whom 169 were local residents, while the remaining participants consisted of neighborhood headmen and other local representatives. The occupational distribution demonstrates the dominance of agriculture-based livelihoods, with 120 participants identified as farmers or agricultural landowners, 26 as fishermen, 20 as tourism operators or employees, 2 as industrial workers, and 3 as museum employees, highlighting the strong interrelation between the riverine landscape and local production systems, livelihoods, and everyday practices. Interviews were conducted in everyday social settings such as coffeehouses, mosque squares, women's and tradespeople's cooperatives, riverbanks, bridges, and irrigation structures, enabling direct engagement with daily practices and spatial experiences. These studies contributed to the conceptualization of the Menderes River Delta as both a living riverine landscape and a landscape heritage. Local narratives, interpreted through the lenses of spatial continuity, mnemonic depth, and everyday life practices, offered critical insights into the processes through which living heritage is continuously reproduced within the delta.

Among these, in-depth interviews were conducted with 82 persons using structured survey sheets/forms that allowed for a more detailed examination of their experiences, perceptions, and narratives (Figure 1.8). This multi-scalar and in-depth interview framework enables the riverine landscape to be understood as a socio-spatial context continuously reproduced through the interactions, practices, and meanings generated by different authors (Table 1.3).

Figure 1.8 Methodology of Field Studies and Social Surveys Addressing Natural Environment, Physical-Spatial Setting, Socio-Cultural Environment, and Socio-Economic Aspects in the Menderes River Delta

Table 1.3 Field Study Interviews: Local Authors / Locals (Settlement and Intra Settlement Scale)

Settlement	Interviews	Interview Content
Sazlı / Söke	Neighborhood headman Hasan Kahraman; local residents (4 persons: 1 woman, 3 men; 4 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture–river relationship; floods; agricultural memory of the plain; industry–plain relations
Yenidoğan / Söke	Neighborhood headman Tuncay Tunç; local residents (3 persons: 3 men; 3 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture–river relationship; industry–plain relations; access to water and irrigation system; floods; agricultural memory of the plain
Akçakonak / Söke	Neighborhood headman Cemil Karaman; local residents (3 persons: 1 woman, 2 men; 3 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture–river relationship; industry–plain relations
Güllübahçe / Söke	Aydın Metropolitan Municipality Güllübahçe Local Services Center and Community House; neighborhood headman Yusuf Çam; former neighborhood headman and mayor Yusuf Toptay; local residents (16 persons: 4 women, 12 men; 13 farmers/agricultural landowners, 3 tourism employees)	River–settlement relationship; the river in everyday life; agriculture–river relationship; access to water and irrigation system; relationship between ancient Priene and the river; floods; agricultural memory of the plain
Tuzburgazı / Söke	Neighborhood headman Mutlu Akıllı; local residents (5 persons: 1 woman, 4 men; 4 farmers/agricultural landowners, 1 fisherman)	River–settlement relationship; the river in everyday life; agriculture–river relationship; impacts of tourism
Atburgazı / Söke	Neighborhood headman Dilaver Balat; local residents (5 persons: 1 woman, 4 men; 4 farmers/agricultural landowners, 1 fisherman)	River–settlement relationship; the river in everyday life; agriculture–river relationship; fishing; access to water and irrigation system
Doğanbey / Söke	Neighborhood headman Serdar Sarıkurt; local residents (14 persons: 6 women, 8 men; 5 farmers/agricultural landowners, 3 fishermen, 6 tourism operators/employees)	River–settlement relationship; the river in everyday life; river–fishing relationship; rural transformation; conservation–use tension
Bağarası / Söke	Neighborhood headman Ahmet İlhan; local residents (6 persons: 2 women, 4 men; 4 farmers/agricultural landowners, 2 industrial workers)	River–settlement relationship; the river in everyday life; agriculture–river relationship; agriculture, livestock, and river relationship; access to water and irrigation system; floods; agricultural memory of the plain

Table 1.3 Continued

Burunköy / Söke	Neighborhood headman Muharrem Kaçar; local residents (5 persons: 1 woman, 4 men; 5 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture–river relationship; livestock–river relationship; access to water and irrigation system; floods; agricultural memory of the plain
Akçakaya / Söke	Neighborhood headman Turgut Kemikli; local residents (6 persons: 3 women, 3 men; 6 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture, livestock, and river relationship
Nalbantlar / Söke	Neighborhood headman Ünal Musacalı; local residents (5 persons: 1 woman, 4 men; 5 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture, livestock, and river relationship
Avşar / Söke	Neighborhood headman Bedri Avcı; local residents (6 persons: 3 women, 3 men; 6 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture, livestock, and river relationship
Karacahayıt / Söke	Neighborhood headman Nebil Kırca; local residents (3 persons: 1 woman, 2 men; 3 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture, livestock, and river relationship
Gölbent / Söke	Neighborhood headman Ahmet Yemiş; local residents (8 persons: 3 women, 5 men; 8 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture, livestock, and river relationship; floods; agricultural memory of the plain
Özbaşı / Söke	Neighborhood headman Murat Özev; local residents (7 persons: 3 women, 4 men; 7 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture, livestock, and river relationship; floods; agricultural memory of the plain
Serçin / Söke	Neighborhood headman Mustafa Kasnak; local residents (12 persons: 4 women, 8 men; 8 fishermen, 4 farmers/agricultural landowners)	River–settlement relationship; the river in everyday life; agriculture, livestock, and river relationship; floods; wetlands; fishing; ecological memory
Sarıkemer / Söke	Aydın Metropolitan Municipality Sarıkemer Local Services Center and Community House; neighborhood headman İhsan Kalmaz; local residents (15 persons: 6 women, 9 men; 12 farmers/agricultural landowners, 3 fishermen)	River–settlement relationship; the river in everyday life; agricultural memory; access to water and irrigation; agricultural production; flood experiences
Akköy / Didim	Neighborhood headman Birol Bıçakçı; local residents (10 persons: 4 women, 6 men; 6 farmers/agricultural landowners, 2 fishermen, 2 tourism operators)	River–settlement relationship; the river in everyday life; coast–settlement relationship; fishing; tourism
Akyeniköy / Didim	Neighborhood headman Ahmet Akyol; local residents (6 persons: 3 women, 3 men; 3 farmers/agricultural landowners, 3 fishermen)	River–settlement relationship; the river in everyday life; coast–settlement relationship; fishing; tourism

Table 1.3 Continued

Balat / Didim	Neighborhood headman Mahir Başer; local residents (8 persons: 3 women, 5 men; 4 farmers/agricultural landowners, 1 fisherman, 3 museum employees)	River–settlement relationship; the river in everyday life; coast–settlement relationship; fishing; tourism; ancient city of Milet and its historic environment
Batıköy / Didim	Neighborhood headman Mustafa Partal; local residents (8 persons: 3 women, 5 men; 6 farmers/agricultural landowners, 2 tourism employees)	River–settlement relationship; the river in everyday life; coast–settlement relationship; fishing; tourism; ancient city of Milet and its historic environment
Kapıkırı / Milas	Neighborhood headman Abdullah Coşkun Yıldız; local residents (14 persons: 7 women, 7 men; 3 farmers/agricultural landowners, 4 fishermen, 7 tourism operators/employees)	Lake Bafa and its surroundings; wetlands; ancient city of Herakleia and the impacts of the river and the alluvial plain; fishing; tourism

Within this methodology, Geographic Information Systems serve as a valuable tool that creates comprehensive and transdisciplinary platforms for understanding, analyzing, and managing the multilayered nature of the landscape herştage. In this context, the spatial design and mental approach of the GIS-based heritage information management and decision-support system database 'MeRiΔGIS' were first developed. All collected data were systematically organized, geographically referenced, and integrated into the heritage information management system (Figure 1.9).[3] For this purpose, the definitions, descriptions, and attributes of the landscape and heritage were first identified based on data obtained from archival/literature research and field studies (Figure 1.9). Before data entry into 'MeRiΔGIS', the materials gathered through archival research, such as aerial photographs, orthophotos, related CAD drawings, historical maps, and sketches, were systematically structured for integration into the database. These datasets included the following components: **natural environment:** topography, river flow patterns, water sources, riverbeds and networks, soil types, agricultural field boundaries

[3] All maps presented in this thesis were produced by Gökhan Okumuş (2026) using GIS-based tools. The basemap data were provided by Esri ArcMap 10.4.1 ArcGIS software and include contributions from OpenStreetMap contributors, licensed under the Open Database License (ODbL).

within the landscape, land patterns, floodplains, and risk zones; **physical and spatial environment:** transportation routes and networks, the built environment and settlements, cadastral layout, land use patterns, and settlement morphology; **socio-cultural and socio-economic structure:** demographic characteristics, mnemonic focal points, local festivals and events, agricultural and fishing focal areas, industrial services, and tourism nodes; **administrative and legal aspects:** administrative and legal boundaries, data and maps related to archaeological sites, and the boundaries, legal status, and definitions of officially conservation areas (Figure 1.9).

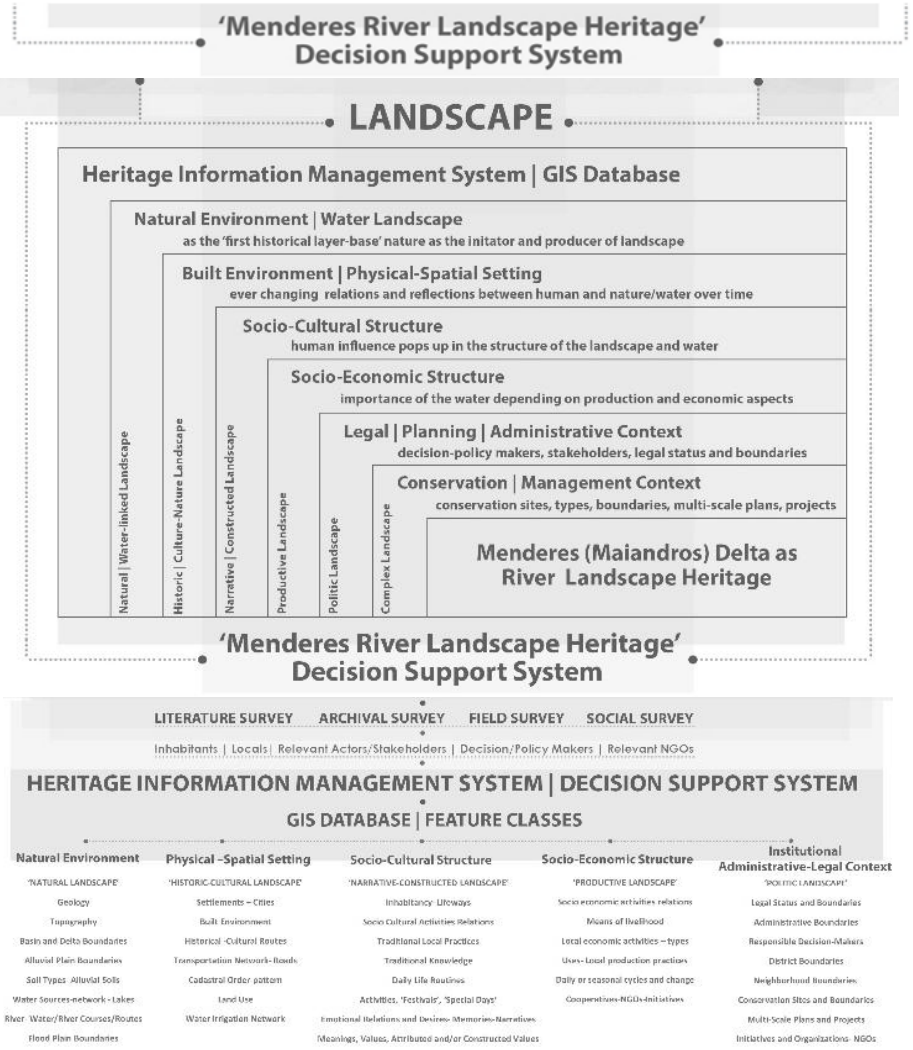
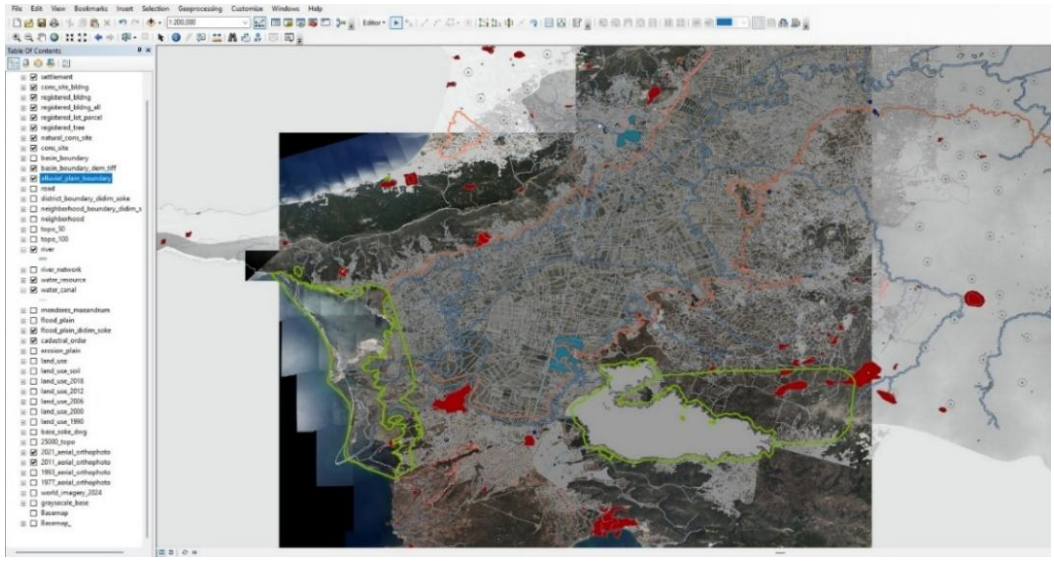


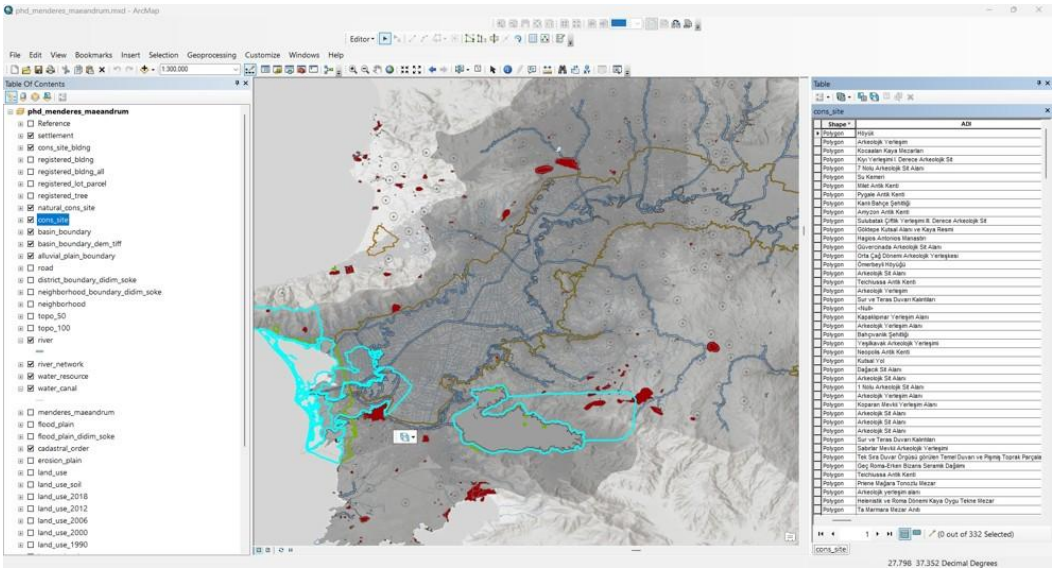
Figure 1.9 Heritage Information Management System *'MeRiΔGIS'* Mind Map and Database Model: Structure and Components, Attribute Tables, and Feature Classes (Okumuş et al., 2026)

After the data entry phase, the classified datasets were transformed into a structured database. Once integrated, the system enabled multidimensional landscape analysis by combining diverse datasets, from natural environment and physical-spatial continuity to memory-based focal points. In this sense, 'MeRiΔGIS' provides a comprehensive framework for exploring the interconnections between natural, historical, cultural, and built landscapes (Figure 1.10). Moreover, it enhances decision-making by offering an extensive analytical structure for examining transformation processes and relationships within the landscape. The correlation of risk and vulnerability data with value-based data, the integration of physical and spatial environment information with local narratives, memories, and stories, and the inclusion of decision-making data through a multi-scalar spatio-temporal approach have all contributed to defining priorities for conservation and management policies and strategies within the proposed framework (Figure 1.10). 'MeRiΔGIS' facilitates a holistic understanding of ongoing transformations within the riverine landscape by emphasizing the interactions between natural and cultural components and among the key human and more-than-human authors that shape its evolution. With the holistic and sustainable conservation and management of the Menderes River heritage and landscape in mind, the system provides a flexible and continuously updatable environment for spatial documentation, storage, analysis, and presentation of the collected data, while allowing the integration of new datasets over time (Figure 1.10).

The system enables the identification of nature–culture overlap/intersection areas, spatio-temporal change analyses, relationships between river flow approach, river and delta formation processes, settlement development and morphology, correlations between agricultural heritage and landscape–settlement patterns, associations of memory and mnemonic places with natural, environmental, and physical transformations, current land uses, and the analysis of legal statuses in relation to physical, spatial, and socio-cultural values. This system contributes to the holistic interpretation and assessment of multilayered data, supporting the riverine landscape heritage approach to understanding riverine landscape heritage. Moreover, it

establishes a basis for developing conservation and management approaches, strategies, policies, and action plans derived from the riverine landscape heritage framework.





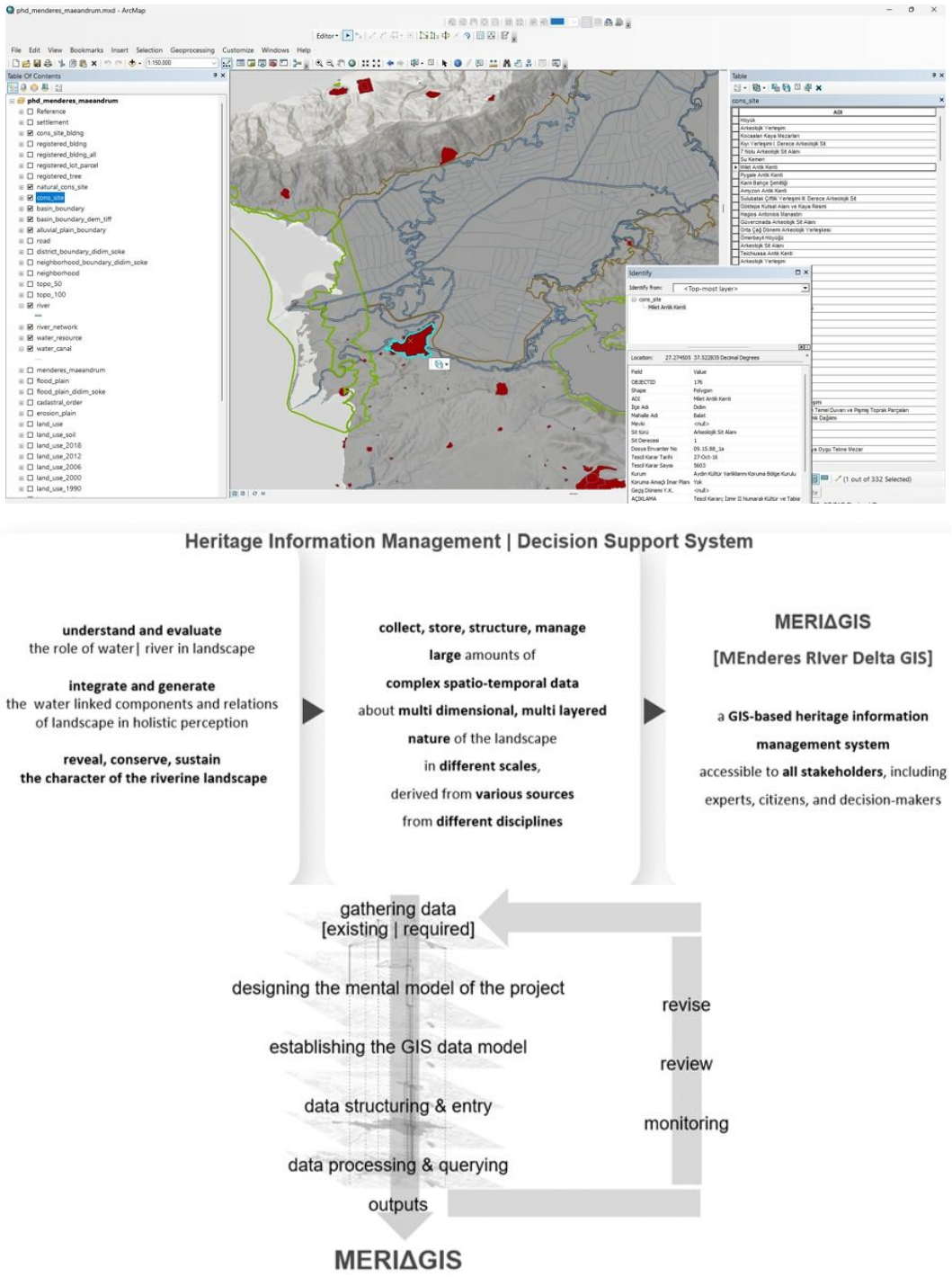


Figure 1.10 Creating GIS-based heritage information management and decision-support system database ‘MeRiΔGIS’ (Okumuş et al., 2026).

1.3.2 Structure of the Thesis

In light of this framework and methodology, the thesis is structured into **five main chapters**. **The introduction chapter** outlines the questions and problems of the research, along with its aims and scope. After presenting the key problems and challenges related to the conservation and management of riverine landscapes as heritage, as well as the main research questions, the discussion is contextualized within the riverine landscape heritage. The chapter identifies major issues such as the fragmentation of existing conservation and management approaches, the nature–culture divide, and the neglect of spatial–temporal and mental continuity. It concludes by presenting the scope, aim, methodology, and the original and wider contributions of the thesis (Figure 1.11).

The second chapter examines, through a critical approach, the nature–culture integrity; landscape heritage; the relationality and ensemble between water and landscape; the conceptualization of riverine landscapes and heritage. Building on the multilayered structure of riverine landscapes, the spatial and temporal dimensions of landscape heritage, and the conceptualization of riverine landscapes, the chapter aims to develop a critical framework. Each of the theoretical pillars, Nature–Culture Integrity, Landscape Approach, Spatio-Temporal Approach, and Landscape Biography Approach that synthesizes these frameworks, is examined individually, assessing their strengths, limitations, gaps, and opportunities in the context of riverine landscape heritage and cultural heritage conservation. Building upon this critical analysis, the thesis introduces its holistic heritage definition and framework: the riverine landscape heritage approach (Figure 1.11).

The third chapter discusses how the Menderes River Delta can be conceptualized as a form of riverine landscape heritage, adopting an approach that frames the delta as a living riverine landscape with its interwoven natural, physical, historical, mental, cultural, and managerial layers. The main objective is to contextualize these theoretical discussions and apply them in practice by holistically evaluating the Menderes River Delta riverine landscape heritage through multiscalar landscape

authors. At the end of the third chapter, the Menderes River Delta is evaluated and defined as a "riverine landscape heritage" (Figure 1.11).

The fourth chapter emphasises the idea of reintegrating the fragmented contexts of the riverine landscape and re-centering the river itself as the 'connector and catalyst agent' of landscape heritage. This approach conceptualizes water and riverine landscapes as living cultural heritage, aiming to introduce a holistic heritage scale, definition, and framework, the 'riverine landscape heritage,' at both theoretical and practical levels. Within the main dimensions of the riverine landscape heritage framework, temporality, spatiality/contextuality, layers, dynamics, driving forces, and indicators of the riverine landscape are defined. The chapter also explains how the riverine landscape heritage approach proposes an approach for the identification, valuation, assessment, and characterization of landscape heritage. In conclusion, the multifaceted contributions of the riverine landscape heritage approach are articulated: its original conceptual and methodological contributions to the literature and theoretical discourse; contributions to the practical framework/roadmap for local landscape communities, contributions to the governance framework to decision-making mechanisms (Figure 1.11).

The final chapter provides a holistic summary of the answers to the main research questions and the overall conclusions of the thesis. It aims to synthesize the key findings and contributions, highlight the theoretical and methodological results, and discuss new directions that may guide future research. The importance of considering rivers as initiators, generators, and transformers of heritage landscapes is re-emphasized, while the critical contributions of the riverine landscape heritage approach, its methodological limitations, and the challenges encountered during the research are critically discussed (Figure 1.11).

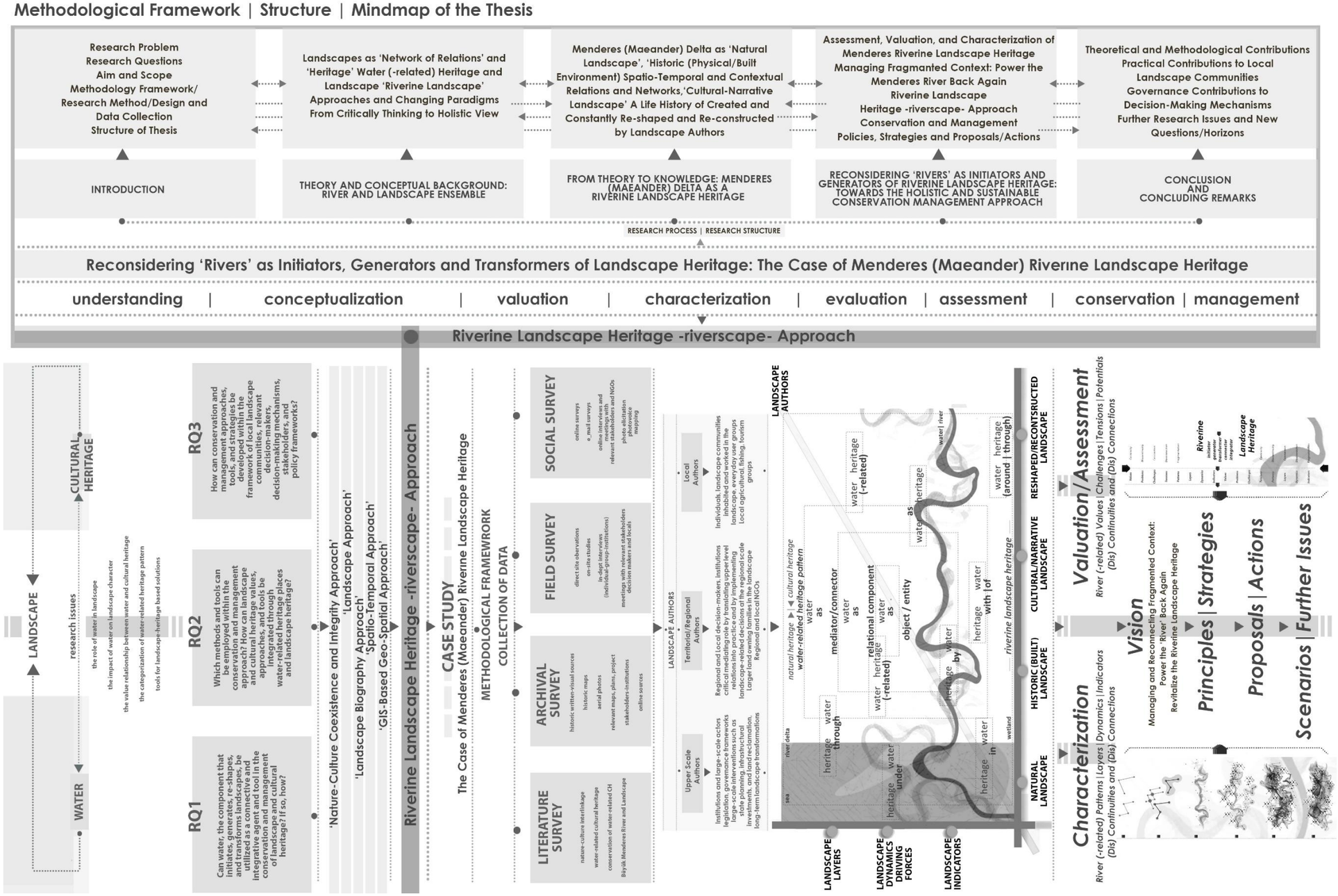


Figure 1.11 Methodological Framework, Structure/ Mindmap of the Thesis (Author, 2026)

CHAPTER 2

THEORY AND CONCEPTUAL BACKGROUND: WATER/RIVER AND LANDSCAPE ENSEMBLE

"Landscape is not a scene to be looked at, but a way of seeing."
(Cosgrove, 1998)

Landscapes are shaped through both tangible and intangible, material and immaterial relationships between nature and humans in time. Tangible features include the physical and spatial forms of the landscape, such as spatial organisation, topography, built structures, road networks, background, and settlement patterns, while intangible features consist of the values, meanings, stories, habits, traditions, myths, ways of life, actions, behaviors, and testimonies collectively or individually attributed by landscape communities (Fairclough, 2003; Smith, 2006). In other words, a landscape is the product of a network of interactions and relationships among humans, nature, and the built environment (Ingold, 2000; Taylor, Lennon, 2011). This relational network leads to the construction of both material and immaterial values and qualities over time. In this context, landscapes constitute a continuously shaped and transforming dynamic process (Cosgrove and Daniels, 1988; Antrop, 2005).

Landscape is a phenomenon that continuously evolves and transforms within a dynamic process shaped by the interactions among its components. By its very nature, landscape embodies change and adaptation, leading to the development, transformation, or disappearance of certain characteristics over time (Antrop, 2005; Fairclough, 2003). Landscape represents an ongoing and dynamic process in which both nature and humans undergo internal transformations, with the human element playing a critical role in creating and sustaining the multilayered values and qualities of the landscape (Ingold, 2000; Taylor, Lennon, 2011). Landscapes reflect the settlement history and the identity, continuity, and existence of landscape

communities, while being shaped and sustained through values, meanings, traditional knowledge, experiences, memories, and testimonies. Landscape communities construct the contemporary meaning of the place through its tangible natural and cultural resources by transforming its symbolic, spiritual, and collective presence in memory (Schama, 1995).

In that sense, the landscape can be defined as a multilayered integrity and network composed of ecological, historical, social, cultural, economic, legal, administrative, and political components (UNESCO, 1972; Lowenthal, 1997; UNESCO, 1992; 2003; Rössler, 2002; Mitchell et al., 2009; Taylor, Lennon, 2011; Larsen, Wijesuriya, 2015; Luginbühl, 2015; Mitchell et al., 2017). These components include elements such as the built environment, road networks, water systems, religious sites, production places, and agricultural landscapes. Each component plays an important role in the characterization of a particular landscape; however, it is the material and immaterial relationships among these elements that ultimately determine the "identity" of the landscape (Lowenthal, 1997; Papayannis & Howard, 2007; Papayannis, 2015; ELC, 2000; Taylor, Lennon, 2011; Luginbühl, 2015).

In this regard, landscape is a multilayered concept in which each period leaves its own imprint on the physical and socio-cultural environment (Antrop, 2005; Fairclough, 2003). Furthermore, it can be understood as a palimpsest that contains the evidence of successive periods (Claval, 2008; Luginbühl, 2015). Landscapes serve as rich documents and open archives that carry the traces of human and natural history (Lowenthal, 1997; Duncan, Duncan, 2009; Luginbühl, 2015). They may also be read as texts through which the history, culture, and identity of places and communities can be interpreted (Cosgrove and Daniels, 1988). Meanwhile, landscapes are linked to the natural processes that influence ecological and environmental cycles, processes that exert a determining effect on socio-cultural and economic life cycles as well as on the physical environment (Ingold, 2000). Therefore, landscapes should be regarded as multilayered, multidimensional, and multiscalar heritage places, shaped by both nature and culture, and as dynamic networks.

In summary, the concept of landscape represents an integrated whole composed of natural, historical–cultural, social, economic, perceptual, political, ideological, symbolic, environmental, and ecological components, and expresses the dynamic interaction between natural and cultural forces (Ingold, 2000; Palang, Fry, 2003; Claval, 2008). The research about landscape presents changing paradigms that are shifted from more 'naturalistic-essentialist approaches' to the more 'constructivist' ones. That is to say, while the initial studies focus more on the structural and morphological dimensions that consider landscape as 'physical reality', the later research focuses on social, cultural, and mental dimensions that consider landscape as 'social construct' (Cosgrove, 1984; Cosgrove, Daniels, 1988; Duncan, Duncan, 2009; Crumley et al., 2017). Then, dichotomies between nature and culture, and also tangible and intangible relations, become the topic of discussion. In the end, integrated approaches have been the focus of debate, bringing all aspects of landscapes together.

2.1 'Water (-related) and Riverine Landscape' Conceptualization

"Rivers, like paths and trails, are lines along which life is lived and remembered, binding together movement, memory, and the lived landscape."(Ingold, 2007)

Rivers, as waterways/water routes/water networks, experience diverse natural conditions and environmental components along their courses. These encounters generate varying forms of settlements, identities, and cultures. In this sense, studying and understanding river heritage makes it possible to establish connections and linkages among different localities and geographies that, while distinct in many ways, share common values (Schnach, 2017; Da Cunha, 2019). Exploring the cultures formed within and around rivers also enables us to recall contemporary water-related challenges and to re-establish our connection with the sources and natural cycles of water.

In the context of water forms, specific and complex landscapes extending along rivers, their surroundings, deltas, and valleys, riverine landscapes encompass the

natural and cultural processes shaped by the ecosystems of the river and its environs (Prideaux, 2009; Cusack, 2010; Schnach, 2017). These landscapes include both natural and human-made elements such as settlement patterns along the river, agricultural production systems, water-based transportation networks, wetlands, floodplains, river terraces, dikes and dams, sacred structures, and fishing grounds. At the same time, they are enriched by the social memory, mythological narratives, rituals, water cults, and identities attributed to the river itself. The riverine landscape is recognized by UNESCO as a significant theme within cultural landscapes and is regarded as the spatial, social, sociocultural, and socioeconomic reflection of nature–culture coexistence (Hein et al., 2020; Taylor, Lennon, 2011). The fluidity, variability, and connectivity of the river enable these landscapes to transform over time; thus, the riverine landscape becomes a complex system in which historical continuity and environmental transformation coexist simultaneously (Klaver, 2018; Da Cunha, 2019).

Within this framework, emphasizing that water and rivers are also cultural, social, historical, and political authors has led to new conceptual openings in landscape heritage studies. The multilayered role of water in relation to landscape heritage, encompassing cultural, social, economic, symbolic, and managerial dimensions, has increasingly been understood as positioning water systems as ecological entities and a network of value production (Prideaux, 2009; Macklin, Lewin, 2015; Da Cunha, 2019). Consequently, systematic studies focusing on water heritage and landscape have emerged, underscoring the notion that water constitutes an integral heritage component within cultural landscapes. In addition to natural, environmental, ecological, and biological dimensions of water and rivers, these systematic inquiries into their multilayered social, cultural, symbolic, economic, ideological, and political meanings approach them through anthropological and interpretive analyses (Da Cunha, 2019; Canadian Heritage Rivers System, 2020).

Rivers, together with the basins they shape, contribute to the social, economic, cultural, and ecological systems of human settlements. Throughout history, settlements have concentrated at the confluence points of rivers, areas that have

served as essential sources of water for daily life while also embodying both fertility and vulnerability to natural hazards. In this sense, rivers, as one of the most vital components of culture, encounter diverse natural conditions and environmental relationships along their course. These interactions have generated different types of settlements, identities, particularities, and cultures. Accordingly, the concept of the riverine landscape, encompassing both the river and its surrounding environments, is approached across various disciplines as a multilayered and dynamic entity shaped through the reciprocal interaction of ecological and cultural processes (Cusack, 2010; Schnach, 2017; Macklin, Lewin, 2015).

Riverine landscapes are defined as "living systems where natural and cultural values interact and evolve together", positioning these areas as living heritage systems in both biophysical and cultural terms. Within this framework, natural indicators such as water quality, biodiversity, and landscape aesthetics are assessed alongside cultural indicators such as historic transportation routes, ritual spaces, and traditional knowledge systems (Prideaux, 2009). This approach, grounded in integrated nature–culture management, emphasises that rivers are "living heritage places" that shape both ecological functions and the cultural identity of local communities. Such a holistic framework positions riverine landscapes as spaces where the interaction between nature and culture attains continuity and resilience over time (Macklin and Lewin, 2015; Schnach, 2017; Da Cunha, 2019).

Tvedt and Jakobsson place the concept of "water control" at the core of the relationship between societies and rivers. From a historical perspective, through the approaches of "water control" and "river biographies", rivers are interpreted as axes along which the economic, political, and cultural structures of societies have been shaped. The statement "controlling rivers has always been a key to controlling landscapes and societies" impresses the decisive role of river management in shaping both landscapes and human systems. The proposed river biographies approach is based on the idea that each river possesses a unique life story shaped by its physical geography, historical events, economic functions, and cultural meanings. This framework enables the reading of rivers within their distinctive historical and

cultural contexts (Tvedt, Jakobsson, 2006). Within this context, rivers are examined in detail to understand how they have been managed throughout the history of civilization and settlement, and how they have influenced the identity, economy, and spatial organisation of societies. Thus, rivers are conceptualized as biographical entities, a synthesis of both physical processes and long-term human interactions.

Moreover, rivers are considered a thematic nexus of geomorphological and socio-cultural processes extending from the origins of civilizations to the present day. As articulated in the expression "the world's great rivers have provided the environmental settings for the emergence of complex societies", rivers are understood as products of both long-term natural processes (such as sediment transport and flood cycles) and human-induced modifications (such as dams, levees, and irrigation systems). This dual formation constitutes the basis for the dual character of contemporary riverine landscapes, as both natural and cultural heritage (Macklin and Lewin, 2015; Klaver, 2018). The role of rivers in human history, from the birth of agriculture and settlement to the Industrial Revolution, is examined through the lens of hydro-geomorphological development. In historiography, Schnach characterizes rivers as "historical agents as much as they are physical features", thereby defining them as geographical and historical authors. Within this framework, themes such as ecological and environmental change, technological and engineering interventions, social and cultural interactions, and political-economic processes form the fundamental dimensions of riverine landscape analysis (Macklin and Lewin, 2015; Schnach, 2017).

Within historical and socio-political perspectives, the role of rivers in nation-building and how riverine landscapes are reinterpreted through collective memory, national symbolism, and political discourse are increasingly emphasized. In this context, rivers are understood as "places of identity" within the imaginative geographies of nations (Cusack, 2010). Cusack's assertion that "rivers shape the geographical imagination of a nation and, in turn, are shaped by the narratives that nations tell about themselves" highlights the reciprocal relationship between spatial representation and cultural narrative. At this point, rivers are also conceptualized as

‘spatial-discursive’ constructs shaped through mapping, naming, and classification practices, products of specific ideological worldviews. As Da Cunha (2019) states, “rivers, as we map and name them, are inventions of a particular worldview”. His work, which delves into the perceptual and symbolic dimensions of rivers, argues that the very notion of “natural” rivers is shaped by historical and cultural perspectives (Da Cunha, 2019).

Through the example of the Ganges River, Da Cunha examines how Western spatial conceptualizations and hydrological categories have been applied to local cultural geographies and mental frameworks, and how these applications have transformed systems of meaning. This perspective foregrounds the necessity of epistemological awareness in the conceptualization of rivers and landscapes, acknowledging that every definition of a river reflects its material reality and the cultural and intellectual paradigms through which it is perceived. Within this framework, alongside the ecological representativeness of water, its political and ideological dimensions are also brought into question. Beyond being a natural or life-sustaining resource, water has become a producer of culture, ideology, and identity. Owing to their sociocultural, socioeconomic, and spatial interconnections, rivers embody the themes of continuity, flow, and organisation within the histories of power, socio-technical systems, socio-politics, and nation-building (Cusack, 2010; Macklin, Lewin, 2015; Da Cunha, 2019). Conceptualizations such as Water/Hydrological Cycle and Water/Hydrological Societies are grounded in the idea that societies have historically been organized around large-scale irrigation or water-control systems, which were managed by hierarchical and centralized authorities (Wittfogel, 1957). According to Wittfogel, the development of centralized and authoritarian regimes, particularly in major Asian civilizations such as those of China, India, Mesopotamia, and Egypt, was closely tied to the management of complex irrigation systems. However, Wittfogel’s approach has been criticized for its generalizing and deterministic tendencies, as it reduces diverse socio-political developments to a single environmental or technological cause.

However, Wittfogel's framework remains significant in highlighting the influence of water management on political structures. The term Hydraulic Empires refers to systems in which large-scale irrigation and hydraulic infrastructure were used to ensure both the spatial expansion and political dominance of empires. In contemporary interpretations, attention is drawn to how water infrastructure functions as a tool of power for the state. The concept of Riverine Societies describes communities whose life, culture, and social order are directly shaped by their relationship with the river, emphasizing water's central role in the production of identity, belonging, economy, and collective memory. These societies develop ways of life synchronized with the river's rhythm, its floods, recessions, and seasonal cycles. Thus, the river itself becomes positioned as a religious, cultural, and economic author. Tracing the history of civilization reveals that, across both Eastern and Western worlds, major rivers have consistently served as cradles of settlements and centers of cultural and political development. For these civilizations, the management of water, infrastructure, and agriculture evolved together with systems of power, ideology, and political authority, structuring relations of access, use, justice, ownership, class, and governance (Wittfogel, 1957; Macklin, Lewin, 2015; Schnach, 2017; Da Cunha, 2019). Ultimately, who controls water, how it is distributed, and to whom it is delivered becomes a fundamental expression of sovereignty.

Neoliberal approaches to water governance have brought forward processes of privatization, commercialization, and commodification of water (Greenham, 2012). The concept of the hydro-social cycle posits that water is not a purely natural substance but a socio-technical construct. It is part of a continuously reproduced network of relations shaped through technology, knowledge, economy, and politics. The circulation of water (infrastructure, distribution, and use) and the configuration of social structures (class, power, and ownership) are co-constitutive and mutually transformative processes (Greenham, 2012). Culturally, water has long been perceived as a symbolic and sacred force, a purifier, a life-giver, and an object of reverence. Water cults, river goddesses, healing springs, and religious rituals have

all contributed to shaping both collective memory and place. In this sense, water operates as an ideological medium for social cohesion, ritual belonging, and local identity formation. Thus, water is increasingly recognized as a space of power, a site of cultural production, and a medium of socio-political interaction. Conceptualizations such as hydraulic societies, riverine societies, and the hydro-social cycle relocate water from the category of environmental object to the very center of social relations. Within this framework, water and rivers organize societies (through governance and decision-making), shape spaces (settlement, agriculture, transportation), produce identities (rituals, cults, and memory), and reproduce ideologies and social structures (access, ownership, and political representation).

In architectural and spatial terms, the reciprocal interaction and tension between the dynamic nature of water and the human intervention for continuous settlement history can be described as "to inhabit the riverscape is to negotiate between water's natural dynamics and the permanence demands in human settlement" (Greenham, 2012). This approach, which examines the architecture, spatial order, configuration, and morphology of riverside settlements through the concept of the riverscape, interprets the riverine landscape as a hybrid issue, both natural and designed. Given that rivers constitute a multi-layered habitat of interaction, such areas are defined as "ecological systems with cultural layers accumulated over centuries" (Greenham, 2012).

In the context of the multifaceted characteristics and values of rivers and riverine landscapes, the relationship between their cultural heritage significance and tourism potential highlights the importance of sustainable development as well as integrated tourism and heritage management policies. As Prideaux notes, "the heritage value of a river lies in its ability to sustain communities both economically and culturally over long periods" (Prideaux, 2009). His work discusses the evaluation of riverine landscapes as economic resources within tourism and heritage management, while emphasizing the need to maintain ecological sustainability in these processes. Within this framework, river heritage is recognized as a tool of strategic importance for economic sustainability and enhancing the quality of life in local communities. The

concept thus locates a transdisciplinary position at the intersection of ecology, history, cultural identity, policy, economy, sustainability, architecture, and tourism, serving as a multidimensional field of analysis for understanding the complex interrelations between natural systems, cultural values, and socio-economic development.

Therefore, the riverine landscape conceptualization should be understood within the framework of nature–culture integrated conservation, as both a spatial reflection of past heritage and a strategic base that shapes the heritage of the future and the goals of sustainable development. The concept of the riverine landscape holds a central position in cultural and natural heritage studies, as it represents spaces shaped and continuously transformed through the mutual interaction of ecological, hydrological, and socio-cultural processes between river systems and human societies.

At its core, a riverine landscape can be defined as the product of the temporal and spatial intersections between a river system and the communities inhabiting its surroundings. This perspective regards rivers as dynamic systems, constantly changing and evolving through geomorphological, ecological, and cultural processes. In this sense, riverine landscapes embody both the continuity of natural processes and the temporality of human interventions, functioning as living archives where nature and culture co-produce meaning, memory, and form.

In this framework, the complex heritage of riverine landscapes, conceived as networks of relationships, can be understood as the “zero line of the landscape”, encompassing both its natural–environmental and cultural–historical dimensions. It includes the geological, geomorphological, and topographical formation processes; soil structures; climatic conditions; water sources and hydrological relations; vegetation and wildlife populations; and overall biodiversity. Equally, it integrates the interconnections between nature, history, and culture through networks shaped by historical and cultural components, such as ancient settlements and their remains, architectural structures, archaeological sites, sacred places, and traditional agricultural areas, reflecting the continuously evolving relationships between

humans and nature throughout history. Moreover, it encompasses transport networks and associated infrastructures, historical urban morphologies, cultural identity frameworks, production systems, past and present land uses, and the industrial or productive systems linked to the landscape (e.g., irrigation canals, hydraulic engineering works, drainage and sewage systems, hydroelectric structures). These elements have been shaped, transformed, and (re)constructed by human and landscape communities across time.

Additionally, the socio-cultural and narrative layers of the landscape, comprising local and regional activities, collective experiences, meanings, memories, and mental imprints, are expressed through physical traces and representations such as myths, folktales, and local stories tied to the river and its surroundings. The socio-economic and production components, agricultural fields, traditional and industrial practices, irrigation systems, vineyards, orchards, farms, pastoral and fishing structures, also form integral layers of this living system. Finally, the legal, administrative, and political contexts and how these frameworks define, delimit, and transform the landscape, through planning, regulation, or governance, constitute another critical dimension. Taken together, these interconnected natural, cultural, social, and political layers demonstrate the inherently multidimensional, multilayered, and dynamic character of riverine landscapes, underscoring their complexity and significance in heritage conservation and management.

In summary, as the natural and cultural relationships established between heritage and landscapes of different character have been evaluated and debated, landscape has been redefined as cultural heritage through its interrelations with themes such as landscape–nature–culture connection and holistic governance, landscape–integrated heritage conservation and management, landscape–identity and sustainable development and conservation, and landscape–social practices, memory, power, and sustainable conservation and management (Howard, 2003; Papayannis & Howard, 2007; Papayannis, 2015; Taylor, Lennon, 2011; Pattenati, 2021). Heritage and landscape studies adopt integrated, transdisciplinary, and multiscalar approaches. In this regard, the approaches developed for defining and conserving both heritage and

landscape have been questioned in relation to their multiple meanings, representational issues, and associations with heritage, while research has diversified around the notion of landscape as a cultural product and form of heritage. The expanding conceptualizations of heritage and the dialectical relations between landscape and heritage have been examined and discussed broadly across different periods and geographies, focusing on diverse approaches to conservation and emerging critical issues.

2.1.1 'Water (-related) and Riverine Landscapes' as 'Network of Relations and 'Heritage'

"Rivers bind together what humans separate, nature and culture, past and present, memory and change." (UN, 2003; 2021)

From wetlands to deserts, from agricultural landscapes to urban networks and coastal settlements, humans have developed highly diverse, intricate, and often interconnected systems for managing water. These systems encompass maritime cultural landscapes, canals, ports, and coastal areas, as well as local knowledge, skills, and regional traditions of water engineering (WHC, 2011; 2013; ICOMOS, 2011, 2013; Willems, Schaik, 2015). In this context, water-related heritage represents a shared product of the multi-dimensional dialogue established over time between humans and nature. Considering water's potential to connect natural and cultural heritage sites, its role in linking the past, present, and future, and its influence as a heritage element on urban planning, development, and landscape relations, water can be regarded as an inspiring keystone for heritage conservation and management.

Water-related heritage encompasses both tangible and intangible components. On the tangible side, it includes historical hydraulic structures such as monuments, irrigation and water supply systems, canals, lock systems, bridges, aqueducts, dams, water industry sites, historic water networks, mills, wells, and water wheels. On the intangible and socio-cultural side, it involves the evolving values and social meanings attributed to these systems, linking water to a wide range of heritage types.

Moreover, wetlands, coastal and maritime heritage, ports and harbor settlements, island cities, urban deltas, waterways and channels, water-based agricultural landscapes, industrial water landscapes, and historic gardens and parks all embody these tangible and intangible relationships.

The heritage values associated with water have played a crucial role in integrating the relationship between nature and culture, thereby contributing to the emergence of heritage and conservation approaches framed within this context. A review of the thematic agendas designated annually by ICOMOS reveals that topics such as “The Cultural Heritage of Water” (2011), “Cultural Landscapes and Monuments of Nature” (2007), “Agricultural Heritage” (2010), and “Rural Landscapes” (2019) emphasize the historical and cultural interconnections between water and landscape. The 2011 ICOMOS theme, “The Cultural Heritage of Water”, highlights that water is a defining component shaping cultural practices, knowledge systems, and social organisations. Within this framework, the theme emphasises the central role of water in the production of both tangible and intangible heritage values, drawing attention to its power in shaping cultural landscapes across a wide spectrum, from belief systems to agricultural practices, from transportation and trade to industrial development.

Similarly, the United Nations’ World Water Day initiatives between 2005 and 2021 have made visible the multidimensional values of water through their annually designated themes. Topics such as “Water and Culture”, “Water Scarcity”, “Water Quality”, “Water and Climate Change”, and “Valuing Water” have heightened global awareness of water in terms of vital necessity, cultural, economic, and ecological value that must be protected. Within this framework, four main priorities have been identified for the conservation and management of water heritage: water security and sanitation, water for rural development, water heritage, and cooperation in the water sector. These priorities emphasize both the multidimensional value of water and the goal of safeguarding the nature–culture continuum (WWC, 2006; WHC, 2011).

In this context, the 2006 World Water Day theme, “Water and Culture”, notes that water is a multifaceted cultural asset. It highlighted how different societies’ perceptions, uses, and rituals surrounding water reveal its universal role in nurturing cultural diversity. The 2020 theme, “Water and Climate Change”, brought attention to the vulnerability of water in the face of climatic transformations. In this regard, UN-Water emphasized that adapting to the impacts of climate change on water is crucial for protecting human health, saving lives, and ensuring a sustainable future. In 2021, the theme “Valuing Water” came to the forefront, aiming to assess the worth of water and its ecological, cultural, and social dimensions. This approach introduced a five-point framework for evaluation:

- The value of water resources (ecosystems and natural assets),
- The value of water infrastructure (storage, use, reuse, and supply systems),
- The value of water services (drinking water, sanitation, and health-related services),
- The value of water-based production and socio-economic activities (agriculture, energy, industry, employment), and
- The socio-cultural values of water (recreational, cultural, and spiritual dimensions) (UN, 2021).

The United Nations’ report on water provides a comprehensive framework for understanding the nature of water and the coordination processes associated with it. The report outlines how water is perceived across different disciplines and geographic contexts, emphasizing the critical importance of recognizing, assessing, and integrating water’s attributed values into decision-making processes. This approach also foregrounds the multidimensional relationship between water and cultural heritage. Experts and scholars have redefined the value of water-related cultural heritage, particularly in the context of future environmental, social, and governance challenges. Consequently, water is recognized as both a carrier of cultural heritage and a determining factor in social development.

The special issue Living with Water, published by the UNESCO World Heritage Centre in 2011 (WHC, 2011), emphasized that water is a cultural reference that influences and shapes all forms of life around it. Building on this approach, the "Water and Heritage Initiative" launched by ICOMOS Netherlands in 2012 aimed to strengthen the relationship between water management and cultural heritage. The 2013 international conference "Protecting Deltas, Heritage Helps!" brought together experts from various disciplines, public institutions, and civil society representatives, highlighting that the integration of water management and heritage conservation processes had become an urgent necessity at both local and global scales (ICOMOS, 2013). The Amsterdam Declaration, adopted as an outcome of the conference, called for enhanced cooperation in the field of water and heritage through research, education, and communication. These initiatives were given both a theoretical and practical basis with the publication of Water & Heritage: Material, Conceptual and Spiritual Connections in 2015 (Willems, Schaik, 2015). The volume emphasized that the relationship between water and heritage should be understood through its conceptual and spiritual aspects. Within this framework, it was noted that the integration of heritage into water management can contribute to addressing current and future environmental challenges.

In that sense, water as heritage is considered across a broad spectrum, from drinking water and sanitation systems to irrigation infrastructures, from natural and artificial water landscapes to defensive structures and waterways. The key themes of water heritage can be summarized as: water for services, water landscapes, waterways, water and energy, and worldviews on water. Each theme has been examined through functional, historical, spiritual, and aesthetic dimensions, thereby revealing the multilayered nature of water heritage. By bringing together local and global case studies from diverse geographies, Adaptive Strategies for Water Heritage: Past, Present, and Future explores water heritage under themes such as drinking water infrastructures, agricultural irrigation and drainage systems, land reclamation practices, river and coastal planning, ports, and coastal engineering structures. Each chapter sheds light on broader contexts, political processes, narratives, socio-cultural

meanings, and subjectivities, thereby presenting a holistic understanding of water heritage (Hein et al., 2020).

The 2017 ICOMOS report "Cultural Heritage of Water in the Middle East and Maghreb", recognized as the first regional publication aimed at encouraging research on water heritage across different parts of the world, examined Turkey under Sub-Region E. In this chapter, İkiz Kaya and Tanyeli (2017) evaluated the relationship between water and cultural heritage in Anatolia through examples at different spatial scales. Their analyses demonstrate that water is a technical or functional component as well as a mediator of architectural, social, and cultural production processes (Figure 2.1). The thematic study further proposed a potential typology of water heritage, organized under six main categories (ICOMOS, 2017; İkiz Kaya, Tanyeli, 2017):

- Water supply, management, and control for human use (including water collection and transportation systems, dams, cisterns, and aqueducts);
- Cultural influences of water use (housing, urban planning, agriculture, and transportation);
- Control of natural water and management of constraints (droughts, floods, drainage systems, hydraulic architecture);
- Water and health (purity, hygiene, spas, water pollution);
- Knowledge, skills, myths, and symbols related to water (scientific understanding, projections, religious symbolism);
- Cultural landscapes of water (relationships with natural and built environments, landscape values)

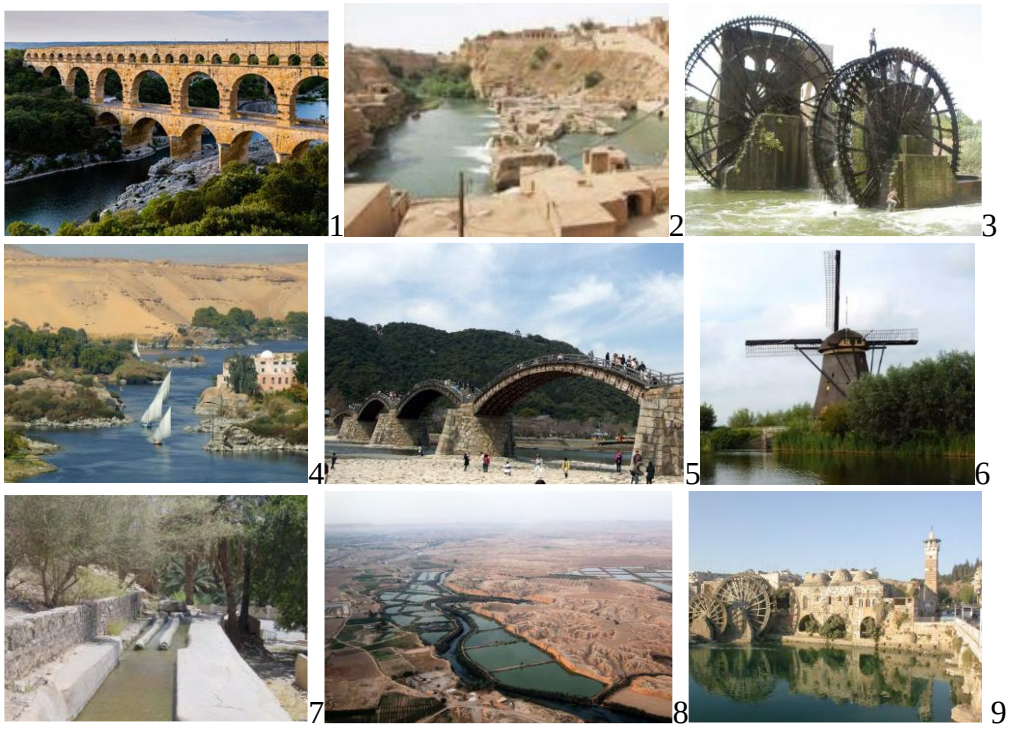


Figure 2.1 Special Water Structures, Agricultural Systems, and Values Built in Different Geographies and Cultures for the Storage, Use, Distribution, and Management of Water, Respectively. France, Iran, Egypt, Japan, Holland, Oman, Syria, Türkiye (ICOMOS, 2017)

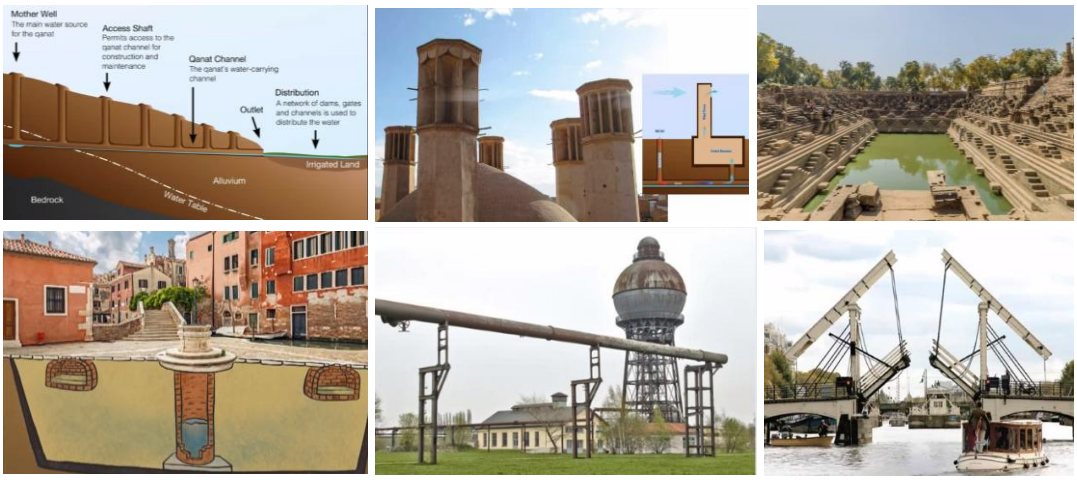


Figure 2.2 Technological and Scientific Solutions for the Management of Water from Different Geographies: Section of a Typical Quanat Water System, Windcatchers Sheesh Badgir Ab Anbar, Iran, Stepped Square Water Tank, India, System of Water Wells Designed To Capture Rainwater, Venice, Water Tower and

Tank, Ilsede, Germany, Water Channels and Bridges, Netherlands (ICOMOS, 2017; Hein et al., 2020)

A similar typology was developed by Douet (2018). Based on data from the World Heritage List and the Tentative List, this typology evaluates water systems in both chronological and regional terms, grouping them under the following categories (Douet, 2018): early systems in the Middle East and Asia, Roman-period water structures, systems in China, mining-related water infrastructures, irrigation and landscape ensembles, transportation canals, flood-control structures, parks and fountains, and water systems used for energy production. This typology illustrates how water heritage has diversified within a universal historical chronology. Today, water heritage stands out as a remarkable research field encompassing diverse tangible and intangible components across different geographies of the world. From ancient irrigation systems in Asia to historic canals in Europe, from urban water structures in the Middle East to traditional wells in Africa, and from dams and hydroelectric facilities in the Americas, this diversity demonstrates how water has generated distinct cultural, technological, and spatial meanings within every society. The multilayered nature of water heritage reflects varying indicators shaped by geographical, climatic, and social conditions (Figure 2.2).

Accordingly, this framework highlights that water heritage should not be understood only as a natural and ecological importance and collection of physical structures, but as a multilayered issue encompassing knowledge systems, symbolic meanings, health and community relations, and landscape contexts. The conference "Water Heritage – A Source of Knowledge for Sustainable Development", held in November 2021, opened discussions on the relationship between water heritage, climate goals, and sustainable development. The conference highlighted key themes such as water within social–ecological contexts, water as a source of historical knowledge and inspiration, urban water management, industrial water heritage, and the strengthening of collaboration and dialogue among decision-making mechanisms. These discussions demonstrated that water heritage is a strategic source of knowledge for advancing sustainable development (Mager, 2023).

Today, water and the wide spectrum of diverse water heritage associated with it face serious threats due to increasing population pressures, industrial and agricultural demands, climate change, and ecological crises. Water can simultaneously embody the symbols of life, renewal, and harmony, while also serving as a source of conflict and destruction. In contemporary contexts, an analytical and holistic approach is increasingly emphasized, one that supports integrated water resources management and acknowledges the interconnections between food, energy, health, education, water quality, and the circular economy (WWC, 2016). Moreover, attention is drawn to the necessity of managing water resources as an inseparable component of social and economic development. The Guide to Climate Change Adaptation, prepared in 2014, offered practical methods for decision-makers. At the 2017 ICOMOS General Assembly, it was emphasized that water-related cultural heritage sites are both vulnerable to and capable of developing resilience against climate change.

The World Water Development Report 2020 drew attention to the opportunities that effective water management offers for climate change adaptation and mitigation. In this regard, the 2020 General Assembly Scientific Symposium under the theme "Shared Cultures – Shared Heritage – Shared Responsibility", particularly through its sub-theme "Culture–Nature Journey: What's Next?" and its emphasis on "Shared Heritage: Multiple Attributes, Multiple Values, Multiple authors, Multiple Responsibilities", display the need to approach water heritage and riverine landscapes within a multilayered, multi-author, and holistic conservation and management framework (UN, 2021). The 2021 conference "Water Heritage – A Source of Knowledge for Sustainable Development" brought renewed attention to the connections between water-related heritage, climate goals, and sustainable development. The event opened discussions on the social, ecological, and historical dimensions of water, emphasizing the importance of transmitting water heritage as a source of knowledge and inspiration for the future, as well as the role of urban water management, industrial heritage, landscape relationships, and collaboration among decision-making mechanisms.

Accordingly, the concept of water (-related) heritage refers to the material and immaterial heritage values that water has generated, shaped, and transmitted throughout human history. Although these values vary across geographical, climatic, political, and economic contexts, physical and functional structures, conceptual and organisational principles, as well as cultural and spiritual dimensions, are recognized as the shared and continuous components of water heritage. Thus, water heritage is a dynamic resource for research, interpretation, and the production of new meanings in the present. In addition to tangible elements, such as historical water infrastructures (dams, cisterns, aqueducts, canals), water management systems, and water-related or coastal settlements, this heritage encompasses intangible aspects such as water (-related) culture, rituals, mythologies, belief practices, and traditional knowledge and techniques (Willems, Schaik, 2015; Hein et al., 2020). Therefore, water heritage should be understood not simply as the preserved relics of the past, but as a dynamic system that reveals the temporal continuity of the culture–nature interaction and the embeddedness of water within collective memory (ICOMOS, 2017). This concept helps us comprehend water's defining role in shaping spatial arrangements, production patterns, and ways of life. Water-related heritage is a critical mediator in developing forward-looking strategies in the contexts of climate change, sustainability, and social resilience (ICOMOS, 2011; 2019a).

The concept of water (-related) landscape can be understood as the spatial expression of water (-related) heritage. Water-related landscapes are spaces shaped by the interplay of both natural processes (such as hydrological cycles and ecological dynamics) and cultural processes (including settlement history, economic activities, and social practices) (Taylor, Lennon, 2011). In other words, water-related landscapes represent areas where the spatial, ecological, and cultural layers of water heritage converge, embodying the long-standing interactions between humans and nature from past to present (Antrop, 2005; ICOMOS-IFLA, 2017). While water (-related) heritage refers to the totality of values, practices, and structural systems associated with water, water (-related) landscape denotes the form in which this heritage becomes spatially and visually legible at the landscape scale. These two

issues should be considered complementary within the framework of integrated culture–nature conservation approaches, where each reciprocally produces meaning and value (Rössler, 2000; 2002; 2003; Mitchell et al., 2009; ICOMOS, 2013). The notion of water (-related) landscapes enables the recognition of water-shaped environments, such as canals, lakes, deltas, rivers, and riverine landscapes, coastal zones, settlements, historic port towns, water-based agricultural landscapes, irrigation systems, and sacred water sources, as both natural resources and cultural meaning-producers. According to this perspective, water transcends its physical existence to become the source of life, settlement, production, and identity (UNESCO, 2011; UN, 2003; 2005; 2021). For water (-related) landscapes, the multilayered role of water, across cultural, social, symbolic, and managerial dimensions, positions both water and its systems as mechanisms of value production. When examined within the framework of cultural ecosystem services, water (-related) landscapes are defined as spaces where both material and immaterial benefits are generated. These landscapes are widely represented in heritage literature through diverse examples such as ritual uses of water, traditional irrigation techniques, coastal settlements, and agricultural systems (UNESCO, 2011; UN, 2003; 2005; 2021).

In that sense, the concept of water (-related) landscape, understood as a complex form of landscape heritage, refers to landscapes that are directly or indirectly associated with various water sources. A water-related landscape possesses a multilayered structure in which cultural and natural components are shaped around the axis of water. These are areas where the spatial organisation is influenced by water, where settlements, modes of production, and social and cultural practices are structured in relation to it. Components such as irrigation systems, fountains, cisterns, aqueducts, baths, coastal settlements, and fishing areas reflect both the functional use of water and its symbolic dimension. At the same time, water-related rituals, water cults, and belief systems associated with the sacredness and purity of water constitute the intangible dimension of these landscapes (Strang, 2004; 2005; UNESCO, 2011; UN, 2003; 2005; 2021).

In conclusion, within the expanding conceptual framework of water (-related) heritage assessments, water (-related) landscapes have come to a distinctive position. Particularly in the contexts of cultural heritage, ecosystem management, landscape planning, and sustainable conservation, the multidimensional and contextual relationships established with water are analyzed through various disciplinary perspectives and addressed through specific phenomenon and definitions such as Water-linked Landscape, Riverine Landscape, Delta Landscape, Sacred Water Landscape, Irrigated Cultural Landscape, Hydraulic Landscape, Coastal Landscape, Maritime Landscape, Port Landscape, Water-linked Production and Agricultural Landscape, Wetland Landscape, Water-linked Industrial Landscape, and Submerged Landscape. Each of these concepts renders the water (–related) heritage relationships visible through a particular dimension; however, they remain insufficient in addressing rivers and deltas as multi-layered, temporal, spatial, relational, and living landscapes in a holistic manner. Water is variously approached as an object, a natural and hydrological environment, a symbol, or a technical infrastructure; yet the holistic landscape heritage holistically produced through human, space, and time relations is most often fragmented. It is an overarching umbrella concept encompassing cultural, natural, and spatial heritage elements that are directly or indirectly connected to water and shaped by its presence. It functions as a general and inclusive framework that considers both water itself and water-related elements as heritage. It is a comprehensive concept that integrates all forms of water-related heritage within a living landscape ensemble by addressing water together with natural processes, cultural practices, spatial patterns, and governance relations. It is a holistic heritage approach that centers on the reciprocal interaction between natural water processes and cultural production. It refers to situations in which water constitutes an inseparable component of heritage places and coexists with them. It denotes cases in which the formation, transmission, or meaning-making of heritage occurs through water. It represents a spatial expression defining heritage areas located along rivers, lakes, or seas. It refers to social, spatial, and cultural heritage patterns organized around water. It is a living-heritage-oriented approach emphasizing that water and water-related heritage are continuously reproduced within everyday life practices. It

expresses heritage landscapes shaped through the spatial, visual, and experiential dimensions of water, including issues such as spatial perception, landscape experience, and visual and mental layers created by authors.

In summary, riverine landscapes are living cultural landscapes that embody multiscalar relationships, local knowledge systems, geographical continuities, and cultural practices. Understanding the concept of the riverine landscape, therefore, requires the integration of perspectives from diverse disciplines such as hydrology, geomorphology, landscape ecology, cultural geography, and heritage studies. This multidimensional perspective enables the integration of conservation of natural processes and cultural values, while fostering the development of sustainable management strategies.

Accordingly, this chapter highlights the transformation from conceptualizing the river as a natural entity and resource towards understanding it as a connective element within landscape heritage. Within the context of the conceptual change of water-related heritage in riverine landscapes, evolving approaches—from natural source/entity to relational component and living mediator/connector—reflect a multi-layered process that reconsiders landscape heritage as a dynamic element shaping natural, ecological, physical, spatial, and socio-cultural processes (Janssen et al., 2017). This framework also provides an explanatory basis for discussions on water and riverine landscape heritage. However, the conceptualization of water-related heritage cannot be fully addressed through the direct application of this tripartite distinction alone; rather, it requires considering the multiple ontological positions of water simultaneously—as source/entity, relational component, and living mediator/connector.

Water is first approached as a source or entity. Within this framework, hydrological regimes, flood cycles, sediment dynamics, and biological processes are identified as the primary determinants of water-related heritage values (Figure 2.3). The treatment of water within the scope of natural heritage often entails a normative and expert-driven conservation approach that focuses predominantly on ecological and physical

characteristics. In this perspective, the relationship between people and place, along with the multidimensional values of heritage, largely remains as a technical and infrastructural background, while everyday practices and processes of cultural production occupy a secondary position. Landscape heritage is thus positioned as a limited and fragile entity to be protected, and water-related agricultural irrigation systems or hydraulic structures are addressed through a production-oriented conservation approach grounded in their historical and functional values. However, this perspective tends to render the cultural layers of riverine landscapes and the role of water in the production of social meaning largely invisible.

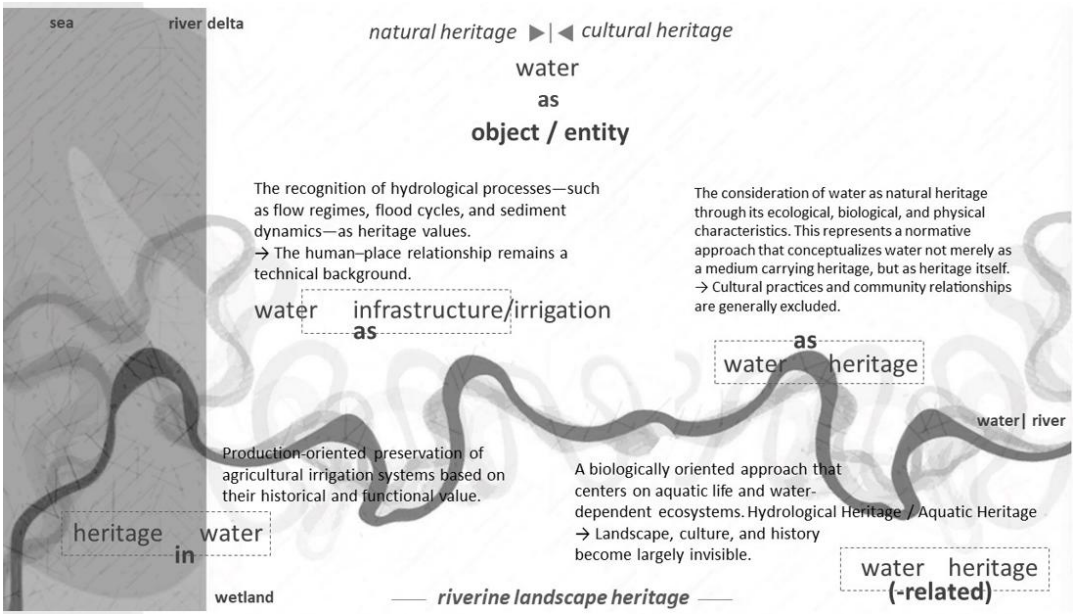


Figure 2.3 Water (-Related) Heritage and Water (-Related) Landscape Concepts: ‘Water as a Natural Source/Entity in Landscape’ (Author, 2026)

Over time, water and the river come to be understood within heritage frameworks as a relational component that shapes, influences, and explains processes of heritage transformation. The conceptualization of water-related heritage as a relational component represents an intermediate stage, in which water and the river are still positioned in a relatively passive role. With the recognition of the river as a form of living heritage embedded within everyday practices, community relations, and

temporal continuity, riverine landscapes begin to be interpreted as relational networks (Figure 2.4).

Within this framework, heritage is primarily understood through cultural assets located in, under, or around water, while water itself is considered an environmental context that influences the formation of these assets. In this sense, water functions as a relational component that explains transformation; however, it is not yet conceptualized as an active agent that initiates or directs such transformations. Water is acknowledged as an element that supports the spatial and symbolic meaning of heritage, yet it continues to be framed as a passive background. Although the deep relationships between water and notions of sacredness, ritual, belief, and everyday practices are recognized, these relationships often remain at a contextual level.

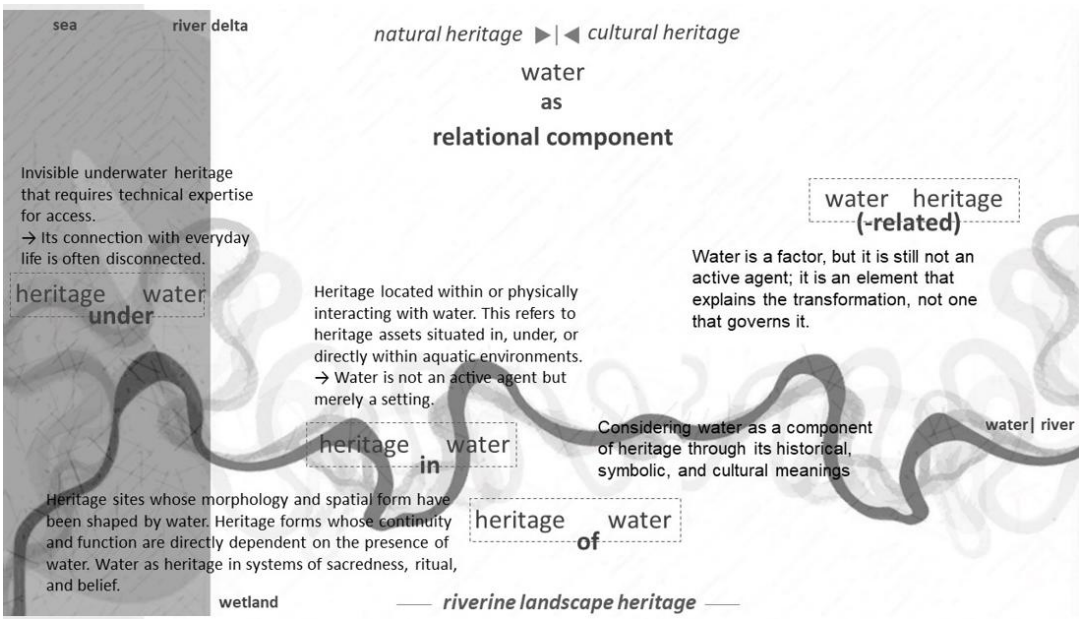


Figure 2.4 Water (-Related) Heritage and Water (-Related) Landscape Concepts ‘Water as a Relational Component in Landscape’ (Author, 2026)

This process reveals a paradigm shift towards understanding water as mediators and connectors within landscape heritage (Figure 2.5). Conceptualized as a mediator—encompassing roles as initiator, generator, transformer, and connector—water is no longer seen merely as a passive agent of heritage. Within this perspective, cultural

practices, hydrological processes, and spatial patterns emerge as interrelated and mutually constitutive dynamics, shaping one another across multiple layers. The river assumes a connective role, linking different landscape layers, carrying narratives, and facilitating transformation. In this sense, water (-related) heritage extends beyond heritage assets directly associated with water to include the social relations, forms of belonging, and dynamics of continuity and change that are established through water.

Accordingly, the research brings together different ways in which water is conceptualized within heritage frameworks and situates these approaches within the context of riverine landscape heritage. Existing research that foregrounds water (-related) heritage through a single analytical dimension often succeeds in making certain relationships visible; however, it remains insufficient in addressing rivers and deltas as multi-layered, temporal, spatial, relational, and living landscapes in a holistic manner.

In complex and multi-scalar heritage contexts such as riverine landscapes, water must be understood in multiple and shifting roles—as a source/entity in some contexts, as a relational component in others, and as a mediator/connector in yet others. Accordingly, the conceptualization of riverine landscapes necessitates the integration of perspectives from diverse disciplines, including hydrology, geomorphology, landscape ecology, cultural geography, and heritage studies. In this sense, water is considered a constitutive component that ensures both the material and narrative continuity of heritage landscapes. This perspective calls for the rethinking of conservation and planning approaches within a process-oriented framework capable of engaging with the dynamic and evolving nature of riverine landscapes.

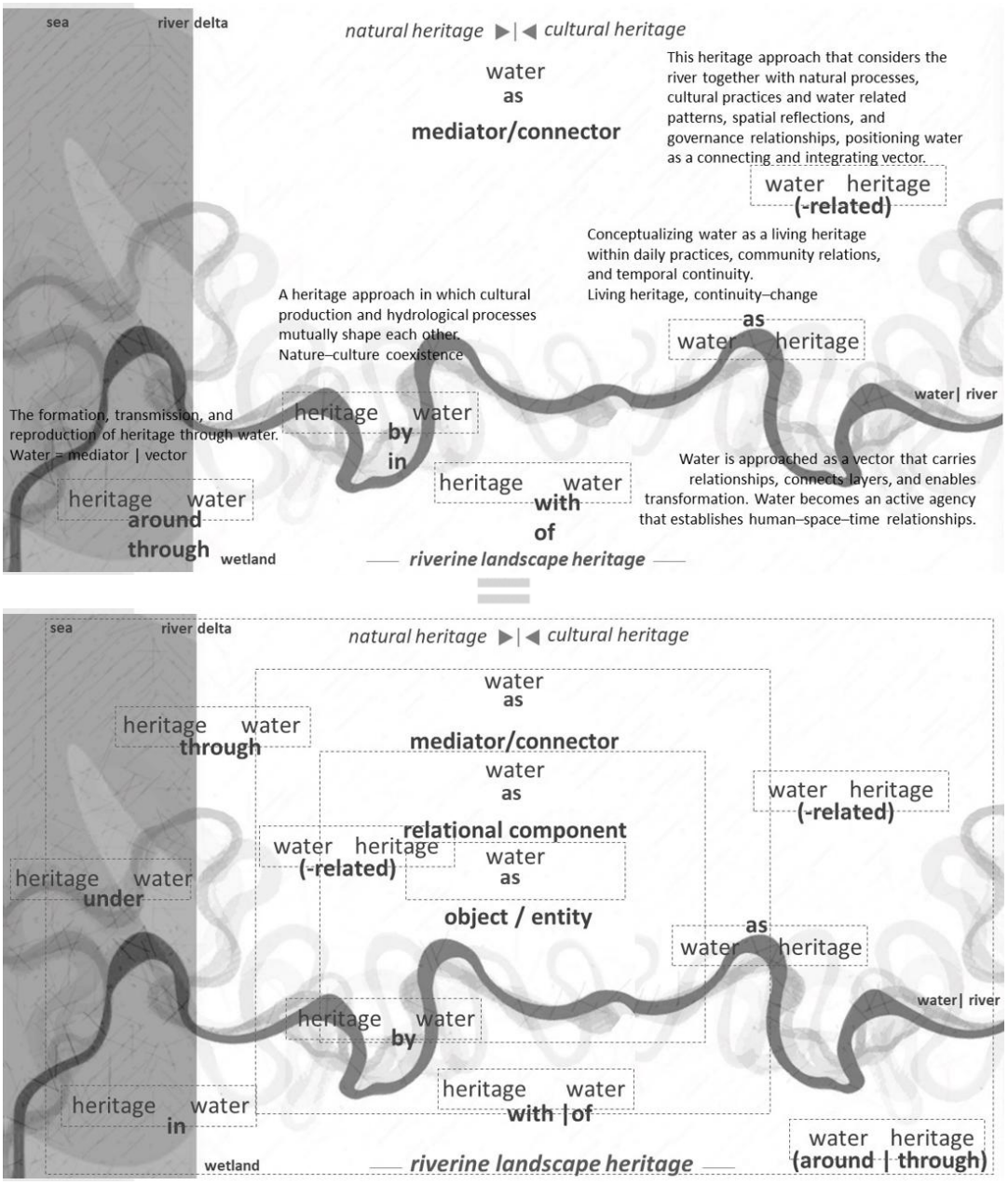


Figure 2.5 Water (-Related) Heritage and Water (-Related) Landscape Concepts ‘Water as a Living Mediator/Connector in Landscape’ (Author, 2026)

2.1.2 'Water (-related) and Riverine Landscapes' Layers, Dynamics, Driving Forces and Indicators

"The river is everywhere at once, at its source, at its mouth, and where it flows between." (Klaver, 2018)

Riverine landscapes are heritage places that reflect multiple forms of knowledge grounded in spatial and temporal relationships across scales. Through these landscapes, it becomes possible to trace how the shifting boundaries, regions, and interactions between land and water have shaped settlements and cultural heritage over time. This research, which positions the river as the initiator, generator, and connector component of landscape and landscape heritage, aims to understand riverine landscapes in their entirety, through all their components, dynamics, layers, and indicators, and to design a holistic perspective for their conservation and management. As heritage places that reflect both nature- and human-driven processes of change and transformation in all their dimensions, riverine landscapes establish diverse forms of connection and possess distinct place-specific characteristics. Therefore, understanding riverine landscapes and their heritage requires analyzing their natural and cultural layers, internal dynamics, and the driving forces that shape them. The simultaneous and successive interactions among these layers and dynamics ultimately constitute the holistic structure of riverine landscapes.

As the zero point or baseline of the landscape, the natural and ecological layer defines the fundamental character of a riverine landscape. It encompasses geomorphological structures, topography, soil types and transformations, alluvial formations, hydrographic systems and hydrological continuity, hydromorphological flow regimes, variations in speed and direction, seasonal dynamics, and specific natural, environmental, and ecological transformations. This layer includes the physical presence, absence, abundance, or scarcity of water, processes such as changes in the riverbed, seasonal and long-term flow regimes, coastal ecosystems and delta formation, shoreline erosion and sedimentation, flood cycles, and the functionality

of floodplains, as well as drought periods, wetlands, deltas, river channels, and irrigation systems. It also comprises climate and microclimate variations, flora and fauna diversity, ecological linkages and biocorridors, and processes of biodiversity change and transformation. Together, these elements form the environmental layer that determines the ecological resilience and sustainability of the river, constituting the primary indicators that define the natural value of the landscape.

However, anthropogenic pressures, such as dam construction, water diversion projects, mining activities, water pollution, and intensive agricultural practices, have led to severe degradations within this layer, threatening the landscape's overall ecosystem services. The connective nature of water establishes continuity of ecological processes. Therefore, nature-based conservation and management approaches must be supported by policies that respect the intrinsic dynamics of river systems and acknowledge their cyclical character. Conserving this baseline is essential for maintaining the self-sustainability of nature and ensuring the long-term viability of socio-economic benefits, reducing disaster risks, and implementing effective nature-based solutions.

In this context, the strength of the natural and ecological layer lies in its role as the life cycles and their sustainability upon which the entire landscape ensemble is built. Such an approach neglects the living nature of riverine landscapes and their inherent environmental resilience. This layer frequently remains secondary, as conservation and management mechanisms tend to focus on the built environment or historical monuments. However, the cultural value of a river must be understood together with its life-generating, regulating, and self-healing nature. Moreover, the increasing impacts of climate change, such as drought, flooding, biodiversity loss, and the spread of invasive species, make this layer both dynamic and fragile. Therefore, conserving this layer is about ensuring the sustainability of human life itself. Approaches that highlight the interconnection between the natural and cultural dimensions, and define water as a resource and vital author, have become increasingly significant. Nonetheless, there are still major gaps in integrating such approaches into planning, landscape conservation, and decision-making

frameworks. In summary, the natural, environmental, and ecological layer forms the backbone of both riverine landscapes and the broader human–nature interaction.

The historical and physical layer of riverine landscapes encompasses the totality of traces, structures, settlement patterns, infrastructures, and functional landscape elements that reflect the historical relationship established with the river. Through spatial continuity, memory, and structural and physical integrity, the river becomes subject to a historical and cultural process of construction. Throughout history, rivers have continuously contained both physical and cultural information related to the history of human settlement, as well as traces of various civilizations. As rivers leave marks on the communities living along their course, they also carry the imprints of those communities and human interventions. Physically, the layers of history and archaeology, the characteristics of the built environment, and the constructed forms reveal insights into the morphology of settlements, their processes of change and transformation, and their adaptation over time. The river's temporal transformations, such as shifts in its course and flow regime, floods, droughts, and spatial modifications caused by human interventions, along with the ensuing processes of adaptation, resilience, and socio-cultural reflection, constitute the historical traces of the landscape (Da Cunha, 2019; Greenham, 2012). This accumulation of historical and cultural relations, inherited from the past, continuously evolves, reshapes, and reintegrates into the living fabric of contemporary life and landscape (Cusack, 2010; Schnach, 2017). In this sense, the structure that emerges over time embodies the material evidence of the productive, protective, directive, and meaning-generating relationships that societies have built with rivers.

The strength of this layer lies in its ability to reveal the traces of the multi-layered relationships established with the past. Considering that rivers derive their meaning through cultural construction, the conservation of these structures is vital for sustaining memory and identity. However, this layer is often perceived as a "relic of history/past", which prevents the development of conservation scenarios that can be integrated into contemporary life. Furthermore, rapid urbanization, large-scale infrastructure projects, and urban transformation practices that sever the city's

connection with the river fragment this layer and threaten its continuity. In summary, the historical and physical layers represent temporal depth, spatial continuity, and cultural identity within riverine landscapes.

The socio-cultural layer, which reflects the historical and spatial strata, serves as the carrier of cultural values, symbolic meanings, and collective memory, acting as an agent of memory, identity, and everyday life. In this sense, the socio-cultural layer emerges as a product of the collective relationships established with the river, showing itself in the communities' daily practices, rituals, narratives, and identity formations. Throughout history, societies have perceived rivers as sacred entities, boundary markers, spatial organizers, and cultural symbols. Rivers have been integral to ceremonies and rituals marking the passages of life, birth, death, purification, and celebration, and have found their place in folk narratives, mythologies, epics, and songs. In this regard, the river becomes both an object and a subject of spatial belonging and socio-cultural production.

Despite its strength, the socio-cultural layer often remains overlooked, undocumented, and unrecorded. In conservation processes, "tangible" structures are typically prioritized, while the social practices and symbolic meanings associated with them are neglected. Yet, the disappearance of these practices leads to the loss of meaning in the physical and spatial layers as well. Another weakness lies in the tendency to romanticize or folklorize this layer. Instead of focusing on the genuine, everyday relationships established with the river, superficial and touristic narratives are often emphasized. This, in turn, can cause local communities to lose their own stories and weaken their sense of connection to place. Moreover, political and engineering interventions, such as urban transformation projects, dam constructions, and riverbed modifications, erase the socio-cultural memory of rivers. Displaced communities become detached from both their tangible and intangible heritage, leading to what may be described as "lost river cultures", representing an environmental as well as a cultural extinction. This layer is also deeply intertwined with temporal dimensions. The cyclical nature of rituals, river calendars, flood seasons, and harvest periods, practices woven through time, play a crucial role in

sustaining socio-cultural continuity. In summary, the socio-cultural layer represents the living habitat of riverine landscapes. In this context, community-based conservation, participatory planning, and cultural continuity emerge as key principles for safeguarding this layer.

The water, energy, transportation, fisheries, agriculture, and tourism services provided by rivers have directly influenced the economic continuity and development of surrounding settlements. In this sense, the river serves as a carrier of economic sustainability, and this layer should be evaluated in relation to the nature of river-based economic activities, modes of production, sources of livelihood, income distribution, social class structures, and the spatial patterns of labor. Riverine landscapes, characterized by fertile soils and irrigation potential, have always been shaped by agriculture. This layer encompasses agricultural activities and productivity levels, traditional and modern knowledge and practices, and the water management systems based on the storage, retention, distribution, transport, and use of water, as well as the irrigation infrastructures and the spatial networks formed through river-based transportation.

Accordingly, in addition to changes in agricultural production approach and productivity, the sustainability of river-based livelihoods, fisheries, waterborne transportation, industrial developments, energy production potential, and the growing energy demand, as well as the economic value derived from tourism and recreational activities, reflect the diverse dimensions of river economies. The diversity of economic authors, the presence of water-based cooperatives, producers' associations, and local economic organisations, all illustrate the socio-economic fabric shaped by the river. Moreover, the economic impacts of water-related disasters such as floods and droughts have historically left both physical and socio-cultural imprints on riverine landscapes.

However, this productivity comes at a cost. One of the critical challenges lies in the tension between short-term economic interests and long-term ecological sustainability. While interventions such as dams, hydroelectric power plants,

irrigation projects, and riverside constructions generate economic benefits, they often disrupt the ecological cycles of the river. Another key concern is the potential of water-based economic activities to produce inequalities. Factors such as access to water, water-use rights, ownership of agricultural land, and revenue from energy production can lead to socio-economic injustices within communities. Large-scale private investments, coastal land speculation, and profit-oriented development projects may restrict local communities' access to economic resources and deepen livelihood crises. Moreover, the conservation of this layer is often assessed primarily through its "economic value-generating" capacity.

In summary, the socio-economic layer represents the economic dimension of human–nature interaction within riverine landscapes. Its conservation should not be limited to economic growth but must also encompass social justice, local development, and resilience. In this regard, concepts such as participatory planning, community-based economies, solidarity economies, and social entrepreneurship serve as key indicators for ensuring the sustainability of this layer.

All these layers and dynamics are influenced by broader-scale driving forces that trigger the transformation of landscapes, such as climate change and ecological crises (UN, 2021), population growth and urbanization pressures, increasing demand for energy and water, global and national economic and agricultural policies, political border conflicts, and national interests in water management. In this context, natural and environmental driving forces (e.g., tectonic movements, climate change, natural variations in the water cycle); anthropogenic driving forces (e.g., population growth, infrastructure projects, dams for energy production, agricultural intensification); cultural and symbolic driving forces (e.g., myths related to water, local narratives, perceptions of water's sacredness, mnemonic connections); and political and managerial driving forces (e.g., water policies, water management and planning frameworks, heritage and landscape conservation regulations) all play crucial roles in shaping riverine transformations. Analyzing these driving forces is essential for assessing the resilience capacity, adaptive potential, and sustainability level of

riverine landscapes, as it reveals the interconnected mechanisms through which natural, cultural, and institutional systems co-evolve over time.

Throughout history, rivers have played a decisive role in defining borders, shaping governance structures, and organizing social order. The socio-political layer represents the sphere within riverine landscapes where state policies, local governance practices, citizen participation, and struggles for justice and equality are represented. The governance of the river is thus understood within this layer as a multi-author, multi-scalar, and multi-dimensional process that reflects the dynamic interplay between policy, power, and participation.

Riverine landscapes together encompass water bodies, coastal zones, agricultural production areas, cultural heritage sites, natural habitats, and settlements. This multifunctionality activates multiple legislative frameworks and overlapping institutional fragmentation. Legal instruments such as water management laws, coastal protection regulations, agricultural policies, urban planning acts, natural and cultural heritage conservation laws, environmental legislation, and disaster management systems all constitute integral components of this layer. However, the overlaps, contradictions, or gaps among these various legal frameworks often create significant complexity in the conservation and management of landscapes. Particularly in hydrologically continuous systems such as riverine landscapes, the lack of coordination among administrative boundaries or institutions contradicts the fluid nature of water and hinders integrated management.

The legal, administrative, and governance layer concerns the legal frameworks, institutional structures, planning instruments, and decision-making mechanisms involved in the conservation, management, and planning of riverine landscapes. This layer encompasses the laws governing natural and cultural assets, conservation designations, planning documents, inter-institutional collaborations, and governance approaches that include participation processes. Riverine landscapes are often managed in a fragmented manner across multiple administrative areas, sectors, and scales. For instance, a single river may traverse both rural and urban boundaries; one

section might be designated as a natural conservation area, while another serves as agricultural land. Meanwhile, it may support energy production, irrigation, tourism, or recreational activities, each regulated under different sectoral frameworks. Therefore, the management of riverine landscapes requires a holistic and multi-scalar governance approach capable of addressing their complex, cross-sectoral, and hydrologically interconnected nature.

In conclusion, riverine landscapes are complex systems interwoven with natural, ecological, spatial, temporal, and cultural multilayeredness (Figure 2.6). Evaluating their landscape layers, dynamics, indicators, and driving forces together is crucial for developing decision-support processes at both local and regional scales. However, sustainability depends on the multidimensional and holistic analysis of all layers, combining their spatial, temporal, and agentive dimensions. Therefore, approaches to the conservation of riverine landscapes must be holistic, participatory, transdisciplinary, and attentive to the interaction between culture and nature, ensuring that these dynamic systems are managed as living and evolving heritage landscapes.

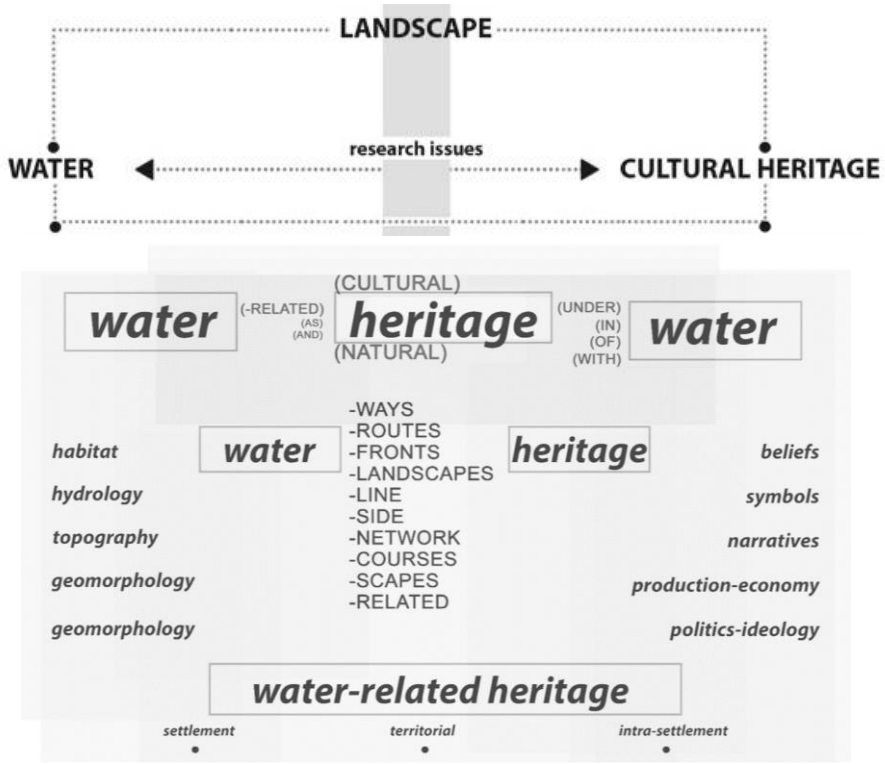


Figure 2.6 Water (-Related) Landscapes and Heritage Patterns, Types, and Forms (Author, 2026)

'Philosophical and Cultural' Dimensions of Water (-related) and Riverine Landscapes

"Water is a cultural substance through which cultural constructions and social relations, values, meanings, beliefs, perceptions, and identities are created, expressed, and sustained." (Strang, 2004)

One of the most significant agencies of nature, perhaps the most essential one, is water. As the central element for the existence of life, water constitutes a fundamental component for the sustainability of ecosystems, life, and all natural resources. The variability in the amount and forms of water available on Earth has shaped the evolution and development of human cultures. In the history of philosophy, elements of nature have been regarded as entities filled with intellectual,

symbolic, and cultural meanings. Within this framework, rivers stand out as powerful philosophical metaphors, embodying fundamental concepts such as time, change, flow, and transformation. Owing to their ever-shifting nature, fluidity, and intrinsic variability, rivers have located a central position in philosophical thought, serving as meaningful symbols in both Eastern and Western traditions. Rivers have attracted transdisciplinary attention, extending from ancient philosophy to literature, ecology, and settlement studies. As living symbols of both physical and cultural circulation, they spatialize processes of social memory and transformation. Thus, the river, simultaneously natural and metaphysical, functions as a dynamic medium through which humanity contemplates continuity and change, permanence and impermanence, and the cyclical essence of existence.

Rivers represent the 'fluidity' and 'infinity' of nature. This state of fluidity has been interpreted philosophically as a metaphor of both time and existence. Through its continuous flow, the river inscribes traces of change upon the surrounding landscape and shapes a layered fabric of time and space. Physical processes such as sediment transport, shoreline erosion, floodplain transformations, and delta formation constitute the geographical imprints of time. Yet these traces are also intertwined with social memory. The rituals, place names, mythologies, and narratives of the communities that have lived along rivers endow the riverine landscape with a cultural temporality. People construct stories about rivers; over time, these stories crystallize into memory and become embedded in the landscape itself (Tuan, 1977; Cusack, 2010; Greenham, 2012; Schnach, 2017). Riverine landscapes, therefore, possess an ever-changing existence and may be understood as the spatial embodiment of becoming.

Culturally, rivers have always symbolized purification, transition, rebirth, and connections (Strang, 2004; UN, 2003; 2005; Klaver, 2011; Ball, 2015). Beyond its physical properties, the relationship between humans and rivers reveals how this interaction generates new meanings and values, shaped by the distinctiveness of place and geography (Strang, 2005; Tvedt, Jakobsson, 2006; Klaver, 2011) (Figure 2.7). The cultural reflections of river's meanings persist vividly in local knowledge

systems, traditional water structures, specific place names and toponyms, folk narratives, and ceremonies. Water-based narratives, mythologies, poems, and local stories reveal the diverse meanings that water holds for societies (Bachelard, 1983; Strang, 2004; UN, 2005). Rituals from around the world, such as baptism in Christianity, ablution and full-body purification in Islam, cleansing ceremonies in the Ganges River in Hinduism, and water-based purification rites in Japanese Shinto temples, all demonstrate the universality of these symbolic meanings (Strang, 2004; Da Cunha, 2019; UN, 2021) (Figure 2.7). These practices reveal that rivers serve as a mediator agency for spiritual, moral, and social transformation. However, cultural representations of water and rivers extend far beyond religious or ritual contexts. In literature, architecture, art, and folklore, water has been portrayed as a metaphor for love, solitude, longing, memory, time, and even political power (Bachelard, 1983; Tvedt, Strang, 2005; Jakobsson, 2006; Boelens, 2015). For instance, in Western literature, rivers are often associated with the passage of time and the inevitability of fate, whereas in Eastern narratives, water tends to symbolize harmony and cyclicality (Bachelard, 1983; Strang, 2004; Schnach, 2017). In Anatolian folk culture, fountains, springs, and water sources function as communal spaces, centers of gathering, love, legends, and prayers, beyond as points of access to drinking water (Önge, 1997; İkiz Kaya, Tanyeli, 2017).

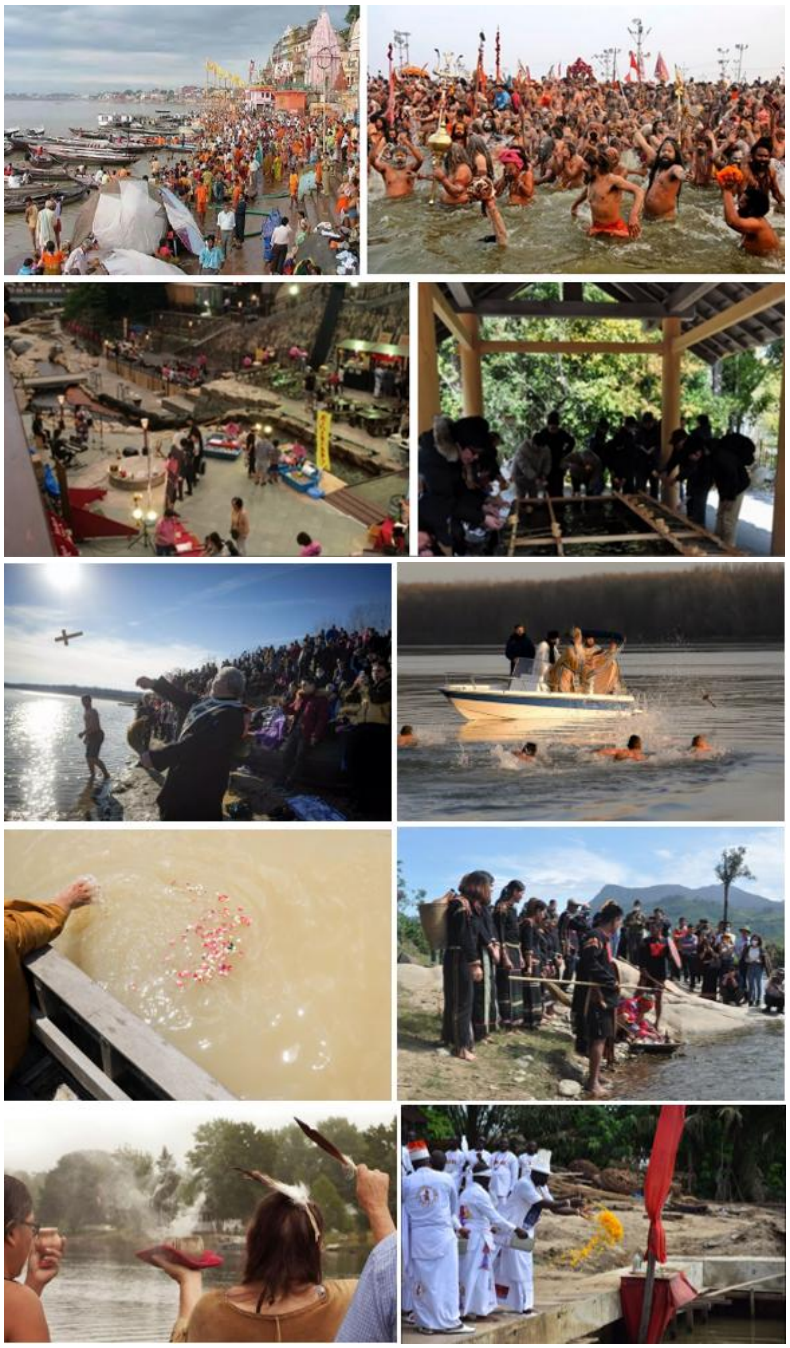


Figure 2.7 River-Based Rituals and Collective Practices as Expressions of Heritage Across Different Contexts: Cultural Significances, Spiritual and Religious Practices and Meanings of Water and River[4]; Top Line: Ganges River, where Believers

[4] Sources in order:
(UN, 2021; UN, 2021; https://3seaseurope.com/wpcontent/uploads/2022/10/epiphany4.webp;

Bathe in the River to Wash Away Their Sins; Second Line: Purification Ceremonies and Festivals in front of a Japanese Shrine and Riverbed; Third Line: The traditional “Throwing of the Cross”/“Blessing of the Water” ritual performed during the Epiphany (Theophany) celebrations in Christianity; Forth Line Left: Scattering ashes and bones for Thai funeral; Forth Line Right: The water worship ceremony of the Ede people living in the village of Kieu, Vietnam; Fifth Line Left: An elder of the Passamaquoddy tribe, on the ancestral canoe journey from Motahkomikuk to Sipayk; Fifth Line Right: Amasikumara Festival, Gabarmatu Kingdom - Delta State, Nigeria.

Across different geographies, rivers embody both mystical meanings—such as purification, renewal, and sacredness—and function as a place where the most fundamental practices of everyday life—washing, laundry, and water provision—are carried out. In this context, alongside religion, rituals, myths, and belief systems, the technical and functional aspects of water and rivers also reflect human–water relationships that have contributed to the emergence of diverse cultures across geographies (food production (agriculture), hygiene (washing, bathing, cleaning), and recreation (diving, swimming, boating, surfing, rafting) (UN, 2003)). This condition demonstrates that rivers are perceived as a space of both physical and spiritual transformation, producing a continuity in which individual experiences are intertwined with collective rituals. (Figure 2.8)

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https://thumbs.dreamstime.com/b/scattering-ashes-bones-thai-funeral-pouring-flower-river-water-buddhist-monk-traditional-ceremony-burying-116651287.jpg?w=992; https://images.vietnamtourism.gov.vn/vn//images/2022/thang_9/2609.dak-lak2.jpg; https://www.voicesfromthebarrens.com/wp-content/uploads/2020/04/wabanaki-elder-at-river-ceremony.jpg; https://www.fmacce.gov.ng/photos/amaseikumor-festival)

Figure 2.8 Everyday Practices and River-Based Activities: Washing, Bathing, Purification and Collective Use of River Across Different Contexts[5]: Top Left: Large group of people wash themselves in river, Varanasi; Top Right: Drying laundry on the riverbank; Bottom Left: Women in Kwantsila village visit this river daily to do laundry, bathe and collect water to cook; Bottom Right: African way of washing.

In that sense, riverine landscapes are places imbued with cultural significance, deeply intertwined with human life, and shaped through historical and social processes. The landscapes formed by rivers have played crucial roles throughout history in the establishment of settlements, the organisation of communities, the determination of production patterns, and the construction of cultural identities. In this sense, the riverine landscape can be conceptualized as a living cultural organism that embodies cultural practices, local knowledge, symbols, narratives, and belief systems. Cultural relationships concerning riverine landscapes are nourished and carried into the future through historical continuity, collective memory, lived

[5] Sources in order: (Top Left ad Right: https://thumbs.dreamstime.com/b/hindu-devotee-bathing-holy-river-ganges-hindu-ghats-varanasi-northern-india-hindu-ghats-holy-river-ganges-218047277.jpg?w=992;https://groundup.org.za/media/_versions/images/photographers/Mkhuseli%20Sizani/women_doing_laudry_in_the_river_near_their_village_huge.jpg;https://www.istockphoto.com/tr/fotoğraf/african-way-of-washing-gm157192961-3205132)

experience, and shared narratives. The living spaces, agricultural practices, religious or mythological stories, and rituals established along a river are constructed within a temporal process, constantly changing and transforming over time (Cosgrove, 1998; Ingold, 2000; Strang, 2004; Assmann, 1995). The flooding, drying, shifting course, or transformation of a river through technical interventions becomes an event inscribed in the collective memory of communities, often carrying either traumatic or deeply symbolic meanings. Thus, the river transforms into a carrier of cultural memory, both as a physical fluidity and a temporal narrative. Alongside material practices such as agriculture, fishing, and transportation, immaterial practices, including myths about water, local legends, beliefs, festivals, and rituals, form integral components of this cultural landscape (UN, 2003; WHC, 2011; Greenham, 2012; Macklin and Lewin, 2015; Schnach, 2017). In this sense, its place in oral culture generates both temporal and spatial belonging. Moreover, structures within the landscape, such as stone bridges, weirs, mills, and ports, serve as tangible representations of the river's cultural significance, while folkloric narratives, prayers, idioms, and symbols constitute its intangible dimension.

In conclusion, riverine landscapes, with their continuous flow, cyclicality, and transformative potential, provide an environmental core that shapes the sense of place. The river's sound, smell, color, and changing natural phenomena, such as flooding or drought, create an emotional and mental fabric embedded in memory (Greenham, 2012; Caskey, 2017; Da Cunha, 2019). In this respect, the geography through which a river flows is an experiential ground of becoming. This condition enables water to act as both a physical and symbolic connector in the relationship individuals or communities establish with a place. In this regard, riverine landscapes become a material representation of accumulated experiences, memory, and continuity over time. Human civilizations established along a river embody spaces of being that reflect the system of values produced by that community over time. Therefore, the conservation of riverine landscapes should be regarded as an act of carrying traces of the past into the future and a means of safeguarding the spatial continuity and meaning-making of social existence.

'Contextual and Spatial' Dimensions of Water (-related) Riverine Landscape Heritage

"A landscape gains meaning only when seen within its context, as part of a greater pattern of life and place." (Spirn, 1998)

Riverine landscape heritage is closely related to place, context, and scale through the network of relationships within temporality. What gives meaning to landscape heritage is its positioning across scales, within geographical, natural, physical, cultural, social, economic, and socio-political contexts. This network of relations can be approached in two ways: first, in terms of spatial boundaries and settlement context; and second, in terms of social and power relations (Duncan, Duncan, 2009; Claval, 2008; Cosgrove, Daniels, 1988; Ingold, 2000). Although many scholars have examined the spatial and scalar dimensions of landscape and heritage, a more detailed exploration of how these two issues interact through spatial reflections would provide a deeper understanding of the subject. These spatially heterogeneous elements interact with one another non-linearly over time, exhibiting characteristics such as self-organisation and adaptation or non-adaptation. One of the key ways to understand spatial heterogeneity is to identify and assess the traces of the many different entities that constitute the landscape structure. The contextual and spatial traces across a landscape pattern provide critical information about the ecological processes, functions, and spatial organisations embedded within the landscape's structure. All these contextual and spatial processes and layers that form the landscape structure are inherently three-dimensional (Cosgrove and Daniels, 1988; Ingold, 2000; Antrop, 2005; Raffestin, 2012).

This three-dimensional structure of the riverine landscape arises from the inherent characteristics of the landscape and is formed through its functions and processes. It serves as a key factor for numerous ecological processes such as topography, erosion, surface runoff, temperature regulation, and the distribution of biodiversity. The importance of the third dimension in landscape ecology lies in its ability to integrate the spatial (horizontal) approach of geographers with the functional (vertical)

approach of ecologists, thus providing a more comprehensive understanding of landscape ensembles (Cosgrove, 1984; Ingold, 2000; Duncan, Duncan, 2009; Raffestin, 2012; Crumley et al., 2017). Changing landscapes, particularly through land use change, result in modifications to landscape structure. Land use changes generally begin at a micro scale, yet the cumulative effects of these minor changes over spatio-temporal relations can, in the long term, lead to critical consequences for environmental conditions and regional characteristics (Figure 2.9).

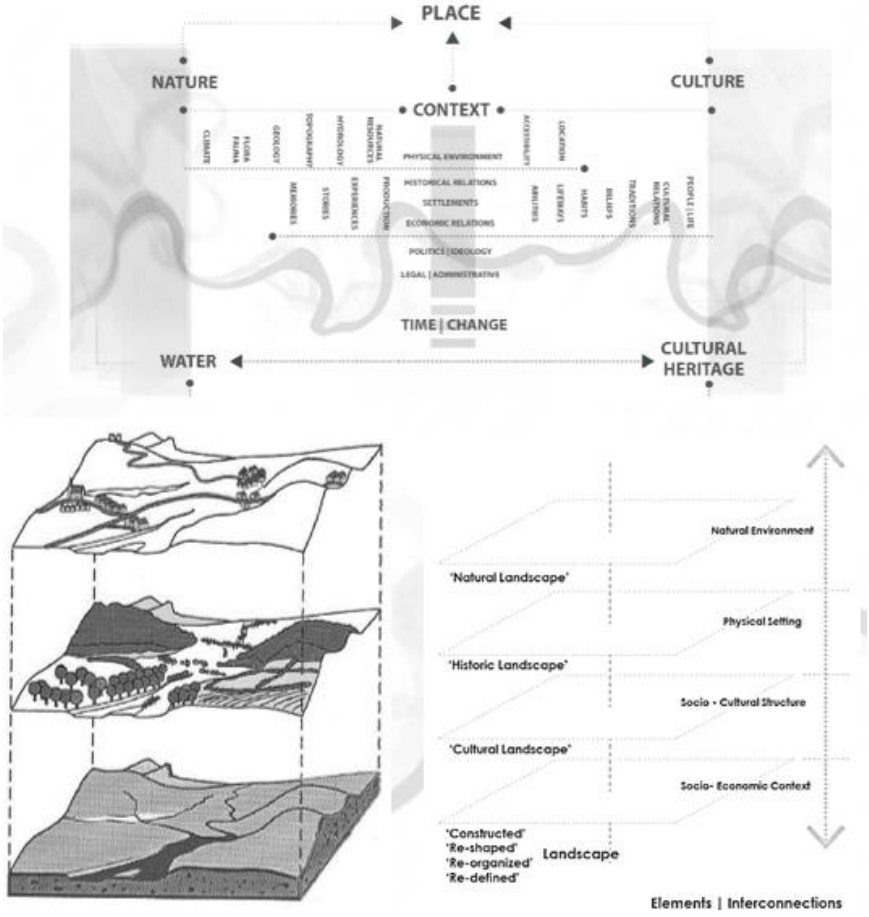


Figure 2.9 Three-Dimensional Contextual and Spatio-Temporal Structure of the Landscapes and Heritage Places (Author, 2026)

The ‘river’ and its heritage hold different meanings for different people, societies, and geographies. In a natural context, water may symbolize border, protection, and/or fertility, while in cultural, religious, and spiritual contexts, it may represent

creation, peace, community, and self-connection (Klaver, 2011; 2018; Silva, Serdoura, & Pinto, 2006; Caskey, 2017). This is because culture directly influences how the significance of water is perceived, derived, and utilized. In this regard, the river or riverside constitutes a matter of connection. As a line, the river reflects a particular way of understanding these physical features through its flow. By examining different forms of riverine heritage, their transformations over time, their relationships with socio-cultural practices, and their functional and spatial development, it becomes possible to understand how societies in the past and present have ascribed value to water (WHC, 2011; 2015; ICOMOS, 2013; 2019)

Rivers, within the spatial context, are also perceived as thresholds and boundaries, a condition that shapes everyday mobility practices and reveals a space of negotiation between humans and nature(Figure 2.10). Across different geographies, people reproduce their relationship with the river through practices of crossing, transportation, and connection, overcoming this natural boundary by means of stepping stones, temporary bridges, boats, and ferries. These crossing practices demonstrate as a “connector” linking the two sides. At the same time, this condition highlights how dynamic and adaptive human–river relationships are in sustaining the continuity of everyday life, and how spatial constraints are negotiated and gradually eroded through social and cultural practices.

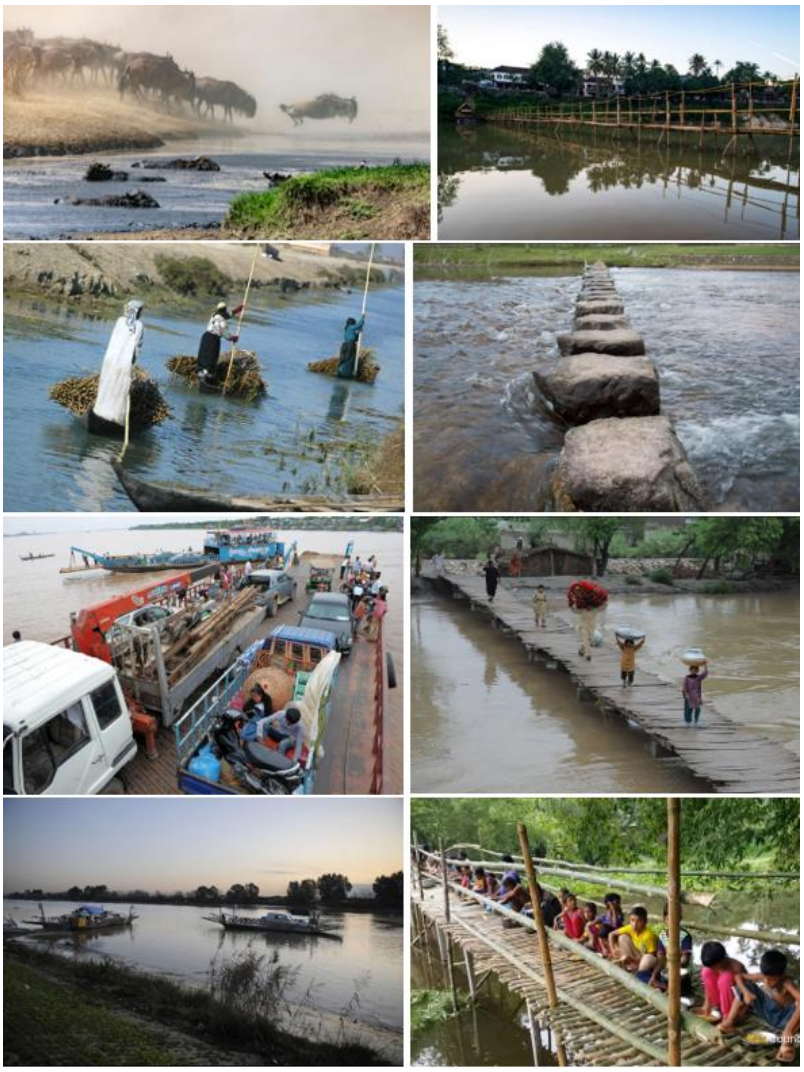


Figure 2.10 A River as a Threshold/Boundary in Spatial Context: Everyday Mobility, Crossing Practices in Riverine Geographies Across Different Contexts[6]

[6] Sources in order: (https://media.istockphoto.com/id/949995472/tr/foto%C4%9Fraf/tanzanyadaki-bir-nehir-ge%C3%A7i%C5%9F-antilop.jpg?s=2048x2048&w=is&k=20&c=XyfreXHmgtJRITidliWKsbe0bEyZ-xDv0KpSnIpyGrA=; https://theroamingcompass.com/wp-content/uploads/2025/04/10.-BAMBOO-BRIDGE-1024x683.jpg; https://savethetigris.org/wp-content/uploads/2016/06/Iraq1.jpg; https://holidayindartmoor.co.uk/hexworthy/huccaby-stepping-stones-huccaby-steps-36726.html?v=localatt&page=1; https://www.afpbb.com/articles/-/3082869; https://www.eurasiareview.com/22112023-dominican-republic-and-haiti-at-the-crossroads-of-the-massacre-river-analysis/?; https://www.gettyimages.com/detail/news-photo/ferry-boats-transporting-commuters-cross-the-guadalquivir-news-photo/96154867?adppopup=true;https://www.youtube.com/watch?v=R_kl62D55Xo)

First Line Left: Wildebeest crossing a river in Tanzania; Top Line Right: Bamboo bridge build annually at low water in dry season over Nam Khan River at confluence of Mekong River in Luang Prabang; Second Line Left: Daily Life Along the Tigris River, Geography of Mesopotamia; Second Line Right: Crossing the river: Huccaby Stepping Stones/Huccaby Steps, Hexworthy, Dartmoor National Park Third Line Left: People ride a ferry as they cross the River Me; Third Line Right: Dominican Republic and haiti at-the crossroads of the Massacre River; Bottom Line Left: Ferry boats transporting commuters cross the Guadalquivir river from the village of Coria del Rio to Sevilla; Bottom Line Right: Local temporary bridge ‘Shako’

Moreover, rivers constitute a multilayered spatial system in terms of production, mobility, and livelihood practices. Across different geographies, the river acts as a creator and transformer of place, functioning as a foundational component of local economies through floating markets where trade takes place, fishing activities, and water-based production practices (Figure 2.11). At the same time, as a crucial element of transportation and circulation, the river shapes the spatial organization of human communities and the rhythms of everyday life. In this context, the relationship established with the river represents a holistic mode of living that extends from production to consumption, and from labor to mobility, continuously reproduced through local knowledge, techniques, and cultural practices.

Figure 2.11 River-Based Production, Mobility, and Livelihood Practices in Riverine Geographies Across Different Contexts[7]; Top Left: Floating market on Mekong River in Vietnam; Top Right: boats selling fruit, Trading boats on Cai Be Floating Market, Mekong Delta; Bottom Left: Farming freshwater fish for Guineantables; Bottom Right: A Ntumu fisherman casting a wooden fish trap and a net.

Rivers present a multilayered and multi-scalar structure in terms of the spatial reflections of production systems and ecological practices. Local activities such as agriculture, fishing, and water management demonstrate that the relationship established with the river is not only economic but also constitutes a spatial and ecological mode of organization (Figure 2 .12). Irrigation systems, terraced agricultural fields, traditional fishing techniques, and structures that regulate water flow reveal that human–river relationships are shaped through technical knowledge, local experience, and environmental adaptation. At the same time, these practices indicate that riverine landscapes are dynamic systems continuously reproduced through human–nature interactions. Production forms aligned with ecological cycles shape both the livelihood strategies of local communities and the spatial organization of place. Therefore, the river should be understood as a living landscape in which technical, cultural, and environmental layers are intertwined, acting as a creator agent of both production and ecological continuity.

In conclusion, riverine landscapes encompass patterns that continuously, discontinuously, fragment, disappear, transform, or are reconstructed across multiple scales, from regional ecosystems to settlement and intra-settlement scales, reflecting the environmental, contextual, and spatial characteristics. Riverine landscapes are shaped and influenced by anthropogenic relationships and uses, and they emerge as the result of complex interactions among natural, biological, physical, social,

[7] Sources in order: (https://es.dreamstime.com/foto-editorial-can-tho-vietnam-barcos-en-el-r%C3%ADo-de-mekong-image49453851; https://www.saigonlocaltour.com/cai-be-floating-market-mekong-delta-attractions/; https://jicamagazine.jica.go.jp/en/article/?id=202201_4f; https://doi.org/10.4000/books.irdeditions.8355)

cultural, economic, and political forces, expressed through various forms, scales, and arrangements of human–nature coexistence.

Figure 2.12 Riverine Production Systems and Ecological Practices: Agriculture, Fishing, and Water Management and Their Spatial Reflections[8]; Top Left: Menderes River and Söke Plain showing irrigation channels ad agricultural landscape; Top Right: The iconic Tegallalang Rice Terraces in Bali; Middle Left: Agricultural workers in the Ouémé Basin; Middle Right: Reed/Cane Worker in

[8] Sources in order:
(Söke Municipality Archive; https://www.shutterstock.com/tr/image-photo/rice-field-altar-offerings-dewi-sri-1095137681**;** https://www.fao.org/images/seralibraries/default-album/image-fp187.jpg?sfvrsn=945c4b9e_5**;** https://www.breakingnews.com.tr/gundem/sicak-gecen-kis-sultan-sazligi-ndaki-kamis-hasadini-da-zorlastirdi-779697; https://www.istockphoto.com/es/foto/el-sistema-de-riego-gm1404995079-457044191; https://www.alamy.com/stock-photo-norias-ancient-water-irrigation-system-hama-syria-)

Sultan Sazlığı Wetland/Delta, Türkiye; Bottom Left: The istoric Irrigation System and Gates Indonesia; Bottom Right: Historic Irrigation System in Hama/Syria.

'Temporal' Dimensions of Water (-related) and Riverine Landscape Heritage

"Landscapes are processes, not products; they flow, evolve, and carry the traces of their making. Every landscape is an archive of time, a visible accumulation of what endures and what changes." (Jackson, 1984)

The relationship between time and space, or between time and landscape, has long been examined within historical and geographical scholarship. Early contributions to this discussion can be traced to Ratzel, who explored the interconnections between geographical settings and human settlement patterns. In his work, Ratzel approached space as a foundational element shaping cultural history, emphasizing how spatial conditions influence the development of societies (Ratzel, 1891). A significant shift in this direction was introduced by Lucien Febvre and Fernand Braudel, the founding figures of the Annales School. Their work reoriented historical inquiry by linking geography with economic structures, social relations, and cultural processes, thereby expanding the scope of historical analysis beyond political events alone (Febvre, 1922; Braudel, 1949). By foregrounding geographical space as an active factor in historical processes, the Annales School laid the foundations for a more integrated understanding of history.

Among these scholars, Braudel placed geography at the center of his research and introduced a renewed conception of time through the concept of longue durée. The temporality of landscapes should be understood through the coexistence of multiple temporal layers. In this regard, the concept of *longue durée*, developed by Braudel, provides a critical theoretical foundation for understanding the long-term, slowly evolving structural characteristics of landscapes. By emphasizing long-term structures and slow transformations, he reframed historical continuity and change beyond short-term events (Braudel, 1963; 1969). Through this perspective, Braudel

broadened the analytical framework of history by highlighting the enduring relationships between human societies and their geographical environments.

However, a *longue durée* perspective remains insufficient for capturing the dynamic and ever-changing nature of landscapes. Braudel's temporal framework also incorporates *conjonctures*—medium-term processes such as economic cycles, land-use transformations, and demographic shifts—and *l'histoire événementielle*, which refers to short-term events, disruptions, and individual experiences (Braudel, 1966). These temporal layers correspond to different dimensions of "geographical time, social time, and individual time," each contributing to the production and transformation of landscapes. He further elaborated this approach through the concept of géohistoire, which he described as a method for comprehending history across multiple temporal layers and fragmented durations (Braudel, 1969). Within landscape studies, and particularly in landscape biography approaches, this multi-temporal perspective enables a more comprehensive understanding of how landscapes are continuously shaped through the interaction of structural conditions, socio-economic processes, and event-based transformations (Ingold, 2000; Roymans et al., 2009; De Jong, 2015; Kolen & Renes, 2015; Crumley et al., 2017; Shakespeare, Russell-O'Connor, 2022). Accordingly, landscapes can be interpreted as multi-layered temporal constructs in which long-term structures, medium-term transformations, and short-term events intersect and co-produce spatial and social outcomes (Figure 2.13).

During this period, scholars such as Pierre Nora and Jacques Le Goff challenged conventional historical narratives by rejecting the idea of space as the sole organizing principle of history (Nora and Le Goff, 1974). Nora, in particular, criticized national historiography rooted in a positivist perspective and proposed an alternative approach that emphasized memory, representation, and symbolic meanings rather than relying exclusively on archival documentation. From this point onward, space increasingly came to be understood in relation to social practices and everyday activities. This perspective was later expanded by scholars such as Claude Raffestin,

who defined territoriality as an “ensemble of relations that a society maintains with exteriority and alterity for the satisfaction of its needs” (Raffestin, 2012).

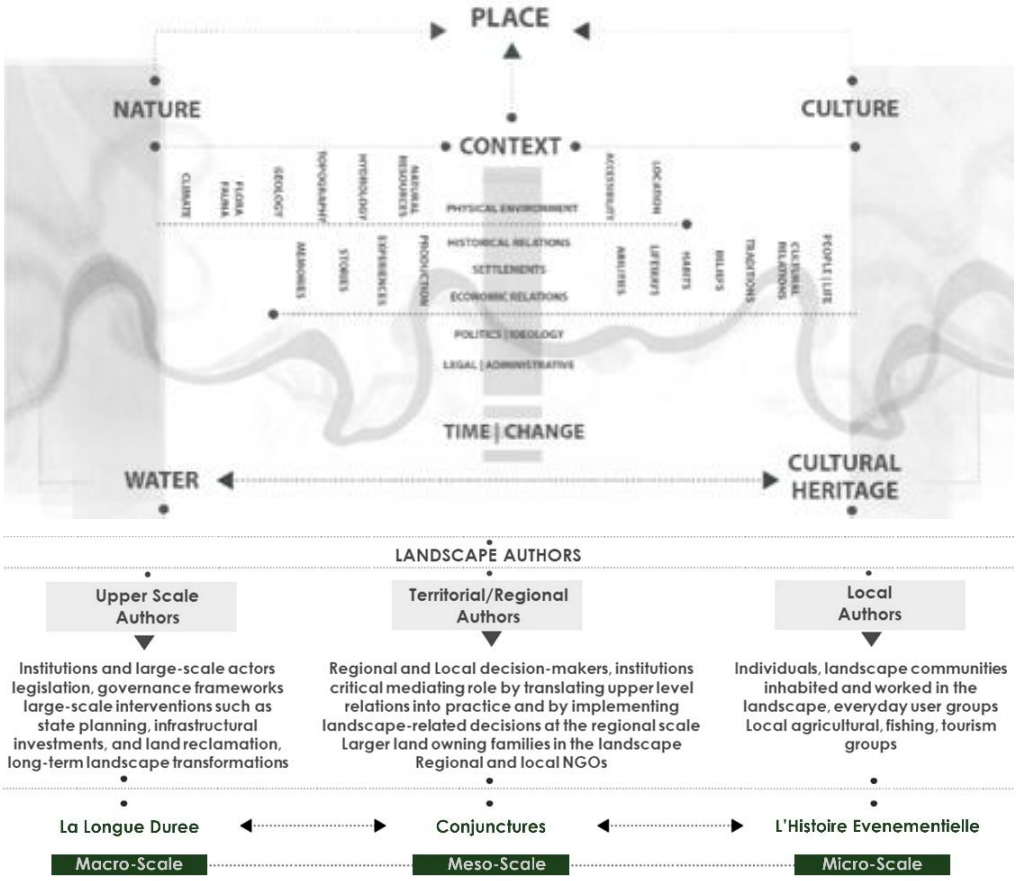


Figure 2.13 Diagram including the Historical Transformations, the Categorisation and Identification of the Landscape Authors and Their Positioning Relating to Braudel’s (1963; 1966) Planes of Time (Author, 2026)

In later periods, spatial perspectives regained prominence within historical research, particularly through the rise of microhistory, shifts in analytical scale, and the growing contributions of archaeology to *géohistoire*. Accordingly, history increasingly began to treat space itself as an object of inquiry, reintroducing geographical approaches similar to those originally proposed by Ratzel. These developments led to diverse scholarly responses to the fundamental question of how knowledge about the past is constructed.

Within this context, landscape emerges as a primary source for understanding the past. Landscapes function as rich documents of both human and natural history, containing material traces of interactions between societies and their environments. They provide insights into historical land-use patterns, settlement practices, traditional knowledge systems, everyday habits, and cultural expressions. As such, landscapes can be read as texts that reveal the history, identity, and cultural continuity of places and communities. In this sense, landscape may also be understood as a palimpsest, bearing the layered imprints of successive historical periods (Duncan, Duncan, 2009; Claval, 2008). Cosgrove and Daniels (1988) argue that landscape emerges through the objectification of memory, as individual and collective pasts become fixed in space.

According to Ingold (2000), landscapes narrate a chronological story of life, of the relationships between nature, humans, and culture, and of settlement history. They embody lives and times that have been displaced and reshaped across generations within their own formations. To perceive a landscape, therefore, is to perform an act of remembrance. This remembrance is not simply recalling an internal image stored in memory but establishing a perceptual relationship with an environment imbued with the meanings of the past. Understanding the dynamism of time, its natural, environmental, physical, spatial, sociocultural, and socioeconomic traces, makes landscape and heritage studies crucial for learning from and narrating richer, more complex stories (Ingold, 2000).

Within this framework, landscape heritage studies confront the challenges of developing new ideas and concepts of time and temporality, as well as engaging with the depth and meaning of time. The strong challenges for such studies lie in establishing a connection between ethnographically observed temporalities and the long-term relations (Ingold, 2000). Experimental studies and emerging theoretical perspectives on landscapes enhance and expand our understanding of how landscapes come into being and how they might transform in the future. The temporality of landscapes does not emerge within a fixed duration; rather, the past is always present in today's landscapes. This is because historical layers contribute to

the shaping of landscapes in a non-linear way, continuously carried through time. Both conscious and unconscious choice, remembrance, forgetting, and perception serve as main agencies that shape living landscapes. The temporal dimension and change are regarded as constitutive components of both landscape and heritage, emerging from natural, historical, social, cultural, economic, political, or ideological processes. In this sense, the landscape is a process, one that accumulates human actions within its natural, ecological, archaeological, and anthropological history.

2.2 Approaches and Changing Paradigms for Water (-related) and Riverine Landscapes as Heritage: Critically Review and Identify, Valuation and Characterization of Approaches

Addressing such a complex landscape necessitates the adoption of nature-based solutions and the integration of nature–culture linkages. These interrelations enable a holistic heritage approach that incorporates the spatio-temporal and biographical dimensions of the landscape, providing a basis for designing policies, proposals, and future scenarios. Within this framework, the Menderes riverine landscape is conceptualized as a dynamic, multilayered, multiscalar, multidimensional, and transdisciplinary riverine landscape heritage, shaped by the interaction between natural processes and human interventions across time and space. This framework acknowledges the generator, connector, and integrative role of water in cultural heritage and landscape management, aiming to unify values, methodologies, and tools within a coherent and adaptive approach.

The conservation and management of water (-related) /riverine landscapes have undergone significant paradigm shifts over the past century. While mid-20th-century practices were dominated by an engineering-based, fragmented approach that treated nature and culture as separate categories, contemporary approaches increasingly emphasize ecosystem-based, integrated culture–nature, multi-author, and adaptive approach (Rössler, 2000; 2002; 2003; Mitchell et al., 2009; UNESCO, 2011; Taylor, Lennon, 2011; Larsen, Wijesuriya, 2015; ICOMOS, 2017). In this context, the

approaches discussed below represent the key conceptual and operational frameworks that have emerged both in the literature and in the applied scope of this study.

2.2.1 'Nature-Culture Coexistence/Integrity' Approach

"The recognition of the interlinkages between culture and nature is essential to ensure the integrity and sustainability of heritage." (*UNESCO, 2003)*

Influenced by relational ontologies emerging from anthropology, geography, and science studies (Ingold, 2000; Harrison, 2015), the nature–culture paradigm views these two spheres as inseparable and calls for a rethinking of heritage boundaries. Within this framework, the Nature–Culture Integrated Approach advocates for understanding cultural and natural heritage not as separate management issues but as reciprocal interaction and co-evolving value systems, embedded within holistic relational networks.

The concept of culture–nature integrity emerged as a response to the fragmented approaches of heritage values within global conservation regimes, particularly the UNESCO World Heritage framework (1972), which historically operated through a dualistic division between natural and cultural sites. The inclusion of "cultural landscapes" in the World Heritage framework in 1992, followed by instruments such as the 2011 UNESCO Historic Urban Landscape Recommendation, marked decisive steps toward the integration of these dimensions. The IUCN–ICOMOS Connecting Practice project (2021) has been especially significant for addressing river systems, landscapes, and water ecologies, as it seeks to explicitly harmonize natural and cultural value assessments. In IUCN–ICOMOS documents (2021), this integrative approach is emphasized as critical for cultural landscapes, biocultural diversity, and living heritage sites. Within riverine landscapes, hydrological functions (such as water quality and flood cycles) coexist with historical settlement patterns, cultural memory, and economic practices, all of which require simultaneous conservation and management (Leitão et al., 2018).

Accordingly, the concept of cultural landscapes as heritage sites evolved into an approach that encompasses the reciprocal interactions between nature and human. This development marks a theoretical transition from dualistic frameworks separating cultural and natural heritage toward a relational paradigm that acknowledges their co-constructed existence and integrity, particularly within water environments. Through the contributions of scholars working on the nature–culture coexistence, this paradigm has turned into a multidimensional interpretive approach that integrates ecological, social, economic, and symbolic values within a unified understanding of heritage (Taylor, Lennon, 2011; Mitchell et al., 2009).

Theoretically, this approach aligns with posthumanist and relational ontologies in geography and anthropology (Harrison, 2015; Ingold, 2000), which argue that landscapes are co-produced by human and non-human authors, and that their integrity lies not in isolating material forms but in preserving the relational networks that sustain them. Within this framework, water (-related) landscapes and river/riverine landscapes situate a critical intersection between cultural and natural systems, holding a distinctive position in the expansion of cultural landscape literature. Water functions simultaneously as source and meaning, ecosystem and cultural practice, ritual and infrastructure, embodying multiple layers of significance (Strang, 2004; WHC, 2011; Hein et al., 2020). Traditionally, however, the division between cultural and natural heritage has posed one of the greatest obstacles to the comprehensive and holistic conservation of such complex heritage sites. In most research, nature is treated only as a background or an environmental and physical frame, a perspective that overlooks the living character and ecological resilience of riverine landscapes.

Similarly, in conservation practice, this ecological layer often remains secondary, with heritage tools focusing predominantly on the built environment or historical context. As Waterton and Watson (2015) point out, in practice, culture is frequently reduced to aesthetics, monuments, or tourism value, neglecting intangible heritage, social memory, and land-based cosmologies. This reduction becomes particularly problematic in riverine landscapes, where local knowledge systems, seasonal rituals,

and historic water-use practices constitute the very essence of cultural meaning. A river's cultural value must, therefore, be understood together with its life-generating, environment-regulating, and self-renewing capacities. The emerging nature–culture integrity and interconnectedness paradigm offers a holistic alternative, recognizing the entangled histories and ecological roles embedded within water and riverine landscapes, and proposing an integrative framework that acknowledges their co-produced and living heritage character (Waterton and Watson, 2015).

This paradigm shift comprises profound implications for how water and riverine landscapes are interpreted, managed, and evaluated in the age of climate crisis, urbanization, and hydrosocial transformation (Boelens, 2015). The culture–nature approach calls for new methodologies specifically adapted to the complexity of water and riverine landscapes. Such complex heritage systems require multi-scalar and transdisciplinary approaches that integrate ecological, hydrological, archaeological, and socio-cultural knowledge. Within this framework, nature–culture approaches aim to eliminate fragmented perspectives in conservation planning by integrating ecological and cultural processes, thereby promoting a holistic understanding of landscape continuity and transformation. However, beyond the conceptual dimension, there are two major practical challenges. First, the authorities of nature conservation and cultural heritage conservation decision-maker mechanisms are separated, leading to a lack of coordination. Despite its potential, the culture–nature connectivity approach faces institutional fragmentation when applied to water and riverine landscapes. In most contexts, water management is overseen by environmental or hydrological agencies, while cultural heritage authorities lack responsibility or technical expertise.

Furthermore, the epistemological dominance of the natural sciences in water management tends to marginalize local narratives and cultural meanings, reducing rivers and their landscapes to mere ecosystem services or hydrological data. Temporal tensions also arise in managing rivers as both dynamic ecological systems and repositories of historical memory; for instance, river restoration projects, while ecologically driven, can inadvertently erase cultural stratigraphy and the historical

layers that embody collective identity and place memory. While the participation of local communities is crucial to the success of this approach, in regions dominated by powerful economic authors, such participation often remains symbolic rather than substantive. Approaches that make visible the relationship between natural layers and cultural values, and that define water as an “initiator and connector agency”, are particularly significant. In this light, the nature–culture approach must move beyond a technical or ecological planning paradigm, toward a holistic heritage conservation vision in which ecosystem services are understood in conjunction with cultural values, acknowledging that the vitality of rivers and landscapes depends equally on their ecological resilience and cultural continuity. In addition, understanding, evaluating, analyzing, and continuously monitoring these multi-layered and multi-scalar interrelations is highly resource-intensive and demands strong institutional coordination across multiple scales and disciplines. Without policy support, adaptive management often remains project-based, with limited long-term impact despite its potential to foster resilience and holistic understanding in the management of riverine and water/river (-related) landscape heritage.

In summary, the nature–culture approach particularly focuses on overcoming conservation traditions that treat natural and cultural heritage as separate categories and on evaluating nature, culture, their reciprocal interactions, and governance processes together. Within this approach, landscape is interpreted as an integrated system/network produced through ecological, cultural, social, and managerial processes. This approach provides a strong conceptual foundation for understanding the constitutive role of elements such as water/river, which shape both natural processes and cultural practices, in the production of heritage. Accordingly, the approach evaluates heritage through relationships and their broader manifestations by drawing on concepts such as nature–culture interlinkages, integrated heritage values, ecological–cultural continuity, landscape integrity, and living nature–culture relations. In addition, through perspectives such as community-based relations, cross-sectoral collaboration, resilience and adaptive management, and long-term transformation, it situates conservation within a holistic manner (Figure 2.14).

Nevertheless, the theoretical strength of the approach does not find an equivalent response at the practical level. Although nature–culture integrity provides a strong conceptual foundation, the translation of integrated values into operational tools, their integration into governance structures, and their applicability within decision-making processes constitute important limitations. In particular, the institutional separation of natural and cultural sectors, fragmented scale-related issues for heritage places, fragmented legal and governance frameworks, the limited availability of measurable indicators, and the insufficient representation of local community dimensions appear to be the main points of tension within this approach. Therefore, the research expands the integrated perspective offered by the nature–culture coexistence approach and reconsiders the relationship between nature and culture not merely through coexistence, but through dynamic, relational, and transformative processes established through water/river (Figure 2.14).

Figure 2.14 Strengths/Limitations/Critical Issues of the 'Nature-Culture Approach' (Author, 2026)

2.2.2 'Landscape' Approach

"Landscape is a palimpsest, a layered text continuously rewritten by nature and culture." (Meinig, 1979)

Within the framework of nature–culture integrity, the landscape approach, as emphasized in both the literature and conceptualization, constitutes a multi-scalar management approach that addresses landscapes through their ecological, cultural, social, and economic dimensions. Emerging as a holistic paradigm for managing complex socio-ecological systems, the landscape approach integrates the cultural, ecological, spatial, and governance dimensions of landscapes to address challenges of sustainability, heritage conservation, and community participation (Smith, 2006; Byrne, 2008; Harrison, 2015). This approach moves beyond fragmented, sectoral interventions and instead advocates for participation and adaptive governance. It emphasises the recognition of multifunctionality, the consideration of multi-scalar dynamics (ranging from local practices to national and global driving forces), and the promotion of negotiation and participatory planning processes, thereby highlighting the relational linkages between ecological and cultural connections.

The concept of cultural heritage has gradually expanded, from archaeological remains, museology, and historic monuments to historic towns and environments, and since the 1960s, it has incorporated new ideas, concepts, debates, and disciplinary perspectives. With globalization, the effects of conservation practices on urban contexts have become more pronounced, leading to integrated efforts to protect both natural and cultural environments. This process directly influenced the establishment of institutions such as ICOMOS and UNESCO and led to the adoption of the World Heritage Convention in 1972 (UNESCO, 1972). During the 1970s, the understanding that the surroundings of monuments should be conserved holistically and utilized for the benefit of society, supported by public funding, began to develop. By the 1980s, historic sites, urban fabrics, and urban characters were increasingly recognized through individual buildings as well as their streets, open spaces, and the

relationships among built environments, all of which came to be regarded as components of heritage conservation.

In the 1990s, debates concerning the geographical scope and definition of conservation areas intensified, and numerous documents were published by national and international heritage organisations. This period coincided with the transition toward a values-based approach; the Burra Charter (ICOMOS, 1999) became an influential document at the international level. In this charter, cultural significance was placed at the center of conservation practice, empowering the values-based understanding of heritage conservation. Furthermore, cultural heritage, as a key instrument in the formation of social identity, encompasses a range of values, including monuments, beliefs, architectural forms, symbols, and traditions. These elements are often categorized as tangible (artistic or architectural works) and intangible (beliefs, customs, traditions). Cultural heritage thus represents a sense of belonging rooted in values transmitted from the past.

Accordingly, the notion of intangible cultural heritage has been broadened and increasingly integrated with tangible cultural heritage. The expansion of heritage to broader territorial contexts marked a turning point that introduced the notions of urban and rural heritage. This shift enabled heritage to be considered within its social, cultural, economic, legal, and administrative contexts. By incorporating the definition and scope of intangible cultural heritage alongside societal dimensions, a paradigmatic transformation toward participatory conservation and management began (Smith, 2006). In this regard, heritage studies moved away from their earlier focus on archaeology and monument-centered approaches, turning instead toward social memory and everyday life practices (Smith, 2006; Waterton, Watson, 2015). In the context of intangible cultural heritage and socio-cultural representation, heritage has been reconceptualised from a “formal” notion into a dynamic process (Byrne, 2008; Harrison, 2015). Cultural heritage is no longer perceived as a physical-spatial concept belonging to the past; rather, it is understood as a social, cultural, socio-economic, ideological, and political process of production (Harvey, 2001). Heritage is not something passive but an active practice, produced and continually

reshaped through social processes. Discussions have therefore centered on how heritage is selected, used, and related to history, framing it as a process constructed in the present and shaped by interpretations oriented toward the future (Lowenthal, 1997; Byrne, 2008).

In line with these processes, integrated approaches to heritage conservation have become increasingly prominent. Initially emerging within the framework of planning and development, these approaches aimed to ensure continuity in both urban and rural environments. Over time, they have evolved into methods for assessing living environments, integrating planning, social development, and conservation within the context of social and economic sustainability. Consequently, the concepts of nature–culture interlinkage, landscape approach, sustainability and conservation, and sustainable development and conservation have become central paradigms adopted by international organisations. Today, the concept of heritage encompasses physical remnants of the past and also local knowledge systems, natural processes, social memory, and cultural expressions, making it a multidimensional research field.

Within this framework, in riverine landscapes, the landscape approach enables strategic basin-scale planning, habitat conservation, and the integrated management of agricultural and built environments, while fostering the recognition of heritage areas as relational networks and the development of corresponding analytical frameworks (Figure 2.15). The landscape approach stands out for its potential to balance ecosystem services with human needs. However, in the context of conservation and heritage management, the issues of scale and transdisciplinary practice remain among its main challenges (Figure 2.15). Despite its holistic perspective, the landscape approach's broad conceptual range and its varying definitions across conservation, planning, and development fields often lead to ambiguities in practice.

Environmental NGOs or institutions may prioritize ecosystem services while overlooking intangible cultural heritage or historical knowledge; conversely, cultural heritage conservation frameworks may focus on protected areas, historic buildings,

or monuments, treating the ecological and living dimensions of the landscape as a secondary background. In riverine landscapes, the collection and continuous monitoring of basin- and landscape-scale data is often cost-intensive, raising concerns about sustainability, particularly in resource-limited regions. Thus, while the landscape approach offers a holistic framework, its implementation requires context-based adaptation, governance mechanisms, and long-term institutional engagement to integrate ecological, cultural, and social dimensions within dynamic riverine systems.

In summary, the landscape approach conceptualizes heritage as a multi-layered and multi-scalar system situated at the intersection of ecological, cultural, and spatial dimensions, enabling the interpretation of a heritage and its physical components and through the relationships among them (Figure 2.15). By emphasizing the layered structure of spatial continuity, the roles of different authors in the process, and the dynamic, continuously evolving character of the landscape, this approach offers a holistic perspective. However, despite its strong conceptual foundation, its implementation tends to vary depending on context; the risk of local specificities being overshadowed by higher-scale frameworks, the challenges of integrating intangible values, and its dependence on institutional capacity emerge as its main limitations (Figure 2.15).

In Türkiye, this approach offers significant potential, particularly for rural landscapes, agricultural areas, and multi-layered urban conservation areas, and serves as a strong tool for maintaining the integrity of areas. It enables the evaluation of heritage sites within the broader landscape ensembles in which these structures are embedded. However, the prevailing planning system—largely based on parcels, functions, and density—limits the implementation of the holistic and relational perspective required by the landscape approach. Methodological limitations in approaching the perceptual and experiential dimensions of landscape and integrating them into planning decisions constitute additional key challenges (Figure 2.15). In many cases, the short-term economic priorities of communities may conflict with long-term ecological conservation goals. These tensions respresent across multiple

scales: intensive water-use demands versus the maintenance of ecological flow, industrial development and mining activities treating rivers as waste repositories versus the conservation of riverine integrity, Land-use pressures versus the ecological and cultural continuity of landscapes, dam and hydropower projects versus the natural flow regimes and aquatic ecosystem sustainability, agricultural intensification in fertile delta regions versus groundwater depletion, soil salinization, and ecosystem degradation, urban transformation and tourism-driven construction versus the sustainability of floodplains and natural water dynamics, flood prevention and river canalization versus the renewal cycles of water, habitat connectivity, and soil nourishment, port and industrial facilities established along river mouths, deltas, and banks versus habitat fragmentation and long-term pollution. However, advances in geographic information systems and spatial analysis tools offer new opportunities to make landscape layers visible and address them holistically.

In summary, the main emphasis of the landscape approach is its interpretation of landscape as an integrated system where natural, cultural, social, economic, and spatial processes intersect. Accordingly, the approach introduces new perspectives to heritage and landscape conservation through concepts such as landscape as an integrated whole, interrelations/interconnectedness, landscape character and layers, landscape perception and values, landscape as process, and multi-scalar reading. At the same time, concepts such as participatory landscape, landscape governance, tangible–intangible integration, sense of place and belonging, and the interpretation of landscape as a socio-ecological system enable landscape to be understood not only through visible physical structures but also through experiences, meanings, and relationships. Nevertheless, the conceptual breadth of the landscape approach may lead to different interpretations of its operational framework, ambiguities in defining heritage boundaries, and outcomes that are at times more descriptive than explanatory. In particular, the translation of values into planning decisions, the analysis of rapid transformations, the integration of intangible and memory-based values, the establishment of coordination among different decision-makers, and the visibility of power relations emerge as significant limitations. While the landscape

approach provides an integrated reading of landscape as a multi-layered and relational system, its broad and often descriptive character reveals the need for more operational and process-oriented frameworks to analyse landscape transformation and management.

Figure 2.15 Strengths/Limitations/Critical Issues of the 'Landscape Approach' (Author, 2026)

2.2.3 'Spatio-Temporal' Approach

> *"It is clear enough space and time, however conceived, are the great framework within which we order our experience. We live in time-places." (Lynch, 1972)*

The spatio-temporal approach focuses on understanding the patterns of change and continuity in landscapes by analyzing spatial and temporal dynamics. Spatio-

temporal analysis provides tools to comprehend heritage in space and time, and ever-evolving and changing processes. Drawing from historical geography and time geography, this approach emphasises continuity and transformation across temporal and spatial scales. Within heritage studies, spatio-temporal approaches highlight the dynamic interaction between spatial configurations and temporal transformations within cultural landscapes (Lowenthal, 1997; Byrne, 2008). Heritage landscapes are inherently multilayered and interrelated, characterized by complex temporal and spatial structures (Harrison, 2015). In riverine landscapes, such frameworks are particularly significant, as hydrological regimes, sedimentation patterns, seasonal cycles, and human interventions continuously reconfigure space and redefine cultural meanings. Therefore, spatio-temporal thinking requires heritage management to move beyond defined boundaries and periodic narratives, instead embracing flow, palimpsest, and transformation as intrinsic components of heritage value.

This complex structure can only be understood through the analysis of landscapes in relation to their interconnected natural, environmental, and ecological transformations, such as changes in hydrographic flow regimes, flood processes, climate and microclimate variations, soil typologies, geomorphological shifts, and biodiversity dynamics. It also involves historical and cultural processes, including continuous settlement histories, historical and archaeological layers, built environment characteristics, mnemonic places, cultural narratives, symbolic and mental attachments that communities form with the landscape, as well as traditional practices and modes of living. Socio-economic transformations, such as agricultural production and water management, fisheries and aquatic economies, ecotourism and tourism investments, and socio-political processes, such as issues of water rights and accessibility, water use, riverbed ownership, and the conflict dynamics surrounding flood prevention policies, further contribute to this intricate system. Additionally, legal and administrative dimensions, including international and national conservation and management statuses, legislative processes, management plans,

and multi-author frameworks, must be examined through their temporal and spatial reflections within an integrated system.

Riverine landscapes encompass multiple temporal layers, ranging from geological formations and continuous settlement histories to ancient irrigation networks, historical engineering works, technological developments, and modern hydroelectric infrastructures. Each layer represents a distinct system of knowledge. The spatio-temporal approach, therefore, recognizes temporal stratigraphy and conceptualizes the landscape as a palimpsest in which traces of past interventions remain visible or concealed. It proposes the mapping of rhythmic patterns, incorporating and analyzing continuities, discontinuities, and fragmentations within these mappings. Such an analysis fosters a deeper understanding of how communities have adapted to, resisted, or evolved with water over centuries. Approaches that acknowledge temporal layering in the interpretation and assessment of riverine landscapes allow local narratives, meanings, ideas, and values to be represented within participatory heritage management, revealing the multi-layered and multi-variable nature of the landscape.

However, while time is often approached linearly, many communities perceive it cyclically, particularly within riverine landscapes shaped by seasonal rhythms, where the perception of time across multiple scales and dimensions holds critical importance. Conservation frameworks typically prioritize a single "authentic" temporal frame, often corresponding to the period of architectural or ecological "authenticity and cultural significance." This tendency erases the complex trajectories of change and results in the loss of narratives embedded within the historical processes of the landscape. Therefore, spatio-temporal analysis must move beyond cartographic chronologies to engage with non-linear knowledge systems embedded in oral histories, community memory, and agricultural rhythms and rituals. When addressing a complex riverine landscape, spatio-temporal data across different scales and statuses may have been produced at different times, by various authors for diverse purposes and focuses, and in multiple formats. This approach is often supported by data-driven analytical methods and tools such as GIS and remote

sensing data infrastructures. GIS has emerged as an analytical and operational tool for managing the multidimensional values and challenges of heritage landscapes. In this context, GIS serves as a multilayered spatial information system that organizes, stores, and queries data related to various aspects of the landscape, including the natural environment, physical and spatial context, socio-cultural structure, economic context, and legal-administrative dimension (Bilgin Altınöz, 2002; 2011; Okumuş et al., 2025; 2026). Within this approach, integrated environments and interfaces are essential for holistic data sets produced across different spatial scales and contextual relationships.

Data-driven tools based on spatio-temporal analyses provide a coherent approach capable of responding to the complexities of nature–culture interconnections and the multilayered nature of heritage landscapes, while their objective, database-oriented structure reveals long-term and multi-layered trends of change. Such tools, by offering a holistic perspective for heritage landscapes, establish an efficient platform for developing holistic approaches and collectively addressing and sharing multi-scalar and multidimensional data produced by various decision-makers. Consequently, they assist in storing, structuring, and querying data related to different layers, components, and interconnections of the landscape, while fostering a holistic perception of the landscape by integrating multidimensional data and reconfiguring how water-related relationships are perceived among landscape communities and landscape authors.

However, addressing compatibility issues that arise during the integration of attribute data from sources across disciplines and inter-scalar contexts requires additional time and effort. The integration of qualitative data with a spatial approach also remains limited (Figure 2.16). Analytical tools based on spatio-temporal analysis often exclude abstract or affective values associated with landscapes. The ritual significance of a multilayered, multi-scalar, and multidimensional river, or its position within collective memory, cannot be easily represented through a numerical approach. Traditional mapping tools and systems, with their inherent spatial fixity,

are often ill-equipped to handle non-linear or fluid spaces such as floodplains or seasonal wetlands.

The spatio-temporal approach treats space and time as inseparable analytical dimensions, enabling the interpretation of landscape through long-term transformations, processes of layering, and evolutionary dynamics (Figure 2.16). It provides a critical framework for understanding the stratified nature of heritage, particularly in geographies where different historical periods accumulate and are continuously reinterpreted. In a context such as Türkiye, characterized by a highly layered historical accumulation, the integrated reading of spatial and temporal processes allows for the analysis of both physical continuities and transformation dynamics. By addressing continuity and change together, this approach makes it possible to understand its formation and transformation processes over time. In this regard, the spatio-temporal approach offers a strategic toolkit for both planning and heritage management in the face of contemporary environmental and social challenges, redefining conservation as a continuously evolving process. However, its tendency to remain largely descriptive, the limited availability of operational tools for interpreting temporal dimensions, the insufficient integration of communities and subjective experiences into the analysis, and the lack of accessible data infrastructures constitute its main limitations.

In summary, the spatio-temporal approach emphasises the analysis of continuity and change together by interpreting landscape not only through its present physical condition, but also through transformations, layering, and spatial reorganisation processes that occur over time. In this respect, it makes visible how heritage landscapes have historically evolved, which layers have survived to the present, which processes have been interrupted, and which transformation pressures have reshaped the landscape. Accordingly, the approach reveals the production processes of landscape from past to present through concepts such as spatial-temporal change, historic layering, continuity and change dynamics, landscape evolution, spatio-temporal mapping, diachronic analysis, and layered transformation. At the same time, it provides an analytical basis through heritage change assessment, the

interpretation of spatial patterns over time, and planning-oriented heritage analysis. The main strength of this approach lies in making change and continuity in the landscape readable, comparable, and representable within the space–time relationship. Therefore, spatio-temporal analysis constitutes a powerful tool for evaluating the continuities, transformations, and ruptures of landscape within conservation and planning processes. Nevertheless, one of the main limitations of the approach is its tendency to focus predominantly on the visible and measurable dimensions of change. This may result in relational heritage values—such as narratives, experiences, memory, belonging, everyday practices, and the relationships among landscape authors—remaining in the background. Similarly, scale and boundary mismatches between historical processes and current governance boundaries, difficulties in translating temporal dimensions into conservation tools, and the limited representation of authors, conflicts, and power relations constitute critical limitations of the approach in practice.

Figure 2.16 Strengths/Limitations/Critical Issues of the ‘Spatio-Temporal Approach’ (Author, 2026)

2.2.4 ‘Landscape Biography’ Approach

“The landscape remembers, not as we do, but through traces, patterns, and continuity.” (*Tilley, 1994)*

The theoretical and methodological framework of this research has been developed through the critical examination, interpretation, and re-evaluation of four major frameworks in heritage and landscape literature. Within this framework, the landscape biography approach—which encompasses these frameworks and constitutes the overarching conceptual basis of the research—interprets landscape as a living heritage that is continuously produced, negotiated, and reconstructed through multiple temporalities, landscape authors, and relational interactions. Accordingly, the landscape biography approach conceptualises a landscape as a layered “life history”, examining together the authors, turning points, and practices of transmission or rewriting that shape places through the multilayered interaction of natural and social processes. Landscapes are biographies written by generations; they tell the stories of how people and place have coexisted and changed through time (Kolen, Witte, 2006; Kolen, Renes, 2015; Lorimer, 2015; Crumley, 2017; Kolen et al., 2018; Shakespeare, Russell-O’Connor, 2022).

Although a relatively recent concept, landscape biography is widely acknowledged to have been introduced by Marwyn S. Samuels in 1979 (Kolen, Renes, 2015; Kolen et al., 2018; Roymans et al., 2009). The approach emerged from debates on the “biography of place/landscape” that developed in human geography and archaeology since the 1970s, revitalised as a reaction against reductionism and the objectivist–subjectivist dichotomy (Kolen, Renes, 2015). Samuels described the concept of landscape as “the biographical narratives of countless individuals who have worked, shaped, used, and imagined landscapes through time.” Individuals who hold influence or recognition, whether through authority, creativity, or circumstance,

inevitably leave a personal imprint on the places they inhabit (Kolen, Renes, 2015). Samuels (1979) conceptualised human influence on the landscape through the notion of landscape "authorship" (Samuels, 1979; Kolen, Renes, 2015; Kolen et al., 2018; Shakespeare, Russell-O'Connor, 2022). Landscape biography seeks to reconstruct the evolution of landscapes over time by examining their physical forms, cultural meanings, and human interactions. Samuels argued that landscapes represent more than by-products or components produced by social, economic, and demographic developments; he highlighted the significance of "anonymous authors", the often overlooked individuals and groups who subtly shape landscapes, thus opening a new field of discussion within human geography.

Another contribution that marks a key turning point in landscape studies came from Meinig (1979). This work is considered one of the main references for biographical landscape studies, offering a range of metaphors that belong to the field of human geography (Meinig, 1979). Meinig (1979) emphasized that landscape depends on the perception of the observer; therefore, its vision emerges according to the desires, interests, and tastes of those who perceive it. Within landscape biographies, these layers or historical stages have been described as "formations" or as "transformations" (Palang, Fry, 2003; Roymans et al., 2009). Identifying each transformation requires an understanding of the backgrounds and structural contexts of the authors involved. To encompass such transformations, landscape biography is conducted over an extended temporal horizon; this enables a comprehensive examination of the underlying structures and recurring patterns that shape events, rather than focusing on isolated occurrences (Ingold, 2000; Roymans et al., 2009; Kolen, Renes, 2015). Landscapes simultaneously function as carriers of collective memory and symbolic meanings and play an active role in the formation of community identity (Samuels, 1979; Bloemers et al., 2010; Roymans et al., 2009; Shakespeare, Russell-O'Connor, 2022). Through engagement with narratives, place names, traditions, and oral histories, landscape biography renders visible dimensions of landscape meaning that remain largely invisible within conventional character-based assessment frameworks. This interpretive dimension strengthens the

reciprocal relationship between landscape and community, revealing how landscapes shape social identities while simultaneously being shaped by those identities through everyday practices and lived experiences.

In that sense, the landscape biography represents a transdisciplinary approach that interprets landscapes as "texts" that accumulate meaning over time through human and natural interventions. According to Rippon (2004), landscape biography is "a method that integrates archaeological, geographical, and cultural perspectives to trace the life story of a place." The biography of a landscape encompasses its physical transformations, the narratives attributed to it, and the human and natural forces that shape it. When addressing the transformation of landscapes as historical processes, this approach examines the temporal dimension; when analyzing the impact of human activities on the natural environment, it explores the interaction between cultural and natural dimensions; and when revealing the narrative aspect of landscapes, it treats them as characters, thereby defining the narrative dimension of place. It expresses "an approach that tells how a geography, a place, or a landscape has evolved and how this process is connected to human life through personal, historical, environmental, and cultural relations and links" (Kolen, Renes, 2015). Within this context, while analyzing the physical forms of the landscape and the influences of natural and ecological processes, it is equally crucial to examine the human impact and cultural uses of landscapes from past to present, as well as to assess their mutual influence on social memory and identity, all of which are vital for a holistic understanding of landscape (Lieberman, 1994; Tilley, 1994; Rippon, 2004; Ingold, 2000).

This integrative ambition positions landscape biography as a methodological response to the fragmented nature of landscape research across disciplinary and temporal boundaries (Kolen, Renes, 2015; Kolen et al., 2018). Instead of isolating specific historical periods or material traces, the approach foregrounds continuity, transformation, and relationality as its core analytical principles. The biographical approach anticipates a comprehensive investigation of a given region across various landscape research fields that extend far beyond the boundaries of natural

environment studies, geography, history, or archaeology. Within this framework, “landscape biography focuses on the interactions between the physical and material aspects of landscapes and their experiences, meanings, and representations” (Kolen et al., 2018). It serves as “a method to analyze the long-term transformations of landscapes from prehistoric times to the present, emphasizing natural and cultural processes, historical layers and processes, and social products reflecting the values, aspirations, and fears of the communities that shape them” (Palang, Fry, 2003; Spek, 2006; Wylie, 2007; Bloemers et al., 2010).

Accordingly, the landscape biography integrates archival and historical analyses with the mapping of chronological transformations; it traces cultural narratives through ethnographic and oral history methods, archival documents, and representations. Through spatial mapping and analytical techniques, its focus extends beyond what presently exists to include how a landscape has been lived, formed, shaped, transformed, reconstructed, and remembered over time. In that sense, the landscape biography approach traces the evolution of a landscape through the examination of its material, spatial, and symbolic transformations over time, often by combining historical, ecological, and ethnographic data (Kolen, Renes, 2015; Bloemers et al., 2010; Roymans et al., 2009; Shakespeare, Russell-O’Connor, 2022).

The concept of landscape, within the landscape biography approach, has evolved from early morphological and descriptive readings toward a contemporary understanding that is multi-layered, relational, and process-oriented (Figure 2.17). This transformation demonstrates that landscape is a process that is experienced, interpreted, and continuously reproduced. In this context, the landscape biography approach enables the integrated reading of layers, authors, and narratives belonging to different periods, thereby providing a strong theoretical foundation for understanding landscapes through the dynamics of continuity and change. Particularly within the context of living heritage, this approach supports the conceptualization of landscape as a socio-spatial organism and reveals significant potential for understanding and managing the processes through which heritage is

produced. In summary, landscape biography offers a holistic framework for understanding and interpreting living landscapes as palimpsests shaped through long-term interactions among humans and more-than-human authors and natural processes. (Figure 2.17).

This background enables the creation of social relations and narratives, contributing to the understanding and identification of landscapes and their interpretive and strategic integration into planning and design processes. Multi-scalar reading, transdisciplinary landscape character, perceptions and ideas of authors, and the bridge between planning and implementation are methodologically emphasized (Kolen, Renes, 2015; Kolen et al., 2018). In this context, natural, cultural, and spatial–analytical archives and tools, as well as decision-support instruments, are considered essential data sources. Based on these sources, biography-based timelines linked to events, agents, authors, and layers, as well as layered spatial inventories, narratives, and mappings within the contexts of morphology, use, and meaning, can generate sensitivity zones, intervention tools and approaches, and monitoring indicators for landscapes.

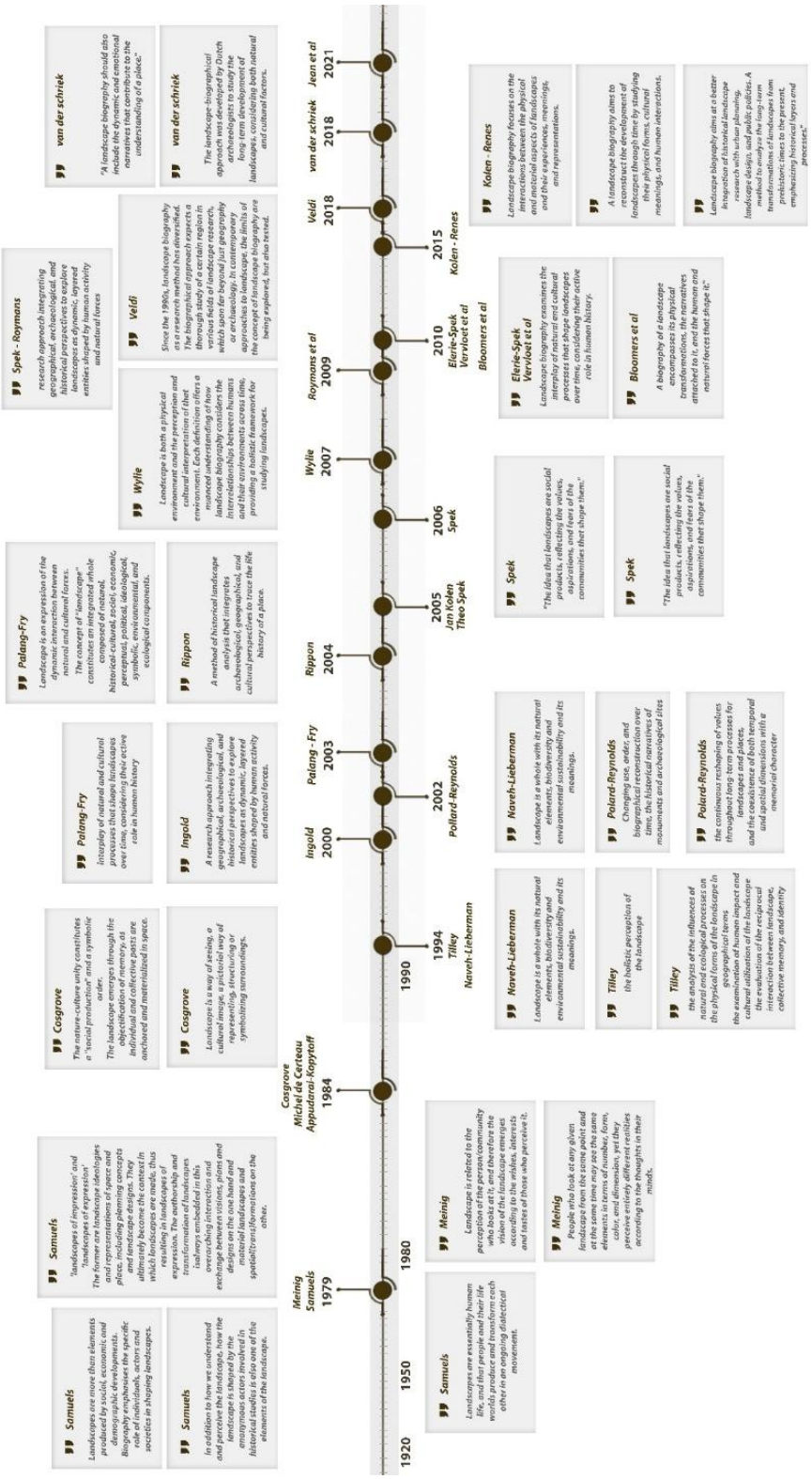


Figure 2.17 Definitions related to the Concept of ‘Landscape’ within ‘Landscape Biography’ (Author, 2026)

Conceived as a landscape approach in the 1970s and further developed from the 1990s, landscape biography has become particularly influential within spatial planning and heritage practice. However, landscape biography remains less widely known and is rarely implemented as a structured approach. Recent local initiatives in different geographies have begun to broaden the conceptual and geographical scope of landscape biography. Accordingly, landscape biography should be understood as a flexible and evolving framework that requires context-specific perspectives, approaches, and continuous critical reflection. In this sense, landscape biography functions not as an alternative to existing assessment tools but as a critical approach with the capacity to enrich and reframe how landscapes are understood, evaluated, and managed. The strength of the landscape biography lies in its capacity to integrate local memory, narratives, and cultural continuities into conservation strategies. In this regard, for landscape heritages that rely on multilayered and multidimensional data and the networks of relations among them, the biographical perspective holds critical significance in understanding the unique wholes that emerge from these interconnections (Figure 2.18).

In this regard, while establishing the nature–culture coexistence, it enables the simultaneous reading of the hydromorphological rhythms and ecological contexts of rivers together with social practices, thus bridging the divide between "natural landscape" and "cultural landscape." At the landscape scale, the processes of time-depth and transformation are connected through visible chains of cause and effect. Instead of a singular 'image' of heritage sites and landscapes, it produces a multilayered understanding of heritage by interpreting the traces of different periods and authors together (Kolen, Renes, 2015; Bloemers et al., 2010; Elerie & Hermans, 2011) (Figure 2.18). Therefore, it contributes to understanding the fragmentations between spatial characteristics and socio-cultural relations, the fading rituals of landscape communities, the mnemonic places whose traditional toponyms are gradually replaced by administrative and official ones, and the fragmentation between official conservation boundaries and the areas valued and attributed meaning by local authors. It is an integrated and holistic approach to landscapes that

aims to transcend traditional divisions between disciplines and period specialisations.

However, landscape biography remains less widely known and is rarely implemented as a structured approach. Particular attention is given to extending the biographical approach to underexplored contexts, such as more-than-human perspectives, multiple and conflicting temporalities, and the inclusion of voices that are often marginalised or silenced. In addition, it is not a fixed methodology, but a flexible and evolving framework that requires locally situated lenses, bespoke methods, and ongoing critical reflection. Nevertheless, this approach entails certain inherent methodological challenges and has been criticised for a degree of perceived "uncertainties" (Kolen and Witte, 2006). While such holistic flexibility is valuable for grasping landscape dynamics more effectively, it also generates practical difficulties, including methodological challenges related to interpretive subjectivity and uncertainties across temporal, spatial, and scalar dimensions. These decisions are contingent upon the researcher(s) and therefore depend on their biases and disciplinary expertise, which may potentially constrain the scope and applicability of the approach.

In summary, landscape biography, which incorporates nature–culture relations, integrated landscape understanding, and spatio-temporal transformation analysis and offers a holistic approach, interprets landscape not merely as an accumulation of layers or a historical outcome, but as a living heritage that is continuously produced, reinterpreted, and reconstructed by diverse landscape authors. The strength of landscape biography lies in its capacity to offer a contextual and relational understanding of landscape change. Accordingly, the approach evaluates landscape as a relational whole through considering landscape as life history, interpreting landscape as palimpsest, making visible reciprocal human–environment interaction, revealing landscape production and reconstruction, and identifying the role of landscape authors across different scales. At the same time, through planes of time and multi-temporalities, living community identity, transdisciplinary methodology, and landscape assessment and characterization methodologies, the approach

analyses not only the physical transformations of landscape but also its experiential, narrative, and societal production processes (Figure 2.18). Nevertheless, the strong explanatory capacity of the landscape biography approach provides a roadmap for understanding landscapes of different characters in a holistic manner. Owing to its conceptual openness and flexibility, the approach brings forward critical issues such as defining methodological boundaries and establishing temporal and spatial frameworks for different geographies and landscapes of varying characteristics. In this context, risks of selective storytelling, representational challenges, and narrative bias may emerge. In addition, the intensive data requirements of the approach and its dependence on extensive archival research may create significant challenges in terms of operationalisation (Figure 2.18).

Figure 2.18 Strengths/Limitations/Critical Issues of the 'Landscape Biography Approach' (Author, 2026)

As a result, in the case of riverine landscapes, the construction of the landscape encompasses its natural, environmental, and ecological transformations; socio-economic transformations; legal and administrative processes; as well as historical and cultural dynamics. Continuous settlement histories, historical and archaeological layers, mnemonic places, cultural narratives, symbolic and mental attachments that communities establish with the landscape, modes of living, and traditional practices together form the multilayered structure of "biography" (Figure 2.18).

2.3 From Critically Thinking to Holistic View: A Holistic Conservation and Management Approach for Riverine Landscapes as Heritage

In light of these frameworks, the comparative analysis and critical thinking evaluation of these approaches reveal that no single framework can fully capture the complexity of riverine landscapes. While each provides distinct tools and perspectives for the conservation and management of riverine landscapes, their conceptualization of heritage sites and their practical applicability vary depending on factors such as institutional structures, local contexts, funding mechanisms, and their relationships. Examples addressing riverine landscapes, heritage places characterized by both natural and cultural continuity, within an integrated heritage management framework, remain quite limited. This situation displays the need for a critical, participatory, and data-driven approach for the conservation of riverine landscape heritage.

Riverine landscapes in Türkiye have been shaped through long-term historical processes, acquiring a distinctive character through agricultural production systems, water management practices, settlement patterns, and multi-layered cultural accumulations. In this context, the Menderes riverine landscape can be understood through its continuity of settlement from antiquity to the present, its agriculture-based production relations, and the defining role of water as both a resource and a risk. In particular, agricultural intensification and excessive water use exert significant pressure on the river's ecological balance, while the multi-authored yet

fragmented decision-maker structure of water governance complicates the development of a holistic approach. Consequently, both the ecological and socio-cultural continuity of the riverine landscape become increasingly fragile.

Another major challenge in the Turkish context lies in data discontinuities and imbalances among different types of knowledge across historical periods. The concentration of archaeological data in specific areas, the thematic focus of Ottoman archival records, and the limited scope of oral history studies result in certain layers of the landscape becoming visible while others remain obscure. In addition, the ongoing transformation of local identities and relations of belonging—driven by migration, economic change, and the restructuring of rural life—affects the continuity of people–river relationships.

Riverine landscapes in Türkiye possess a rich living heritage foundation, shaped by strong local knowledge systems, everyday practices, and multi-layered narratives. Agricultural production practices, traditional water-related knowledge systems, local toponyms, and elements of spatial memory provide valuable insights into present forms of production and everyday life. When made visible through appropriate methods, this potential becomes a critical resource that can be integrated into both conservation and management processes. Moreover, the multi-layered structure of riverine landscapes creates a fertile ground for transdisciplinary collaboration, bringing together diverse authors and enabling the development of holistic and innovative approaches.

In this regard, it aims to establish relational linkages across fragmented decision-maker structures, integrate diverse knowledge types, and place local identities at the center of decision-making processes. Accordingly, the riverine landscape is redefined not simply as a physical entity, but as a complex organism shaped through historical processes, everyday practices, ecological dynamics, and multi-author relations. This perspective contributes to a more inclusive, multi-layered, and context-sensitive understanding of landscape and heritage studies in Türkiye, offering a transformative potential that moves beyond existing approaches.

Nevertheless, this approach holds significant potential to contribute to landscape and heritage studies in Türkiye. Existing approaches tend either to focus primarily on physical and environmental conservation or to prioritize specific periods, thereby addressing landscape continuity in a fragmented manner. In contrast, Riverine landscape heritage proposes a more holistic perspective by examining the landscape through the relationships established among multiple temporal layers, authors, and knowledge types. In doing so, it contributes to the evolution of landscape studies in Türkiye toward a more relational, multi-layered, and inclusive framework, opening up new avenues for both academic inquiry and practice.

In light of the critically evaluated literature on heritage and landscape, this research approaches these frameworks not as independent or sequential models, but as interconnected and complementary bodies of knowledge operating together. In this context, the landscape biography approach is positioned as the conceptual base that encompasses these perspectives. Building upon these core emphases: through Nature–Culture Integrity, the emphasis is placed on coexistence and reciprocal interactions; through the Landscape Approach, on integrated understanding and assessment; through Spatio-Temporal Analysis, on how landscape has changed, transformed, layered, and been sustained/fragmented over time; and through Landscape Biography, on who produces and reconstructs landscape; 'Riverine Landscape Heritage' addresses how water/river initiates, generates, connects, and transforms these multi-layered, multi-dimensional, multi-scalar, and multi-author relationships and processes (Figure 2.19).

Developed through this critical evaluation, the 'Riverine Landscape Heritage' approach reconceptualises riverine landscapes as heritage as an integrated heritage system continuously reproduced through different scales, temporalities, layers, and relationships. Accordingly, the approach foregrounds the multi-dimensional, multi-scalar, multi-layered, multiple spatio-temporal, and multi-relational nature of riverine landscapes (Figure 2.19).

Figure 2.19 Critical Thinking of Main Theoretical Pillars of the Research: A Holistic Approach that Addresses 'Water/River' as 'Connector and Catalyst' for the Riverine Landscape Heritage (Author, 2026)

The multi-dimensional structure encompasses natural, physical, spatial, socio-cultural, economic, and managerial contexts; the multi-scalar structure incorporates landscape authors at macro–meso–micro levels as well as regional, settlement, and intra-settlement relationships; the multi-layered structure addresses processes of continuity–change and transformation; and the multi-temporal structure evaluates multiple planes of time and simultaneous transformations together. In addition, the

approach interprets riverine landscapes through the relationships established by water/river and the heritage patterns produced through these relationships and conceptualises water simultaneously as an entity, a relational agent, and a mediator/connector in relation to the heritage patterns it creates. Within this approach, water/river is understood beyond being merely a natural resource or an entity; rather, it is evaluated as a connector and catalyst that initiates (initiator), shapes (generator), and transforms (transformer) heritage production, while organising, determining, sustaining, and disrupting relationships across different layers, authors, scales, and temporalities (Figure 2.19). Furthermore, this research adopts a transdisciplinary and holistic methodology to understand, document, and sustainably manage the multidimensional landscape and heritage character of the riverine landscapes. Recognizing the connector and integrator role of water/river in cultural heritage and landscape management, this framework aims to integrate values, approaches, and tools.

In conclusion, the 'riverine landscape heritage' approach proposed in this research is primarily structured through the relational, multi-scale, multi-temporal, and multi-author reading offered by critical evaluation. This research approaches the fragmented contexts, fragmented layers, fragmented narratives, fragmented governance structures, and fragmented heritage places and patterns of the riverine landscapes through a framework that conceptualizes the river as the 'living mediator, connector and integrator component.' (Figure 2.20). To (re)connect these water-related linkages and heritage places, the components of natural, historical, cultural, and constructed landscapes, and the networks of relationships among them, are systematically analyzed. This perspective provides a comprehensive understanding of how these relationships overlap, correspond, and form interconnected networks, emphasizing the significance of water/river as a natural, physical, cultural, and mnemonic mediator and connector (Figure 2.20).

Figure 2.20 Toward Riverine Landscape Heritage Approach: A Critical Assessment (Author, 2026)

CHAPTER 3

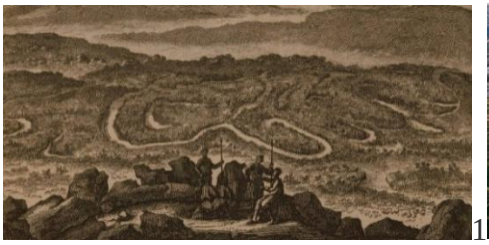
FROM THEORY TO KNOWLEDGE: MENDERES (MAEANDER) RIVER DELTA AS RIVERINE LANDSCAPE HERITAGE

"Water is the source of life for all beings. Water was the permanent entity from which all other entities originated and to which they returned. Water was the source of life for all living things and the shaper of all nonliving things." (Thales, who laid the basis of philosophy through the Milet School he established in the Menderes (Maeander) Basin, 6th century BC)

In this chapter, the Menderes River Delta is examined as a multilayered and dynamic riverine landscape heritage, based on the theoretical concepts and approaches developed in the previous chapters. The main objective is to contextualize these theoretical discussions and apply them in practice by holistically evaluating the Menderes River Delta as riverine landscape heritage through its philosophical, natural, historical, cultural, institutional, and managerial contexts. The chapter first discusses how the Menderes River Delta can be conceptualized as a form of riverine landscape heritage, adopting an approach that frames the delta as a living riverine landscape with its interwoven natural, historical, cultural, and institutional layers. Subsections explore the geographical and geomorphological processes that shape the delta, such as progradation, fluvial dynamics, coastal ecosystems, and their relations within the natural environment. This is followed by an examination of historical continuities and transformations that have defined settlement, trade, and production networks. In addition, this chapter's approach incorporates these dimensions of impression and expression as integral components of landscape analysis and proposes their translation into tangible layers. Accordingly, emotional and perceptual content generated through narratives, memory mapping, local toponyms, and everyday practices is made visible by linking it with spatial analyses.

3.1 Menderes (Maeander) Riverine Landscape Heritage Conceptualization: Layers, Dynamics, and Indicators

The Menderes River is located in southwestern Anatolia. In addition to river and geographical formations, Menderes is a cross-cultural symbol and multi-layered phenomenon with mythological, linguistic, and conceptual meanings extending from antiquity to the present. In ancient times, it became renowned for its winding course and is the source of the English word maeander, used to describe a bend in a river or the action of moving in a winding fashion. Today, in many languages, the word maeander is used to describe a river's winding and curving course. Since antiquity, the continuous form of the maeander motif has symbolized both the continuity, sustainability, and ever-changing transformation of time. The river's winding and curving configuration generates a multilayered structure of meaning, geographical, linguistic, and symbolic at once. The Menderes River played an important role in the birth of civilizations and the continuous settlement history of the region (Başgelen 2010; Göney, 1975; Brückner et al. 1997). In that sense, the term maeander encompasses both geographical references and historical associations with patterns of settlement, as well as cultural connotations and interconnections. The Menderes River, through its physical, syntactical, and metaphorical "maeanders", establishes a bridge across cultures, linking civilizations and settlements at the basin scale and universal spheres of meaning (Figure 3.1).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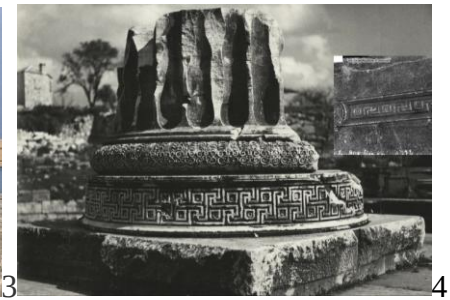
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Figure 3.1 The flow of the Menderes with its maeanders along the plain (Choiseul-Gouffier, 1782); 2: The Menderes Plain today (Büyük Menderes Basin Atlas, 2012); 3: Meandros Statue, River God, Roman Period (Milet Museum); 4: Maeander Icon/Pattern (National Library Archive, 1994)

In antiquity, the maeander motif/icon/pattern was widely used in art, architecture, and philosophical and cultural representations, symbolizing a complex and continuous nature. In this regard, the flow of the Menderes River embodies a non-linear perception of time and space, a cyclical, self-referential motion that reconstructs memory. The movement of the Menderes mirrors the cognitive processes of the human mind: it remembers, forgets, shifts direction, yet always continues to flow. In this sense, the Menderes River, while a tangible geographical, topographical, natural, environmental, and physical agency, can also be interpreted as both a reference to spatial processes and a material reflection of the maeander philosophy itself.

The characteristic maeandering form and flow regime of the Menderes constitute a spatial and natural reflection of transformation. Its shifts in direction, the creation of floodplains, and the redefinition of its own course reveal that the river is a processual entity. The delta formed by the alluvial deposits carried by the progradation process of the Menderes River is a spatial expression of a creation and transformation that has accumulated over time and is constantly changing. In this sense, it represents a philosophical metaphor of "being/procession/formation."

In that sense, the Menderes (Maeander) River and its delta form a riverine landscape that has been continuously shaped through the intertwined dynamics of natural processes and human practices over long temporal horizons. As a river system historically known for its shifting course and expansive floodplain, the Menderes exemplifies the inherent dynamism of riverine landscapes, where geomorphology, hydrology, settlement, production, and cultural practices co-evolve rather than exist as separate domains.

Accordingly, this thesis conceptualizes the Menderes River Delta as a riverine landscape and as a holistic and relational entity, where nature and culture are inseparable components of a continuously produced landscape. From this perspective, the river is a spatial system that organizes human activities, a temporal medium through which continuity and transformation unfold, and a cultural reference that generates meanings, memories, and forms of belonging. Such an understanding aligns with landscape-based and process-oriented heritage approaches that emphasize change, interaction, and lived experience as constitutive dimensions of heritage.

The Menderes River Delta and its riverine landscape constitute a **multi-layered ecological and natural environment** formed by the reciprocal interactions of diverse natural layers. The delta and riverine landscape represents an integrated landscape where ecosystems, morphodynamic processes, and biophysical indicators operating at different scales can be simultaneously observed. In this context, approaching the delta as a natural landscape requires a comprehensive analysis through its multiple layers, geomorphological structure, hydrological system, ecological diversity, and climatic conditions, as well as through the dynamics that operate among these layers, sedimentation, erosion, flooding, coastal transformation, and ecological cycles, and the indicators in which these processes are materialized, lagoons, wetlands, alluvial soils, shoreline changes, and biological diversity. Accordingly, this chapter examines the Menderes River Delta through the multidimensional layers of its natural landscape, discusses the dynamic processes that govern the interactions between these layers, dynamics, driving forces, and indicators that reveal the landscape's patterns of change and continuity. This approach enables the conceptualization of the delta as a heritage landscape shaped within the relational continuum of nature, time, and place.

The **historical (physical/built environment) landscape** approach adopted in this section considers the delta through archaeological remains and historical records, and layers (natural, cultural, and morphological traces of settlements, monumental structures, transportation networks, agricultural areas), dynamics (migrations, trade

relations, wars, and natural disasters in the context of change, interaction, and human intervention), and indicators (historical and archaeological sites, remains, maps, and written documents as traces, forms, structures, and representations). Thus, the landscape can be examined as a place that bears the marks of historical continuity and transformation.

With its historical depth and continuity, the Menderes River has produced a complex landscape shaped by the life patterns, production practices, belief systems, and spatial organisations of diverse communities. Within this cultural landscape, layers (agricultural production zones, religious structures, settlements, and everyday life spaces), dynamics (rituals, agricultural and production practices and relations, nomadism, forms of social organisation, and tourism practices), and indicators (settlement and architectural examples, physical and built environment remains and spatial traces, production infrastructures, agricultural landscape, local memory places, and toponyms) come to the forefront. Examining the delta through the lens of historical and cultural landscape allows for an understanding of how the relationships that local communities have established with nature have played a determining role in the production and transformation of place.

The Menderes (Maeander) River Delta has long functioned as a field of imagination where natural, ecological, environmental, and spatial connections intersect with diverse narratives, myths, and literary depictions. From ancient writers to modern travelers, numerous observers have described the delta through their own perspectives, shaping the region's world of meaning. The local landscape stands as a **cultural and narrative landscape** formed through the production practices, belief systems, and everyday life cultures of its communities. The mnemonic and mental dimensions of the landscape expose the emotional, symbolic, and perceptual link that individuals and communities develop with their surroundings, their feelings, associations, and attachments. These features concern not so much the physical form of the landscape as the traces it leaves in the human mind and collective memory. Thus, the Menderes riverine landscape becomes both a place of memory and a carrier of mental representations.

The Menderes landscape presents a living narrative shaped by the values and meanings attributed to water throughout history. The guiding, transformative, and sometimes restrictive power of water can be observed in both production practices and social life. Agricultural systems, irrigation networks, flood-control structures, religious rituals, and mythological narratives represent different faces of this dynamic relationship. Analyzing the natural, historical, cultural, and spatial layers of the Menderes River Delta as a narrative landscape requires examining and understanding the ensemble of narratives co-produced by water, land, and people. The methodology of this section approaches the delta as a multi-sourced memory articulated through written, oral, visual, and spatial narratives. Accordingly, the method consists of several interrelated components: qualitative data analysis, spatial documentation (GIS-based mapping), oral history, archival research, and cultural landscape interpretation.

The narrative landscape study encompasses multiple layers of knowledge extending from antiquity to the present. All collected data have been classified according to narrative type, historical period, source category, and thematic content. This classification is structured around four main narrative axes: mythological–Historical Narratives: Ancient texts, myths, legends, classical historians, representations of the Menderes (maeander) figure/icon in Greek mythology, and archaeological records. Social–cultural narratives: travel notes, reports, and explorers' records, oral histories, interviews with local inhabitants and community authors, representations of the Menderes in local memory, folk stories, place names, water toponyms and narrative places, as well as production and daily life practices. Institutional–administrative narratives, archival materials including Ottoman and Republican state archives, documents from the National Library and local newspaper collections, legal decrees, State Hydraulic Works (DSİ) reports, and NGO records. Contemporary–experiential narratives: tourism activities, festivals, association initiatives, and media representations.

The main objective of this methodology is to analyze how different narratives, mythological, historical, local, institutional, and contemporary, produced across

various periods in the delta interconnect, and to interpret these narratives in relation to their spatial indicators (Figure 3.2).

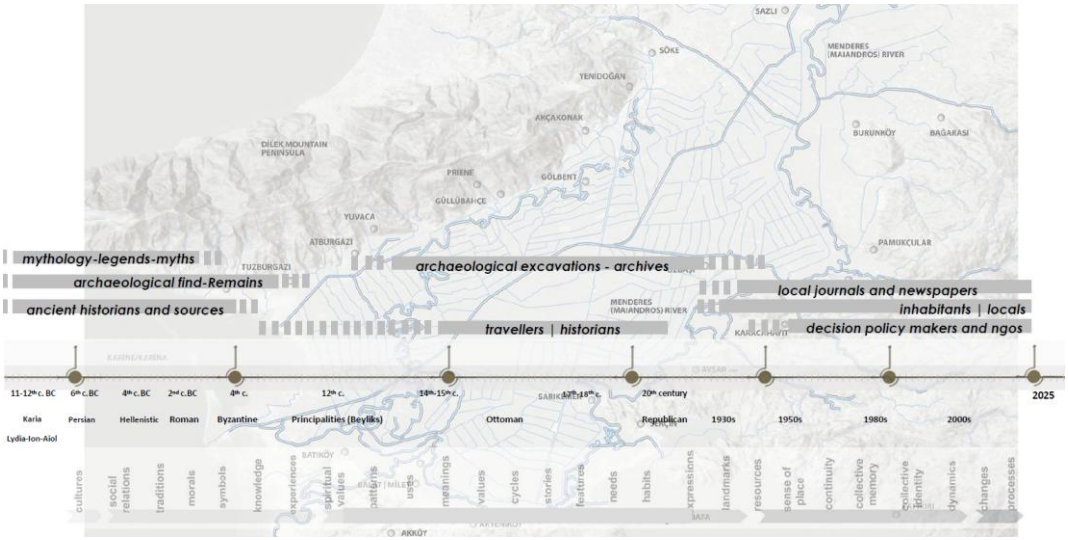


Figure 3.2 Sources and References of the Menderes (Maeander) River Delta as Riverine Landscape Heritage (Author, 2026)

In addition, the Menderes River Delta has been influenced by various forms of governance, administrative organisations, and the spatial regulations associated with them. From ancient practices of water management and land division to the Ottoman tahrir (land survey) systems, from the land reforms of the Republican period to the irrigation and reclamation projects implemented during the second half of the twentieth century, successive regulatory frameworks have deeply influenced the delta. Extending from the administrative structures of ancient city-states through the Byzantine and Ottoman periods to the planning and conservation policies of the modern Republic, the delta represents a landscape continuously shaped by governance decisions. These frameworks organized land and water, actively transformed the landscape by redefining ownership status, agricultural production zones, settlement patterns, and administrative and managerial boundaries (Özdemir, 2009). In particular, during the modern era, legal instruments such as cadastral surveys, reclamation and irrigation laws, heritage and conservation acts, and environmental protection regulations have turned the delta into a place structured

through administrative and institutional practices. As discussed in this section, the Menderes (Maeander) River and its delta are conceptualized as a multi-layered riverine landscape heritage continuously reproduced through the inseparable interactions of nature and humans in time. This holistic structure reveals that the dynamic landscape ensemble is shaped through processes, interactions, and the production of meaning. In this regard, in order to analyze the complexity of the landscape in a more in-depth manner, the following sections will analytically differentiate the Menderes riverine landscape into natural, historical, and cultural landscape components. Each landscape type will be examined through its constituent layers, the dynamics governing the interactions between these layers, and the indicators through which these processes become spatially manifest. This approach enables a multidimensional understanding of patterns of continuity and change, and provides a comprehensive framework for analysing how the Menderes riverine landscape is produced, transformed, and reconstructed as a landscape heritage.

3.1.1 Menderes (Maeander) River Delta as 'Natural Landscape': Geographical and Geomorphological Framework, Natural Environment and Contextual Relations

"The delta is the handwriting of water, where the Earth and the sea negotiate their boundaries." (ICOMOS, 2013)

The Menderes River (historically the Maeander or Maeander, from ancient Greek: Μαίανδρος, Maíandros) is the longest in Western Anatolia, with a total length of approximately 584 km. Originating near Afyon-Dinar in Inner Western Anatolia, the river follows an east–west course between the Sultandağları to the north and the Babadağ–Menteşe massif to the south, flowing through the plains of Afyon, Denizli, and Aydın before reaching the Aegean Sea (Kraft et al., 1977). Today, the delta lies within the boundaries of Aydın Province, west of the Söke Plain, and extends across a wide area along the Aegean coast together with the natural and geomorphological environment formed by the Dilek Peninsula to the west and the Latmos (Beşparmak)

Mountains and Lake Bafa to the south (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020) (Figure 3.4; Figure 3.5) The river flows westward in a continuous route from its source region in Inner Western Anatolia, following both topographic slopes and geological fault lines. Among the rivers of the Aegean Region, only the Gediz and Büyük Menderes extend their upper basins as far inland as Inner Western Anatolia (Figure 3.3).

The Menderes River Delta is an 'integrity/ensemble' composed of multilayered natural and environmental components. Surrounded by the Mykale Massif (today Dilek Mountain) to the north, the Latmos (Beşparmak Mountains) to the south, the Aydın Plain to the east, and the Aegean Sea to the west, the delta functions as an ecotone (Brückner et al., 1997; 2002; 2003; Ergin et al., 2007; Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020). This geographical ensemble reflects the coexistence of diverse ecosystem types and natural processes: mountain ecosystems, coastal wetlands, lagoons (Karina, Azap, and the Bafa connection), extensive alluvial plains, and coastal dunes all form integral parts of the system (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020).

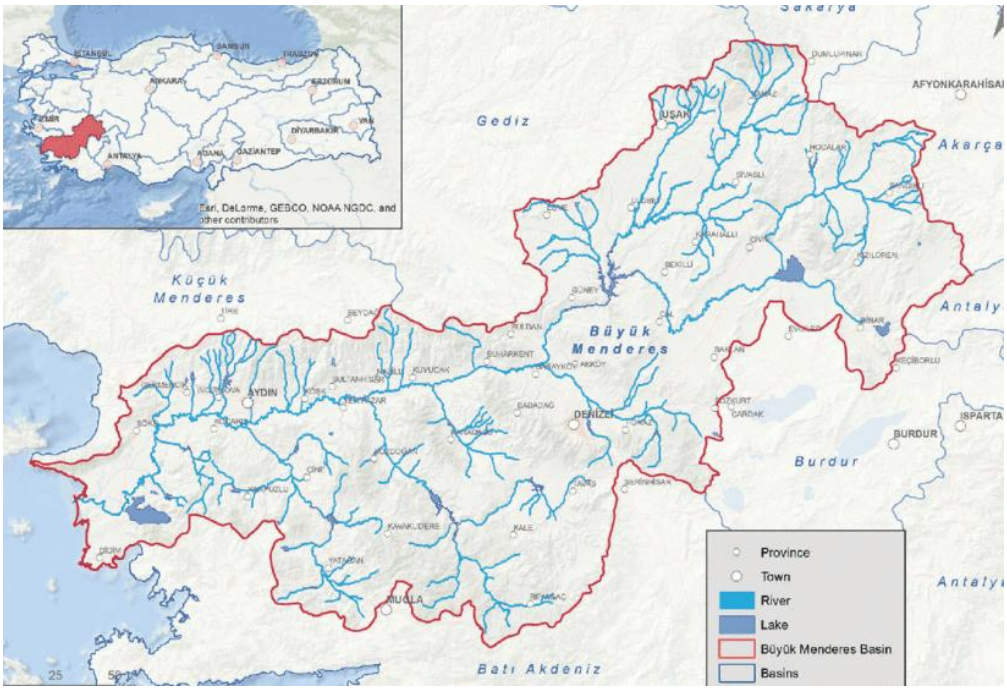


Figure 3.3 Menderes (Maeander) River Basin and Delta as Riverine Landscape Heritage in Southwestern Anatolia in Türkiye (1: Okumuş, based on Google Maps, 2026; 2: Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors; modified by the author)

The Menderes Basin forms one of the most prominent depression systems of Western Anatolia, and the Menderes River, after which it is named, has been the main agent shaping this morphology and system. The river, approximately, drains a large basin covering 27.417,6 km². Its flow direction, feeding areas, and morphological character are closely related to the geomorphological structure of the region (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020). These characteristics also distinctly reflect the general topographic inclination and climatic dynamics of Western Anatolia. The Menderes River originates mainly from the Kumalar Plateau, which rises to the north and east of Sandıklı. It first continues its course through the Işıklı Plain under the name Hamam Çayı. Another river branch of the river is fed by the Pınarbaşı dolin near the Sultan Mountains; after passing the area known as ‘Kızıl Büküm’, this branch takes the name Banaz Çayı. Following its confluence with the Banaz Stream, the branch of the river between Dayılar and Yenice descends from

800 meters to 160 meters, creating a 640-meter elevation difference (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020). This gradient increases the river's carrying capacity, shaping the valley and facilitating the accumulation of alluvial soils. Throughout history, these fertile areas have provided favorable conditions for settlement, agriculture, and trade, rendering the Menderes Valley one of the oldest and most continuously inhabited regions of Anatolia (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020).

Flowing its westward course, the Menderes receives the Çürüksu Stream from the left side. From this point onward, it flows within a broad depression geography. Into this depression, river streams/branches flow from the Aydın Mountains to the north, while from the south it is joined by the Dandalas, Akçay, and Çine streams. In this way, the basin system gradually evolves into an increasingly complex and rich hydrological network. Flowing onward, the Menderes River passes by the ancient city of Milet, which served as a port throughout antiquity but is now located approximately one kilometer inland from the sea. At this point, the river reaches the Aegean Sea through a shallow, sandy delta formed by a river mouth. In the western region of its course, the overlapping of small northern streams from the Aydın Mountains with southern streams such as the Dandalas, Akçay, and Çine creates a complex delta system (Figure 3.6; Figure 3.7).

Topography of Menderes (Maeander) Riverine Landscape

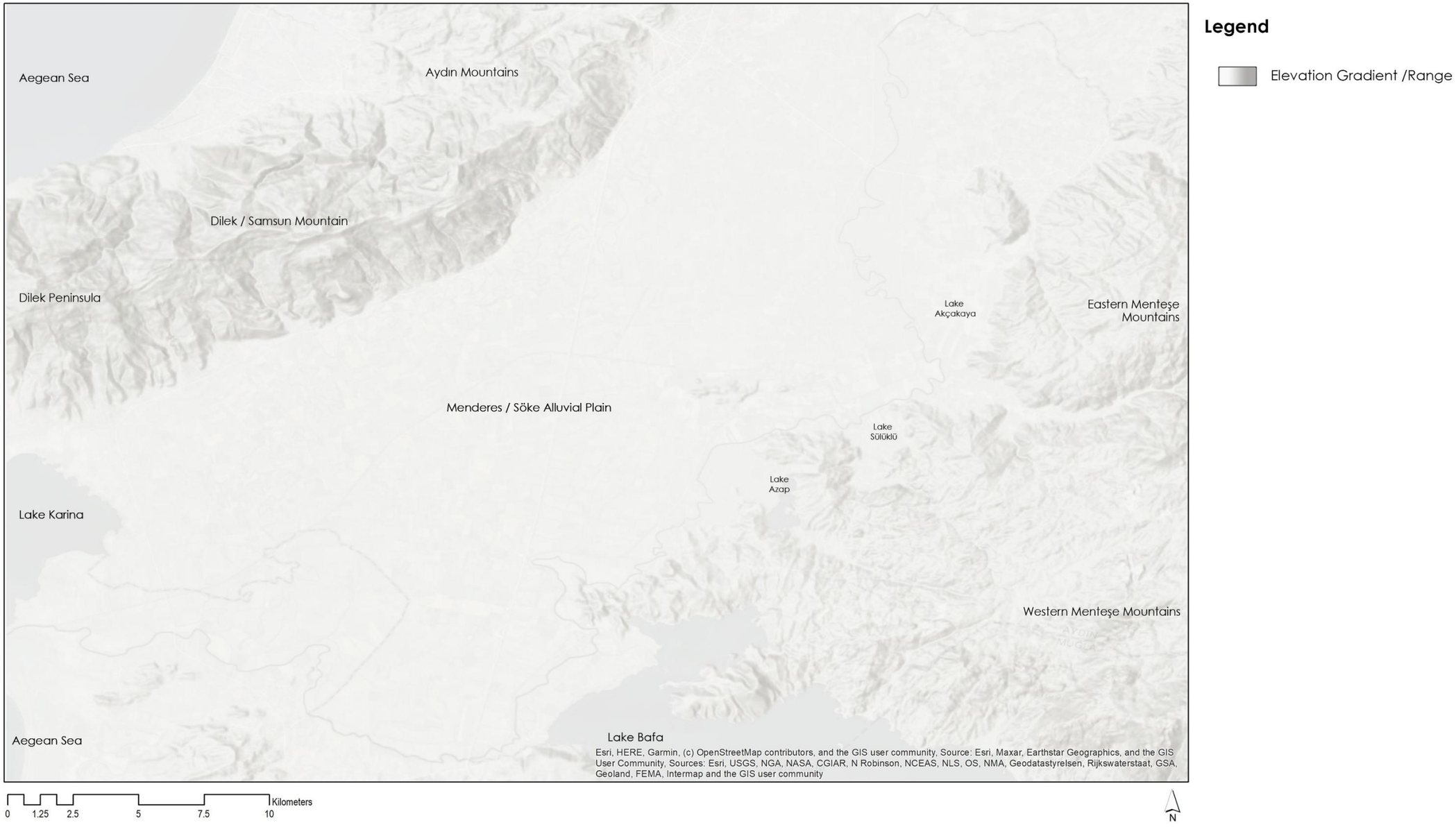


Figure 3.4 Topography of Menderes (Maeander) Riverine Landscape (Author, 2026)

Topography of Menderes (Maeander) Riverine Landscape

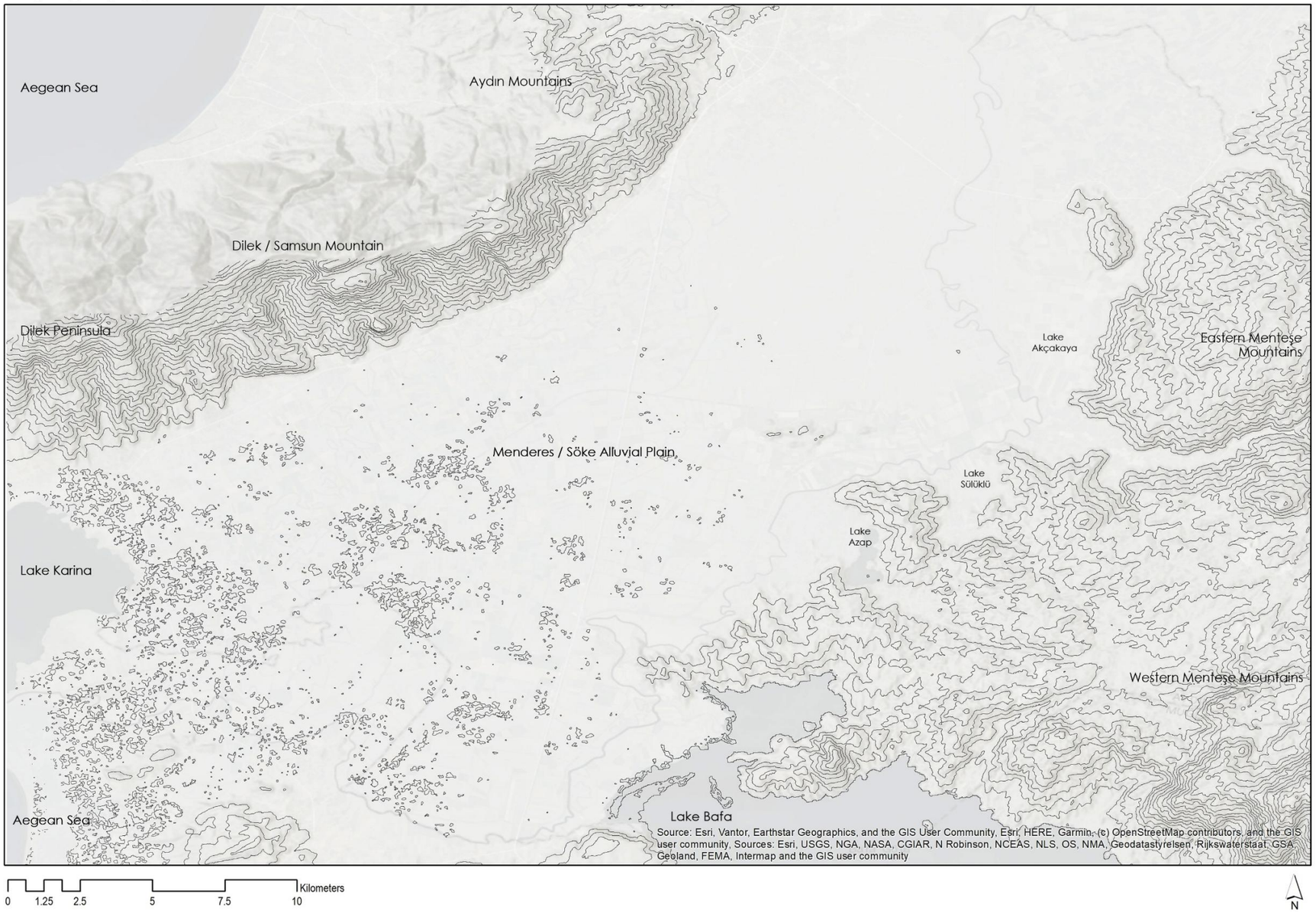
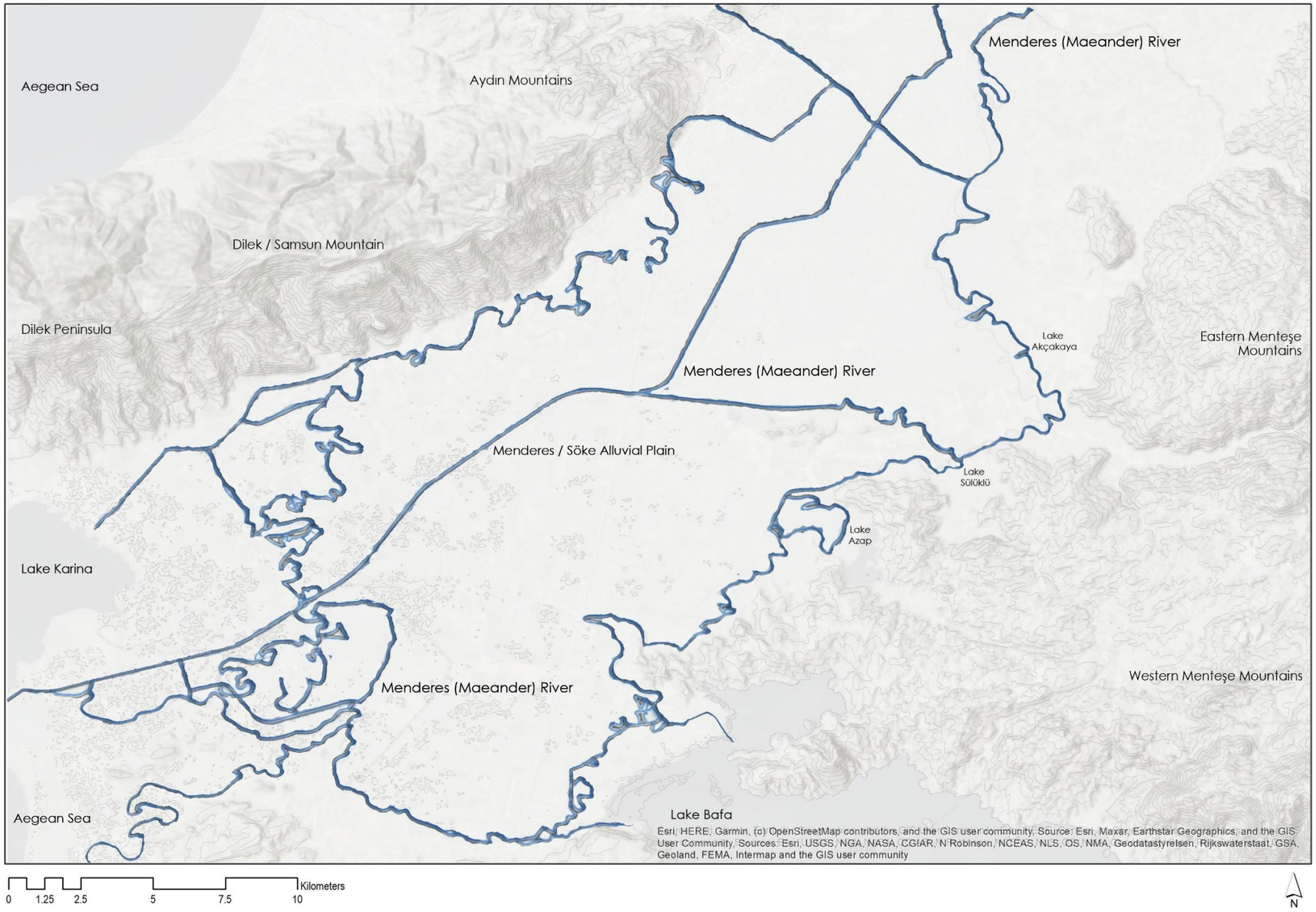


Figure 3.5 Topography of Menderes (Maeander) Riverine Landscape (Author, 2026)

Topography and Hydrological Network of Menderes (Maeander) Riverine Landscape

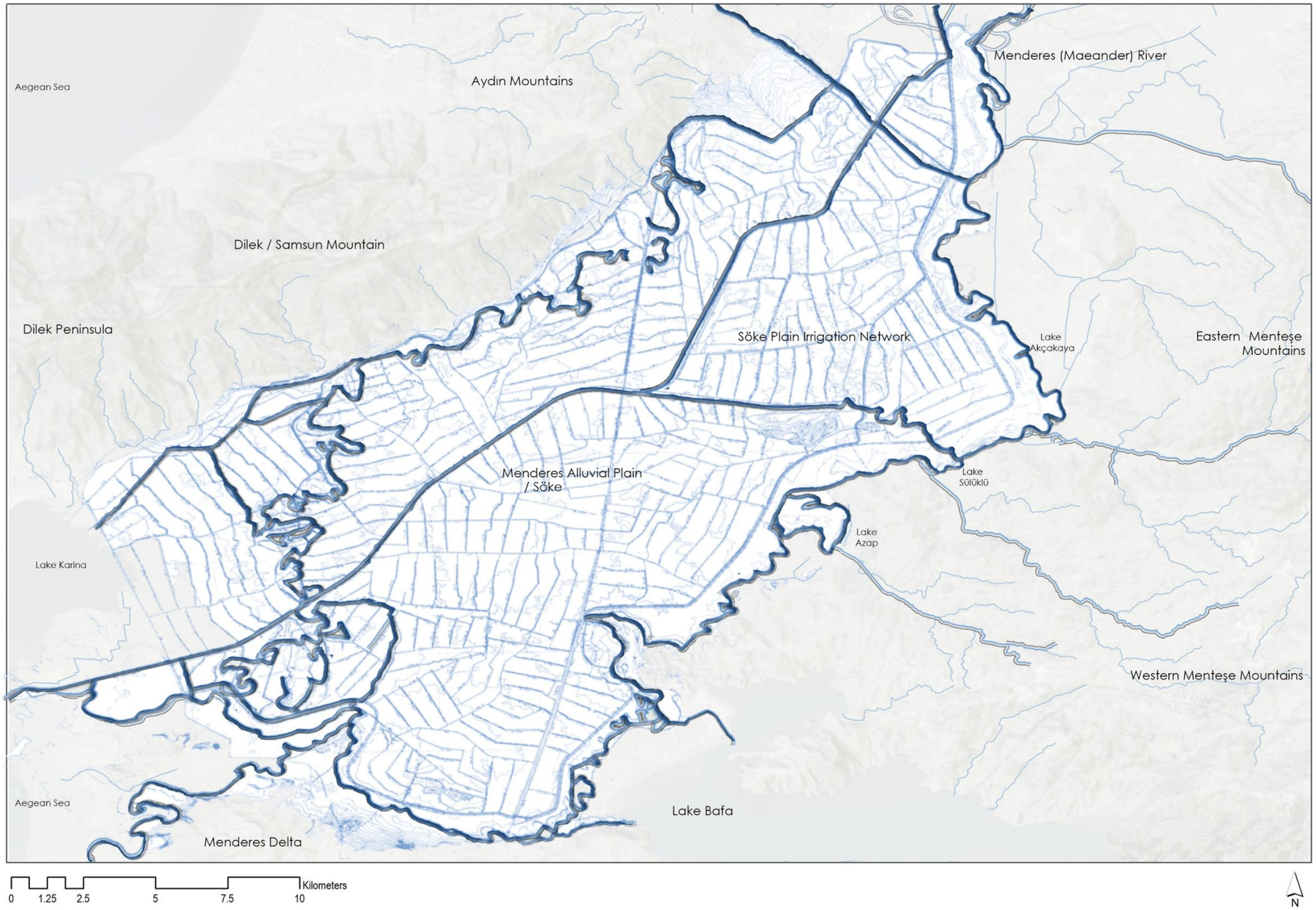


Legend

- Menderes (Maeander) River
- Elevation Gradient /Range
- Elevation Contour Lines (50 m. interval)

Figure 3.6 Topography and Hydrological Network of Menderes (Maeander) Riverine Landscape (Author, 2026)

Water Network of Menderes (Maeander) Riverine Landscape



Legend

- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.7 Topography and Hydrological Network of Menderes (Maeander) Riverine Landscape (Author, 2026)

The geographer-historian Strabo (XIV.1.12) notes that the river rises in Phrygia, flows through Caria, and reaches the sea along the Ionian coast. In Strabo's explanations, the river is described as having a "labyrinthine/labyrinth-like maeanders" structure due to its winding course, an attribute that later gave rise to the etymological origin of the term maeander. Strabo (Strab. XII. 8. 15; Jones, 1961) draws a connection between the river's flow and its name, stating that the river, in the plain bearing its own name, the Maiandros Plain, was "extremely winding, and because of these bends, anything that twists and curves is called Maiandros or to maeander." (Figure 3.8)

Figure 3.8 The "Maeander Icon/Pattern" depicted on coins from cities within the Menderes Basin; Bottom: The maeander motif on a coin from Priene, circa 290–250 BCE; the maeander motif on a coin from Priene Diopol, circa 290–270 BCE; and the maeander pattern on a coin from Magnesia on the Maeander, circa 282–225 BCE (Tül, 2013; Howgego et al., 2005)

In connection with this naming, Propertius (Elegies, II.35–40) writes that "the Maiandros deceptively flows through the lands of Phrygia, concealing its flow", while Quintus Smyrnaeus (Posthomerica, I.280–285) similarly describes the river as "flowing from Phrygia along an intricate route." Ausonius (Technopaegnion, XIII.12) offers a different interpretation, comparing the Greek letter ξ (xi) to the "wayward flow of the Maiandros", emphasizing its tendency to stray into other paths. Pausanias (VII.2.3) describes the Menderes as a mythological and sacred river,

symbolizing fertility and continuity in ancient belief systems (Howgego et al., 2005). Pliny the Elder (nat. V. 110; 113) also emphasises the river's constant turning motion that forms endless curves. Propertius (eleg. II. 35–40) writes that "Maiandros deceptively winds through the lands of Phrygia, concealing its current". Chandler notes that the river flows in magnificent windings from the northern limits of the plain (Chandler, 1817: 179–183). In ancient times, it became renowned for its winding course and is the source of the English word maeander, used to describe a bend in a river or the action of moving in a winding fashion (Jones, 1961). In addition, Wheler and Spon (1678) visited the region and described the maeanders of the Menderes as a "labyrinth". In that sense, the maeandering river course, one of the defining characteristics of the Menderes River's flow regime and morphology, serves as the most prominent indicator of the delta's dynamic processes (Göney, 1975; Brückner, 1997; 2003) (Figure 3.9). Seneca (Herc. f. 680–685) similarly remarks that "Maiandros plays with its own winding waters."

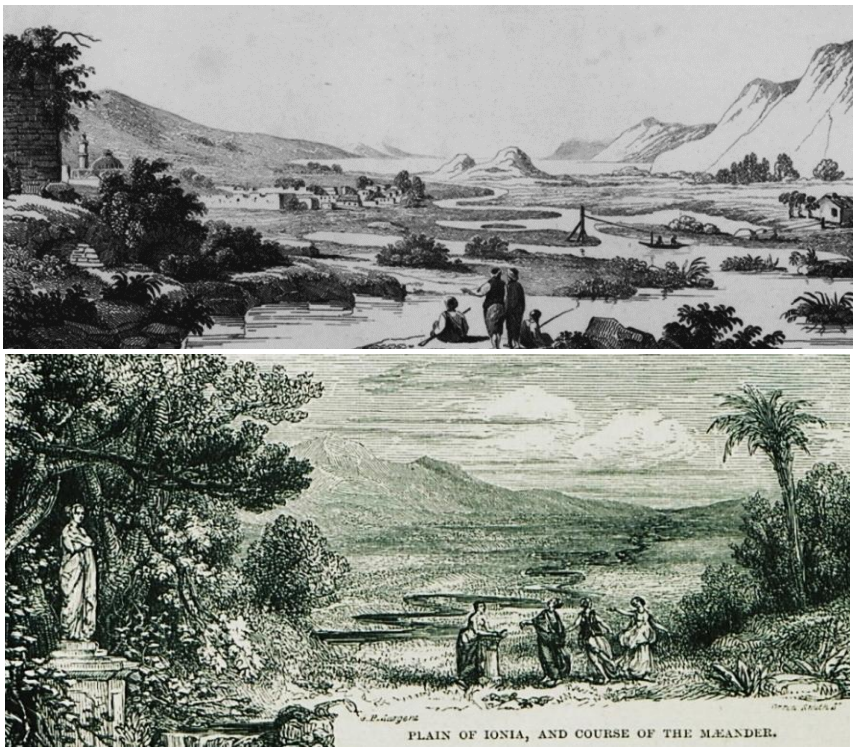
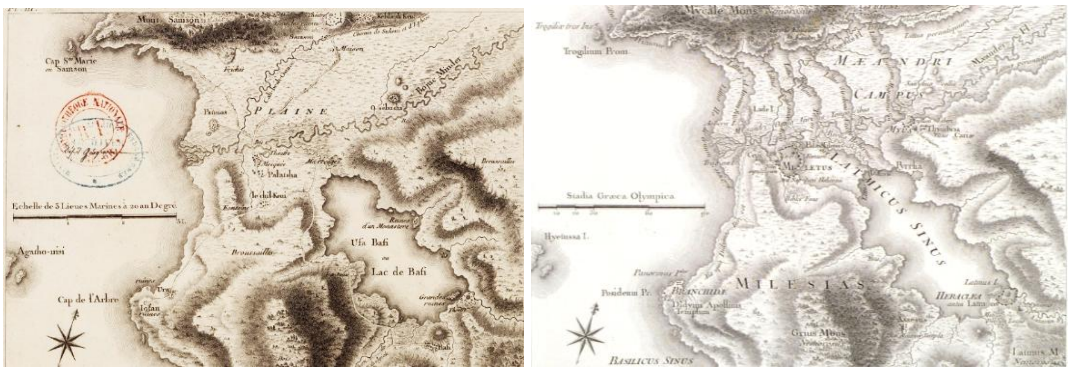


Figure 3.9 The Menderes Valley and the Flow of the Menderes River Along the Plain. View of Menderes River (1782) (Choiseul, Gouffier, 1782:170); View of the course of the Maeander River Delta from Milet (Chandler, 1817); View of Milet and boat routes and stop points with the Maeander river and delta (Asia Minor) (1835) (Pouqueville, 1835); The plain of Ionia, and course of the Maeander, 1882 (Wordsworth, 1882)

Among the rivers of the Aegean Region, the Menderes possesses a distinctive character, both for its length and for its regime extending deep into the inland areas of Western Anatolia. The river's flood dynamics, the distribution of seasonal precipitation, agricultural activities on the plains, and ecological diversity in the coastal areas form an interconnected and mutually sustaining system. This structure represents a characteristic example that integrates spatial continuity with temporal transformation. Accordingly, the relationship between the natural environment and the cultural context is of particular significance for the Menderes River Delta. The Menderes River is a watercourse and main agency that has shaped the Western

Anatolian landscape throughout history, guided settlement patterns, and carried cultural memory.

The Menderes River Delta represents a unique example of a wave-dominated delta and a fluvio-marine interaction zone. It is characterized by a high alluvium sediment load and a distinct maeandering flow regime (Figure 3.10). Throughout the Holocene, sea-level fluctuations, the progradation process, and alluvial deposition have continuously reshaped the delta. During the Middle Holocene, rising sea levels created coastal embayments that were subsequently filled by the sediments deposited by the river (Kraft et al., 1977; Brückner, 1997; 2002). The river, carrying an annual average of 16–20 million tons of alluvium (Ergin et al., 2007; Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020), has generated and transformed a continuous process of progradation within the delta. This ongoing deposition has transformed the delta into a complex geomorphological system composed of multi-channeled riverbeds, extensive marshlands, coastal dunes, lagoon systems (Karina, Azap, and the Bafa connection), and wide alluvial plains (Kraft et al., 1977). The accumulated sediments have progressively extended the coastline westward throughout history. Lake Bafa is the result of the ancient Latmos Bay gradually transforming into an enclosed lake. The Söke Plain and the Menderes River Delta, formed through this progradation process in the Aegean Sea, create some of the most fertile lands of Anatolia. These natural and hydrological dynamics and the Menderes River Delta itself clearly illustrate the progradation processes of the Menderes River (Brückner, 1997; 2003; Müllenhoff et al., 2004).



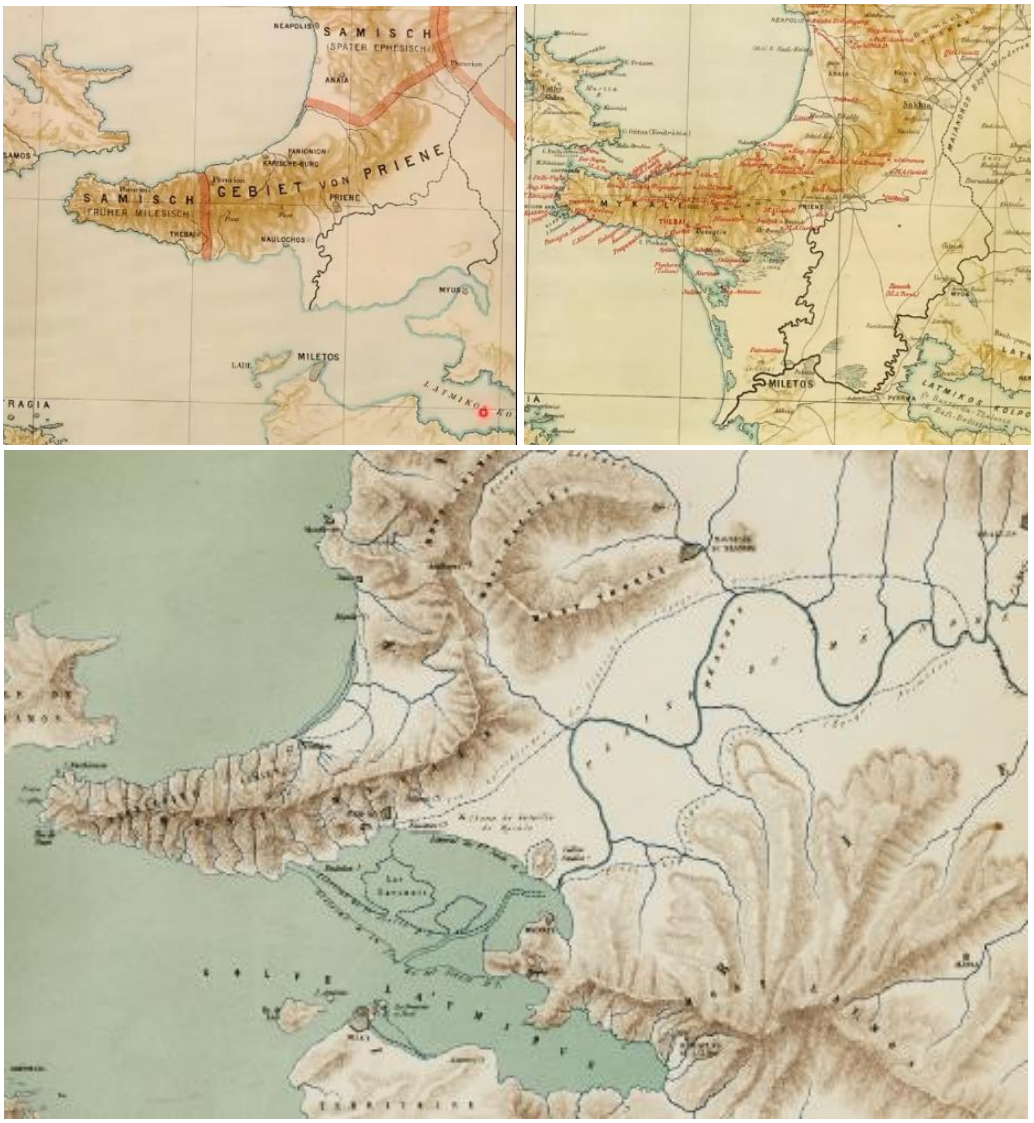


Figure 3.10 Top Left: The Menderes River Delta and the Surrounding of Palatsha (Balat/Milet) (Choiseul, Gouffier, 1782:186); Top Right: The progradation of the Menderes River Delta and shifts in the shoreline according to Choiseul and Gouffier in 1782 (Choiseul-Gouffier 1782:111); Middle: 19th century Priene and Milet Gulf (Chandler, 1817); Bottom: The progradation of the Maeander River Delta and the shifts in the shoreline according to Olivier Rayet in 1877 (Rayet, Thomas, 1877: 2)

On the other hand, 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., 1997). Alluvium shaped the Söke

alluvial plain, and consequently, the sea passage gradually closed to form Lake Bafa and the Menderes River Delta. This process of progradation resulted in ancient harbor cities losing their importance, but created a riverine 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.

The delta of the Menderes River and its surrounding coastline have undergone significant spatial and ecological transformations as a result of the progradation process that has continued from around 1500 B.C. to now (Brückner et al., 1997; 2003; Bay et al., 2003; Müllenhoff et al., 2004) (Figure 3.11). This natural dynamic has played a decisive role in shaping human settlements, determining the positioning and direction of cities, and directing economic production relations. The coexistence and reciprocal interaction between humans and nature have rendered the landscape an ensemble, an entity in different forms across different periods- that is continually redefined, and carries a multilayered spatial pattern and morphology.

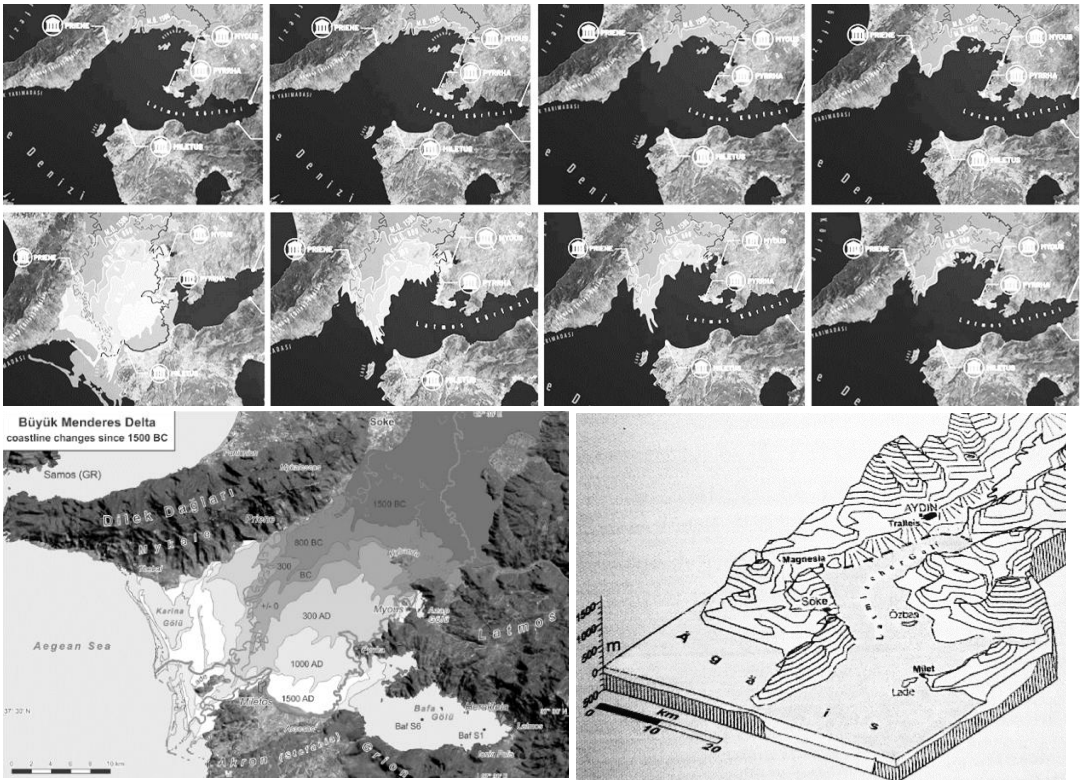


Figure 3.11 Top: Transformation as an outcome of the multi-layered nature of the landscape: The progradation process -from 1500 BC until today- of the Menderes riverine landscape shifts in the shoreline (Source: Brückner et al., 1997; 2003); Bottom: The progradation process -from 1500 BC until today- of the Menderes River Delta and alluvial plain shifts in the shoreline (Brückner et al. 1997, 878:1; Bay et al. 2003:1).

Accordingly, the river's oldest course route, "Old Maeander" (Figure 3.12), lies in the northeast of the delta plain, where it once reached the sea through the area surrounding Lake Karina and Tuzla Kırı (Leedshill, Gizbili, 1967; 1969; Göney, 1975). This phase reflects the river's northward-oriented course during the period following the Early Holocene. However, with the sedimentation and the change of the shoreline, this route gradually lost its flow capacity and became shallower, while new river branches channeled toward the southwest. During these periods, the river carved new routes across the expanding delta plain, occasionally altering its course through floods and the natural levees. This shifting was driven by both natural flow dynamics, such as overflow, sediment accumulation, and slope changes, and human interventions, including channel construction, agricultural drainage, the construction of irrigation systems, and the redirection of water flows (Leedshill, Gizbili, 1967; 1969; Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020) "New Maeander" (Figure 3.12) represents the main current flow route of the river observed today, extending through the areas of Balat, Ağaçlı, and Akköy before reaching the Aegean Sea. This transformation signifies the redefinition of the delta's natural and physical environment, settlement organisations, economic aspects, and cultural reflections. As the former delta settlements gradually became inland, agricultural production, fishing, and transportation activities intensified within the newly formed Menderes River Delta (Leedshill, Gizbili, 1967; 1969; Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020). Accordingly, this process gradually advanced the shoreline westward, leading over time to shifts in the flow directions, river branches, and riverbed positions within the delta (Figure 3.12) (Leedshill, Gizbili, 1967; 1969; Göney, 1975; Kapur et al., 2017).

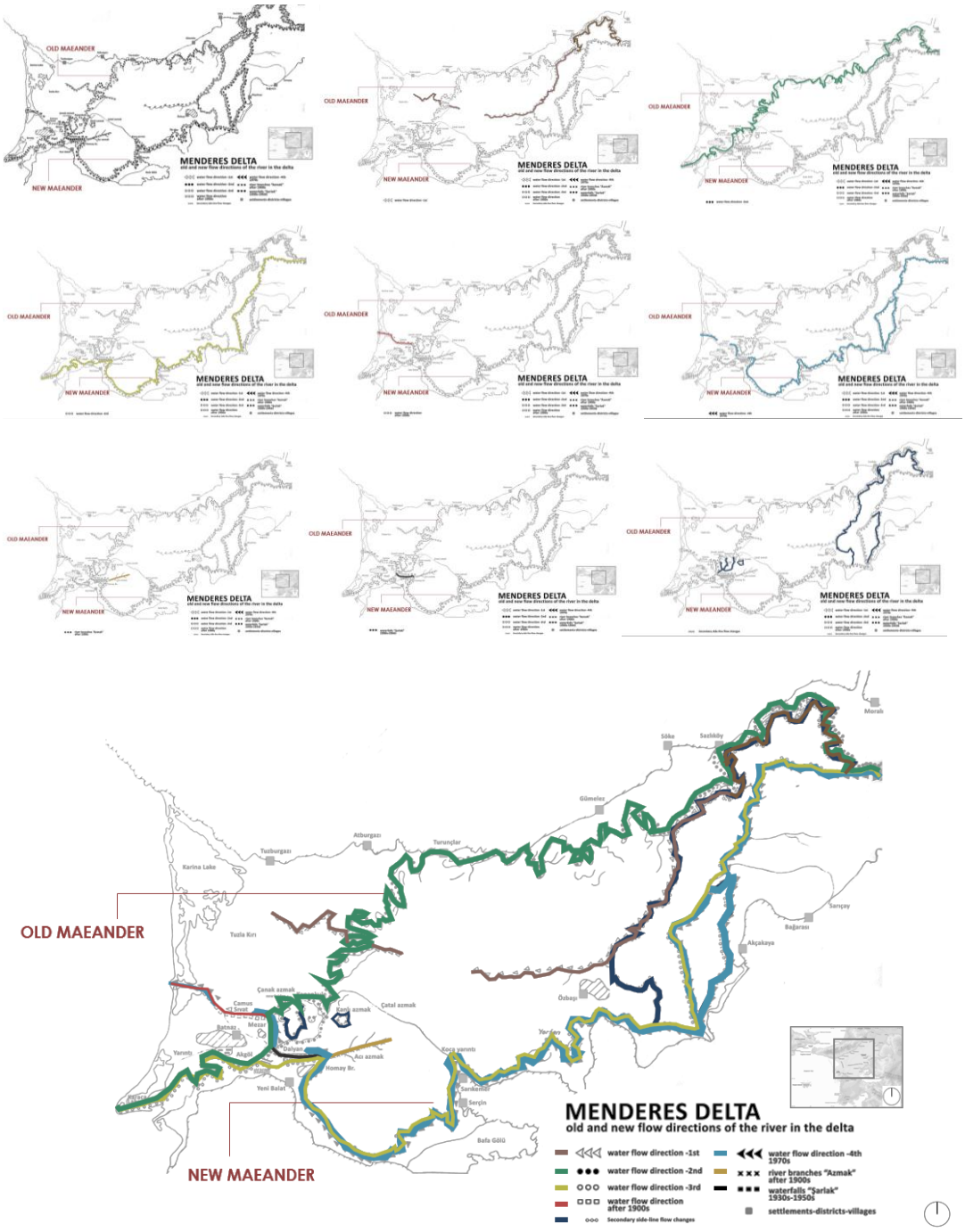


Figure 3.12 Transformation as an outcome of the multi-layered nature of the landscape: old and new flow directions of the Menderes River (These maps have been prepared by the author based on the following sources: Leedshill, Gizbili, 1967; 1969; Göney, 1975; Harmancıoğlu, Altınbilek, 2020)

The water and soil structure of the Menderes River Delta constitutes one of the fundamental components shaping the natural landscape framework of the delta, directly reflecting its fluvial geomorphology, hydrological regime, and long-term sedimentary processes. In that sense, soil types, soil characteristics and interrelations, and soil–agriculture relationships constitute one of the critical landscape layers, as they are continuously transformed and reconstructed through the reciprocal interaction of fluvial dynamics, sedimentation processes, and changing human practices (Leedshill, Gizbili, 1967; 1969; Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020). The delta is predominantly characterized by extensive alluvial formations, complemented by hydromorphic, colluvial, and Mediterranean soil types that together define a highly dynamic and heterogeneous soil structure (Kapur et al., 2017).

The central and low-lying parts of the delta are dominated by alluvial soils and floodplain deposits, which have developed through continuous sediment accumulation transported by the Menderes River over millennia. These soils are generally deep, fine-textured, and nutrient-rich, exhibiting high agricultural potential (Figure 3.13). Their spatial continuity across the delta plain corresponds closely with the active and former river channels, abandoned maeanders, and flood basins, indicating the strong influence of fluvial dynamics on soil formation processes (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020). The presence of alluvial coastal soils along the deltaic zone further reflects the interaction between river-borne sediments and marine processes, particularly in areas affected by coastal progradation and lagoonal systems (Harmancıoğlu, Altınbilek, 2020). In parallel, hydromorphic soils are widely distributed in depressional zones and areas with high groundwater tables, especially around former lake basins and wetlands such as the surroundings of Lake Bafa (Figure 3.13). These soils are shaped by prolonged water saturation, leading to reduced drainage capacity and specific chemical characteristics, including organic accumulation and periodic conditions (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020).

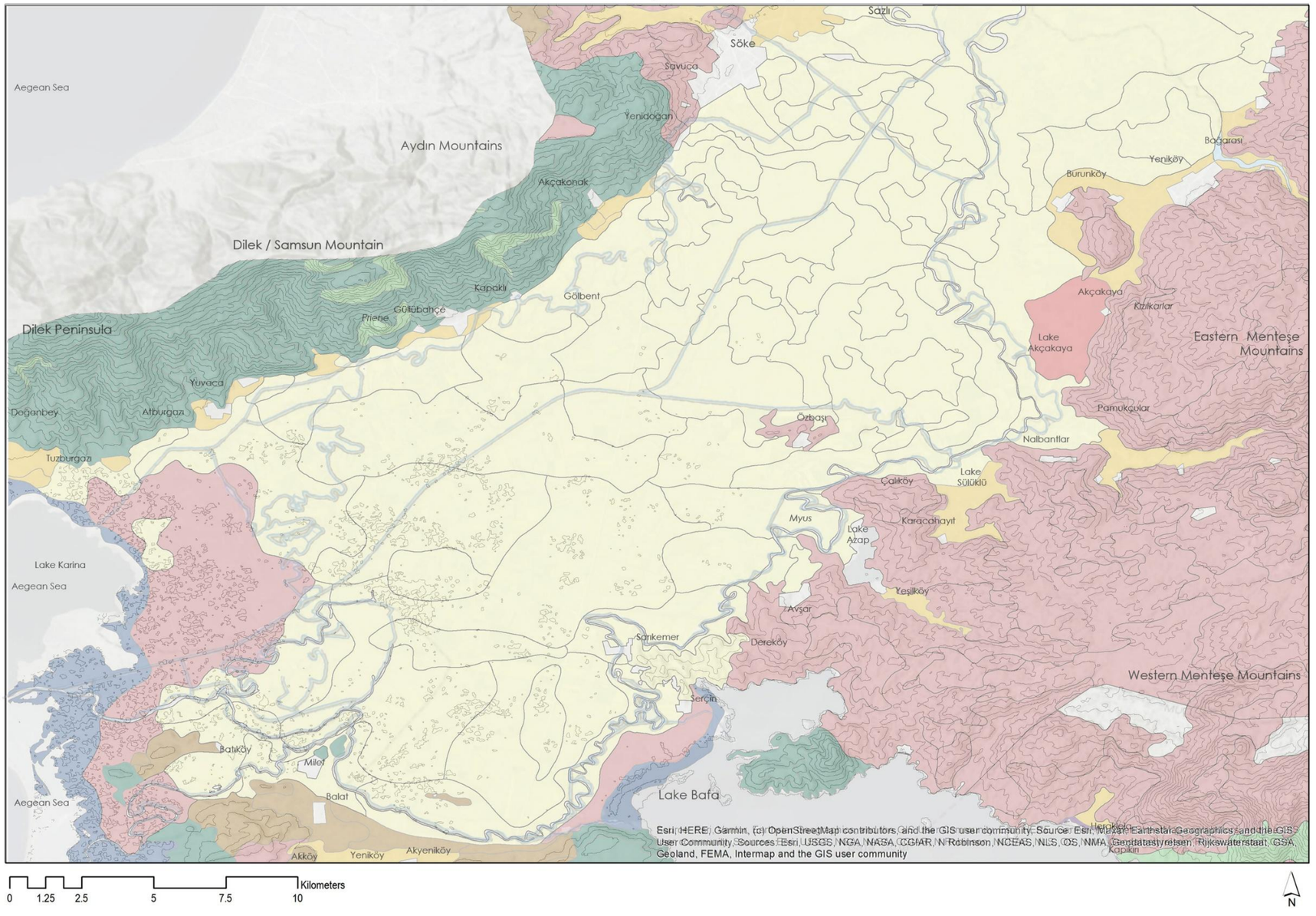
The central part of the delta, largely coinciding with the Menderes alluvial plain, is predominantly characterized by Class I and Class II lands, which exhibit little to no limitations for agricultural use. These soils are generally deep, well-developed, and fertile, benefiting from long-term sediment accumulation and relatively gentle topography. Their high productivity and adaptability have historically supported intensive and diversified agricultural practices, positioning the delta plain as one of the most important cultivation zones in the region (Figure 3.14). The spatial continuity of these classes along the main river corridor further highlights the decisive role of fluvial processes in shaping agricultural suitability (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020).

The peripheral zones of the delta, particularly along the transition areas toward the surrounding mountainous terrains, are characterized by colluvial soils and reddish-brown Mediterranean soils (Figure 3.13). These soils result from slope processes, material transport from higher elevations, and long-term weathering under Mediterranean climatic conditions. Compared to the alluvial core, they are generally shallower and more heterogeneous, reflecting the geomorphological gradients between the delta plain and the adjacent uplands. In these areas, brown forest soils, red Mediterranean soils, and localized rendzinas appear, especially where limestone bedrock dominates, linking soil formation directly to geological structure (Kapur et al., 2017) (Figure 3.13). The spatial diversity of soil types across the Menderes River Delta highlights the delta's role as a composite natural landscape shaped by the continuous interaction of river dynamics, topography, climate, and geological conditions. This soil heterogeneity has played a decisive role in structuring agricultural practices, settlement patterns, and land-use systems throughout history, forming a critical natural basis for the emergence and persistence of human–environment relationships in the delta.

Surrounding the core alluvial areas, Class III and Class IV lands become increasingly dominant. These lands present moderate limitations related to factors such as soil depth, drainage conditions, erosion risk, or slope (Figure 3.14; Figure 3.15). While still suitable for cultivation, they require more careful crop selection and

management practices. In the Menderes River Delta, these classes often appear in transitional zones between the flat delta plain and the surrounding foothills, reflecting gradual changes in topography and soil formation processes (Kapur et al., 2017; Harmancıoğlu, Altınbilek, 2020). More pronounced limitations are observed in Class V and Class VI lands, which are primarily located along the peripheral and upland areas of the delta system. These lands are characterized by severe constraints that restrict their agricultural use to limited or highly managed forms, such as grazing or specific perennial crops (Kapur et al., 2017). Finally, Class VII and Class VIII lands represent areas that are largely unsuitable for agricultural cultivation due to strong limitations, including steep terrain, erosion susceptibility, or hydrological instability. In the Menderes River Delta context, these lands are primarily associated with mountainous zones and ecologically sensitive areas, where land use has historically been oriented toward grazing, forestry, or natural conservation (Figure 3.13; Figure 3.14). Overall, the agricultural land capability classification of the Menderes River Delta demonstrates that soil suitability for cultivation reflects a complex interplay between geomorphology, hydrology, and long-term human–environment interaction.

Soil Structure Characteristics and Types in Menderes (Maeander) Riverine Landscape

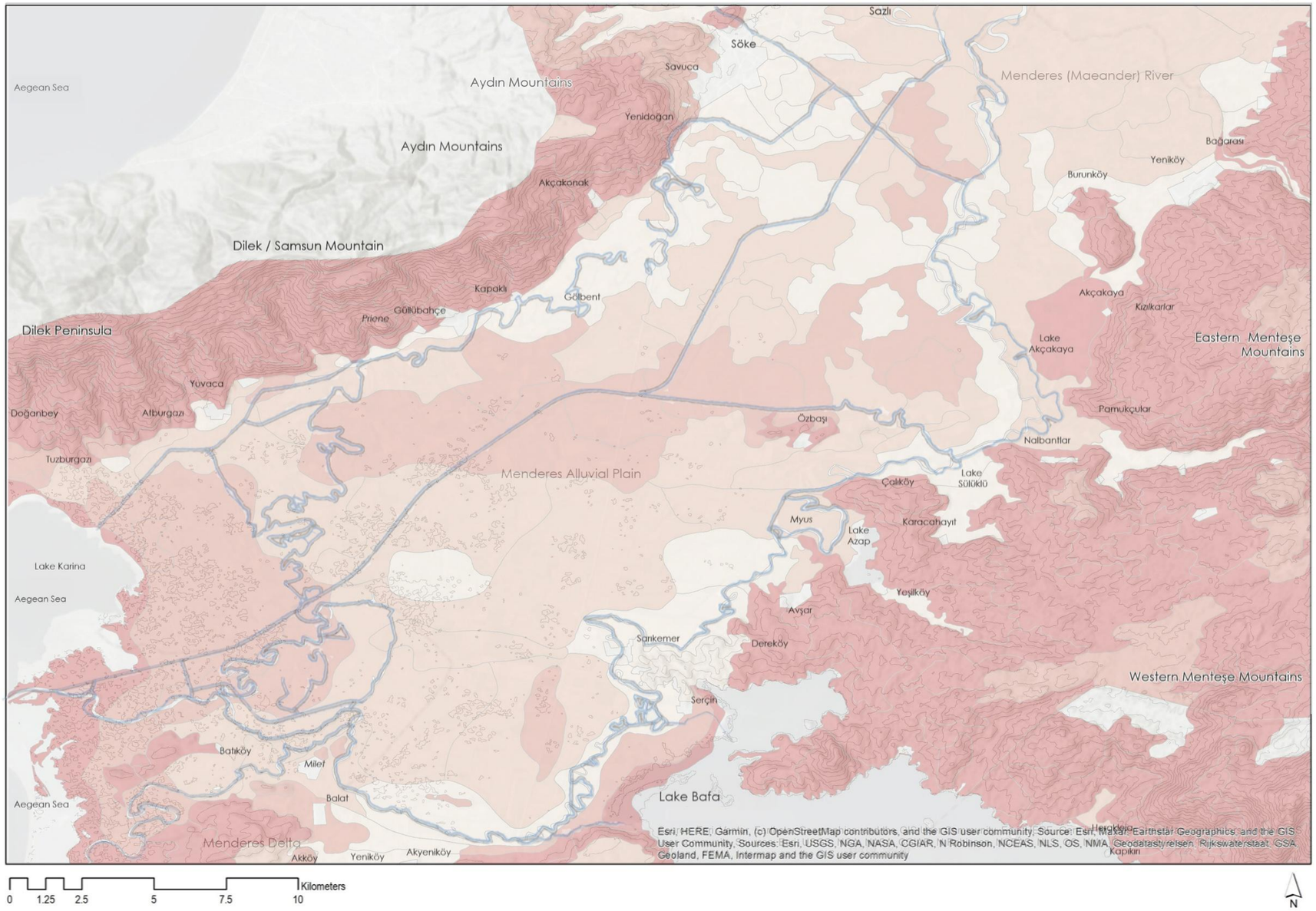


Legend

- Alluvial Coastal Soils
- Alluvial Soils
- Hydromorphic Soils
- Floodplain Soils
- Brown Forest Soils
- Colluvial Soils
- Red Mediterranean Soils
- Reddish Brown Soils
- Red Yellow Podzolic Soils
- Reddish Chestnut Soils
- Coastal Dunes
- Organic Soils
- Regosols
- Rendzinas
- High Mountain Meadow Soils
- Bare Rock
- Menderes (Maeander) River
- Topography

Figure 3.13 Soil Structure Characteristics and Soil Types in Menderes (Maeander) Riverine Landscape (Author, 2026)

Soil Structure Classification in terms of Agricultural Productivity in Menderes (Maeander) Riverine Landscape



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Class I Lands and Class II Lands

Class I and II soils have virtually no/slight limitations for cultivation and allow the widest range of agricultural uses.

Class III Lands; Class IV Lands

Class III and IV soils have moderate limitations that restrict crop choice and require careful management.

Class V Lands; Class VI Lands

Class V and VI soils have severe limitations, permitting only restricted agricultural use under intensive management.

Class VII Lands; Class VIII Lands

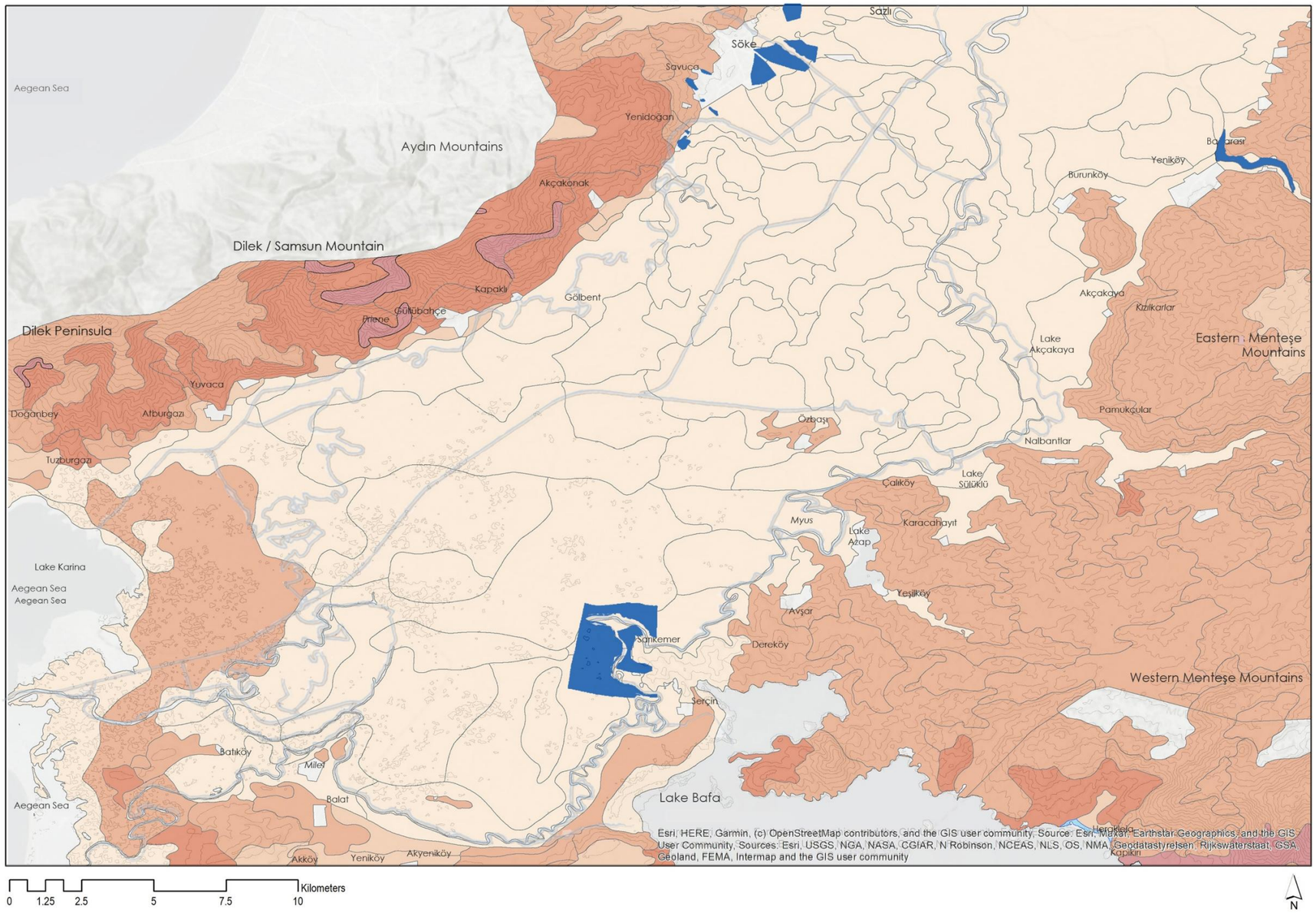
They are not suitable for cultivation due to limitations such as flooding or stoniness, yet they allow pasture, forestry, or wildlife use. These soils have strong limitations that make them unsuitable for crops and appropriate mainly for grazing and forestry. They are unsuitable for agriculture and are used exclusively for ecological protection, recreation, or natural conservation.

Menderes (Maeander) River

Topography

Figure 3.14 Soil Types and Classification in terms of Agricultural Productivity in Menderes (Maeander) Riverine Landscape (Author, 2026)

Erosion Plains and Flood Plains in Menderes (Maeander) Riverine Landscape



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None or Very Slight

Areas with minimal erosion or flooding limitations, generally suitable for a wide range of agricultural and land uses.

Moderate

Areas with moderate susceptibility to erosion or periodic flooding, requiring controlled land management practices.

Severe

Areas significantly affected by erosion processes or flood dynamics, limiting agricultural suitability and requiring careful land management.

Very Severe

Areas highly prone to erosion or flooding, where agricultural use is severely restricted and conservation-oriented land use is recommended.

Floodplain Beds

Low-lying areas shaped by fluvial processes and periodic flooding, characterized by active sediment deposition and channel migration.

Coastal Dunes

Sand dune formations along the coast created by wind-driven sediment accumulation and coastal geomorphological processes.

Bare Rock

Rock-dominated surfaces with little or no soil cover, often associated with steep slopes and high erosion susceptibility.

Menderes (Maeander) River

Topography

Figure 3.15 Erosion Plains and Flood Plains in Menderes (Maeander) Riverine Landscape (Author, 2026)

In light of this information, the Menderes River Delta constitutes a multi-layered natural landscape encompassing the Menderes/Söke Alluvial Plain, the Menderes Plain–Dilek Mountain and Menderes Plain–Menteşe Mountain thresholds, the Menderes River Delta, historic islands and elevations (such as Lade Island), Karina Lagoon, and Lake Bafa together with its associated marshes, wetlands, and lagoon systems. This system produces a multi-layered natural infrastructure extending from delta formation and shoreline changes to alluvial accumulation processes and the formation of wetlands, and consists of diverse spatial subsystems ranging from the Söke Plain to the delta and lagoon systems, and from mountain–plain thresholds to Lake Bafa (Figure 3.16; Table 3.1)

In this context, the Menderes riverine landscape is evaluated as a multi-layered and dynamic landscape ensemble that encompasses the production-oriented spatial organization of the Söke/Menderes Plain (Figure 3.16), the high permeability and transformation capacity of the delta and lagoon systems, the changing ecological character of Lake Bafa over time (Figure 3.17); the determining role of mountain–plain thresholds in directing hydrological and topographical processes, and historical morphological traces such as Karina Lagoon and Lade Island that point to former shorelines and paleo-geographical formations (Figure 3.18; Figure 3.19). This structure is shaped through the interaction of natural processes and spatial components operating at different temporal scales, making the relationship between continuity and change in the landscape visible at both physical and functional levels.

This integrity constitutes a dynamic system formed through the interaction of natural processes operating at different temporalities and human interventions. At the macro scale, the natural landscape is shaped through the interaction of climatic, geomorphological, hydrological, and ecological layers. The Mediterranean climate regime, particularly in the Menderes/Söke Plain and the delta plain, determines both agricultural production and wetland systems through seasonal rainfall distribution, drought, and evaporation processes. In this context, the geomorphological layer can be interpreted through the progradation process that expresses the advancement of the Menderes River Delta toward the Aegean Sea and the continuous displacement

of the shoreline. This process is concretized by the inland positioning of historical port cities today, while the integration of elevations such as Lade Island into the mainland reflects the traces of former shorelines. Similarly, the gradual infilling of the Latmos Gulf and its transformation into Lake Bafa constitute one of the most striking indicators of long-term sediment accumulation and changes in coastal morphology. While the hydrological layer directs the formation of alluvial plain systems through river flow and sediment transport, the ecological layer represents biodiversity and habitat continuity through Karina Lagoon, Lake Bafa, and other wetland systems. The main driving forces shaping these processes are the climate system, basin-scale sediment production, sea-level changes, and tectonic movements. Accordingly, elements such as shoreline changes, alluvial terraces, dune systems, natural levee formations, lagoon and lake transformations, and the spatial displacement of archaeological remains emerge as the primary indicators of the long-term evolution of the landscape (Table 3.1).

At the meso scale, the natural landscape is reshaped through the interaction of hydro-ecological, agricultural, and hydro-technical layers. In this context, the Menderes/Söke Alluvial Plain has transformed into an area of intensive agricultural production with the establishment of irrigation and drainage systems, giving rise to an agro-economic structure shaped by the production of cotton, figs, and olives. Processes such as the conversion of wetlands into agricultural land, the infilling of lagoons, and their reformation can be particularly observed in relation to Karina Lagoon and the delta system. In this process, Lake Bafa emerges as a significant biodiversity area due to its ecological values and conservation status. The thresholds between the Menderes Plain and the Dilek and Menteşe mountain masses play a determining role as critical transition zones that direct water flow and sediment transport, while also representing areas where different land-use practices intersect. At this scale, key dynamics include variability in river flow, maeandering, channel shifts, the transformation of wetlands into agricultural land, habitat fragmentation and regeneration, and the regulation of the hydrological regime through engineering interventions. The main driving forces shaping these transformations are agricultural

policies, economic changes, state-led water management projects (particularly those led by DSİ), population and production pressures, and land-use decisions. In this context, land-use changes, wetland loss, increasing salinity, the expansion of irrigation and drainage networks, indicators of agricultural productivity, and river channel shifts observable in aerial imagery are considered the primary indicators revealing the meso-scale transformation of the landscape (Table 3.1).

The reflections of the natural landscape at the settlement scale are shaped by everyday use practices and the impacts of natural and environmental events. The Menderes/Söke Plain stands out as a production area that is reshaped each year due to floods and droughts; these processes directly affect the boundaries of agricultural land and production patterns. While Karina Lagoon and the delta system exhibit a dynamic structure through seasonal water-level changes and salinity fluctuations, Lake Bafa and its surroundings continuously transform due to changes in water quality and human interventions. At the settlement scale, irrigation canals, small-scale embankments, and local interventions enable the reproduction of the landscape at the micro level. At this scale, floods, droughts, rapid sediment deposition, water-level fluctuations, and short-term ecological stress emerge as the main dynamics, while extreme climatic events, short-term water management decisions, and local interventions constitute the primary driving forces shaping these processes. The extent of floodplains, water-level measurements, annual changes in agricultural areas, increasing salinity, and the effects of irrigation networks at the settlement scale are considered key indicators that enable the monitoring of these processes (Table 3.1).

Natural processes and the geomorphological, hydrological, and ecological characteristics they produce constitute the fundamental structural framework of the Menderes riverine landscape. However, this natural context has continuously interacted with human interventions, production practices, and settlement decisions throughout history, and this interaction has played a determining role in shaping the landscape. This reciprocal relationship established with the riverine landscape both sustains a spatial organization guided by natural processes and generates new

relationships through how human use, direct, and transform water. Therefore, in order to understand the Menderes riverine landscape holistically, it is necessary to examine how this infrastructure formed by natural systems has been reshaped, transformed, and reproduced through human interventions. Human interventions constitute a critical dimension in understanding the transformation and production of the Menderes River Delta as a natural landscape. The delta emerges as a landscape shaped through the interaction between natural processes and human practices, where agricultural fields, irrigation canals, marshlands, and rural settlements coexist in interconnected relations. In the 19th century, modern engineering interventions began to play a defining role in the transformation of the Menderes River Delta.

Building upon these earlier forms of human–nature interaction, the twentieth century marks a critical turning point in the transformation of the Menderes River Delta through large-scale, planned, and institutionalized interventions. Unlike earlier practices shaped by local knowledge and adaptive strategies, this period is characterized by engineered approaches aimed at controlling and reorganizing the natural system. Processes such as the drainage of wetlands, the construction of irrigation and flood-control infrastructures, and land reclamation projects significantly altered the hydrological regime, sediment dynamics, and ecological structure of the delta. These interventions redefined the relationship between water and land, transforming previously dynamic and seasonally variable landscapes into more regulated and stabilized agricultural environments. While such practices enhanced agricultural productivity and supported regional development, they also led to the reduction of wetland ecosystems, the disruption of natural cycles, and the simplification of landscape diversity. In this sense, the Menderes River Delta in the twentieth century can be understood as a landscape increasingly shaped through technocratic governance and infrastructural interventions, where the natural landscape was systematically redesigned, controlled, and reconfigured.

Beginning in the 1950s, irrigation projects, flood protection systems, water regulations, dams, and irrigation and drainage infrastructure were implemented throughout the Menderes River Delta and the Söke Plain, deeply affecting the

region’s natural hydrological regime of the Menderes River. These interventions, through flood control measures, irrigation systems, and drainage canals, have locally changed the direction of the water, creating new artificial flow routes through engineered modifications at the confluence and divergence points of river branches (Leedshill, Gizbili, 1967; 1969). Through the State Hydraulic Works (DSİ) projects (Figure 3.20; see also for details Figure 3.41; Figure 3.42), the river flow was placed under control, flood risks were reduced, and cotton production was significantly increased (Atalay, 1997). The irrigation canals constructed under the Söke Plain Irrigation Project, in particular, reduced the river’s interaction with its natural floodplain; the seasonal overflow pattern of the water was replaced by a controlled distribution system. The drainage and conversion of saline marshlands into agricultural land changed the delta’s characteristic wetland ecology (Leedshill, Gizbili, 1967; 1969). During this period, the development of irrigation and flood management systems largely restricted the Menderes’ natural maeandering movement, directing the riverbed into a more linear course.

Accordingly, the Menderes River Delta has been in continuous interaction with human interventions throughout history, and this interaction has necessitated the consideration of the landscape not only in terms of its natural and contextual relationships but also through its physical, built, and experienced reflections. Therefore, a holistic understanding of the landscape requires examining how this structural framework provided by the natural context has been transformed through human interventions.

Menderes (Maeander) Delta as 'Natural Landscape':
Geographical and Geomorphological Framework and Natural Environment and Contextual Relations

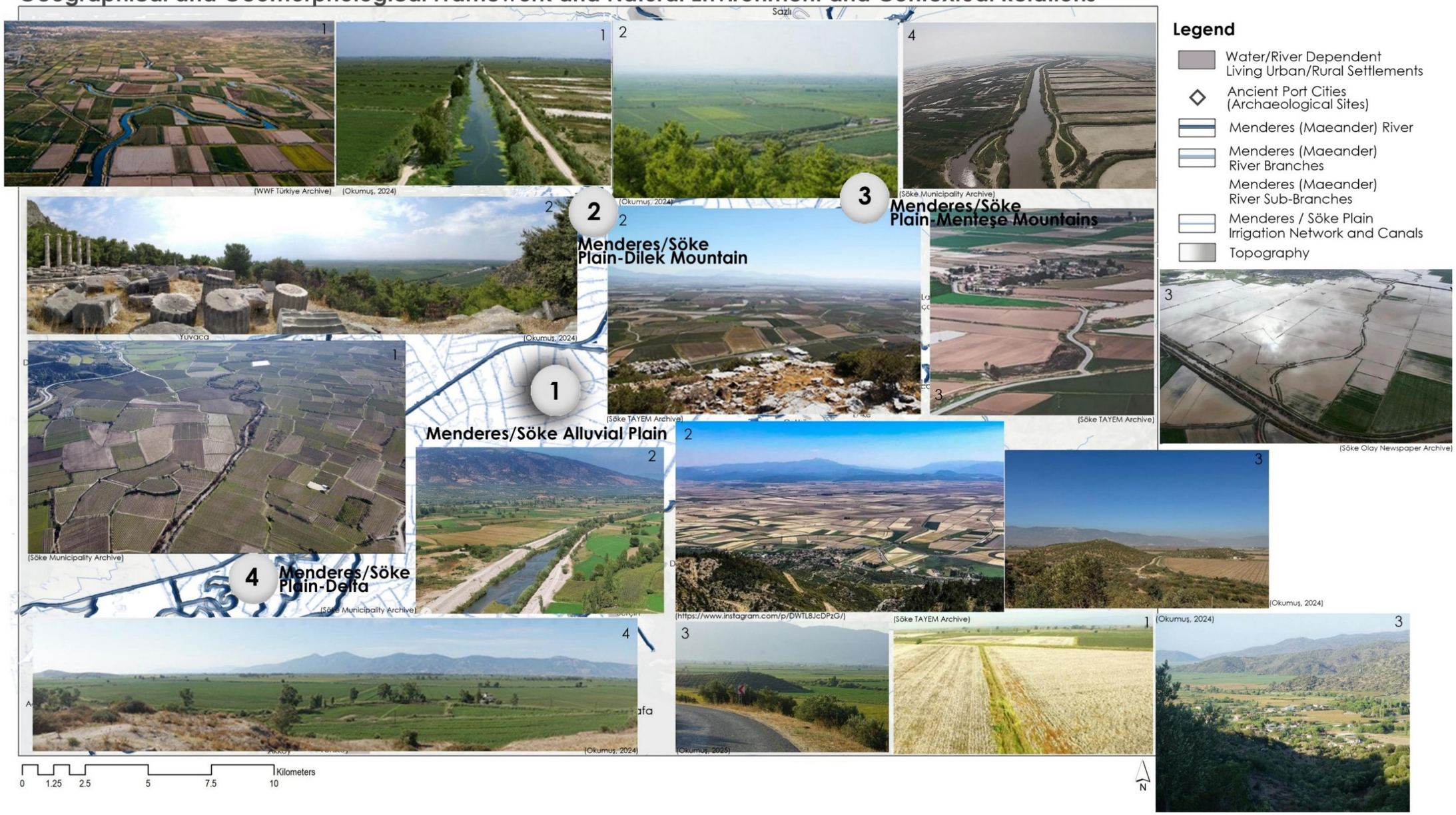

Figure 3.16 Natural Environment and Contextual Relations of Menderes (Maeander) Riverine Landscape: Menderes/Söke Alluvial Plain (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Menderes (Maeander) Delta as 'Natural Landscape':
Geographical and Geomorphological Framework and Natural Environment and Contextual Relations

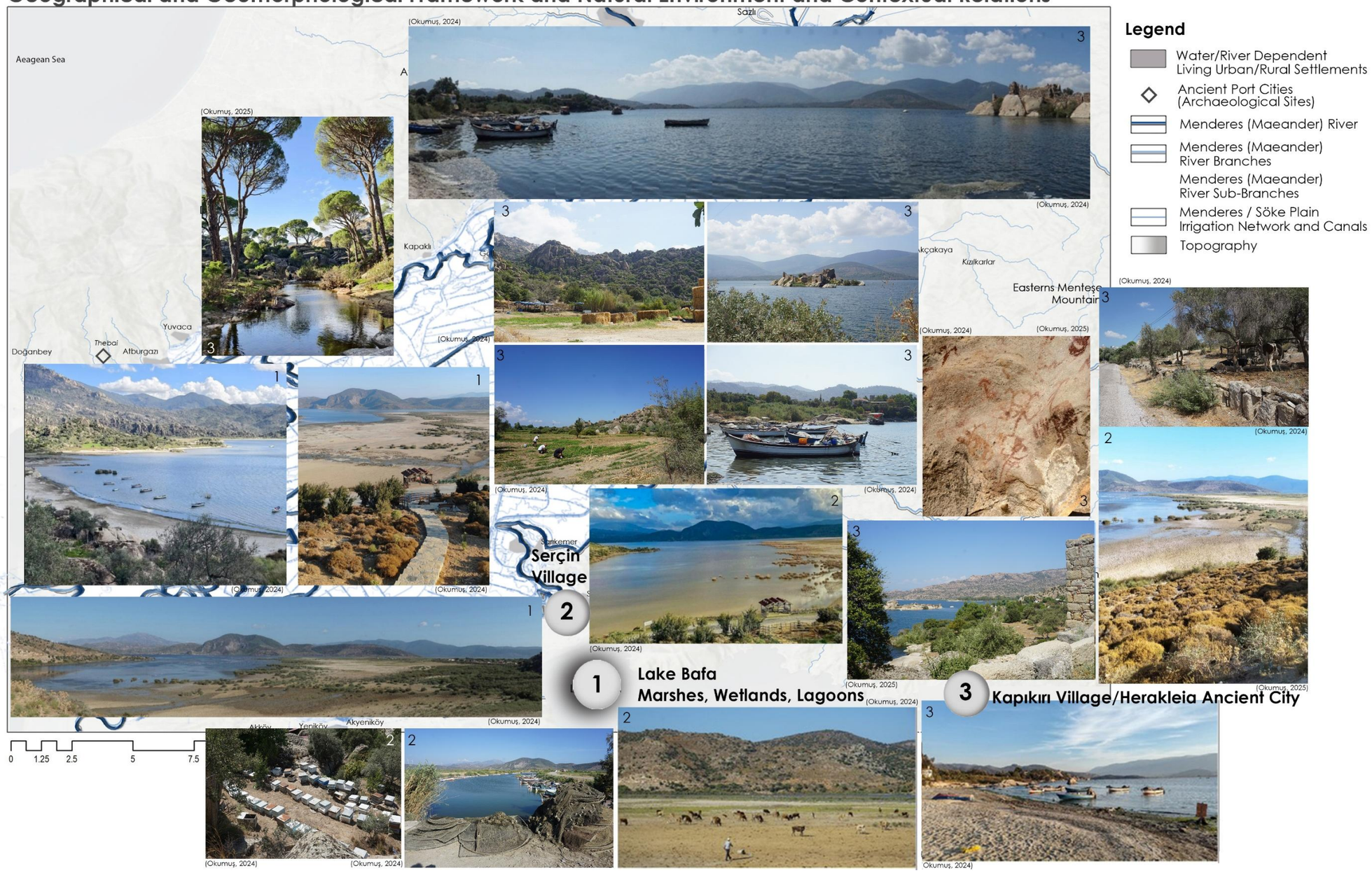

Figure 3.17 Natural Relations of Menderes (Maeander) Riverine Landscape: Menderes River Delta and Lake Bafa Wetland and Lagoon System (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Menderes (Maeander) Delta as 'Natural Landscape':
Geographical and Geomorphological Framework and Natural Environment and Contextual Relations

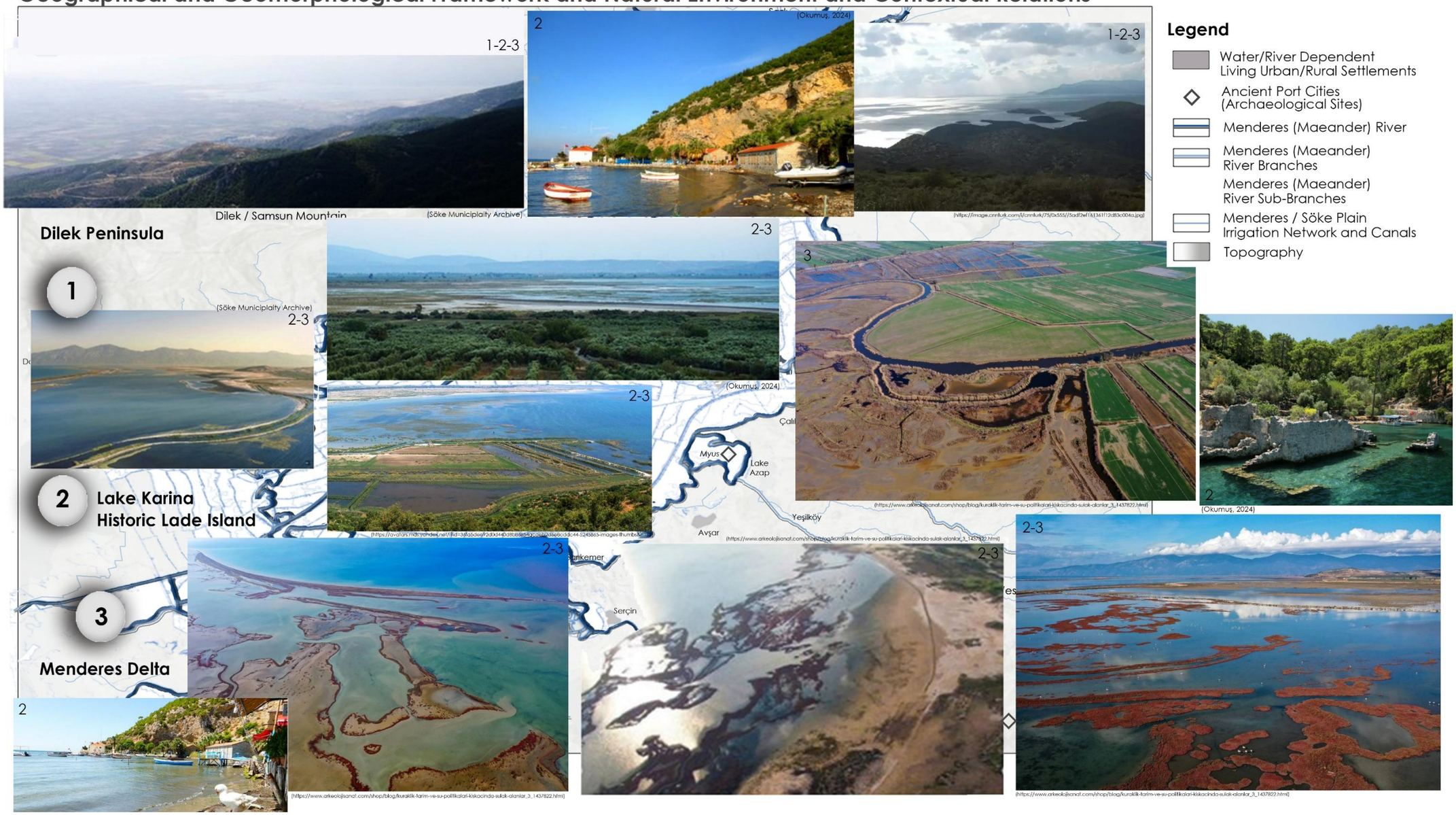

Figure 3.18 Natural Environment and Contextual Relations of Menderes (Maeander) Riverine Landscape: Menderes River Deltaic/Lagoon Zones (Menderes Riverine Landscape Heritage Atlas, Author, 2026

Menderes (Maeander) Delta as 'Natural Landscape':
Geographical and Geomorphological Framework and Natural Environment and Contextual Relations

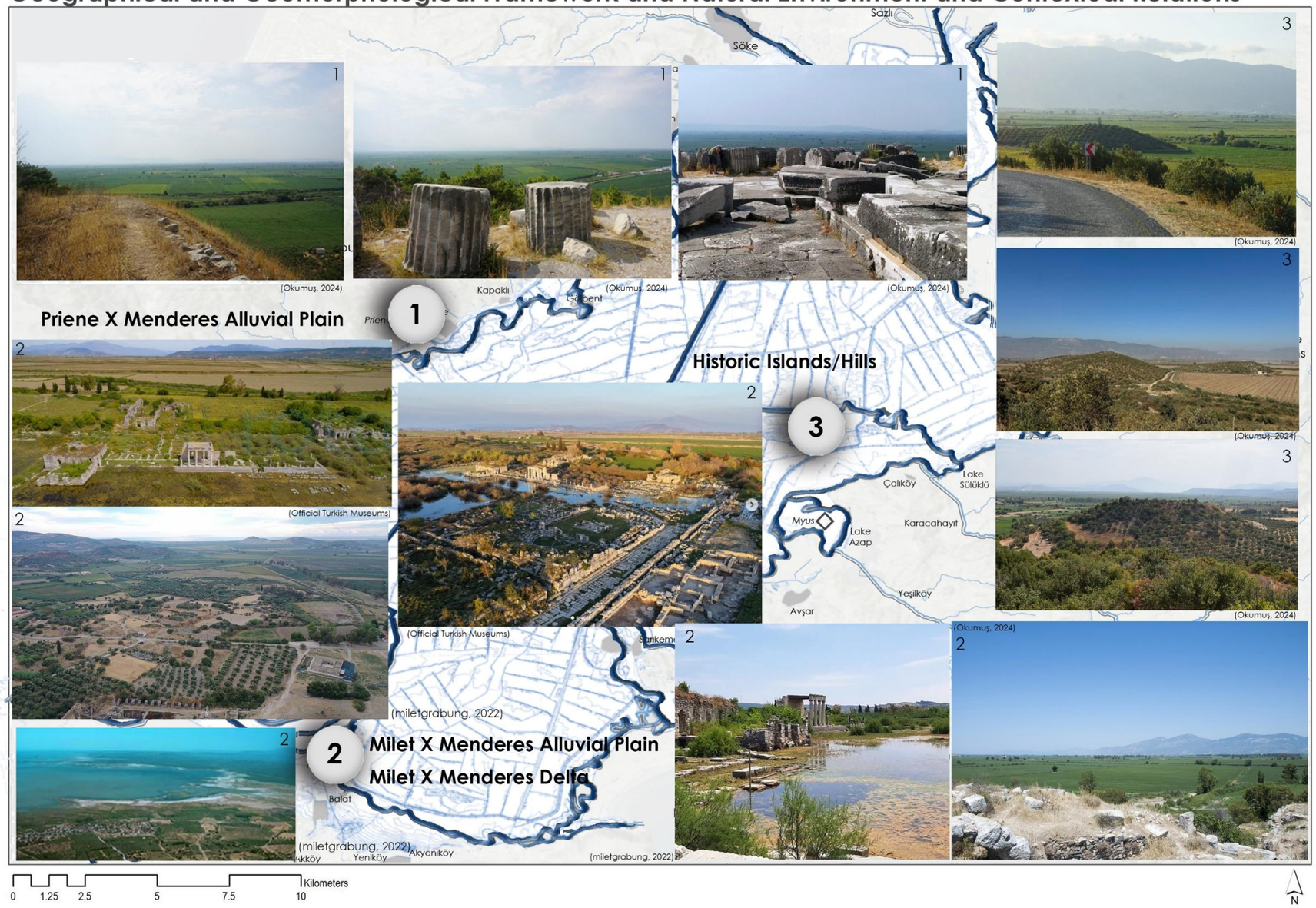

Figure 3.19 Natural Environment and Contextual Relations of Menderes (Maeander) Riverine Landscape: Ancient Port Cities and Historic Islands (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations': Lower Büyük Menderes Irrigation Project | Söke Plain Irrigation Union, Irrigation Network/Canals Constructed in the 1970s (State Hydraulic Works (DSİ) 21st Regional Directorate, Aydın)

Figure 3.20 Söke Plain /Menderes River Delta Irrigation Network, built in the 1970s, and the transformed and reconstructed landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Accordingly, the Menderes riverine landscape is a multi-layered system composed of hydrological, geomorphological, ecological, biological, climatic, and land cover/soil components, characterized by continuous transformations driven by fluvial, coastal, climatic, and anthropogenic dynamics throughout history (Table 3.1). While each of these layers contains its own continuities and transformations, they interact with one another to form a dynamic ensemble. Within this framework, the hydrographic layer consists of rivers, lakes, lagoons, and groundwater systems, and in the case of the Menderes River Delta, it is defined by the water mass of the Büyük Menderes River, its tributaries, lake systems (Bafa Lake, Azap Lake, Karina Lagoon, etc.), and groundwater recharge zones. The geomorphological layer encompasses topography, coastline, alluvial plain, and mountain foothills, shaped through a progradation process formed by the continuous accumulation of alluvium transported by the river (Brückner, 1997; 2003; Müllenhoff et al., 2004; Knipping et al., 2004). The ecological layer represents the continuity of aquatic and terrestrial ecosystems by integrating wetland ecosystems, reed beds, salt marshes, and agricultural landscapes, while the biological layer is characterized by the diversity of flora and fauna, including bird species such as flamingos, pelicans, and the Mediterranean monk seal (Magnin & Yarar, 1997). The climatic layer, defined by Mediterranean climatic conditions, directly influences all other layers, whereas soil and land cover—particularly alluvial, saline, and hydromorphic soils—constitute one of the most important natural components of the delta (Table 3.1).

The ongoing processes of delta formation and progradation throughout history have transformed the Menderes River Delta into a “natural landscape archive.” The flow regime observed in the delta today is the result of a hybrid landscape shaped by both natural and artificial processes. Although the traces of the river’s former maeandering can still be read in the delta plain, modern irrigation networks and drainage channels have been superimposed upon these traces, intertwining historical continuity with contemporary interventions. This multidimensional process of transformation represents a long-term landscape evolution parallel to the river’s gradual advance toward the sea over thousands of years. The horizontal progression

of the river reflects both natural evolution and environmental transformation processes. While the traces of former and current river branches express the temporal layers of this transformation, the continuous advancement of the shoreline reveals the simultaneity of spatial continuity and change (Table 3.1).

At the macro scale, long-term processes such as delta progradation, shoreline changes, and the transformation of the Latmos Gulf into Lake Bafa constitute the structural foundation of the landscape. At the meso scale, this natural environment is reorganized through agricultural production, water management, and land-use decisions; irrigation and drainage systems, wetland transformations, and hydrological interventions reshape the functioning of the landscape. At the micro scale, the landscape is continuously reproduced through floods, droughts, and everyday interventions, while local practices and short-term environmental changes emerge as the determining factors of this process. In this context, the layer–dynamics–driving force–indicator approach developed makes the multidimensional structure of the landscape visible and provides a holistic framework that enables the simultaneous reading of both natural and transforming processes (Table 3.1).

Table 3.1 Menderes River Delta as ‘Natural Landscape’ Layers, Dynamics, Driving Forces, and Indicators

Scale/Author	Layers	Dynamics	Driving Forces	Indicators
Macro (upper) Scale –longue durée	Climatic Layer; Geomorphological Layer (deltaic geomorphology, alluvial accumulation, shoreline, soil formation, and salinity balance); Hydrological Layer (river flow, sediment regime); Ecological Layer (wetlands, lagoons, reedbeds)	Mediterranean climate regime; seasonal rainfall concentration; drought; evaporation; climatic stress on wetlands and agriculture; fluvial–marine interaction; delta progradation; tectonic activity and subsidence; sedimentation and erosion cycles; shoreline shifting processes	Climate system (Mediterranean regime); basin-scale sediment production; sea-level changes; tectonic processes; long-term hydrological regime	Annual flood and drought cycles reflected in crop patterns; salinization processes and agricultural yield variability; expansion of the delta plain toward the Aegean Sea; coastal line changes; alluvial terraces, dune systems, closure of former bays, transformation of Latmos Bay into Lake Bafa; formation of natural levees; ecological vulnerability of wetlands

Table 3.1 Continued

Meso (regional–territorial) Scale – conjonctures	Hydro-ecological Layer; Soil and Agricultural Layer (agricultural landscapes, drainage systems, wetland transformations); Hydro-technical Layer (channels, embankments, hydromorphological interventions)	River flow variability; sedimentation and deltaic progradation; channel shifting and maeandering; wetland-to-agriculture transformation; habitat fragmentation and regeneration; lagoon formation and infilling; human–nature interaction; wetland dynamics and water-level fluctuations; irrigation, drainage	Agricultural policies and economic cycles; state-led water management (DSİ projects, dams, irrigation systems); population and production pressures; land-use decisions; medium-term climate change impacts	Seasonal flooding patterns; formation of Karina Lagoon and Azap Lake; land-use changes; wetland loss and transformation; salinity gradients; irrigation and drainage networks; biodiversity hotspots; endemic species distribution; river flow shifts visible in aerial imagery; lagoon salinity variations
Micro (settlement and intra-settlement) Scale – l'histoire événementielle	Agro-natural Layer; Floodplain systems; Seasonal water cycles; Agricultural production areas (irrigation, rural production); Anthropogenic hydro-technical layer (dams, drainage, flood control, irrigation networks)	Floods and droughts; rapid sediment deposition; storm-induced coastal erosion; water-level fluctuations; short-term ecological stress; abrupt changes in agricultural production; river regulation; flood control; drainage; wetland reclamation; infrastructure-driven transformation	Extreme climatic events; short-term water management decisions; local interventions (canals, embankments); seasonal climate anomalies	Flood extent and frequency; water-level measurements; salinity increase; annual and seasonal land-use changes; shifts in agricultural boundaries; river flow and settlement relations observable in aerial imagery; irrigation and drainage networks at the settlement scale

3.1.2 Menderes (Maeander) River Delta as 'Built Environment/Landscape (Valley of Civilizations'): Historical Framework, Spatio-Temporal and Contextual Relations and Networks

"The Menderes (Maeander) flows through time as much as through land, carrying layers of nature, memory, and civilization." (Derived from historical-geographical readings of Maeander in Strabo's "Geographica")

The Menderes riverine landscape represents a multilayered landscape that has witnessed the settlements, production activities, and commercial exchanges of various civilizations, encompassing the interactions of different cultures throughout history. Beyond presenting a linear historical sequence, this landscape reveals a complex relational system structured through interconnected settlements, infrastructural networks, production systems, and spatial practices that have evolved in response to the dynamics of the riverine environment. From ancient port cities and sacred landscapes to rural settlements, transportation corridors, water management systems, and modern infrastructural interventions, the delta embodies a stratified yet integrated spatial formation in which each layer both inherits and transforms the previous ones.

The historical and temporal context of the Menderes riverine landscape should be understood as the coexistence and interaction of multiple temporal layers operating in different scales (Figure 3.20). As described in the chapter on the research framework and methodology, the concept of *longue durée* provides a critical theoretical foundation for interpreting the slow-evolving structural characteristics of landscapes, including geomorphological formations, hydrological regimes, and long-term settlement continuities. However, a long-term perspective remains insufficient for capturing the dynamic and ever-changing nature of riverine landscapes. This research's temporal framework also incorporates *conjonctures*—medium-term processes such as economic cycles, land-use transformations, and demographic shifts—and *l'histoire événementielle*, referring to short-term events

and individual experiences (Braudel, 1966). Together, these correspond to the interrelated dimensions of geographical, social, and individual time (Braudel, 1966). Within this framework, the Menderes riverine landscape is examined through a multi-temporal perspective that extends from deep structural conditions to lived experiences, while also systematically addressing its layers, dynamics, driving forces, and indicators. This integrated approach enables a more comprehensive understanding of how landscape transformations emerge through the interaction of long-term structures, socio-economic processes, and event-based dynamics (Figure 3.20).

Within this framework, the Menderes River Delta is approached as a coherent riverine system in which built environments, transportation networks, and production landscapes are structured through their relationship with the river, sedimentation processes, and shifting coastlines. Accordingly, this section examines the historical (built) landscape of the delta through landscape layers, components, dynamics, and driving forces, including ancient settlement systems and their interrelations, transportation and connectivity networks, built environments and spatial organization, modern interventions and water management systems, transformation processes, contemporary settlement structures, and cadastral patterns. Through this relational reading, the delta emerges as a "Valley of Civilizations," not only defined by the historical layers but by the continuity of interactions that have continuously produced, reconfigured, and sustained the spatial ensemble of the landscape.

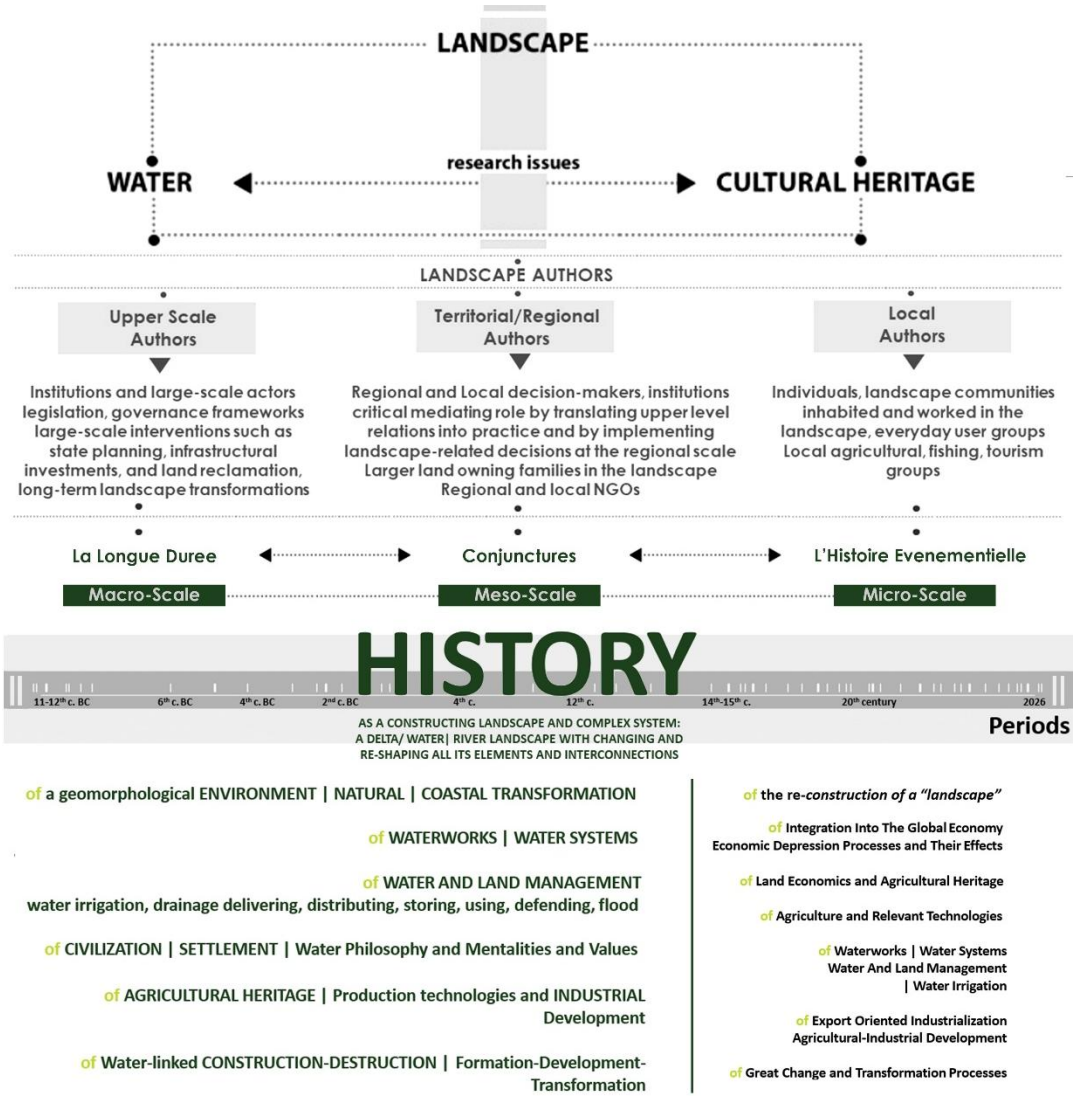

Figure 3.21 Diagram including the Menderes Riverine Landscape's Historical Transformations, the Categorisation and Identification of the Landscape Authors and Planes of Temporalities (Author, 2026)

The prehistoric settlements of the Menderes River Delta, particularly from the Neolithic and Chalcolithic ages onward, are closely linked to the settlements of the Aegean basin (Kraft et al., 1977; Brückner, 2003; Thompson, 2007) (Figure 3.20). During the prehistoric phase of the delta, settlement traces were generally associated with small-scale communities and natural shelters. Archaeological evidence from mounds dating to the Neolithic and Chalcolithic periods reveals the earliest signs of

human occupation in the region (Figure 3.21). The fertile agricultural plains, permanent water sources, and the diversity of the deltaic ecosystem created favorable conditions for the emergence of early human settlements. Traces of the transition from hunter-gatherer to sedentary agrarian societies can be observed in areas along the delta margins, where soils were suitable for grain cultivation. Findings such as pottery fragments, obsidian tools, and grain remains indicate that the region evolved into an early center of agricultural civilization (Thompson, 2007; Akdeniz, 2022).

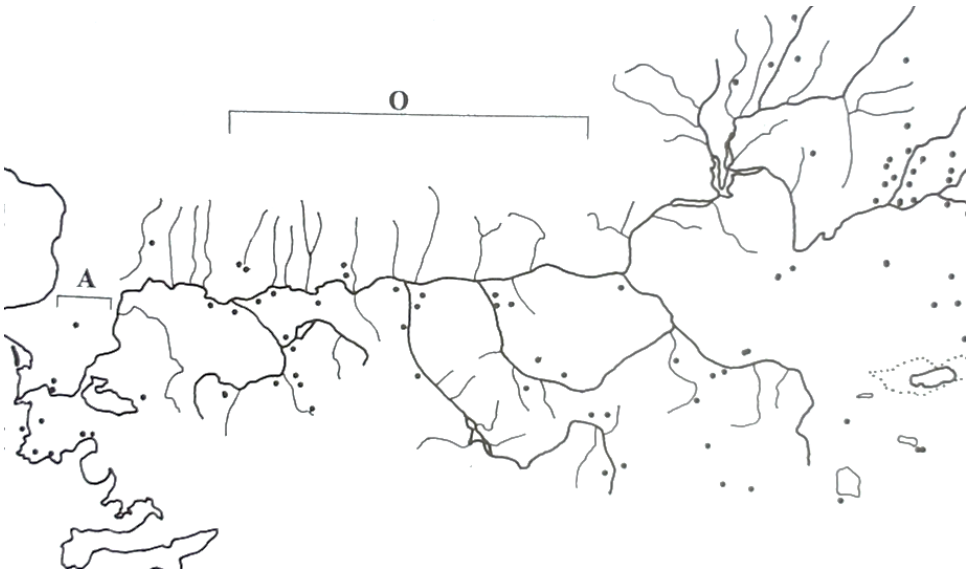

Figure 3.22 Prehistoric settlements and findings in the Menderes Basin (Akdeniz, 2022)

The landscape of this early period was composed of natural shelters, rock overhangs, caves, and mound settlements, forming the earliest layers of human–place interaction. Archaeological traces identified on the slopes of Mount Mykale (Samsun/Samson Mountain) and around Mount Latmos (Beşparmak Mountain) indicate that these areas served both as natural refuges and productive zones during the prehistoric era. In this context, natural environmental elements, mountains, rocks, lakes, water sources, and maritime connections constituted the fundamental morphological background shaping patterns of human settlement (Thompson, 2007; Akdeniz, 2022). The rock paintings around Mykale and Latmos, mound remains, and marine sediments detected near Lake Bafa and former coastlines buried under

alluvium are geomorphological indicators reflecting the intertwined cultural and natural imprints of this era.

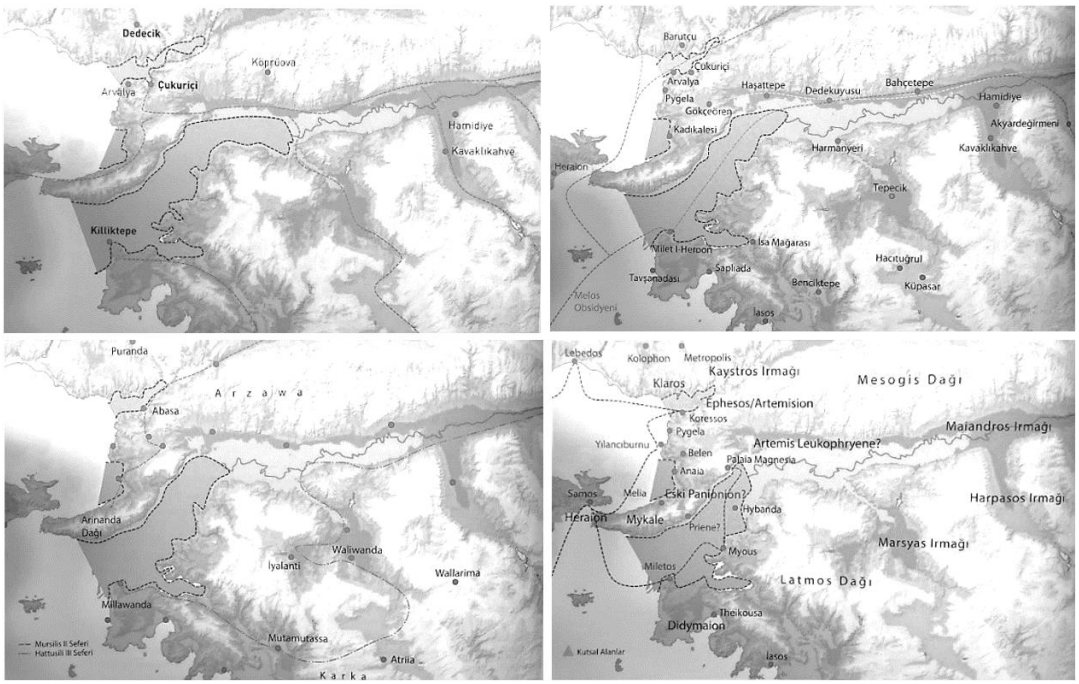

Figure 3.23 14.000-5.000 BC Natural Landscape and Roads; 5.000-2.000 BC Chalcolithic and Bronze Age Settlements; 1.315-1.250 BC Hittite Period Settlements; 1.100-950 BC (Tül, 2013)

The Menderes River Delta, in antiquity, served as a natural corridor/threshold and a nexus attraction and intersection center for the Ionian, Carian, and Lydian civilizations (Strabo, Geographika, XIV.1.11; Cramer, 1832; Jones, 1961; Kraft et al., 1977). (Figure 3.22). Priene, Milet, Thebai, Myus, and Pyrra were the principal ancient port cities that shaped and were, in turn, shaped by the deltaic landscape. The river–sea connection enabled these cities to flourish both economically and culturally (Greaves, 2002). Milet, with its four harbors, became a major node in trade between the Aegean and the Black Sea, while also serving as the birthplace of philosophy and science (Figure 3.22; Figure 3.23). In addition to Milet, Priene, and Myus—the most important ancient port cities of Ionia—the island of Lade and the port structures within the delta constitute significant spatial traces of this period (Kraft et al., 1977; Brückner et al., 2003). As Pliny observed, “nature has torn the

islands from the sea and added them to the mainland." This process illustrates the continuous transformation of the coastal geography under the influence of the Maeander. The silting up of Lade and the nearby islands, and their eventual incorporation into the mainland, represent a dramatic geomorphological change, vividly captured in Pliny's statement that "nature here has brought about a kind of disappearance."

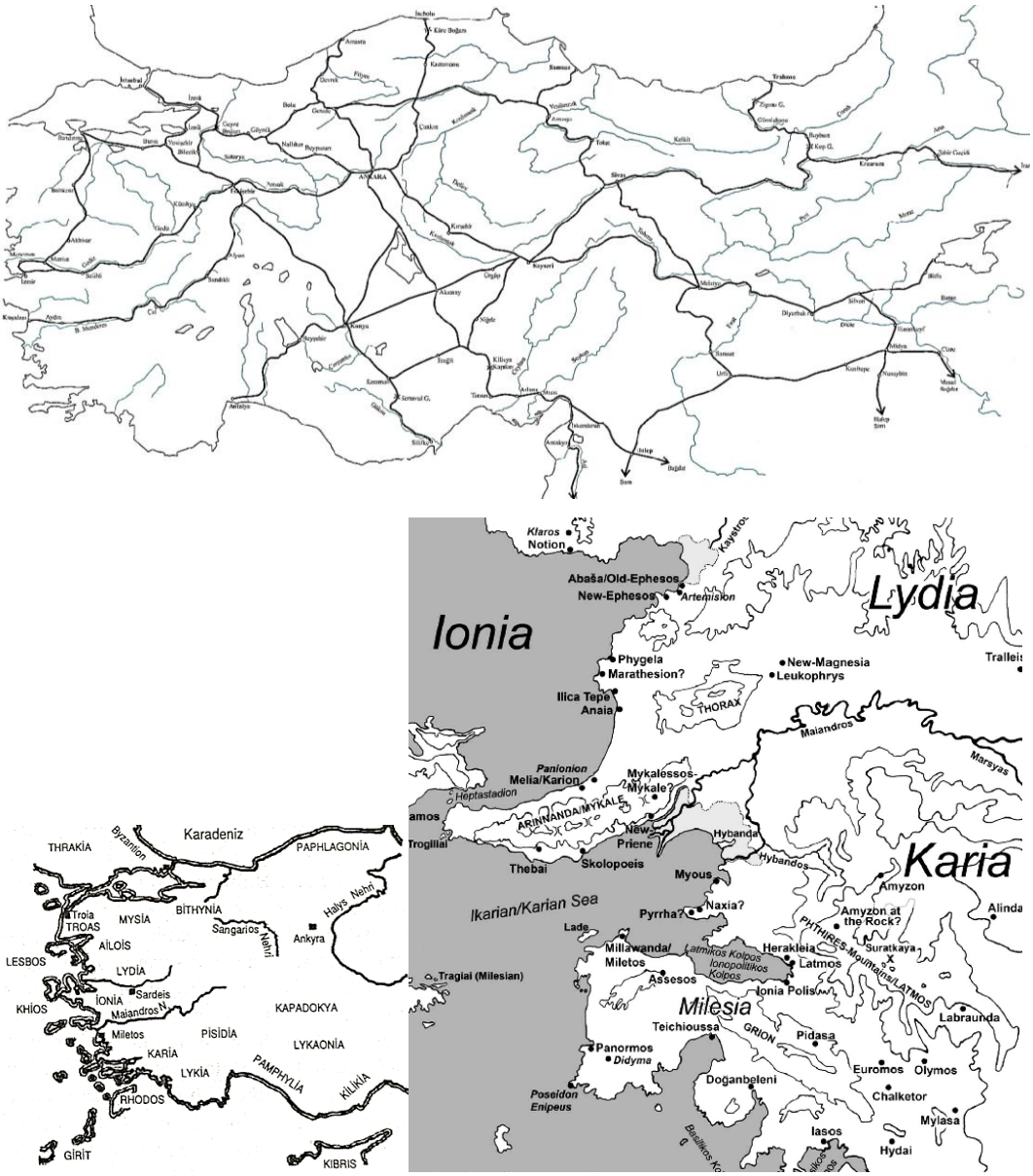

Figure 3.24 Top: Transportation Networks and Routes around Anatolia/Asia Minor and the Maeander Delta in Antiquity (Akurgal et al., 2001); Bottom: Regions of

Anatolia in Antiquity, historical topography of southern Ionia with adjacent parts of Lydia and Caria (Akurgal et al, 2001); The shoreline represents that of the Late Geometric Period (ca. 700 BCE). Light gray shading indicates the approximate extension of the Kaystros (Küçük Menderes) and Maeander (Büyük Menderes) river mouths around ca. 1500 BCE. (Herda et al., 2009)

Within this framework, the Menderes Valley and Delta were perceived in the ancient world as both a natural boundary among Lydia, Caria, and Ionia, and a spatial axis of cultural, economic, and political integration. The key dynamic of this era was the interrelation between maritime trade, natural and physical environment, and religious, cultural, and economic activity (Herda et al., 2019). The historian Herodotus (I.80) notes the Maeander's wide riverbed and the role of its alluvial deposits in shaping the landscape. He describes the land inhabited by the Ionians as follows (Hart, 2014): "The Ionians who gather at Panionion have founded their cities in the region which, in my judgment, enjoys the most beautiful climate and the fairest skies in the world. Neither those who dwell to the north nor those who dwell to the south can be compared with Ionia."

Figure 3.25 The Menderes Basin and Delta in 'The Tabula Peutingeriana' is an illustrated ancient Roman road map showing routes from the British Isles to the

Mediterranean Basin and the Near East, extending as far as India and Central Asia during the Late Roman period (see Tabula Peutingeriana, Segment VIII, 1916 facsimile edition)

In the later periods, the significance of the Maeander Delta partially declined; however, the continuity of life in the region was sustained through coastal fortresses, religious structures, and villages (Figure 3.24). The delta was reshaped by religious, military, and economic functions. Particularly, Herakleia ad Latmos around Lake Bafa became a religious center with its Byzantine monasteries. In this context, urban settlements such as Herakleia from the ancient city period, along with city walls, monasteries, churches, and small coastal villages, constitute the oldest layers of the delta. Moreover, the rural settlements at the foothills of Mykale represent significant examples of the Byzantine layers. While the delta preserved the continuity of agricultural practices, religious buildings emerged as focal points of social organisation. The strengthening of religious life and the proliferation of monasteries, together with the growing importance of defense needs and their spatial reflections, redefined the organization of the landscape. At the same time, Arab incursions and security concerns led to the relocation of settlements from coastal areas to more protected inland locations, while the contraction of regional trade and the limited continuation of coastal commerce indicate a reconfiguration of economic relations.

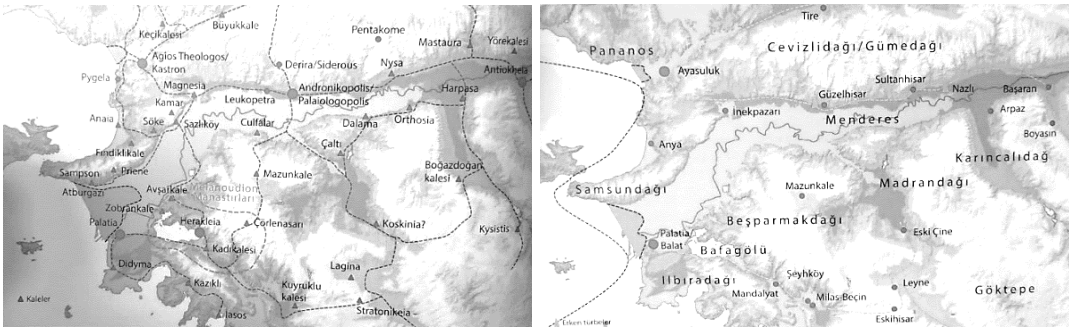

Figure 3.26 10.c-13.c. AD Byzantium Period Castles, Cities and Settlements; 14.c. The AD Turkish early settlements, Silk Road, and its connection with the trade network (Tül, 2013).

During the Byzantine period, the proliferation of religious institutions and monasteries endowed the landscape with both symbolic and functional spiritual identity. Rural villages, small fortifications, and new settlement traces over earlier urban remains, together with expanded agricultural lands, irrigation channels, and terraced fields, constitute the primary spatial layers of the landscape (Ousterhout, 1999; Akurgal et al., 2001) (Figure 3.25). Bridges and caravanserais emerge as key infrastructural components structuring trade routes and regional connectivity, while the reorganization of agricultural production reinforces the delta's productive landscape. The main dynamics shaping this built environment include the control of coastal trade routes, the continuity of agricultural production, and regional power struggles, alongside demographic transformations linked to Turkmen settlement and the increasing visibility of Islamic cultural and religious structures. Architectural remains and trade networks, particularly around Balat and its surroundings, function as spatial indicators of these processes, revealing a landscape continuously restructured through the interaction of economic, political, and cultural forces (Ousterhout, 1999; Akurgal et al., 2001). The monastic ruins around Herakleia ad Latmos, the rural settlements at the foothills of Mykale, and the Beylik-period architecture around Balat stand as tangible spatial indicators of this historical layer (Figure 3.24).

During the Ottoman period, the delta functioned as a valuable productive landscape in terms of both agriculture and trade. Söke and its surroundings became an important administrative center (Dankoff, Kim, 2010). Products such as cotton, tobacco, and figs were cultivated in the delta and transported to Mediterranean markets. The settlements recorded in the Ottoman tahrir registers, along with the development of the Söke township, agricultural lands, caravan routes, inns, caravanserais, mosques, and bridges, structures that held social significance for local communities, constitute the spatial and social layers of this period.

The main dynamics that shaped the landscape during this era include the organisation of caravan and trade routes and marketplaces, the taxation system, and coastal trade. Particularly after the 17th and 18th centuries, the records and notes of travelers and

researchers played a crucial role in understanding the history and cultural heritage of the Maeander region. Narratives, drawings, and maps produced by scholars from various disciplines, history, archaeology, architecture, art history, and urban planning, serve as primary sources documenting the region's social, economic, religious, and cultural conditions. In these travel reports, the historical and cultural layers of the Maeander River valley and delta are frequently emphasized, revealing the region's role as both a cradle of ancient civilizations and a crossroads of cultural interaction. William Martin Leake, who produced detailed maps and observations of the ancient cities of Anatolia and the Maeander Delta, described the location of these cities as part of the "Maeander Geography" and examined their topographical characteristics.

Travelers' accounts[9] of the Menderes River Delta reveal a historical (built) landscape structured through the interaction of monumental urban forms, rural settlements, and multi-scalar transportation networks shaped in relation to the river and its evolving geomorphology (Figure 3.26). The built environment is articulated through a rich assemblage of architectural elements, including aqueducts, bath structures, watchtowers, defensive walls, theatres, temples, and harbor systems, which together reflect the complexity of ancient urban organization, particularly in cities such as Milet and Priene. These cities exhibit advanced spatial planning principles, including grid-based street systems, agoras as central nodes of political and commercial life, and harbor infrastructures that enabled strong integration with maritime trade networks.

[9] (Wheeler and Spon, 1673; Sandys, 1673: 267–269; Wheler, 1682: 268–269; Pococke, 1743:45; Van Egmont, 1747; Choiseul, Gouffier, 1782:170; Choiseul, Gouffeir, 1782:150, 176; Chandler, 1817:185, 188; Forbin, 1819; Cramer, 1832:463; Arundel, 1834:241; Fellows, 1838: 264–265; Texier, 1839; 1862; Rayet, Thomas, 1877; Ramsay, 1890:40; Ramsay, 1890:58, 59; Ramsay, 1890:111; Sartiaux, 1921)

Figure 3.27 Menderes Basin and Delta Geography Depictions, 1:1391–1452 Depiction; 2:1359–1683 Depiction; 3: Tabula Asiae I. (Karte); 4: Tabula Prima

Asie; 5: Grecia Sophiani; 6: Asia Minor; 7, 8: Greece with part of Anatolia (Sources: GeoPortOst (Historical Maps Collection of Aydın and Western Anatolia), accessed via OldMapsOnline, Retrieved February 10, 2026, from https://www.oldmapsonline.org/en/Aydın); 9:Meandri Campi, "Maeander Geography" Greciae Antiquaea Designated Nova (Sources: GeoPortOst (Historical Maps Collection of Aydın and Western Anatolia), accessed via OldMapsOnline, Retrieved February 10, 2026, from https://www.oldmapsonline.org/en/Aydın)

Travelers' accounts also emphasize the transformation of the coastal urban system within the Menderes River Delta. Milet, Priene, and Myus are described as "sea cities," reflecting their historical connection to maritime networks and coastal geographies. Among these, Milet stands out through representations of its former grandeur, articulated through monumental structures such as its theatre, inscribed city walls, visible ruins, and water-related infrastructures. At the same time, these accounts highlight a process of spatial decline and transformation, as Milet is depicted as a ruinous and largely abandoned settlement, despite its continued identification in local terminology as Palat, Palatia, or "The Palaces." This duality reflects the layered character of the deltaic landscape, where the remnants of past urban prominence coexist with later phases of abandonment and reoccupation.

Archaeological remains documented by travelers further reveal the layered transformation of these historic built environments (Figure 3.26; Figure 3.27). The monumental scale of structures such as the theatre of Milet, inscribed city walls, temples, and sacred precincts indicates the former prominence of these cities, while the presence of ruins, reused architectural fragments, and small-scale dwellings illustrates processes of decline, abandonment, and reoccupation. In Priene, the terraced urban form, chessboard-like street pattern, and preserved defensive structures demonstrate a highly organized built environment adapted to topographic conditions. Similarly, the remains of fountains, inscriptions, and reused stone elements in nearby settlements reflect the continuity and reinterpretation of ancient material culture within later rural contexts.

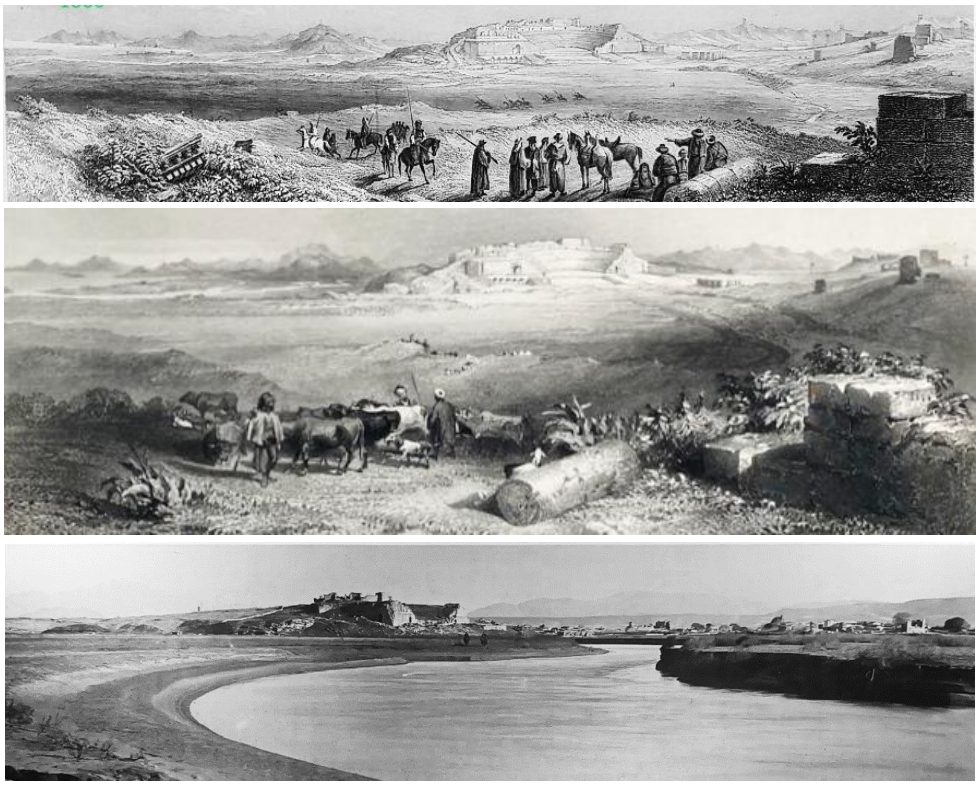

Figure 3.28 Top and Middle: 19th-century engraving “Milet and the Menderes River Delta” (engraver A. Willmore). Bottom: View of the Milet Theatre and the city of Milet across the Menderes River (Milet Museum Archive, 1910)

The spatial structure of the delta is equally defined by transportation and mobility systems, which evolved across different historical periods while maintaining a strong relationship with the riverine landscape (Figure 3.28; Figure 3.29). In the 17th, 18th, and 19th centuries, travelers describe a dense network of routes connecting coastal centers such as Kuşadası and Milet with inland settlements, including Söke, Güllübahçe, and Balat. These routes often followed natural corridors between mountain ranges such as Mykale and the surrounding uplands, illustrating how topography and hydrology guided movement patterns. River crossings, frequently conducted by rafts, constituted critical nodes within this network, reinforcing the role of the Menderes as both a barrier and a connector. Caravan routes and overland trade networks formed another key component of this transportation system. Inns, caravanserais, and stopping points such as Derbent coffeehouses functioned as infrastructural anchors supporting long-distance trade and travel. These routes linked

agricultural hinterlands with coastal ports, facilitating the movement of goods such as cotton, textiles, and agricultural products, and integrating the delta into broader regional and interregional economic systems. In this context, Milet retained its role as a major maritime gateway, while inland routes extending toward Phrygia and other regions formed part of a wider trade geography.

Figure 3.29 Left: The view of the Maeander River, its alluvial plain, and the delta from Priene presents the appearance of an “enormous plain/space” (Chandler, 1817) Right: River and boat/ferry transportation along the banks of the Menderes River and the city of Milet (1764) (Söke Tarih, 2021:1); Bottom: The Menderes Valley and the Flow of the Menderes River Along the Plain (Choiseul, Gouffier, 1782:170)

Figure 3.30 Top: Caravan resting places and inns within the delta along the travel route, View of Byblis Spring and Menderes River Delta (Choiseul, Gouffeir, 1782:150, 176); Bottom: The Menderes River viewed from Mount Samsun (Dilek Mountain) (Wiegand et al., 1904: 9); The Decauville railway used in archaeological excavations, with the Menderes River and Plain stretching into the background (Wiegand et al., 1904: 1)

Travelers' accounts also provide significant insight into the Ottoman-period rural settlements of the Menderes River Delta, revealing a dispersed yet interconnected settlement system embedded within the riverine landscape (Figure 3.30). Settlements such as Söke (Sukia), Güllübahçe (Kelebeç/Kalibesh), Doğanbey (Domatia), Sarıkemer, Serçin, Özbaşı (Osbashı), Akköy (Akku), Balat, and Kapıkırı emerge as key spatial nodes structured in relation to the alluvial plain, river crossings, and surrounding mountainous terrain. These villages are described as modest rural settlements characterized by low-rise housing, agricultural production areas, and proximity to water sources, often located at transitional zones between plains, slopes, and former coastal lines. In many cases, they coexist directly with the remains of ancient cities, such as Güllübahçe with Priene and Balat with Milet, illustrating a layered built environment in which Ottoman-period rural life was superimposed upon earlier urban and monumental landscapes. The spatial layers of the Ottoman

period were shaped by production and transportation infrastructure. The Söke township and its rural surroundings formed the core of the administrative and productive network in the delta. The cultivation of crops such as cotton, tobacco, figs, and licorice made the Maeander Plain an area of intensive agriculture. Inns, caravanserais, mosques, bridges, and market buildings that supported this production system left enduring spatial traces across the delta as elements of both economic and social interaction. In addition, these settlements often coexisted with ancient ruins, reflecting a layered landscape in which past and present spatial forms overlapped. The presence of markets, small-scale commercial exchanges, and agricultural production infrastructures highlights the continued economic vitality of these settlements within the delta system.

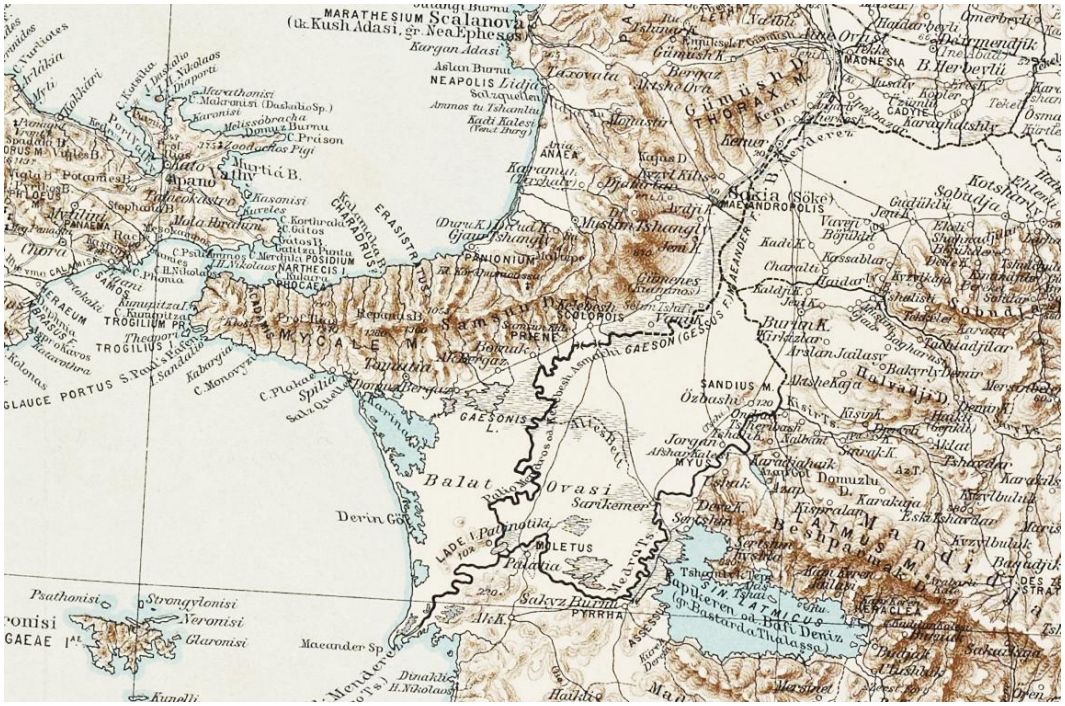

Figure 3.31 Top: Menderes River Delta and Surrounding Map (Menderes River Delta and Surrounding Map (Kiepert, 1911, Karte von Westlichen Kleinasien)

By the 19th century, evolving trade relations had transformed production patterns in the region. In parallel, cotton-processing facilities, ginning factories, licorice plants, and storage areas introduced the early industrial layers of the landscape. The

establishment of the railway connection in the early 20th century linked the delta to the İzmir port, reorganizing the regional production and trade network (Keyder, 1987) (Figure 3.31). During this period, the drainage of marshes, the regulation of river flows and branches, and the construction of water management systems became defining elements of spatial transformation. When viewed collectively, water management, production organisation, and infrastructural investments reveal a complex dynamic in which natural, economic, and technological processes were deeply intertwined. The remains of mosques, churches, bridges, inns, caravanserais, and trade buildings in the delta stand as spatial indicators of social life. Similarly, the 19th-century cotton-processing facilities, licorice factories, and railway lines constitute spatial traces and reflections of industrialization within the landscape (Şahin, 2002).

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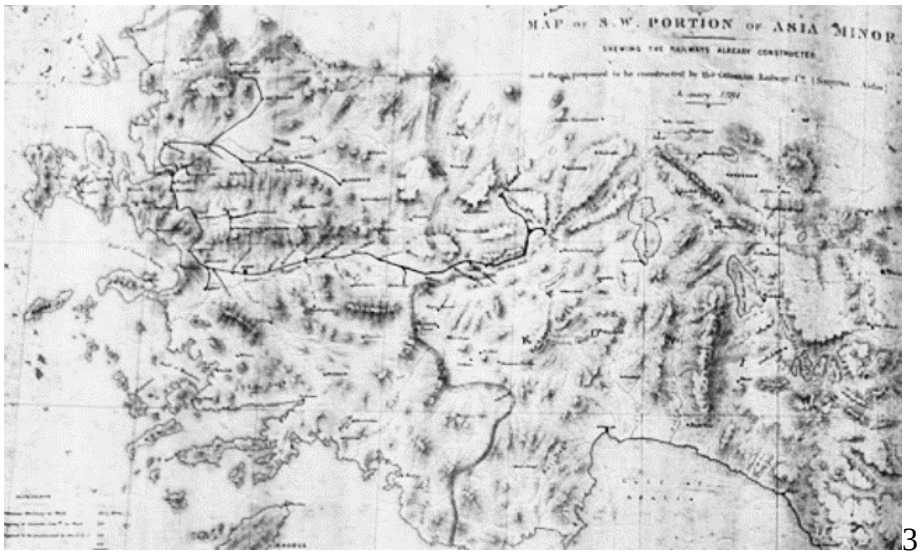

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Figure 3.32 1: İzmir–Aydın Railway Company share certificate; 2: illustration depicting the construction of the Aydın Railway (artist: David Hall McKevan); 3: Izmir–Aydın Railway, 1884 (Gallica Digital Library).

In summary, these observations demonstrate that the Menderes River Delta constitutes a continuously evolving built landscape in which ancient cities, rural settlements, transportation networks, and industrial infrastructures coexist and interact. The persistence of routes, the transformation of focal centers, and the layering of built environments reveal a spatial system shaped by the ongoing interplay between geomorphological change, economic networks, and human mobility. The region's strategic position, fertile soils, and abundant water resources transformed the delta into an economic geography connected to both local and international markets. During the 1900s, the Menderes River Delta, and particularly the Söke Plain, became a key site for implementing the new state's agricultural and industrialization policies. In line with the Republic's national development goals, the delta region gained importance for its productive potential and a landscape where modernization, resettlement, and nation-building processes were actively materialized. Railway lines, port connections, and road networks formed the spatial backbone of both production and distribution systems (Figure 3.32). During this process, state-supported farms, agricultural stations, warehouses, and agricultural facilities represented the spatial layers of the region's new productive infrastructure.

In this regard, these multi-layered processes present the interaction between river dynamics, environmental factors, settlement patterns, infrastructural systems, and production networks together with historical continuity and contemporary spatial organization. In this regard, the river-dependent settlement network and built environment configuration of the Menderes (Maeander) riverine landscape constitute the spatial manifestations of urban and rural settlements, irrigation systems and their components, and ancient port cities together with their present-day archaeological remains (Figure 3.33). Topographical elements such as the Dilek Peninsula and the Menteşe Mountains provide a framework that both bounds and directs the delta. Within the settlement network developed under these thresholds,

the Menderes River and its tributaries define the strong relationship between water access, settlement location, and land use, as well as the primary morphological framework, while the extensive irrigation networks and canals spreading across the Söke Plain are superimposed onto this natural system, reflecting the relationship between agricultural production and the built environment. Moreover, the urban centers, village networks, and built environment components of river-dependent settlements constitute important indicators that make visible the experienced and produced dimensions of the landscape (Figure 3.33).

Within this network, Söke functions as the urban core of river-dependent living settlements, serving as a center where administrative, economic, and social functions are concentrated, while the surrounding villages represent rural subsystems shaped through agricultural production, access to water, and local everyday practices (Figure 3.34). The urban fabric of Söke encompasses both historical and contemporary layers of the built environment through its characteristics, traditional building typologies, and street patterns. At the same time, the riverbed and its surrounding arrangements demonstrate that the relationship with water is shaped by both natural processes and engineering interventions. The built environment developing along the river corridor, including bridges, transportation axes, and urban infrastructure elements, provides the spatial manifestation of mobility and connectivity relations (Figure 3.34). In addition, agricultural production areas, industrial facilities, and irrigation systems reflect the production-oriented transformation of the landscape and its economic structure.

The river-dependent rural settlements diversify through the urban and administrative center of Söke and produce different spatial characteristics. In particular, the villages located on the northern (right) side of the Menderes River (such as Sazlı, Yenidoğan, Güllübahçe, Atburgazı, Tuzburgazı, and Doğanbey) exhibit different spatial characteristics in line with their relationships with the river, the alluvial plain, and the surrounding topography (Figure 3.35). These settlements reflect a settlement pattern that is generally located on mountain foothills and elevations to avoid flood risk, while at the same time maintaining access to production areas in the plain. The

building typologies presented in the figure, including stone houses, examples of rural architecture, religious structures, and abandoned or partially preserved settlement fabrics, reveal the historical continuity and transformation processes of these areas. In particular, the built environment observed in Güllübahçe and its surroundings reflects continuity with ancient settlements, while settlements such as Doğanbey bear the spatial traces of abandonment, resettlement, and conservation processes (Figure 3.35). At the same time, rural settlements make visible the settlement–production–landscape relationship through agricultural production areas, olive groves, terraced lands, and rural road networks (Figure 3.35).

The settlements on the southern (left) side of the river, such as Bağarası, Burunköy, Pamukçular, Nalbantlar, Karacahayıt, Avşar, Sarıkemer, Serçin, and Kapıkırı, have developed spatial characteristics in accordance with their relationships with the river system, the alluvial plain, wetlands, and the surrounding topography (Figure 3.36). While some of these settlements are located in proximity to production areas directly associated with the plain, others are situated on higher topographical areas, developing positioning strategies to avoid flood risk. In particular, river crossing points, shoreline uses, and water-based livelihood practices produce a distinct spatial and functional organization in the southern bank settlements. Moreover, the ancient remains and traces of historical settlements observed in areas such as Kapıkırı, Sarıkemer, Avşar, and their surroundings reflect the long-term continuity of settlement and the landscape memory of the region (Figure 3.36).

The inland/alluvial plain settlements that are directly fed by the river but are also related to topographical thresholds, agricultural production areas, and wetland systems, such as Gölbent, Özbaşı, Akyeniköy, Balat, Akköy, Batıköy, and their surrounding settlements, are characterized by their relationships established between the river system, the alluvial plain, agricultural lands, and wetland areas (Figure 3.37). These settlements are connected, on the one hand, to the extensive alluvial plain that provides access to agricultural production areas, and on the other hand, they exhibit a settlement pattern compatible with the natural environment through threshold areas such as historical islands/present-day elevations and hills, and the

deltaic zone. In particular, Balat and the surroundings of Milet reflect the long-term settlement history and landscape memory of the region. At the same time, wetland systems, coastal landscapes, agricultural production areas, fishing weirs and related areas, coastal harbor remains, and building typologies such as storage units, customs structures, and temporary shelters reflect the natural and production-oriented character of the landscape (Figure 3.37).

In conclusion, when considered together with the urban settlement of Söke, the rural network formed by the northern, southern, and inland villages, the components of the built environment, ancient and contemporary transportation networks, and modern infrastructures, the landscape encompasses the integrity of historical, productive, and socio-spatial processes. The contemporary Menderes (Maeander) Delta presents a highly articulated and multi-layered built landscape in which living urban and rural settlements, transportation infrastructure, and cadastral organization collectively define the spatial logic of the riverine landscape. Settlements such as Söke, Güllübahçe, Doğanbey, Sarıkemer, Serçin, Özbaşı, Akköy, Balat, and Kapıkırı form a dispersed yet interconnected settlement network structured in close relation to the Menderes River, its branches, and the alluvial plain. While Söke serves as the primary urban and economic center of the plain, smaller rural settlements are situated along irrigation channels, former riverbeds, and transitional zones between the plain and the surrounding mountainous terrain, including the Dilek (Samsun) and Menteşe Mountains. This spatial configuration reflects a continuity of river-dependent settlement patterns, where proximity to water, fertile soils, and transportation corridors continue to shape both rural and settlement forms of habitation.

Built Environments and River Dependent Settlement Network in Menderes (Maeander) Riverine Landscape

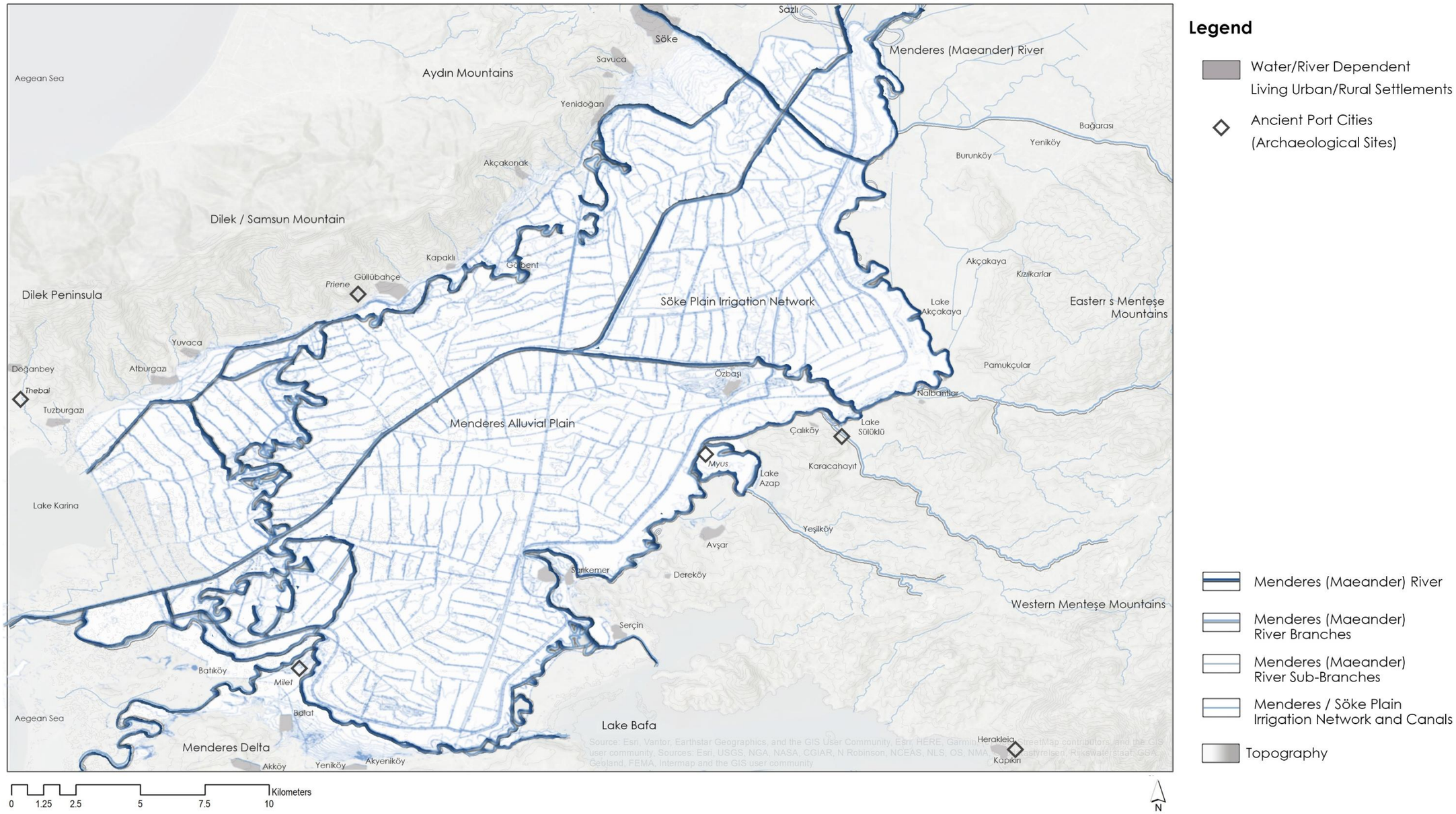


Figure 3.33 River-dependent Living Urban/Rural Settlements, Built Environments and Archaeological Sites/Remains in Menderes (Maeander) Riverine Landscape (Author, 2026)

Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations': Historical Framework, Spatio-Temporal and Contextual Relations and Networks | Center of Water/River Dependent Living Settlements/Villages (Söke)

Figure 3.34 Built Environments/Settlements in Menderes (Maeander) Riverine Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations': Historical Framework, Spatio-Temporal and Contextual Relations and Networks | Water/River Dependent Living Settlements/Villages (Northern/Right Side)

Figure 3.35 Historic Environments/Settlements in Menderes (Maeander) Riverine Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026

Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations': Historical Framework, Spatio-Temporal Spatio-Temporal and Contextual Relations and Networks | Water/River Dependent Living Settlements/Villages (Southern/Left Side)

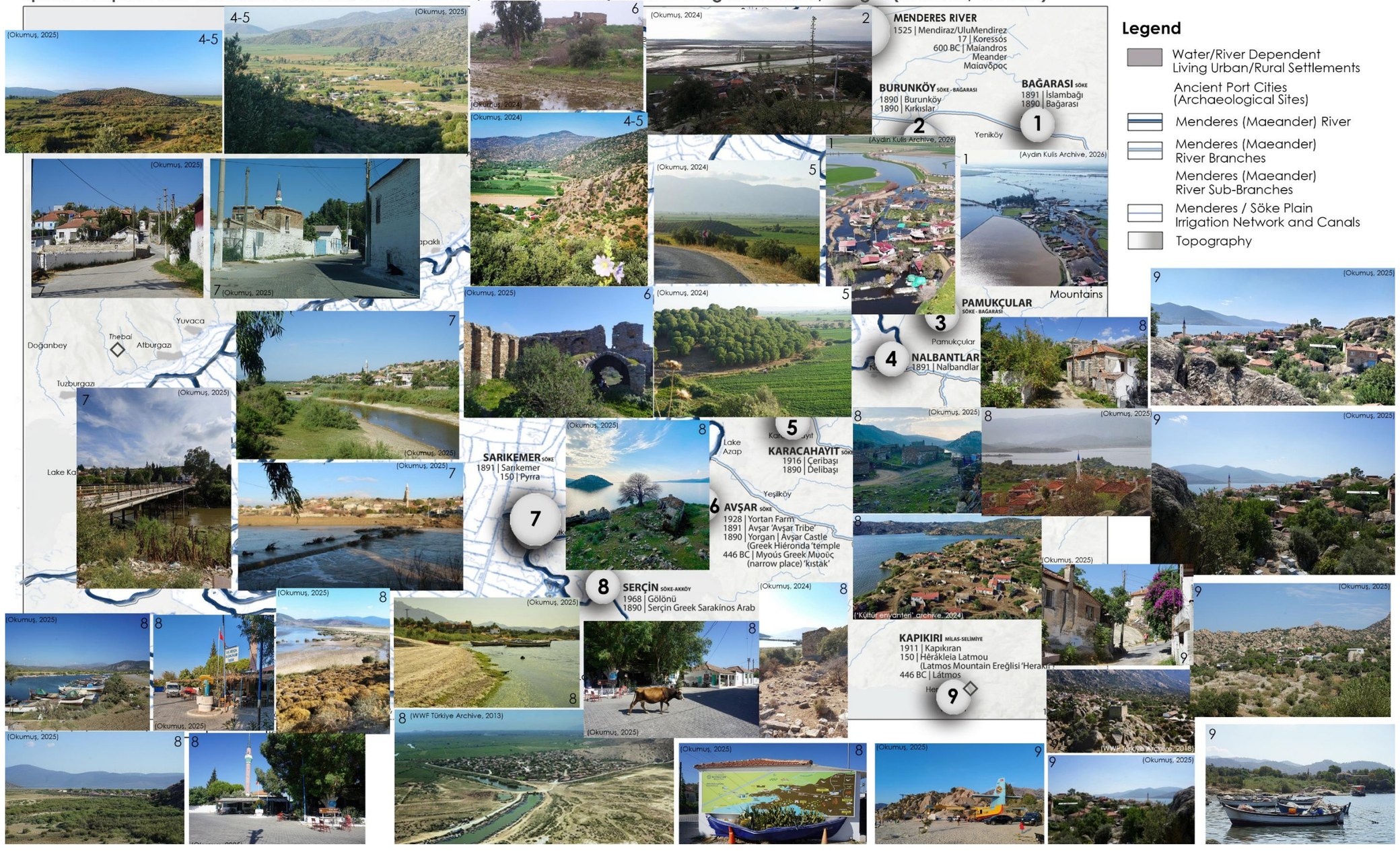


Figure 3.36 Historic Environments/Settlements in Menderes (Maeander) Riverine Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations': Historical Framework, Spatio- Temporal and Contextual Relations and Networks | Water/River Dependent Living Settlements/Villages (Inner Land: Deltaic Zone | Plain)

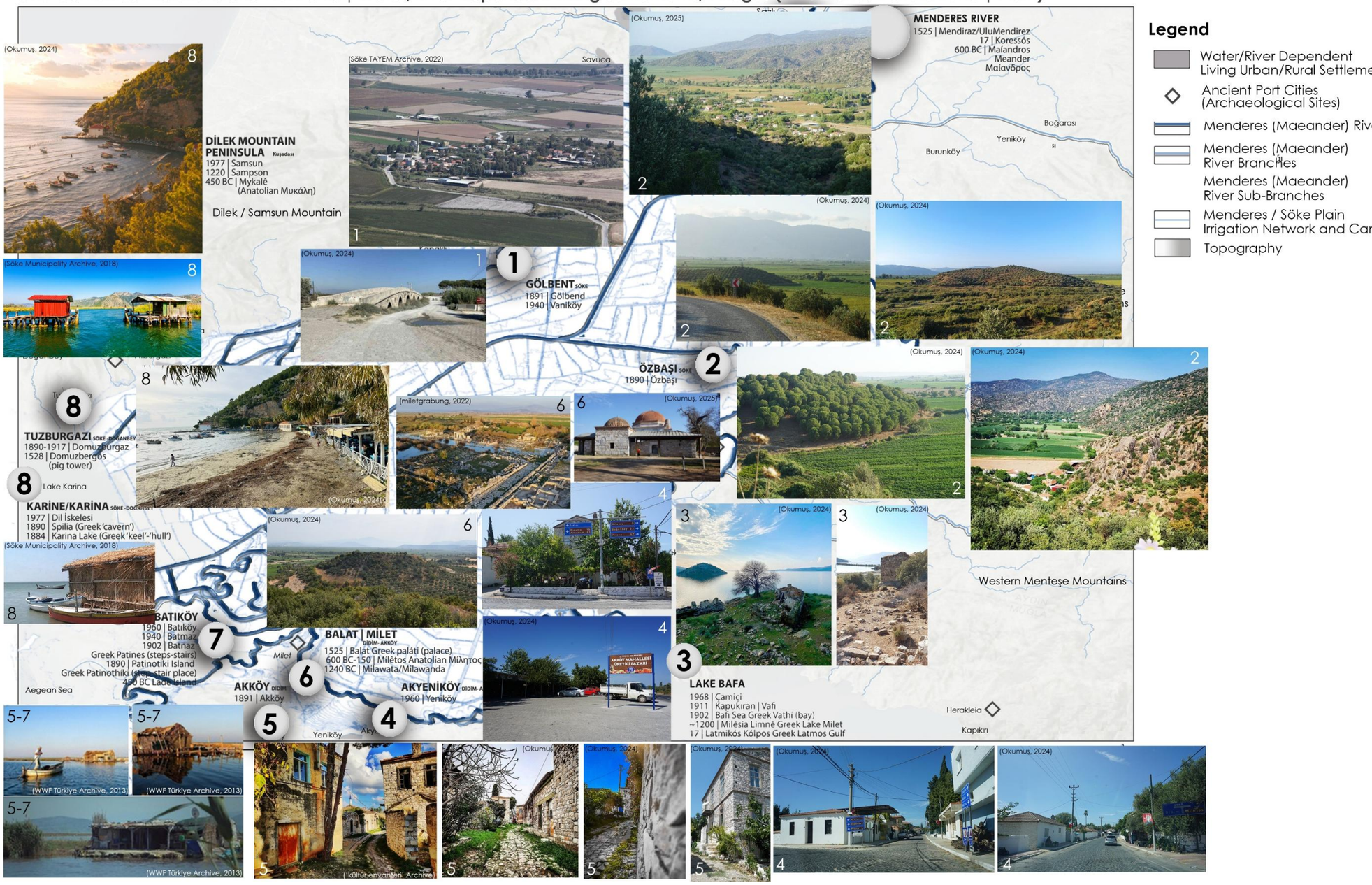


Figure 3.37 Historic Environments/Settlements in Menderes (Maeander) Riverine Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

When the settlement patterns shaped in the Menderes River Delta and the built environment characteristics of these settlements are considered together with the transportation and connection networks that ensure the spatial integrity of this system, the layered organization of mobility, production, and settlement systems within the riverine landscape becomes evident (Figure 3.38). The relationships that river-dependent settlements establish not only with the river but also with land transportation and regional connections constitute fundamental elements that determine the processes of production, distribution, and mobility within the landscape.

While the Menderes River and its tributaries constitute the primary morphological spine of the landscape, the road network superimposed on this natural structure provides inter-settlement connectivity and regional mobility. The Söke–Kuşadası–İzmir, Söke–Aydın, and Söke–Milas–Bodrum axes form the main transportation backbone of the region, supporting the functioning of production and distribution systems at both local and regional scales. Major regional axes such as the Söke–Kuşadası–İzmir road, the Söke–Aydın highway, and the Söke–Milas–Bodrum corridor link the delta to broader regional systems, while secondary routes such as the old Söke–Didim road and local connections between Söke, Güllübahçe, Balat, and surrounding settlements reflect earlier mobility patterns embedded within the landscape (Figure 3.38).

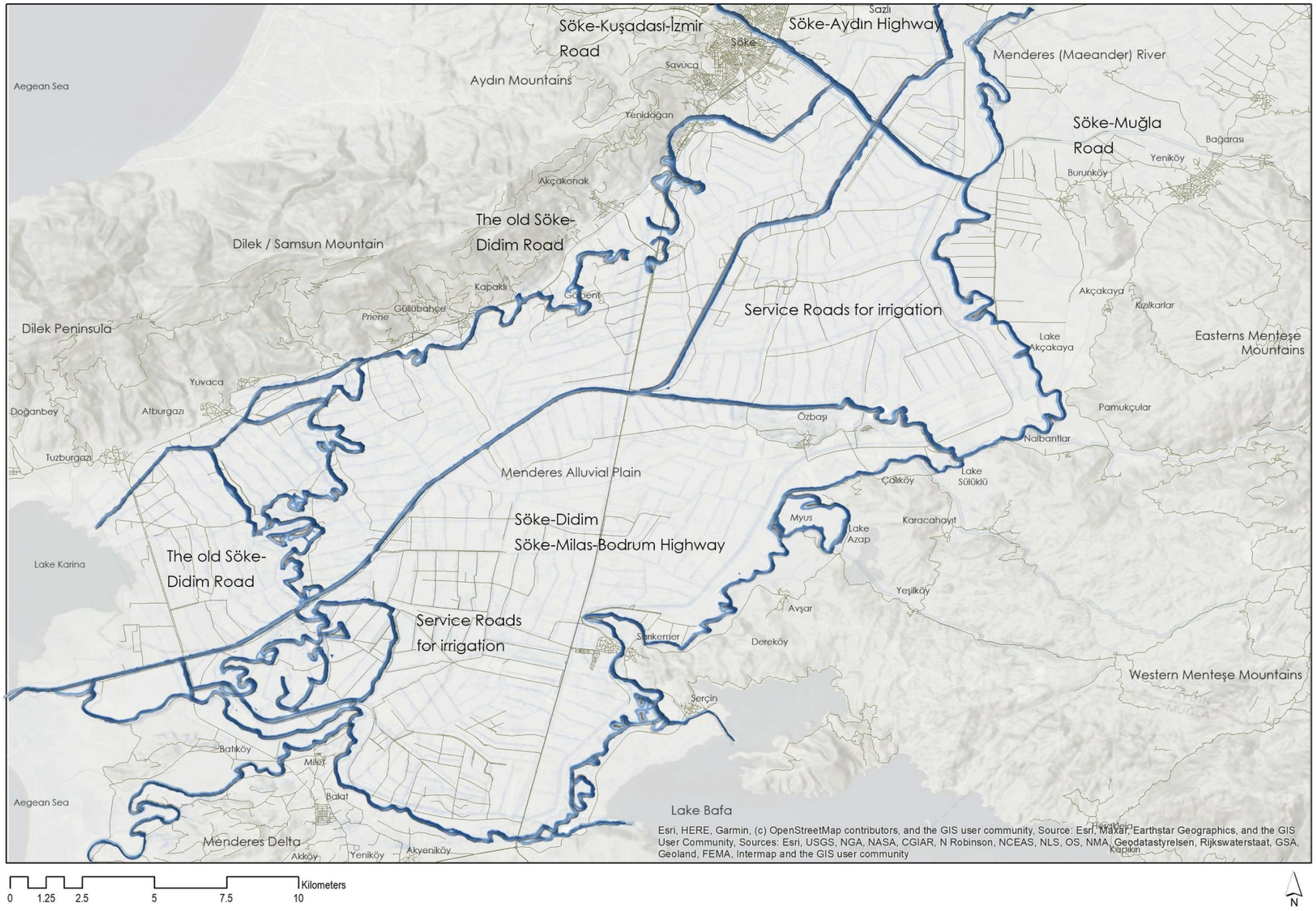
At the same time, within the context of the strong relationship between irrigation infrastructure and transportation systems, service roads developing along irrigation canals facilitate access to agricultural production areas and directly spatialize the production–transportation relationship. Moreover, the continued existence of historical transportation routes, such as the old Söke–Didim road, together with contemporary transportation systems, makes the relationship between continuity and transformation visible in the landscape (Figure 3.38).

The agricultural production system in the Menderes riverine landscape is a fundamental agency that determines the spatial organization of the landscape,

reflected in settlement and the cadastral pattern/order. The regular and repetitive parcel geometries observed in the Söke Plain are a result of planned agricultural production and modern land arrangements. The cadastral pattern is strongly related to irrigation and drainage systems and represents a production landscape shaped together with water management infrastructure. The coherence between parcel boundaries, canal networks, and transportation connections is one of the key elements determining both the functional and spatial organization of the landscape (Figure 3.39).

The cadastral pattern of the delta constitutes one of the most visible expressions of this interaction between natural processes and human intervention. Across the Söke Plain, land parcels exhibit a highly organized yet heterogeneous structure, shaped by alluvial formation processes, irrigation planning, and agricultural intensification. Rectilinear and semi-regular parcel geometries dominate large sections of the plain, reflecting modern land consolidation and mechanized agricultural production, while more irregular patterns persist in areas influenced by former river channels, wetlands, and topographic constraints. The alignment of parcels with irrigation canals and drainage systems reveals the extent to which water management infrastructures have restructured land division and spatial organization. Moreover, the cadastral fabric illustrates the transformation of the delta into a managed and productive landscape, where agricultural fields, irrigation networks, and settlement clusters are integrated within a coherent spatial system. This system is not static but continuously evolving, shaped by ongoing processes such as agricultural restructuring, settlement expansion, infrastructural development, and environmental regulation (Figure 3.39).

Settlements and Transportation/Road Network in Menderes (Maeander) Riverine Landscape

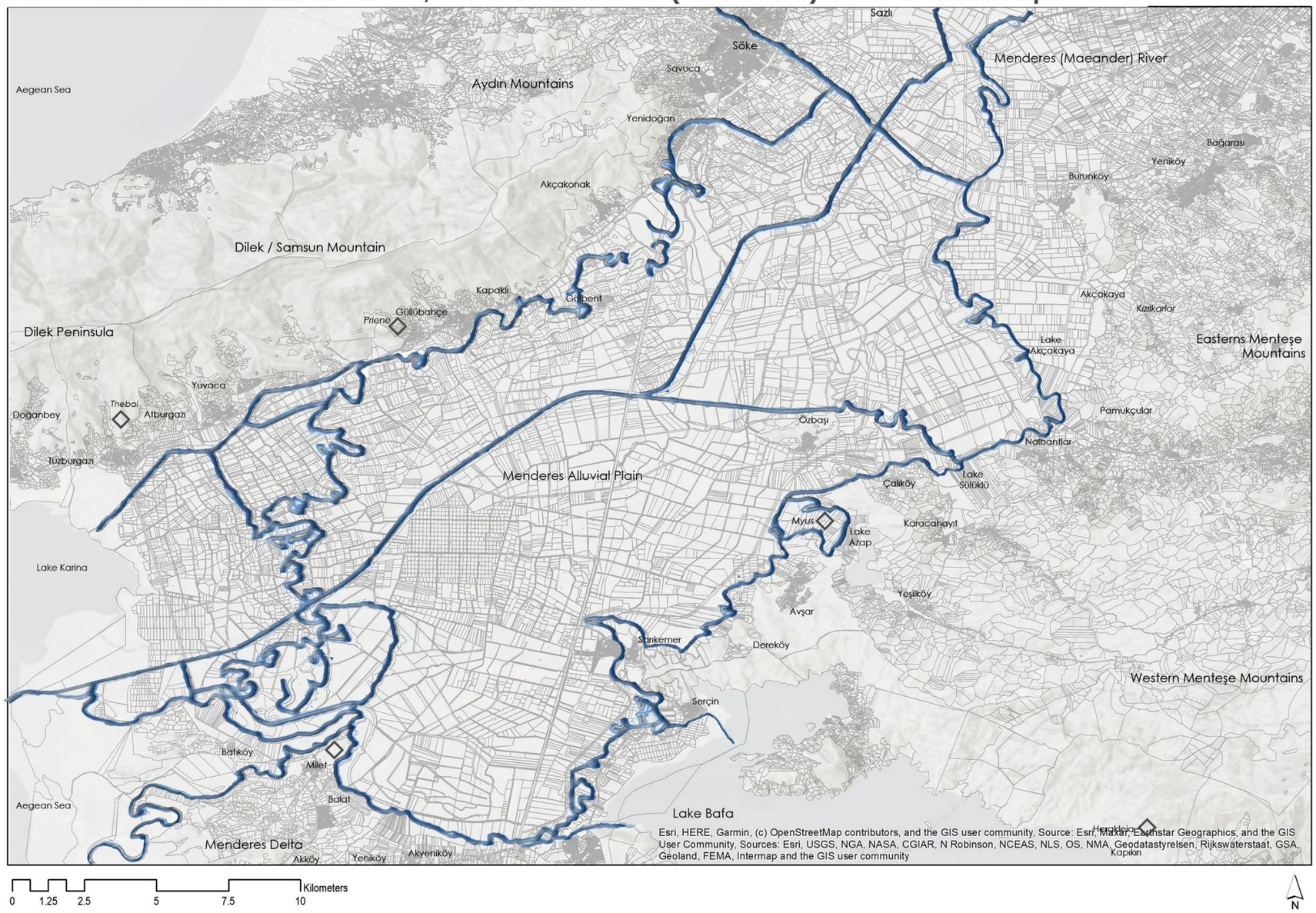


Legend

- Water/River Dependent Living Urban/Rural Settlements
- Road Network
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.38 Settlements/Built Environments and Transportation/Road Network in Menderes (Maeander) Riverine Landscape (Author, 2026)

Settlements and Cadastral Pattern/Order in Menderes (Maeander) Riverine Landscape



Legend

- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Cadastral Pattern/Order
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.39 Settlements/Built Environments and Cadastral Pattern/Order in Menderes (Maeander) Riverine Landscape (Author, 2026)

The built environment layer, which constitutes the historical depth and continuity of settlement networks and spatial organization, plays a critical role in understanding both settlement continuity and the historical transformation of the landscape within the context of river–sea interaction and deltaic processes through ancient port cities and archaeological sites. Ancient port cities such as Priene, Milet, Thebai, Myus, Pyrra, and Herakleia, as archaeological focal points, demonstrate the historical continuity of coastal changes that have emerged particularly as a result of delta progradation, where former ports are now located inland (Figure 3.40). Urban theaters, temple remains, fortifications, harbor structures, and other archaeological components reveal both the urban organization of these cities and their relationship with water (Figure 3.40). At the same time, these remains reflect the long-term transformation of the landscape and its spatial reflections, shaped by natural processes. In particular, the alluvial accumulation processes observed around Myus and Milet have led to the infilling of former harbor areas, transforming them into land; this has redefined the historical geography of the landscape (Figure 3.40).

Accordingly, the delta exhibits a distinctly multi-layered settlement structure, in which contemporary villages and towns coexist with, and in many cases directly overlap, the archaeological remains of ancient port cities such as Milet, Priene, and Myus. In places such as Güllübahçe–Priene and Balat–Milet and Herakleia–Kapıkırı, the superposition of ancient, Ottoman, and modern settlement layers produces a complex spatial palimpsest, where built environments from different historical periods remain legible within the present landscape (Figure 3.40). These multi-layered settlement patterns reveal processes of relocation, adaptation, and transformation shaped by geomorphological change, particularly the progradation of the delta and the shifting coastline. In this context, the Menderes riverine landscape is a multi-layered built environment and cultural landscape that embodies the relationship of continuity and transformation from antiquity to the present (Figure 3.40).

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Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations': Historical Framework, Spatio-Temporal and Contextual Relations and Networks | Ancient Port Cities (Archaeological Sites)

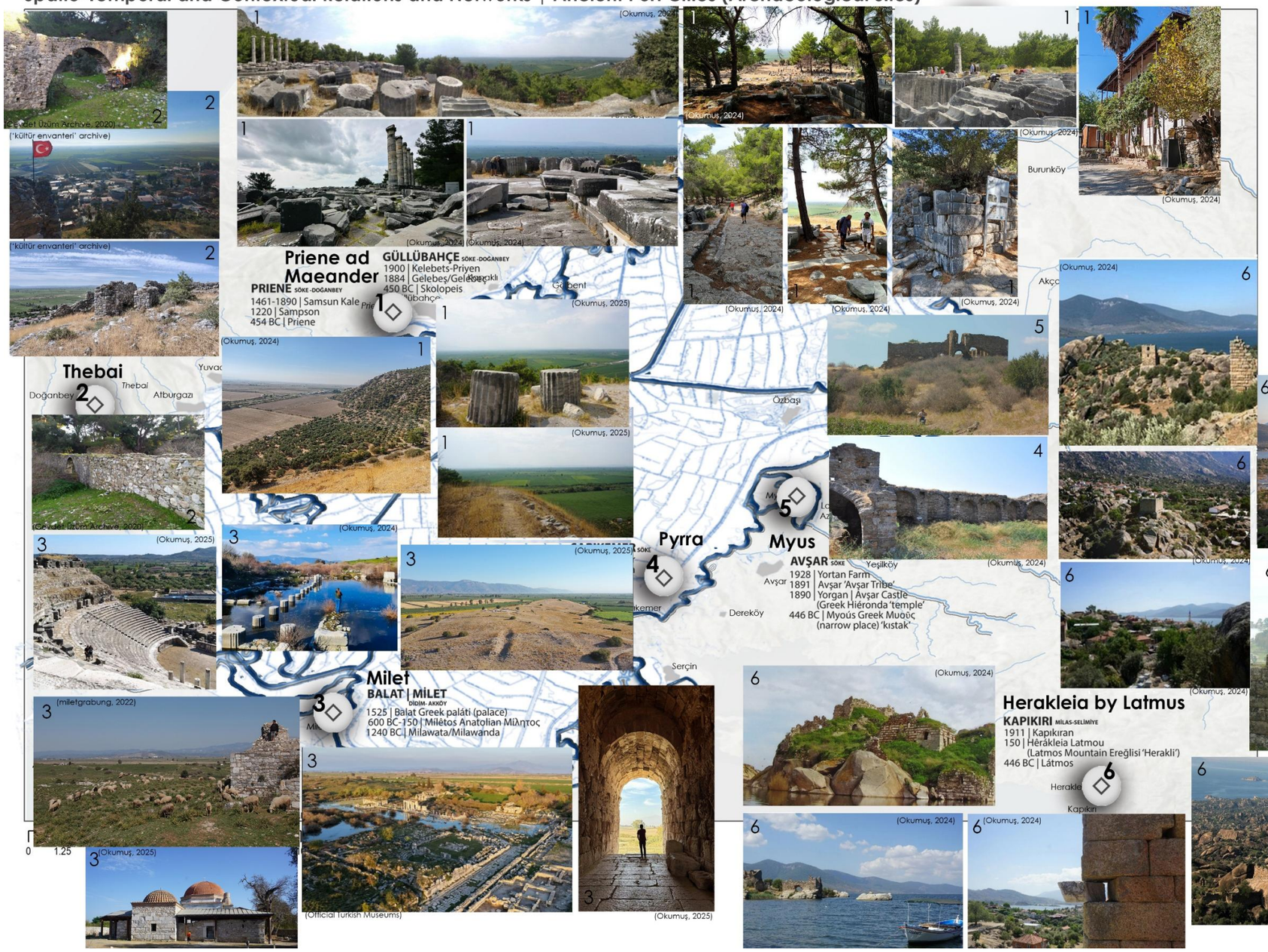


Figure 3.40 Ancient Port Cities/Archaeological Sites in Menderes (Maeander) Riverine Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

In the Menderes riverine landscape, the irrigation network and system, as one of the built environment components, reveal how the landscape has been reproduced and transformed in the modern period through human interventions in water management. Agricultural irrigation practices, which have influenced and reshaped the historical layers, settlement system, transportation networks, and cadastral organization of the Menderes riverine landscape, have directly intervened in the natural functioning of the landscape—particularly through irrigation projects implemented in the second half of the 20th century—thereby fundamentally transforming both production systems and spatial organization. At the same time, the dominance of cotton and tobacco monocultures, alongside the continued production of figs and olives, reshaped the agricultural landscape, while rural settlements expanded and temporary dwellings for seasonal labor emerged as new spatial components. These developments, combined with rural-to-urban and seasonal migration patterns, led to the fragmentation of rural areas and the growth of settlement structures. In this context, the post-1970 period can be interpreted as a phase in which the Menderes River Delta evolved into a modern engineering landscape, where infrastructural systems, agricultural intensification, and demographic shifts collectively restructured the physical and built environment. The control of water flows, the expansion of agricultural production, and the integration of the region into broader economic networks became the key dynamics shaping the socio-spatial transformation of the delta (Köşeli, 1975; Ergin et al., 2007).

Beginning in the 1950s, the Menderes River Delta underwent a profound transformation driven by agricultural modernization, mechanization, and large-scale water management interventions (Figure 3.41; Figure 3.42). The construction of dams, irrigation canals, and extensive water distribution networks by the State Hydraulic Works (DSİ) redefined the spatial organization of the landscape, enabling the expansion of cultivated lands and the intensification of agricultural production (Köşeli, 1975; Ergin et al., 2007). This infrastructural layer introduced a new built environment characterized by engineered water systems that regulated natural

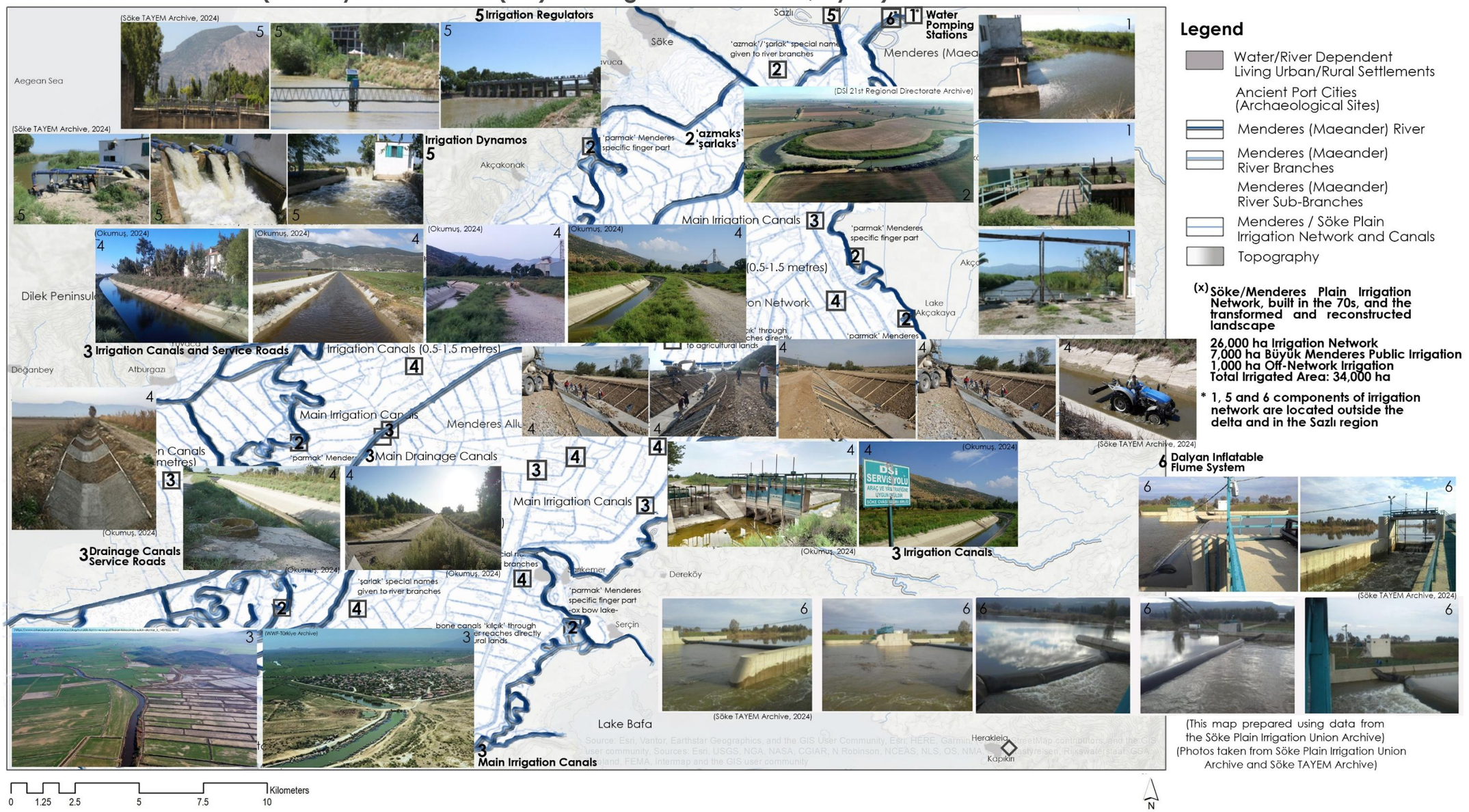
hydrological processes and transformed traditional production patterns (Figure 3.41; Figure 3.42).

The irrigation network and canals established within the scope of the Söke Plain irrigation project, implemented by the State Hydraulic Works (DSİ) in the 1970s, function as a hydro-technical infrastructure constructed on the natural flow system of the Menderes River, enabling the direction and control of water through main irrigation canals, drainage canals, regulators, and pumping stations. The irrigation canal network has enabled agricultural production to be carried out in a planned and systematic manner, particularly in the Söke Alluvial Plain, and, together with the large-scale parcelization pattern, has shaped the modern production landscape. Service roads developing along irrigation canals facilitate access to agricultural areas, while integrating the production–transportation–water management relationship into a holistic system (Figure 3.41; Figure 3.42). At the same time, while these interventions have increased the production capacity of the landscape, they have also led to the reconfiguration of natural hydrological processes, the transformation of wetlands, and changes in the ecosystem structure. The redirection of river branches, the establishment of drainage systems, and flood control structures are among the main interventions that redefine the natural dynamics of the landscape.

Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations':
Lower Büyük Menderes Irrigation Project | Söke Plain Irrigation Union, Irrigation Network/Canals*
Constructed in the 1970s (State Hydraulic Works (DSİ) 21st Regional Directorate, Aydın)

Figure 3.41 Söke Plain /Menderes River Delta Irrigation Network, Built in the 1970s, and the Transformed and Reconstructed Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Menderes (Maeander) Delta as Built Environment/Landscape 'Valley of Civilizations':
Lower Büyük Menderes Irrigation Project | Söke Plain Irrigation Union, Irrigation Network/Canals(x)
Constructed in the 1970s (State Hydraulic Works (DSİ) 21st Regional Directorate, Aydın)



Legend

- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

(x) Söke/Menderes Plain Irrigation Network, built in the 70s, and the transformed and reconstructed landscape

26,000 ha Irrigation Network
7,000 ha Büyük Menderes Public Irrigation
1,000 ha Off-Network Irrigation
Total Irrigated Area: 34,000 ha

*** 1, 5 and 6 components of irrigation network are located outside the delta and in the Sazlı region**

(This map prepared using data from the Söke Plain Irrigation Union Archive)
(Photos taken from Söke Plain Irrigation Union Archive and Söke TAYEM Archive)

Figure 3.42 Söke Plain /Menderes River Delta Irrigation Network, Built in the 1970s, and the Transformed and Reconstructed Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

After 1980, the Menderes River Delta underwent a significant transformation with the emergence of tourism alongside ongoing agricultural production, leading to a diversification of its spatial and economic structure. Tourism investments concentrated along the Kuşadası–Didim–Davutlar–Güzelçamlı axis introduced new built forms, including secondary housing developments and tourism facilities, while agricultural production—particularly cotton, fig, and olive cultivation—continued to define the rural landscape. This period marked the formation of a dual landscape structure, in which industrial agriculture and tourism-driven development coexisted and collectively reshaped the physical and built environment. At the same time, neoliberal economic policies, construction activities, and expanding urbanization pressures intensified environmental challenges, bringing issues of conservation and land-use regulation to the forefront. The designation of urban and archaeological conservation zones, together with environmental protection measures, introduced a new planning layer that redefined the relationship between development, conservation, and management. The coexistence of these dynamics has produced a spatial system characterized by economic diversification, intensified environmental pressures, and an increasingly regulated built environment shaped through planning, conservation, and sustainability-oriented approaches.

In summary, the river-dependent urban and rural living settlement system of the Menderes riverine landscape constitutes a spatial organization shaped by patterns of historical, productive, and everyday relationships established with the river. From ancient settlement patterns to transportation infrastructures, irrigation networks, and contemporary land-use configurations, the delta emerges as a complex riverine landscape in which natural processes and human interventions are continuously intertwined. These overlapping spatial components do not exist independently; instead, they are dynamically interconnected through processes such as sedimentation, agricultural transformation, infrastructural development, mobility, and governance (Table 3.2). In this context, the persistence of historical routes within modern transportation networks, the coexistence of ancient ruins with living

settlements, and the restructuring of land through irrigation-based cadastral systems all point to a landscape defined by continuity through change (Table 3.2).

Within the context of long-term processes, the settlement system reflects the continuity of prehistoric and early settlement layers as well as ancient port cities and sacred landscapes. In this context, ancient port cities are particularly based on a settlement morphology shaped by river–sea interaction; access to trade routes connected to the river mouth and the Aegean Sea is a determining factor in the location of these settlements. The delta progradation process formed as a result of the maeandering flow of the Menderes River, and sediment transport emerges as a structural transformation requiring the relocation of the settlement pattern. Ancient harbor infrastructures, canals, and water-dependent production systems constitute important components of this long-term hydro-cultural layer, while route networks shaped through trade routes and river access support settlement continuity. The main driving forces shaping these structural layers are climate and sea-level changes, the sediment regime, and Mediterranean–Aegean trade networks (Table 3.2).

At the meso-scale, the settlement system is reshaped particularly through the rural settlement network, agricultural production structure, transportation systems, and cadastral organization. In this context, while the Söke Plain has become an agro-economic center shaped by intensive agricultural production activities, the northern and southern riverbank villages have developed distinct spatial and economic characteristics through their different relationships with the river. In this process, the construction of irrigation networks and drainage systems, the expansion of agricultural lands, the transformation of wetlands, and the regulation of the river regime through engineering interventions are the main dynamics. At the same time, railways, bridges, and road systems reorganize transportation and mobility by replacing historical route networks. The main driving forces shaping these transformations are developments such as modernization policies, large-scale state interventions, market-oriented agriculture, and population growth and mobility (Table 3.2).

At the micro scale, the built environment is shaped through everyday life practices, seasonal production cycles, and local interventions. Settlements in and around Söke exhibit changing patterns of use, particularly in relation to agricultural production cycles; seasonal labor, temporary settlements, and the reorganization of production areas are key components of this process. At the same time, floodplains and risk-prone areas directly affect spatial organization, especially in settlements located along the river. In this process, tourism activities, conservation and management policies, and environmental pressures also reshape settlement dynamics. The main driving forces at this scale are local community practices, everyday needs, short-term economic fluctuations, water management decisions, and climatic changes. Agricultural areas affected by floods, annual crop variations, local water use practices, irrigation and drainage networks, tourism facilities, and conservation boundaries constitute the primary indicators of these processes (Table 3.2).

Table 3.2 Menderes River Delta as 'Built Environment/Landscape' Layers, Dynamics, Driving Forces, and Indicators (Figure 3.33-Figure 3.42)

Scale	Layers	Dynamics	Driving Forces	Indicators
Macro (upper) Scale – longue durée	Prehistoric and Early Settlement Layer; Ancient Urban and Sacred Landscape (Milet, Priene, Myus, Didyma); River Morphology and Hydrological System; Hydro-cultural Infrastructure (ancient harbors, canals); Route and Maritime Network Layer	Delta progradation and shoreline shift (displacement of port cities inland); river–land–sea interaction; continuity of water-based production systems; spatial continuity and site selection patterns; maeandering and sedimentation	Climate and sea-level changes; sediment regime; trade networks (Aegean–Mediterranean system); agrarian production regimes; need for water access; adaptation to geomorphological change	Inland location of ancient harbors; settlement patterns in relation to topography and water; archaeological water structures (canals, harbor remains); continuity of historical routes

Table 3.2 Continued

Meso (regional–territorial) Scale – conjonctures	Historic Rural Settlement Layer (villages, agrarian systems); Agricultural Production Layer; Transportation and Mobility Layer; Industrial and Infrastructure Layer; Cadastral and Land-use Organization Layer; Hydro-technical Layer	Expansion and intensification of agricultural production; development of irrigation and drainage systems; conversion of wetlands into agricultural land; transformation of settlement patterns; regulation of river regimes through engineering; reorganization of trade and transportation networks; industrialization and integration into the global economy	Modernization and development policies; state-led interventions (DSİ projects, dams, irrigation systems); market-oriented agriculture; population growth and rural transformation; technological developments (mechanization); global agricultural markets; migration and mobility	Agricultural production patterns (cotton, fig, olive); parcel geometries and cadastral data; railways, bridges, caravan routes; industrial and processing facilities; land-use change maps; irrigation and drainage networks; reclaimed wetlands; fragmented ecosystems
Micro (settlement and intra-settlement) Scale – l'histoire événementielle	Everyday Socio-spatial Landscape (multi-layered living places); Temporary Use Areas (seasonal production spaces); Risk Areas (floodplains); Micro-settlement Interactions; Irrigation and Water Management Layer; Tourism Economy Layer; Conservation and Governance Layer	Seasonal variations in production and land use; everyday water-use practices; local interventions; impacts of floods on settlements and production; short-term economic and environmental changes; expansion of irrigation and mechanization; tourism development and spatial pressures; environmental degradation and climate impacts	Local community practices and decision-making; everyday needs; short-term economic fluctuations; water management interventions (DSİ); tourism-driven economic dynamics; conservation policies (Ramsar, National Park); climate change and environmental pressures	Flood-affected agricultural areas; annual crop variations; local water-use practices; temporary and local use patterns; irrigation and drainage networks; tourism facilities and secondary housing; conservation boundaries and planning decisions; local narratives and practices; wetland loss and biodiversity change; water quality and environmental reports

3.1.3 Menderes (Maeander) River Delta as 'Narrative Landscape': A Life History of Created and Constantly Re-shaped and Re-constructed by Local Landscape Authors

"A single powerful drop of water is enough to create a world and to dissipate the night. To imagine its force, one needs no more than to contemplate a single, deeply envisioned drop. Thus, when water becomes dynamic, it becomes a seed; water gives life an infinite impetus"... "The language of waters is itself a poetic reality; rivers and streams add their voices to the silent landscapes with a peculiar fidelity. The murmuring waters teach birds and humans to sing again, to speak again, and ultimately, between the word of water and the word of man, there exists a certain continuity"... (Bachelard, 1983)

Landscape is conceptualized through the dimensions of "impression" and "expression," where the emotional and perceptual relationships that individuals and communities establish with place play a defining role in its formation (Samuels, 1979). While "impression landscapes" refer to how individuals perceive, feel, and experience the landscape, "expression landscapes" reveal how these experiences are externalized through narratives, symbols, practices, and spatial arrangements.

This approach enables a perspective that can be described as the "geographization of narratives, perceptions, and emotions." In this sense, emotions move beyond being individual experiences to become spatially embedded, shared, and continuously reproduced in relation to specific places. In the context of the Menderes riverine landscape, this is observable through forms of belonging associated with the river, collective memories of floods, meanings attributed to particular places, and everyday practices.

The Menderes (Maeander) River Delta can be approached as a narrative landscape in which the meanings, memories, and identities of place are continuously produced through the interplay of nature, time, and human experience. Extending from ancient myths to modern travelogues and contemporary everyday practices, the delta

constitutes a powerful narrative geography shaped by diverse landscape authors who have described, interpreted, and reimagined it across different historical periods. In mythological narratives, the river is personified and embedded within symbolic and philosophical meanings; in travel writings, it is portrayed as a fertile, dynamic, and often exotic landscape; while in modern accounts, it becomes an object of scientific observation and spatial analysis. These narratives, ranging from ancient myths and historical records to local stories and everyday life narratives, form a multi-layered structure and network that shapes the cultural memory of the region. Within this narrative field, natural components such as the river, sea, mountains, and plains intertwine with human experiences, emotions, and socio-cultural practices, transforming the landscape into a carrier of stories and a living mediator through which meanings are continuously negotiated and reproduced. In this sense, the Menderes River Delta emerges as a fluid and evolving landscape heritage, where past and present, nature and culture, and material and immaterial dimensions intersect.

Accordingly, this section approaches the Menderes River Delta as a narrative landscape by examining a set of thematic narratives articulated through the relationships between the Menderes River and its natural environment, historical/built environment, socio-economic context, socio-cultural context, and administrative and governance context. Through this framework, the section traces how the life history of the Menderes River, shaped by diverse landscape authors, is continuously created, re-shaped, reinterpreted, and re-constructed through narratives that interlink people, place, and time. In that sense, the identified narrative themes are methodologically organized into four analytical clusters: Menderes River and Meaning & Symbolism; Menderes River and Production & Transformation; Menderes River and Socio-cultural Structure; and Menderes River and Experience & Representation. These clusters are further spatialized through their corresponding layers, dynamics, and indicators, enabling the interpretation of the delta as a narrative landscape in which narratives are not only produced but also embedded within and made visible through space.

In this sense, the narratives associated with the Menderes River reflect not only the river itself but also the human–place relationships established through it, collective memory, modes of production, mobility networks, and contemporary challenges, threats, risks, and future expectations concerning both the river and landscape. The narratives developed by the communities living along the Menderes constitute significant sources of knowledge that render the multiple layers of the riverine landscape visible. On the one hand, these narratives convey the physical characteristics of the river, its ecological processes, and its historical transformations; on the other hand, they reveal the everyday interactions between people and the river, their senses of belonging, economic activities, and cultural practices. Consequently, the Menderes riverine landscape emerges as a living heritage in which identities are produced, memories are shaped, economic life is organized, and cultural meanings are continuously recreated.

An examination of the narratives concerning the Menderes River Delta demonstrates that local communities perceive, experience, and interpret the riverine landscape through a number of recurring themes. Accordingly, these narratives have been addressed across a broad spectrum ranging from the river's physical characteristics to its cultural heritage components, and from productive activities to everyday life practices. In this respect, the Menderes River Delta is understood as a multilayered landscape in which water-related identities, economic activities, social relations, mobility networks, and collective memory are continuously formed and reproduced. Within the scope of this dissertation, the narratives associated with the Menderes River Landscape have been identified and evaluated through archival and literature research, field studies, social surveys, interviews, and stakeholder meetings under the following themes and sub-themes:

- **Narratives Regarding The "Flow/Winding" Pattern of the Menderes River and Its Symbolic Meaning as an "Founder and Creator" Icon**

    - Meandering (The Winding River)
    - Fertile Lands

- Life-Giving Water
- Lifeline//Lifleblood/Source of Life

- **Narratives Regarding Temporalities and Transformation Processes of the Riverine Landscape**

  - Narratives of Progradation and Delta Formation
  - Narratives of Changes in the River Course
  - Narratives of Floods and Drought Periods
  - Narratives of the Socio-Cultural Background of Settlements, Population Exchange, and Migration
  - Narratives of Modern Interventions and Spatial Transformations in the Landscape since the 1960s

- **Narratives of Production, Labour, and Livelihoods**

  - Agriculture, Crops, and Water Management (Cotton Narratives, Tobacco Narratives, Licorice Root Narratives)
  - Agricultural Lands, Agricultural Production and Irrigation, Factories, Mills, Seasonal Workers' Houses, and Key Farm Owners/Families
  - Fishing and Lagoon Narratives

- **Narratives of Mobility, Connections, and Crossing the River**

  - Narratives of the "Two Sides" of the Menderes and "Crossing the Menderes" (Bridges, Crossings, Mnemonic Places, Routes, and Settlements)
  - Narratives of Moving Along the Menderes: River Transportation
  - Boathouses (Salhaneler), Boats, River Transport Routes, and Focal Mnemonic Places
  - Narratives of Historical Transportation and Trade Networks at the Regional Scale

- **Narratives of Place, Memory, and Social Lifecycle**

  - Right and Left Sides/Northern and Southern Settlements
  - The relationship between settlement names and identities and water, including toponyms and local place names
  - Focal Mnemonic Places and Routes
  - Local Events, Commemorative Days, and Festivities
  - Everyday Relationships and Rituals Associated with the River
  - Narratives of Historic Settlements
  - Narratives of Cultural Routes

- **Narratives of Risks, Pressures, and the Future of the River Delta**

  - Ecological ad Environmental Challenges and Pressures
  - Narratives of Water Pollution
  - Narratives of Drought and Water Loss
  - Agricultural Pressures and Threats
  - Conservation and Management Debates
  - Local Visions and Perspectives of the Future

In summary, this framework aims to evaluate the multiple meanings attributed to the Menderes riverine landscape across different scales, by different authors, and over different periods of time within a holistic perspective. In this sense, narratives constitute an essential interpretative tool for understanding the transformation of the Menderes River Delta from past to present and for developing perspectives regarding its future.

Narratives Regarding The "Flow/Winding" Pattern of the Menderes River and Its Symbolic Meaning as an "Founder and Creator" Icon

Accordingly, the analysis first examines the narratives that reveal the role of the Menderes River in the formation of regional identity and the symbolic meanings attributed to the river. In the Menderes River Delta, the river embodies a continuous

movement, rhythm, and narrative of life. This narrative represents itself both in the physical flow of the river and in the imagery embedded in cultural memory. Since antiquity, the river has carried the temporal traces of a geography through the act of "maeandering", constantly changing direction, winding, and reshaping itself. The fact that the name "Menderes" has entered languages around the world shows that its form has become an icon (Figure 3.43). "Maeander" or "maeandering" signifies the winding motion of a river and the fluidity of time, ambiguity, and the capacity to adapt. In local narratives, the river is personified as a being that "wanders and brings fertility", "rages and overflows, but eventually calms again.

The name "Menderes" (Maeander), derived from the river's winding course, was used in Western languages with the meaning of "maeandering" or "sinuous", and over time evolved into a universal concept used to describe the patterns/icon of nature (Strabo, Geographika XIV; Herodotus, I.142). In describing the region's natural landscape, Strabo (XII.8.15) draws a connection between the river's form and its name, noting that in the area called the Plain of Maiandros, the river flows in an extremely winding manner, so much so that anything serpentine or twisting came to be called maiandros or to maeander. Seneca (Herc. f. 680–685) writes that the Maiandros "plays with its own winding waters", while Pliny (Nat. V.110; 113) emphasises the river's constant turning and coiling motion. Ausonius (Techn. XIII.12), from a different perspective, compares the Greek letter ξ (xi) to the wandering flow of the Maiandros River, suggesting that it, too, strays into other paths. Meanwhile, Himerius (XXV.70–80) offers a vivid depiction of the region: "Although the Nile is longer than the Maiandros, in nature the Maiandros surpasses the Nile. It is marvellous to speak of the lands the Nile has granted to the Egyptians. Yet the Maiandros has deprived sailors of the sea, giving instead to farmers furrows to plough with their yokes. Where once there was sea, one may now see a plain where fawns leap instead of dolphins, and hear, in place of the sailor's commanding shout, the flute of a shepherd" (Tülay, 2004; Türkbay, 2017; Ülker, 2018).

In antiquity, Herodotus described the Menderes Basin as the "Valley of Civilizations" (Aydın Governorship Special Administrative Directorate, 1990;

Kalender, 2023). According to Thales, who laid the basis of philosophy and founded the Milet School in the Büyük Menderes River Delta in the 6th century B.C., “water is the source of life for all beings”. Inspired by the Menderes River, he defined water as “Water was the permanent entity from which all other entities originated and to which they returned. Thales believed that water was the origin of all things in nature. Furthermore, in the context of the Menderes Basin and the Milesian School, Anaximander’s conceptualization of time complements Thales’ philosophy of water: while Thales explained the essence of being through fluid continuity, Anaximander articulated its temporal and cosmic order through cyclical balance and solar motion (Tülay, 2004; Türkbay, 2017; Ülker, 2018).

In mythological narratives, references to “the Menderes and its waters” frequently appear in discussions concerning the duality of permanence–immortality and nothingness between the human soul and the gods. “Zeus and the other gods stand near the source of the Menderes, continually investing in the perpetuity of its flow. According to the myth, ‘the Menderes rises from the souls of humans within nothingness, and without filtering these souls from the void, the gods would not possess the ever-flowing waters of the Menderes.’ The gods send every mortal to the void upon death, later using their souls to feed the Menderes fountain on Mount Olympus. It is said that the gods were once mortal themselves but achieved eternity by drinking from the Menderes. The Menderes is produced on Mount Olympus, where Zeus dwells. Having full control over the distribution of the water, Zeus, in times of increasing distrust toward his kin, decides to cease sharing the Menderes freely and begins to ration it” (Tülay, 2004; Türkbay, 2017; Ülker, 2018). In ancient mysticism, the Menderes was described through notions such as “the end”, “completion”, “resurrection after death”, “the cosmic cycle of closure”, “the water of immortality of the gods”, and “the source that ensures the continuity of life.” (Bean, 2000; Tülay, 2004; Thonemann, 2011; Tül, 2013; Türkbay, 2017; Ülker, 2018)

The Menderes has turned the delta and the Menderes Plain into a geography of abundance. Local people associate the fertility of the soil directly with the character

of the river. Expressions such as “The more the Menderes overflows, the more it yields” (“Menderes ne kadar taşarsa o kadar mahsul olur”) and “Whatever the water gives, the soil keeps” (“Su ne verirse toprak onu saklar”) reflect a deep faith in the productive power of nature. During flood seasons, the river can cause damage, yet it also revitalizes the land. This dual nature appears in local narratives as both a “blessing” and a “challenge”, “When it overflowed, we were afraid at first, but then rejoiced. When the water withdrew, the soil glistened, it turned green again. The plain could not breathe unless the Menderes flooded.” (“Taştı mı korkardık ama sonra sevinirdik. Su çekilince toprak parlar, yeşerirdi. Menderes taşmadan ova nefes almazdı.”) These words reveal not a struggle against nature, but rather a knowledge of coexistence. In the language of the local people, the Menderes is remembered as the “lifeline”, the “hand of fertility”, and the “heart of the soil.” (“Can damarı/suyu”, “bereketin eli”, “toprağın kalbi”)

These narratives show how water has been internalized as the driving force that determines the rhythm of life: “If the Menderes were cut off, we would be too. When the water recedes, the fields go silent, and so do people. Our breath comes from its water.” (“Menderes kesilirse biz de kesiliriz. Suyu çekilince tarlalar susar, insanlar da susar. Bizim nefesimiz onun suyundandır.”) A smiling farmer in the coffeehouse means his field has water; it has been irrigated. (“Kahvede yüzü gülen bir çiftçi görürseniz, anlayın ki tarlasında su vardır, tarlası sulanmıştır.”) “They used to say, ‘The Menderes grows with us.’ When the rains came, we rejoiced, for the river would be full, and so would we. In drought, everyone’s heart dried up; it was as if our veins withdrew.” (“Menderes bizimle büyür derlerdi. Yağmur çok yağarsa sevinirdik, çünkü nehir doyar, biz de doyarız. Kuraklık olunca herkesin içi kururdu, sanki damarlarımız çekilirdi.”)

Today, Herodotus’ words, “Those who live here have built their cities under the most beautiful sky and in the best climate” (“Burada yaşayanlar en güzel gökyüzünün altında, en iyi iklimde şehirlerini kurmuşlar”), are still quoted by locals to describe the region. Through this quotation and its historical reflections, the Menderes

continues to be seen as the region's lifeline, provider, and source of life, just as it was in antiquity.

In summary, while the river's "maeandering" character represents change, ambiguity, and adaptability within the continuity of flow, its form has evolved into a conceptual and cultural icon extending from antiquity to the present. From ancient thinkers to mythological narratives, the Menderes is framed as the source of life, the carrier of continuity, and a component of the cosmic cycle; in this sense, water gains meaning both as the foundation of existence and as a medium of temporal continuity. At the same time, local narratives reflect a knowledge of coexistence that emerges from experiencing the river's dual nature between flooding and fertility, constructing the human–nature relationship not through opposition but through interdependence and harmony. Concepts such as abundance, life, livelihood, and belonging are continuously reproduced through everyday interactions with the river, while the Menderes is embedded in collective memory through expressions such as "lifeline," "source of life," and "the heart of the soil."

| The Flow Image and Icon of the Menderes River: Narratives of "Meandering", "Fertile Lands (Bereketli Topraklar)", "Lifeline /Lifeblood (Can Damarı) Living Water / Source of Life (Yaşamın Kaynağı)"

Figure 3.43 The Icon of the Menderes River: Narratives of "Maeandering", "Fertile Lands", "Lifeline /Lifeblood Living Water / Source of Life" (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Narratives Regarding Temporalities and Transformation Processes of the Riverine Landscape

Narratives Regarding Menderes River Progradation Process

Secondly, the temporal transformation of the river landscape is explored through natural processes, particularly delta formation and changes in the river course. The settlement patterns that developed on both sides of the Menderes, together with the local place names attributed to these settlements, constitute one of the principal narrative domains that demonstrate the river's influence on spatial organization. The Menderes (Maeander) River Delta can be interpreted as a narrative landscape shaped by the intertwined processes of natural transformation and human experience. The river's long-term progradation has reconfigured coastlines and settlements while generating enduring narratives such as "these areas used to be the sea" and "settlements were port cities." These expressions reflect collective memory and reveal how landscape change is perceived, interpreted, and continuously re-constructed through both environmental dynamics and human agency (Figure 3.44).

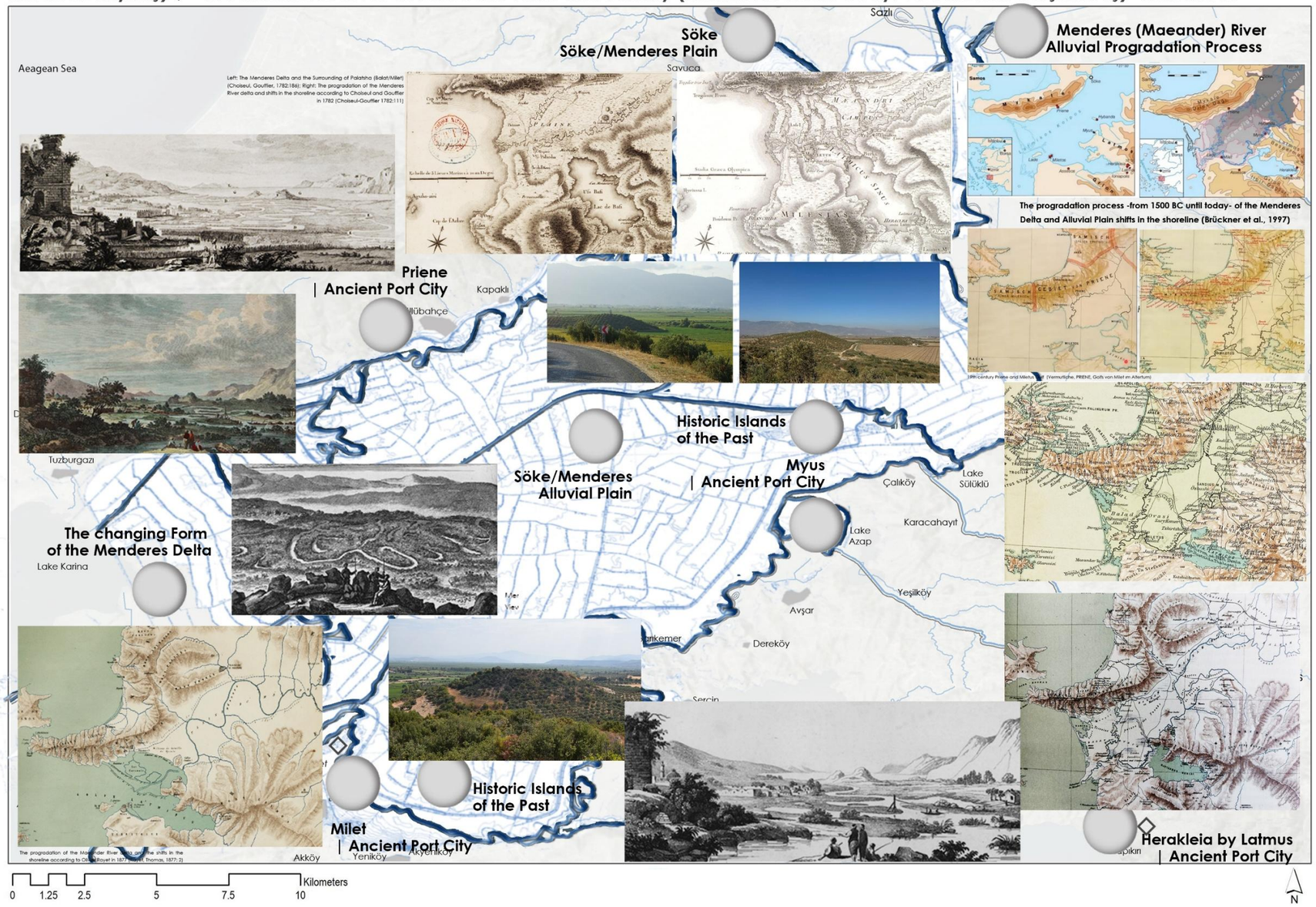
The Menderes River Delta, shaped by thousands of years of progradation, continues to live on in local narratives such as "This place used to be the sea, ships would come all the way here." ("Eskiden burası denizdi, gemiler buraya kadar gelirdi.") Elderly residents around Akköy, Doğanbey, and Balat recall their childhood memories through "the smell of the sea and the salty wind" ("deniz kokusu ve tuzlu rüzgâr"). These stories are the cultural reflections of a geomorphological process: "For thousands of years, the river has pushed the coastline westward with the alluvium it carried, turning the sea into land, the gulf into a plain, and the harbor into soil." ("Nehir, binlerce yıldır taşıdığı alüvyonlarla kıyı çizgisini batıya doğru itmiş; denizi karaya, körfezi ovaya, limanı toprağa dönüştürmüştür.") Communities living along the delta frequently refer to the ever-changing nature of the soil and the retreat of water in their daily expressions. Phrases such as "The sea used to reach up to that hill" ("Eskiden deniz şu tepeye kadar varmış"), "Bafa Lake used to taste salty, it mixed with the sea" ("Bafa Gölü'nde tuz tadı kalırmış, denizle karışırmış"), or

“These lands were once the sea” (“Buralar eskiden denizmiş”) reveal how people transform geomorphological change into memory. The process that scientists describe as alluvial deposition is expressed in local language as “the tidal wave and river flow cycles” (“denizin ve nehrin kendi döngüsü”), “the land swallowing the water” (“toprağın suyu yutması”), or “the filling of Menderes” (“Menderes’in doldurması”).

Regarding the ancient settlements of the delta, phrases such as “lost coastal cities” (“kayıp kıyı kentleri”) and “The cities used to be port towns” (“Kentler liman kentiymiş”) reflect a deep cultural awareness of transformation: “Ships used to dock here, Priene could see the sea. Now it lies between the mountain and the plain. The sea is gone, but it left its trace. (“Eskiden gemiler buraya dayanırmış, Priene deniz görürmüş. Şimdi baksan dağla ova arasında. Deniz gitmiş ama izini bırakmış) The fertility of the Söke Plain is still described as “The Menderes created the plain and its abundance”, (“Menderes ovayı ve bereketi oluşturmuş”), “soil made by the hand of the Menderes”, (“Menderes’in eliyle yapılan toprak”), or “the prosperity brought by the river.” (“nehirin getirdiği bereket”). These expressions reveal an understanding of nature as a productive and creative agent. The Menderes is perceived as a “generative agent” (“yaratıcı unsur”), the source that gives birth to the plain, fertility, and life itself. Today, the dunes, marsh remnants, and fossilized seashells scattered across the delta stand as tangible traces of time in the landscape.

In summary, through these narratives, processes such as the progradation process, alluvial deposition, and shoreline shift are internalized and reinterpreted within everyday language, transforming environmental change into collective memory. At the same time, references to lost coastal cities and the shifting relationship between settlements and the sea demonstrate a culturally embedded awareness of temporal transformation, where traces of the past persist in both material remains and narrative expressions. The recurring emphasis on fertility—articulated through phrases such as “the Menderes created the plain and its abundance” —further positions the river as a generative and transformative agent, reinforcing its role as an initiator of landscape, livelihood, and life.

Menderes River Progradation Process: "These Areas Used to Be the Sea (Buralar Eskiden Denizmiş)", "Settlements were Port Cities (Kentler Liman Kentiymiş)", "The Menderes River Created the Plain and Fertility (Menderes Nehri Ovayı ve Bereketi Oluşturmuş)" Narratives



Legend

- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.44 Menderes River Progradation Process and Temporal Narratives (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

The Socio-Cultural Background of the Landscape and Migration (Population Exchange and Seasonal Workers Mobility) Periods in the Narratives

The Menderes riverine landscape is also shaped by migration processes, particularly through the population exchange and the movements of seasonal workers. These migration narratives reveal how shifting demographic structures, labor dynamics, and patterns of mobility have continuously redefined social relations and spatial practices, contributing to the ongoing transformation and reconfiguration of the landscape (Figure 3.45).

In the Menderes riverine landscape, place names function not merely as geographic descriptors but as spatial manifestations of identity, belonging, and power relations. From Antiquity through the Byzantine and Ottoman periods to the present, the naming and renaming of settlements make visible the presence and dominance of different social groups within the landscape. In this sense, the tension between Greek and Turkish toponyms reflects not only a linguistic transformation but also a broader ideological, cultural, and political process of redefinition. While the replacement or Turkification of place names foregrounds certain historical narratives and marginalizes others, the persistence of former names in local memory indicates the continuity of the landscape's multi-layered identity.

The 1923 Greek–Turkish population exchange constitutes a critical rupture within this layered structure. Many settlements along the Menderes River—such as Güllübahçe (near ancient Priene), Doğanbey (formerly Domatia), Akyeniköy, and Bağarası—were previously inhabited predominantly by Greek populations, but were resettled by new communities following the exchange. This transformation entailed demographic change and the reconfiguration of land-use practices, spatial organization, and systems of meaning. While abandoned or repurposed buildings, altered settlement patterns, and shifting production practices left visible traces in the physical fabric of the landscape, narratives, memories, and former place names associated with earlier settlements continue to persist within its intangible layers.

The 1923 population exchange following the establishment of the Republic radically transformed the social fabric of the Menderes River Delta. The Greek population living in settlements such as Doğanbey, Balat, Güllübahçe, Karina, and Akköy was relocated to Greece, while Turkish migrants from Thessaloniki, Kavala, Crete, and Lesbos were settled in their place. The agricultural knowledge, culinary traditions, religious practices, and linguistic characteristics brought by these migrants created a new cultural layer within the delta. The stone houses, church ruins, fountains, and threshing grounds from this period are still remembered today as narrative places. "The basement of our house is built from old Greek stones. My grandfather used to say, 'This stone is different; they brought it from the sea.' We grew up in those houses, living with someone else's memory." ("Bizim evin temeli eski Rum taşındandır. Dedem 'bu taş başka taş, denizden almışlar' derdi. Biz o evlerde büyüdük, başkasının anısıyla yaşadık.") For the migrants, the delta represented both a new beginning and a remembrance of what was lost. "The other side of the water" / "Suyun öte yanı / suyun diğer yakası", in this geography, this phrase signifies the opposite side of the river as well as a homeland left behind. In this regard, even today, when locals describe the socio-cultural background of their settlements, terms such as "migrant", "nomad", or "native" ("Göçmen", "Yörük", "Yerli") are frequently used.

Another phenomenon and narrative of migration in the delta is the 'Seasonal Worker Migrations and Temporary Settlements Along the River' that took place during the cotton harvest periods. The expansion of cotton production created a new seasonal migration cycle in the Menderes River Delta. Seasonal workers set up temporary tent settlements along the Menderes River, particularly in the Karina Region and along the new Söke–Didim road. These temporary settlements generated a unique social and spatial dynamic around the river; tents, field paths, and wooded areas by the riverbanks transformed into temporary living places. "When the cotton season arrived, the color of the plain would change. Trucks full of workers would come and set up tents by the river. As evening fell, songs would rise from the fields." ("Pamuk zamanı geldi mi ovanın rengi değişirdi. Kamyonlar dolusu işçi gelir, nehrin kenarına

çadır kurardı. Akşam olunca tarlalardan şarkı sesi gelirdi.") In addition, the image of "seasonal cotton workers" has held a special place in the collective memory of the delta. In both photographs and local stories, these young people symbolize diligence, resilience, and hope. The icon located in the center of Söke town refers to the cotton harvest season, the visibility of women's labor, and the emotional dimension of agriculture. In this sense, the delta landscape has become a shared space of remembrance for both labor and youth within social memory.

In summary, this section conceptualizes the Menderes River Delta as a socially constructed and continuously reconfigured landscape shaped through migration processes, demographic transformations, and mobility patterns, where identity, belonging, and memory are negotiated across time. Migration narratives—particularly those related to the 1923 population exchange and the mobility of seasonal workers—reveal how ruptures and continuities coexist within the landscape, producing new socio-spatial configurations while preserving traces of earlier layers. The renaming of settlements and the tension between Greek and Turkish toponyms demonstrate how power relations, cultural identities, and ideological frameworks are inscribed into space, while the persistence of former names in local memory reflects the enduring multivocality of the landscape. The population exchange emerges as a critical moment of transformation that reshaped not only the demographic structure but also agricultural practices, spatial organization, and systems of meaning, embedding new cultural layers through the lived experiences, traditions, and knowledge of incoming communities. At the same time, seasonal labor migrations introduce cyclical and temporary spatial formations along the river, generating dynamic patterns of settlement, labor, and social interaction that further diversify the landscape's temporal and spatial dimensions. In this sense, the Menderes riverine landscape is revealed as a multi-layered socio-spatial continuum in which displacement, adaptation, and coexistence intersect, allowing diverse identities, memories, and narratives to persist and be continuously reproduced within the evolving landscape.

Migration Narratives: Population Exchange Period (1922-1925), 1950s,1990s and Seasonal Agricultural and Cotton Worker's Mobility

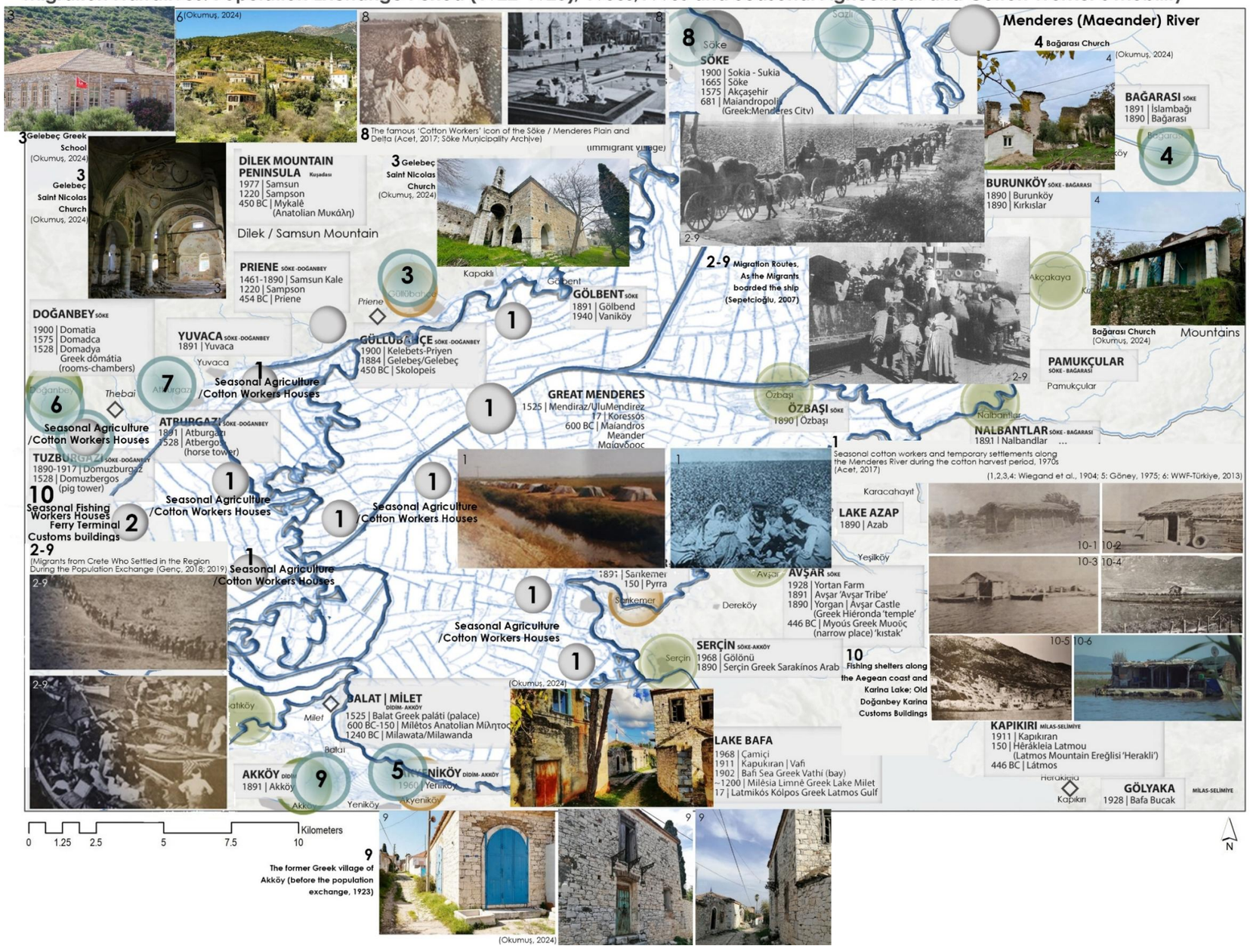


Figure 3.45 The Socio-Cultural Background and Migration (Population Exchange and Seasonal Workers Mobility) Periods in the Narratives (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Floods and Drought Periods of the Menderes River Delta

Floods and drought periods of the Menderes River reflect the dynamic hydrological regime that has continuously shaped both the physical landscape and human adaptation strategies. These extreme conditions influence agricultural production, settlement patterns, and water management practices, revealing how communities have historically responded to and coexisted with the river's variability (Figure 3.46). In the Menderes River Delta, floods are stories of both fear and fertility. The floods that have occurred in the delta remain among the most significant events still recounted by local communities. During these floods, some villages were submerged, and agricultural lands were destroyed. According to local narratives, the villages of Sazlı, Gölbent, Güllübahçe, Balat, Akköy, Sarıkemer, Özbaşı, and Bağarası were among the most severely affected settlements. Yet, despite the devastation, local people often say that the soil "came back to life" after the floods, as the waters restored its fertility. This dual nature, of destruction and renewal, forms the central tension of the Menderes narratives. Although the construction of irrigation canals, networks, dams, and regulatory structures has partially brought floods under control, these interventions have disrupted the river's natural cycles and negatively impacted the ecological diversity of the delta. Flood and drought periods thus represent the two extremes that define both the natural dynamics and the socio-cultural memory of the delta.

One of the areas most affected by the Menderes floods has been the Sazlı Village–Söke–Bağarası road corridor. From the 1940s to the 1980s, the river frequently overflowed in this region, inundating the roads and farmlands. The former riverbed, known in local speech as the "old Menderes branch" ("eski Menderes kolu"), is recalled with every new flood. "When the water came, you would think the plain had turned into the sea. The Bağarası road would completely disappear." ("Su bir geldi mi ovayı deniz sanırdın. Bağarası yolu görünmez olurdu.") Throughout the 20th century, the floods of the Söke Plain were frequently reported in local newspapers and municipal records. Headlines such as "The Menderes overflowed, the plain is under water" ("Menderes taştı, ova sular altında kaldı") became a seasonal ritual in

public memory. Each flood mobilized processes of solidarity, evacuation, and reconstruction within the community. “When the newspapers said ‘The Menderes overflowed, ’ it meant the water was coming, time to prepare. Tractors were moved to the bridgehead, and everyone waited to see which way the water would flow.” (“Gazetelerde ‘Menderes taştı’ yazardı. Bizim için o haber demekti ki su geliyor, hazırlanın. Traktörler köprü başına çekilir, herkes suyun yönünü beklerdi.”)

Within this framework, from the 1950s onward, State Hydraulic Works (Devlet Su İşleri – DSI) initiated a series of flood control projects across the delta. The flood wall constructed along the Söke Stream, the embankment system built between the Menderes River Delta and Lake Bafa, and the eucalyptus trees planted around Özbaşı were among the early interventions designed to regulate the flow of water and control flooding. “They planted the eucalyptus trees to hold back the floodwaters. When the water hit their roots, their trunks would not bend. We call them the ‘flood trees.’” (“Okaliptusları taşkını tutsun diye diktiler. Su köklerine vurunca gövdesi eğilmezdi. Biz ona ‘taşkın ağacı’ deriz.”) With the construction of irrigation canals, the control of water brought both relief and a transformation of identity for the delta communities. The people who once “lived according to the water” became those who “managed the water.” While this transition reduced the risks of flooding and contributed positively to agriculture, it also transferred the control of water to specific institutions, introducing new power structures and political dynamics within the plain.

Another distinctive period, as vividly remembered and narrated as the floods, is that of the droughts in the delta. During times when the flow of the Menderes diminished, the riverbed transformed into spaces for gatherings, markets, fairs, and playgrounds. In local memory, the drought seasons are recalled as natural intervals, periods of pause and respite in the life cycle of the river and its communities. In conclusion, the floods and droughts of the Menderes constitute the natural rhythm of life in the delta. For this reason, the Menderes River Delta stands as a living mnemonic landscape, one that oscillates between the river’s presence and absence, its fluctuations, and its alternating periods of flood and drought.

In summary, floods, remembered simultaneously as moments of destruction and renewal, embody the dual nature of the Menderes, where loss and fertility coexist, reinforcing a deep understanding of the river's generative capacity. At the same time, recurring drought periods reveal an alternative spatial and social condition, transforming the riverbed into temporary sites of gathering, exchange, and everyday activity, thus highlighting the fluidity of landscape functions. The transition from living in accordance with the river's rhythms to actively controlling its flow through modern water management infrastructures marks a critical shift in the relationship between society and water, introducing new forms of governance, dependency, and power. In this sense, floods and droughts operate not only as hydrological phenomena but as structuring forces that produce a spatio-temporal rhythm within the delta, shaping patterns of settlement, production, and memory.

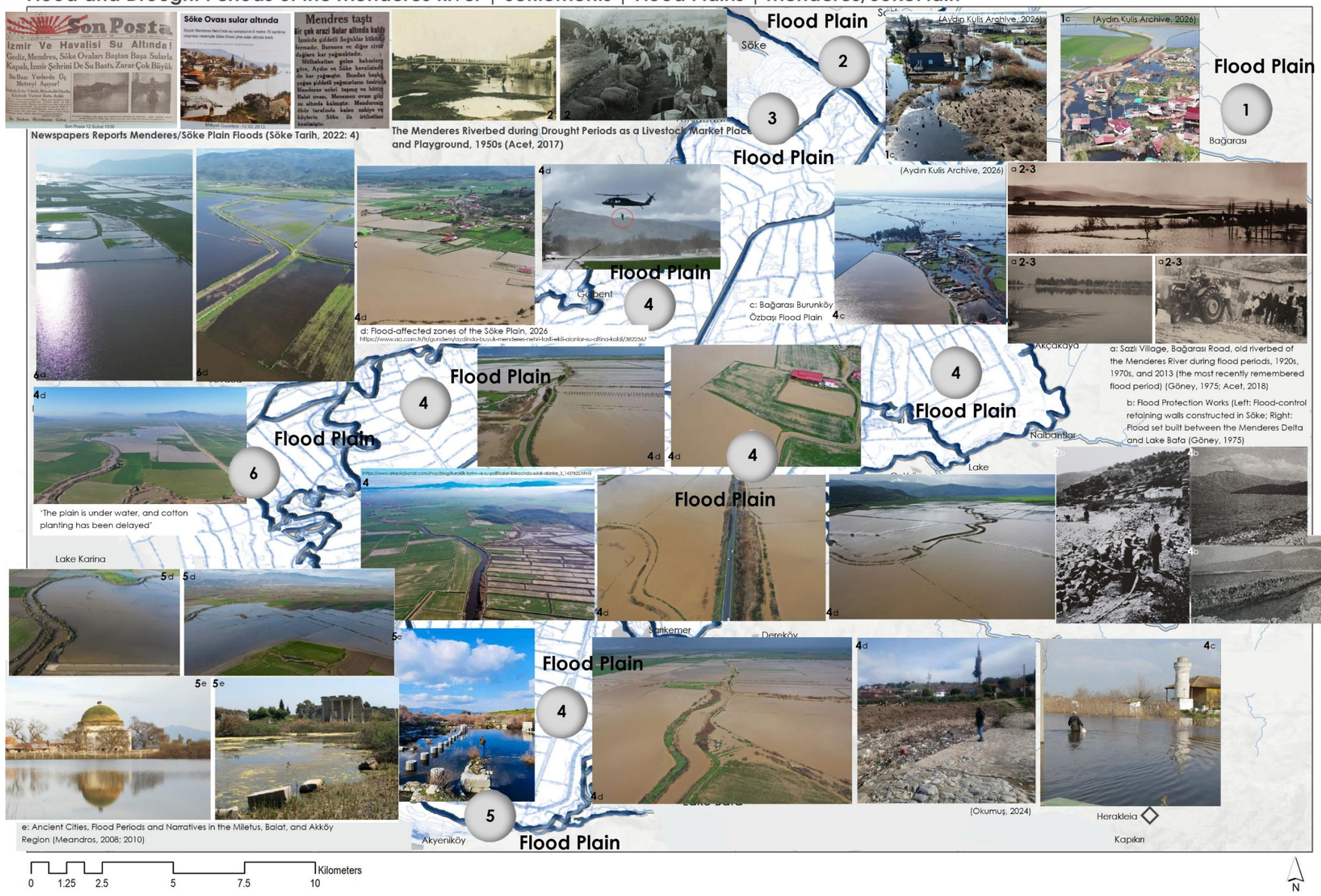


Figure 3.46 Flood and Drought Period Narratives: Focal Mnemonic Places, Settlements, Flood Plains (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Modern Interventions (Mechanization in Cotton Agriculture, Establishment and Construction of the Irrigation Network, and Related Narratives and Places)

This section conceptualizes modern interventions in the Menderes River Delta as a transformative phase that reconfigures the riverine landscape through the integration of mechanization, hydraulic engineering, and state-led development policies, marking a critical shift in the relationship between water, production, and society. Modern interventions—such as the mechanization of cotton agriculture and the establishment of irrigation networks—have significantly transformed the Menderes landscape, reshaping production systems, water management practices, and spatial organization. These processes have generated new narratives and places that reflect changing technologies, labor relations, and human–river interactions. Beginning in the 1950s with the construction of the Adıgüzel, Kemer, and Işıklı Dams, water-control projects radically altered the flow regime of the Menderes. The Söke Plain irrigation project introduced extensive canal networks that, while increasing agricultural productivity, adversely affected the natural wetlands of the delta. Within the framework of state development policies, the mechanization of agriculture, the development of irrigation systems, and the expansion of technical education fundamentally reshaped the region's economic and spatial structure. Archival documents from TAYEM (Directorate of Agricultural Production Enterprise, Agricultural Extension, and In-Service Training Center) reveal that between 1950 and 1980, training programs on tractors, combine harvesters, cotton-picking machines, and irrigation pumps were conducted throughout the Söke Plain and Menderes Basin, illustrating the diffusion of modern agricultural knowledge into the rural landscape (Figure 3.47).

Within the delta's modernization layer, mechanization in cotton agriculture symbolizes the broader agricultural transformation, characterized by the arrival of tractors in the Söke Plain, the transition from manual to mechanized production, the fragmentation of land, the decline of small producers, the alteration of agricultural rhythms, and the transformation of seasonal labor. From the mid-20th century

onward, water in the Menderes River Delta was transformed into a planned engineering network. Under the Lower Büyük Menderes Project of the State Hydraulic Works (Devlet Su İşleri – DSI, 21st Regional Directorate, Aydın), a comprehensive irrigation and drainage system was established, transforming and reshaping the delta. The components of this network, the main drainage canal (Menderes main channel), primary irrigation canals, regulators, inflatable flume systems, dynamos, drainage and discharge canals, concrete irrigation channels, and service roads, became water courses for natural water flow and integral parts of an artificial landscape background.

The Main Menderes Channel (Ana Yarık) (the new riverbed of the Menderes, serving as the main irrigation canal) stands as the largest engineering intervention by DSI in the delta, redirecting the river's waters toward agricultural production. The canal follows a linear course parallel to the natural maeandering flow of the river, symbolically "straightening" nature's curve through human design. Locals refer to this canal as "the new path of the Menderes" ("Menderes'in yeni yolu"). The regulators act as central control structures of the new hydraulic regime, regulating the distribution of water across the delta. The drainage and discharge canals were designed to draw excess water away from agricultural fields, creating artificial boundaries that now define the flow of water. These structures, while technical in purpose, have taken on new mnemonic meanings in local memory as places that shape the water. Regarding this engineered network, the azmaks and şarlaks remain partially natural components. In local terminology, "şarlak" refers to a small waterfall or water source. Even today, locals refer to certain parts of the irrigation channels as "şarlak" or "azmak", preserving the linguistic memory of the delta's former hydrological landscape.

This system also generated new geographies of production within the delta and, at the same time, gave rise to new "local place names." Over time, the irrigation network was linguistically integrated into everyday life, as local communities developed their own naming practices, creating informal geographies absent from official maps. Landscape communities named the canals according to their location

or function: “Büyük Kanal” (Great Canal), “Menderes Yarığı” (Menderes Channel), “Menderes Parmağı” (Menderes Finger), “Menderes Kılçığı” (Menderes Spine), “Küçük Şarlak” (Small Waterfall), “Azmak” (Stream), “Pompa Kanalı” (Pump Canal), “Batı Hattı” (Western Line), “Gölyolu Kanalı” (Lake Road Canal), “Çeltik Deresi” (Çeltik Stream), and “Azmakbaşı” (Streamhead). These names have become both spatial indicators and oral-memory terms, reflecting the community’s lived relationship with water and land. In this way, the irrigation network has produced a new spatial vocabulary across the Menderes River Delta.

In summary, the construction of dams, irrigation networks, and drainage systems not only altered the natural flow regime of the river but also redefined spatial organization, agricultural practices, and labor dynamics, transitioning from a system based on adaptation to one centered on control and optimization. Mechanization in cotton agriculture further accelerated this transformation, reshaping production rhythms, restructuring rural economies, and introducing new socio-economic hierarchies. At the same time, the emergence of an extensive artificial water network—comprising canals, regulators, and engineered channels—produced a new landscape background in which natural and constructed systems became deeply intertwined. Despite this transformation, local communities continued to interpret and internalize these interventions through their own linguistic and cultural frameworks, generating new toponyms and narrative forms that reflect living experiences of the engineered landscape.

The Irrigation Network and Spatial Transformations in the Menderes River Delta: Spatial and Cadastral Traces of Post-1960 Transformations

This section conceptualizes the irrigation network and road interventions in the Menderes River Delta as key instruments of a post-1960 transformation that restructured the landscape through cadastral reorganization, infrastructural development, and the consolidation of state-led water management. In the Menderes River Delta, the development of road and highway infrastructure constitutes a significant intervention process that reshapes cadastral arrangements and property

relations. Particularly in the formation of road routes passing through agricultural lands, a cadastral system emerges in which landowners contribute portions of their land. Although this process is often based on collective agreement at the local scale, it leads to the redefinition of property boundaries, fragmentation of parcels, and shifts in land-use patterns.

The irrigation network and road interventions in the Menderes River Delta represent key drivers of post-1960 transformations, leaving distinct spatial and cadastral traces across the landscape. These interventions have reconfigured land use patterns, agricultural organization, and accessibility, reflecting a shift toward more controlled, mechanized, and state-led management of water and territory. This period coincided with the nationwide implementation of State Hydraulic Works (DSİ) projects, during which large-scale irrigation, drainage, and flood control systems were constructed. In the Söke Plain, the Büyük Menderes Irrigation Project, initiated in the 1960s, was designed to regulate the river regime, prevent floods, and increase cotton-based agricultural production. Within this framework, the natural flow relationship between the river and the plain was transformed into an engineering-based network through the construction of main drainage canals, discharge ditches, and secondary irrigation channels. As a result of these interventions, the delta plain ceased to function as a natural water–land transition zone and evolved into a high-yield agricultural landscape, a cadastral, parcelized terrain defined by property boundaries and productivity goals. The irrigation system restricted the Menderes River's natural maeandering flow and gradually created a linear and technical water infrastructure that suppressed the river's intrinsic hydrodynamic circulation within the delta (Figure 3.47).

The Söke–Didim highway (D525), constructed between the late 1960s and early 1970s, cut across the delta perpendicular to the natural direction of flow, thereby physically fragmenting the hydromorphological continuity of the landscape. Crossing the very centre of the delta plain, the road divided the freshwater–saltwater transition zones into two distinct parts and simultaneously reshaped the orientation of cadastral orders and ownership boundaries. Thus, the highway became a

transportation axis as well as an ecological and socio-economic threshold in the delta. The construction of the irrigation network and the highway led to significant transformations in the cadastral sheets of the delta plain. In aerial photographs from the 1950s, agricultural plots appeared as permeable, wet, and undefined fields, whereas by the 1970s, they had been reconfigured into geometric, rigidly bounded areas delineated by linear canals and roads. This transition marked a reorganisation of both land ownership and agricultural production relations within the Menderes River Delta (Figure 3.47; Figure 3.48).

While such infrastructure interventions initially enhance accessibility and support economic activities, they subsequently generate new impacts that disrupt landscape continuity. Roads and highways, especially when intersecting river-related agricultural lands and floodplains, weaken spatial integrity and create sharp boundaries between different land uses. This fragmentation also reshapes everyday practices, production relations, and local mobility patterns. One of the most critical effects of these interventions concerns water flow and the natural dynamics of the landscape. Road embankments, drainage systems, and elevation differences can interrupt surface and groundwater movement, altering natural flow paths. This may result in new environmental issues such as water accumulation, localized drying, or drainage problems in certain areas.

This engineering-based reconstruction profoundly influenced the morphological, ecological, and cultural layers of the delta's evolution. The morphodynamic processes of the river mouth, progradation, and sedimentation were redirected through irrigation and drainage channels, which in turn partially isolated the natural lagoon systems of the delta, such as Karina, Azap, and the Bafa connections. Over time, settlement, industrial, and storage zones developed along the highway corridor, gradually transforming the delta into an infrastructural landscape. Thus, from the mid-20th century onward, the Menderes River Delta became, on one hand, a rational agricultural landscape shaped by hydraulic engineering, and on the other, a fragmented ecosystem marked by progressive ecological disintegration. In summary, within the broader context of rewriting knowledge, water, and landscape, the

Menderes–Söke Plain irrigation network represents a technological cycle in which water moves from nature to human control and then returns to nature, signifying the evolution of water's natural flow into a mechanical one (Figure 3.47; Figure 3.48).

The knowledge production initiated through TAYEM training materialized in DSİ's engineering practices, generating within rural memory a new language of water and river. Today, the irrigation network and its components in the delta stand not only as hydro-technical systems but also as mnemonic structures of modernization. The State Hydraulic Works (DSİ) Lower Menderes–Söke Plain Irrigation Project and the construction of its associated infrastructure brought forth new river and agricultural narratives around themes of agricultural productivity, ecosystem balance, and landscape transformation. The Adıgüzel, Kemer, and Demirköprü Dams altered the region's hydrological regime, while flood control measures, such as eucalyptus plantations, embankments, and land reshaping, revealed the engineering nature of the new agricultural order.

The socio-cultural effects of these altered waterways included migration, property redistribution, shifts in labor patterns, and the redefinition of power dynamics between settlements. Within local narratives, the idea of "taming and regulating the river and water" emerged as a symbol of modernization. Modernization in the Menderes River Delta thus transformed water into a manageable resource, altering the traditional knowledge of living with nature. The irrigation networks, dams, and mechanized agriculture collectively formed modern landscape layers, structured, productive, yet emotionally detached. This phrase, "Today, the water still flows in the Menderes River Delta, yet it is a directed, confined, and silent flow," emphasizes that the Menderes River and its waters, once the initiator and main agent of the delta and plain, are now perceived merely as irrigation canals, technical boundaries, and functional corridors.

In summary, these interventions redefined the relationship between land, water, and ownership by fragmenting previously fluid and permeable landscapes into geometrically ordered, parcelized units governed by productivity and control. The

construction of irrigation and drainage systems, together with the Söke–Didim highway, not only altered hydrological flows and ecological continuity but also introduced new spatial thresholds that divided the delta both physically and functionally. This shift marks the transition from a dynamic water–land interface to a regulated and engineered system in which the river's maeandering flow and sedimentary processes are constrained within technical infrastructures. At the same time, these transformations generated new socio-economic dynamics, including changes in labor organization, migration patterns, and property relations, while embedding new power structures within the landscape. Although these interventions enhanced agricultural productivity and accessibility, they also contributed to ecological fragmentation and the gradual disintegration of lagoon systems and natural habitats. In this sense, the Menderes River Delta emerges as an infrastructural landscape where natural processes are increasingly subordinated to technological systems, and where water, once a generative and shaping force, is redefined as a controlled and regulated resource. This transformation reflects a broader shift from a lived, adaptive relationship with the river toward a mechanized and managed hydrological regime, in which the flow of water becomes directed, confined, and symbolically detached from its former cultural and ecological meanings.

Menderes (Maeander) Delta as 'Cultural-Narrative Landscape':A Life History of Created and Constantly Re-shaped and Re-constructed by Landscape Authors
Modern Interventions in Landscape (Mechanization in Agriculture, Establishment and Construction of the Irrigation Network, and Related Narratives and Places)

Legend

- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- The components of the reconstructed landscape as part of the project in the 1970s, including the irrigation network, canals, and waterways.
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Topography

(This map prepared using data from the Söke Plain Irrigation Union Archive)

Figure 3.47 Focal Places and Narratives Regarding Modern Interventions in Menderes Riverine Landscape (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Cadastral Order/Spatial Pattern Reflecting the Transformed Landscape Morphology of the River's Course Changes, Old and New Branches, Flow Routes, and the Construction of the Irrigation Network

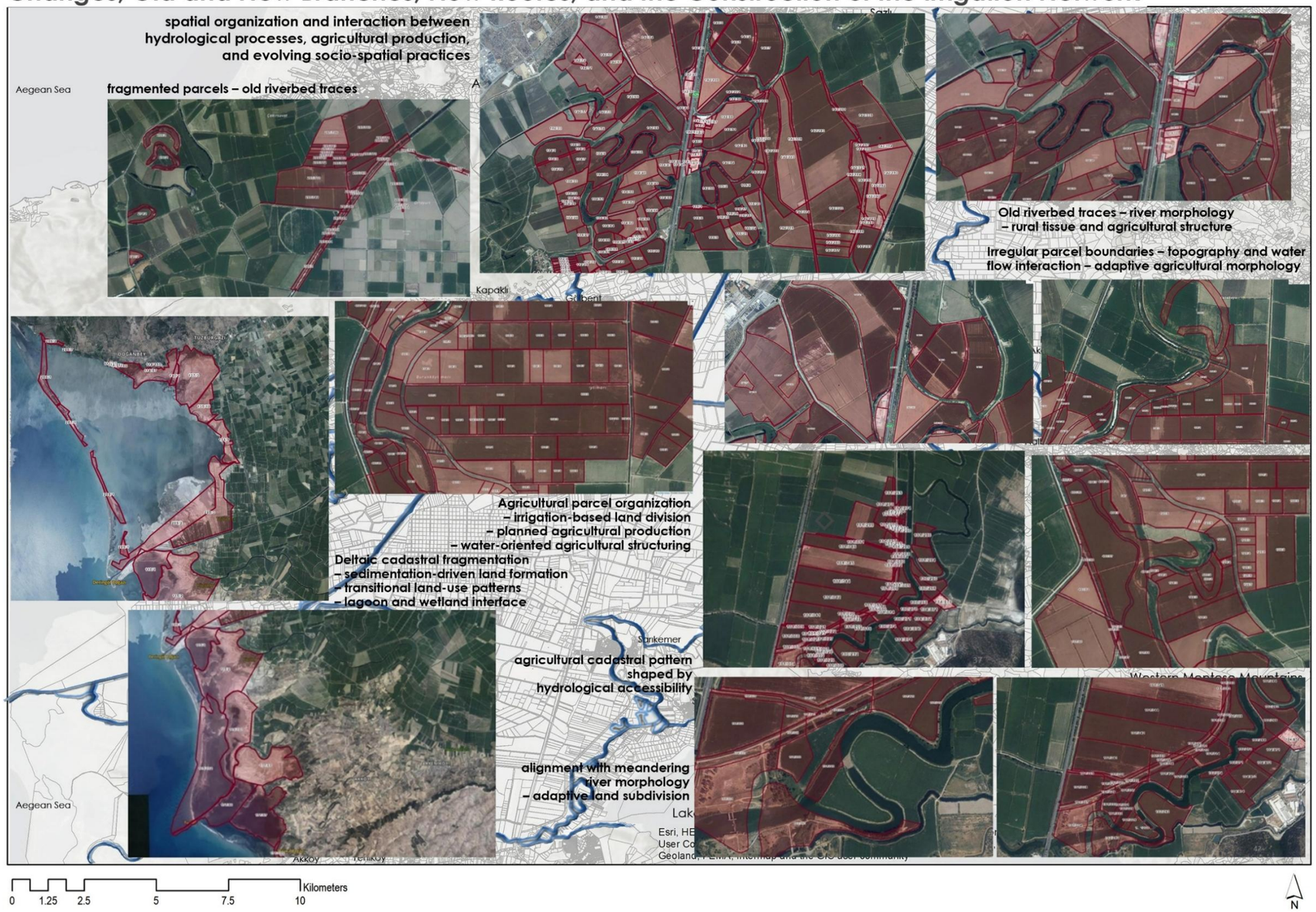


Figure 3.48 Focal Places and Narratives Regarding Modern Interventions, Spatial and Cadastral Traces of Post-1960 Transformations in Menderes Riverine Landscape (Author, 2026)

Narratives of Production, Labour, and Livelihoods

Agriculture, Crops, and Water Management: Narratives of Cotton, Tobacco, and Licorice Root

The productive character of the river landscape is investigated through agricultural activities, cropping patterns, irrigation systems, large estates, and labour relations. Migration movements, experiences of population exchange, and the mobility of seasonal workers contribute significantly to understanding the social and cultural background of the river landscape. Narratives concerning moving along the Menderes, crossing the river, and making use of its waters are evaluated through bridges, crossing points, transportation routes, boathouses (*salhaneler*), and the focal places associated with them. The Menderes riverine landscape can be understood through agricultural practices and water management, where crops such as cotton, tobacco, and licorice root have played a defining role in shaping both the physical environment and local livelihoods. These production-based narratives reflect long-standing interactions between water, soil, and human agency, revealing how the landscape has been continuously organized, transformed, and sustained through cultivation practices and resource management. In the Menderes River Delta, agriculture is a productive activity but a way of life intertwined with water management, the continuity of labor, and the shaping of an ever-changing landscape (Figure 3. 49).

Since the 19th century, the Söke Plain and its surroundings have become one of the key centers of cotton cultivation in Anatolia. With the construction of irrigation canals, the cotton fields around Söke, Akköy, Sarıkemer, and Yenidoğan began to stretch endlessly toward the horizon. Cotton, known locally as “white gold” (“beyaz altın”), was supported by the establishment of ginning and oil-processing factories. The construction of dams, regulators, and canals during this period is remembered in local memory as “the time when the course of the Menderes was changed” (“Menderes’in yönünün değiştirildiği dönem”), symbolizing the beginning of an era in which water came under human control. The people of the delta have historically

shaped the soil through water and transformed water into a component of labor. Agricultural practices have generated narratives of both harmony with nature and resistance to it: “If there is water, there is life” (“Su varsa hayat var”), “The soil needs water” (“Toprak su ister”), “The water of the Menderes brings abundance” (“Menderes’in suyu bereket getirir”).

Before the establishment of modern irrigation systems, the delta’s inhabitants developed simple yet highly localized methods for directing and utilizing water. During the river’s flood seasons, the natural spread of water was viewed as an opportunity that enhanced the fertility of the plains. The saying “The crop of those who know the river’s course never dries” (“Su yatağını tanıyanın mahsulü kurumaz”) reflects an intimate understanding of the hydrodynamic rhythms of the landscape. Structures such as canals (kanal), ditches (arık), ponds (gölet), and small dams (bent) were built, sometimes by shoveling, sometimes by stacking stones, demonstrating the deep integration of local knowledge into everyday labor. Cooperation during irrigation evolved into community-based systems of water sharing and local governance. In this sense, water was the source of agricultural productivity as well as a driving force that structured power relations, neighbourhood connectors, cooperation, and social order. As reflected in the words of local memory: “During elections, mayors would promise, ‘Water will reach your fields, ’ or ‘There will be plenty of water, ’ speaking directly to the heart of the plain’s irrigation needs.” (“Bölgedeki belediye başkanlarının seçimlerde en büyük vaatleri ‘tarlanıza su gelecek’, ‘su bolluğu olacak’ gibi ovanın sulanmasına ilişkin söylemlerdir.”)

The Menderes Plain is characterized by saline soils and marshlands formed through floods and the interaction between the sea and the land. The local people have experienced the struggle with these soils as both a physical and cultural form of resilience. Before the construction of irrigation and drainage canals in the pre-Republican period, marshy areas both limited agricultural productivity and contributed to the spread of diseases such as malaria. This era is remembered as “the time of struggle with swamps and diseases” (“bataklıklarla ve hastalıklarla mücadele dönemi”). With the reclamation of wetlands and the construction of drainage

systems, the plain's landscape regained its balance between life and production. This process represents one of the most visible aspects of modernization policies; yet in local memory, this transformation endures as "the struggle to keep the soil alive despite the water" ("suya rağmen toprağı yaşatma mücadelesi").

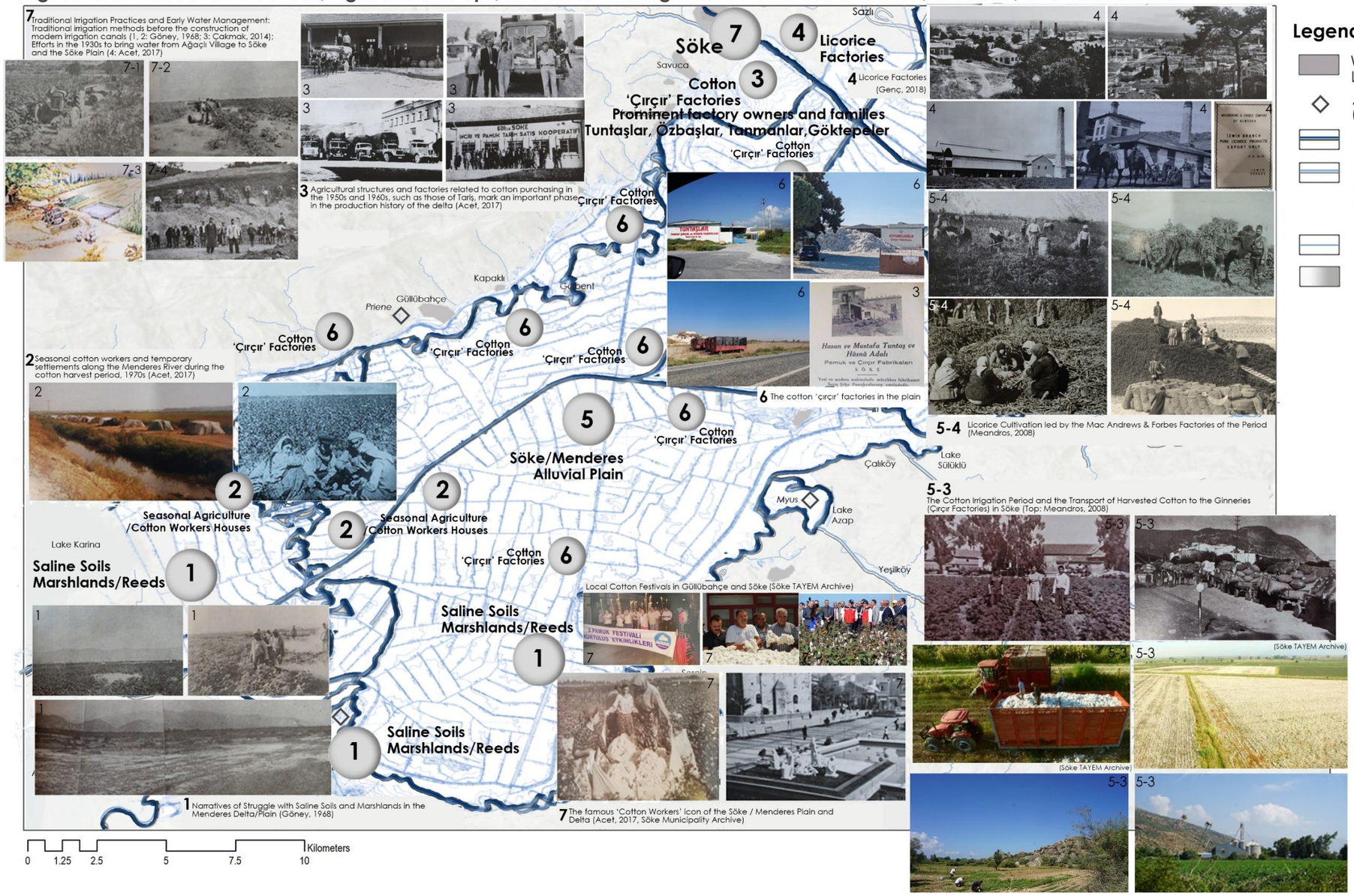
Since the 19th century, the Menderes River Delta has transformed into a production area known for licorice cultivation and export. During this period, the British-based Mac Andrews & Forbes company organized production in the delta, integrating local labor into a global trade network. Licorice root, known among locals as "tatlı kök" ("sweet root"), conceals behind its sweetness a form of labor that is arduous, intense, and seasonal. Licorice root cultivation, together with the influx of foreign enterprises, the expansion of trade through railway connections, and the integration of agricultural production into export markets, represents a narrative of production that linked the Menderes River Delta to the wider world. In the mid-20th century, cotton cultivation radically transformed the economic and spatial fabric of the Menderes Plain. The irrigation canals constructed by DSİ (State Hydraulic Works) from the 1950s onward formed the infrastructure of modern agricultural production. During this period, the ginneries were first established in Söke and later spread throughout the plain, becoming local symbols of the transformation of agriculture into industry. With the expansion of cotton cultivation, especially in Söke, Sarıkemer, Akköy, and Güllübahçe, new employment opportunities emerged, and seasonal labor increased.

In summary, the historical transition from locally embedded water practices to modern irrigation infrastructures reflects a shift from coexistence with natural hydrodynamic cycles toward increasing human control over water, while simultaneously generating new forms of dependency, cooperation, and social background. Local narratives—articulating water as life, abundance, and necessity—translate technical processes of irrigation, drainage, and soil management into lived experience, revealing a deep-seated knowledge of environmental rhythms and resilience. At the same time, struggles with salinity, marshlands, and disease foreground the landscape as a site of endurance, where production is sustained

through both adaptation to and transformation of environmental constraints. The integration of the delta into global trade networks, particularly through licorice and cotton production, further situates the Menderes within broader economic and political systems, linking local labor to transnational processes. In this sense, the riverine landscape emerges as a dynamic field where water operates not only as a natural resource but as a socio-economic driver, a cultural connector, and a transformative force shaping the continuous reconfiguration of landscape, livelihood, and social relations

Menderes (Maeander) Delta as 'Cultural-Narrative Landscape':A Life History of Created and Constantly Re-shaped and Re-constructed by Landscape Authors

Agricultural Production Practices, Agircultural Crops, and Water Management: Narratives of Cotton, Tobacco, and Licorice Root



Legend

- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.49 Agriculture, Crops, and Water Management: Narratives of Cotton, Tobacco, and Licorice Root (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Fishing in the Menderes River Delta and Dalyans, and Animal Husbandry in the Delta

This section conceptualizes fishing and animal husbandry in the Menderes River Delta as adaptive socio-ecological practices through which communities engage with the dynamic interface of water, wetlands, and land, shaping both livelihoods and the spatial organization of the landscape. Fishing in the Menderes River Delta and its dalyans, together with animal husbandry practices, reflect long-standing interactions between water, wetlands, and local livelihoods. These activities reveal how communities have adapted to and utilized the delta's ecological conditions, shaping both subsistence strategies and the socio-spatial organization of the landscape (Figure 3.50). In the Menderes River Delta, Karina Lake, Dil Lagoon, Taşburun Lagoon, and the shores of Lake Bafa form the central areas of fishing activity. These lagoons have traditionally been divided among nearby settlements, each holding usage rights through local cooperatives. Doğanbey and Tuzburgazı carry out fishing in the Dil Lagoon and Karina Lake, while Akköy, Balat, and Akyeniköy are active in the Taşburun Lagoon. Fishing in these lagoons is practiced through traditional methods, net drawing, longline fishing (parakete), boat guidance, and seasonal fishing cycles. Freshwater species such as carp, catfish, and mullet inhabit the river, while toward the delta, where freshwater mixes with the sea, hybrid ecosystem species are found. This fish diversity determines the seasonal fishing calendar of delta communities: when the water rises, fish swim inward; when it recedes, they are collected with nets.

The lagoons operate as cooperative-based production systems that shape both the livelihood of families and inter-village relations. Since the 1950s, lagoon cooperatives have become essential institutions of delta life, symbolizing both local organisation and economic solidarity within the dynamic hydrological landscape of the Menderes. Karina Region and Dil Lagoon are often referred to collectively as Karina Lake or the Menderes River Delta Lake. The fishermen's shelters, net-repair areas, and salting workshops stand as tangible heritage elements of this culture. Along the coastal strip stretching between Doğanbey and Tuzburgazı, reed-roofed

fishermen's huts are established each summer as temporary yet recurring living spaces. These sites embody the local communities' adaptive knowledge of living in temporary harmony with the natural environment. The fishermen's shelters also function as mnemonic places, each one bearing traces of a past production relationship, a family's story, and the rhythmic cycles of the river and its waters. The fishnet drying grounds, pier remnants, and walls of the old customs building along the lakeshore still carry the imprints of this collective production memory. The fishermen's shelters, seasonal workers' huts, Greek-period customs buildings, and fishing activities around Karina Lake remain among the most prominent and living local narratives of the delta.

Another lagoon frequently mentioned is Taşburun, known as the fishing area of Akköy, Balat, and Akyeniköy on the southern (left) side. This site is also referred to as the "boathouses" ("salhaneler"), "Menderes Mouth" ("Menderes ağzı"), and "Menderes Fork" ("Menderes Çatalı"). The direction of the water flow, the level of salinity, and the seasonal cycles have shaped both the economic and social organisation of the region. Lagoons, fishing areas (dalyans), lakes, and river branches are vital for the fishing economy and for the transmission of water knowledge and toponyms within the delta's social relationships. In addition, Serçin and Lake Bafa, located at the eastern end of the delta, have historically represented the symbolic centers of both freshwater fishing and lake culture. Fishing in Lake Bafa differs from that of the delta, reflecting an inland lake tradition: the coves enclosed by nets are referred to as "fish fields" ("balık tarlası"). The communities living around the lake sustain their livelihoods primarily through the fishing of eel, blackfish, bass, and mullet. This region is renowned for its Eel Festival ("Yılan Balığı Festivali"), and the fisheries and fishing cooperatives in the area continue to operate actively today.

Furthermore, the Bafa Lake region of the delta, along with Özbaşı, Serçin, Sarıkemer, Atburgazı, and Tuzburgazı, stand out as key settlements for livestock activities within the broader agricultural landscape of the plain. Around Serçin Village, seasonally migrating shepherd communities and small-scale livestock farms

still exist today. Since the early Republican period, the Balat Plain and the surroundings of Lake Bafa have become centers of cattle breeding. As described in a local newspaper, this region was once referred to as “the marketplace for the finest animals and agricultural products of the Büyük Menderes Basin.”

In summary, fishing activities concentrated in lagoons ‘Dalyans’ such as Karina, Dil, and Taşburun, as well as Lake Bafa, reveal a system structured by seasonal cycles, water levels, and salinity gradients, where ecological knowledge and production practices are closely intertwined. Cooperative-based management systems further demonstrate how resource use is collectively organized, embedding economic activity within networks of social relations and local governance. At the same time, fishermen’s shelters, net-drying areas, and lagoon infrastructures function as mnemonic places that materialize the rhythms of production and the continuity of water-based knowledge across generations. The coexistence of temporary and recurring spatial forms—such as seasonal fishing settlements and grazing areas—highlights the fluidity of the delta landscape, where permanence and transience are continuously negotiated in response to environmental variability.

Menderes (Maeander) Delta as 'Cultural-Narrative Landscape':A Life History of Created and Constantly Re-shaped and Re-constructed by Landscape Authors

Fishing in the Menderes Delta, Lake Karina and Dalyans, and Animal Husbandry in the Menderes/Söke Plain

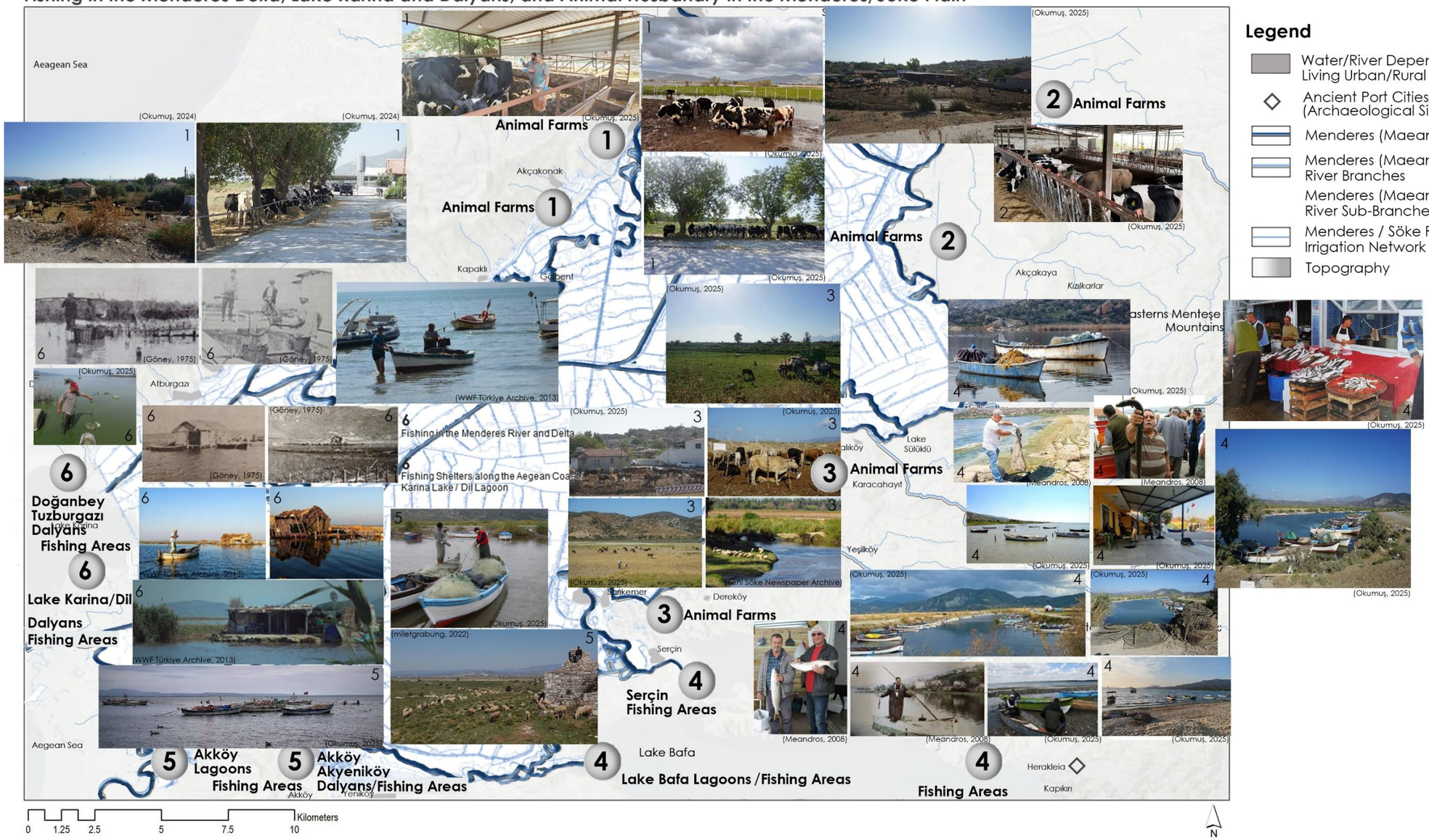


Figure 3.50 Fishing Narratives: Focal Mnemonic Places, Dalyans, Farms, and Relevant Settlements (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

"Crossing the Menderes" Narratives: Bridges of the Menderes River and Its Focal Mnemonic Places, Routes and Settlements

"Crossing the Menderes" encapsulates the river's bridges as both physical connectors and mnemonic places shaped by everyday crossings and shared experiences. Beyond their infrastructural role, these structures anchor narratives of movement, encounter, and memory, revealing how the act of crossing continually produces and reinterprets meanings within the Menderes landscape (Figure 3.51). "Crossing the Menderes" ("Menderes'i Geçmek") is, beyond a geographical crossing, still a lived expression used in the local language today. The crossing points over the river have always served as reference landmarks for local communities. Locals note the meetings and events held around the bridges on market days, the festive gatherings during religious holidays, and the "prayer meetings" organized after floods.

For the Menderes (Söke) Plain, the bridges mentioned include Sazlı (Ramazanpaşa), Gölbent Kambur (Wooden) Bridge, Gelebeç (Güllübahçe) Bridge, Sarıkemer (Stone) Bridge, Madenciler Bridge, Burunköy–Bağarası Menderes Bridge, and Balat–Batmaz Wooden Bridge; for Söke town center, the main ones are Demirköprü and Kambur Bridge. In local expression, "to cross the Menderes" ("Menderes'i geçmek") signifies both overcoming hardship and passing through a threshold; thus, like the river itself, bridges are connective, transformative, and mnemonic elements.

Another narrative pattern concerning the bridges of the Menderes relates to the stories and mnemonic places associated with the river's course changes, floods, and destructions. The powerful floods of the Menderes have destroyed numerous bridges throughout the centuries, erasing some from existence. The remains of old bridges are still visible today in the areas where the river once altered its course. The photographs taken under the title "Menderes Bridge Souvenir" ("Menderes Köprüsü Hatırası") constitute some of the most vivid visual documents of social life in the

delta between the 1930s and 1960s. Although many of them have been demolished or reconstructed today, the presence of the bridges endures in collective memory. People still define locations through expressions such as “by the old bridge” (“eski köprünün orası”) or “across the iron bridge” (“demir köprünün karşısı”). This linguistic usage demonstrates that the bridges continue to exist within the mental map of the region. As public places, the bridges have served as venues for celebrations, demonstrations, encounters, and social events. Examples include the Victory Day celebration on the Arch Bridge (Kambur Köprü) in 1936, the Söke Stream Crossing Ceremonies (Söke Çayı geçiş törenleri) in 1948, and the demonstrations held on the Iron Bridge (Demirköprü) during the 1960s. These events reveal that the bridges were narratives of transportation but symbolic arenas of social memory. In this sense, bridges become political, cultural, and emotional centers of the landscape. Each stands as a place of collective memory where the community gathers, celebrates, mourns, and remembers.

The old wooden Menderes bridges, which connected the northern and southern settlements of the Menderes, are referred to by the local people as “the heart of the delta” (“deltanın kalbi”). For many years, transportation between Bağarası and Söke, as well as between Balat and Sarımeker, relied on these bridges. The passage across the wooden bridges is remembered with both fear and admiration, the bending of the planks, the sound of the water, and the deaths that occurred on the bridge. “When crossing the wooden bridge, you could hear the sound of the water beneath your feet. The planks groaned, but we crossed anyway. That bridge integrated the delta, connecting the north and the south.” (“Ahşap köprüden geçerken suyun sesi ayağının altından gelirdi. Tahtalar inlerdi ama geçerdik. O köprü deltayı birleştirirdi, kuzeyi güneye bağlardı.”) “It swayed like a cradle, the timbers creaked, and a few people fell into the Menderes and died.” (“Beşik gibi sallanırdı, ahşapları çıtırdardı, birkaç kişi Menderes’e düştü ve öldü.”)

In summary, these narratives conceptualize the bridges of the Menderes as critical socio-spatial and mnemonic components of the riverine landscape, where the act of “crossing” emerges as both a physical movement and a metaphorical threshold

shaping collective memory and meaning. While bridges function as infrastructural connectors linking the northern and southern parts of the delta, they simultaneously operate as sites of encounter, gathering, and social interaction, embedding everyday practices within the spatial fabric of the landscape. The recurring expression “crossing the Menderes” reflects a lived cultural code that signifies transition, overcoming difficulty, and passage through both spatial and experiential boundaries. Narratives associated with floods, destruction, and the reconstruction of bridges further reveal the temporal dimension of the landscape, where loss and continuity coexist through both material remnants and memory. Even when physically absent, bridges persist within the mental map of the region through language and collective remembrance, demonstrating their enduring mnemonic presence. As venues of celebrations, rituals, and political events, bridges also function as symbolic arenas where social memory is performed and reproduced. In this sense, the Menderes bridges transcend their utilitarian role, emerging as dynamic nodes that interconnect water, time, movement, and human experience, and as powerful generators of the mnemonic landscape through which the river is continuously lived, remembered, and reinterpreted.

Menderes (Maeander) Delta as 'Cultural-Narrative Landscape':A Life History of Created and Constantly Re-shaped and Re-constructed by Landscape Authors

"Crossing the Menderes" ("Menderes'i Geçmek"): Bridges | Routes | Boathouses | of the Menderes and Its Mnemonic Places and Narratives

a: Photographs taken on the bridges as "Menderes Bridge Souvenirs" ("Menderes Köprüsü Hatırası": the "Stone" ("Taş") Bridge, 1938; b: the new concrete "Arch Bridge" ("Kambur Köprü") from 1929; c: "Arch Bridge Souvenirs("Kambur Köprü Hatırası"), 1944 (Yalçınkaya, 2009, Acet, 2017, Genç, 2018)

The period remembered through the Menderes Flood (Menderes Seli) and the destruction of the Iron Bridge (Demir Köprü), 1955 (a: Genç, 2018, b: Çakmak, 2014)

Gelebeç Bridge, "the bridge that was submerge under the rising waters of the Menderes River is now only visible in the form of its remaining paving stones" (Özbay, 2020)

The Old Wooden Menderes Bridge (Eski Ahşap Menderes Köprüsü), known as "the connector of the delta" (deltanın bağlayıcısı), linked the northern and southern settlements along the Söke–Bağarası route; the Balat (Batmaz) Bridge ("Balat (Batmaz) köprü") before the 1970s. (Acet, 2017)

The old and new bridges stand side by side in Sarıkemer; the old bridge now lies beneath the plain; the early 1900s Sarıkemer "Stone Bridge" (locally also known as "Taş Köprü", "Kemal Sunal Köprüsü" due to the film shot there)

Ramazanpaşa (Kemer/Sazlıköy) Bridge (1, 2, 3: Wiegand vd., 1904:34; 4: Pierre Tremaux, 1867; 5: Okumuş, 2024; 6: Çakmak, 2014)

An old bridge buried beneath the alluvial plain between Burunköy and Bağarası; a bridge over the former bed of the Menderes River near Bağarası (today, the plain's land surface lies several meters above the bridge's level) (Göney, 1968)

a: Menderes Iron Bridge (Demirköprü), 1930, and the Victory Day celebration in front of the Arch Bridge (Kambur Köprü), 1936; b: Söke Stream Bridge Crossing Ceremonies (Söke Çayı köprü geçiş törenleri); c: 1948; the Iron Bridge (Demirköprü) as the venue for and public events, 1950 (Acet, 2017, Genç, 2018)

Legend

- Transportation Stations/Boathouses 'Kayıkhaneler'
- **1-2-3-4** River Transportation Routes
- Menderes Bridges
- Former Municipalities/ Administrative Centers ('Eski Belediyelikler')
  Sarıkemer | Akyeniköy | Güllübahçe
- Former Sub-Districts Administrative Sub-Centers ('Bucaklar')
  Doğanbey | Akköy | Bağarası
- Greek Orthodox Settlements/ Rumeli and Balkan Immigrants in early 20th century ('Göçmen/Muhacir Merkezleri')
  Bağarası | Sazlı | Akçakonak | Güllübahçe | Atburgazı | Tuzburgazı | Doğanbey | Akköy | Akyeniköy
- Nomadic ('Yörük') Settlements/ Local ('Yerli') Settlements
  Serçin | Batıköy | Avşar | Özbaşı | Nalbantlar | Pamukçular | Akçakaya
- Today's Municipality Current Administrative Center 'Söke Belediyesi'
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.51 "Crossing the Menderes" Narratives: Bridges of the Menderes River and Its Focal Mnemonic Places, Routes and Settlements (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

“Crossing the Menderes” (Menderesi Geçmek): Menderes River Transportation and Its Mnemonic Places and Narratives

“Crossing the Menderes” frames river transportation as both a functional system and a lived practice through which the landscape is experienced and remembered. Routes, crossings, and nodes of movement emerge as mnemonic places that attach narratives of travel, trade, and encounter, revealing how mobility across the river has continuously shaped social relations and the meanings attributed to the Menderes landscape (Figure 3.52). Throughout history, the Menderes River Delta has served both as a boundary and a passage route. The river has been a carrier of agriculture, trade, and everyday life; the modes of crossing it, rafts, boats, narrow-gauge railways (dekovil), and ships, have shaped the lifestyle and narrative universe of the local communities.

Before the construction of bridges across the delta, the Menderes was described as “a plain and dwelling transported by boats” (“kayıklarla geçilen bir ova, mesken”). Transportation of goods between Balat, Akköy, and Araphisar was carried out by small boats and raft-like vessels. In the memories of the elderly, boats and rafts known as “Menderes Ships” (“Menderes Gemileri”) hold an important place; these rafts were used both for trade and for mutual visits. River transport served to carry fish, cotton, licorice root, and olives, thus establishing socioeconomic and sociocultural connections. In this context, “Crossing the Menderes” (“Menderes’i Geçmek”) no longer refers to the act of crossing a bridge; it becomes a symbol of life, transportation, passage, and storytelling over the water.

River transportation was one of the main components of the transportation system in the Menderes River Delta, particularly during the 19th and the first half of the 20th century. Along the delta and the Menderes Plain, routes such as Batıköy, Balat Doğanbey, Güllübahçe, Söke; Bağarası, Burunköy, Sazlı–Söke; Özbaşı, Güllübahçe, Söke; Serçin, Sarıkemer, Güllübahçe, Söke, the inhabitants established crossing points that followed the river’s natural flow. These points became centers of both

economic and social interaction. Each crossing line, Balat–Batmaz, Serçin–Sarıkemer, and Gölbent–Söke, holds a distinct narrative within local memory.

From the 19th century onward, European travelers who visited the region described their raft journeys on the Menderes River with both admiration and unease. In their travel notes, the Menderes was depicted as "a snake-like, winding yet calm river" ("yılan gibi kıvrılan ama sakin akan nehir") and the "brave villagers standing on wooden rafts" ("tahta salların üstündeki cesur köylüler"). They also portrayed the routes they followed on the rafts, along with the stopping points and crossing axes along the river.

The rafts that the local people referred to as "ships" ("gemi") were the most characteristic means of transportation on the Menderes. These rafts can be regarded as local engineering solutions adapted to the river's flow, facilitating transportation between settlements and enabling the movement of animals and goods. Constructed from tree trunks and wooden planks, these simple yet functional structures were used for carrying both people and materials.

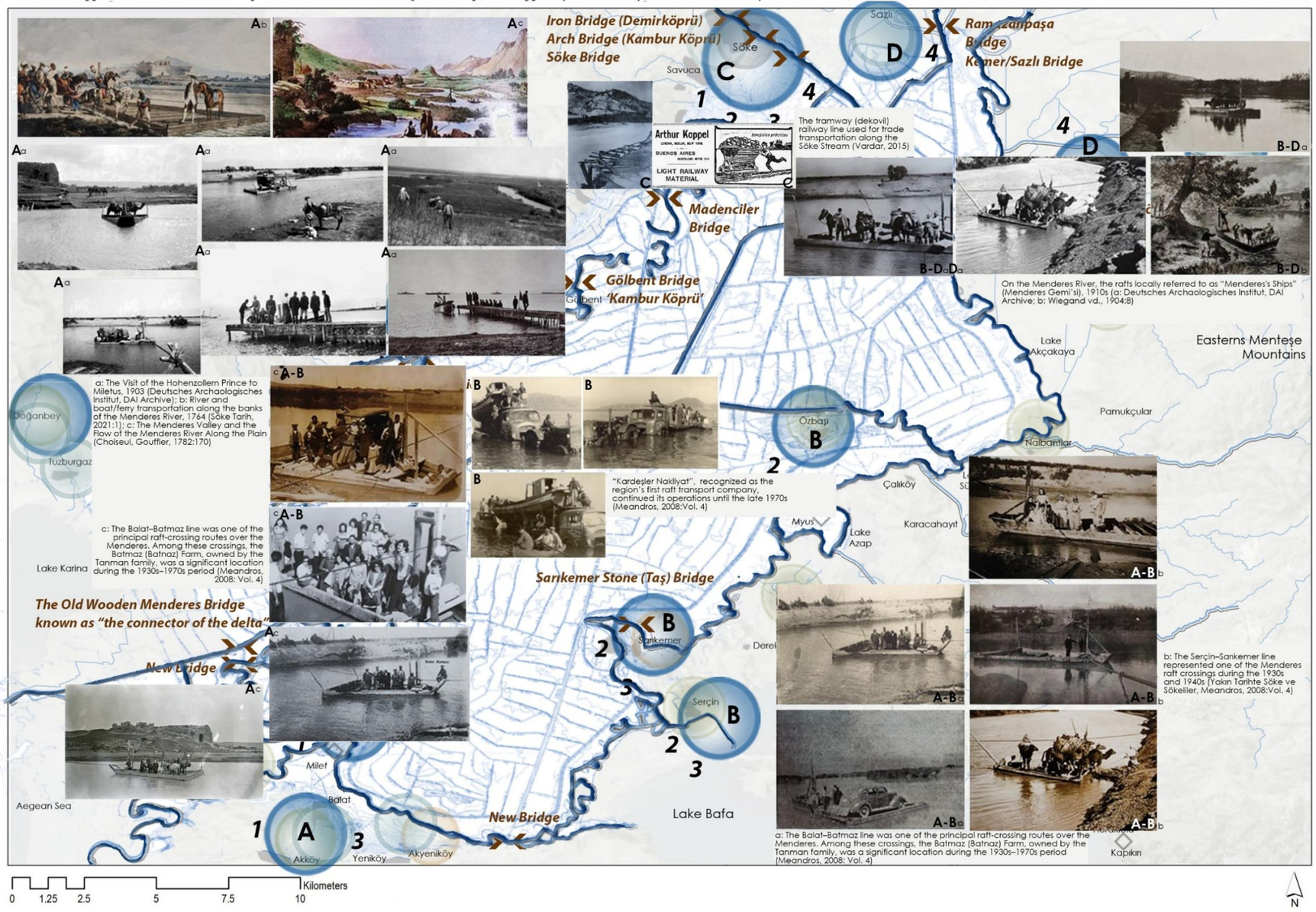
The efficiency of the rafts relied on the knowledge of those who could "read" the river's flow, an inherited water-reading tradition passed down through generations. The Menderes River was crossed transversely by these rafts. Along the Söke–Bağarası (Mandice) line and the area where the Büyük Menderes meets the sea, eight raft locations were identified. Although there is no record of their exact construction dates, some of these rafts were in use until the 1970s. The known crossing points are Burunköy Raft, Çalıköy Raft, Avşar Raft, Sarıkemer Raft, Dalyan Raft, Balat Raft, Fahri Tanman Raft, and Batmaz Raft. Each of these rafts could carry 5–6 loads of pack animals or a tractor across the river. Their surface area was approximately 40–50 square meters. The rafts were generally constructed from planks cut to a depth of about 50 centimeters. Passage across the river was achieved through steel cables tied to poles fixed on both banks of the Menderes. The most distinctive feature of these rafts was the wide wooden platform and the cable system attached to a pole on top

of it. This mechanism allowed the raft to take direction more easily against the current.

The Balat–Batmaz line was one of the most well-known raft crossing points in the Menderes River Delta. The most distinctive feature of this line was that the raft transportation operated as a local, family-based enterprise. The Batmaz (Batnaz) Farm, owned by the Tanman family, served as the economic and social center of this route.“They used to call it Batmaz’s ship. It wasn’t just a raft on the water; it was like an entire bridge. The Tanman family managed the raft; everyone trusted their crossings and called it ‘Batmaz’, that’s how the name remained.” (“Batmaz’ın gemisi derlerdi. Suyun üstünde sal değil, sanki koca bir köprüydü. Tanmanlar salı idare ederdi, herkes onların geçişine güvenir, ‘Batmaz’ derdi, adı da oradan kalma.”) Additionally, the Burunköy–Bağarası line held importance for trade in this region. The raft used there was known as the “Menderes Burunköy Raft” (“Menderes Burunköy Gemisi”). Located along the northeast–southwest axis of the Menderes River, the Serçin–Sarıkemer line constituted the second main raft-crossing point of the plain. In the 1950s, Kardeşler Nakliyat was established along this line and became known as the region’s first organized raft transportation company. Tractors, cotton bales, tobacco sacks, and agricultural machinery were carried across the river using these rafts. These crossing routes sustained the delta as part of the river’s economic circulation network while simultaneously creating points of social interaction among the local communities.

In summary, modes of crossing—rafts, boats, bridges, and later industrial infrastructures such as the decauville railway—emerge as key components that structure both economic networks and everyday life, embedding movement within the cultural and spatial fabric of the landscape. The expression “crossing the Menderes” extends beyond a physical act to signify a broader narrative of passage, connectivity, and lived experience, reflecting how mobility across the river continuously produces meaning. Local practices such as raft transportation, grounded in inherited knowledge of reading the river’s flow, illustrate a deep integration of environmental understanding with labor and technological adaptation.

At the same time, historical transportation routes and crossing points function as nodes of interaction, trade, and social exchange, linking settlements and integrating the delta into wider economic systems. The transition from traditional river-based mobility to more structured and industrialized systems further reveals the evolving relationship between water and infrastructure. In this sense, the Menderes River Delta emerges as a dynamic landscape of movement, where routes, crossings, and transport practices act as mnemonic structures that sustain the continuity of labor, circulation, and collective memory within the ever-changing riverine environment.



Legend

- Transportation Stations/Boathouses 'Kayıkhaneler'
- **1-2-3-4** River Transportation Routes
- Menderes Bridges
- Former Municipalities/ Administrative Centers ('Eski Belediyelikler')
  Sarıkemer | Akyeniköy | Güllübahçe
- Former Sub-Districts Administrative Sub-Centers ('Bucaklar')
  Doğanbey | Akköy | Bağarası
- Greek Orthodox Settlements/ Rumeli and Balkan Immigrants in early 20th century ('Göçmen/Muhacir Merkezleri')
  Bağarası | Sazlı | Akçakonak | Güllübahçe | Atburgazı | Tuzburgazı | Doğanbey | Akköy | Akyeniköy
- Nomadic ('Yörük') Settlements/ Local ('Yerli') Settlements
  Serçin | Batıköy | Avşar | Özbaşı | Nalbantlar | Pamukçular | Akçakaya
- Today's Municipality Current Administrative Center 'Söke Belediyesi'
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.52 "Crossing the Menderes" Narratives: River Transportation Routes and Boathouses (Salhaneler) and Its Focal Mnemonic Places (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Narratives of Place, Memory, and Social Lifecycle

Water and River Toponyms and Mnemonic Places in the Menderes River Delta

Water- and river-related toponyms, together with mnemonic places, constitute key carriers of memory in the Menderes River Delta. These names and sites encode historical uses, environmental features, and lived experiences, revealing how communities perceive, interpret, and transmit their relationship with water and the river across generations. The traces of water and the river in the Menderes landscape can be observed in the names of settlements, localities, and places, both in official and local nomenclature. The Menderes River Delta and its surroundings constitute a hydro-geography shaped together with the river that lends its name to the region.

In this geography, water is also a bearer of settlements, identities, and narratives. Elements such as rivers, lakes, streams, springs, weirs, and bridges find expression in place names, creating both a linguistic landscape and a cultural fabric of memory. These toponyms are not simply geographical descriptions; they are linguistic projections of the people's relationship with water, their modes of production, beliefs, and memories.

Throughout the delta, numerous water-related place names exist: Subaşı (Head of Water), Sazlı (Reedy), Gölbent (Lake Weir), Gölköy (Lake Village), Gölyaka (Lakeside), Gölönü (Lakefront), Su Köy (Water Village), Çaybaşı (Streamhead), Değirmenköy (Mill Village), Köprübaşı (Bridgehead), Ada Mahallesi (Island Neighborhood), etc. These names indicate both the location of water sources and the productive and symbolic relationship humans have established with water. Roots such as “göl” (lake), “pınar” (spring), “dere” (creek), “çay” (stream), “köprü” (bridge), and “değirmen” (mill) compose the hydro-toponymic character of the Menderes landscape. These names embody the linguistic reflections of water’s formal (geographical), functional (productive), and emotional (cultural) existence. Each carries a story, a relationship, and a memory.

In the Menderes River Delta, water-related place names can be interpreted as both natural and cultural indicators. Names containing “Göl” (lake), such as Gölbent, Gölyaka, Gölönü, and Gölköy, mark the boundaries of former water basins. Those with “Çay” (stream) and “Dere” (creek), such as Çaybaşı, Dereağzı, and Dereçay, delineate flow routes and micro-valleys. Names with “Pınar” (spring), such as Pınarbaşı, Akpınar, and Karapınar, represent water sources, as well as places of belief and fertility. Toponyms containing “Değirmen” (mill), like Değirmenköy and Değirmenönü, indicate former production areas powered by water. Those including “Köprü” (bridge), such as Köprübaşı, Sarıkemer Köprü, Demirköprü, and Kambur Köprü, reflect networks of social and spatial connection. Finally, names incorporating “Ada” (island), like Ada and Adaköy, signify elevated or insular settlements surrounded by water during flood periods. This configuration reveals that toponyms act as indicators of the triad of natural structure – human intervention – memory continuity within the Menderes landscape.

Most of the settlements around the Menderes have historically been established near water sources. This settlement pattern has been decisive in ensuring the continuity of production, transportation, and daily life. In the Söke Plain, settlements such as Gölbent, Gölköy, Gölyaka, Sazlıköy, and Çaybaşı are situated directly along water routes, former riverbeds, and wetlands. This indicates that place names function as a spatial sequence of indicators. Toponyms related to water also express how people make sense of nature. The name “Subaşı” (Head of Water) conveys an administrative and protective meaning; “Değirmen” (Mill) symbolizes labor and production; “Köprü” (Bridge) represents passage and connection. Names with “Pınar” (Spring) evoke the origin, sacredness, and continuity of life. Within the Menderes landscape, some place names have changed over time, while others have experienced spatial displacement due to the retreat of water, the shifting of the riverbed, or the relocation of villages. For example, the old settlement of Çayköy was relocated after severe river floods; the name Gölyaka now designates a village that is no longer close to the lake. This situation forms the linguistic traces of the physical transformation of the landscape.

In summary, this section conceptualizes water- and river-related toponyms in the Menderes River Delta as linguistic and spatial reflections of memory that encode the dynamic relationship between natural processes, human intervention, and cultural meaning. The hydro-toponymic patterns of the delta—reflected in names associated with lakes, streams, springs, mills, and bridges—reveal how environmental features, production practices, and symbolic meanings are embedded within language, forming a cultural landscape of memory. At the same time, these toponyms function as indicators of historical environmental transformations, marking former water bodies, shifting riverbeds, and changing settlement patterns. The persistence, transformation, or displacement of such names demonstrates how language preserves the traces of landscape change, even when physical conditions have altered. In this sense, toponyms operate as a bridge between past and present, material and immaterial, revealing a spatio-temporal continuity in which water not only shapes the physical landscape but also structures identity, belonging, and collective memory.

'The Two Sides of the Menderes' ('Menderes'in İki Yakası'): Northern and Southern/Right and Left Settlements, Local Names Attributed to the Settlements

"The Two Sides of the Menderes" frames the river as a defining spatial and cultural boundary that organizes settlements along its northern and southern (right and left) sides. Local naming practices attributed to these settlements reflect geographic orientation, social relations, identities, and everyday distinctions, revealing how the river shapes both the physical configuration and the cultural perception of place (Figure 3.53). One of the defining geographical characteristics of the Menderes River Delta is the differentiation between the two sides of the river, each possessing distinct social, ecological, and economic identities.

The northern (right) side, encompassing the Söke, Güllübahçe, Gölbent, Atburgazı, and Doğanbey line, has developed as an area concentrated in agricultural production, industry, and rural settlements. This region is marked by the cultivation of cotton,

wheat, and sunflowers, along with ginning and oil-processing factories. The southern (left) side, developing across Balat, Akköy, Serçin, Sarıkemer, and Bafa, is better known for fishing, tourism, and ecological activities. The Karina Lagoon and the surroundings of Lake Bafa form a special zone of nature observation, fishing, and rural tourism. The distinction between the two sides is also related to cultural background: narratives of a production-oriented "work" culture dominate the north, while those of a nature-oriented "life" culture prevail in the south. Yet, the two sides are interconnected through bridges, markets, and rituals, making the Menderes function as both a divider and a connector, a "lifeline" of the delta. "We are on the northern (right) side; beyond the main channel, we call it 'the other side of the Menderes.' Our fields face the plain. Those on the southern side live closer to the water; they know the water, while we know the soil." ("Biz kuzey (sağ) yakasındayız, ana yarıktan sonrasına 'Menderes'in diğer yakası' deriz. Bizde tarlalar ovaya bakar. Güneydekiler suya daha yakın yaşar. Onlar suyu bilir, biz toprağı.") In the north, Söke and Güllübahçe are remembered as the most well-known and historically significant municipalities, while Doğanbey is recognized as an old district center (bucak). On the southern side, Sarıkemer and Akyeniköy are frequently mentioned by locals as key settlements important for both irrigation and administrative functions. The former bucak municipalities of this southern side are recalled as Akköy and Bağarası. Whichever side one talks to, it becomes evident that people define settlements through expressions such as "our side", "the other side", "lower side", or "upper side" ("bizim yaka", "karşı yaka", "aşağı yaka", "yukarı yaka"). The Menderes River, the Karina Lagoon, and the fishing weirs (dalyans) serve as shared reference points. Moreover, in describing places and directions, locals often refer not to the present Söke–Didim road but to the older transportation axis of the delta: Güllübahçe–Atburgazı–Menderes Bridge (the bridge of the main channel) –Balat–Batıköy–Sarıkemer. Here, the Menderes is not perceived as a boundary, but as a mirror of reciprocal identity formation; each side defines itself in relation to the other.

In terms of settlement identities, the inhabitants of Sarıkemer are referred to as “Kemerli” (people of the arch), those from Bağarası as “Bağarcalı”, from Gölbent as “Bentli”, and the settlement of Balat as “across from Batmaz.” People from Güllübahçe are described as “Gelebeçliler” (from ancient Gelebeç) and “immigrants.” The settlements of Bağarası, Güllübahçe, Atburgazı, and Doğanbey are collectively remembered as migrant villages. When asked about the native settlements, references are usually made to those on the southern side, such as Serçin and Sarıkemer. Sarıkemer is a critical village within the irrigation system and functioned as an irrigation center before the establishment of the current irrigation network. Its agriculture and stone bridge are key reference points across the delta. River journeys to the mills of Güllübahçe and local landmarks such as the church, fountain, and the ancient city of Priene (Priyen) are among the most frequently narrated places. For Sazlı, expressions such as “Söke and the Menderes Arch” are common, while Bağarası is remembered as an “old municipality and district center” and a “Christian and migrant settlement.” Gölbent is described through phrases like “plain village”, “island village”, “the last settlement on the plain”, “flood zone”, and “temporary or seasonal workers’ dwellings.” Güllübahçe is remembered in association with Priene (Priyen) and defined as a “mill settlement”, “village with a church”, “village entered through a tree-lined road”, “the oldest village”, “migrant Greek village”, and “the center of the northern (right) side” as well as “one of the flood zones.” The cotton festivals and the Priene Festival held there are also prominent cultural narratives. For Atburgazı, popular local descriptions include “horse farm”, “fishing village near Karina and the lagoon”, and “saline soils.” The northern or right-side coastal settlement of Doğanbey is recalled and described as “Domatya (houses with rooms), tourist village, Greek houses, Karina, fishing village”, and “fishing festival.”

On the southern (left) side, Batıköy and Balat are generally mentioned in connection with Milet. In local narratives, Batıköy (Batnaz or Batmaz) is described as “the summit of Milet and the delta”, “the delta and seaside village, “Lade Island”, and “the Menderes Mouth / the Menderes Fork.” Balat, associated with ancient Milet, is

identified as “the principality center”, “the area of palaces and gardens”, “the oldest settlement”, “the delta village”, “the slaughterhouse village”, “the fishing village”, and “the flood zone.” The former municipal and district centers (bucak) of this region, Akköy and Akyeniköy, are remembered for Taşburun Lagoon (Taşburun Dalyanı), slaughterhouse facilities, flood zones, and their historical administrative functions. The most important center and the most widely narrated focal point of this side is Sarıkemer. Serving both as a former municipal center and a hub of irrigation-related practices and relations, Sarıkemer maintained its strategic position following the construction of the Söke–Didim Road, which cuts through the middle of the delta. It is the only settlement in the delta referred to as both a river settlement and a water/irrigation settlement. It is described as “the center and largest village of the left side”, a market settlement, “the cotton village”, “the site of the cotton festival”, “a stop on river transportation and cotton routes”, “the only village through which the Menderes flows”, “the stone bridge”, and “the former irrigation center.”

Distinct from other settlements in the delta in terms of both its economy and location, Serçin is referenced together with Lake Bafa and the delta itself. Known as a fishing village, Serçin is among the oldest indigenous settlements of the region. The spring festivals and eel festivals held here place the village at the center of many local narratives. Remembered in stories of flooding, Serçin is described as the “eel village”, “domestic and nomadic village, “Bafa village,” and “market village.” Other settlements on this side include Avşar, known for its proximity to Lake Azap, its castle, and the nearby ancient city of Myus, and described as a mountain village. On the opposite side, Özbaşı, located within the plain like Gölbent, is known as an “island village”, “plain village”, and “hill village.” Appearing as an alluvial “island” in old maps, the village stands out for its panoramic view extending from the plain toward the delta. It is also associated with the Özbaşı family, one of the well-known cotton producers and ginning factory owners of the delta. The most significant reference points in narratives concerning fishing include Doğanbey, Tuzburgazı, Akköy, Akyeniköy, and Serçin, along with the independently functioning lagoons (dalyans) of the right and left sides. The Karina Lake and Dil Dalyan are referred to

as Karina Lake or the Menderes River Delta Lake, representing the lagoon area of Doğanbey and Tuzburgazı. The fishermen's shelters, seasonal agricultural workers' huts, Greek-period customs buildings, and today's taverns and restaurants in this area are among the most commonly noted components of local memory. Another lagoon mentioned frequently is Taşburun Dalyan on the southern (left) side, also known as the "slaughterhouse" ("salhane") and "Menderes Mouth" ("Menderes Ağzı") or "Menderes Fork" ("Menderes Çatalı").

In summary, the distinction between the northern (right) and southern (left) sides of the river reveals differentiated socio-economic, ecological, and cultural patterns, where production-oriented and nature-oriented ways of life emerge in relation to the river's spatial organization. Local naming practices and expressions such as "our side" and "the other side" demonstrate how the river operates as a reference framework for spatial perception, identity construction, and everyday orientation. At the same time, the narratives attributed to settlements—reflecting agricultural production, migration histories, fishing practices, and ecological characteristics—highlight the multi-layered nature of the landscape, where material features and cultural meanings are deeply intertwined.

Menderes (Maeander) Delta as Cultural/Narrative Landscape Heritage | Menderes Plain Settlements Attributed Local Names | Nomenclatures and Their Socio-Cultural Background

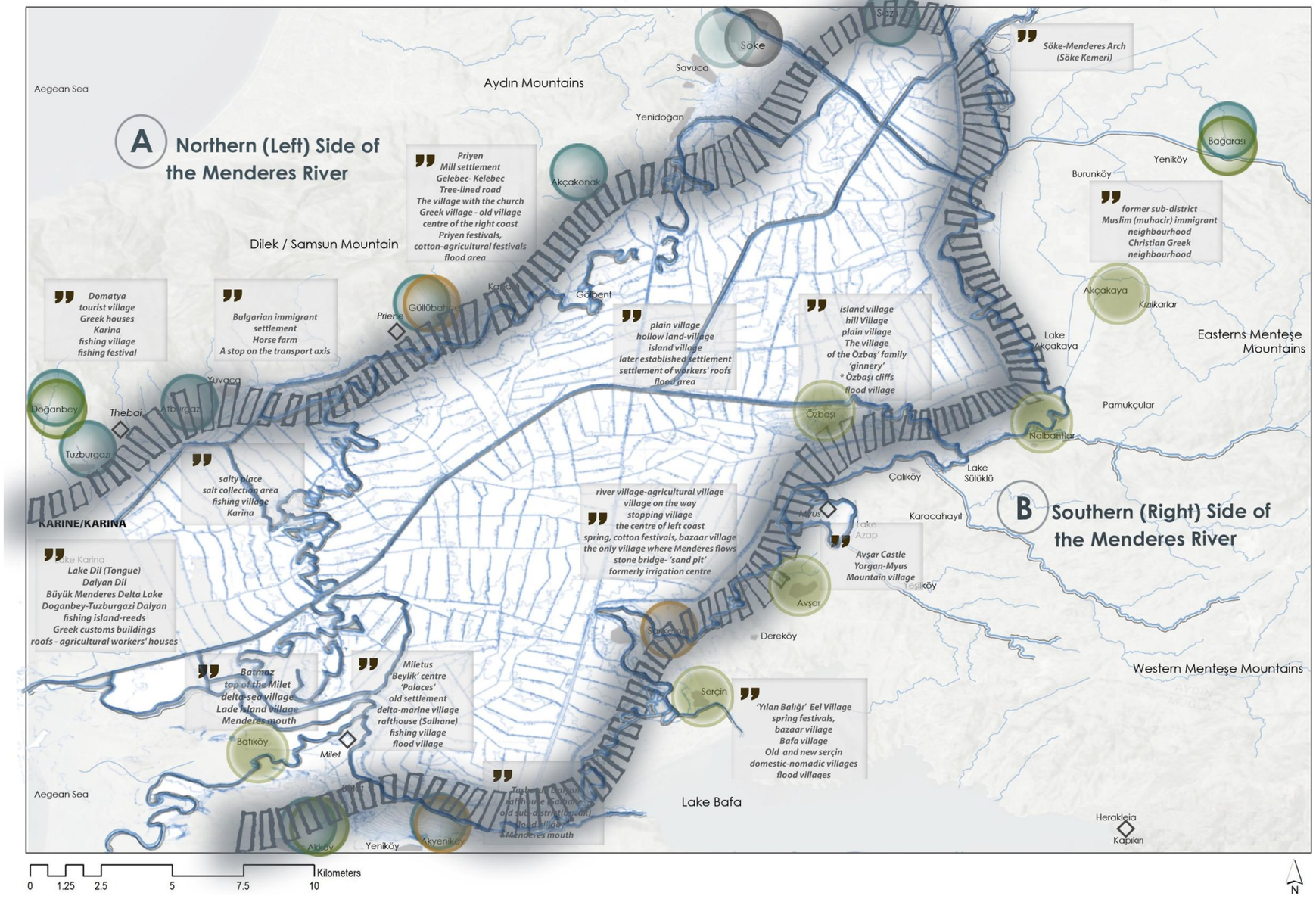


Figure 3.53 'The Two Sides of the Menderes' ('Menderes'in İki Yakası') Narratives: Northern and Southern/Right and Left Settlements, Centers, Local Names Attributed to the Settlements (Author, 2026)

Mnemonic Focal Places/Buildings and Key Figures/People in the Delta

This section conceptualizes the Menderes River Delta as a layered mnemonic landscape in which physical structures, focal places, and key figures function as anchors of memory, production, and identity, revealing how socio-economic and cultural processes are spatially materialized and continuously reinterpreted over time. Mnemonic focal places, buildings, and key figures in the delta constitute a layered network of places through which memory, production, and identity are attached in the Menderes River Delta. Agricultural structures, factories, mills, fountains, churches, markets, ancient cities, and archaeological remains—together with the families and individuals associated with them—serve as focal points of collective memory, revealing how social, economic, and cultural processes are spatially embedded and continuously reinterpreted over time.

The mills of Güllübahçe and Balat represent the continuity of production from the Ottoman period to the Republic, reflecting the persistence of an agrarian lifestyle and local industry. Greek houses in Doğanbey, abandoned after the population exchange, have been transformed into eco-tourism sites, while cotton ginning and oil factories, especially in Söke, mark the industrialization of agricultural production. Archaeological cities such as Priene, Milet, Myus, and Herakleia stand as both geological and cultural witnesses to the delta's formation and the role of water in shaping civilizations. Together, agricultural and industrial structures, along with markets, bridges, and religious buildings, function as mnemonic places that embody the collective memory of production, transformation, and social life in the riverine landscape (Figure 3.54).

The mill structures located in the Turunçlar Neighborhood of Güllübahçe are among the oldest production places in the delta. These mills, powered by the river's flow, were historically accessed by rafts from settlements situated on both the northern and southern sides of the Menderes. As a main stop and central point in raft transportation, Güllübahçe served as a hub for inter-village interaction, communication, and social relations (Figure 3.54).

Today, while some of the mills have fallen into ruin, the stone buildings and water channels remain visible. These remnants represent early mnemonic traces of the water-driven production economy. “Going to the mill was like a festival. People would cross on rafts carrying sacks; during weddings and ceremonies, the rafts around Güllübahçe created scenes full of joy and celebration.” (“Değirmene gitmek bayram gibiydi. Salların üstünde torbalarla geçilirdi, düğün ve tören geçişleri Güllübahçe çevresinde coşkulu sal görüntüleri ortaya çıkarırdı.”) The Ramazan Paşa (Kemer) Bridge is one of the region’s historical crossing points, and its surroundings have gradually transformed into a mnemonic place. The nearby streams (azmaks) and water sources hold cultural value both for their natural beauty and for the local stories associated with them. The area once known as the “Şarlak Waterfall” (“Şarlak Şelalesi”) stands today as one of the symbols of the lost narratives of nature within the delta. In contrast, the cement factory currently located in this area marks the industrial transformation that replaced the natural and historical landscape. Recalled by the local people as “one of the first polluting elements of the delta” (“deltayı kirletici ilk unsurlardan biri”), the cement factory frequently appears in both old photographs and oral narratives as a turning point in the environmental and cultural history of the Menderes River Delta.

During the Republican period, with the development of the cotton and agricultural industries, cotton ginning, textile, and plow factories were established in Söke. These factories symbolized the era in which manual labor merged with mechanization before the full industrialization of the delta. Prominent factory owners and families of this period, Tuntaşlar, Özbaşlar, Tanmanlar, and Göktepeler, remain key figures in the delta’s economic memory and continue to be frequently mentioned in local narratives (Figure 3.54). The factories are remembered as centers of social interaction, where weddings, festivals, and workers’ gatherings were held, embodying the rhythm of the delta’s industrial developments. In addition to the cotton ginning factories, the cotton centers, and the memories and narratives associated with this period, the emphasis the productive landscape of the delta. The Tariş cotton collection centers, storage buildings, weighing scales, warehouses filled

with cotton sacks, and queues of trucks together compose the visual and auditory memory of the delta's production landscape. During the cotton season, the act of purchasing cotton becomes a social ritual. "When the cotton season arrived, everyone would gather in front of Tariş". ("Pamuk zamanı geldi mi, herkes Tariş'in önünde olurdu.") This period represents a time when both the agricultural economy and the local memory were interwoven through production.

At the end of the 19th and the beginning of the 20th century, the Mac Andrews & Forbes Company established licorice-root factories in the region, integrating the Menderes River Delta into an international agricultural production network. Licorice cultivation was concentrated in the wetlands along the riverbanks, where villagers collected the roots and transported them to the factories. These factories symbolized the intersection of foreign capital and local labor in the delta. Although their physical traces have largely disappeared today, licorice-root cultivation still endures in the collective memory of the region. Along the Aegean coast, Karina Lake and the former customs buildings of Old Doğanbey stand as symbols of the economic and cultural connections established between the delta and the sea. The fishermen's shelters and the seasonal workers' huts built along the lakeshore formed temporary yet enduring living spaces created by small communities. These areas and their ephemeral shelters remain vividly remembered by the local people and serve as important narratives that reference the seasonal transformations of the landscape. They represent the memory of the intersection between water and labor/industry at the point where the river meets the sea. During the pre-mechanization period of cotton harvesting, temporary settlements established by seasonal workers formed a distinctive layer of both production and dwelling culture within the delta. These temporary houses or shelter settlements were typically established along the Söke–Didim road, around Karina Lake, along the main Menderes channel, and in the vicinity of Gölbent. These settlements represent a mode of living situated between transience and continuity in the delta. Today, they remain among the most frequently recalled local narratives, directly referencing the seasonal transformation and dynamic rhythm of the landscape.

The riverbeds, especially outside the flood seasons, served as spaces for livestock markets and temporary trade areas. “When the water receded, the riverbed turned into a flat plain; people would buy and sell animals, and exchange agricultural tools, tobacco bales, and cotton sacks there.” (“Suyun çekildiği dönemlerde nehir tabanı, düzlük hâline gelir; insanlar burada hayvan alım satımı yapar, tarım aletlerini, tütün balyalarını, pamuk çuvallarını takas ederlerdi.”) These temporary markets represented a spatial pattern attuned to the hydrological regime of the delta, economic rhythms organized in harmony with the cycles of nature. In the ancient cities of Priene, Milet, Didyma, and Herakleia ad Latmos, various social and cultural events, as well as ceremonies related to archaeological excavations throughout the 20th century, have created multilayered narrative spaces linking the past and the present within the delta. These events were represented in ways for the local people to reconnect with their historical memory. “When the excavation season came, the young men of the village would go to work at the ancient site. We used to take cigarette breaks among the ancient stones.” (“Kazı zamanı geldi mi köyün gençleri antik kentte çalışmaya giderdi. Antik taşların arasında sigara molası verirdik. “)

In summary, agricultural and industrial structures such as mills, factories, and storage facilities, together with religious buildings, markets, and archaeological sites, embody the continuity and transformation of production systems, linking water-driven practices to processes of industrialization and global integration. At the same time, the individuals and families associated with these places emerge as active agents in the construction of collective memory, embedding social relations and economic histories within the spatial fabric of the landscape.

Menderes (Maeander) Delta as 'Cultural-Narrative Landscape':A Life History of Created and Constantly Re-shaped and Re-constructed by Landscape Authors

Mnemonic and Narrative Areas/Buildings and Key Figures/People in the Delta (agricultural structures, factories, factory and farm owners/families, mills, fountains, churches, markets and trading places, ancient cities, and archaeological remains)

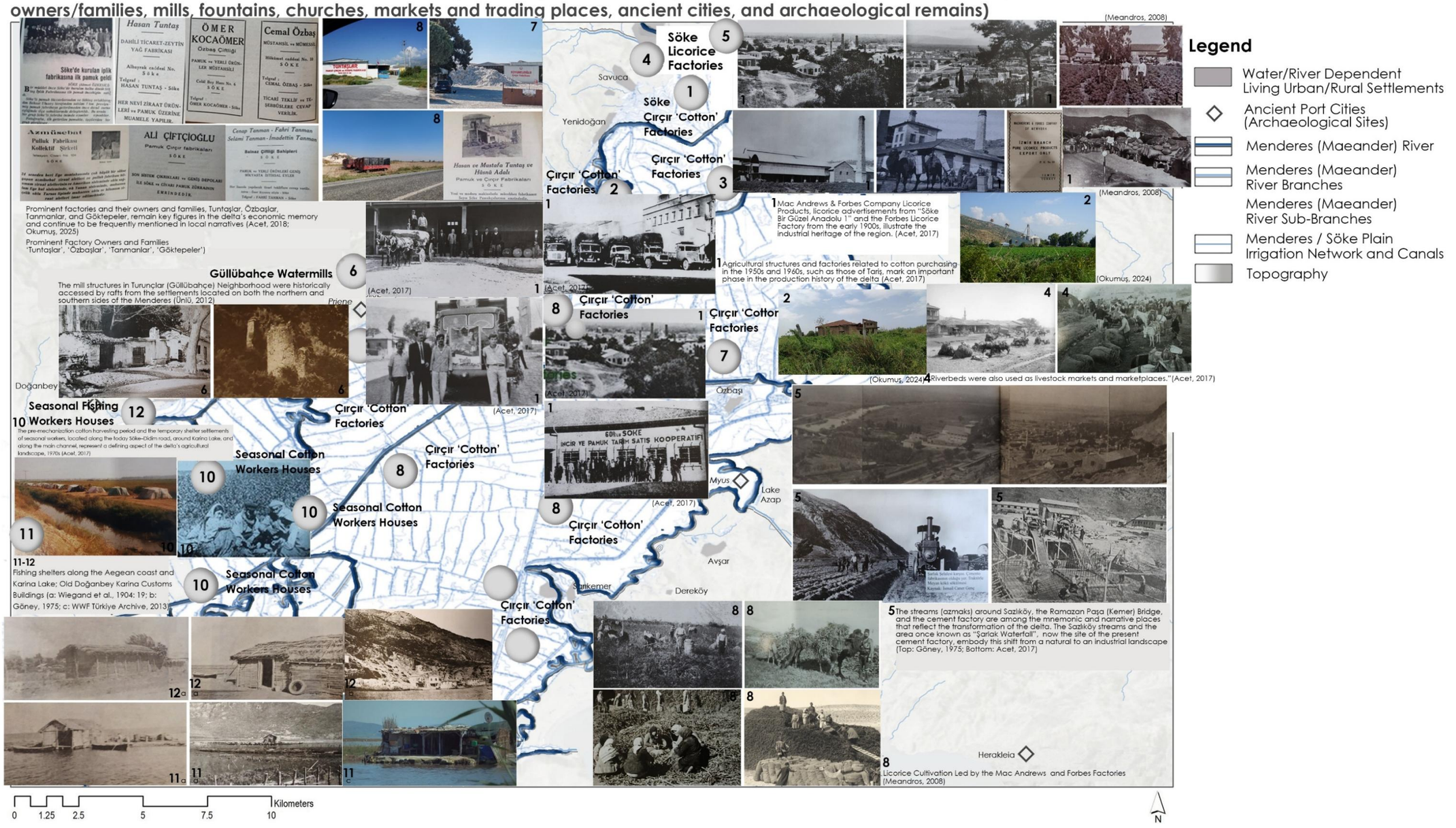


Figure 3.54 Agricultural Lands, Factories, Mills, Seasonal Workers' Houses, and Key Farm Owners/Families (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Focal Mnemonic Places and Narratives Regarding Local Landscape Activities/Events/Festivals, and in the Menderes River Delta

This section conceptualizes local activities, events, and festivals in the Menderes River Delta as contemporary expressions of a living landscape in which cultural practices, collective memory, and environmental experience are continuously reproduced and performed. Local landscape activities, events, and festivals in the Menderes River Delta, together with narrative mnemonic places, reflect the ongoing reproduction of cultural practices and collective memory within the landscape. These events and relevant mnemonic places embody shared experiences, seasonal rhythms, and community identities, revealing how the delta continues to be lived, remembered, and reinterpreted through social and cultural interactions (Figure 3.55; Figure 3.56; Figure 3.57)

Today, the Menderes River Delta stands as a 'living landscape' where components of nature and culture coexist through local events and tourism activities. As reflected in local narratives, these events include birdwatching in Lake Bafa National Park; archaeological walking routes in Herakleia and Kapıkırı; Doğanbey Village, known as the 'tourist village' with its stone houses and olive festivals; Karina Lagoon with its fish restaurants and fishing activities; Serçin with its eel festivals and spring celebrations; Güllübahçe with its Priene Festival and cotton, agriculture, and spring festivities; and Sarıkemer with its Cotton Festival. These settlements and activities constitute landscape elements where experiential connections between past and present continue to unfold. Local civil society organisations in the Menderes River Delta, particularly the Meandros Association, have historically played a significant role in raising awareness for the protection of cultural and natural heritage. Through nature walks, cycling routes, photography tours, and river-related events, the association has helped render the water landscape visible as both a 'living cultural landscape.' The activities of the association, still remembered by local communities today, aim to reconnect people and nature and to transform tourism into an experience-based conservation practice, thereby fostering a contemporary heritage consciousness rooted in the living dynamics of the delta.

In addition, two significant local events that sustain the continuity of water culture are the Serçin Eel Festival and the Karina Fishing Festival. Serçin Village, located at the eastern end of the Menderes River Delta, is well known for its Lake Bafa fishing and eel catching traditions. The annual Eel Festival held in the village demonstrates that fishing is preserved as a form of intangible cultural heritage. The festival features fishing competitions, traditional foods, folk dances, and collective gatherings by the lakeshore, all of which recreate the unity between water and community. Moreover, Karina Lake and its surrounding area, historically one of the most significant reference sites for water and fishing culture in the delta, remain narrative and mnemonic places that recall past fishing practices, fishermen's shelters, and old customs buildings. Today, despite being held irregularly, the Karina (Dil) and Taşburun Fishing Festivals continue to be organized, maintaining the site's importance for Doğanbey, Tuzburgazı, Akköy, Balat, and Akyeniköy in the context of fishing. These events represent contemporary examples of living landscape that celebrate and commemorate the interlinkage between human and water (Figure 3.55).

Agricultural festivals and fairs in the delta, particularly cotton festivals and spring celebrations, can be interpreted as celebrations of agricultural memory. The cotton festivals organized in Güllübahçe, Sarıkemer, and Söke are events that commemorate agricultural production and seasonal cycles. These festivals feature cotton-themed parades, folk dances, exhibitions, and competitions, transforming cotton production into a main component of collective identity. The Cotton Festival has evolved into a cultural representation of labor in the fields, where agricultural production memory turns into performance, and everyday life becomes a celebration. This transformation can be read as a symbol of the post-modernization shift in the delta, from production to narrative, from practice to representation (Figure 3.55).

Within the framework of the coexistence of ancient sites and contemporary cultural life, the settlement of Güllübahçe, historically associated with the ancient city of Priene, hosts the Priene (Priyen) Festivals held both in the modern village and within the archaeological site. Through theatrical performances, classical music concerts,

art workshops, and historical walks, the ancient city and its surroundings are transformed into a vibrant cultural stage. The festival renders Priene's cultural landscape identity visible once again, bridging academic inquiry and touristic experience. The Priene Festival thus embodies a tangible example of temporal continuity within the delta. Similarly, the walking routes and tourism activities around Herakleia (Kapıkırı) and Lake Bafa reveal the unity of ancient delta landscapes, mythology, memory, and place. Situated on the shores of Lake Bafa, Herakleia ad Latmos (Kapıkırı) represents a landscape where nature and history are intertwined and experienced together through its mythological past and panoramic scenery. The village, with its trails leading to Mount Latmos, rock paintings, and monastic remains, unveils the mystical layers of the landscape. In recent years, the Herakleia Tourism Route has emerged as a distinctive 'narrative landscape' that merges nature walks, cultural routes, and mythological storytelling. Unlike other tourism practices in the delta, this area represents a form of experiential heritage where natural and historical memory coexist and are continuously reinterpreted (Figure 3.56; Figure 3.57).

The most prominent tourism point within the delta, Doğanbey Village, is located inside the boundaries of the Dilek Peninsula–Büyük Menderes River Delta National Park and has been re-functionalized as a 'tourist village' through its preserved traditional architecture. The old settlement of Doğanbey (Domatia), abandoned by its Greek inhabitants during the population exchange period, was granted a conservation status in the 1990s and has since been redefined through the interrelation of cultural heritage and tourism. Today, the village stands as a site where the notions of eco-tourism and cultural heritage converge, offering both a space of experience and representation. For visitors, it embodies the reconstruction of an "authentic village atmosphere", while for the local people, it signifies the reclaiming of the spatial memory of the past. In this sense, Doğanbey symbolizes the delicate balance between conservation and tourism, as well as the broader debate between conservation and identity within the delta.

Although tourism pressure is not intense within the delta itself, the proximity of major tourist centers such as Kuşadası and Didim increases the potential for tourism investments and initiatives around the delta, which in turn places stress on the natural ecosystems and highlights the fragile equilibrium between conservation and use. In summary, the local activities that have emerged across the delta should be interpreted as narratives and mnemonic practices. From the nature walks organized by the Meandros Association to the ancient performances in Priene, from the eel festivals in Serçin to the cotton festivals in Güllübahçe, each event carries the multi-layered history of the Menderes into the present. These activities represent contemporary ways of retelling the landscape co-produced by the river, the soil, and the people.

In brief, these events—ranging from fishing festivals and agricultural celebrations to cultural and tourism-based activities—function as mnemonic practices that sustain and reinterpret the relationship between people, water, and place. Through festivals such as the Serçin Eel Festival, Karina Fishing Festival, and cotton celebrations in Güllübahçe and Sarıkemer, production-based practices are transformed into cultural representations, where labor, seasonal cycles, and local identity are collectively celebrated and reimagined. At the same time, tourism activities and cultural routes, particularly around Priene, Herakleia, and Doğanbey, reveal how historical layers and archaeological landscapes are reactivated as experiential spaces, bridging past and present through new forms of engagement (Figure 3.55; Figure 3.56; Figure 3.57).

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Narrative Mnemonic Routes and Focal Places | Local Activities, Events, Days and Festivals in Menderes/Söke Plain and Menderes Delta

Figure 3.55 Focal Mnemonic Places, Routes and Narratives Regarding Local Landscape Activities/Events/Days/Festivals (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

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Mnemonic and Narrative Areas/Buildings and Key Figures/People in the Delta (agricultural structures, factories, factory and farm owners/families, mills, fountains, churches, markets and trading places, ancient cities, and archaeological remains)

Figure 3.56 Ancient Port Cities/Archaeological Sites, Transportation Routes, and Local Events/Festivals (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

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Mnemonic and Narrative Areas/Buildings and Key Figures/People in the Delta (agricultural structures, factories, factory and farm owners/families, mills, fountains, churches, markets and trading places, ancient cities, and archaeological remains)

Figure 3.57 Ancient Port Cities/Archaeological Sites, Touristic Places and Local Events/Festivals (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

Narratives of Challenges, Risks, Pressures, and the Future of the River Delta

This section conceptualizes the Menderes River Delta under increasing pressure, where environmental degradation, industrialization, and large-scale interventions have fundamentally transformed both ecological systems and cultural perceptions of water. The Menderes River Delta has historically been associated not only with processes of production and settlement history but also with conditions of disease, reflecting the complex interplay between environmental dynamics, human habitation, and health-related vulnerabilities. This condition is primarily rooted in the river's alluvial transport capacity and the associated process of progradation. As sediments carried by the river accumulate in the delta, they advance the coastline while simultaneously creating low-gradient areas where water easily collects, and drainage remains limited. This morphological structure has facilitated the formation of extensive wetlands, especially following seasonal floods, providing suitable habitats for disease-carrying organisms. Since the 20th century, drainage projects, wetland reclamation, and river regulation interventions have aimed to reduce these health risks. However, these measures have also led to significant transformations in the ecological structure of the landscape. The reduction of wetlands, the decline in biodiversity, and the disruption of natural hydrological cycles have introduced new tensions among different components of the riverine landscape.

Pollution, environmental challenges, and increasing pressures in the Menderes River Delta pose significant threats to its ecological integrity and cultural landscape. Industrial discharge, agricultural challenges, water overuse, and urban expansion have altered natural processes and degraded habitats, highlighting the growing tension between development and the sustainability of the river–delta system (Figure 3.58). Once remembered as a landscape of abundance, the Menderes River Delta has, over time, seen its dominant narratives shift toward themes of industrial pollution, unplanned urbanization, agricultural chemicals, and ecological stress. The Menderes River, once called the "lifeblood" ("can damarı"), is now often referred to by local communities as "the sick river", "the muddy water", or "the black Menderes."

Textile plants, food industries, and olive oil processing facilities around Söke have accelerated the river's pollution over the past century. Large-scale pressures and threats across the basin have degraded the water quality of the delta, a change that local people describe poignantly as "the days when the Menderes could breathe are over." ("Menderes'in soluk aldığı günler bitti.")

Over time, the old canals, azmaks, and drainage systems of the delta have fallen into disrepair, leading to the uncontrolled spread of reeds and the formation of marshy areas. The reed beds, once integral to the living water cycle, are now perceived by local inhabitants as symbols of neglect. Places where the water no longer flows and where waste accumulates are referred to as "dead water", "swamp", or "rotten creek" ("ölü su", "batak", "çürük dere"). Although these zones remain ecologically significant as biological corridors, in human memory, they are perceived as "lost lands." This perception symbolizes the loss of nature's value in the modern era, marking a shift from viewing wetlands as living systems to interpreting them as signs of abandonment and decay (Figure 3.58).

In the context of water pollution and its sources, the cement factory located at the western end of the Menderes Basin stands as the most prominent symbol of industrialization in local narratives about the delta. The facility, situated along the Söke–Sazlı corridor, dominates the landscape with its massive physical presence while exerting environmental pressure through dust emissions, wastewater discharge, and thermal impacts. Its location, close to the river's floodplain and agricultural irrigation zones, has generated both ecological risks and social discontent. In addition to the cement plant, spinning mills, oil and cotton-processing factories, feed plants, and slaughterhouse waste have been discharged into the delta, causing an irreversible decline in water quality. The phrase "the water flowed gray or black" ("su gri veya siyah aktı") in local speech conveys both a physical observation and a symbolic expression of the river's lost spirit. Today, the Menderes River is frequently described by residents as "black, muddy, and turbid" ("kara, çamurlu, bulanık"). This is not just a visual description but also a narrative of

mourning: since in collective memory, Menderes water has long symbolized purity, fertility, and life, its darkening represents the contamination of these very values.

Moreover, large-scale industrial and construction investments throughout the basin have directly affected the water quality and ecological integrity of the delta. As locals put it, “All the basin’s pollution flows here” (“Bütün havzanın kirliliği buraya akıyor”), reflecting the cumulative impact of urban and industrial expansion in cities such as Denizli and Aydın. The industrial areas around Söke, along with the rapidly growing urban settlements, have introduced additional pressures on the delta. The discharge of untreated wastewater into riverbeds, the dumping of domestic waste into tributaries, and unplanned construction have produced a layer of urban pollution. This situation has particularly degraded the water quality in the river segments surrounding the urban area, blurring the boundary between agricultural and natural systems (Figure 3.58).

In addition to industrial waste and pollution entering the river and water systems at the basin scale, agricultural pollutants and irrigation residues, including chemical fertilizers and pesticides used in modern agriculture, are carried through rivers and irrigation canals all the way to the delta. The intensive use of nitrogen-based fertilizers in cotton and corn production has led to eutrophication and algal blooms, which have disrupted the oxygen balance in the lagoons. The green film that forms on the surface of the water is locally referred to as “the shell of the Menderes”. Furthermore, in the last two decades, the establishment of geothermal power plants (JES) throughout the Menderes Basin has introduced new pressures on both water resources and soil structures. The hot wastewater discharged from these plants mixes with groundwater and surface water, threatening the delta’s ecosystem due to heavy metals, boron, arsenic contamination, and thermal pollution. In particular, the concentration of geothermal activities along the Germencik–İncirliova–Söke corridor has created a new layer of environmental crisis. Alongside human interventions at both the basin and delta scales, climate change, as one of the defining forces of the age of multiple crises, has intensified the processes of change and transformation in precipitation and flow regimes. The resulting droughts and floods

have become central themes in the region's contemporary narratives. These processes constitute some of the most significant pressures and threats to the natural and environmental sustainability and ecological balance of the delta. Such pressures, which also disrupt the natural evolutionary processes of the delta, have deeply affected water resources, wetlands, biodiversity, marine, river, and lake ecosystems, agricultural monocultures, and the richness of local flora and fauna.

In summary, historically shaped by dynamic interactions between natural processes and human adaptation, the delta is now experiencing a critical shift in which the balance between production and sustainability is increasingly disrupted. Pollution from industrial discharge, agricultural chemicals, and basin-wide activities has degraded water quality, altering the ecological integrity of wetlands, lagoons, and river systems, while also reshaping local narratives that now describe the river as "sick," "muddy," or "black." These changing perceptions reflect not only physical deterioration but also the erosion of the symbolic meanings once associated with water as a source of life, fertility, and continuity. At the same time, interventions such as wetland drainage, river regulation, and geothermal energy production have intensified ecological fragmentation and disrupted natural hydrological cycles, creating new environmental vulnerabilities. The transformation of wetlands from productive and living systems into spaces perceived as "dead water" or "lost lands" further illustrates a profound shift in human–nature relations within the delta.

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Pollution, Challenges, Pressures, and Threats in Menderes/Söke Plain and Menderes Delta

Figure 3.58 Focal Places and Narratives Regarding Challenges, Pressures, and Threats in the Menderes Riverine Landscape Heritage (Menderes Riverine Landscape Heritage Atlas, Author, 2026)

The Menderess Delta is a multi-layered narrative landscape produced and reinterpreted across different scales and temporalities. In this context, the Söke urban core, the northern and southern riverside villages, the inland/alluvial plain settlements, the ancient port cities, and the transportation networks connecting them encompass symbolic, cultural, and experiential dimensions far beyond the built environment. This process constitutes a multi-layered structure extending from long-term mythological and symbolic narratives to narratives of production and transformation, as well as everyday experiences. This framework aims to evaluate the multiple meanings attributed to the Menderes riverine landscape across different scales, by different authors, and over different periods of time within a holistic perspective. In this sense, narratives constitute an essential interpretative tool for understanding the transformation of the Menderes River Delta from past to present and for developing perspectives regarding its future.

The Menderes River narrative landscape is shaped through mythological–symbolic layers, hydro-toponymic layers, landscape memory, and river identity narratives. The maeandering flow of the river has been interpreted since antiquity not only as a physical feature but also as a metaphor associated with the concepts of time, continuity, and transformation; this has led to the establishment of the concept of "maeander" in both linguistic and conceptual terms. The personification of the river, its representation as a divine entity, and its definition as a source of life demonstrate the continuity of the relationship between landscape and meaning. In this context, sacred and urban centers such as Milet, Priene, and Didyma emerge as spatial focal points where mythological and cultural narratives are produced. Natural processes such as delta progradation and shoreline change have, over time, been transformed into narratives; the inland positioning of port cities has generated powerful narratives embedded in the collective memory regarding landscape transformation. The main driving forces shaping these processes are the continuous influence of the natural environment, belief systems, ancient knowledge production, and reciprocal human–water relationships. Ancient texts, mythological references, the continuity of sacred sites, the sustainability of place names and river-related toponyms, and the

representation of the river as a source of life constitute the primary indicators of this long-term narrative layer (Table 3.3).

At the meso-scale, the narrative landscape is reshaped particularly through layers of agricultural production, water management, migration and mobility, and socio-spatial transformation. In this context, the agricultural production system that developed in the Menderes/Söke Plain has generated a strong economic and cultural representation, particularly through the narrative of "white gold" associated with cotton production. With the establishment of irrigation and drainage systems, the transformation of the relationship with the river has led to the emergence of new narratives expressing the transition from "living with water" to "controlling water." In this process, engineering interventions have changed narratives such as the "new course of the Menderes," through the redirection and regulation of the river. At the same time, the inland positioning of ancient cities such as Milet and Priene, which became disconnected from the sea, has been carried into the present through local narratives expressed as "these areas used to be the sea." Migration processes, particularly population exchange and rural mobility, have led to the redefinition of settlement identities, while the socio-spatial identities differentiated between the northern and southern riverside villages have also become evident narratives. Mobility relations established through river crossings, raft transportation "Menderes ships", and "Menderes Bridges" have reinforced narratives of passage and connection. The main driving forces shaping these processes are economic systems, population movements, and regional interactions. In this context, agricultural production narratives, distinctions between migrant and local populations "yerli and yörük", water-related toponyms, and transportation structures emerge as the primary indicators of narrative production (Table 3.3).

At the micro scale, the narrative landscape is shaped through everyday life practices, river flow, and experiences of environmental change, and local interventions. In settlements in and around Söke, the relationship with the river is continuously reproduced through daily water use, irrigation practices, and local events. Periods of floods and droughts are transformed into narratives as experiences embedded in

collective memory; expressions such as “the plain became the sea” constitute the narrative representation of these experiences. Practices such as markets established in riverbeds during drought periods enable local responses to environmental conditions to be transformed into narratives. At the same time, processes of environmental degradation and pollution reshape the perception of the landscape through expressions such as “Black Menderes.” Tourism activities, local festivals in the plain and settlements, and conservation/management practices contribute to the reinterpretation of the landscape and the production of new narratives. The main driving forces shaping these processes are large-scale interventions, climatic events, local community practices, and the tourism economy. While places such as bridges, mills, marketplaces, and archaeological sites become focal points of narrative production, flood and drought narratives, discourses related to water management interventions, and contemporary forms of representation constitute the primary indicators of this process (Table 3.3).

The Menderes (Maeander) River Delta, when approached as a narrative landscape, reveals a multi-layered structure in which meanings, memories, and spatial practices are continuously produced through diverse narrative forms. Within this framework, the landscape can be analytically understood through its narrative layers, the dynamics that continuously reproduce and transform these layers, and the indicators through which these processes become visible in space and memory. The narrative layers include mythological–symbolic meanings, historical–transformational processes, socio-economic production practices, migration and identity formations, mnemonic places and spatial structures, and contemporary environmental and experiential narratives. These layers are shaped by dynamic processes such as the reinterpretation of myths, geomorphological transformations translated into memory, agricultural production and water management practices, population movements, modernization and infrastructural interventions, and contemporary environmental pressures. The indicators of this narrative landscape emerge as spatial, linguistic, and experiential traces, including local expressions, place names, settlements, production structures, infrastructures, rituals, festivals, and everyday practices. In this sense, the Menderes River Delta functions as a continuously

evolving narrative system, where layers, dynamics, and indicators are interconnected and collectively reveal the life history of a landscape that is constantly created, re-shaped, and re-constructed by its landscape authors (Table 3.3).

Table 3.3 Menderes River Delta as 'Narrative Landscape': Layers, Dynamics, Driving Forces, and Indicators

Scale	Layers	Dynamics	Driving Forces	Indicators (Narrative Traces)
Macro (upper) Scale – longue durée	Mythological–Symbolic Layer; Hydro-toponymic Layer; Landscape Memory Layer; River Identity Narratives	Personification of the river (river gods); production of mythological and philosophical meanings; continuity between place and meaning; transformation of natural processes into narratives (maeandering, time, continuity); reinterpretation across periods; delta progradation and shoreline shifts interpreted through narratives, including the transformation of port cities into inland settlements	Belief systems and mythology; perception of the natural landscape; ancient knowledge production; human–water relationships	Ancient texts and descriptions; mythological references; continuity of sacred places; persistence of place names; the concept of "maeander" in language; representations of the river as a "lifeline" or "source of life."

Table 3.3 Continued

Meso (regional–territorial) Scale – conjonctures	Agricultural–Production Layer; Water Management and Modernization Layer; Migration and Identity Layer; Mobility and Transportation Layer; Socio-spatial Change Layer	Narrativization of coastal change ("these areas used to be the sea"); production of narratives through agricultural practices ("white gold"); expansion of agriculture, irrigation, and mechanization; transition from living with water to controlling water through engineered systems; migration and identity formation	Economic systems (agriculture, trade); transition from Ottoman to modern socio-economic structures; population movements; regional interactions	Narratives of inland shifts of Milet and Priene; seashell traces; cotton-related narratives ("white gold"); distinctions between migrant and local populations; raft and river-crossing narratives ("Menderes ships"); water-related toponyms (e.g., Subaşı, Çaybaşı); irrigation infrastructure
Micro (settlement and intra-settlement) Scale – l'histoire événementielle	Mnemonic–Spatial Layer; Ecological and Environmental Layer; Risk and Resilience Layer; Everyday Narrative Layer; Contemporary Cultural Layer	Transition from living with water to controlling water; experiences of floods and droughts; perception of environmental degradation ("black Menderes"); production of memory through places and everyday practices; interaction between environmental processes and human pressures; adaptation and resilience; reproduction of landscape through tourism, festivals, and heritage practices	State-led interventions (DSİ); climatic events; local community practices (agency); tourism and neoliberal economic dynamics; conservation policies	Narrative places such as bridges, mills, markets, and archaeological sites; "crossing the Menderes" narratives; accounts of engineered interventions (e.g., "new course of the Menderes"); flood narratives ("the plain became the sea"); drought-related practices (e.g., markets in riverbeds); pollution narratives ("black Menderes"); festivals and cultural events; contemporary representations (e.g., social media)

3.2 Current Situation and Approaches Created by Upper Scale and Territorial/Regional Landscape Authors: Preserving and Managing Menderes (Maeander) River Delta as Riverine Landscape Heritage

During the Republican period, the establishment of village organisations, the construction of public institutions, and land reform initiatives reshaped the administrative structure of the delta. In the early years of the Republic, these dynamics merged with modernization policies and the nation-state's agricultural development strategies. Land reforms, the institutionalization of village governance, and the creation of public service infrastructure collectively redefined the administrative framework of the deltaic landscape. In this regard, Ottoman archival documents, travelers' reports, and historical maps, along with land reclamation projects of the Republican period and agricultural production statistics and population censuses from the 1920s onward, constitute key indicators for understanding the evolving administrative landscape of the Menderes River Delta. After 1950, in line with the state's developmentalist policies, the Menderes River Delta became a major implementation area for large-scale irrigation and flood control projects, primarily led by the State Hydraulic Works (Devlet Su İşleri – DSİ). During this period, the state's role in the delta strengthened considerably through DSİ's initiatives, and dams, irrigation canals, and drainage systems emerged as the main components of the administrative landscape (DSİ, 1972). The governance layer of the delta was further shaped by the rapid expansion of rural settlements, the establishment of agricultural cooperatives, and the formation of irrigation unions.

Today, the Menderes River Delta and its riverine landscape are subject to the interventions, decisions, and projections of numerous authors operating at different scales, encompassing both its natural and cultural values. This situation renders the delta a complex heritage place shaped by multilayered institutional structures, policy documents, and planning practices functioning across various levels of governance. At the local scale, municipalities, provincial administrations, and local irrigation unions play key roles in the everyday management of the landscape through zoning

plans, conservation-oriented development plans, infrastructure projects, and irrigation management. The delta today exhibits a stratified structure defined simultaneously by its natural–ecological boundaries (river, lagoon, coastline) and its administrative boundaries (province, metropolitan municipalities, district municipalities, neighborhoods, and settlements).

In its geographical and administrative scope, the Menderes Basin extends across a vast territory encompassing Afyonkarahisar, Aydın, Burdur, Denizli, Isparta, İzmir, Kütahya, Manisa, Muğla, and Uşak. The Menderes River Delta, currently located within the provincial boundaries of Aydın and administratively falling under the districts of Söke and partly Didim, is also influenced by the upper-scale administrative jurisdictions of Kuşadası, Germencik, Koçarlı, and İncirliova. Ecologically and geographically, the associated areas include Lake Bafa (partly on the Muğla–Milas border), the Dilek Peninsula (within the Kuşadası boundary), and the Lower Basin of the Menderes River extending along the Söke Plain (Figure 3.59; Figure 3.60).

One of the key geographical characteristics shaping the Menderes River Delta, predominantly located within the Söke District, is the distinct social, ecological, and economic character observed between the two sides of the river. In the past, the settlements now affiliated with Söke were governed by Güllübahçe Municipality on the northern side and Sarıkemer and Akyeniköy Municipalities on the southern side. The current Local Service Centers established in these areas serve as indicators of this former administrative structure. Administratively, the delta, historically divided into northern and southern axes, is now entirely contained within the authority of the Söke District Municipality. Moreover, Doğanbey to the north and Bağarası and Akköy to the south were formerly recognized as central bucak (subdistrict) settlements. Söke District today functions as the principal administrative center and the governance core of the delta. The fertile agricultural plains stretching across the valley, industrial zones, settlement patterns, and most of the management boundaries responsible for controlling the delta’s ecosystem lie within the boundaries of the

Aydın Metropolitan Municipality and the Söke Municipality (Figure 3.59; Figure 3.60).

Boundaries of Administrative Responsibilities in Menderes (Maeander) Riverine Landscape

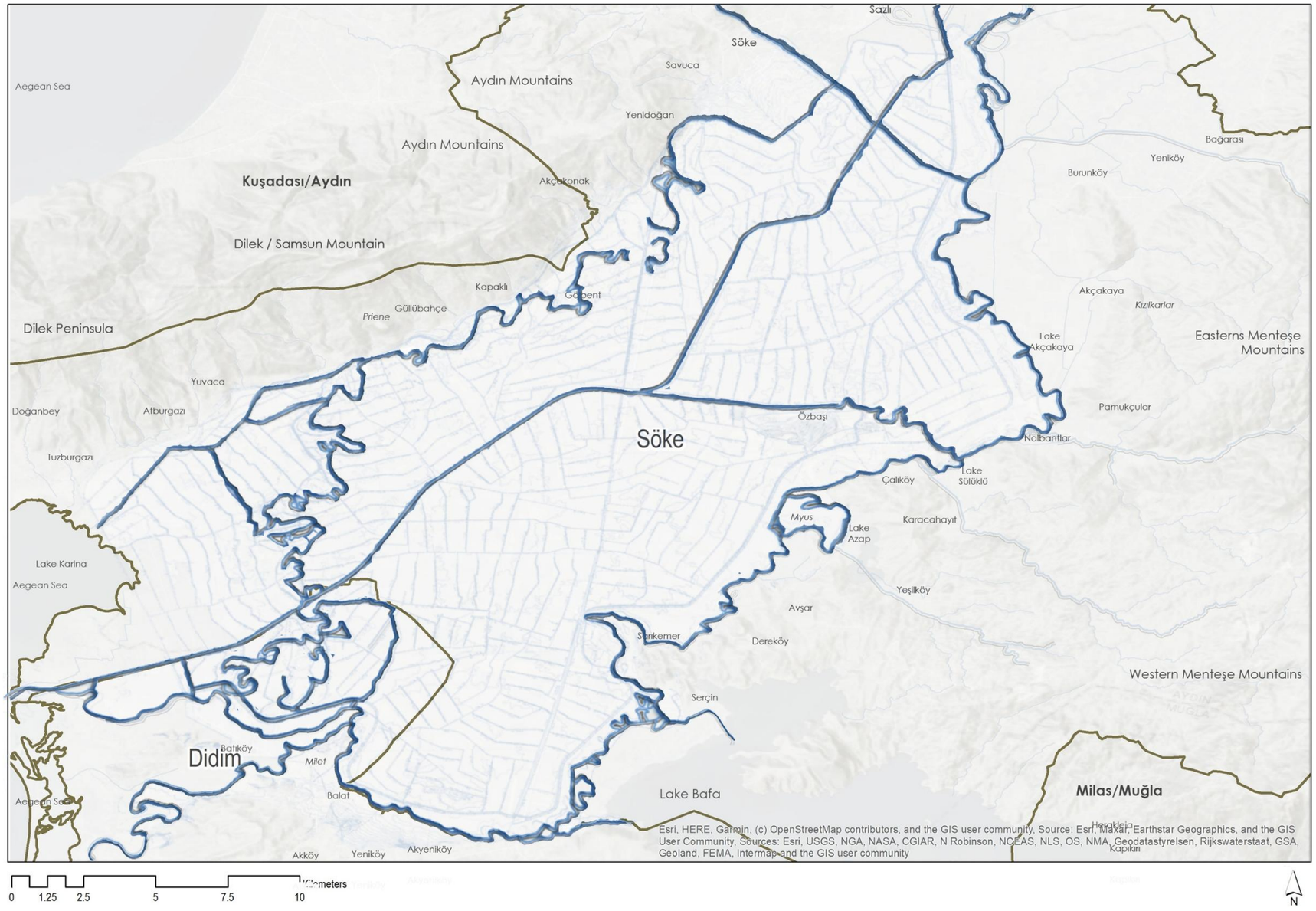


Figure 3.59 Boundaries and Administrative Responsibilities of Metropolitan Municipalities (Muğla, Aydın) and District Municipalities (Söke, Didim, Milas, Kuşadası) (Author, 2026)

Boundaries of Administrative Responsibilities and Neighbourhoods in Menderes (Maeander) Riverine Landscape

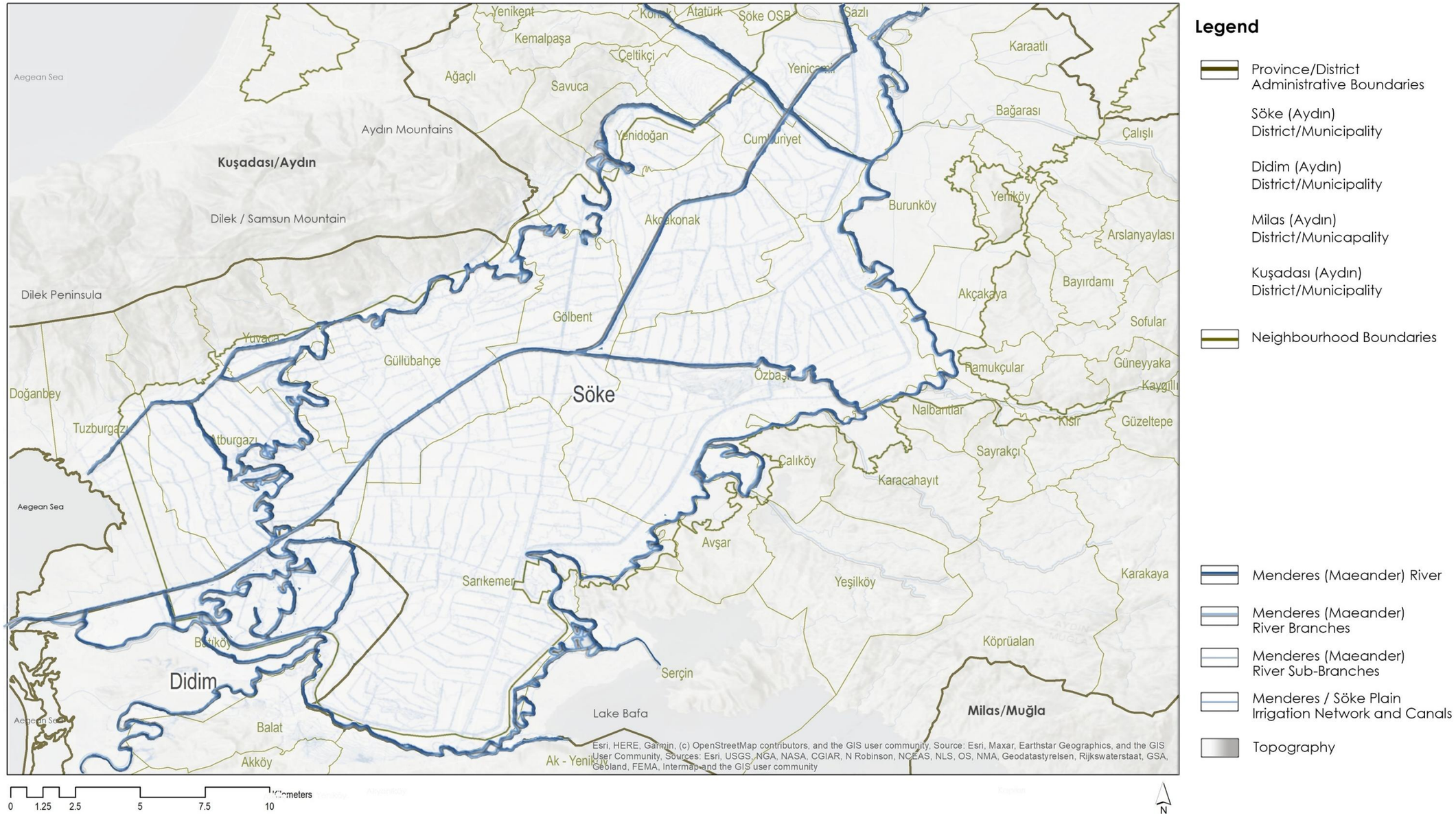


Figure 3.60 District Municipalities (Söke, Didim, Milas, Kuşadası) and Neighborhoods in Menderes (Maeander) Riverine Landscape (Author, 2026)

3.2.1 Multi-Scale Natural and Cultural Heritage Places: Conservation and Management Sites

The Menderes River Delta represents one of the most dynamic and multilayered riverine landscapes of Anatolia. Ecological processes, cultural practices, and socio-economic transformations have interacted continuously here for millennia, making the delta remarkable for its wetlands of international significance, endemic species, and fragile ecosystems, and its rich cultural landscape interwoven with agriculture, settlements, mnemonic places, and cultural heritage. Understanding the delta as a complex riverine landscape heritage requires moving beyond the traditional dichotomies of nature and culture, adopting instead a holistic perspective that recognizes the deep interconnection between natural processes and human activities.

In the context of Türkiye, the governance of the Menderes River Delta is shaped by a multilayered legal, administrative, and institutional framework. Within this framework, the delta simultaneously demonstrates both the potential of holistic approaches and the challenges generated by fragmented governance and management issues. On one hand, basin management plans, strategic environmental assessments, and flood/drought risk frameworks increasingly reflect a landscape-scale and integrative understanding of management. On the other hand, the overlapping authorities of different ministries, the lack of inter-institutional coordination, and the pressures induced by agriculture, industry, urbanization, and climate change continue to threaten the integrity of the landscape. In this sense, the delta serves as a crucial laboratory for observing the transformation of approaches to conservation and heritage management: from the nature–culture dualism that dominated the protection approach in the 1980s and 1990s to the integrative basin management, ecological risk assessment, and landscape-based approaches that have evolved since the 2000s and 2010s.

The Menderes riverine landscape and its delta represent a multilayered heritage system in which natural and cultural values intersect across local, regional, national, and international scales. As a riverine landscape, it encompasses diverse forms of heritage, from archaeological and urban conservation sites within ancient settlements to wetlands that sustain biodiversity and ecological continuity, coastal ecosystems, and legally protected natural areas. These overlapping, intersecting, or diverging layers of heritage simultaneously function as local mnemonic places, areas of ecological and cultural significance at the national level, and potential assets of international recognition within global conservation frameworks.

The Menderes River Delta stands among the most significant natural heritage areas due to its biological diversity, wetlands, position along migratory bird routes, and the ecosystem services it provides. Alongside the Gediz and Küçük Menderes River Deltas, the Büyük Menderes River Delta forms one of the most important delta systems in western Anatolia. The delta's dynamic structure, its shifting coastline, the cyclical renewal of its floodplains, and the natural evolution of its geomorphology demonstrate its nature-based transformation (Büyük Menderes Basin Atlas, 2012). These natural dynamics have directly influenced human settlement patterns and shaped land-use decisions around the river. Throughout history, the Menderes River Delta has hosted numerous civilizations, encompassing ancient cities, sacred sites, rural villages, agricultural production areas, and water-related infrastructures. This multilayered character extends beyond archaeological and architectural remnants, encompassing oral traditions, customary practices, and symbolic meanings that ensure its cultural continuity (Fairclough et al., 2008). The maeandering form of the Menderes River has also appeared in cultural production as a pattern, a symbol, and a metaphor of flow.

At the local and regional levels, the delta reflects long-term interactions between people and the river through its archaeological sites, living urban and rural settlements, and the interrelations among the natural, cultural, historical, economic, mental, and narrative components of the landscape, as well as through agricultural practices. Many of these areas have been officially registered as archaeological

and/or urban conservation sites. However, their significance extends beyond physical remains, encompassing intangible heritage and the everyday practices that sustain the living character of the delta. In that sense, the Menderes riverine 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/or conflicting values and dilemmas have created new types of heritage through space and time. Natural environments, urban and rural settlements, and archaeological sites formed and re-shaped by water and the Menderes River Delta are conserved/designated 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 decision-makers, at both the national and international level (Büyük Menderes Basin Atlas, 2012) (Figure 3.61; Figure 3.62; Figure 3.63; Table 3.4)

Table 3.4 Conservation and Management Areas in Menderes River Delta (Figure 3.61; Figure 3.62; Figure 3.63)

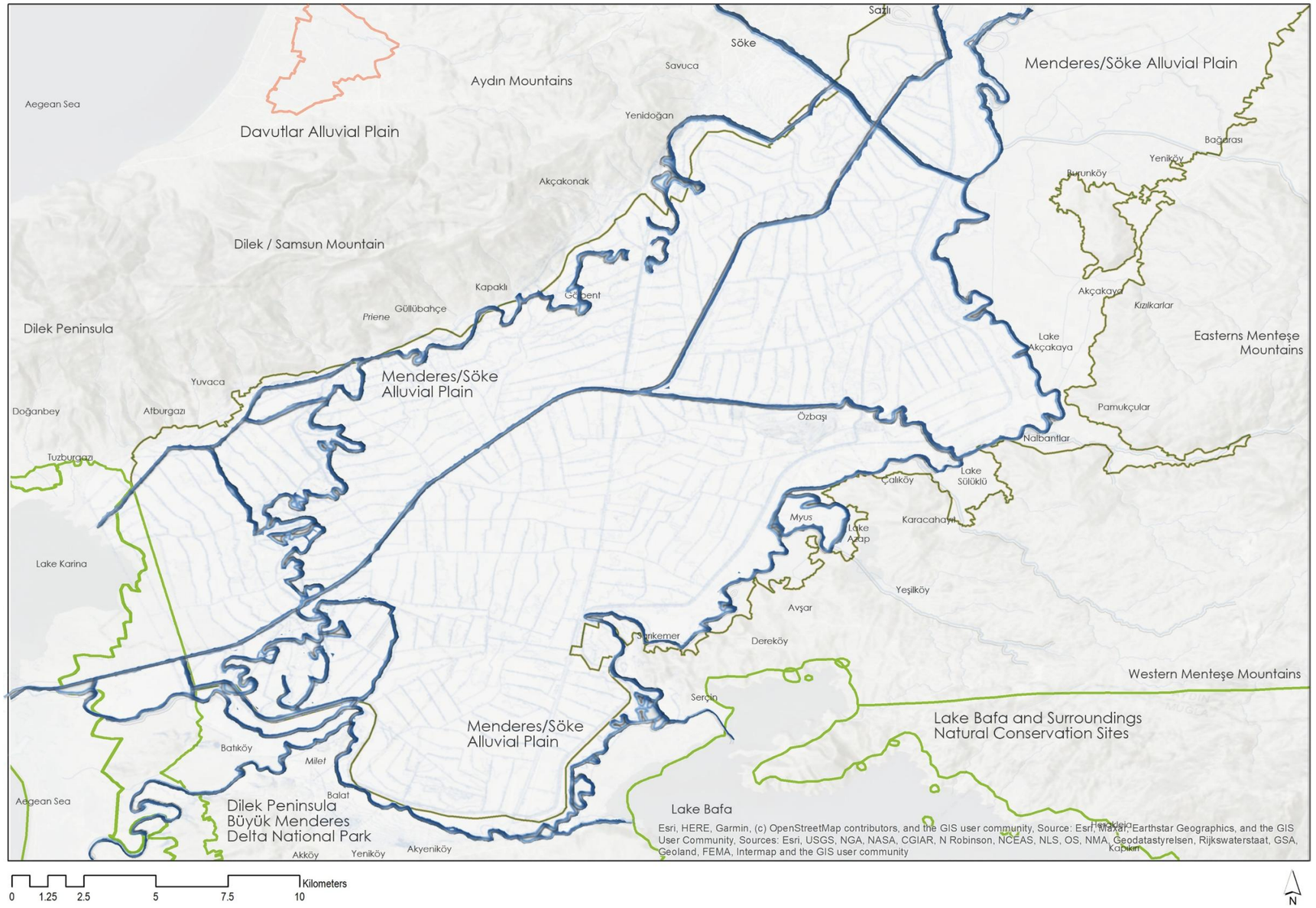
Designation	Related Areas	Description
Natural Conservation Sites (Strictly Protected / Qualified Protected / Sustainable Use Areas) Natural and National Parks	Lake Bafa and surroundings; Dilek Peninsula–Büyük Menderes River Delta National Park; Wetlands and lagoons; Agricultural production areas, Alluvial plain	Legally protected ecological zones, including strictly protected areas, qualified conservation zones, and sustainable use areas; critical habitats for biodiversity and ecosystem continuity
Ramsar Site (International Wetland Protection) Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)	Delta lagoons and wetland systems	Internationally recognized wetlands with high biodiversity value, especially for migratory birds and aquatic ecosystems

Table 3.4 Continued

Archaeological Conservation Sites	Milet, Priene, Myus, Herakleia; Panionion; Monasteries; Necropolises; Rock settlements and ancient harbors	Multi-layered archaeological landscapes reflecting long-term human–water interaction and historical settlement patterns
Urban Conservation Sites	Söke; Doğanbey; Akköy	Settlements preserving traditional urban/rural fabric and architectural heritage
Historic Conservation Sites	Savuca; Yenidoğan	Areas reflecting cultural memory, local history, and socio-spatial continuity
Registered Buildings and Lots	Mosques, churches, farm buildings, olive oil factories, industrial structures, bridges, fountains	Individually registered cultural assets representing architectural, industrial, and rural heritage

In summary, today, the 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 River 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 vary 1) natural and cultural landscapes, wetlands, agricultural lands, alluvial plains and historic lakes and islands and 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; and 3) archaeological remnants of ancient cities such as ancient ports and port streets, monuments and gates, port colonnades, city walls, temples, places of worship sacred roads (Figure 3.64).

Natural Conservation Sites and Their Management Boundaries in Menderes (Maeander) Riverine Landscape

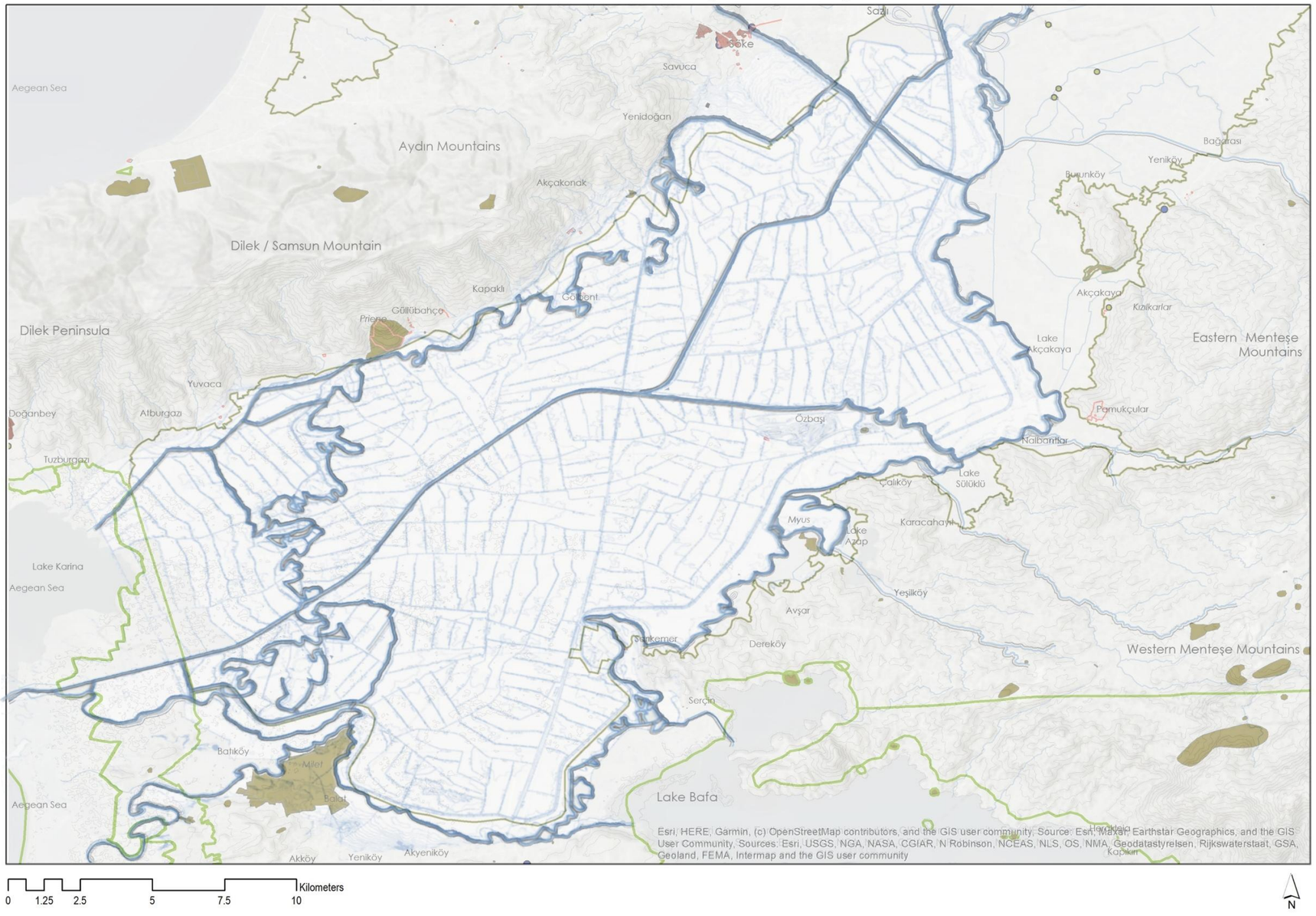


Legend

- Natural Conservation Sites
  Their Management Boundaries
  - Dilek Peninsula- Büyük Menderes Delta Natural Site and National Park (Strictly Protected Sensitive Area) (Qualified Natural COnservation Site)
  - Lake Bafa and Surroundings Natural Conservation Sites
- Alluvial Plain Boundaries
  - Menderes/Söke Alluvial Plain
  - Davutlar Alluvial Plain
- Menderes River Basin Boundaries
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 3.61 Natural Conservation Sites and Management Areas and Boundaries in Menderes (Maeander) Riverine Landscape (Author, 2026)

Conservation Sites and Management Areas in Menderes (Maeander) Riverine Landscape



Legend

Archaeological Sites

Ancient Cities / Archaeological Settlements (Miletus, Priene, Myus, Thebai, Herakleia, Leukophrys), Prehistoric Rock Art and Hellenistic–Roman Tombs (Ballıkaya), Funerary Monuments, Rock Shelters, Necropolis Areas, Sanctuary Sites, Fortresses and Fortress Remains, Rock Passages and Water Passages, Monasteries and Monastic Remains, Mounds (Höyüks) and Settlement Areas, Early-Period Caves, Roman and Byzantine Period Remains, Ancient Workshop/Industrial Activity Areas, Hilltop/Island Archaeological Settlements, Historic (Late Byzantine) Farm Complexes.

Urban Conservation Sites

Söke Urban Conservation Sites
Doğanbey Urban Conservation Site
Akköy Urban Conservation Site

Historic Conservation Sites

Martyrdom Sites / Martyr Memorial Areas (Savuca, Yenidoğan)

Registered Lots
Registered Buildings

Mosques and Cemeteries (Burunköy, Bağarası, Kalcık), Sazlıköy Fountain, Güllübahçe Mills, Water Channels, Wells, Fountains, Water Mills (Karacahayıt, Güllübahçe, Akçakaya), Storage Structures (Lake Karina), Train Station Buildings, Greek-Period Churches (Akköy, Güllübahçe, Doğanbey, Bağarası), Tanneries and Olive Oil Factories, Caravanserais (Mountain Settlements), Sarıkemer and Gölbent Bridges

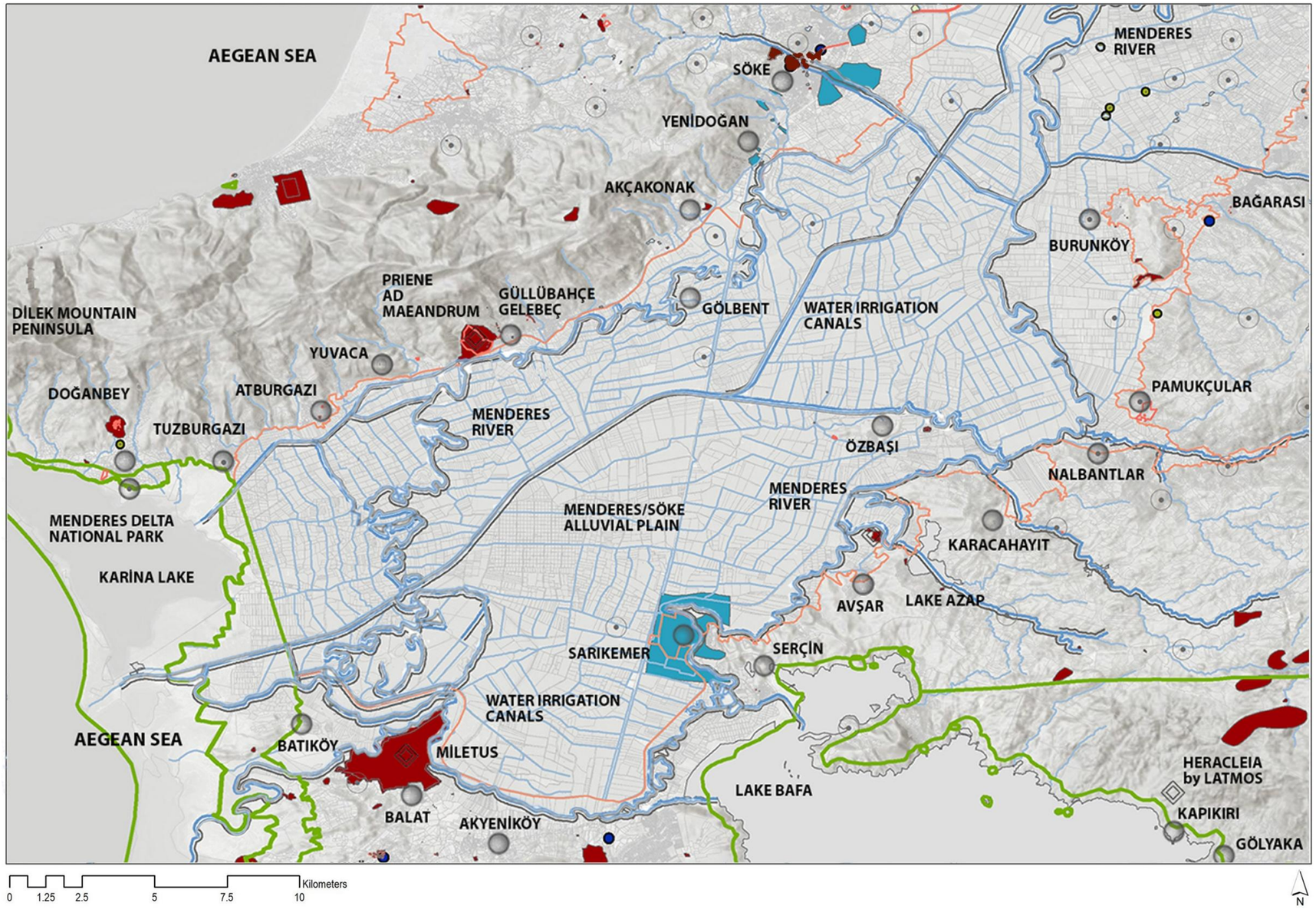
Natural Conservation Sites

Büyük Menderes Delta Natural Site (Strictly Protected Sensitive Area), Büyük Menderes Delta Natural Site (Qualified Natural Conservation Site), Dilek Peninsula–Büyük Menderes Delta National Park, Lake Bafa and Surroundings Natural Conservation Sites

Registered Trees
Menderes River Basin Boundary
Menderes Alluvial Plain Boundary
Menderes (Maeander) River
Topography

Figure 3.62 Conservation Sites and Management Areas in Menderes (Maeander) Riverine Landscape (Author, 2026)

Natural and Cultural Heritage Conservation Sites in Menderes (Maeander) Riverine Landscape



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Conservation Sites

Archaeological Sites

Ancient Cities / Archaeological Settlements (Miletus, Priene, Myus, Thebai, Herakleia, Leukophrys), Prehistoric Rock Art and Hellenistic–Roman Tombs (Ballıkaya), Funerary Monuments, Rock Shelters, Necropolis Areas, Sanctuary Sites, Fortresses and Fortress Remains, Rock Passages and Water Passages, Monasteries and Monastic Remains, Mounds (Höyüks) and Settlement Areas, Early-Period Caves, Roman and Byzantine Period Remains, Ancient Workshop/Industrial Activity Areas, Hilltop/Island Archaeological Settlements, Historic (Late Byzantine) Farm Complexes.

Urban Conservation Sites

Söke Urban Conservation Sites
Doğanbey Urban Conservation Site
Akköy Urban Conservation Site

Historic Conservation Sites

Martyrdom Sites / Martyr Memorial Areas (Savuca, Yenidoğan)

Registered Lots

Registered Buildings

Mosques and Cemeteries (Burunköy, Bağarası, Kalcık), Sazlıköy Fountain, Güllübahçe Mills, Water Channels, Wells, Fountains, Water Mills (Karacahayıt, Güllübahçe, Akçakaya), Storage Structures (Lake Karina), Train Station Buildings, Greek-Period Churches (Akköy, Güllübahçe, Doğanbey, Bağarası), Tanneries and Olive Oil Factories, Caravanserais (Mountain Settlements), Sarıkemer and Gölbent Bridges

Natural Conservation Sites

Büyük Menderes Delta Natural Site (Strictly Protected Sensitive Area), Büyük Menderes Delta Natural Site (Qualified Natural Conservation Site), Dilek Peninsula–Büyük Menderes Delta National Park, Lake Bafa and Surroundings Natural Conservation Sites

Registered Trees

Water/River Dependent Living Urban/Rural Settlements
Alluvial Plain's Cadastral Pattern
Flood Plain Areas
Alluvial Plain Boundaries
Menderes (Maeander) River
Menderes (Maeander) River Branches
Menderes (Maeander) River Sub-Branches
Menderes / Söke Plain Irrigation Network and Canals
Topography

Figure 3.63 Conservation Sites and Management Areas in Menderes (Maeander) Riverine Landscape (Author, 2026)

Within this framework, the Menderes riverine landscape stands as a heritage place in which natural and cultural heritage are deeply intertwined. While the delta formed by the river, its wetlands, floodplains, and agricultural lands, represents a landscape shaped by natural processes, the ancient cities, historic urban and rural settlements, landscape narratives, stories, rituals, and river-based life practices embody the traces of cultural heritage. In this regard, the management of the landscape requires integration across spatial scales, legal frameworks, and institutional authors. Such complexity necessitates the development of participatory, ecosystem-based, and culturally sensitive strategies that connect local practices with national policies and global heritage discourses. Today, both the ecological and cultural components of the delta are under increasing threat. The fragmented implementation of natural and cultural conservation statuses, the challenges of achieving holistic conservation and management, unplanned development, and fragmented planning processes contribute to administrative, legal, and institutional complexity. In this respect, this fragmentation limits the participation of local communities in its governance, transforming the Menderes River Delta into a landscape heritage at risk.

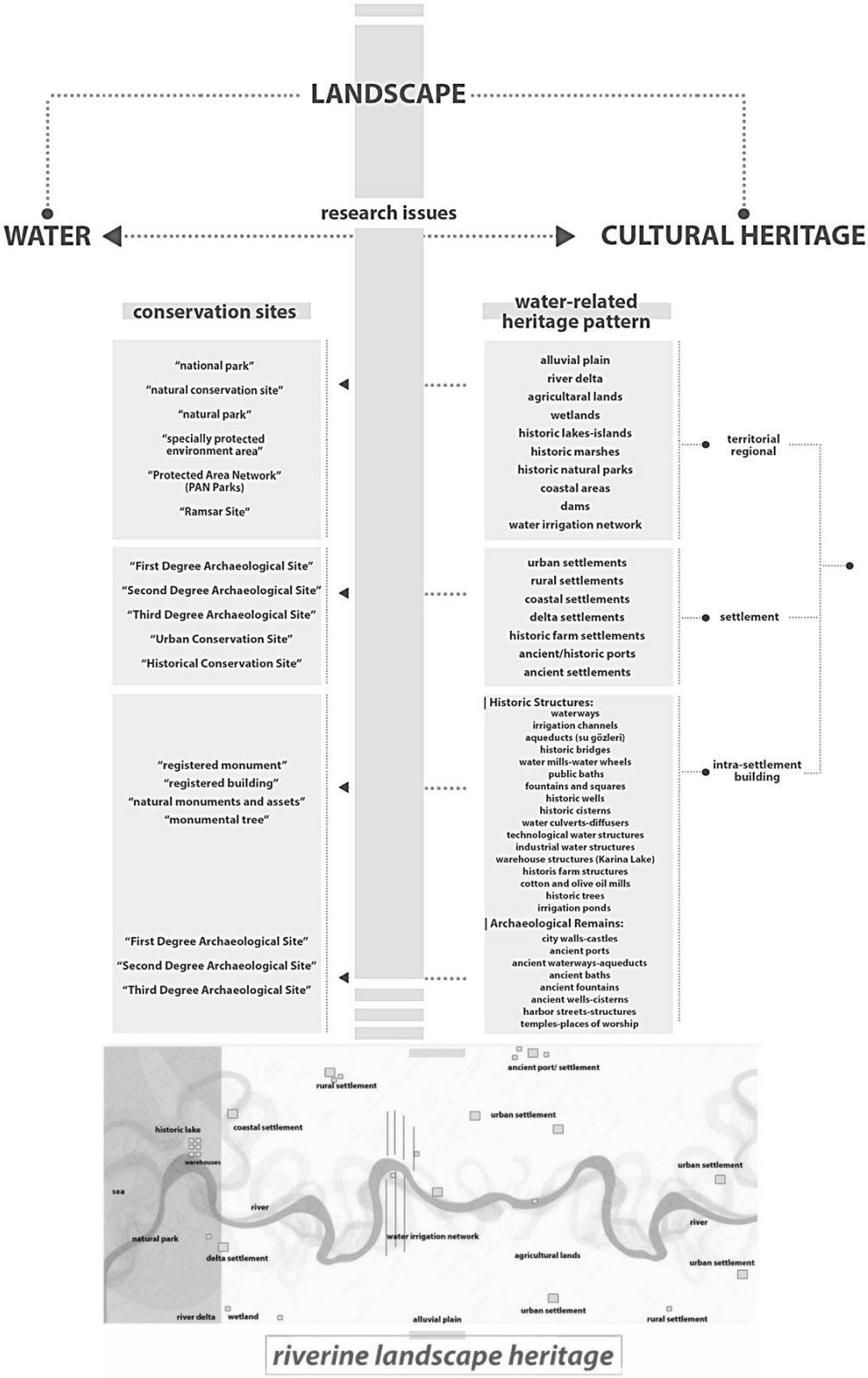


Figure 3.64 Conservation and Management Areas and Heritage Patterns (Author, 2026)

3.2.2 Multi-Scale Authors: Their Roles and Projections

The Menderes Riverine landscape emerges as a product of physical and ecological processes and a socio-spatial system shaped by a multi-layered institutional structure and upper-scale decision-makers. In this context, the landscape illustrates the responsibilities of various upper-scale authors, the plans, policies, and strategic documents developed over time, and their impact on the landscape. The relationship between upper-scale authors and policy frameworks demonstrates that the Menderes Riverine landscape should be understood as a complex governance arena structured through multi-author interactions.

At the national level, multiple overlapping ministries and general directorates, including the Ministry of Environment, Urbanization and Climate Change (Çevre, Şehircilik ve İklim Değişikliği Bakanlığı); the Ministry of Culture and Tourism (Kültür ve Turizm Bakanlığı); the Ministry of Agriculture and Forestry (Tarım ve Orman Bakanlığı); the State Hydraulic Works (Devlet Su İşleri – DSİ); DSİ Irrigation Unions (Sulama Birlikleri); the General Directorate of Nature Conservation and National Parks (Doğa Koruma ve Milli Parklar Genel Müdürlüğü); the General Directorate for the Protection of Natural Assets (Tabiat Varlıklarını Koruma Genel Müdürlüğü); and the Turkish Water Institute (SUEN – Türkiye Su Enstitüsü), assume diverse administrative roles within the delta and its broader landscape through the preparation of plans, regulations, action frameworks, and strategic programs. These authors hold responsibilities ranging from wetland conservation and cultural heritage registration to basin management planning and flood or drought risk projections.

Additionally, projects implemented through provincial governorships (valilikler), regional development agencies, civil society organisations, research institutes, and universities contribute to both scientific research and development-oriented planning processes, shaping the conservation and management approaches applied to the delta. For example, projects supported by the South Aegean Development Agency (GEKA – Güney Ege Kalkınma Ajansı) and scientific reports prepared by Adnan

Menderes University (Adnan Menderes Üniversitesi) offer valuable insights into the ecological and socio-economic dynamics of the delta.

Thus, the plans, reports, documents, and projects prepared for the Menderes River and its delta are multilayered governance tools that reflect the perspectives, priorities, and intervention modalities of authors operating at different scales. Reading these documents together enables an understanding of the delta as a multi-author and multi-scalar administrative landscape. The Ministry of Environment, Urbanization and Climate Change (Çevre, Şehircilik ve İklim Değişikliği Bakanlığı) serves as the central authority responsible for the protection of wetlands, natural conservation sites, and special environmental protection zones within the context of the Menderes River and its delta. The Ministry also oversees Environmental Impact Assessment (EIA – Çevresel Etki Değerlendirmesi) processes, holding the authority to evaluate the environmental implications of all infrastructure, industrial, or tourism projects to be implemented in the delta. In this capacity, it plays a decisive role in maintaining the ecological balance of the natural landscape, while, when properly executed, possessing the potential to safeguard the nature–culture integrity of the area.

In the conservation of natural heritage, the General Directorate for the Protection of Natural Assets (Tabiat Varlıklarını Koruma Genel Müdürlüğü) is responsible for the identification, protection, and monitoring of natural conservation sites. Through the process of designating protection status, it establishes a direct legal framework for conservation within the delta. However, due to limited implementation and enforcement mechanisms, its influence on the landscape remains largely confined to the level of legal designation. The General Directorate of Nature Conservation and National Parks (Doğa Koruma ve Milli Parklar Genel Müdürlüğü), on the other hand, is responsible for the protection of national parks, nature parks, wetlands, and wildlife. As the authority managing the Dilek Peninsula–Büyük Menderes River Delta National Park, it plays a crucial role in safeguarding ecological continuity within the delta.

The Ministry of Agriculture and Forestry (Tarım ve Orman Bakanlığı) holds extensive authority in the delta, encompassing agricultural production, biodiversity conservation, management of inland water resources, and flood control. The management of forest areas and the formulation of agricultural policies also fall under its responsibility. The Ministry's regulation of agricultural production patterns is directly connected to irrigation systems, a relationship that both supports regional development and imposes pressure on the ecosystem. Its policy decisions actively shape the agricultural, natural, and socio-economic landscapes of the delta. In this context, agricultural, forestry, and ecological policies produce direct spatial outcomes. In terms of water management, the Turkish Water Institute (SUEN – Türkiye Su Enstitüsü) is tasked with developing national water policies and ensuring international coordination. Specifically regarding the Menderes River Delta, it formulates strategies to align water management with international conventions such as the EU Water Framework Directive. As its work primarily operates at the policy and strategic level, its influence on the landscape is indirect yet directive in nature. The State Hydraulic Works (Devlet Su İşleri – DSİ) plays a leading role in dam construction, flood control, and water resource management. Through dams, irrigation canals, and flood protection structures, DSİ directly shapes the hydrological regime of the delta, exerting a strong transformative effect on both the agricultural production landscape and wetland ecosystems.

The operation and maintenance of infrastructure under the State Hydraulic Works (Devlet Su İşleri – DSİ) are often delegated to local irrigation unions such as the Söke Plain Irrigation Union (Söke Ovası Sulama Birliği). These unions are responsible for distributing irrigation water, managing drainage systems, and ensuring the continuity of the agricultural landscape. Although they are critical for sustaining agricultural production, excessive water use and mismanagement increase the risks of salinization and ecological degradation in the delta. Therefore, the effectiveness of the union is directly linked to the sustainability of the agricultural landscape. Formed through the progradation process of the Menderes River, the Söke Plain is one of the most fertile agricultural areas in Anatolia, producing cotton,

wheat, sunflowers, and olives. While the irrigation union ensures the continuity of agricultural production, the irrigation regime directly influences the water balance of wetlands and the ecological stability of the delta. For instance, excessive water withdrawal accelerates salinization, whereas controlled water distribution supports the conservation of wetlands. Since irrigation unions play a decisive role in shaping agricultural practices and local economic life, they indirectly contribute to sustaining the practices that make the delta a living cultural landscape. However, the authority of these unions is limited to farmers within their administrative boundaries; they have no direct authority over basin-scale decision-making or ecological conservation. Thus, while the Söke Plain Irrigation Union is among the most influential local authors shaping the agricultural landscape, water regime, and ecosystem balance of the Menderes River Delta, its authority remains confined to operation, maintenance, and water distribution.

The system is also legally regulated by Law No. 6172 on Irrigation Unions (Sulama Birlikleri Kanunu No. 6172), which mandates that these unions are responsible for the operation, maintenance, and management of irrigation facilities established by the State Hydraulic Works (Devlet Su İşleri – DSİ). Accordingly, infrastructure such as dams, canals, and drainage networks constructed by DSİ is transferred to the union, which ensures their sustainable operation.

The Ministry of Culture and Tourism (Kültür ve Turizm Bakanlığı), together with its General Directorate of Cultural Heritage and Museums (Kültür Varlıkları ve Müzeler Genel Müdürlüğü), is responsible for the registration, inventory, restoration, and conservation of archaeological and urban conservation sites within the delta. The conservation of ancient cities such as Milet, Priene, and Didyma falls directly under this institution’s authority. Its role extends beyond the tangible heritage; it is also crucial for maintaining the continuity of the cultural landscape. The conservation of archaeological sites associated with the riverine landscape strengthened the delta’s identity as a cultural landscape heritage.

At the local level, provincial governorships and special provincial administrations (valilikler and il özel idareleri, e.g., Aydın, Muğla) are responsible for implementing and coordinating conservation board decisions taken at the national level. Their authority is primarily operational, ensuring that national legislation and ministerial directives are translated into spatial practice within the delta. Their influence on the landscape is directly tied to the degree of on-site implementation of conservation decisions.

Local municipalities (yerel belediyeler), such as those of Söke and Didim, serve as key authors in the delta's everyday spatial transformation through zoning plans, conservation-oriented plans, and the planning of green and recreational areas. The development of settlements, the planning of tourism zones, and the organisation of everyday living spaces fall within their authorities. Consequently, municipalities exert a direct influence on both the ecological and cultural transformation of the deltaic landscape.

Finally, non-governmental organisations and academic institutions contribute to conservation and management processes through scientific research, public awareness activities, local participation mechanisms, and monitoring studies. These authors create an alternative sphere of knowledge production beyond official institutions and promote a participatory perspective on conservation. By generating alternative forms of knowledge, they enhance local awareness and strengthen the living heritage perspective. In this sense, they contribute to approaching the landscape through the coexistence of natural or cultural frameworks and a holistic heritage manner (Table 3.5; Table 3.6).

This multi-author structure embodies both significant potential and considerable challenges for the Menderes Riverine landscape. On the one hand, the diverse areas of expertise among institutions allow for the establishment of a comprehensive framework for the conservation of both natural and cultural heritage. On the other hand, overlapping authorities, lack of coordination, and fragmented management make it difficult to address the delta as an integrated riverine landscape heritage.

Therefore, strengthening inter-institutional collaboration, adopting approaches based on nature–culture integrity, and developing approaches that prioritize the participation of local communities are essential for achieving sustainable conservation and management in the delta (Table 3.5; Table 3.6).

The Büyük Menderes River Delta and riverine landscape are managed and conserved through a multilayered system in which numerous laws, regulations, and institutional authors operate simultaneously (Table 3.5). In Türkiye, the legal framework governing such areas has evolved through a series of national laws and international conventions, gradually shifting toward a structure that better integrates nature–culture integrity. This section outlines the main legislative and regulatory instruments relevant to the conservation and management of the Menderes riverine landscape. Taken together, the tables reveal that while numerous institutions and policy instruments actively shape the Menderes Riverine landscape, their actions are often fragmented and sector-based. Institutions operating in water management, agriculture, natural conservation, and cultural heritage exert significant influence; however, these influences are rarely integrated within a holistic framework. Similarly, although plans and strategies developed over time contribute to addressing environmental risks, water governance, and conservation objectives, challenges related to coordination and continuity persist in practice. This highlights the need to move beyond sectoral approaches toward a more integrated and process-oriented governance model that reconsiders the relationships among decision-makers, policies, and landscape dynamics in order to ensure the sustainable management of the Menderes riverine landscape (Table 3.5; Table 3.6).

Table 3.5 Responsibilities of Upper/Regional and Territorial Scale Authors and Their Impacts on the Menderes Riverine Landscape

Upper Scale Landscape Author	Responsibilities	Impacts on the Menderes Riverine Landscape
Ministry of Environment, Urbanization, and Climate Change	Wetlands, natural conservation sites, specially protected environmental areas, Environmental Impact Assessment, EIA processes	Protects wetlands and natural conservation sites in the delta; regulates the ecological impacts of large-scale projects through EIA procedures
Ministry of Culture and Tourism – General Directorate of Cultural Heritage and Museums	Archaeological and urban conservation sites, cultural heritage inventory, restoration, and registration procedures	Protects the cultural landscape of the delta, including ancient cities such as Milet, Priene, and Didyma; responsible for registration and restoration of archaeological heritage.
Ministry of Agriculture and Forestry	Agricultural production, forest areas, inland water resources, biodiversity, and flood management	Shapes agricultural practices in the delta; influences natural landscapes through flood management and biodiversity conservation measures.
Governorship / Provincial Special Administrations	Implementation and coordination at the provincial level; enforcement of conservation board decisions	Acts as an intermediary in implementing conservation decisions; determines local spatial outcomes of national policies.
Municipalities	Development plans, conservation-oriented zoning plans, green spaces, and recreational arrangements	Directly shape spatial changes in the delta through urban development, tourism areas, and green space arrangements.
General Directorate for the Protection of Natural Assets	Designation, conservation, and monitoring of the natural conservation site status	Provides legal protection by designating natural conservation areas; limited effectiveness in enforcement and monitoring.
General Directorate of Nature Conservation and National Parks	National parks, nature parks, wetlands, and wildlife conservation	Manages the Dilek Peninsula–Büyük Menderes River Delta National Park; plays a crucial role in sustaining the ecological continuity of wetlands.
State Hydraulic Works (DSİ)	Management of water resources, dams, and flood control projects	Determines the water regime in the delta through dams and irrigation infrastructure; exerts transformative impacts on agricultural landscapes and ecosystems.
Söke Plain Irrigation Union	Distribution of irrigation water, operation and maintenance of irrigation and drainage systems, and collection of fees	Ensures continuity of agricultural production; overuse of water may cause salinization and ecological degradation.
NGOs and Academic Institutions	Scientific research, public awareness, local participation, monitoring, and reporting	Produce alternative knowledge and raise awareness; strengthen community participation and contribute to the development of the “living heritage” perspective.

Table 3.6 Responsibilities Upper/Regional and Territorial Scale and Their Impacts on the Menderes Riverine Landscape

Year	Upper Scale Landscape Author	Document Title	Main Focus / Contribution
1997	Ministry of Forestry, General Directorate of National Parks and Wildlife	Long-Term Development Plan of Dilek Peninsula – Büyük Menderes River Delta National Park	First comprehensive plan; aimed at conservation-use–use balance, biodiversity protection, and visitor management.
2004	Ministry of Agriculture and Forestry, Directorate General for Water Management	Draft Büyük Menderes River Basin Management Plan	Early adaptation to the EU Water Framework Directive identified nitrate, domestic, and industrial pollution pressures.
2012	Adnan Menderes University (with GEKA support)	Büyük Menderes River Pollution Inventory	Scientific inventory of water pollution sources and loads; established baseline for later action plans.
2012	Ministry of Forestry and Water Affairs	National Basin Management Strategy (2012–2023) – Wetland Management Planning Guide	Provided methodological framework for wetland planning; strategic basis for Ramsar sites such as the Delta.
2013–2015	Ministry of Agriculture and Forestry	Basin Conservation Action Plans	Defined measures for pollution reduction and wetland protection; pilot actions for Büyük Menderes.
2013–2016	Kafkas University (Scientific Project)	Impact of Integrated Basin Approach on Pollution Control in Büyük Menderes Basin	Evaluated sources of pollution, the effectiveness of existing plans, and proposed good agricultural practices.
2016 (Feb.)	EU–Ministry of Environment and Urbanization	SEA Pilot Project – Draft Büyük Menderes Basin Management Plan	First application of Strategic Environmental Assessment to the basin; analyzed risks and scenarios.
2016 (Oct.)	Ministry of Environment and Urbanization	Büyük Menderes Basin Pollution Prevention Action Plan	Targeted reduction of household, agricultural, and industrial pollution loads reaching the Delta.
2016	Ministry of Forestry and Water Affairs	Project on Impacts of Climate Change on Water Resources – Final Report & Executive Summary	Analyzed climate risks: droughts, floods, sea-level rise; highlighted salinization risk in the Delta.
2016	Ministry of Environment and Urbanization (with EU support)	Strategic Environmental Assessment Report for Büyük Menderes Basin Management Plan	Environmental assessment of basin planning emphasized wetland habitats and ecological sustainability.
2017–2023	Ministry of Forestry and Water Affairs	National Drought Management Strategy and Action Plan	Basin-scale drought preparedness: safeguarding ecological flows and wetland resilience in the Delta.

Table 3.6 Continued

2018 (Nov.)	EU–Ministry of Environment and Urbanization (Technical Assistance Project)	Büyük Menderes River Basin Management Plan	Finalized river basin plan in line with the EU Water Framework Directive; comprehensive risk and pressure analysis.
2018	Yaşayan Nehirler Yaşayan Ege Project	Büyük Menderes Basin Atlas	Visual and spatial inventory; documented hydro-ecological, cultural, and socio-economic characteristics.
2019 (May)	Ministry of Agriculture and Forestry, DG for Water Management	Büyük Menderes Basin Flood Risk Management Plan	Identified flood-prone areas, risk reduction strategies, and emergency management for the Delta.
2019	Ministry of Agriculture and Forestry	National Water Plan (2019–2023)	National framework; emphasized efficient irrigation, ecosystem-based water management in the Delta.
2019–2021	Ministry of Agriculture and Forestry	Sectoral Water Allocation Plans	Balanced distribution of water among sectors; secured minimum ecological flows for the Delta wetlands.

The Menderes Basin and Delta constitute a multi-layered landscape shaped by the contributions of non-governmental organisations, local initiatives, academic institutions, and professional bodies. Within this complex structure, civil society authors play a critical role in producing scientific knowledge and monitoring ecological processes, enhancing public awareness, fostering community participation, and making the cultural and natural values of the region more visible.

Through initiatives such as the “Living Rivers, Living Aegean” project and the Büyük Menderes Basin Atlas, WWF has promoted an integrated river basin management approach that considers water, soil, biodiversity, and human activities as interconnected components of a single system. These initiatives combine scientific data production, policy influence, and pilot implementations, including water quality monitoring, cleaner production practices in the textile sector, and sustainable agricultural methods. In parallel, awareness-raising projects such as “The Journey of Water” contribute to strengthening the cultural and social dimensions of water, emphasizing its role in collective memory and everyday life.

At the regional level, institutions such as the South Aegean Development Agency (GEKA) support environmental sustainability through strategic planning, funding mechanisms, and regional policy development. GEKA's initiatives focus particularly on reducing environmental risks, improving water and soil quality, and promoting sustainable industrial practices, especially within the textile sector. Similarly, organisations such as EKODOSD, ÇEKÜL, DAD, and DKD contribute through biodiversity monitoring, wetland conservation, cultural heritage awareness, and educational programs.

In addition to conservation-focused organisations, initiatives such as the Center for Spatial Justice (MAD) and Bayetav Art introduce critical and creative perspectives by addressing themes of spatial justice, environmental inequality, and cultural memory. Through mapping, storytelling, artistic production, and participatory platforms, these reinterpret the Menderes landscape as a living socio-ecological system shaped by both ecological processes and social struggles. Grassroots movements such as the Büyük Menderes Initiative further emphasize environmental justice and community rights, highlighting the role of local resistance in confronting ecological degradation.

Academic institutions also play a central role by providing the scientific basis for conservation and management. Universities research water quality, biodiversity, agricultural systems, and cultural landscapes, and produce data, reports, and analyses that contribute to policy-making and planning processes. Archaeological studies, ecological monitoring, and spatial analyses collectively reveal the long-term interactions between natural processes and human settlements, reinforcing the understanding of the delta as a dynamic interface between nature and culture.

Despite these diverse and significant contributions, several limitations persist. Many initiatives remain project-based and lack long-term continuity, while collaboration between civil society and governmental institutions is often limited. Furthermore, most studies focus on the basin scale, and there is still a notable gap in projects

directly addressing the delta as a cultural landscape integrating both natural and cultural heritage dimensions.

Overall, the conservation and management of the Menderes Basin and Delta are shaped by a diverse network of authors operating across multiple scales. While NGOs, academic institutions, and local initiatives provide innovative, participatory approaches, the absence of integrated frameworks, long-term monitoring mechanisms, and institutional coordination limits their overall impact. Therefore, strengthening collaboration among landscape authors, ensuring continuity of initiatives, and developing holistic approaches that fully integrate the cultural landscape identity of the delta remain critical for achieving sustainable and resilient landscape governance.

As a result, studies on the Menderes River Delta offer a rich body of knowledge across different disciplines and scales; however, these studies, initiatives, and programs have largely developed in a fragmented manner. Archaeological research tends to focus on ancient cities and settlement systems, while ecological studies address wetlands, biodiversity, and habitat dynamics within the delta. Similarly, water management and agriculture-oriented studies are shaped by the river's hydraulic characteristics, irrigation systems, and production relations, whereas conservation initiatives often proceed through limited, site- or theme-specific interventions. This situation reveals that the multi-layered structure of the riverine landscape is examined from multiple perspectives, yet these bodies of knowledge are rarely evaluated in relation to one another. Conservation efforts in the Menderes River Delta are carried out within the frameworks of different institutions and regulations; objectives such as the conservation and management of natural sites, the continuation of agricultural production, and the evaluation of cultural heritage are often addressed independently.

This research positions itself as a platform that establishes linkages among disciplines, data types, and landscape authors. By integrating diverse forms of knowledge—such as archaeological data, ecological indicators, hydraulic analyses,

and local narratives—within a single system, this approach enables a more holistic understanding of the landscape's multi-layered structure. Just as fragmented contexts within the landscape form a larger system through their interconnections, different research efforts and conservation initiatives are re-related and reinterpreted within this framework. Accordingly, the area is redefined not as the sum of isolated studies but as a holistic riverine landscape heritage shaped by the continuous interaction of multiple components.

3.3 Lessons from the Menderes Riverine Landscape: Results of the Case Study and Critical Remarks

In Türkiye, landscape conservation and management processes have primarily focused on protected natural areas, archaeological sites, and urban conservation areas. As a result, the landscape has only rarely been addressed as a holistic concept. This has led to conservation and planning processes that are often fragmented and characterized by sectoral disconnections. Within the current system, the landscape is largely divided among the responsibilities of different institutional structures. This multi-layered and fragmented governance framework makes it difficult to develop a holistic approach, particularly in water (-related) and riverine landscapes where nature and culture are deeply intertwined. The lack of integration among water management, agricultural policies, and spatial planning processes results in fragmented interventions in water (-related) and riverine landscapes.

Another defining feature of landscape conservation in Türkiye is the reliance of planning processes on technical and top-down decision-making mechanisms. This limits the inclusion of local knowledge, everyday practices, and living heritage components in decision-making. However, water (-related) and riverine landscapes are also socio-spatial constructs continuously reproduced through landscape experiences, narratives, and practices. At the same time, recent developments indicate a growing recognition of landscape as a more holistic concept. In particular, the increasing visibility of the cultural landscape concept—through international

literature and conventions—has contributed to a broader awareness of the interconnectedness of nature and culture. Nevertheless, its implementation remains limited and is often confined to project-based or site-specific interventions (Table 3.7).

One of the most critical challenges identified in the study relates to natural, environmental, and ecological pressures. Climate change-induced processes, including droughts, floods, and irregular precipitation patterns, significantly affect the hydrological balance of the delta. Water scarcity during dry periods and sudden flood events disrupt agricultural production, weaken ecosystem resilience, and threaten the continuity of wetland systems. At the same time, intensive agricultural practices, industrial pollution, and untreated domestic waste contribute to the deterioration of water quality, creating severe ecological risks across the basin. The transformation of the river system through dams and irrigation infrastructures, while enhancing agricultural productivity, has also led to sediment retention, coastal erosion, biodiversity loss, and the gradual shrinkage of wetlands. These processes collectively demonstrate that interventions in the water regime and increasing environmental pressures are among the primary drivers of ecological degradation in the Menderes River Delta (Table 3.7).

Beyond environmental challenges, the study highlights a significant process of contextual fragmentation within the water (-related) and riverine landscapes. Historically, the Menderes River functioned as a central structuring element that connected settlements, cultural practices, and collective memory. However, contemporary developments have transformed this relationship into a predominantly utilitarian one. The river is now largely perceived as an economic and technical resource, primarily associated with irrigation and production. This shift has weakened the symbolic, cultural, and experiential connections between communities and water, leading to the erosion of cultural continuity. The disappearance of water-related narratives, place names, and practices indicates a profound transformation in how the river is perceived and experienced. As a result, the water (-related) and riverine landscapes have shifted from being understood as a “living landscape” to

being treated as a “managed technical resource,” reflecting a broader perceptual and socio-cultural transformation (Table 3.7).

The Menderes River Delta, as a complex water (-related) and riverine landscape shaped by the interaction of natural, cultural, spatial, and socio-economic systems, is increasingly exposed to a range of interconnected challenges. The findings of the case study reveal that the sustainability of the delta is not only threatened by environmental pressures but also by the fragmentation of socio-cultural relationships and managerial structures. In this context, the delta emerges as a multi-layered landscape of vulnerability, where ecological processes, cultural continuity, and governance mechanisms are simultaneously under stress (Table 3.7).

Table 3.7: An overview of the issues, challenges, and potential related to water (-related) and riverine landscape conservation and management in Türkiye

Theme/Issue	Challenges	Potentials
Agricultural Systems	Intensive irrigation, high water consumption, and chemical use → pressure on water quality and ecology	Sustainable agriculture, agro-ecological production, water-sensitive planning
Water Management	Fragmented institutional structure, engineering-driven interventions, and pressure for flood control	Integrated basin management, nature-based solutions
River Morphology	Channel regulation and embankments → loss of maeandering structure	Restoration and support of natural flow regimes
Archaeological Landscape	Isolated conservation of sites, disconnection from the landscape context	Interpreting ancient cities within the riverine landscape (holistic biography)
Ecological Systems	Wetland loss, decline in biodiversity	Ramsar sites, habitat restoration
Local Knowledge and Practices	Invisibility, exclusion from decision-making processes	Participatory planning, memory mapping
Narratives and Memory	Erased landscape layers, forgotten places	Toponyms, oral history, narrative layers
Institutional Structure	Fragmented authority, lack of coordination	Multi-scale governance, integration through riverine landscape heritage

A further key finding of the case study concerns institutional and managerial fragmentation. The governance of the Menderes River Delta is characterized by a multiplicity of authors, overlapping decision-maker authorities, and sector-based legal frameworks that operate across different scales. The lack of coordination among institutions responsible for water management, agriculture, conservation, and

planning creates conflicting decisions and limits the effectiveness of conservation efforts. Moreover, the disconnect between natural boundaries, such as the basin and delta, and administrative boundaries exacerbates governance challenges. Although the region is designated under multiple protection statuses, including national parks, wetlands, and archaeological sites, these designations are often managed independently, without establishing a holistic relationship between natural and cultural heritage. This fragmented governance structure prevents the water (-related) and riverine landscape from being addressed as an integrated socio-ecological system. Water is variously approached as objects, a natural and hydrological environment, a symbol, or a technical infrastructure; yet the holistic riverine landscape heritage holistically produced through human, space, and temporalities is most often fragmented. Riverine landscape heritage is an overarching umbrella concept encompassing cultural, natural, and spatial heritage elements that are directly or indirectly connected to water and shaped by its presence. It is a comprehensive concept that integrates all forms of water-related heritage within a living landscape ensemble by addressing water together with natural processes, cultural practices, spatial patterns, and governance relations.

As a result, the case study reveals that the challenges facing the Menderes River Delta are not isolated but deeply interconnected across ecological, socio-cultural, and institutional dimensions. Environmental degradation, the loss of cultural continuity, and fragmented governance structures collectively undermine the resilience and sustainability of the landscape. These findings highlight the urgent need for a holistic, multi-scalar, and integrative approach that reconnects water, landscape, and community, while also strengthening institutional coordination and long-term management strategies. Accordingly, this research approaches the fragmented contexts, fragmented layers, fragmented narratives, fragmented governance structures, and fragmented heritage places and patterns of the Menderes riverine landscape through a framework that conceptualizes the river as the “connector and catalyst component.” This approach recognizes the river as a landscape heritage agency that initiates the functioning of the landscape and

landscape heritage, generates its values, transforms its dynamics, and continually restructures all its layers. Therefore, evaluating the Menderes River through a holistic perspective within the context of landscape heritage, and conceptualising the delta as a holistic riverine landscape heritage, is a methodological, practical, and governance-related necessity. Grounded in this necessity, the study evaluates layers and dynamics of the delta through a river-centered relational framework and reveals how the Menderes functions as the connector and catalyst power of this multi-scalar, multilayered, and multidimensional landscape heritage (Figure 3.65)

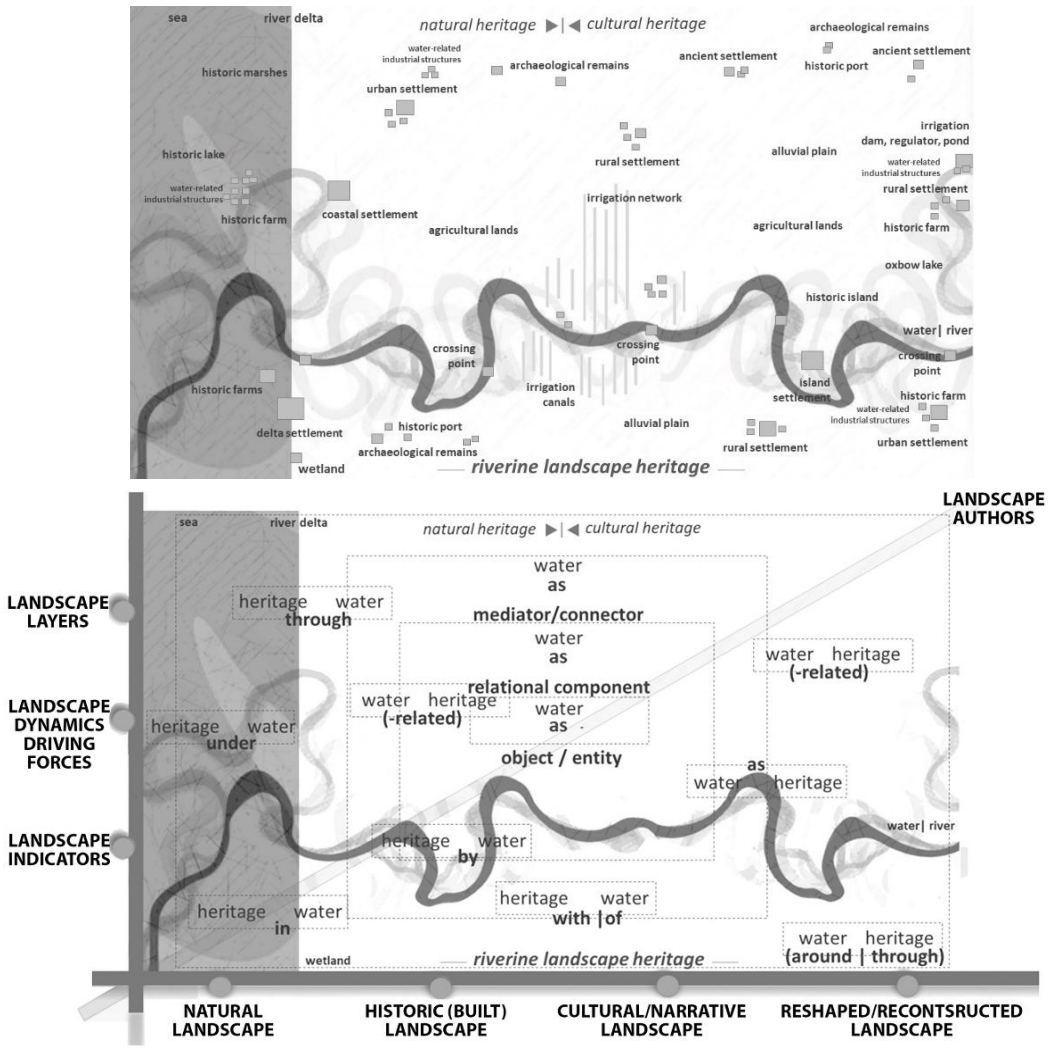


Figure 3.65 Menderes River as The 'Connector and Catalyst' of Water (–Related) Relationships/ Water (–Related) and Riverine Landscape Heritage (Author, 2026)

CHAPTER 4

RECONSIDERING 'RIVERS' AS INITIATORS AND GENERATORS OF RIVERINE LANDSCAPE AND HERITAGE: TOWARDS THE HOLISTIC AND SUSTAINABLE CONSERVATION MANAGEMENT APPROACH

"It is characteristic of this net of Nature's, however, that the meshes of one layer are always attached to those of another, and it is impossible to remove any one of them alone; for, one after another, the rest follow the one you are removing, because they are all attached to one another successively." (Galen, Vol. 1, Ninth Book: II, 11)

This chapter introduces a holistic and sustainable conservation–management framework through the **'riverine landscape heritage' approach**, developed based on the Menderes riverine landscape as a case study. This approach conceptualizes water and riverine landscapes as living cultural heritage, aiming to introduce a new heritage scale, definition, and approach at both theoretical and practical levels. Accordingly, the multifaceted contributions of the riverine landscape heritage approach are articulated: its original conceptual and methodological contributions to the literature and theoretical discourse; its practical and community-based consequences that strengthen the relationship between local communities and their landscape heritage; its institutional and managerial contributions to multi-author governance and decision-making processes; and its proposals for integrating fragmented contexts. These analyses are presented within the riverine landscape heritage holistic and sustainable landscape framework, including the multi-layered maps and guiding documents developed under the riverine landscape heritage approach. In addition to highlighting the practical contributions of the riverine landscape heritage framework, this section discusses and presents the envisioned future conservation and management framework, its vision, principles, policies,

strategies, and actions, and future scenarios, aimed at sustaining and regenerating the Menderes Riverine Landscape Heritage (Figure 4.1).

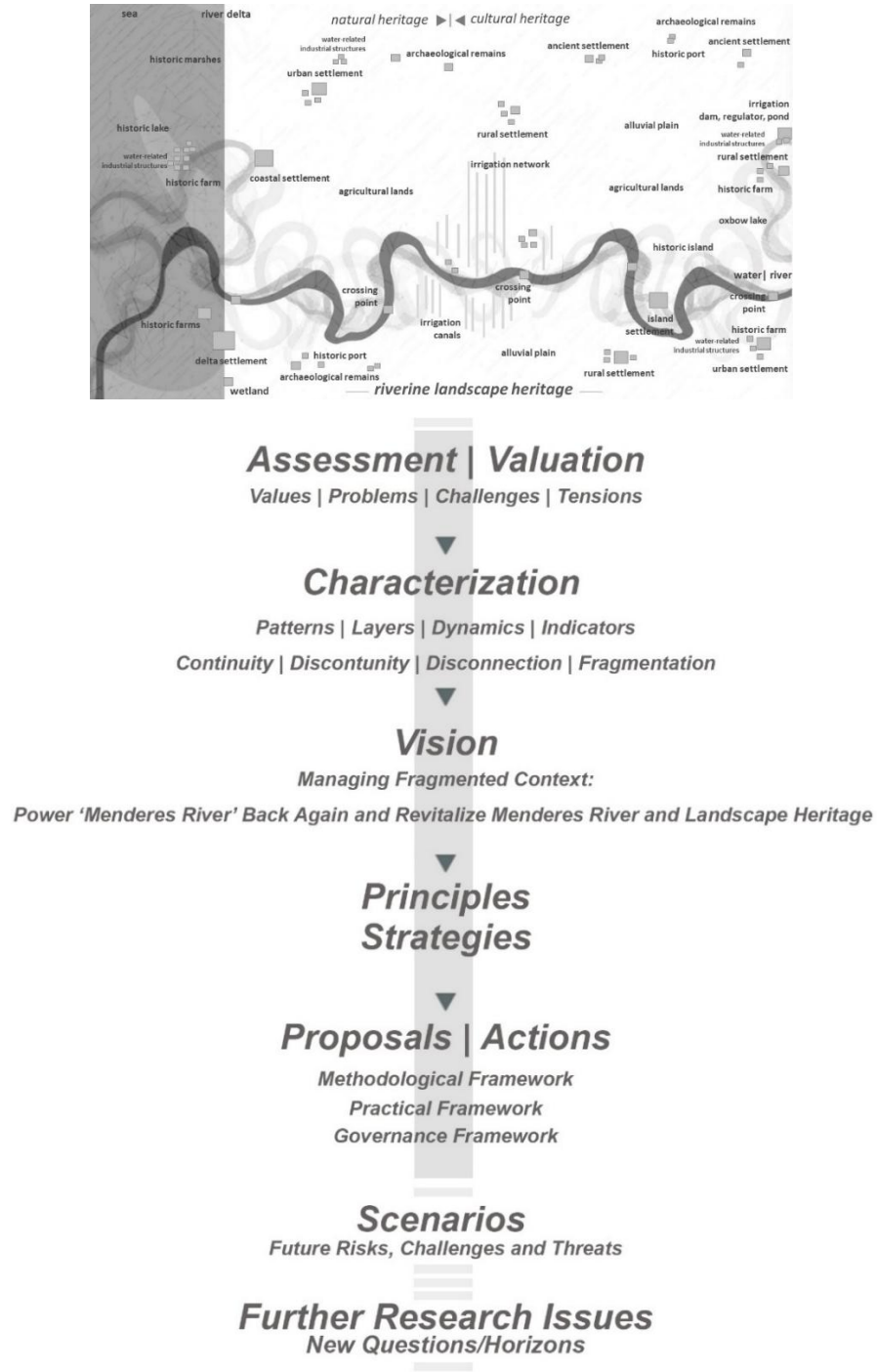


Figure 4.1 'Riverine Landscape Heritage' Approach from Valuation to Proposals (Author, 2026)

4.1 Assessment and Valuation of the Menderes River Delta as Riverine Landscape Heritage

The holistic "Values–Challenges–Tensions" analysis constitutes the core methodological framework through which the Menderes River Delta is examined as a complex and multi-layered riverine landscape heritage. This stage adopts a relational and author-based approach that identifies, interprets, and interconnects the meanings, functions, and pressures embedded within the delta's natural, historical–archaeological, cultural, narrative, and dynamically evolving landscape layers. Beyond assessing heritage through formal designations, the approach brings together values attributed and created by authors: (i) upper scale landscape heritage values/challenges/tensions assigned by decision makers, institutions, expressed through planning and legal instruments, conservation frameworks and sectoral governance priorities; (ii) regional/territorial scale values/challenges/tensions assigned by regional and local decision makers, instituions, local representatives of upper-level decision makers, larger land owning families, regional and local NGOs; (iii) values attributed by landscape communities, shaped by memory, everyday practices, experiential knowledge, symbolic representations and locally based interpretations of place; and embedded in the material, ecological, historical and symbolic characateristics of the delta (Figure 4.2). By analysing these three categories simultaneously, the framework reveals values and challenges about how heritage significance is constructed, negotiated, and sometimes contested across different authors and landscape contexts. Finally, the mapping of tensions highlights the critical fault lines between conservation and use, natural evolution and engineered interventions, traditional practices and modern production systems, and local narratives and institutional priorities (Figure 4.2).

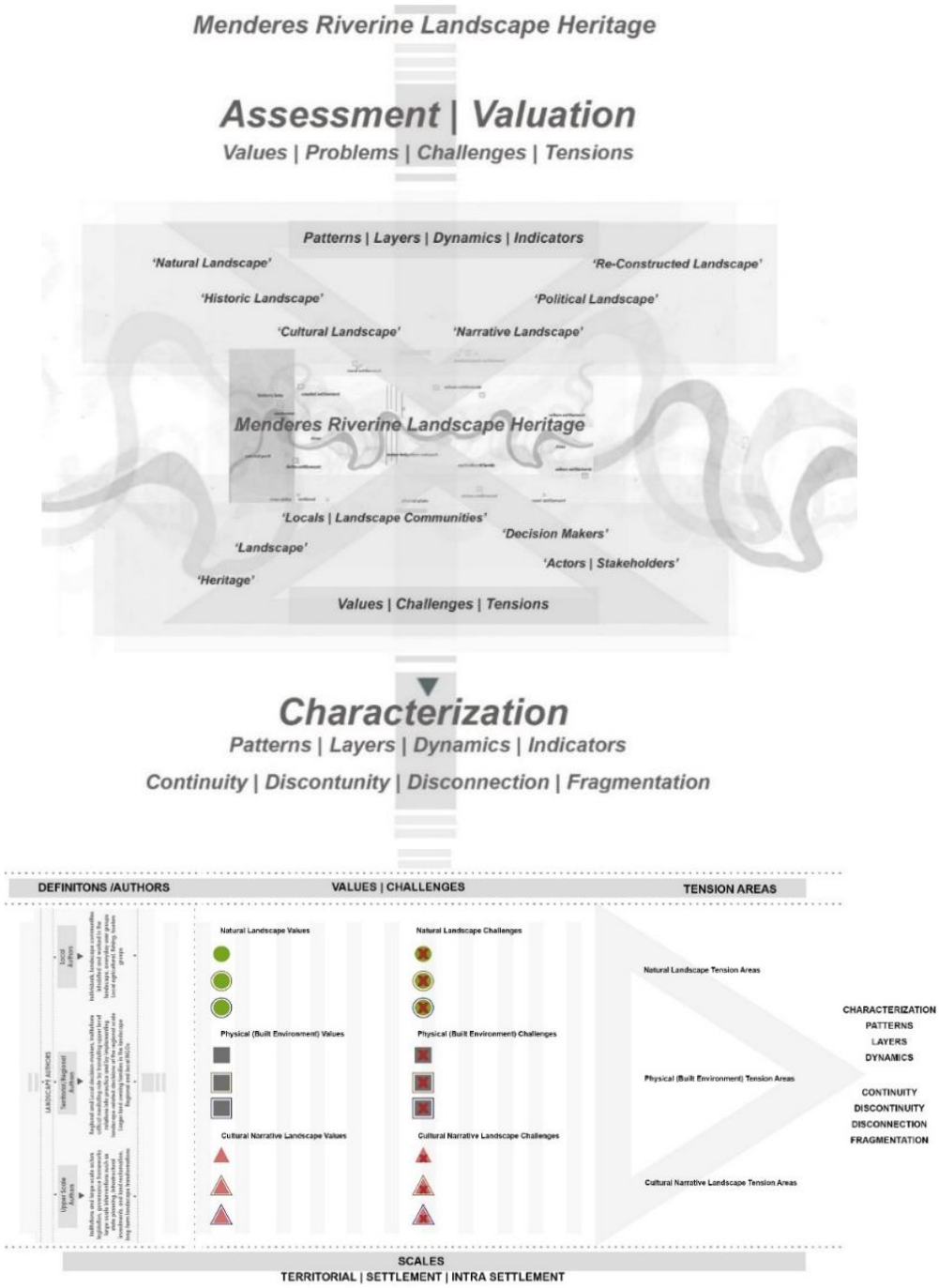


Figure 4.2 ‘Riverine Landscape Heritage’ Approach: Valuation and Characterization Approach (Author, 2026)

The **‘natural’ landscape** of the Menderes is shaped through the long-term interaction between river dynamics, deltaic processes, ecological systems, and

human practices operating across multiple spatial and institutional scales. As a riverine landscape, the delta embodies ecological and geomorphological values and relevant production systems, everyday practices, and historically embedded relationships between water, land, and communities. Within this context, the identification of landscape values, the recognition of emerging challenges, and the analysis of tensions between conservation, production, and development constitute an essential framework for understanding the dynamic and multilayered nature of the delta. At the upper scale, the natural landscape values of the Menderes River Delta are primarily framed through institutional designations and sectoral priorities. The delta is recognised as part of the Menderes Basin and the Menderes River system, incorporating nationally protected areas such as the Dilek Peninsula–Büyük Menderes River Delta National Park, designated natural conservation sites, qualified natural protection areas, and strictly protected sensitive zones. These designations emphasise ecosystem services, coastal protection potential, and water-management-oriented values, particularly through upper-scale irrigation networks operated by state authorities. In parallel, natural areas are also attributed with tourism and recreation potential, positioning the delta within broader development and economic narratives (Figure 4.3; Table 4.1).

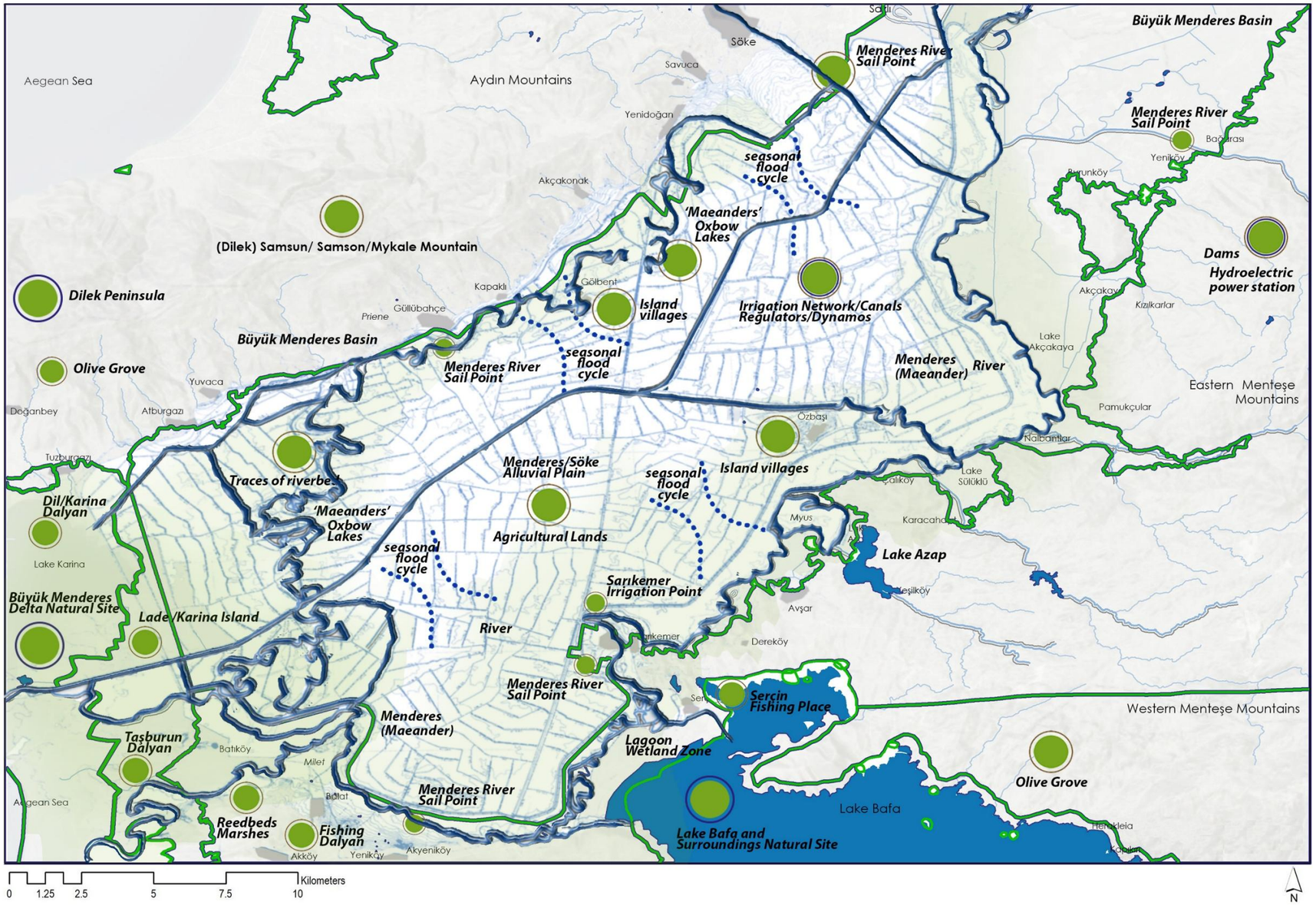
At the regional and territorial scale, landscape values are articulated through ecological integrity and the continuity of natural processes. The Dalyan–Bafa lagoon system, wetlands across Sarıkemer, Serçin, and the Menderes floodplain, and biodiversity areas such as Azap Lake and Bafa Lake are recognised as key components of the delta's riverine ecosystem. These areas embody the conservation of natural cycles driven by the Menderes River and its tributaries, sustaining deltaic processes, alluvial plains, and distinctive coastal morphology. Historic islands, ancient lakes, and marshlands further contribute to the uniqueness of the landscape, reinforcing the delta's role as a complex assemblage of water, sediment, and ecological relationships. At the local scale, natural landscape values are closely tied to lived experience and everyday interaction with the river and its seasonal flow cycles and rhythms. Seasonal production practices aligned with water cycles in the

Menderes and Söke alluvial plains, fishing traditions sustained through the Taşburun and Karina Dalyans, and daily landscape relations shaped by water availability illustrate how nature is valued through use, memory, and continuity. Traces of former riverbeds, traditional transportation routes, and stopping points reflect a landscape read and inhabited through movement, work, and seasonal change (Figure 4.3; Table 4.1).

However, the natural landscape heritage is becoming increasingly fragile due to human activities, climatic changes, and interventions that disrupt the sediment regime. Water extraction, land-use transformations, and coastal modifications threaten the continuity of natural heritage values. The degradation of natural processes, coupled with a weakening of ecosystem services, leads to losses in heritage values. Today, in conjunction with the era of multiple crises, the accelerating impacts of the climate crisis, together with spatial, social, and technological transformations, position the natural heritage of the Menderes River Delta at the center of overlapping and ongoing crises. At the upper scale, water pollution, competing water allocation plans, and conflicts between agricultural demand and water availability pose significant risks to the riverine system. Large-scale drainage projects and demands for coastal modification further intensify pressure on natural processes and landscape integrity (Figure 4.4; Table 4.1).

At the regional and territorial scale, these pressures show as disruptions to ecosystem integrity and the natural flow regime of the river. Water extraction through irrigation canals, constructed water systems, and hydraulic structures alters sediment balance, contributing to the degradation of historically significant environments, including the ancient harbour basin of Milet. Wetland shrinkage in the Dalyans and Bafa Lake regions, combined with desiccation driven by climate change, signals a broader weakening of the delta's capacity to sustain its ecological functions. From the local perspective, challenges are experienced directly through the decline of fisheries, pollution of coastal zones, and increasing agricultural pressure on the southern delta plains (Figure 4.4; Table 4.1).

Menderes (Maeander) Delta as Natural Landscape Heritage | VALUES

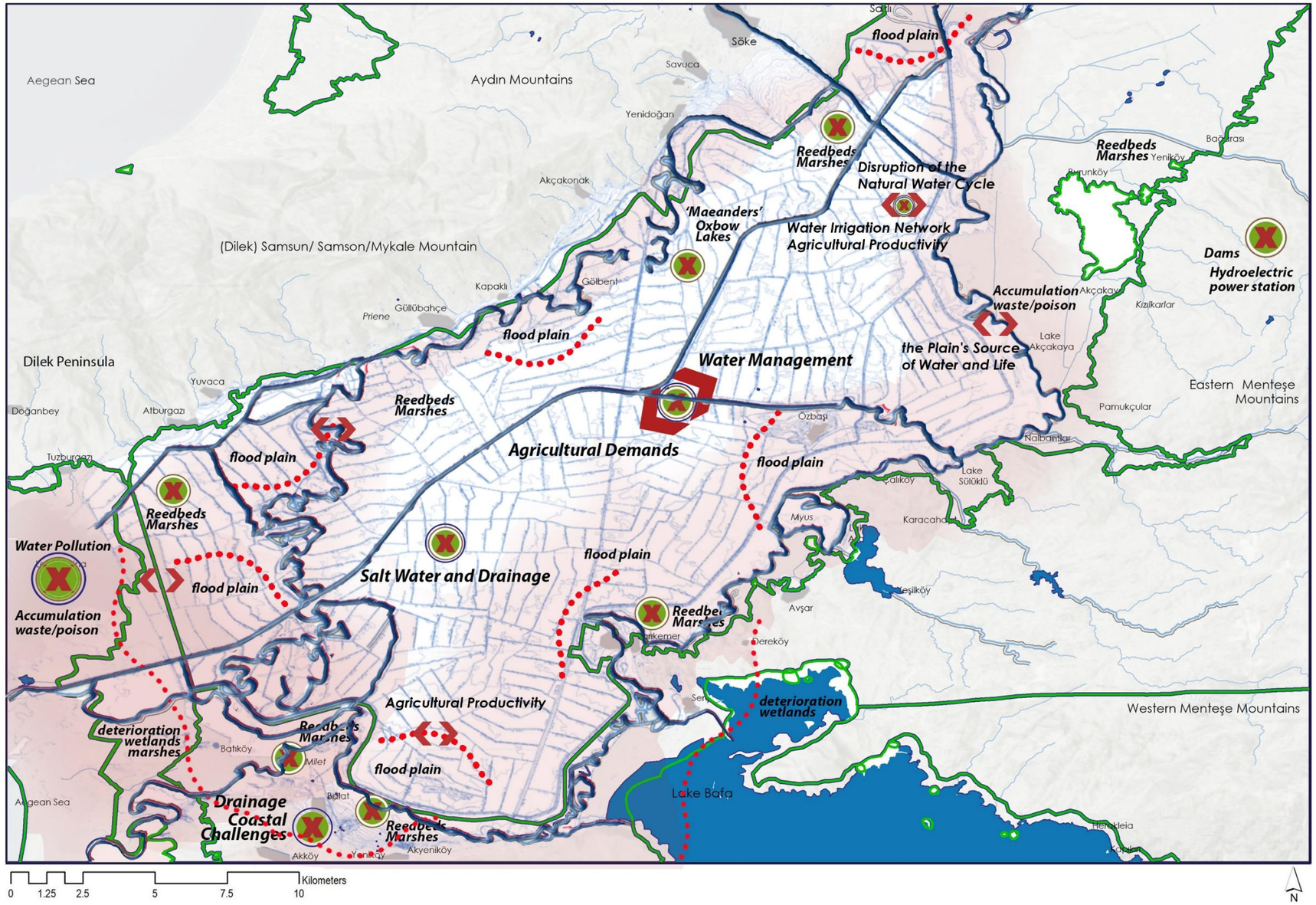


Legend

- Natural Landscape Heritage Values and Places by Local Authors
- Natural Landscape Heritage Values and Places by Territorial/Regional Authors
- Natural Landscape Heritage Values and Places by Upper Scale Authors
- Menderes (Maeander) River Basin and Alluvial Plain Boundaries
- 'The Most Fertile Agricultural Lands', Thanks to Seasonal Flood Cycles
- 'Two Sides of the Menderes River', Fertile Agricultural Lands and Places Close to the Water
- Water Sources
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.3 'Riverine Landscape Heritage' Approach: Natural Landscape Heritage Values (Author, 2026)

Menderes (Maeander) Delta as Natural Landscape Heritage | CHALLENGES



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- Challenges Related to Natural Landscape Heritage, as Described by Local Authors
- Challenges Related to Natural Landscape Heritage, as Described by Territorial/Regional Authors
- Challenges Related to Natural Landscape Heritage, as Described by by Upper Scale Authors
- Seasonal Flood Plains
- 'Two Sides adn Delta of the Menderes River' The Accumulation of Waste and Pollution
- Dilemmas/Conflicts Related to Natural Landscape and Water
- Menderes (Maeander) River Basin and Alluvial Plain Boundaries
- Water Sources
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.4 'Riverine Landscape Heritage' Approach: Natural Landscape Heritage Challenges (Author, 2026)

The future of the natural landscape heritage is directly linked to conflicts arising from tensions between conservation and use. Production pressures, agricultural transformation, and infrastructural demands further complicate the safeguarding of riverine landscape heritage values. The convergence of values and challenges generates a series of tensions that define the contemporary condition of the Menderes River Delta riverine landscape. At the upper scale, tensions arise between conservation objectives and development agendas, particularly along coastal interfaces such as Söke–Menderes and Didim–Menderes. Incompatibilities between water management strategies and ecosystem cycles highlight structural conflicts embedded within planning and governance frameworks. At the regional level, the tension between natural regimes and human intervention becomes increasingly visible. Agricultural productivity goals often conflict with ecosystem protection, while coastal interventions contradict the conservation of natural morphology. Water management practices designed to maximise efficiency and control come into tension with heritage ecosystems that depend on variability, flooding, and sediment movement. At the local scale, these tensions are lived and negotiated through everyday practices. Traditional production systems based on seasonal rhythms confront modern agricultural methods driven by irrigation-intensive productivity. Fisheries come into conflict with expanding coastal recreation and tourism activities, particularly in areas such as Güllübahçe and Doğanbey. Similarly, natural flood regimes essential to deltaic processes stand in opposition to modern land-use practices seeking stability and predictability.

Taken together, the values, challenges, and tensions of the Menderes River Delta reveal a riverine landscape characterised by dynamic interactions. Natural landscape heritage in the delta is produced through multi-scalar processes involving institutional frameworks, ecological systems, and local practices, each attributing different meanings and priorities to the landscape. The resulting tensions underscore the limits of static conservation approaches and highlight the need for process-based, adaptive frameworks capable of engaging with change, uncertainty, and negotiation.

Table 4.1 Natural Landscape Heritage | Values – Challenges – Tensions

Issues	Assigned by Upper Scale Authors/ Decision Makers	Regional/Territorial Authors	Attributed by Local Authors
Values	Büyük Menderes Basin, Büyük Menderes River, Dilek Peninsula–Büyük Menderes River Delta National Park; Büyük Menderes River Delta Natural Conservation Sites; Menderes River Delta Qualified Natural Protection Areas; Menderes River Delta Strictly Protected Sensitive Areas; ecosystem services (Bafa Lake Natural Park and Natural Sites); coastal protection potential (coastal zones); water-management-oriented values (DSİ irrigation network); tourism/recreation potential of natural areas	Ecosystem integrity (Dalyan–Bafa lagoon system); wetland heritage (Sarıkemer, Serçin region, Menderes floodplain); conservation of natural cycles (Menderes River and tributaries); biodiversity (Azap Lake, Bafa Lake, the Delta and its surroundings); continuity of deltaic processes; alluvial plain; uniqueness of coastal morphology; historic islands (Özbaşı, Lade Islands); historic lakes and marshes	Production practices tied to seasonal water rhythms (Menderes River, Menderes/Söke alluvial plain and agricultural lands); fishing cycles (Taşburun and Karina Dalyans); everyday landscape relations shaped by the river and nature; traces of the Menderes riverbed; transportation routes and stopping points
Challenges	Water pollution; pressure of water allocation plans; agriculture–water conflicts; pressure from drainage projects (Karaağaç/Akköy drainage canals); coastal modification demands	Loss of ecosystem integrity and disruption of natural flow regime due to water extraction (irrigation wells, constructed water systems and structures); disturbance of sediment balance (ancient harbour basin of Milet); shrinkage of wetlands (Dalyan and Serçin region); desiccation linked to climate change	Decline in fisheries (disruption of natural cycles, constructed water systems, fish traps in Dalyans); water pollution and coastal contamination (Akköy coast); agricultural pressure (southern delta plains); shrinking marshlands; disappearance of seasonal floods
Tensions	Conservation goals vs. development goals (Söke–Menderes and Didim–Menderes coastal interface); incompatibility between water management and ecosystem cycles	Natural regime–intervention conflict (Menderes riverbed areas); agricultural productivity–ecosystem protection conflict; coastal interventions–natural morphology contradiction; water management–heritage ecosystems tension	Traditional production vs. modern agriculture; fisheries vs. coastal recreation tensions; fisheries–tourism conflict (Güllübahçe–Doğanbey areas); flood regimes vs. modern agricultural methods and irrigation-driven productivity

The ‘**built and physical’ environment/landscape** of the Menderes constitutes a distinctive archive of long-term interactions between river dynamics, settlement processes, production systems, and cultural practices. As a riverine landscape, the delta has continuously shaped and been shaped by physical and built environments extending from ancient harbour cities to contemporary rural and urban settlements. At the upper scale, the historic landscape heritage of the Menderes River Delta is primarily recognised through formally designated archaeological sites, historical sites, and urban conservation areas. Major ancient cities such as Milet, Priene, Pyrra, and Myus, together with associated historic settlements including Balat, Doğanbey, Güllübahçe, Özbaşı, Avşar, and Serçin, form a dense archaeological network reflecting the delta’s long-term occupation. Urban conservation areas in settlements such as Söke, Doğanbey, and Akköy, along with historic structures including aqueducts, bridges, water mills, wells, and cisterns, underline the importance of water-based infrastructures in shaping the built environment. These elements are often framed within cultural tourism narratives, emphasising their representational and economic value. (Figure 4.5; Table 4.2)

At the regional and territorial scale, historic landscape values are articulated through the memory and continuity of ancient settlements, harbour systems, and shoreline dynamics. Archaeological layers associated with ancient harbours, such as those of Milet and Priene, together with the Myus harbour basin, illustrate the long-term transformation of the delta’s coastline. Paleo-shoreline terraces, silted harbour basins, and traces of former coastlines constitute a unique spatial archive documenting deltaic processes and human adaptation. The integrity of historical roads, routes, and water-related infrastructures—ranging from aqueducts and flood embankments to irrigation channels and water mills—reinforces the continuity of a water-oriented cultural geography. Industrial and technological structures, including historic farm complexes, cotton and ginning factories, licorice-processing facilities, dams, and irrigation networks, reflect successive phases of river-related development and production (Figure 4.5; Table 4.2).

The building scale encompasses water-related tangible heritage elements in the Menderes River Delta: aqueducts, traces of historic ports, flood embankments and structures, water channels, coastal structures (fishing infrastructures, customs and port structures), Menderes bridges, agricultural water-management systems, water mills, and industrial and technological water structures (irrigation network and its components, storage structures around Karina Lake, historic farm complexes along the Menderes River, and cotton, ginning, and licorice-processing facilities). These structures constitute the spatial records of the relationship established between human communities and the delta, reflecting the historical continuity of production, transportation, and settlement practices shaped through water. They also embody the traditional, industrial, and technological development processes that have unfolded across the deltaic landscape (Figure 4.5; Table 4.2). The physical environment of the Menderes River Delta faces a range of challenges arising from competing land uses, environmental change, and governance limitations. At the upper scale, conflicts between agriculture and heritage conservation are particularly evident in areas such as the Myus plain, where productive agricultural land overlaps with archaeological zones. Insufficient conservation infrastructure, limited resources for excavation and maintenance, and fragmented research environments constrain effective heritage management, while conservation–use conflicts persist across multiple site types (Figure 4.6; Table 4.2).

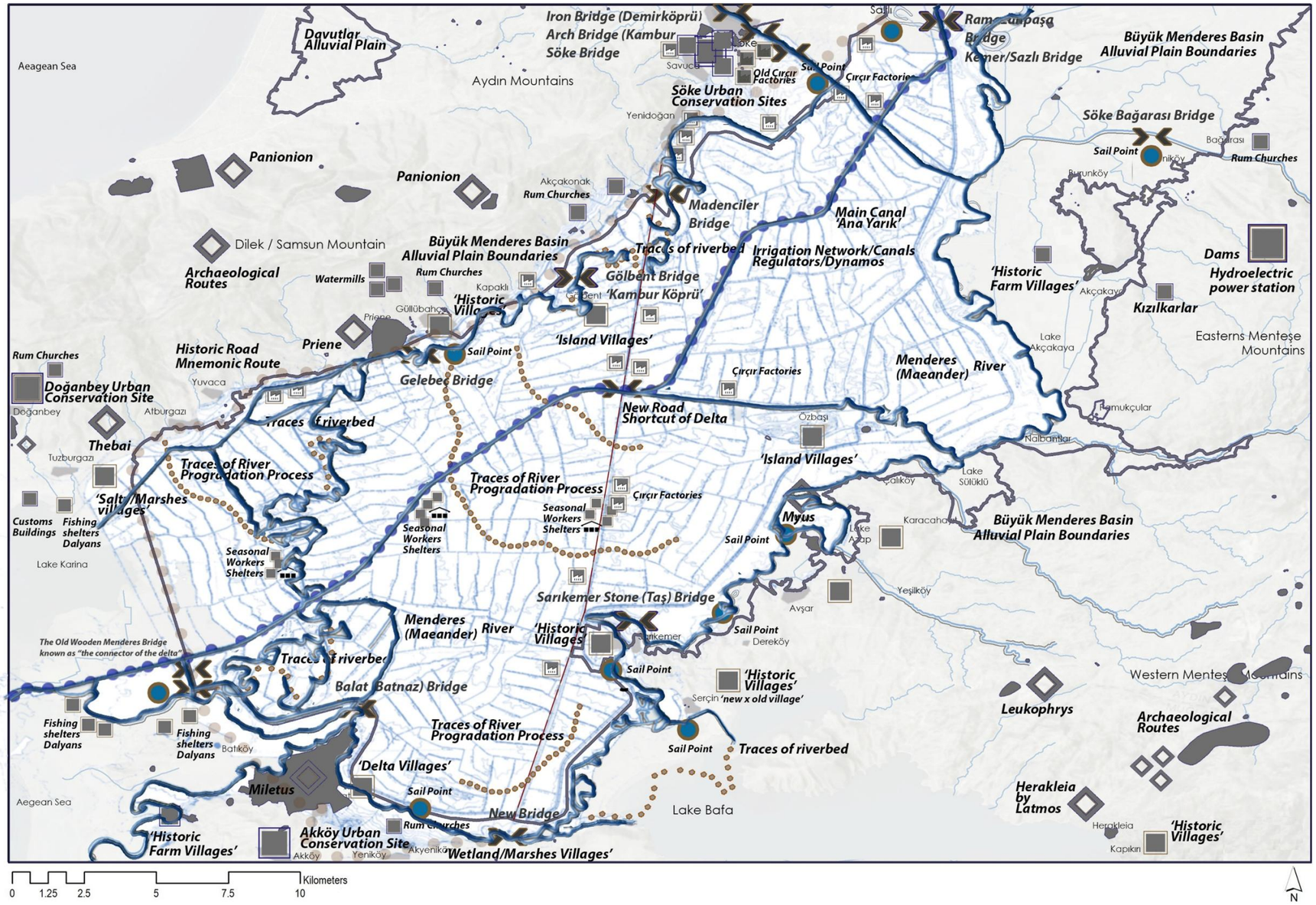
At the regional and territorial level, these challenges manifest through the gradual invisibilisation of archaeological features, especially silted harbour basins such as the ancient inner harbour of Milet. Agricultural expansion around Myus, shoreline change erasing traces of historic harbour landscapes, and unplanned industrial, infrastructural, and transportation investments threaten the integrity of historic environments. Gaps and weaknesses in conservation and management frameworks make visible these pressures, often prioritising short-term economic interests over long-term heritage values (Figure 4.6; Table 4.2). From the local perspective, challenges are experienced through the degradation of physical environments associated with natural constraints, including marshland settlements and areas

characterised by alluvial or saline soils. Furthermore, archaeological areas perceived as “non-functional,” such as the surroundings of Myus and Balat, face marginalisation, while expanding agricultural activities place additional pressure on villages. These processes contribute to a growing perception of “invisible history,” where heritage exists but is no longer legible or integrated into everyday life (Figure 4.6; Table 4.2).

The reciprocal interaction between values and challenges generates significant tensions within the historic landscape of the Menderes River Delta. At the upper scale, tensions emerge between archaeological excavation needs and infrastructure development, particularly where large-scale projects intersect with protected sites. At the regional scale, the memory of historic harbours stands in contrast to contemporary shoreline configurations shaped by sedimentation and land reclamation, while fertile plains essential to agricultural productivity conflict with protection requirements (Table 4.2). At the local scale, tensions are negotiated through everyday practices and lived experiences. Conservation restrictions often clash with daily use, agricultural values compete with heritage protection, and irrigation-driven agricultural systems generate conflicting outcomes by enhancing productivity while simultaneously degrading historic and ecological environments. Water pollution, industrial agriculture, and large-scale hydraulic infrastructures intensify these tensions Table 4.2).

In summary, the built environment/ landscape heritage of the Menderes River Delta emerges as a deeply layered and dynamic riverine system, shaped by the interplay of archaeological remains, water-related infrastructures, production landscapes, and lived practices. Values, challenges, and tensions are distributed unevenly across scales and authors, reflecting differing priorities and interpretations of heritage. Understanding the historic landscape heritage of the Menderes River Delta thus requires recognising it as an evolving cultural geography continuously negotiated through the relationship between river, land, and society.

Menderes (Maeander) Delta as Historic Built Environment and Landscape Heritage | VALUES

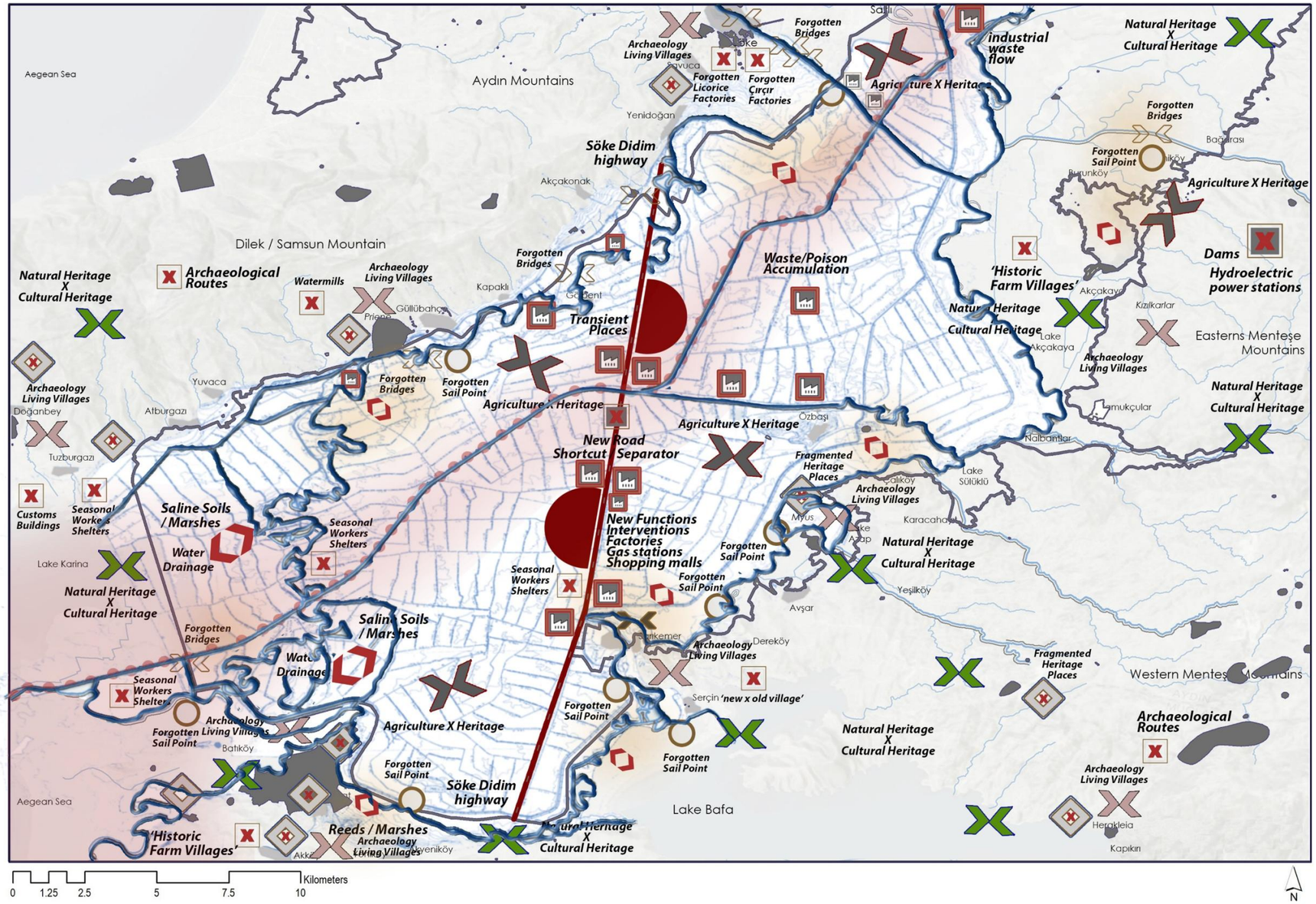


Legend

- Values Related to Built Environment as Described by Local Authors
- Values Related to Built Environment as Described by Territorial/Regional Authors
- Values Related to Built Environment as Described by Upper Scale Authors
- Physical Traces of Old Maeander, Riverbed and Progradation Process
- Main Irrigation Center/Axis Main Maeander Canal 'Ana Yarık'
- The Historic Road connecting the Menderes Delta
- The New Road connecting the Menderes Delta 'Shortcut of Delta'
- Menderes River Sail Points and Mnemonic Places
- Cotton 'Çırçır' Factories
- Archaeological Sites and Routes
- Seasonal Agricultural Workers Shelters
- Bridges connecting the Menderes Delta
- Menderes (Maeander) River Basin and Alluvial Plain Boundaries
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.5 'Riverine Landscape Heritage' Approach: Built Environment/Landscape Heritage Values (Author, 2026)

Menderes (Maeander) Delta as Historic Built Environment and Landscape Heritage | CHALLENGES



Legend

- Challenges Related to Built Environment as Described by Local Authors
- Challenges Related to Built Environment as Described by Territorial/Regional Authors
- Chalenges Related to Built Environment as Described by Upper Scale Authors
- Main Irrigation Canal/Axis Main Source of Pollution
- The New Söke-Didim Highway seperating the Menderes Delta
- Bridges that have Physically Disappeared and Forgotten
- Conflicting Places in terms of Archaeological and Living Heritage
- Conflicting Places in terms of Natural and Cultural Heritage
- Conflicting Places in terms of Agriculture and Heritage
- Places that have Physically Disappeared and Forgotten
- Cotton 'Çırçır' Factories that Pollute The River and Delta
- Fragmented Archaeological Heritage Sites
- Forgotten Menderes River Sail Points and Mnemonic Places
- Saline Soils/Marshes Water Drainage Problems
- Menderes (Maeander) River Basin and Alluvial Plain Boundaries
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals Topography

Figure 4.6 r'Riverine Landscape Heritage' Approach: Built Environment/Landscape Heritage Challenges (Author, 2026)

Table 4.2 Built Environment/Landscape Heritage | Values – Challenges – Tensions

Issues	Assigned by Upper Scale Authors/	Regional/Territorial Authors	Attributed by Local Authors
Values	Archaeological Sites (Milet–Balat and Batnaz, Priene–Güllübahçe, Myus–Özbaşı–Avşar, Akyeniköy–Kumtepe, Akçakonak); Historical Sites (Yenidoğan); Urban Conservation Areas (Söke, Doğanbey, Akköy, Gölbent, Kapaklıpınar); Historic Structures (aqueducts, bridges, water mills, historic wells, cisterns); cultural tourism potential	Memory of ancient settlements; archaeological layers and ancient harbours; remains of former coastlines and traces of historical harbour structures (paleo-shoreline terraces around Priene); continuity of archaeological sites (Myus mound); historical roads and routes; integrity of the long-term cultural geography; multilayered historical landscape traces; living urban and rural settlements (coastal settlements, delta and alluvial-plain settlements, historic farm complexes, historic island settlements); unique record of historical shoreline changes; aqueducts, traces of ancient harbours, flood embankments, water channels, coastal structures (fishing infrastructures, customs-port structures), Menderes bridges, agricultural water-management systems, water mills, industrial and technological water structures (irrigation network and component structures, dams, cotton, ginning, and licorice-processing factories), structures reflecting traditional, industrial, and technological water/river development processes.	Perceptions of ancestral land (Priene–Güllübahçe, Milet, Balat village); memory of historical routes (Priene–Milet ancient road); perception of sacred and fertile places; settlement categories associated with the river (plain, island, delta, wetland, marshland, coastal, historic farm, harbour, floodplain, fishing); cotton and agricultural factories (important factory-owning families: Tuntaş, Özbaş, Tanman, Göktepe); former licorice-processing factories; Menderes transportation routes; Menderes bridges; key settlements and irrigation points within the irrigation network; water- and river-based toponyms; festival and celebration places connected to the river (Doğanbey, Güllübahçe, Serçin, Sarıkemer, Akköy); market places around the riverbed; water mills; industrial and technological water structures (irrigation network and components)

Table 4.2 Continued

Challenges	Agriculture–heritage conflict (Myous plain); insufficient conservation infrastructure (archaeological excavation areas); conservation-use–use conflicts; tension between agriculture and protected sites; insufficient resources for excavation and conservation; fragmented research environment	Invisibilisation of harbour basins and archaeological areas (e.g., the silted ancient inner harbour of Milet); agricultural pressure (expansion around Myous); shoreline change erasing heritage traces (Priene hinterland); unplanned construction and investment activities (industrial, infrastructural, transportation-related); limitations, gaps, and weaknesses in conservation and management	Physical environments and structures associated with natural struggles (marshland settlements, alluvial and saline soils and agricultural settlements); degradation around Menderes bridges; reedbeds and marshlands experiencing neglect; negative impacts of irrigation networks and newly introduced irrigation and agricultural techniques (dams, irrigation networks and methods, agricultural factories, water pollution); archaeological areas perceived as "non-functional" (Myus and Balat surroundings); expansion pressures on villages from agricultural growth; perception of "invisible history"
Tensions	Excavation areas vs. infrastructure needs (archaeological sites)	Historical coastline–modern land-use conflict (agricultural use in Milet harbour basin); tension between protected sites and agricultural lands; modern roads vs. ancient roads; historical harbour memory vs. shoreline change; fertile plains vs. protection needs	Everyday use vs. conservation restrictions; agricultural values vs. heritage protection; conflicting effects of irrigation networks and new agricultural systems (dams, irrigation networks and methods, agricultural factories, water pollution)

Beyond its physical and ecological dimensions, the delta is a '**narrative' landscape** in which meanings are continuously produced, transmitted, and transformed across generations. These narratives operate at multiple scales, shaped by institutional framings, regional interpretations, and local experiences. Analysing cultural narrative landscape heritage through the interconnected lenses of values, challenges, and tensions enables a deeper understanding of how the riverine landscape is not

only inhabited and used, but also remembered, imagined, and contested (Figure 4.7; Table 4.3).

At the upper scale, cultural narrative values of the Menderes River Delta are often framed through economic and promotional discourses. Agricultural productivity, particularly in the southern delta plains, is emphasised as a defining narrative of value, alongside rural development potential articulated through planning frameworks in the Didim–Söke hinterland. Tourism narratives and regional image-making strategies, especially along the Priene–Milet route, foreground selected historical and scenic elements of the landscape, while promotional approaches in the Didim–Söke region translate cultural landscapes into marketable representations. Within this framing, narratives are frequently aligned with cultural economy objectives, producing value while simultaneously generating conflicts between economic visibility and deeper cultural meanings (Figure 4.7; Table 4.3).

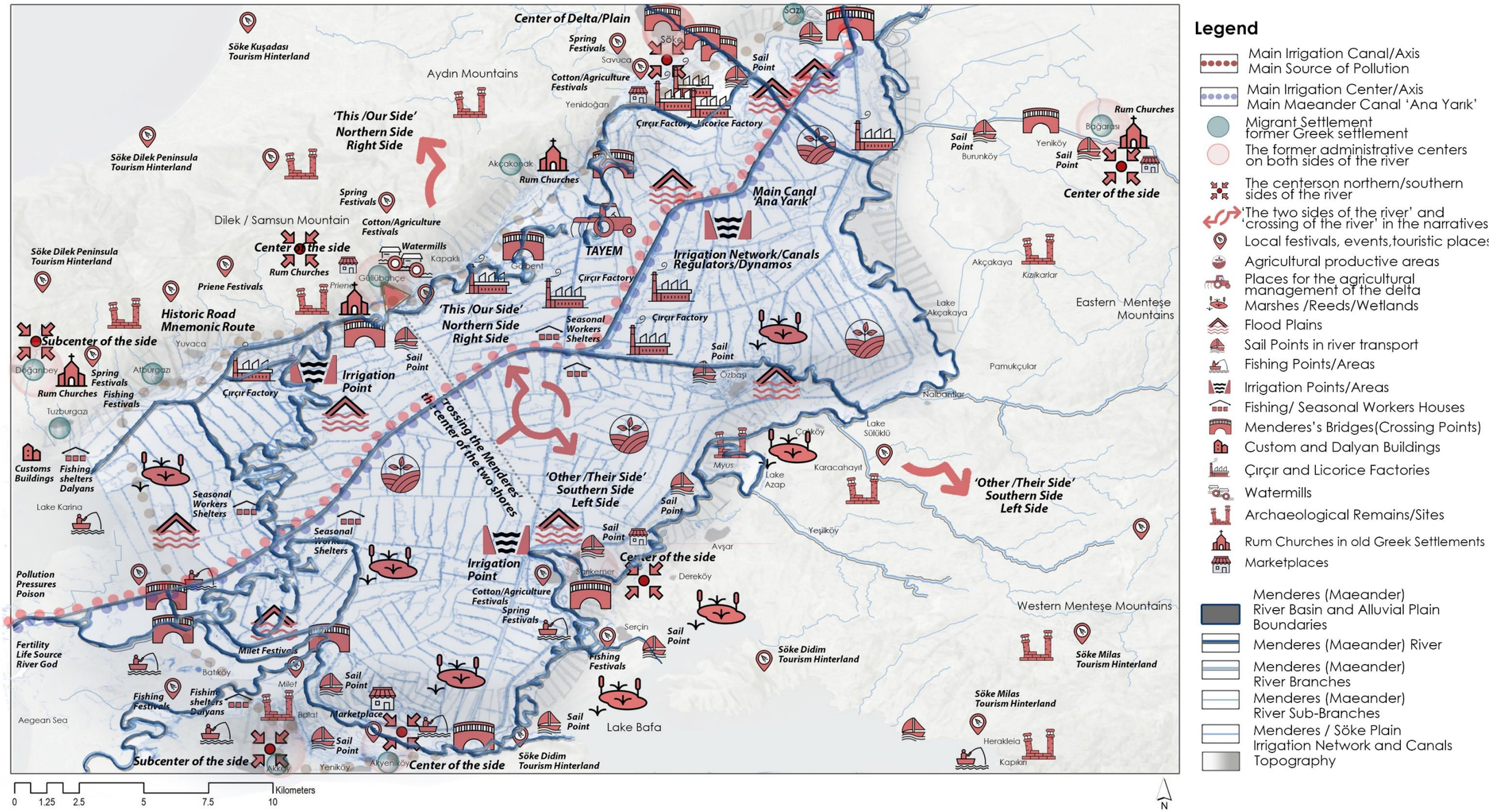
At the regional and territorial scale, cultural narrative values are rooted in traditional agricultural and irrigation practices, rural settlement culture, and shared landscape understandings. The plain functions as a collectively experienced landscape connecting the left and right sides of the Menderes River, reinforced through historical irrigation canals, including traces of older canal systems around Sarıkemer. Local knowledge systems, social memory, and mythological references contribute to a multilayered narrative structure, enriched by descriptions in ancient texts and travellers' accounts, particularly those referencing the maeandering flow icon of the river around Milet and the Güllübahçe coastline. Sensory landscapes, such as views across Bafa Lake, and symbolic associations attached to water, fertility, and movement further embed collective memory and meaning into the riverine environment (Figure 4.7; Figure 4.8; Table 4.3).

At the local scale, cultural and narrative values are articulated through everyday stories, oral histories, and spatial categorizations rooted in lived experience. Landscape values are embedded in everyday perceptions, memories, and uses of the

built environment. Ancestral land narratives associated with settlements such as Priene–Güllübahçe, Milet, and Balat, memories of ancient roads connecting key urban centres, and the perception of sacred and fertile places along the river reveal how history is experienced through living heritage places. Local water-related toponyms of settlements—plain, island, delta, wetland, marshland, coastal, harbour, and floodplain settlements—demonstrate a nuanced understanding of the river's spatial influence. Water- and river-based toponyms, traditional bridges, stopping points along river routes, irrigation nodes, marketplaces, and festival spaces connected to the river further illustrate how historic built environments continue to structure social life and identity (Figure 4.8; Figure 4.9; Table 4.3).

Narratives describing the two "sides" of the Menderes, stories of "crossing the Menderes," and shared memory places—such as the Menderes gorge, main river channel, Güllübahçe mills, ginning factories, and bridges—illustrate how the river is embedded in communal identity. Oral narratives of fishers and farmers associated with *dalyans*, fishing structures, Karina Lake, and seasonal festivals in Serçin and surrounding settlements convey experiential knowledge of water rhythms, often described as a "knowledge of the soil and the Menderes." Settlement categories defined by the river—ranging from plain and delta settlements to wetland, marshland, coastal, harbour, and stopping settlements—reflect a narrative geography shaped by water. Family farming identities, traditional irrigation knowledge, local nomenclature, agricultural factories linked to notable families, and stories surrounding bridges, irrigation networks, and seasonal labour structures further demonstrate how narratives are interwoven with production, movement, and social lifecycle (Figure 4.8; Figure 4.9; Table 4.3).

Menderes (Maeander) Delta as Cultural / Narrative Landscape Heritage | VALUES

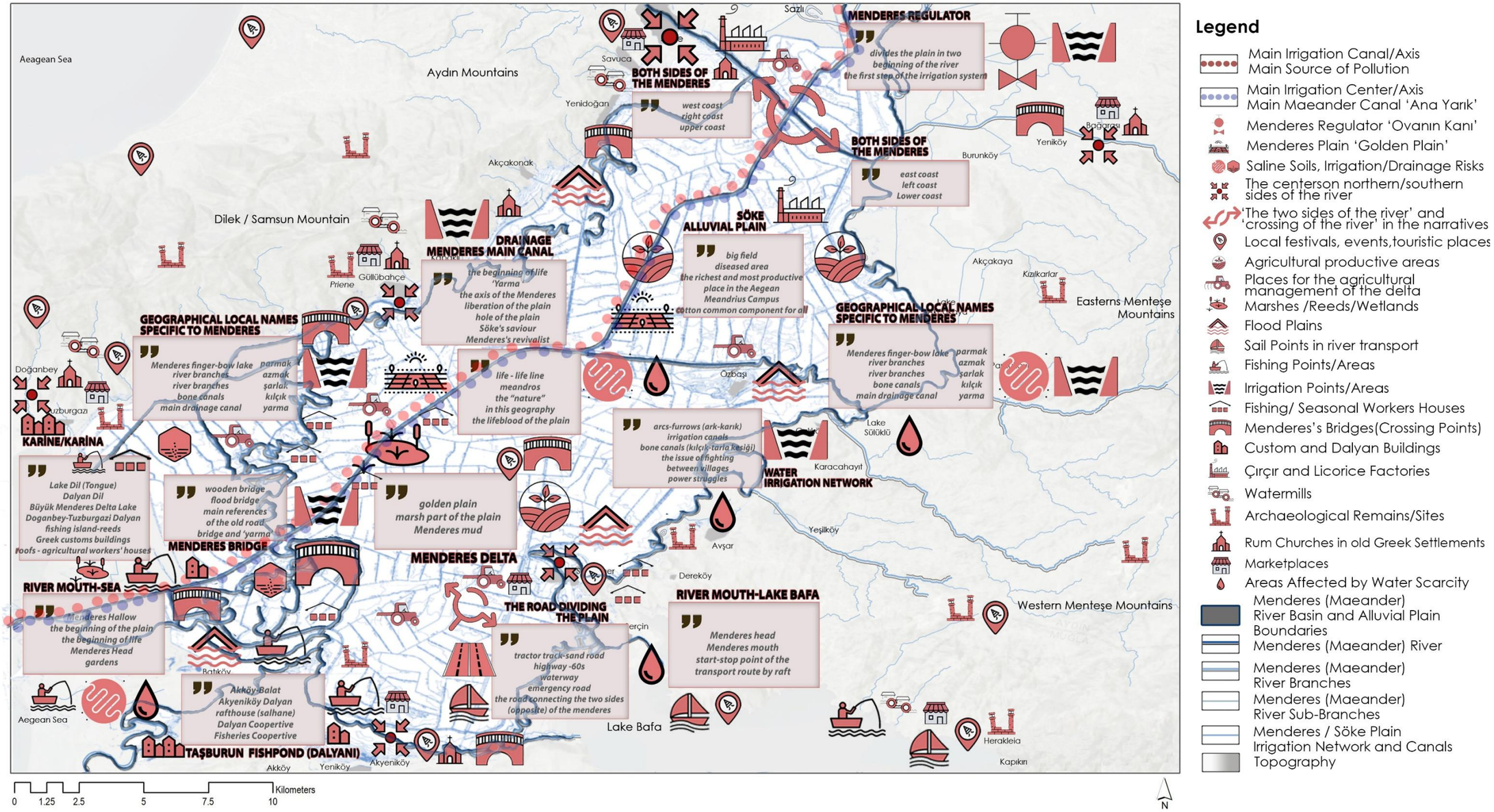


Legend

- Main Irrigation Canal/Axis Main Source of Pollution
- Main Irrigation Center/Axis Main Maeander Canal 'Ana Yarık'
- Migrant Settlement former Greek settlement
- The former administrative centers on both sides of the river
- The centerson northern/southern sides of the river
- 'The two sides of the river' and 'crossing of the river' in the narratives
- Local festivals, events,touristic places
- Agricultural productive areas
- Places for the agricultural management of the delta
- Marshes /Reeds/Wetlands
- Flood Plains
- Sail Points in river transport
- Fishing Points/Areas
- Irrigation Points/Areas
- Fishing/ Seasonal Workers Houses
- Menderes's Bridges(Crossing Points)
- Custom and Dalyan Buildings
- Çırçır and Licorice Factories
- Watermills
- Archaeological Remains/Sites
- Rum Churches in old Greek Settlements
- Marketplaces
- Menderes (Maeander) River Basin and Alluvial Plain Boundaries
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.7 'Riverine Landscape Heritage' Approach: Narrative Landscape Heritage Values (Author, 2026)

Menderes (Maeander) Delta as Cultural / Narrative Landscape Heritage | LOCAL NAMES | WATER & RIVER TOPONYMS

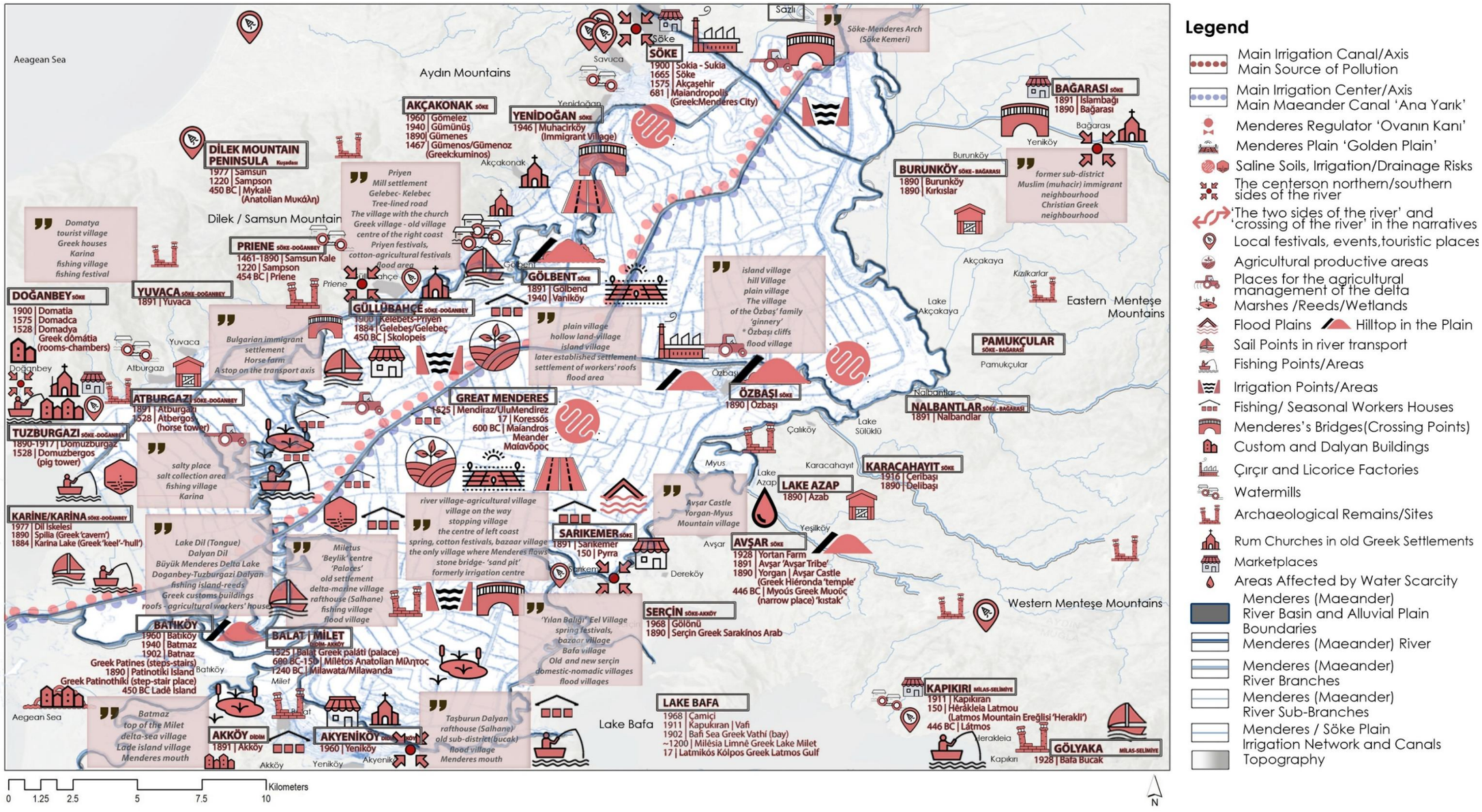


Legend

- Main Irrigation Canal/Axis Main Source of Pollution
- Main Irrigation Center/Axis Main Maeander Canal 'Ana Yarık'
- Menderes Regulator 'Ovanın Kanı'
- Menderes Plain 'Golden Plain'
- Saline Soils, Irrigation/Drainage Risks
- The centerson northern/southern sides of the river
- 'The two sides of the river' and 'crossing of the river' in the narratives
- Local festivals, events,touristic places
- Agricultural productive areas
- Places for the agricultural management of the delta
- Marshes /Reeds/Wetlands
- Flood Plains
- Sail Points in river transport
- Fishing Points/Areas
- Irrigation Points/Areas
- Fishing/ Seasonal Workers Houses
- Menderes's Bridges(Crossing Points)
- Custom and Dalyan Buildings
- Çırçır and Licorice Factories
- Watermills
- Archaeological Remains/Sites
- Rum Churches in old Greek Settlements
- Marketplaces
- Areas Affected by Water Scarcity
- Menderes (Maeander) River Basin and Alluvial Plain Boundaries
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.8 'Riverine Landscape Heritage' Approach: Narrative Landscape Heritage Values (Author, 2026)

Menderes (Maeander) Delta as Cultural / Narrative Landscape Heritage | LOCAL/ HISTORIC NAMES | NOMENCLATURES

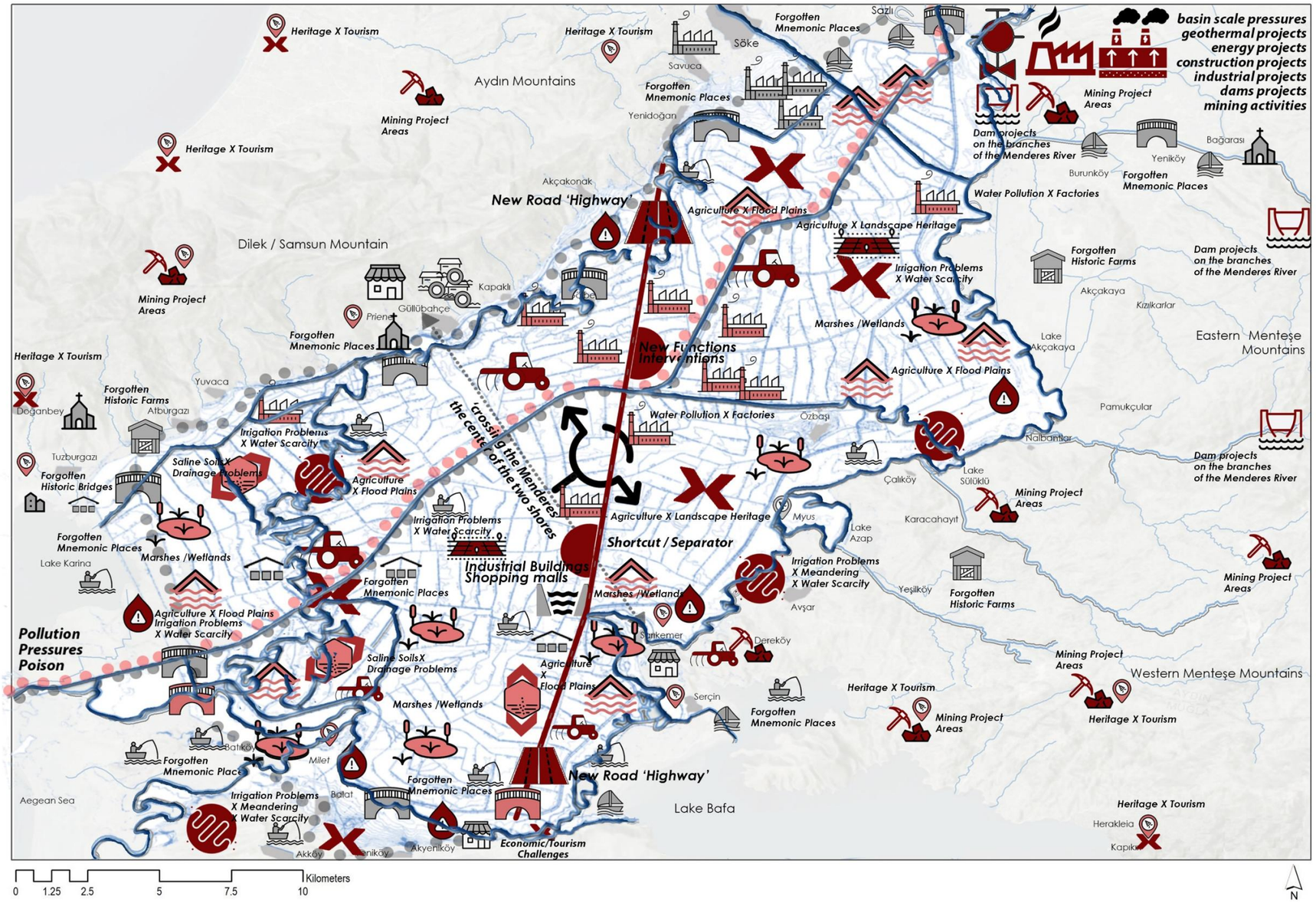


Legend

- Main Irrigation Canal/Axis
  Main Source of Pollution
- Main Irrigation Center/Axis
  Main Maeander Canal 'Ana Yarık'
- Menderes Regulator 'Ovanın Kanı'
- Menderes Plain 'Golden Plain'
- Saline Soils, Irrigation/Drainage Risks
- The centerson northern/southern sides of the river
- 'The two sides of the river' and 'crossing of the river' in the narratives
- Local festivals, events,touristic places
- Agricultural productive areas
- Places for the agricultural management of the delta
- Marshes /Reeds/Wetlands
- Flood Plains / Hilltop in the Plain
- Sail Points in river transport
- Fishing Points/Areas
- Irrigation Points/Areas
- Fishing/ Seasonal Workers Houses
- Menderes's Bridges(Crossing Points)
- Custom and Dalyan Buildings
- Çırçır and Licorice Factories
- Watermills
- Archaeological Remains/Sites
- Rum Churches in old Greek Settlements
- Marketplaces
- Areas Affected by Water Scarcity
- Menderes (Maeander) River Basin and Alluvial Plain Boundaries
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.9 'Riverine Landscape Heritage' Approach: Narrative Landscape Heritage Values (Author, 2026)

Menderes (Maeander) Delta as Cultural / Narrative Landscape Heritage | CHALLENGES



Legend

- Main Irrigation Canal/Axis
- Main Source of Pollution
- Highway / Seperator of Delta
- 'The two sides of the river' and 'crossing of the river' in the narrative
- Conflicting Places in terms of Agriculture / Heritage / Tourism
- Mining Areas/Projects
- Saline Soils/Drainage Problems
- Water Scarcity/Irrigation Problems
- Dam/Energy Projects
- Water Pollution X Factories Agricultural Industries
- Meandering X Water Scarcity
- Agriculture X Irrigation Problems
- Highway
- Upper Scale Pressures/Projects
- Touristic Places/The conflict between economy and heritage
- Marshes /Reeds/Wetlands
- Flood Plains
- Demolished/Forgotten Sail Points in river transport
- Demolished/Forgotten Fishing Points/Areas
- Demolished/Forgotten Irrigation Points
- Demolished/Forgotten Fishing/ Seasonal Workers Houses
- Demolished/Forgotten Menderes's Bridges(Crossing Points)
- Demolished/Forgotten Custom and Dalyan Buildings
- Demolished/Forgotten Çırçır and Licorice Factories
- Demolished/Forgotten Watermills
- Demolished/Forgotten Rum Churches in old Greek Settlement
- Demolished/Forgotten Marketplaces
- Demolished/Forgotten Historic Farms
- Menderes (Maeander) River Basin Alluvial Plain Boundaries
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.10 'Riverine Landscape Heritage' Approach: Narrative Landscape Heritage Challenges (Author, 2026)

Cultural narrative landscape heritage in the Menderes River Delta faces significant challenges arising from processes of modernisation, commodification, and structural transformation. At the upper scale, the transition from small-scale agriculture to large-scale agricultural enterprises alters traditional narratives of production and land stewardship. Homogenisation of touristic imagery, particularly along the Didim–Milas interface, and the commodification of landscape representations reduce narrative diversity, privileging simplified and market-oriented images over layered cultural meanings. (Figure 4.10; Table 4.3). At the regional and territorial scale, basin-wide pressures increasingly shape narrative erosion within the delta. Geothermal investments, energy projects, construction activities, and industrial development fragment land and landscape continuity, while outmigration of younger populations and the transformation of rural structures weaken the transmission of cultural practices. As touristic representations become dominant, locally embedded narratives tied to everyday practices, irrigation knowledge, and seasonal rhythms lose visibility. Spatial change contributes directly to the weakening of landscape imagery, eroding the symbolic coherence of the riverine landscape (Figure 4.10; Table 4.3).

From the local perspective, challenges are experienced through everyday disruptions and narrative loss. Fragmentation of land and landscape, limited access to water in areas such as the interior of the Balat riverbank, and the outmigration of youth—particularly evident in regions such as Akköy—undermine the continuity of narrative transmission. Stories of water pollution, water scarcity, and threats associated with irrigation networks increasingly dominate local discourse, alongside narratives describing the decline or disappearance of fishing activities in the delta. Flood narratives persist as reminders of environmental uncertainty, yet are often reframed within technical or risk-oriented discourses (Figure 4.10; Table 4.3).

The interaction between values and challenges produces pronounced tensions within the cultural narrative landscape of the Menderes River Delta. At the upper scale, mismatches emerge between heritage narratives and economic promotion strategies,

particularly where productivity-driven goals conflict with the sustainability of rural character. Along corridors such as Söke–Didim and routes such as Priene–Milet, promotional narratives often contradict the multilayered settlement patterns and lived histories of the Menderes Plain, Güllübahçe, Balat, Akköy, Sarıkemer, and Serçin. These tensions reveal conflicts between rural fabric conservation and agricultural expansion. At the regional scale, tensions arise between traditional production practices and modern agricultural systems, as well as between water management strategies and production demands. Memory-based narratives associated with the river increasingly conflict with growth-oriented economic agendas, while symbolic heritage values stand in tension with utilitarian uses of the landscape. Historical representations of the delta often struggle to coexist with rapid spatial transformation, generating contradictions between narrative continuity and physical change (Table 4.3).

At the local level, economic pressures are transforming lifestyles, the traditional production landscape, and the landscape's local identity. Conflicts between water management and production demand persist, while local narratives frequently clash with externally imposed touristic discourses. Symbolic meanings attached to the river—once understood as both an economic resource and the lifeline of the plain—are reconfigured, as narrative emphasis shifts toward viewing the Menderes primarily as a technical and regulated flow. This transformation reflects a deeper tension between lived cultural meanings and technocratic framings of the riverine landscape (Table 4.3).

In conclusion, the narrative landscape heritage of the Menderes River Delta emerges as a dynamic and contested domain shaped by stories, memories, and symbolic interpretations embedded within the riverine environment. Values, challenges, and tensions are produced through interactions between institutional narratives, regional transformations, and local lived experiences, revealing the fragility of narrative continuity under conditions of rapid change. Recognising the delta as a cultural

narrative landscape highlights the importance of narratives as an active agency of heritage that shapes how landscapes are understood, valued, and negotiated.

Table 4.3 Narrative Landscape Heritage | Values – Challenges – Tensions

Issues	Assigned by Upper Scale Authors/ Decision Makers	Regional/Territorial Authors	Attributed by Local Authors
Values	Agricultural productivity value (southern delta agricultural plains); rural development potential and rural planning (Didim–Söke hinterland); tourism narrative and image (Priene–Milet route); promotional value (Didim–Söke region); cultural economy–value conflicts	Traditional agricultural and irrigation practices; rural settlement culture (the plain functioning as a shared landscape between the left and right sides of the river); historical traces of irrigation canals (old canals around Sarıkemer); local knowledge; social memory; mythological values; descriptions in ancient texts; multilayered historical narratives (references to the maeanders of the Menderes in ancient sources around Milet; travellers' accounts along the Güllübahçe coastline); sensory landscape (Bafa Lake views); sensory and symbolic meanings; collective memory	Descriptions of the two "sides" of the Menderes and associated spatial categories; narratives of "crossing the Menderes"; shared places in community memory (Menderes gorge, main channel, Güllübahçe mills, ginning factories, Menderes bridges, etc.); oral narratives of fishers and farmers (Dalyans, fishing structures, Karina Lake, Serçin festivals, etc.); local seasonal knowledge of water rhythms ("knowledge of the soil and the Menderes"); settlement categories associated with the river (plain settlements, island settlements, delta, wetland, marshland, coastal, historic farm, harbour, along river routes); family farming identities (notable families); traditional irrigation knowledge (village irrigation systems and local nomenclature); cotton and agricultural factories (Tuntaş, Özbaş, Tanman, Göktepe families); narratives of the Menderes bridges; narratives on irrigation settlements and irrigation networks; fishing structures along the Menderes and delta; narratives of seasonal agricultural labour structures

Table 4.3 Continued

Challenges	Modernisation pressures (transition to large-scale agricultural enterprises); homogenisation of the touristic image (Didim–Milas interface); commodification of the landscape	Basin-scale pressures reflected in the delta (geothermal investments, energy projects, construction and industrial development); land and landscape fragmentation; outmigration of younger populations; transformation of rural structures; loss of cultural practices; dominance of touristic representations; narrative erosion due to spatial change; weakening of landscape imagery	Basin-scale pressures reflected in the delta; land and landscape fragmentation; outmigration of youth; transformation of rural structures; water-access problems (Balat riverbank interior); youth loss (Akköy region); narratives of water pollution; narratives of water scarcity; threats associated with irrigation networks and irrigation-related structures; narratives of "fishing has ended in the delta"; flood narratives
Tensions	Heritage narrative vs. economic strategies; productivity goals vs. heritage character; (Priene–Milet route and multilayered settlement areas, Güllübahçe, Balat, Akköy, Sarıkemer, Serçin); rural fabric conservation vs. agricultural expansion	Traditional production–modern agriculture conflict (plain); water management–production demand tension; memory–economic growth contradiction; local narrative–touristic discourse conflict; symbolic heritage–economic use tension; historical representation–spatial transformation contradiction	Economic pressure–lifestyle conflict; traditional production–modern agriculture tension; water management–production demand tension; local narrative–touristic discourse conflict; symbolic heritage–economic use conflict; narratives reflecting the river as both an economic resource and the lifeline of the plain, while its narrative meaning shifts toward a purely physical/technical flow

4.2 Characterization and Zoning of Menderes Riverine Landscape Heritage: (Dis) Continuities and (Dis) Connections

This research develops a three-stage characterization and zoning framework that evaluates the riverine landscape through both macro-scale landscape characteristics, meso-scale regional and territorial relations, and micro-scale settlement and intra-settlement spatial, cultural, and archaeological features. In light of assessment and valuation chapter, in the first phase, three major upper-scale character areas are defined within the multi-layered analytical framework that integrates natural,

historical, physical/built environment, cultural, mental and mnemonic, economic, agricultural, and infrastructural landscape components.: the northern (right) side of the Menderes River, the southern (left) side, the inner-land alluvial plain, and the land–sea interaction zone. These zones provide a structural framework shaped by river–delta morphology, ecological processes, and large-scale spatial patterns. These analyses are operationalized through GIS-based spatial mapping of focal places, thematic routes, and network systems.

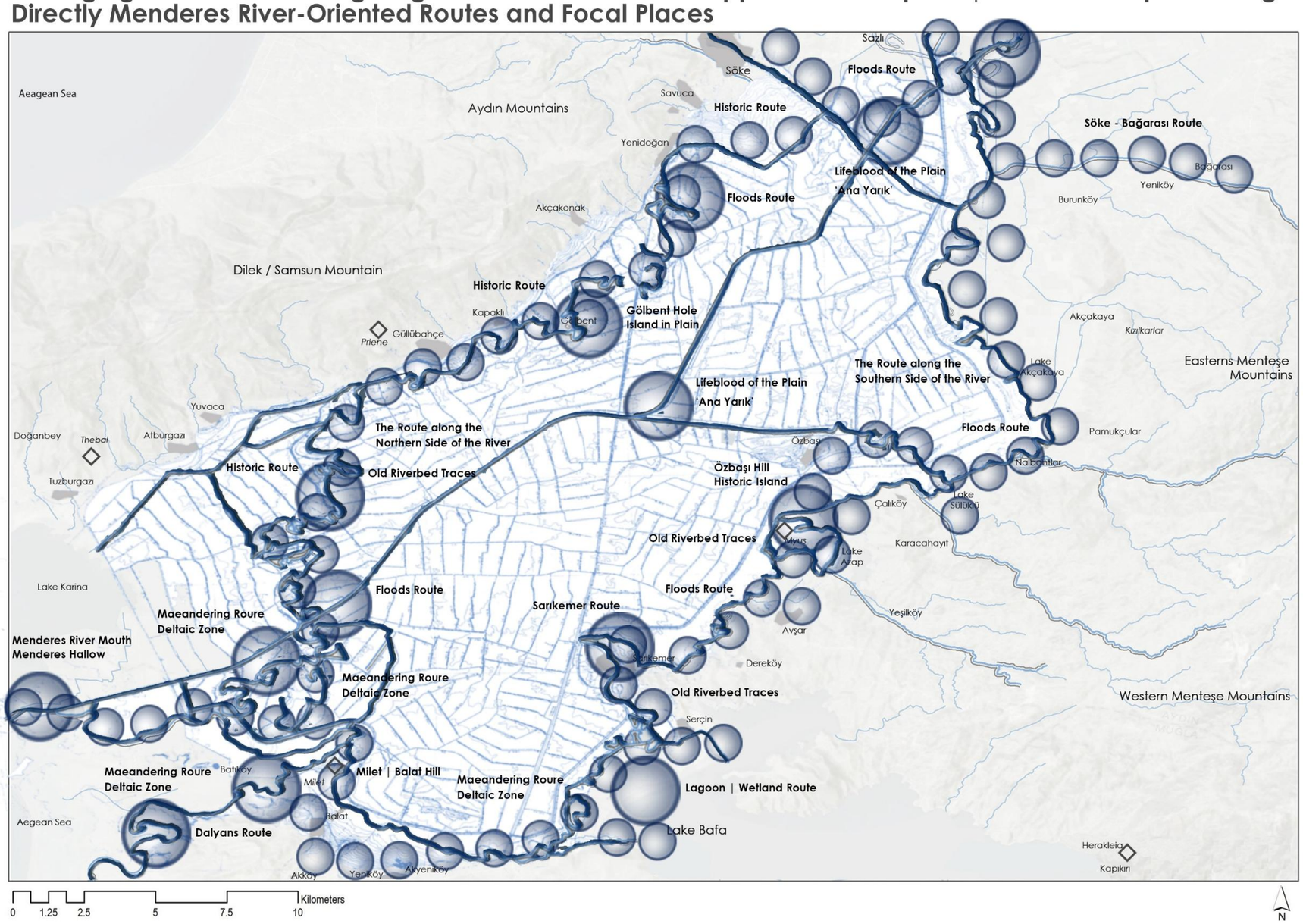
Each thematic layer operates as an analytical lens that reveals different dimensions of the riverine landscape—ranging from natural dynamics and historical continuity to everyday practices and socio-economic production patterns. Through the identification of focal places and routes across these thematic maps, the fragmented landscape was systematically decomposed and reinterpreted. This multi-layered analytical approach enabled the detection of spatial patterns of (dis)continuity and (dis)connection, forming the basis for the conservation and management of the riverine landscape. The first step involved the production of thematic mappings representing different dimensions of the landscape, including: natural and hydrological structures (river flow, deltaic formation, wetlands), historical continuity traces (ancient settlements, transportation routes, irrigation systems), socio-economic and production landscapes (agriculture, water management, industrial development), and narrative and mnemonic layers (local events, festivals, cultural practices) (Figure 4.11; Figure 4.12; Figure 4.13; Figure 4.14; Figure 4.15; Figure 4.16; Figure 4.17). Each theme was visualized through distinct yet overlapping layers using color-coded focal places and routes. Beyond evaluating each thematic layer independently, the analysis focused on: the overlap of different thematic values (natural, historical, narrative), the intensity and clustering of focal points, and the continuity and directionality of routes.

In the second phase, the urban, rural, and archaeological settlement clusters within the delta are evaluated based on their internal dynamics, their modes of interaction with the Menderes River, historical layering, land-use practices, and landscape

characteristics. Through a valuation and assessment framework that incorporates landscape heritage values, challenges, and tensions, as well as values, challenges, and tensions attributed by local landscape communities and those assigned by decision makers, the focal character areas of the delta have been defined. Beyond treating these datasets as separate thematic layers, the analysis adopts a relational and integrative approach, focusing on the spatial overlaps, intersections, and intensities generated by the coexistence of these layers. The mapping of directly river-oriented focal places and routes, settlement-based networks on both sides of the river, historical continuity traces, irrigation and agricultural production systems, transportation networks, and mnemonic landscapes collectively reveals a complex spatial structure defined by multiple forms of interaction. In this context, the density, clustering, and convergence of focal points and routes become key indicators for identifying character areas (Figure 4.18; Figure 4.19).

This multi-scalar and multi-dimensional approach reveals that the Menderes Riverine Landscape operates as a relational system structured through flows, connections, and layered interactions. The river itself plays a central role in generating these relationships, shaping both the distribution of landscape components and the connections between them. The macro-scale structure provides the territorial framework, while the meso-scale clusters highlight the localized intensities and interaction zones within this system (Figure 4.18; Figure 4.19).

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage
Directly Menderes River-Oriented Routes and Focal Places

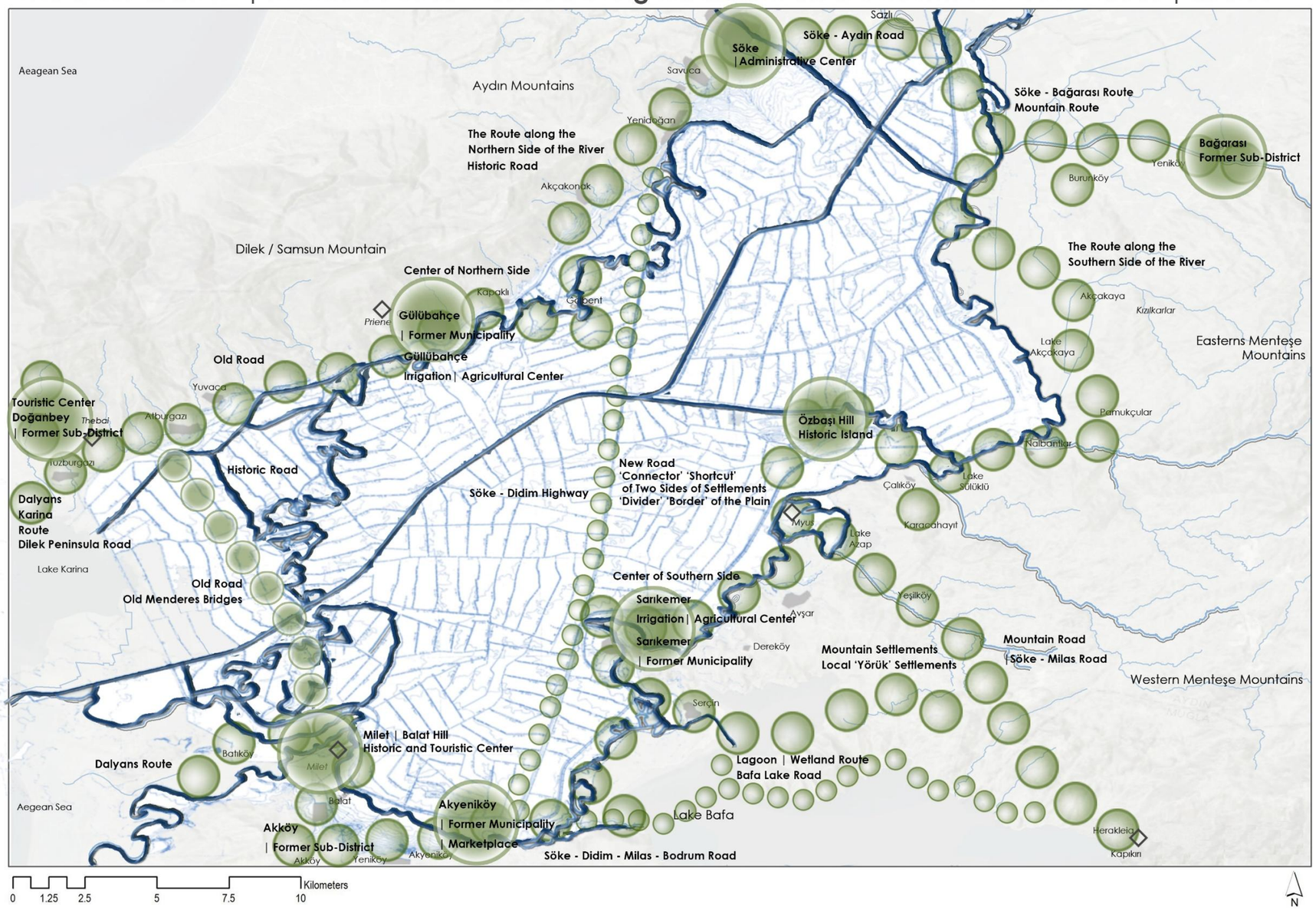


Legend

- Directly Menderes River-Oriented Focal Places
- Directly Menderes River-Oriented Routes
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.11 Directly Menderes River-Oriented Focal Places and Routes (Author, 2026)

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage
'Two Sides of River' | Menderes River-Oriented Living Urban and Rural Settlements Focal Places | Routes



Legend

'Two Sides of River' | Menderes River-Oriented Living Urban and Rural Settlements Routes

'Two Sides of River' | Menderes River-Oriented Living Urban and Rural Settlements Routes

Water/River Dependent Living Urban/Rural Settlements

Ancient Port Cities (Archaeological Sites)

Menderes (Maeander) River

Menderes (Maeander) River Branches

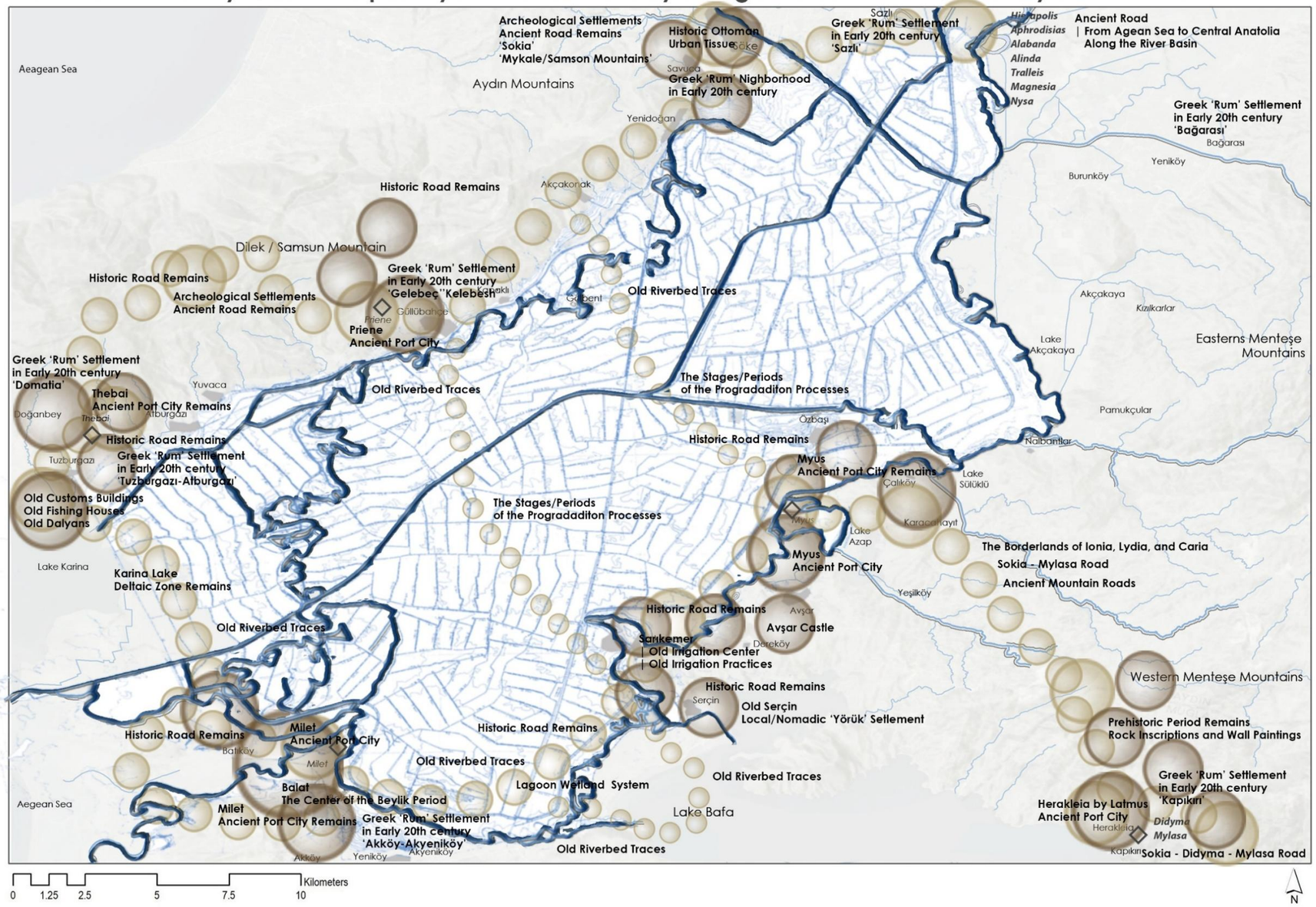
Menderes (Maeander) River Sub-Branches

Menderes / Söke Plain Irrigation Network and Canals

Topography

Figure 4.12 Menderes River-Oriented Living Urban and Rural Settlements Focal Places and Routes (Author, 2026)

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage
Historical Continuity Traces Shaped by the Natural and Hydrological Structure and Multilayered Built Environment

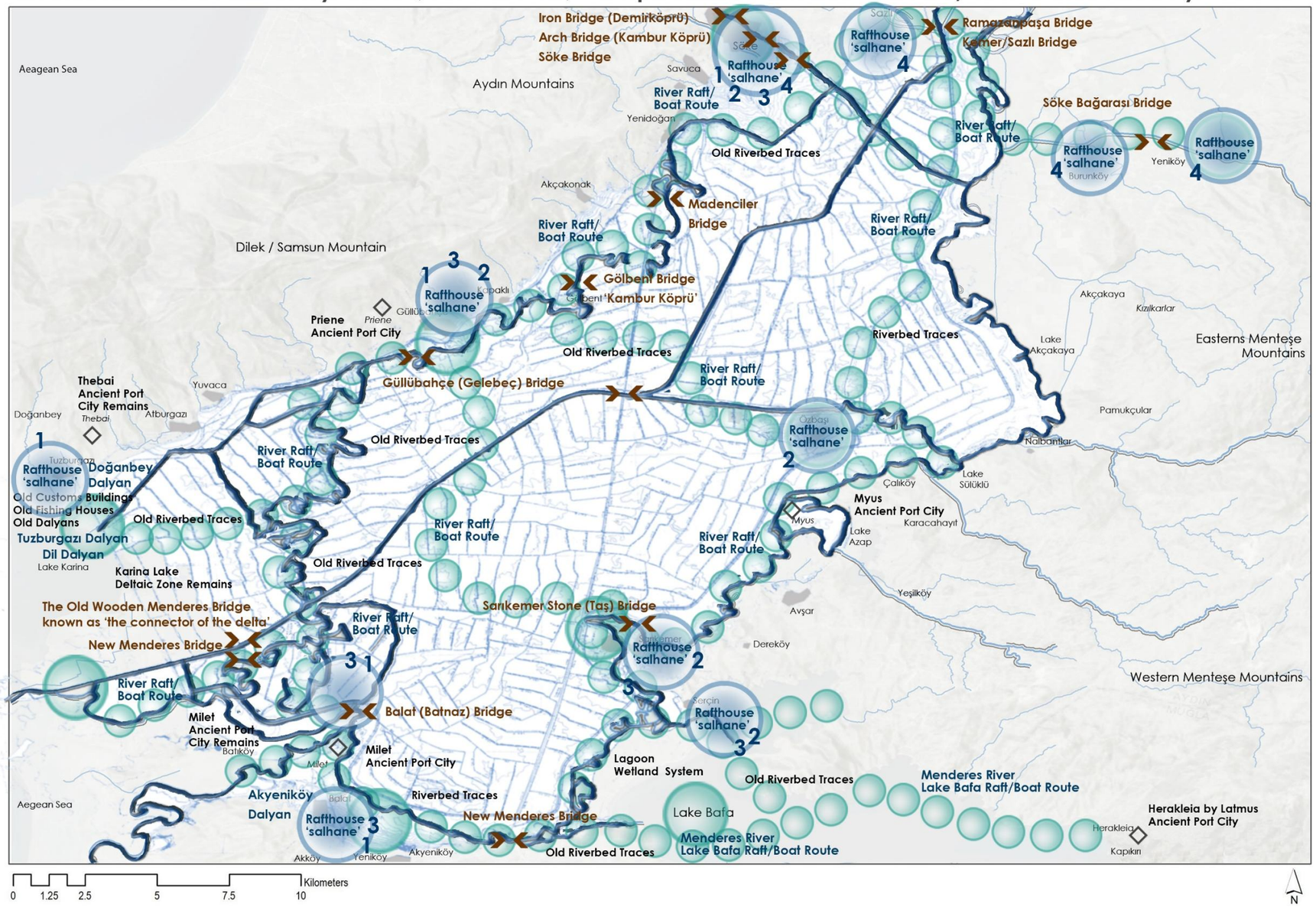


Legend

- Focal Places
  Historical Continuity Shaped by the Natural and Hydrological Structure and Multilayered Built Environment
- Routes
  Historical Continuity Shaped by the Natural and Hydrological Structure and Multilayered Built Environment
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.13 Historical Continuity Traces Shaped by the Natural and Hydrological Structure and Multi-Layered Built Environments (Author, 2026)

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage
Menderes River's Natural Dynamics, Flow Routes, Transportation Networks and Raft/Boathouses Journeys Routes



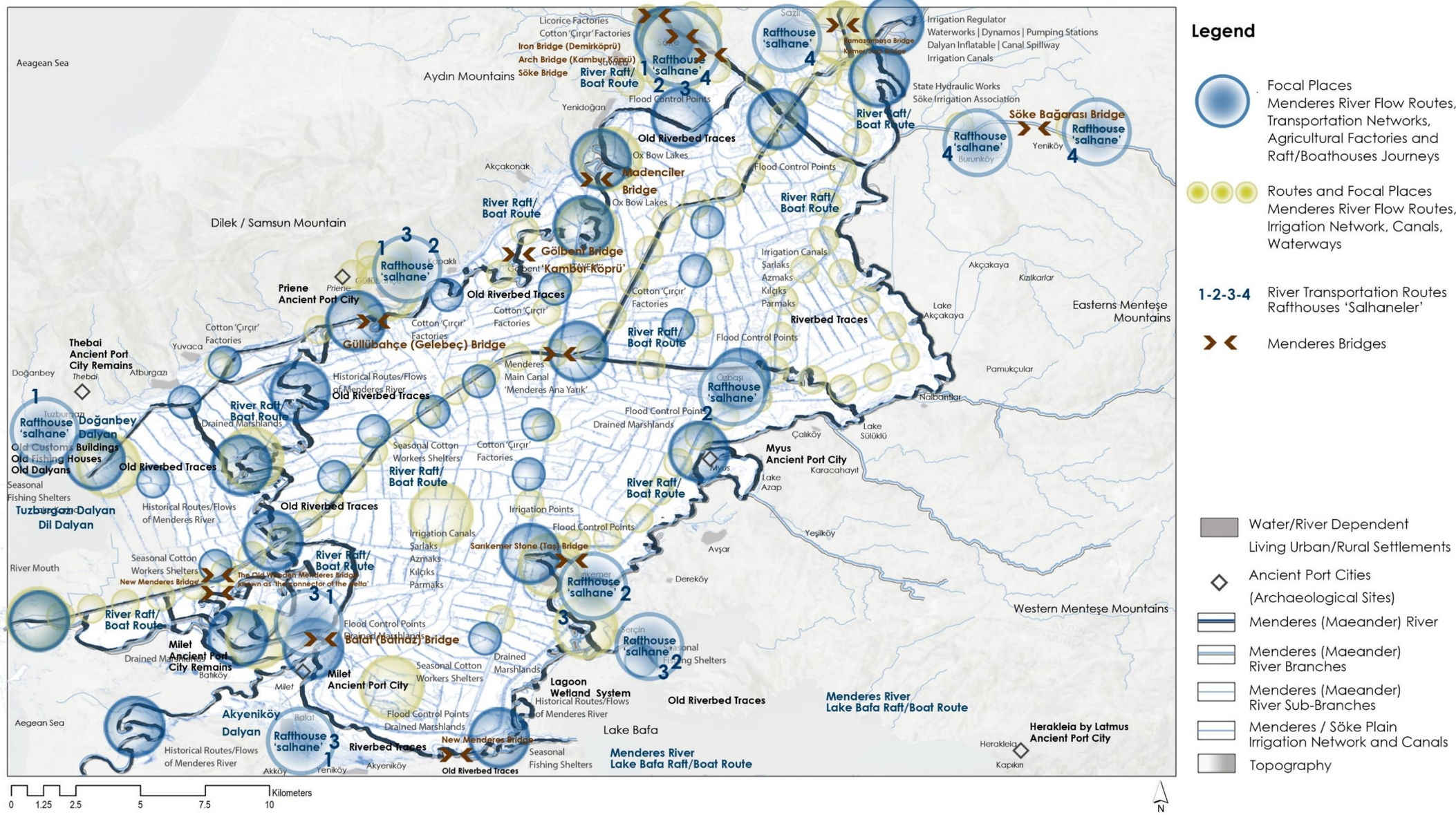
Legend

- Focal Places — Menderes River Flow Routes, Transportation Networks and Raft/Boathouses Journeys
- Routes — Menderes River Flow Routes, Transportation Networks and Raft/Boathouses Journeys
- 1-2-3-4 River Transportation Routes Rafthouses 'Salhaneler'
- Menderes Bridges
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.14 Menderes River's Flow Routes, Transportation Networks and Raft/Boathouses Focal Places and Routes (Author, 2026)

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage

Focal Places and Routes | Agricultural History and Rural Production | Water Management History and Irrigation Projects



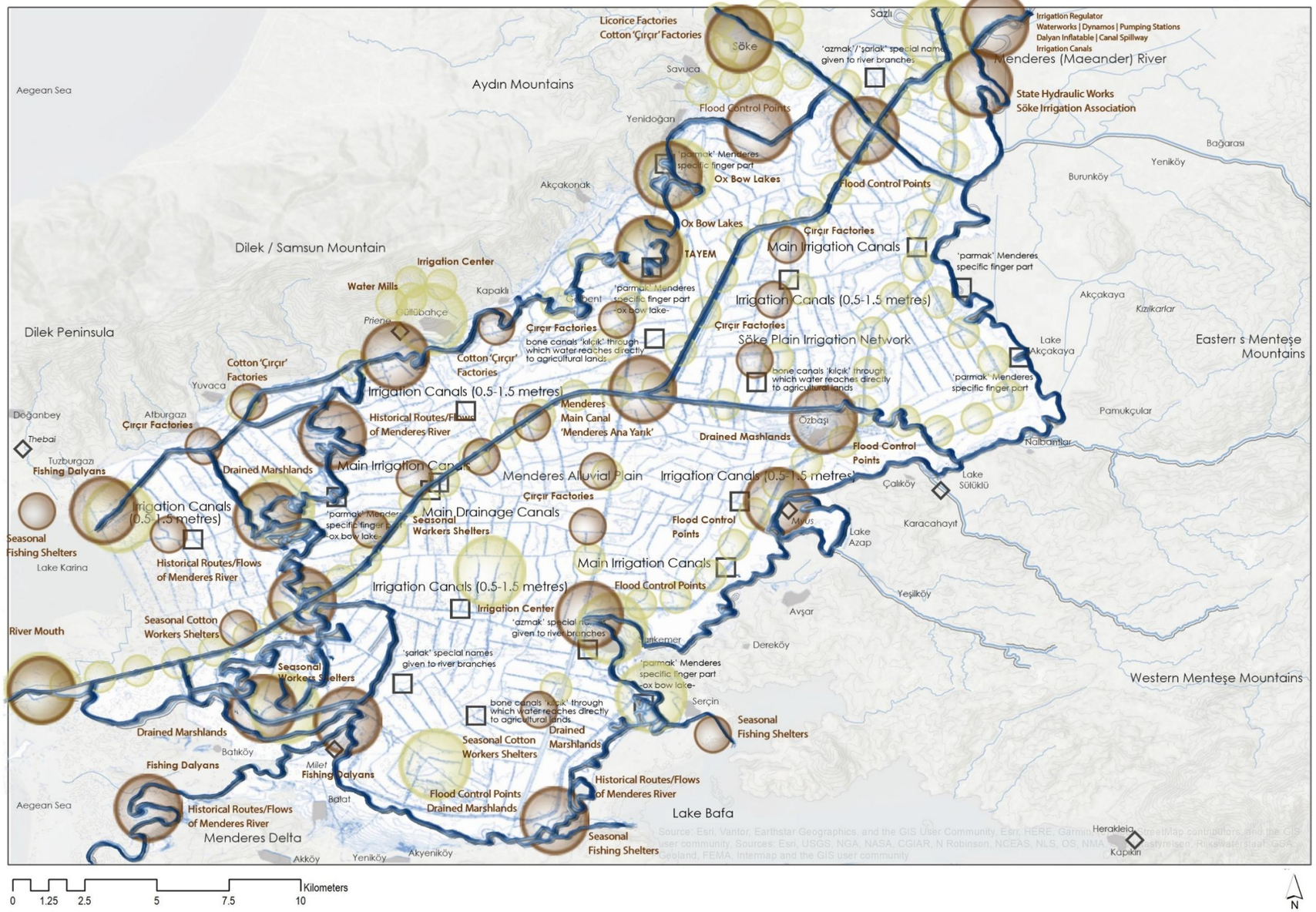
Legend

- Focal Places
  Menderes River Flow Routes, Transportation Networks, Agricultural Factories and Raft/Boathouses Journeys
- Routes and Focal Places
  Menderes River Flow Routes, Irrigation Network, Canals, Waterways
- 1-2-3-4 River Transportation Routes Rafthouses 'Salhaneler'
- Menderes Bridges
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.15 Agricultural History, Rural Production and Water Management History and Irrigation Projects Focal Places and Routes (Author, 2026)

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage

Focal Places and Routes | Agricultural History and Rural Production | Water Management History and Irrigation Projects



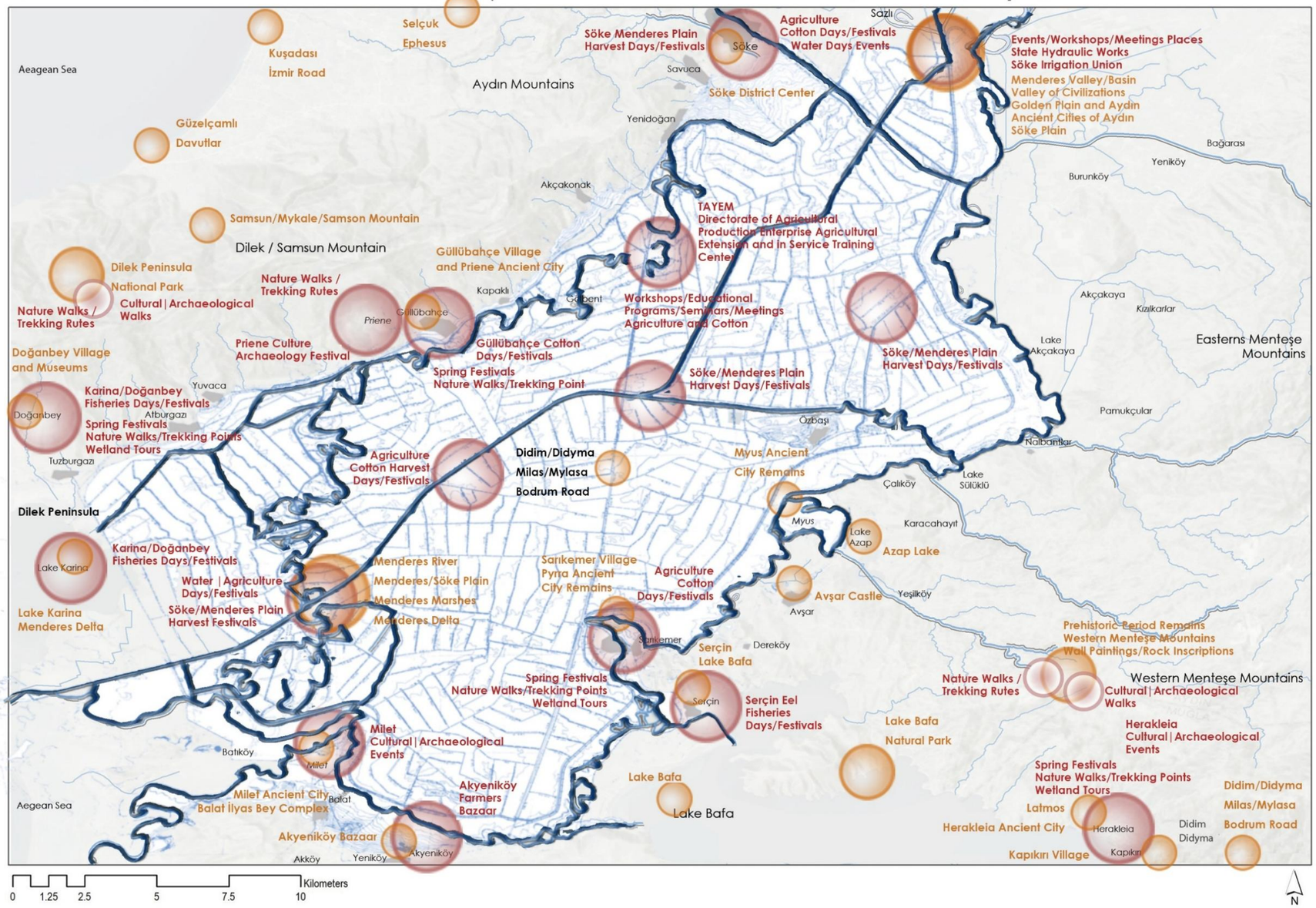
Legend

- Focal Places
  Menderes River Flow Routes, Transportation Networks, Agricultural Factories and Raft/Boathouses Journeys
- Routes and Focal Places
  Menderes River Flow Routes, Irrigation Network, Irrigation Points, Irrigation Canals, Waterways
- The components of the reconstructed landscape as part of the irrigation project in the 70s, including the irrigation network, canals, points
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.16 Agricultural History, Rural Production and Water Management History and Irrigation Projects Focal Places and Routes (Author, 2026)

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage

Focal Places, Routes and Mnemonic Places | Touristic Places and Local Events, Activities, Days and Festivals



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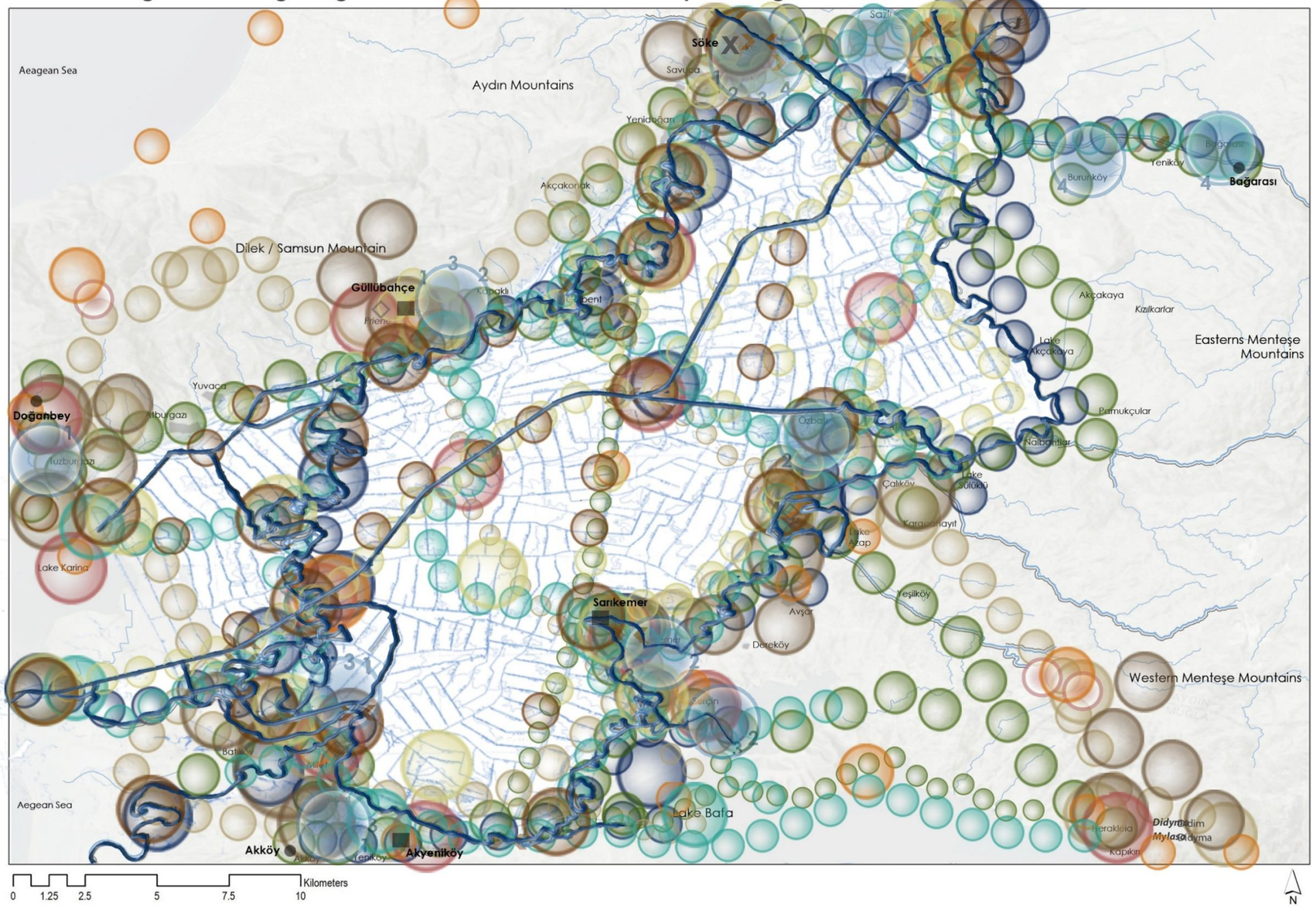
- Touristic Focal Places, Routes and Mnemonic Places
- Local Events, Activities, Days, Tours and Festivals and Their Places and Routes
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.17 Local Landscape Activities, Events, Days and Festivals Focal Places, Routes and Mnemonic Places (Author, 2026)

Managing and Reconnecting Fragmented Context: From Approach to Proposal | The 'MeRiScape' Heritage

Reconnecting and Reintegrating the Menderes Riverine Landscape through Menderes River | Thematic Menderes Routes

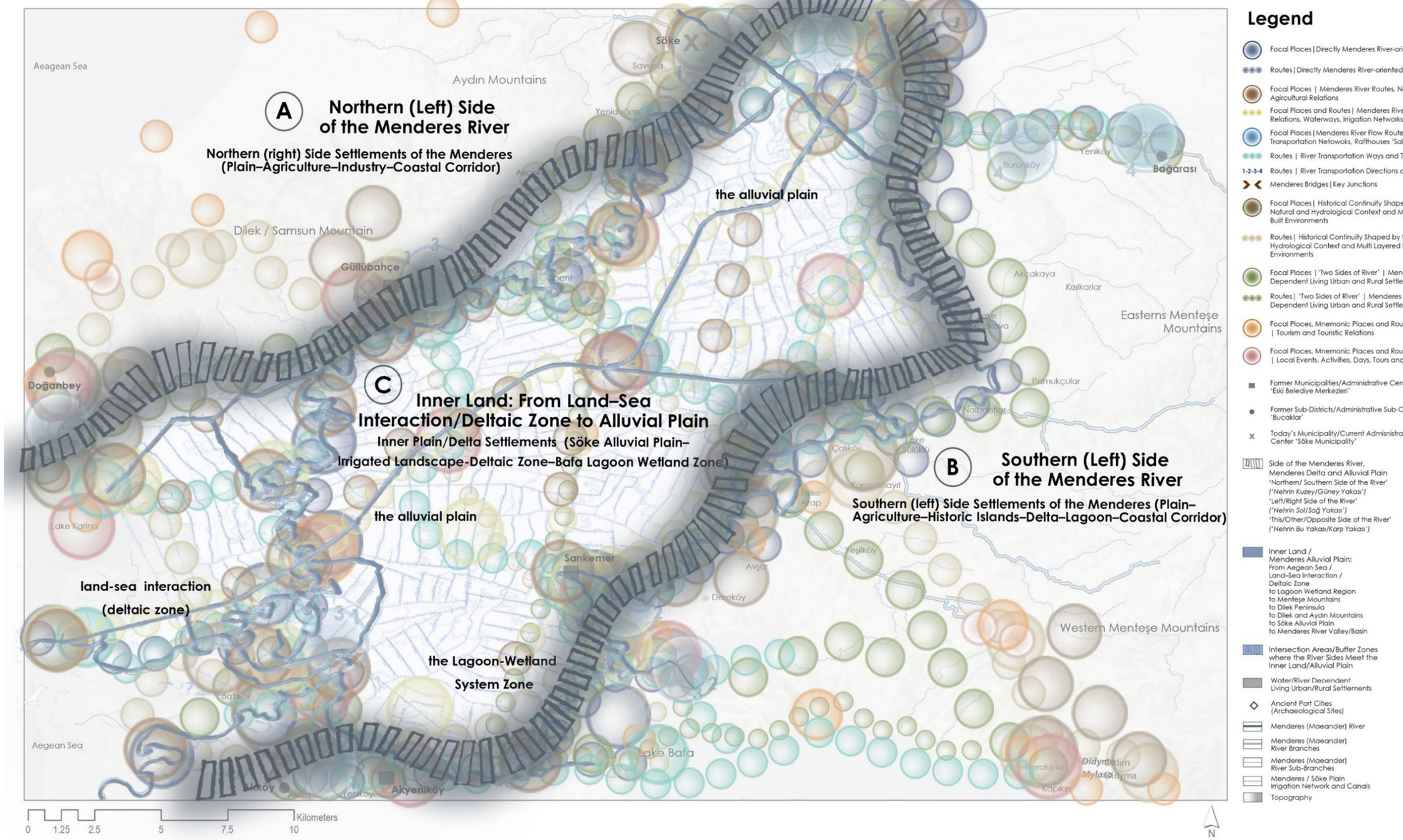


Legend

- Focal Places | Directly Menderes River-oriented Relations
- Routes | Directly Menderes River-oriented Relations
- Focal Places | Menderes River Routes, Networks, Agricultural Relations
- Focal Places and Routes | Menderes River Flow Relations, Waterways, Irrigation Networks, Canals, Points
- Focal Places | Menderes River Flow Routes, Transportation Netowoks, Rafthouses 'Salhaneler'
- Routes | River Transportation Ways and Trips
- 1-2-3-4 Routes | River Transportation Directions and Rafthouses ;
- Menderes Bridges | Key Junctions
- Focal Places | Historical Continuity Shaped by the Natural and Hydrological Context and Multi Layered Built Environments
- Routes | Historical Continuity Shaped by the Natural and Hydrological Context and Multi Layered Built Environments
- Focal Places | 'Two Sides of River' | Menderes River Dependent Living Urban and Rural Settlements
- Routes | 'Two Sides of River' | Menderes River Dependent Living Urban and Rural Settlements
- Focal Places, Mnemonic Places and Routes | Tourism and Touristic Relations
- Focal Places, Mnemonic Places and Routes | Local Events, Activities, Days, Tours and Festivals
- Former Municipalities/Administrative Centers 'Eski Belediye Merkezleri'
- Former Sub-Districts/Administrative Sub-Centers 'Bucaklar'
- x Today's Municipality/Current Admisnistrative Center 'Söke Municipality'
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.18 Characterization/Zoning Analysis of Menderes Riverine Landscape Heritage: Reconnecting and Reintegrating the Menderes Riverine Landscape Heritage through Menderes River (Author, 2026)

Characterization and Zoning of Menderes Riverine Landscape Heritage
Upper-scale Character Areas | Natural, Historical, Built, Cultural, Narrative, Political, and Reconstructed Landscapes



Legend

- Focal Places | Directly Menderes River-oriented Relations
- Routes | Directly Menderes River-oriented Relations
- Focal Places | Menderes River Routes, Networks, Agricultural Relations
- Focal Places and Routes | Menderes River Flow Relations, Waterways, Irrigation Networks, Canals, Points
- Focal Places | Menderes River Flow Routes, Transportation Netowoks, Rafthouses 'Salhaneler'
- Routes | River Transportation Ways and Trips
- 1-2-3-4 Routes | River Transportation Directions and Rafthouses
- Menderes Bridges | Key Junctions
- Focal Places | Historical Continuity Shaped by the Natural and Hydrological Context and Multi Layered Built Environments
- Routes | Historical Continuity Shaped by the Natural and Hydrological Context and Multi Layered Built Environments
- Focal Places | 'Two Sides of River' | Menderes River Dependent Living Urban and Rural Settlements
- Routes | 'Two Sides of River' | Menderes River Dependent Living Urban and Rural Settlements
- Focal Places, Mnemonic Places and Routes | Tourism and Touristic Relations
- Focal Places, Mnemonic Places and Routes | Local Events, Activities, Days, Tours and Festivals
- Former Municipalities/Administrative Centers 'Eski Belediye Merkezleri'
- Former Sub-Districts/Administrative Sub-Centers 'Bucaklar'
- Today's Municipality/Current Admisnistrative Center 'Söke Municipality'
- Side of the Menderes River, Menderes Delta and Alluvial Plain
  'Northern/ Southern Side of the River' *('Nehrin Kuzey/Güney Yakası')*
  'Left/Right Side of the River' *('Nehrin Sol/Sağ Yakası')*
  'This/Other/Opposite Side of the River' *('Nehrin Bu Yakası/Karşı Yakası')*
- Inner Land / Menderes Alluvial Plain: From Aegean Sea / Land-Sea Interaction / Deltaic Zone to Lagoon Wetland Region to Menteşe Mountains to Dilek Peninsula to Dilek and Aydın Mountains to Söke Alluvial Plain to Menderes River Valley/Basin
- Intersection Areas/Buffer Zones where the River Sides Meet the Inner Land/Alluvial Plain
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.19 Macro-Scale Characterization/Zoning in Menderes Riverine Landscape Heritage (Author, 2026)

Macro-Scale Characterization and Zoning in Menderes Riverine Landscape Heritage

This level of characterization focuses on identifying broad spatial patterns and territorial distinctions shaped by the river's course, hydrological dynamics, and the distribution of settlements and land-use systems. Accordingly, the landscape is conceptualized through three primary character areas: the northern side of the river, the southern side, and the inner alluvial plain. At the macro scale, the differentiation between the northern and southern sides of the river, together with the inner alluvial plain and deltaic zones, reflects the varying configurations of hydrological processes, settlement patterns, agricultural production systems, and historical development trajectories. Each of these areas reflects distinct configurations of natural processes, agricultural systems, settlement patterns, and historical development, revealing the river's role in structuring the overall spatial organization of the landscape. These large-scale character areas provide the foundational framework for further analysis, enabling a more detailed exploration of localized dynamics, interactions, and transformations at finer scales.

A. Northern (right) Side of the Menderes River: (Plain–Agriculture–Industry–Coastal Corridor)

In light of this macro-scale characterization and zoning, the settlements located on the northern side of the Menderes River have historically constituted the most productive and continuously evolving zones of the delta system. This region represents a landscape corridor where agricultural production (particularly cotton, olive, fig, and licorice) has long been intertwined with industrial activities, and where the traces of water management and modernization are most visibly observed. The northern side settlements embody both the continuity of historical production systems in the delta and the processes of spatial transformation that have reshaped them over time (Table 4.4).

Along this axis, Sazlı (Menderes' Kemeri) Neighbourhood stands out as one of the most prominent centers where industrial production and water management components intersect. The regulators and drainage canals operated by the State Hydraulic Works (Devlet Su İşleri – DSİ), together with the adjacent cement factory, have transformed Sazlı into an industrial–hydraulic landscape. Developed along the watercourses, irrigation lines, and floodplain, the settlement vividly reflects the tangible impacts of human intervention on river dynamics (Table 4.4). Akçakonak and Yneidoğan Neighborhood is a smaller-scale settlement located along the eastern edge of the Söke Plain. In addition to agricultural production, it serves as a transitional zone between the plain and the foothill settlements. Owing to its geographical position, it lies close to water distribution points and reflects the localized management practices of the irrigation system at the rural level.

Güllübahçe (ancient Priene) stands as one of the most significant cultural landscapes of the Menderes River Delta. The ancient urban fabric coexists with rural settlement forms that date back to the Ottoman and early Republican periods. Today, Güllübahçe is distinguished by its dual identity, both as an archaeological heritage site and as a center of ongoing agricultural production, representing a rare intersection between a cultural and a living rural landscape. Atburgazı Neighborhood, situated at the heart of the deltaic plain where flood and drainage channels are densely concentrated, accommodates both small-scale industrial activities and agricultural production. This settlement typifies the balance between flood control and agricultural productivity, functioning as a characteristic plain settlement within the delta landscape. Tuzburgazı Neighborhood derives its name from the historical salt production areas of the region and is located along the transition zone between the lagoon and agricultural lands of the delta. Around the settlement, agricultural production coexists with seasonal livestock breeding and fishing activities. It remains one of the few villages where traditional production practices of the delta can still be observed. Doğanbey (old Domatia) holds a distinctive position among the northern side settlements. Following restoration, it has acquired the identity of a "tourist village", emerging as a living cultural heritage

site characterized by its stone architecture, narrow streets, and authentic settlement pattern. Situated at the entrance of the Dilek Peninsula–Büyük Menderes River Delta National Park, it serves as a strategic focal point for both eco-tourism and cultural tourism.

Table 4.4 Northern (right) Side Settlements of the Menderes (Plain–Agriculture–Industry–Coastal Corridor)

Focal Settlements	Main Characteristics	Landscape Character
Sazlı (Menderes' Arch) Neighbourhood	Known for the cement factory and DSİ (State Hydraulic Works) regulators.	Industrial landscape; azmaks (natural streams) and floodplain areas.
Güllübahçe (Ancient Priene)	Located around the ancient city of Priene, stands out for tourism and cultural heritage.	Cultural landscape combining agriculture and archaeological layers.
Atburgazı Neighbourhood	Characterized by agricultural production and small-scale industry.	The Menderes floodplain is crisscrossed by drainage canals.
Tuzburgazı Neighbourhood	Known for lagoon fishing and traditional salt production.	Lagoon–sea transition zone; fishery and wetland landscape.
Doğanbey (Ancient Domatia)	Restored heritage village; significant tourism centre.	Stone architecture, cultural heritage site, entrance to National Park.
Karina Lagoon Area (Doğanbey–Akköy Axis)	Area with fishing shelters and bird migration routes.	Natural–cultural ecotone along the coastal zone.

Overall, this character area reveals a landscape where the potential for direct river contact remains high, yet is increasingly constrained by pronounced flood and ground-stability risks, as well as the progressive loss of river-side access points. Rural and agricultural production continues to dominate, with the spatial and ecological rhythm of the area shaped by the cyclical interplay between sediment accumulation, seasonal floods, and agricultural practices. Although the settlements largely retain a living character, their everyday relationship with the river has weakened in several locations, while archaeological traces and historical routes remain only partially legible. The area is defined by a series of persistent tensions: agricultural productivity competes with ecological and hydrological sustainability; irrigation infrastructure challenges the wetland–lagoon water regime; settlement expansion, new investments, and tourism pressures conflict with the conservation

and sustainability of cultural landscape character; and modern agricultural patterns often contradict flood-management requirements. Collectively, these dynamics display a landscape where natural processes, rural production systems, and socio-cultural practices must continually negotiate space, value, and continuity. The zone can be divided into sub-interaction areas: settlements on the northern (right) side of the alluvial plain; settlements' alluvial plain expansion areas; areas where the northern (right) side meets the delta and the sea.

B. Southern (left) Side of the Menderes River (Plain–Agriculture–Historic Islands–Delta–Lagoon–Coastal Corridor)

The settlements located on the southern side of the Menderes River stand out through their reliance on agriculture, fishing, dalyans (fish farms), livestock breeding, and coastal tourism. This part of the delta is directly associated with the system of former river branches and lagoons. Historically, the southern side of the Menderes River Delta has constituted a landscape zone where both natural and cultural production practices have been concentrated. It represents a multi-layered settlement system shaped along lagoons, azmaks (natural watercourses), and ancient riverbeds, where fishing, fish-farming, livestock, agriculture, and coastal tourism coexist. Unlike the industrial and agricultural production foci on the northern side, the southern settlements embody landscapes of living interaction with coastal ecosystems (Table 4.5).

Bağarası Neighborhood is one of the largest rural settlements along this axis and serves as the agricultural production center of the Söke Plain. In addition to cotton, tobacco, and fig cultivation, it once hosted numerous ginning factories, reflecting the industrial components of modern agriculture. Its flat terrain, interlaced with irrigation channels and vast cotton fields, makes Bağarası one of the most distinctive cultural production landscapes of the delta. Burunköy is a small-scale rural settlement located on the southwestern edge of the Menderes Plain, where agriculture and livestock activities coexist. Although its direct contact with the river is limited,

it is integrated into the delta's production network through irrigation and drainage systems. Burunköy represents a traditional rural landscape where local production and solidarity-based economies continue to exist. Avşar Neighborhood lies within the plain and is characterized by small-scale agricultural and livestock production. Known for its diversity of crops, cotton, cereals, and forage plants, it also sustains both small and large livestock activities, forming a mixed-production landscape. The presence of irrigation canals allows Avşar to maintain its seasonal rhythm of production, symbolizing rural continuity in the delta. Serçin Neighborhood lies along the shores of Lake Bafa and represents one of the most vibrant examples of the fishing culture within the delta. The Eel Festivals make visible the socio-cultural significance of the lake and delta ecosystems while illustrating how local livelihoods have evolved into expressions of communal identity. Serçin is a typical example of a water-based cultural landscape located within the lake–delta transition zone. Sarıkemer Neighborhood is distinguished by its historic stone-arched bridge over the Menderes River, which has long served as a passage connecting the northern and southern sides of the delta. The bridge remains a symbolic place in terms of transportation and collective memory.

Table 4.5 Southern (left) Side Settlements of the Menderes (Plain–Agriculture–Historic Islands–Delta–Lagoon–Coastal Corridor)

Focal Settlements	Main Characteristics	Landscape Character
Bağarası	One of the largest rural settlements of the Söke Plain, known for cotton production and ginning facilities.	Flat agricultural land, modern irrigation channels, and cultural production landscape.
Burunköy	A rural settlement where agriculture and livestock farming coexist; although direct contact with the river is limited, it is integrated into the delta's production network through irrigation and drainage systems.	River crossing point along the Söke–Bağarası corridor.
Avşar	A small rural settlement sustained by agriculture and livestock.	Flat plain; local agricultural production zone.
Serçin	Located on the shores of Lake Bafa, known for its fishing tradition and the annual Eel Festival (Yılan Balığı Şenliği).	Lake–delta transition zone; strong fishing culture.
Sarıkemer	Renowned for its historical stone-arched bridge (kemer köprü).	River crossing and bridge surroundings as a mnemonic and heritage landscape.

As a result, this character area forms a cultural–ecological system in which water, salt, agriculture, and fishing coexist along the southern side of the Menderes River Delta. The southern region represents the area where natural processes (flooding, marsh formation, lagoon evolution) most visibly merge with human practices, providing the clearest spatial reflections of coastal and water-based culture. In this character area, historical agricultural and production landscapes and traditional rural tissues remain distinctly visible, offering a strong sense of continuity between past and present land-use practices. The landscape's rhythm is shaped by clearly defined water channels, irrigation canals, and agricultural zones that integrate seamlessly with ecological corridors. The physical relationship with the river is more apparent here than in many other parts of the delta, as agricultural activities and plain-based production systems maintain a direct and functional interaction with the river. Archaeological layers, including mounds, ancient harbours, and former coastal settlements, are particularly evident in certain locations, emphasizing the area's long-term cultural depth (Table 4.5).

In conclusion, environmental sensitivity increases toward the coastal areas, where risks of flooding and inundation are pronounced. Persistent tensions define the landscape: modern agricultural mechanisation challenges the integrity of traditional production patterns; water-resource use increasingly conflicts with lagoon and ecotonal regimes; archaeological vulnerability intersects with everyday agricultural activities; and spatial continuity is threatened by rapid land-use change. Collectively, these conditions highlight the need for careful management strategies that safeguard both the historical depth and ecological dynamism of the landscape. The zone can be divided into sub-interaction areas: settlements on the southern (left) side of the alluvial plain; settlements' alluvial plain expansion areas; settlements' wetland and Lake Bafa expansion areas; areas where the southern (left) side meets the delta and the sea.

C. Inner Land: From Land–Sea Interaction/Deltaic Zone to Alluvial Plain | Menderes River Alluvial, Agricultural and Irrigated Landscape

The inner plain belt surrounding the Menderes River Delta lies to the east and southeast of the Söke Plain, forming an ecological continuum that connects the river's former floodplain with Lake Bafa and the surrounding mountainous terrain. Unlike the deltaic lowlands, this zone is distinguished by its topographical diversity and transitional landscapes. The inner plain settlements are generally characterized by agricultural production, livestock breeding, and small-scale industries; they also serve as key indicators of water management practices, migration dynamics, and the transformation of local production systems (Table 4.6). Gölbent Neighborhood derives its name from historical water management structures, specifically, bends (weirs). Surrounded by irrigation and drainage canals, it represents a hydraulic agricultural landscape where production practices based on water control persist. The cotton fields, azmak (natural watercourses) systems, and irrigation canals around Gölbent reflect a hydraulic node in the landscape. In addition, Gölbent exhibits a hybrid character where production and settlement functions intertwine within the plain. The Özbaşı Neighborhood is situated in a strategic position (the area known as the "historic island" before the Menderes River's progradation process) in terms of flood management. Located near one of the river's former channels, it is surrounded by weirs, irrigation canals, and embankments. Özbaşı exemplifies how hydrological regulation activities shape the spatial structure of rural settlements. Eucalyptus trees in flood plains, drainage canals, and cotton fields constitute the defining components of this landscape.

Akköy Neighborhood, situated near the lagoon system within the inner plain corridor, is known for agricultural production, fishing, and animal husbandry. Its geographic position at the intersection of agricultural and hydrological cycles makes Akköy significant in terms of both production and ecological transition. In recent years, environmental protection policies have enhanced their eco-tourism potential. The Balat Neighborhood is one of the key focal points of cultural and archaeological continuity in the delta. Adjacent to the ancient city of Milet, the settlement has historically functioned as a center of river–sea interaction. Today, agricultural activities coexist with cultural tourism based on archaeological heritage. Balat

spatially embodies the historical memory and cultural landscape identity of the delta. Batıköy lies inland from the section where the Menderes turns westward toward the Karina Lagoon, positioned between plain and coastal ecosystems. Its name, derived from the former marshlands, reflects the area's environmental past. The village, known for seasonal livestock grazing and small-scale vegetable cultivation during the summer, is among the few remaining sites where temporary settlement practices persist in the delta. Akyeniköy Neighborhood functions as a multifunctional settlement where tourism, fishing, and seasonal labor coexist. Its proximity to the Karina and Dalyan regions has transformed the village into an economically and socially dynamic zone centered on marine and lagoon-based livelihoods. Seasonal houses, fishing shelters, and summer facilities reflect the evolving landscape dynamics of this area.

Table 4.6 Inner Plain/Delta Settlements (Söke Alluvial Plain–Irrigated Landscape-Deltaic Zone–Bafa Lagoon Wetland Zone)

Focal Settlements	Main Characteristics	Landscape Character
Gölbent Neighbourhood	Surrounded by irrigation channels, its name derives from bent (weir), indicating a historical trace of water management. ("island and plain village")	Water-based landscape with azmaks, drainage canals, and cotton fields.
Özbaşı Neighbourhood	Key location for flood management and irrigation infrastructure; historically referred to as a "hill and historic island settlement" within the plain.	historical island topography (The only hill within the flat plain, a historical island village)
Akköy Neighbourhood	Geographically positioned at the intersection of agricultural production and the hydrological system, connected with the Dalyan and Karina coastal zones and lagoon system.	Drainage corridors, flat plain terrain, and hydrological linkages with lagoons, Tourism + fishing + agriculture within a lagoon–coastal interface
Balat	Located near the ancient city of Milet, a conflicting point of agriculture, archaeology, and cultural tourism, ("hill village in the plain")	Archaeological and agricultural landscape: a focal mnemonic place within the delta.
Akyeniköy	Situated along the coastal zone, closely linked to the Dalyan and Karina areas.	Mixed-use landscape of tourism, fishing, and agriculture.
Batıköy	Functions as a transitional zone between plain and coastal ecosystems, characterized by seasonal livestock, agriculture, and small-scale fishing.	Flat plain with elevated points; interface between deltaic and inland plains.

This character area constitutes the most dynamic and fragile zone of the Menderes River Delta, where rapid shoreline mobility and low-elevation, shifting surfaces create highly vulnerable ecological and geomorphological conditions. Continuous reshaping by sedimentation, flood cycles, and coastal processes supports a mosaic of lagoons, marshlands, wetland ecotones, and unique habitats, many of which are intertwined with significant archaeological traces located along former shoreline terraces. Along the coastline, the youngest deltaic formations, including accretion surfaces and dune systems, mark the evolving interface between land and sea, while the distribution of river sediments and the proliferation of drainage and irrigation canals generate a fragmented topography. Although settlement pressure remains relatively low, the area faces severe environmental threats, including salinization, flooding, seasonal inundation, drainage failures, and coastal erosion.

Cultural and historical patterns also intersect with ecological processes: marine-related routes and archaeological sites remain legible, yet modern agricultural homogenisation has eroded much of the area's distinctive character. Traditional two-shore narratives and historical mobility patterns, once structured by river-based transport and bridges, have been diminished by the dominance of contemporary highway infrastructure. The landscape is therefore shaped by persistent tensions: modern agriculture challenges ecological and hydrological sustainability; drainage infrastructure disrupts the river's natural regime; productivity pressures conflict with conservation priorities; flood-management imperatives intersect with settlement expansion; and modern irrigation systems accelerate landscape homogenisation. In summary, these dynamics emphasize the need for integrated strategies that reconcile agricultural production, ecological resilience, and heritage conservation in this highly sensitive deltaic environment.

Meso-Scale/ Regional Focal Character Areas **in Menderes Riverine Landscape Heritage**

Unlike the macro scale, which emphasizes broad spatial differentiation, this level focuses on zones of intensity—where flows converge, routes intersect, and landscape processes interact most visibly. The convergence of routes, focal places, and networks—such as irrigation infrastructures intersecting with historical settlements, or transportation routes overlapping with cultural and mnemonic landscapes—produces spatial clusters that function as dynamic nodes within the landscape. These nodes represent areas of intensified interaction, where natural processes, socio-economic activities, and cultural practices are deeply intertwined. In that sense, these focal character areas represent zones where multiple layers of the riverine landscape interact, overlap, and reinforce one another, producing spatial concentrations of meaning, function, and transformation. Accordingly, each focal character area corresponds to a specific configuration of interacting processes: areas where historical urban development and river dynamics converge (e.g., Söke, center and core of the landscape); areas where agricultural production and long-term settlement continuity intersect (e.g., Güllübahçe, Priene); coastal interfaces where deltaic processes and cultural landscapes overlap (e.g., Doğanbey–Karina, Akköy); multi-layered historical cores shaped by long-term geomorphological transformation (e.g., Milet–Balat, Batıköy),; agricultural nodes structured through irrigation networks and water management systems (e.g., Güllübahçe and Sarıkemer); and interface zones where topography, settlement, and agricultural systems intersect (e.g., Özbaşı, Gölbent) (Figure 4.20; Figure 4.21). These focal areas are not isolated units; rather, they function as interconnected nodes within a broader relational system. Their spatial significance emerges from their position within networks of movement, production, and cultural interaction (Figure 4.20; Figure 4.21)

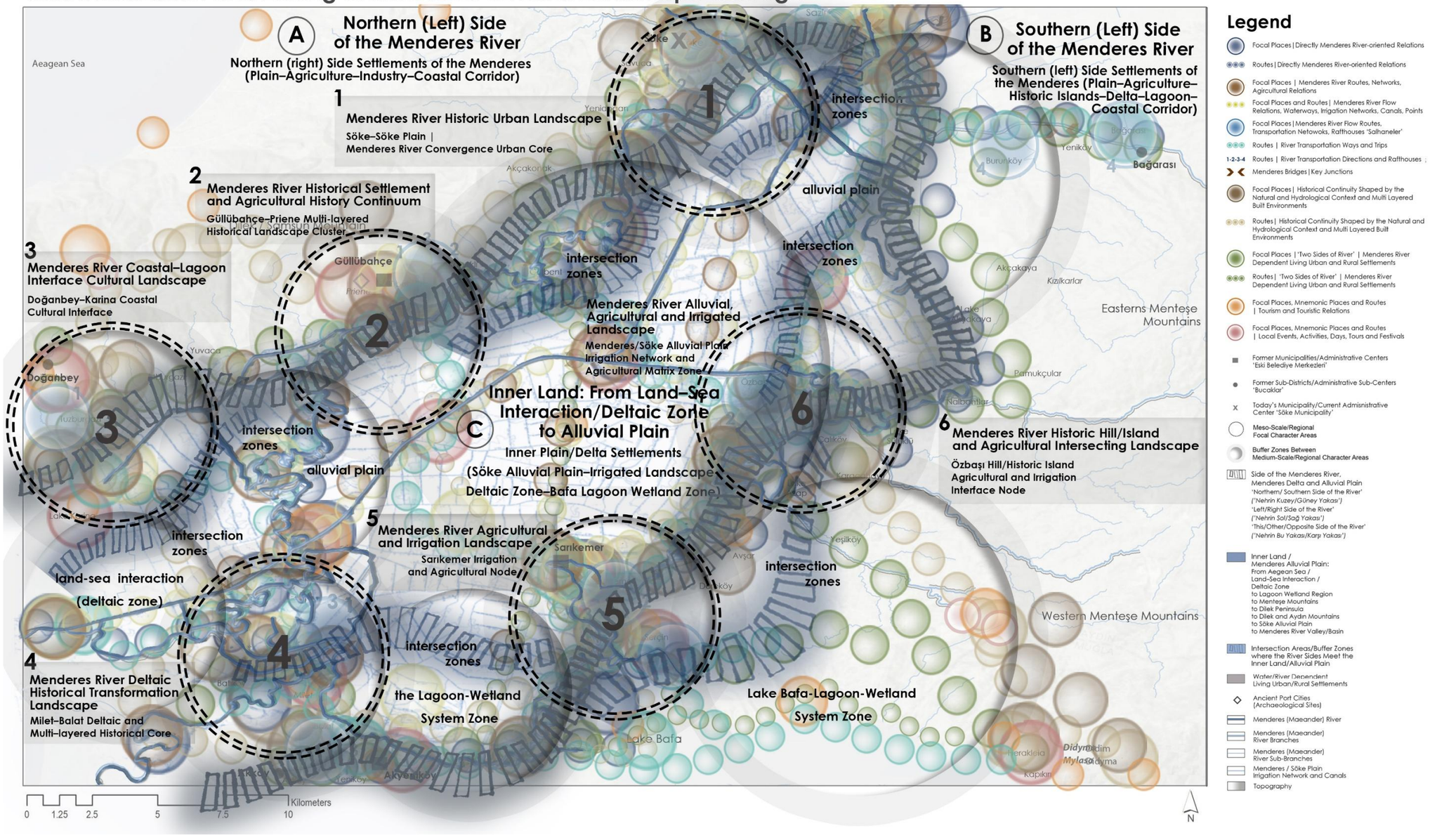
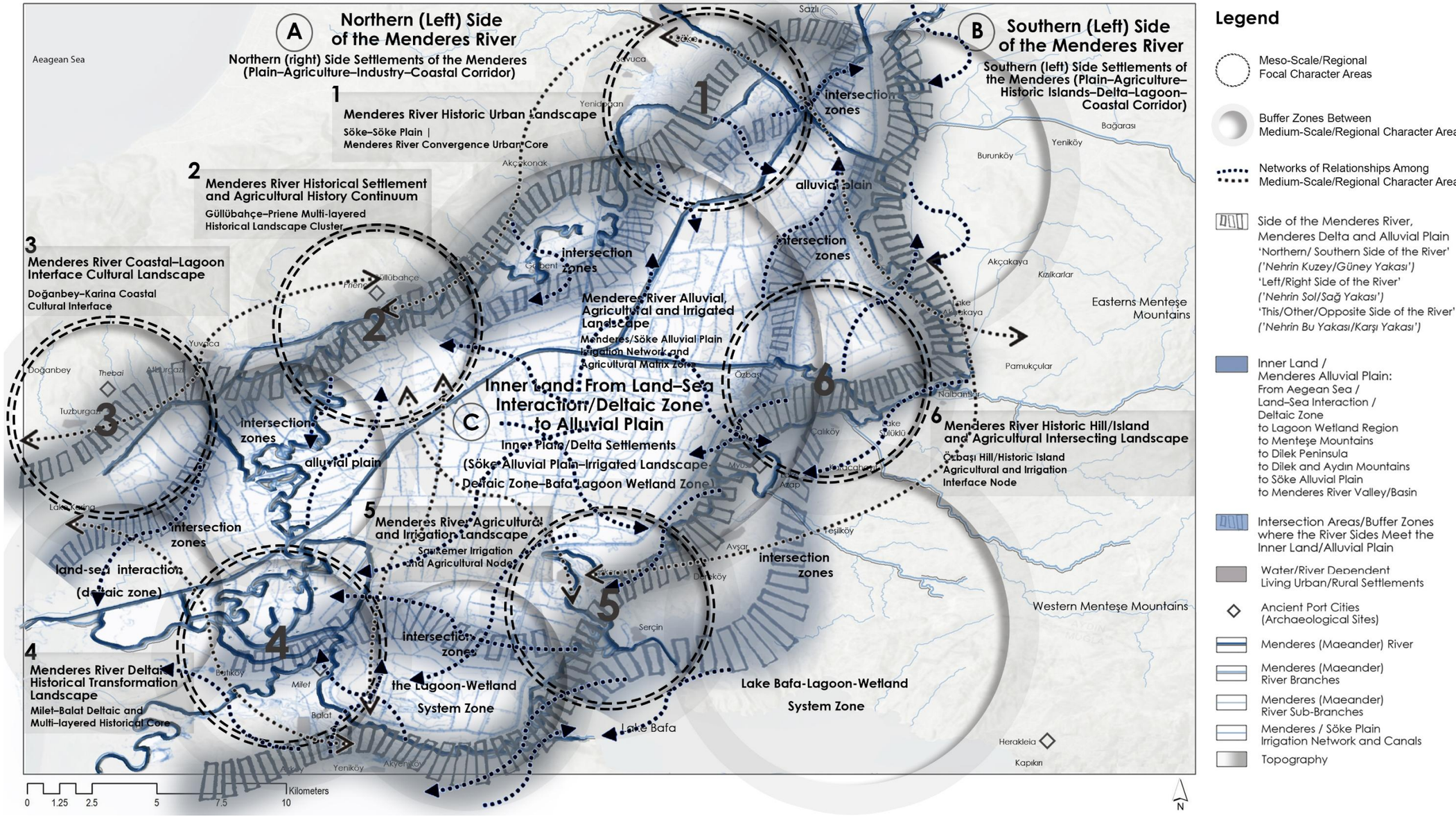


Figure 4.20 Meso-Scale Characterization and Zoning and Meso-Scale/Regional Focal Character Areas in Menderes Riverine Landscape (Author, 2026)

Assessment, Valuation, and Characterization of Menderes Delta as a Riverine Landscape Heritage
Characterization and Zoning of Menderes Riverine Landscape Heritage



Legend

- Meso-Scale/Regional Focal Character Areas
- Buffer Zones Between Medium-Scale/Regional Character Areas
- Networks of Relationships Among Medium-Scale/Regional Character Areas
- Side of the Menderes River, Menderes Delta and Alluvial Plain
  'Northern/ Southern Side of the River' *('Nehrin Kuzey/Güney Yakası')*
  'Left/Right Side of the River' *('Nehrin Sol/Sağ Yakası')*
  'This/Other/Opposite Side of the River' *('Nehrin Bu Yakası/Karşı Yakası')*
- Inner Land / Menderes Alluvial Plain: From Aegean Sea / Land–Sea Interaction / Deltaic Zone to Lagoon Wetland Region to Menteşe Mountains to Dilek Peninsula to Dilek and Aydın Mountains to Söke Alluvial Plain to Menderes River Valley/Basin
- Intersection Areas/Buffer Zones where the River Sides Meet the Inner Land/Alluvial Plain
- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.21 Meso-Scale Characterization and Zoning and Meso-Scale/Regional Focal Character Areas in Menderes Riverine Landscape (Author, 2026)

1. Menderes River Historic Urban Landscape (Söke–Söke Plain | Menderes River Convergence Urban Core)

This character area represents the primary convergence core of the Menderes Riverine Landscape, where multiple landscape layers, focal places, and route systems intersect with the highest spatial intensity. Located in and around Söke and its surrounding alluvial plain, the area functions as a central node in which hydrological flows, irrigation infrastructures, transportation networks, agricultural production systems, and administrative structures are spatially and functionally intertwined. The landscape is defined by the dense clustering of urban, agricultural, infrastructural, and socio-cultural components, forming a highly integrated socio-spatial system. The convergence of river-related processes—such as water distribution, agricultural production, transportation network, and landscape governance—creates a multilayered environment in which flows are continuously redistributed and reorganized (Table 4.7).

The overlapping of multiple focal places and routes—including river-oriented transportation routes, agricultural and irrigation networks, and cultural narrative pathways—reveals a high degree of spatial and functional integration. These overlapping systems generate a complex network of interactions, where movement, production, and everyday life are closely interconnected (Table 4.7). Beyond its spatial nexus, this area plays a critical role in the governance and management of the landscape. Söke functions as the contemporary administrative and decision-making center, hosting institutional structures that regulate water management, agricultural production, spatial planning, and socio-economic activities. This concentration of administrative and economic functions reinforces the area's role as an organizational core, where policies, strategies, and everyday practices intersect and influence the broader landscape ensemble. At the same time, the area embodies a continuous process of socio-spatial reproduction. Everyday practices, market activities, transportation flows, and governance mechanisms interact to sustain and transform the landscape. Overall, this character area operates as both a spatial convergence

zone and a governance hub, structuring the relationships between surrounding character areas. It connects different parts of the riverine landscape through flows, networks, and institutional systems, making it the primary organizing core through which the Menderes Riverine Landscape is articulated, managed, and continuously reproduced (Table 4.7).

Table 4.7 Menderes River Historic Urban Landscape (Söke–Söke Plain | Menderes River Convergence Urban Core)

Layers	Dynamics	Indicators
Hydrological & River System	Flow convergence, redistribution, and regulation of river-related systems	Intersection of river flow traces, irrigation canals, drainage systems, and water control infrastructures
Agricultural & Irrigation Landscape	Intensification, organization, and optimization of agricultural production	Dense irrigation networks, parcelized agricultural fields, production nodes, and alignment of fields with water systems
Urban & Built Environment	Urban expansion, densification, and functional diversification	Urban growth patterns, mixed-use development, industrial and service areas, and infrastructural density
Transportation & Infrastructure	Network integration, connectivity, and mobility concentration	Intersection of regional and local road networks, bridges, transport corridors, and logistic nodes
Socio-economic & Administrative	Centralization of governance, economic activities, and institutional control	Presence of administrative institutions, public services, market areas, and economic hubs (Söke core)
Cultural & Narrative Landscape	Socio-spatial reproduction through everyday practices and cultural interactions	High density of focal point overlaps (multi-layered clusters), daily activity nodes, cultural routes, urban-based narratives
Flow & Network Interaction	Multi-directional flow interaction and redistribution across systems	Overlapping mobility, production, and governance routes; convergence of river, infrastructure, and economic flows
Spatial Integration	High degree of spatial and functional integration across landscape components	Dense intersection of multiple thematic layers, strong connectivity between urban, rural, and agricultural systems

2. Menderes River Multi-layered Landscape and Agricultural Continuum (Güllübahçe–Priene Multi-layered Historical Landscape Cluster)

This character area represents a multi-layered and temporally deep landscape continuum in which historical settlement patterns and long-term agricultural practices are embedded within the riverine system of the Menderes. Centered around

Güllübahçe and the ancient city of Priene, the area reveals a multilayered landscape biography shaped through the continuous interaction between topography, water systems, settlement, and production practices. The spatial configuration of this landscape is defined by the coexistence and interrelation of archaeological remains, historical routes, terraced or structured agricultural systems, and contemporary land-use practices (Table 4.8).

The persistence of agricultural practices, even as they evolve in response to technological and socio-economic changes, illustrates a form of adaptive continuity. Agricultural fields, irrigation traces, and land-use patterns demonstrate how production systems are layered over time, maintaining underlying spatial logics while accommodating new practices. Similarly, historical routes often remain embedded within contemporary circulation networks, reinforcing the continuity of movement and access across different periods. The concentration of archaeological sites and cultural heritage nodes, particularly around Priene, further highlights the multilayered character of the area. This coexistence is also reflected in narrative landscapes, where memory, identity, and everyday practices continue to be shaped by long-term relationships with the river and the land. Overall, this character area is defined by a dynamic balance between continuity and transformation. In this sense, it embodies the riverine landscape as a living and evolving system, where the past actively informs present-day spatial organization and future transformations (Table 4.8).

Table 4.8 Menderes River Multi-layered Landscape and Agricultural Continuum (Güllübahçe–Priene Multi-layered Historical Landscape Cluster)

Layers	Dynamics	Indicators
Historical & Archaeological Landscape	Long-term settlement continuity and temporal layering	Dense archaeological clusters (Priene and surroundings), stratified settlement traces, and spatial persistence of ancient urban forms
Agricultural Landscape	Co-evolution of agriculture and settlement systems	Terraced or structured agricultural fields, continuity of cultivation patterns, integration of traditional and modern farming practices

Table 4.8 Continued

Topographical & Geomorphological	Topography-driven spatial organization and adaptation	Settlement placement along slopes and elevated areas, terrace formations, relation to fertile plains, and erosion patterns
Hydrological & River System	Long-term interaction between water systems and land use	Proximity to river branches, irrigation traces, and alignment of agricultural zones with water availability
Route & Connectivity	Continuity and transformation of movement systems	Overlap of historical routes with present-day paths, connections between settlements, fields, and archaeological sites
Cultural & Narrative Landscape	Accumulation and transmission of landscape memory	Narrative routes, place-based memories, and cultural references linked to agriculture and settlement history
Production & Land-use	Transformation within the continuity of productive systems	Low–medium density but multi-layered overlap zones, persistence of agricultural land-use structures alongside contemporary modifications
Socio-spatial Interaction	Ongoing reproduction of the landscape through human practices	Interaction between local communities and land, continuity of rural practices, integration of everyday life into the historical landscape structure

3. Menderes River Coastal–Lagoon Interface Cultural Landscape (Doğanbey–Karina Coastal Cultural Interface)

This character area represents a critical interface zone within the Menderes Riverine Landscape, where coastal, lagoon, and settlement systems dynamically intersect and continuously reconfigure one another. Located around Doğanbey and Karina, the area is defined by the interaction between marine influences, lagoon ecologies, and human activities, forming a highly responsive and adaptive socio-ecological landscape. The spatial structure of this landscape is shaped by the convergence of land and water systems, where coastal morphologies, lagoon dynamics, and sedimentation processes interact with settlement patterns and economic practices. Fluctuations in water levels, salinity gradients, and sediment deposition directly influence both ecological conditions and human use patterns. As a result, the landscape is characterized by a high degree of environmental variability, requiring continuous adaptation by local communities (Table 4.9).

Fishing activities, seasonal settlements, and tourism-related uses constitute key components of this adaptive system. These practices are closely aligned with the rhythms of the lagoon and coastal environments, reflecting a form of socio-spatial organization that is flexible, temporary, and responsive to environmental change. Unlike more स्थिर settlement structures observed inland, the built environment here often exhibits a lighter, more transitional character, shaped by both ecological constraints and economic opportunities. The area also functions as a transitional corridor, connecting inland agricultural and settlement systems with coastal and lagoon environments. The density of intersecting routes—linking villages, fishing areas, wetlands, and coastal nodes—reveals the importance of mobility and access in maintaining the continuity of socio-economic and cultural practices (Table 4.9).

Overall, this interface landscape embodies a strong cultural and narrative dimension. Memories of fishing traditions, seasonal rhythms, and water-based practices are embedded within the landscape, contributing to its identity and continuity. The coexistence of ecological sensitivity and cultural resilience defines the character of this area, where environmental constraints and opportunities are continuously negotiated through everyday practices (Table 4.9).

Table 4.9 Menderes River Coastal–Lagoon Interface Cultural Landscape (Doğanbey–Karina Coastal Cultural Interface)

Layers	Dynamics	Indicators
Coastal & Marine System	Coastal morphological change and marine–terrestrial interaction	Coastal edge zones, shoreline shifts, and sediment accumulation patterns
Lagoon & Wetland System	Land–water interaction, seasonal fluctuation, ecological adaptation	Lagoon systems, wetlands, water level variations, and salinity transitions
Hydrological Transition	Interaction between riverine and coastal water systems	Mixing zones of freshwater and saltwater, transitional hydrological patterns
Settlement & Built Environment	Flexible, adaptive, and seasonal spatial organization	Fishing shelters, temporary/seasonal settlements, dispersed settlement patterns
Socio-economic Activity	Hybrid economic practices and adaptive livelihoods	Fishing nodes, aquaculture areas, tourism-related functions, and local production sites

Table 4.9 Continued

Mobility & Route	Connectivity between inland, lagoon, and coastal systems	Routes linking settlements to fishing areas, wetlands, and coastal access points
Cultural & Narrative Landscape	Transmission of water-based cultural practices and memory	Fishing traditions, seasonal practices, narrative routes, and place-based identities
Ecological Sensitivity	Environmental vulnerability and resilience dynamics	Protected areas, biodiversity zones, bird habitats, and ecological risk zones
Interface & Transition	Continuous negotiation between environmental and human systems	Overlapping thematic layers, multi-functional use zones, and high variability areas

4. Menderes River Deltaic Historical Transformation Landscape (Milet–Balat Deltaic and Multi-layered Historical Core)

This character area represents the most explicit manifestation of transformation within the landscape, where deltaic processes, historical settlement patterns, and cultural landscapes are continuously reconfigured over time. Centered around Milet, Balat, and Akköy, the area embodies a multilayered landscape in which the interaction between fluvial dynamics and coastal processes has fundamentally reshaped spatial relationships between land, water, and settlement. The defining characteristic of this landscape is its geomorphological dynamism. The shifting course of the Menderes River, combined with long-term sedimentation and progradation processes, has gradually transformed coastal configurations, displacing shorelines and altering the relationship between inland and maritime environments.

This continuous transformation is not limited to natural and physical changes but extends to the reconfiguration of cultural and socio-economic systems. Historical ports, trade routes, and settlement networks have been successively adapted, abandoned, or reinterpreted in response to changing environmental conditions. Archaeological remains, paleo-channels, and residual spatial patterns reveal multiple phases of occupation, use, and transformation, forming a multilayered landscape. The high density of overlapping focal places and routes—linking archaeological cores, historical infrastructures, and contemporary land uses—indicates a complex

and multi-scalar interaction between past and present. As a result, once-coastal port cities such as Milet have become inland settlements (Balat, Batıköy), illustrating how river-driven processes continuously reorganize spatial hierarchies. This reinforces the role of the river as a creator agent that drives long-term landscape change. Overall, this character area can be understood as a deltaic transformation landscape, where continuity is expressed through ongoing change (Table 4.10).

Table 4.10 Menderes River Deltaic Historical Transformation Landscape (Milet–Balat Deltaic and Multi-layered Historical Core)

Layers	Dynamics	Indicators
Deltaic & Geomorphological	Sedimentation, progradation, and river course shifts	Old riverbeds, paleo-channels, delta formation patterns, sediment accumulation zones
Hydrological & River System	Redistribution of water flows and transformation of river–sea relations	Changing river mouths, altered hydrological connections, and inland shift of coastal zones
Historical & Archaeological Landscape	Layered historical transformation and settlement reconfiguration	Ancient port cities (Milet), archaeological cores, stratified settlement traces
Coastal & Marine Interaction	Reconfiguration of settlement–coast relationships	Displacement of coastlines, inlandization of former coastal settlements
Route & Connectivity	Transformation and reorganization of trade and movement systems	Historical trade routes, connections between ports and inland settlements, and route shifts
Cultural & Narrative Landscape	Reinterpretation of landscape through historical memory and identity	Narratives of lost coasts, memory of port functions, cultural reinterpretation of space
Land-use & Production	Adaptation of land-use practices to changing environmental conditions	Transition from maritime to agricultural land use, mixed-use transformation zones
Transformation & Temporal	Continuous reconfiguration of spatial and functional systems	High overlap of historical + hydrological layers, multi-temporal landscape structures

5. Menderes River Agricultural and Irrigation Landscape (Sarıkemer Irrigation and Agricultural Node)

This character area represents the productive core of the Menderes Riverine Landscape, where the river functions as a generator and organizer of agricultural systems through both natural hydrological processes and engineered irrigation infrastructures. Centered around Sarıkemer and the surrounding alluvial plain, the

landscape is defined by the integration of river flows, canal networks, and agricultural production systems, forming a highly structured and functional spatial matrix. The defining feature of this area is the transformation of water into a managed and distributive system. Natural river flows are captured, redirected, and regulated through an extensive network of irrigation canals, drainage systems, and hydraulic infrastructures. This integration of natural and engineered systems creates a hybrid landscape in which water operates as both a natural resource and a controlled infrastructural element (Table 4.11).

Agricultural production emerges as the dominant organizing force within this system. The alluvial plain, characterized by fertile soils and controlled water access, supports intensive cultivation practices that are spatially structured through irrigation networks. Parcelization patterns—often linear or grid-based—reflect the underlying logic of water distribution, revealing how agricultural landscapes are systematically organized in relation to hydraulic infrastructures. The convergence of irrigation routes, agricultural nodes, and settlement structures demonstrates a strong functional integration between production, infrastructure, and habitation. At the same time, this landscape reflects an ongoing process of transformation driven by technological advancements and changing agricultural practices. Modern irrigation techniques, mechanization, and evolving production systems continuously reshape spatial configurations while maintaining the fundamental logic of water-based organization. Overall, this character area can be understood as an engineered/irrigated and productive riverine landscape, where water acts as a structuring and organizing force that connects natural processes with human intervention (Table 4.11).

Table 4.11 Menderes River Agricultural and Irrigation Landscape (Sarıkemer Irrigation and Agricultural Node)

Layers	Dynamics	Indicators
Hydrological & River System	Regulation and redistribution of natural water flows	Irrigation channels, regulated river branches, and controlled water entry points

Table 4.11 Continued

Irrigation & Hydraulic Infrastructure	Human-controlled water distribution and management	Irrigated landscape, drainage systems, regulators, junction nodes
Agricultural Production	Irrigation-driven landscape production and intensification	Structured parcel patterns (grid/linear), crop distribution, and high productivity zones
Land-use & Spatial Organization	Spatial structuring based on water distribution logics	Alignment of fields with canals, regular parcelization, and organized agricultural layouts
Settlement & Rural Network	Integration of settlements within production systems	Agricultural service settlements, proximity to irrigation nodes, rural production hubs
Transportation & Service	Connectivity supporting production and distribution	Service roads along canals, agricultural transport routes, and links between fields and settlements
Socio-economic System	Production-based economic organization and specialization	Cooperative structures, agricultural markets, irrigation unions, production networks
Technological & Transformation	Adaptation and transformation through modern irrigation practices	Mechanized agriculture, modern irrigation techniques, and changing field configurations
Water–Infrastructure Interface	Integration of natural and engineered systems	Overlap of river flows with canal systems, hybrid hydrological–technical networks.

6. Menderes River Historic Hill/Island and Agricultural Intersecting Landscape (Özbaşı Hill/Historic Island Agricultural and Irrigation Interface Node)

Centered around Özbaşı and its elevated landform—interpreted as a "historic island" within the alluvial plain—the area introduces a distinct morphological condition that interrupts and reshapes the otherwise continuous landscape structure. The presence of this elevated terrain within a predominantly flat and irrigated plain creates a spatial anomaly that influences the distribution of water, settlement, and movement systems. Unlike the surrounding agricultural matrix, which is largely structured through linear irrigation networks, this area operates as a point of morphological resistance and redirection, where flows are diverted, reorganized, and intensified (Table 4.12).

The interaction between maeandering river dynamics and topographic elevation produces a spatial configuration in which natural and engineered systems intersect. Irrigation channels are often redirected or adapted in response to topographical

constraints, resulting in localized variations in field patterns and water distribution systems. The overlapping of focal places and routes—particularly those related to water management and agricultural production—reveals the role of this area as a mediating node between different landscape ensembles (Table 4.12). The "historic island" suggests past relationships with river dynamics, where changes in water levels and sedimentation may have once defined the area as a distinct landform. Overall, this character area can be understood as an intersectional and mediating landscape node, where natural morphology, agricultural systems, and river dynamics interact to redirect and intensify spatial processes.

Table 4.12 Menderes River Historic Hill/Island and Agricultural Intersecting Landscape (Özbaşı Hill/Historic Island Agricultural and Irrigation Interface Node)

Layers	Dynamics	Indicators
Geomorphological & Topographical	Morphological interruption and reconfiguration of flows	Elevated landforms within alluvial plain, hill/island formations, and topographic discontinuities
Hydrological & River System	Interaction between river dynamics and topography	Maeander–elevation relationships, localized flow deviations, altered water paths
Irrigation & Hydraulic Infrastructure	Adaptation of water systems to topographical constraints	Diversion of irrigation channels, irregular canal alignments, and junction nodes
Agricultural Production	Localized restructuring of agricultural patterns	Modified parcel geometries, variations in field organization, and hybrid agricultural layouts
Settlement & Spatial Organization	Strategic positioning and clustering of settlements	Settlement traces near elevated areas, proximity to water control points
Route & Connectivity	Convergence and redirection of movement systems	Intersection of irrigation routes, agricultural paths, and settlement connections
Socio-spatial Interaction	Localized convergence of production, habitation, and infrastructure	Medium–high density clustering of nodes, multifunctional spatial use
Historical & Narrative	Persistence and reinterpretation of historical landscape identity	"Historic island" traces, layered meanings, embedded historical references
Flow Mediation	Redirection and mediation of spatial and functional flows	Overlapping routes, nodal intersections, localized intensity of interactions

In conclusion, the meso-scale analysis represents critical nodes where different dimensions of water (-related) heritage—natural processes, historical continuities, socio-economic systems, and cultural practices—come together and intensify.

Within this system, the Menderes River operates as the fundamental initiator, generator, and connector, shaping the emergence, distribution, and interconnection of these focal areas. It mediates the relationships between its various components, enabling the continuous production and transformation of the riverine landscape. Therefore, the Menderes riverine landscape should be conceptualized and addressed as an integrated system, where character areas and intersection zones are understood as interdependent components of a continuously evolving ensemble.

Micro-Scale Characterization/ Settlement and Intra-Settlement Characteristics in Menderes Riverine Landscape

In light of the upper scale analysis and characterization, at the micro scale, the analysis focuses on settlement and intra-settlement dynamics, examining how the riverine landscape is experienced, produced, transformed, and reproduced through everyday spatial practices. By analysing intra-settlement spatial configurations and their connections to broader landscape processes, this scale reveals the embeddedness of riverine dynamics within daily life and local socio-cultural practices. The analytical framework at this level is based on the interpretation of schematic mappings that capture recurring spatial patterns, relational configurations, and interactions between settlements and the river. These representations reveal dynamic patterns such as shifting settlement cores, changing riverbeds, irrigation-based spatial organization, seasonal mobility, and the transformation of socio-economic structures (Figure 4.22-4.28).

Firstly, settlement morphologies exhibit a strong dependence on river flow regimes and hydrological structures. The shifting course of the river, the presence of old riverbeds, and the formation of alluvial plains directly influence settlement locations, orientations, and internal organization. Secondly, agricultural production and irrigation networks emerge as key structuring forces at the intra-settlement scale. Canals, irrigation lines, and water distribution systems organize not only agricultural lands but also settlement layouts, circulation patterns, and economic relations. These systems create a spatial structure where settlements function as nodes within a

broader production landscape. Thirdly, the analysis highlights processes of transformation, displacement, and reconfiguration. The emergence of new settlements, the decline or abandonment of older ones, and the shifting of focal points reflect broader socio-economic and environmental changes. Seasonal worker settlements, temporary housing structures, and evolving production practices indicate a landscape that is continuously reshaped through both mobility and adaptation. Moreover, infrastructure and modern interventions—such as highways, new roads, and irrigation projects—introduce new layers of connectivity and fragmentation. These elements sometimes function as connectors, integrating different parts of the landscape, while at other times they act as barriers, creating disconnections between settlements and their historical relations with the river.

The micro-scale construction of settlements and spatial organization is analyzed particularly through flows (river flow), connections, and settlement relations (Figure 4.22, Figure 4.23). Firstly, the expressions “river flow”, “crossing the river,” and “bridges” indicate that the river functions both as a connecting and separating boundary. While settlements are predominantly located on the left and right sides of the river, the relationship with the opposite side is established through bridges and crossing points. This condition reveals that the river is beyond a natural and ecological line, but also a threshold that directs spatial decisions. The relationships defined by “main river canal”, “irrigation canals,” and “agricultural lands” demonstrate that the river forms a backbone organizing agricultural production. The construction of the new highway, referred to with concepts such as “connector/separator”, “highway,” and “new road”, shows that modern transportation infrastructures transform existing relationships. It is particularly noteworthy that newly developed roads running parallel to the river sometimes act as connectors and at other times as separators. Within this structure, while certain points intensify, others are integrated into the system through weaker connections (Figure 4.22, Figure 4.23).

The spatial relationships observed at the micro scale within the landscape are also reshaped by human interventions, infrastructural systems, and production practices

(Figure 4.22, Figure 4.23). The concepts “irrigation canals”, “main irrigation canals,” and “water control points” demonstrate that the natural flow of water is redistributed through human intervention. Water diverted from the main branch of the river towards agricultural lands through canals fragments the landscape and produces a new spatial organization. While the gridal structure formed by irrigation canals maximizes agricultural production, it also determines the organization of settlements and transportation systems. Moreover, with the introduction of new transportation axes, some former connections weaken while new focal points gain strength (Figure 4.23, Figure 4.24; Figure 4.27, Figure 4.28). Elements such as “bridges”, “river transport routes,” and “factories” constitute nodal points where systems intersect within the landscape. While bridges and crossing points establish the relationship between the two sides of the river, production areas and settlements emerge as focal points, strengthening these connections.

As components of landscape production, it is observed that agriculture-oriented settlements, production structures, and water management systems are directly interconnected. Particularly, the location of seasonal worker structures and production areas indicates that the landscape is a system structured through labor and production relations. For Sarıkemer and Güllübahçe, where agricultural production and everyday practices/events continue, when former riverbeds, existing irrigation systems, and transportation networks are considered together, it becomes evident that the fragmented structure of the landscape is, in fact, capable of being re-integrated.

Furthermore, micro-scale analysis addresses the spatial relationships emerging at the micro scale within the riverine landscape through disconnections, thresholds, and potentials for reconnection. Through critical analysis, it discusses at which points the landscape becomes fragmented, in which areas continuity weakens, and where it can be re-established (Figure 4.25, Figure 4.27, Figure 4.28). While infrastructural interventions that generate fragmentation and disconnections increase accessibility on the one hand, they interrupt the relationships between agricultural lands, settlements, and the river on the other, producing areas that experience loss of

memory and function. In this sense, the landscape is not a completely disconnected system; rather, it is interpreted as a structure open to reconnection and containing potential relationships (Figure 4.25, Figure 4.26, Figure 4.27, Figure 4.28). The reintegration of cultural landscape and forgotten practices is possible through the re-establishment of physical connections and the reintegration of cultural and everyday practices into the landscape ensemble.

As a result, micro-scale characterization explains how river flows, traces of former riverbeds, irrigation systems, transportation networks, settlement patterns, and production relations intersect, intensify, weaken, and are re-established with one another. Bringing together different character areas of the riverine landscape through sectional representations makes the holistic structure of the system readable at the micro scale (Figure 4.27, Figure 4.28). In this context, flows, disconnections, interventions, and reconnection potentials within the landscape are addressed within a single spatial configuration through a multi-scalar approach. This study demonstrates that the landscape should be understood not as a continuous and coherent whole, but through the lens of discontinuities and disconnections that shape its evolving structure and meaning. Forgotten focal points, weakened connections, and fragmented spatial relationships have become fundamental components of the analysis. At the same time, reconnection and reorganization readings developed based on the same data demonstrate that these disconnections also provide potential areas for intervention and reintegration.

Characterization and Zoning of Menderes Riverine Landscape Heritage:

Menderes River (-related) Patterns, (Dis) Continuities and (Dis) Connections Created by Authors: 'MeRiScape' Heritage Approach

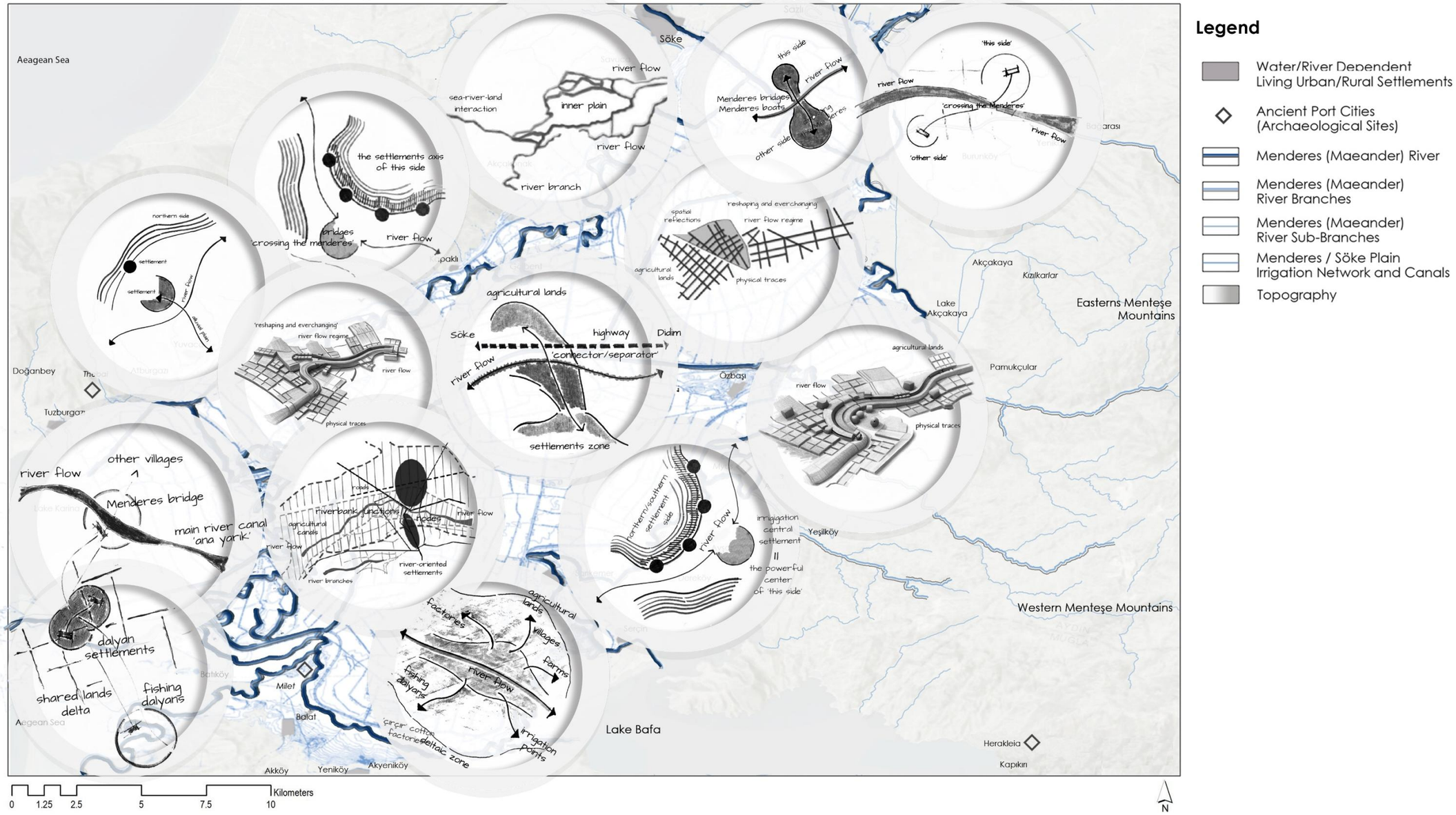


Figure 4.22 Micro-Scale Characterization/ Settlement and Intra-Settlement Characteristics in Menderes Riverine Landscape: Flows, Connections and Settlement Organization (Author, 2026)

Characterization and Zoning of Menderes Riverine Landscape Heritage:

Menderes River (-related) Patterns, (Dis) Continuities and (Dis) Connections Created by Authors: 'MeRiScape' Heritage Approach

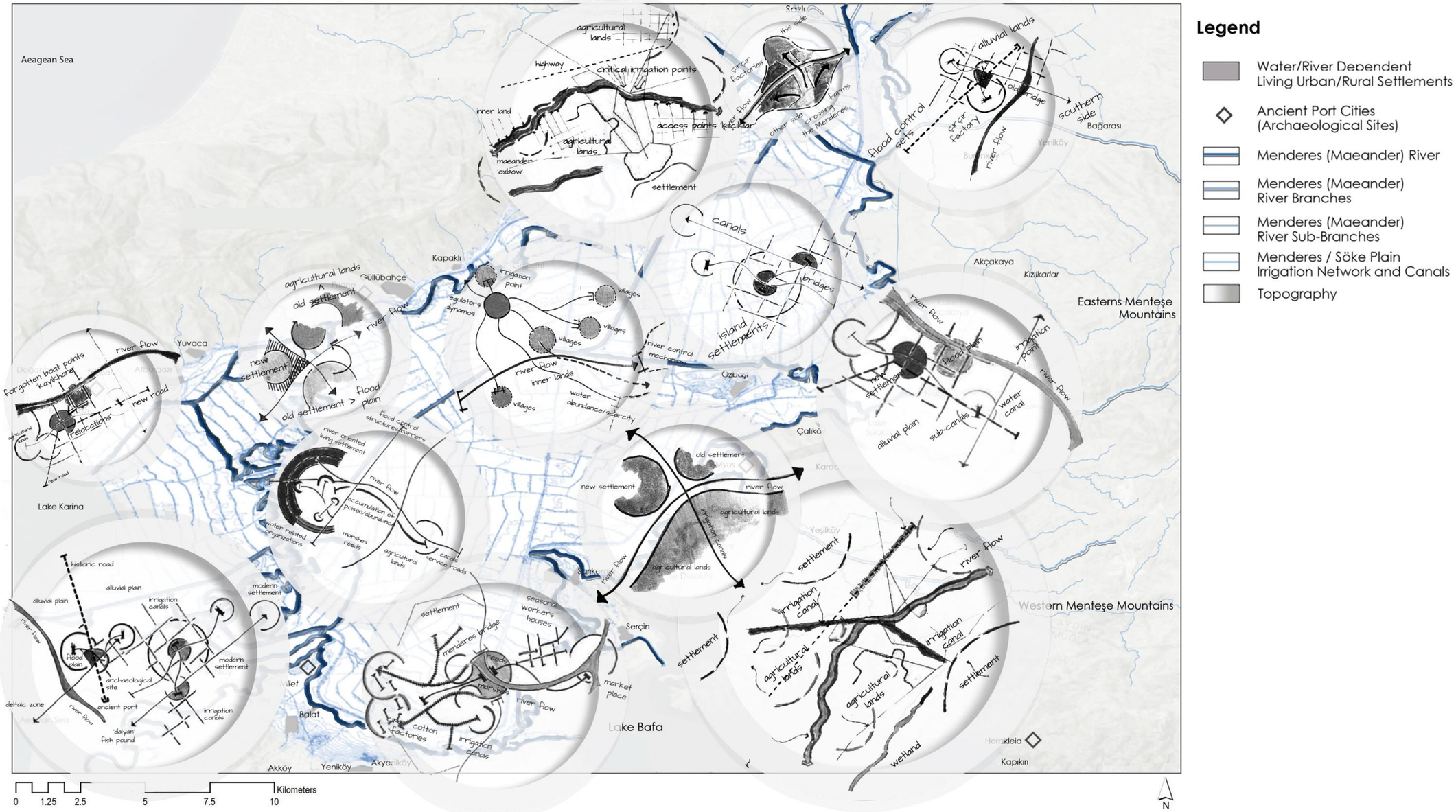
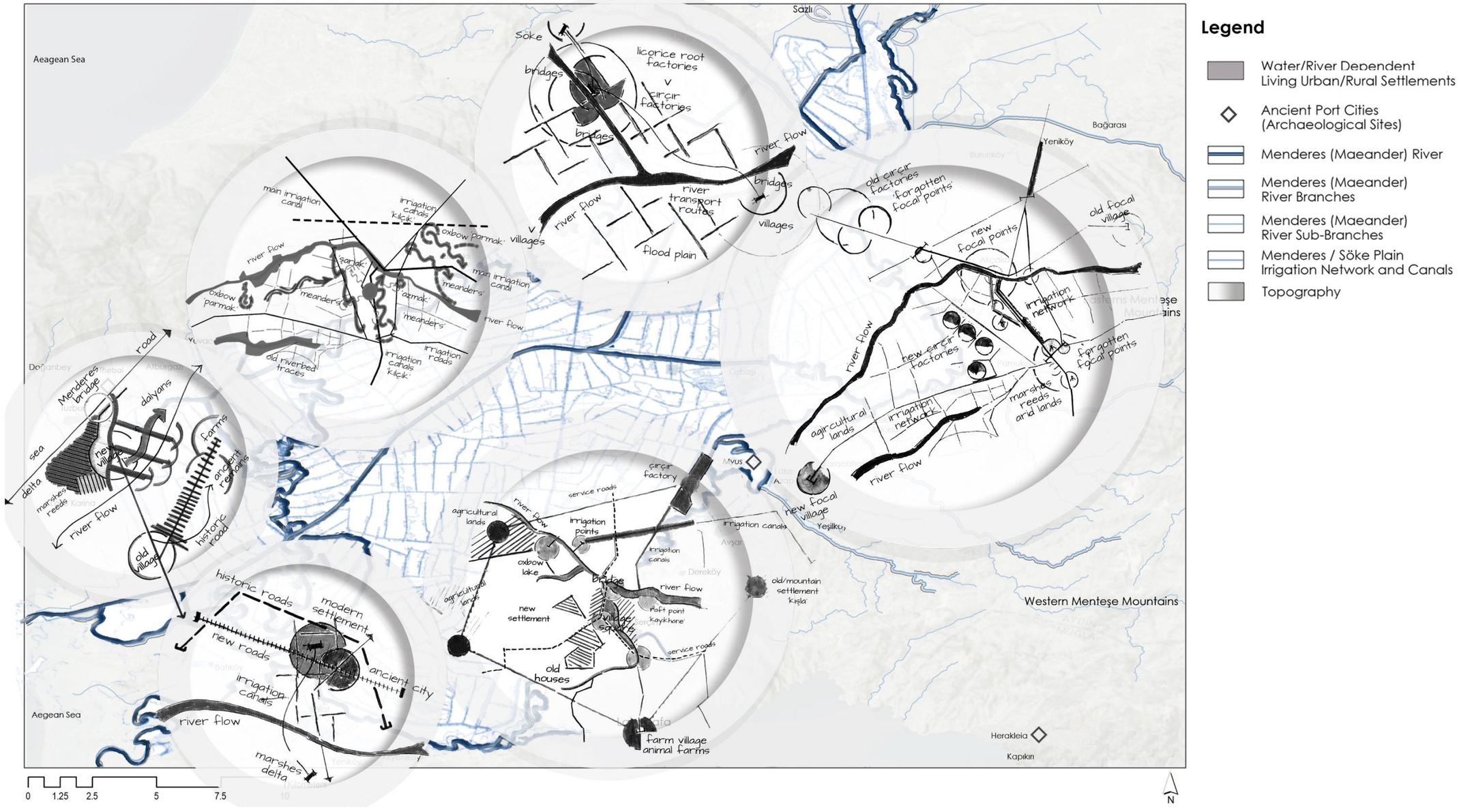


Figure 4.23 Micro-Scale Characterization/ Settlement and Intra-Settlement Characteristics in Menderes Riverine Landscape: Dynamics of Transformation and Intervention Processes (Author, 2026)

Characterization and Zoning of Menderes Riverine Landscape Heritage:

Menderes River (-related) Patterns, (Dis) Continuities and (Dis) Connections Created by Authors: 'MeRiScape' Heritage Approach



Legend

- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
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Figure 4.24 Micro-Scale Characterization/ Settlement and Intra-Settlement Characteristics in Menderes Riverine Landscape: Flows, Connections and Disconnections (Author, 2026)

Characterization and Zoning of Menderes Riverine Landscape Heritage:

Menderes River (-related) Patterns, (Dis) Continuities and (Dis) Connections Created by Authors: 'MeRiScape' Heritage Approach

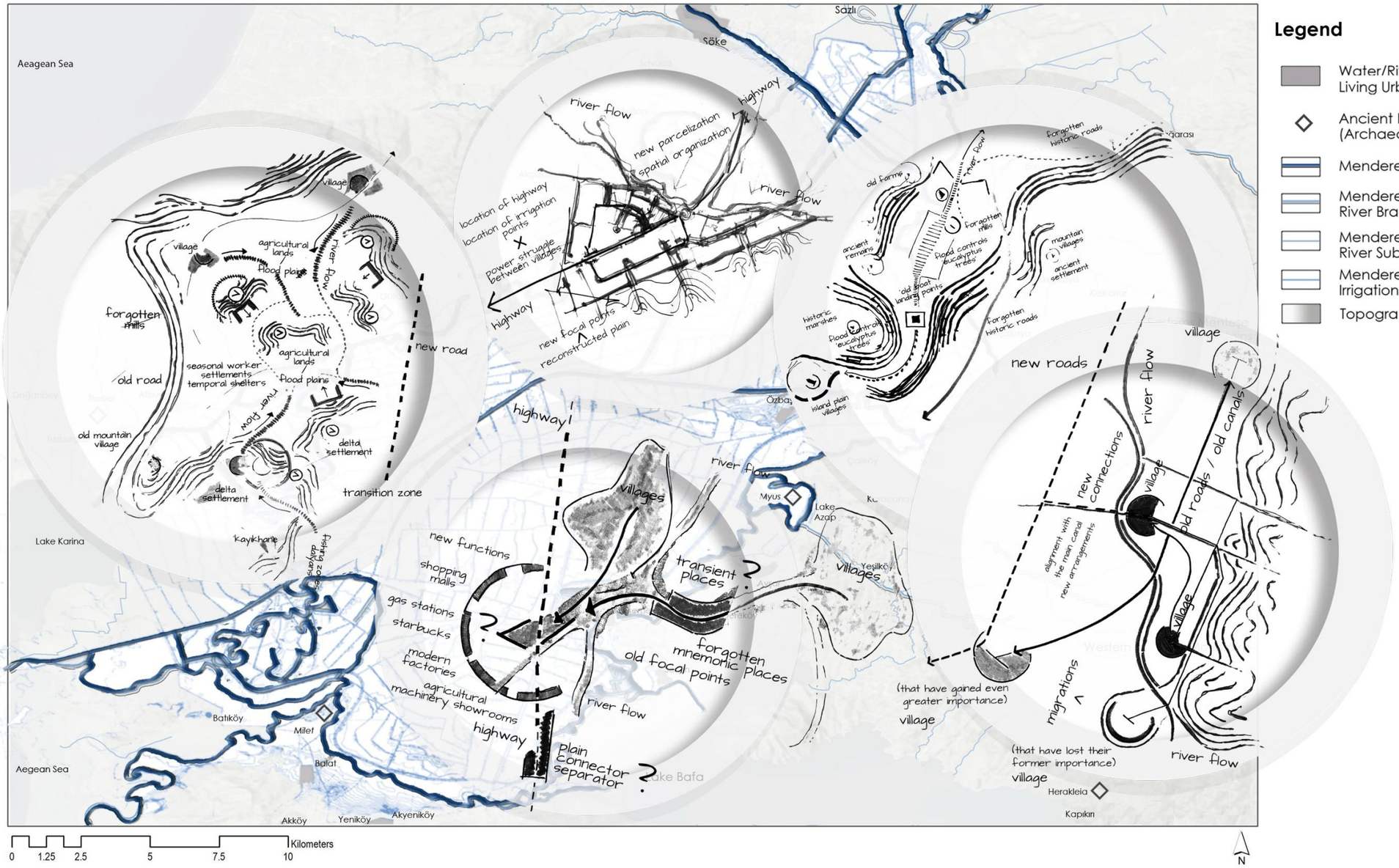


Figure 4.25 Micro-Scale Characterization/ Settlement and Intra-Settlement Characteristics in Menderes Riverine Landscape: Disconnections, Thresholds and Potentials for Reconnection (Author, 2026)

Characterization and Zoning of Menderes Riverine Landscape Heritage:

Menderes River (-related) Patterns, (Dis) Continuities and (Dis) Connections Created by Authors: 'MeRiScape' Heritage Approach

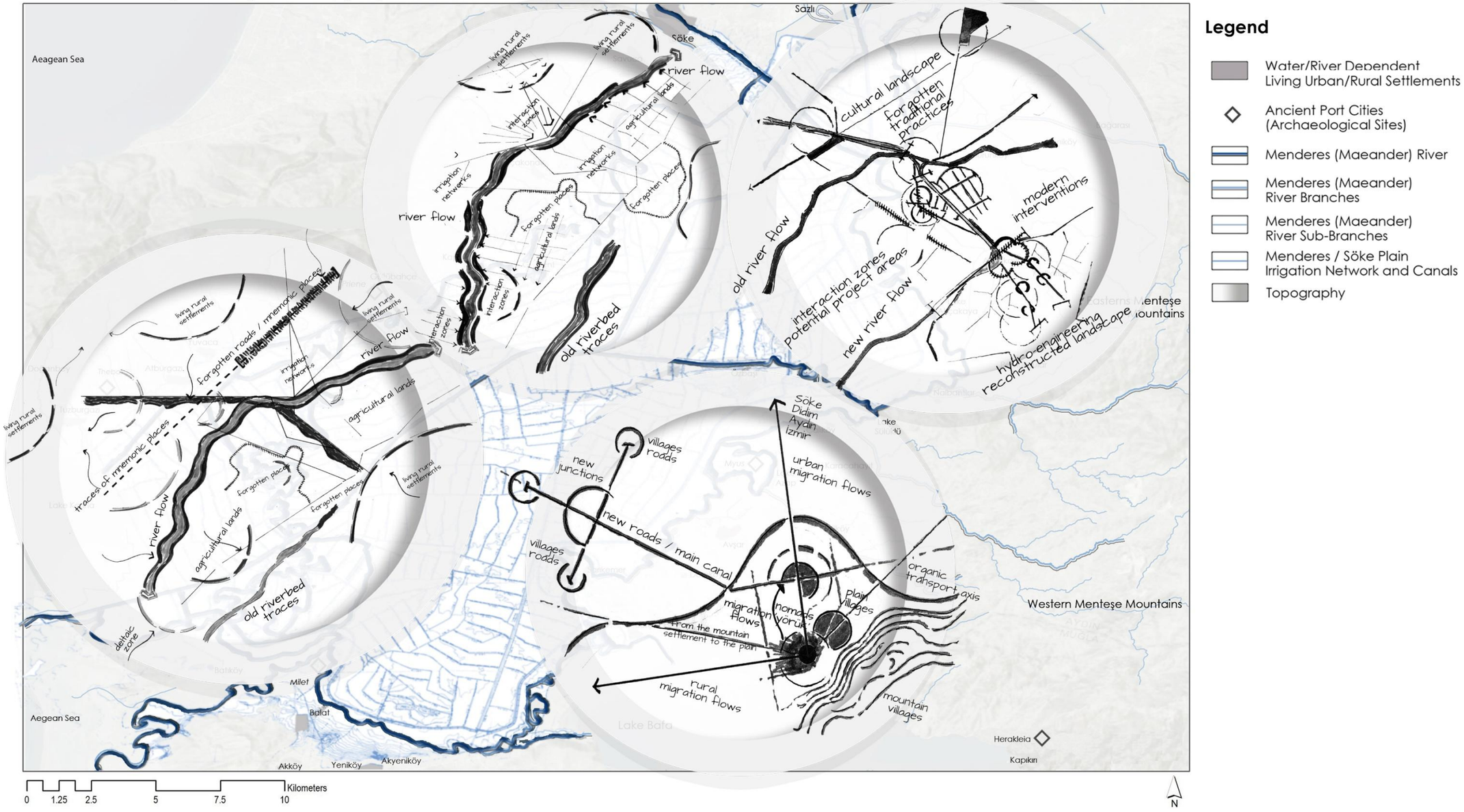
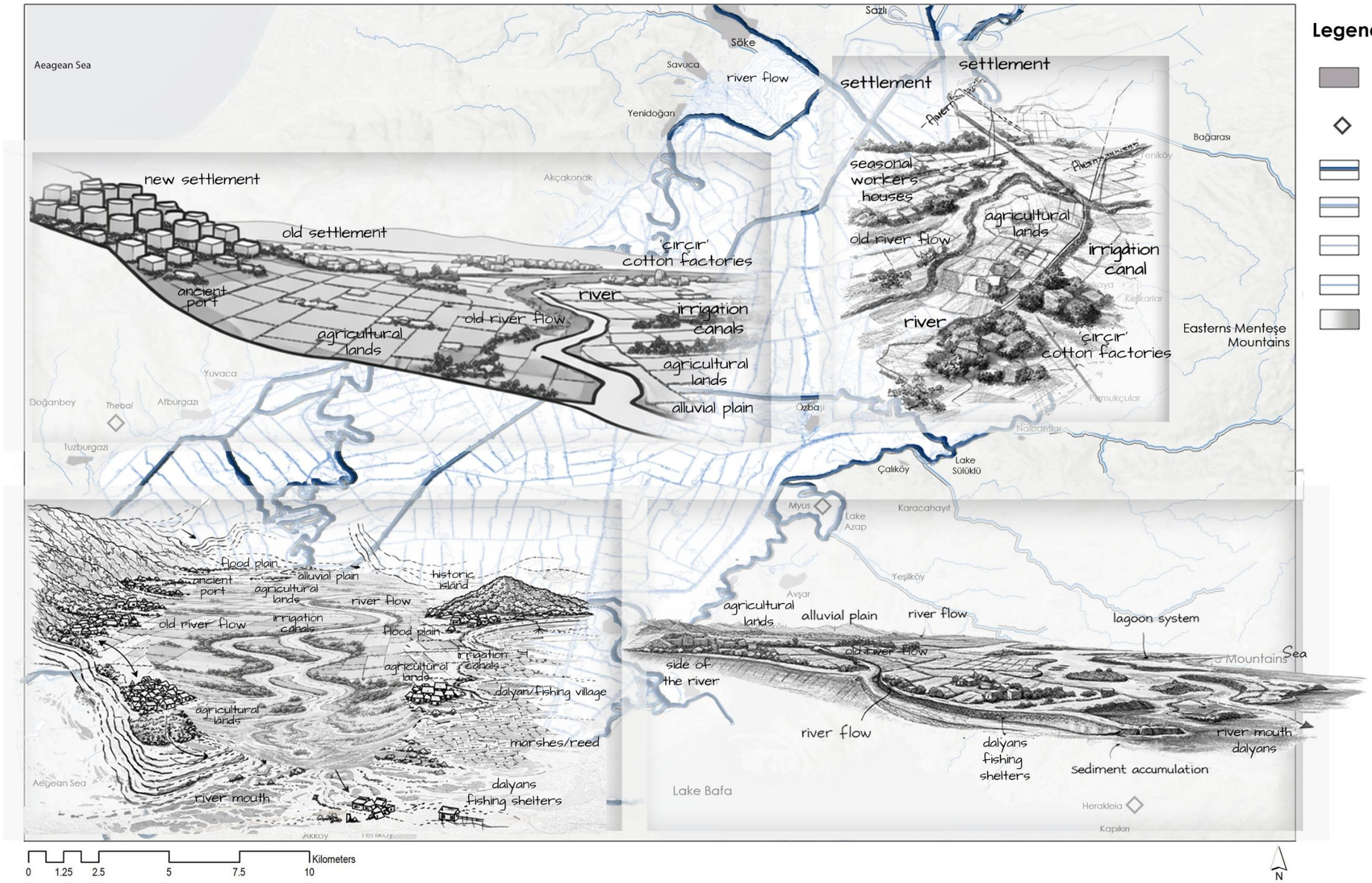


Figure 4.26 Micro-Scale Characterization/ Settlement and Intra-Settlement Characteristics in Menderes Riverine Landscape: Reconnecting and Reintegrating of Fragmented Context (Author, 2026)

Characterization and Zoning of Menderes Riverine Landscape Heritage:

Menderes River (-related) Patterns, (Dis) Continuities and (Dis) Connections Created by Authors: 'MeRiScape' Heritage Approach



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- Water/River Dependent Living Urban/Rural Settlements
- Ancient Port Cities (Archaeological Sites)
- Menderes (Maeander) River
- Menderes (Maeander) River Branches
- Menderes (Maeander) River Sub-Branches
- Menderes / Söke Plain Irrigation Network and Canals
- Topography

Figure 4.27 Reconnecting and Reintegrating of Fragmented Context (Author, 2026, 3D images were generated by AI)

Characterization and Zoning of Menderes Riverine Landscape Heritage:

Menderes River (-related) Patterns, (Dis) Continuities and (Dis) Connections Created by Authors: 'MeRiScape' Heritage Approach

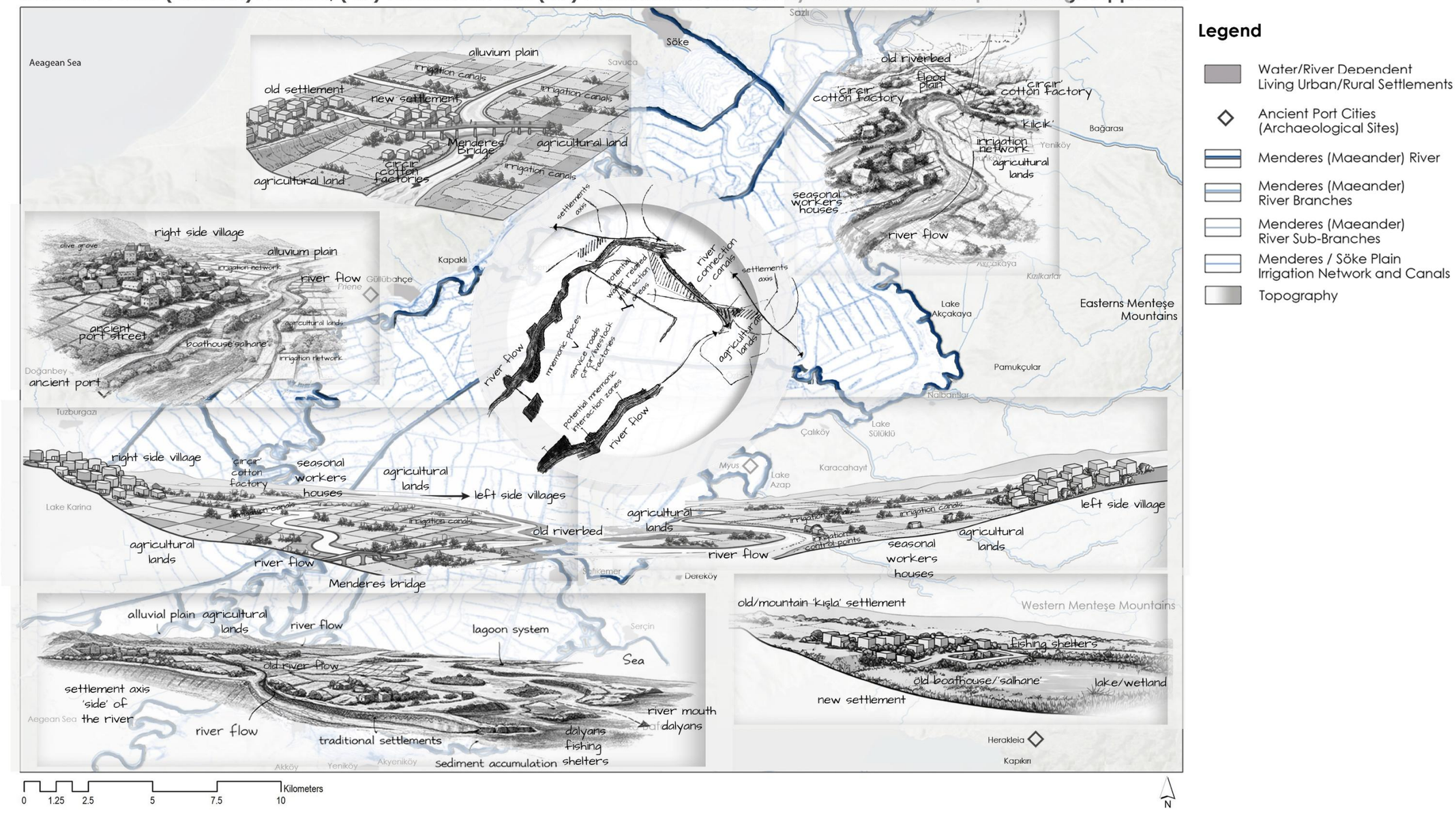

Figure 4.28 Reconnecting and Reintegrating of Fragmented Context (Author, 2026, 3D images were generated by AI)

4.3 Managing and Reconnecting Fragmented Context: Power the 'Menderes River' Back Again and Revitalize the Menderes River and Landscape Heritage

The vision of "Managing and Reconnecting Fragmented Context: Power the 'Menderes River' Back Again and Revitalize the Menderes River and Landscape Heritage" positions the Menderes River as the main creator agency that reconnects the natural landscape, the cultural and historical landscape, the narrative landscape, the governance landscape, and the continually reconstructed landscape layers and dynamics. Accordingly, this research approaches the fragmented contexts, fragmented layers, fragmented narratives, fragmented governance structures, and fragmented heritage places and patterns of the Menderes River Delta through a framework that conceptualizes the river as the "connector and catalyst component" (Figure 4.29).

This vision aims to reconnect the fragmented context through the Menderes River, which functions as the fundamental agency that generates, initiates, and transforms the landscape; to strengthen relationalities; to make the narratives of landscape communities visible; and to reactivate the riverine landscape as a natural, cultural, and socio-narrative heritage place. The vision seeks to reconnect the natural, cultural, historical, and narrative components of the landscape through the river; to ensure the recognition of the river-generated landscape as a holistic heritage framework; and to empower river–landscape–community relations within a sustainable, inclusive, and multi-author governance framework. Grounded in the connective and integrative role of the Menderes River, the principles, the corresponding policies, the strategies, and the actions established in this research are presented as a comprehensive and holistic approach (Figure 4.30):

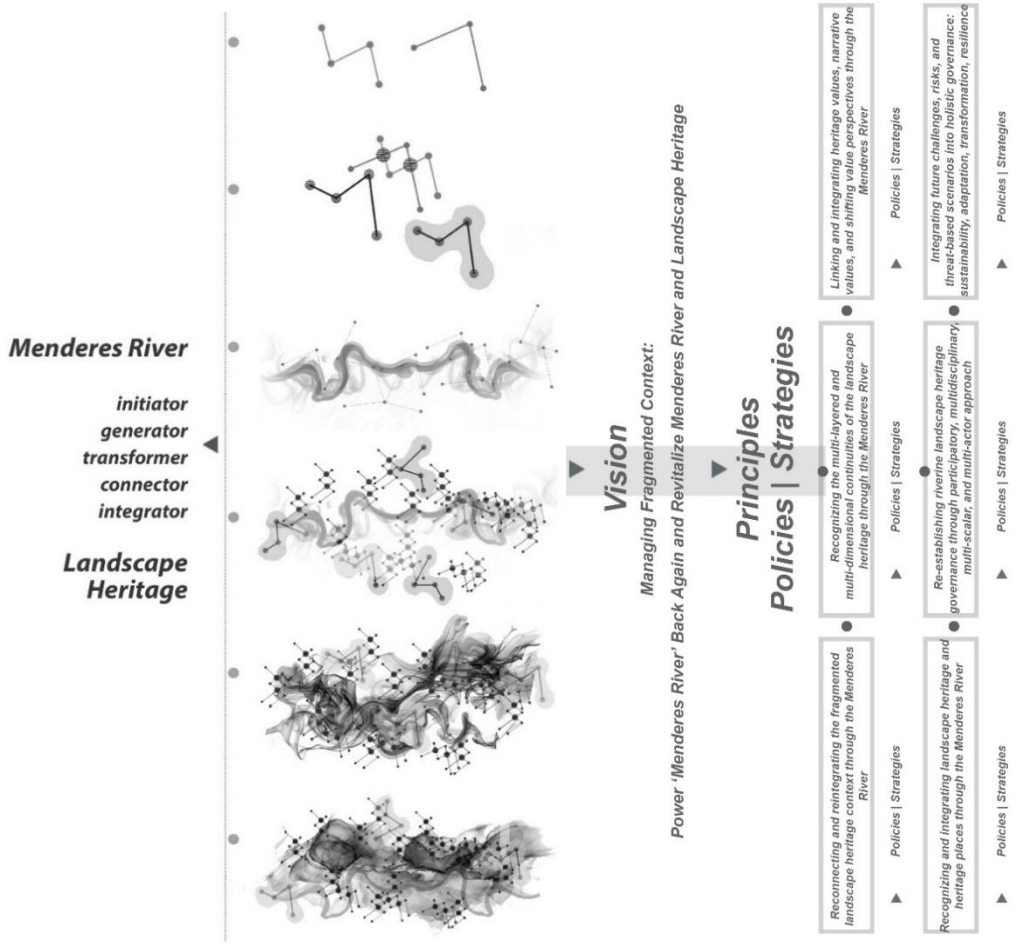

Figure 4.29 'Riverine Landscape Heritage' Approach: Vision, Principles, Policies, and Strategies (Author, 2026)

Principles:

1. Reconnecting and reintegrating the fragmented landscape heritage context **through the Menderes River**
2. Recognizing the multi-layered and multi-dimensional continuities of the landscape heritage **through the Menderes River**
3. Linking and integrating heritage values, narrative values, and shifting value perspectives **through the Menderes River**
4. Recognizing and integrating landscape heritage and heritage places **through the Menderes River**

5. Re-establishing **Menderes riverine landscape heritage governance** through a participatory, transdisciplinary, multi-scalar, and multi-author approach
6. Integrating future challenges, risks, and threat-based scenarios into **Menderes riverine landscape heritage holistic governance**: sustainability, adaptation, transformation, and resilience

Reconnecting and reintegrating the fragmented landscape heritage context through the Menderes River constitutes a fundamental starting point of this framework. In this regard, the fragmented ecological and cultural contexts between the delta, mid-basin, and upper-basin are re-established through the river, which is conceptualized as a connective and integrative agent linking natural, cultural, and socio-spatial layers. This approach recognizes "riverine landscape heritage" and calls for the integration of complex legal and administrative frameworks for its conservation and management, while addressing sectoral and administrative practices that generate fragmentation through holistic coordination mechanisms. The river's flow and its capacity to initiate, generate, and transform landscape and heritage are placed at the core of this perspective.

Accordingly, character areas and critical nodes/zones are identified to establish river-centred landscape connectivity; the causes of fragmentation are analysed, and environmental, spatial, economic, and governance measures are developed to reduce pressures such as infrastructure interventions, tourism-induced impacts, and agricultural transformations. Spatial planning guidelines, frameworks, platforms, and projects are designed within a riverine landscape heritage perspective to reconnect fragmented landscape character areas, while tools and environments are developed to reveal community-level experiences of fragmentation and to enable the rediscovery of shared living practices. Furthermore, conceptual schemas and data integration platforms—such as landscape heritage information and management systems and landscape-based decision-support systems—are established, and long-term management and intervention scenarios are produced to address hydrological

disruptions, environmental changes, cultural and economic drivers, and future risks and threats. These are supported by integrated environmental, spatial, and socio-economic planning schemes and multiscalar institutional coordination mechanisms.

Recognizing the multi-layered and multi-dimensional continuities of landscape heritage through the Menderes River forms the second pillar of this approach. A river-centred perspective is developed to address natural, historical, cultural, social, and political continuities, conceptualizing the river–delta landscape as a dynamic and ever-changing ensemble. Ecological dynamism and continuity are prioritized in planning and conservation decisions, and multidimensional interventions at basin and delta scales are evaluated to ensure the continuity of the water regime. The river is acknowledged as a creative and connective author that initiates and transforms landscape continuity, leading to new definitions and approaches to landscape and heritage. Instead of linear historical narratives, a new reading of historical and cultural continuities is developed through the river, integrating continuity–discontinuity–fragmentation relationships into conservation and governance processes. This is operationalized through a river-centred spatio-temporal matrix capturing settlement history, agricultural landscapes, archaeological sites, and modern interventions; identifying areas of continuity, discontinuity, and fragmentation; and reinterpreting transformations through the initiator, generator, and reconstructer agency of the river.

The river, wetlands, coastal zones, and agricultural areas are recognized as an integrated ecological whole, while river-related cultural practices—such as irrigation, transportation, fishing, and rituals—are conceptualized as "water-based cultural landscape practices." Platforms are designed to document and integrate local knowledge and practices, and holistic environments are developed to bring together historical, archaeological, traditional, and contemporary everyday life practices. In parallel, ecosystem- and water-based impact assessment approaches are introduced for interventions such as dams and drainage systems, and nature-based solutions are

prioritized over engineering-driven interventions in addressing water quality degradation, flooding, coastal erosion, and wetland loss.

Linking and integrating heritage values, narrative values, and shifting value perspectives through the Menderes River constitutes another key dimension of this framework. Long-term, evolving, and transforming layers of memory are preserved and sustained through an integrated assessment that recognizes heritage values, landscape values, locally attributed values, and values assigned by decision-makers. The spatial reflections of narratives and attributed values are made visible within the riverine landscape, and community-attached values, collective memory, and identities are connected through the river. Value definitions are developed through the integration of these multiple perspectives, ensuring their incorporation into planning and conservation processes. In this context, landscape communities along the river are integrated into networks grounded in a shared identity and shared heritage vision. Narrative maps, oral history data, and memory records are systematically documented and incorporated into landscape heritage information and management systems, while narrative inventories are developed for specific communities such as fishers, farmers, villagers, artisans, migrants, and urban residents. Shared assessment environments are designed to integrate heritage, narrative, and memory, positioning narratives, experiences, and sense of place not merely as complementary information but as indicators of value and risk in decision-making processes. Spatial storytelling and cultural route designs are also developed to reveal the natural, historical, and cultural narrative values of the landscape.

This approach emphasizes the **recognition and integration of landscape heritage and heritage places through the Menderes River**. Cultural heritage values are linked with natural landscape processes and heritage dynamics, and the Delta's multi-layered landscape is recognized within a holistic, river-centred framework. Water- and river-based cultural practices are acknowledged as intangible and living heritage, and the Menderes River is positioned as a heritage-generating and heritage-connecting agent in defining landscape heritage character. Urban, rural, and

archaeological heritage sites, natural conservation areas, and living landscape contexts are integrated within a character-based framework. Accordingly, riverine landscape heritage character areas and specialized zoning systems are defined, heritage layers are integrated through relational structures, and thematic routes and frameworks are developed to emphasize the coexistence of natural and cultural heritage. Conservation and management guidelines, documentation processes, and methodological frameworks are established to evaluate ecological, archaeological, cultural, and agricultural components holistically. Multi-layered planning tools are developed to integrate water-regime data with ecological, cultural, and economic continuity indicators, supported by monitoring frameworks and presentation tools.

Finally, **the re-establishment of riverine landscape heritage governance** is addressed through a participatory, transdisciplinary, multi-scalar, and multi-author approach. Inclusive governance mechanisms are designed to overcome institutional fragmentation, positioning the river at the centre of decision-making processes. Basin- and delta-scale conservation and management platforms are established, and multi-scalar governance schemas are developed to ensure inter-institutional coordination. Participatory planning processes and governance networks are designed to include scientific institutions, ministries, local governments, NGOs, and community representatives. Open-data heritage information management systems and monitoring mechanisms are developed to support governance processes, while river-based governance platforms coordinate data sharing and institutional responsibilities. Holistic impact assessment systems are established to evaluate ecosystem-based planning decisions alongside cultural landscape values. Community networks are developed to facilitate knowledge exchange, and landscape management sub-units are established for each character area. Transdisciplinary work programmes are implemented to address future scenarios related to climate adaptation, risk management, and agricultural transformation.

In this context, **future challenges, risks, and uncertainties are integrated into holistic governance frameworks through adaptive, scenario-based approaches**.

Climate change, water regime shifts, and socio-economic transformations are addressed through flexible planning strategies and monitoring mechanisms, while crisis and disaster management are embedded within a long-term landscape resilience framework. Collaborative processes involving local knowledge and decision-makers support climate and water projections, risk–opportunity analyses, and scenario-based spatial planning approaches that address socio-spatial and socio-economic vulnerability. Nature-based solutions are prioritized to enhance water quality and landscape processes, while sustainable agricultural scenarios and alternative production models are developed in alignment with ecosystem-based approaches. Pilot projects and knowledge-sharing platforms are established to support adaptive practices, and water- and river-related cultural events, routes, and awareness programmes are designed to re-socialize landscape experience and strengthen the relationship between communities and the riverine landscape.

Accordingly, the Menderes River defines a form of heritage in which the river functions as a connector, an initiator, generator, creator, and transformer of multi-scalar geographical, cultural, economic, and social relations that sustain the landscape's identity and continuity. It conceptualizes the Menderes River as a creator agent for landscape and landscape heritage (a dynamic source of life driving progradation and natural transformation processes); a carrier (of cross-scalar physical, social, cultural, mental, and economic components); a connector and integrator (a catalyst ensuring connectivity within the basin); a seperator (a geographical, physical, and spatial boundary); a productive element (a life-giving source sustaining agricultural and energy production and economic livelihoods); and a narrative-symbolic force (a mythological, sacred, and storytelling catalyst). In this context, riverine landscape heritage represents a complex riverine landscape and heritage encompassing the natural and cultural components shaped by the river and its surrounding ecosystems, as well as the intricate processes and relational networks interlinking them.

In this regard, riverine landscape heritage critically engages with the culture–nature approach, landscape approach, spatio-temporal approach, and biographical approach within the discourse of cultural heritage conservation. As a holistic heritage approach, riverine landscape heritage articulates a comprehensive vision for conservation and management, supported by its guiding principles, corresponding policies, strategies, and specific actions, toward ensuring the sustainable continuity of the Menderes riverine landscape.

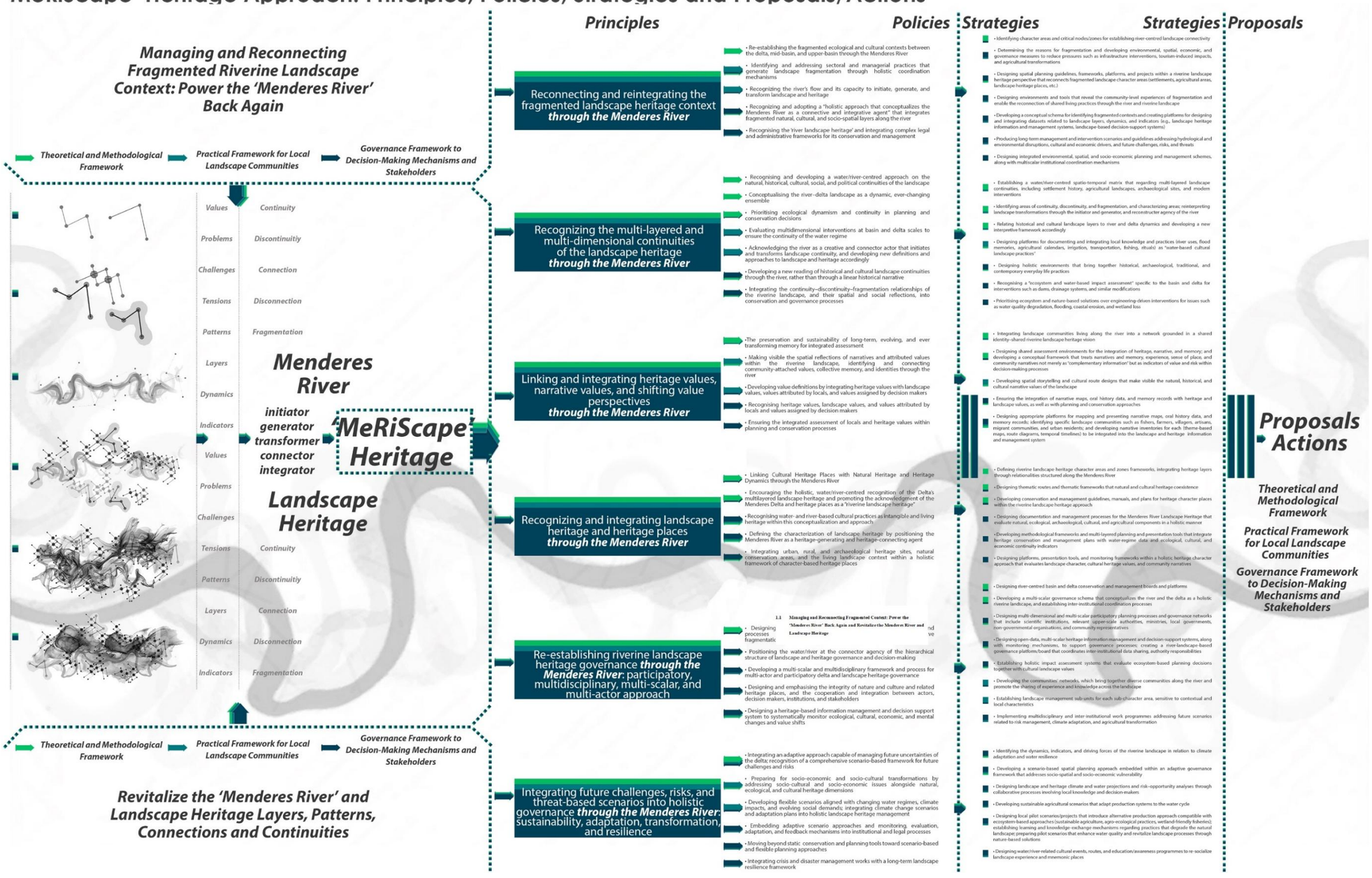

Figure 4.30 'Riverine Landscape Heritage' Approach: Principles, Policies, Strategies, and Proposals/Actions (Author, 2026)

4.4 From Approach to Proposal: The Riverine Landscape Heritage Approach Proposals

In light of this vision, the principles, and the strategies, riverine landscape heritage recognizes the Menderes River as the initiator, generator, creator, and transformer of the landscape; perceives water as a connector and integrator; and promotes a living, participatory, and holistic heritage conservation and management approach that preserves ecological, historical, cultural, and spatial continuities. This holistic framework is structured around six interrelated contexts: the natural and environmental context, the physical and spatial setting, the socio-cultural framework, the socio-economic framework, the legal and managerial context, and the conservation–planning–monitoring context. In this regard, the research presents the concluding remarks and contributions of riverine landscape heritage, its holistic vision and approach to the Menderes Riverine Landscape, under three key categories: Theoretical and Methodological Framework, Practical Framework for Local Landscape Communities, and Governance Framework to Decision-Making Mechanisms, Proposals for Theoretical and Methodological Framework.

4.4.1 Theoretical and Methodological Framework

This study critically engages with the definitions and boundaries of heritage, questioning their adequacy in capturing the complexity and dynamism of riverine landscapes. Heritage frameworks have long relied on structure-oriented and site-based categorizations, often privileging tangible attributes and clearly delineated boundaries. Such approaches tend to overlook the fluid, processual, and relational nature of landscapes shaped by ongoing interactions between natural systems and human practices. In addressing these limitations, the study engages critically with a range of theoretical approaches that have shaped contemporary heritage and landscape discourse.

Building on these critical reflections, the '***riverine landscape heritage'*** approach proposes an integrated and process-oriented framework that moves beyond the partial contributions of these approaches. Within this framework, riverine landscapes are conceptualized as multiscalar and multidimensional heritage emerging from the continuous co-production of natural dynamics, cultural practices, and human agency (Figure 4.31). This perspective understands it as a networked and multilayered structure in which flows, connections, and intersections are fundamental. In this regard, the identification of character areas, routes, focal places, and intersection zones enables a relational reading of the landscape, revealing how different processes overlap, interact, and transform one another across multiple scales. This reconceptualization directly informs the conservation and management principles of the approach. Riverine landscape heritage highlights that riverine landscapes are fragile systems in the context of climate change, drought, floods, and other environmental pressures, and introduces a management principle focused on ecological continuity and resilience. Accordingly, wetlands, floodplains, and delta systems are addressed as interconnected components within a holistic landscape ensemble, requiring continuous monitoring and adaptive management strategies.

Different riverine components governed by varying legal and administrative frameworks are integrated spatially and temporally within a cultural landscape perspective to ensure coherence in management. In this context, a long-term ecosystem monitoring system is proposed, supported by an updatable and shareable structure that enables coordinated management across all landscape components. Based on the principle of integrity, *riverine landscape heritage* proposes that the river and its landscape should be managed as a riverine landscape ensemble despite fragmented conservation statuses. The approach further emphasizes inclusiveness by incorporating the diversity of values embedded in the riverine landscape and by providing accessible tools for decision-makers and local communities. The conservation of spatial continuity between settlements, physical layers, and the river itself is identified as a critical requirement for sustaining the living heritage character of the landscape. Strategies are developed to strengthen connections between urban

and rural settlements, archaeological sites, and the river, while areas that exist primarily in collective memory are defined as "character areas" requiring careful management.

A key component of the approach is the development of a comprehensive database, *'*MeRiΔGIS,*'* that systematically records and monitors spatial layers and their interrelations. This database enables the evaluation of relationships between the river and various landscape components, including settlements, built environments, and hydraulic systems, while supporting the visualization of temporal transformations through multilayered analyses. The transdisciplinary character of riverine landscape heritage constitutes another key contribution. By integrating disciplines such as ecology, geography, history, architecture, urban planning, and anthropology, the framework enables comprehensive analysis through shared datasets and cross-disciplinary methods. Within this context, 'MeRiΔGIS' functions as a multilayered spatial information system that organizes and analyzes data related to natural, spatial, socio-cultural, economic, and administrative dimensions of the landscape. Through the integration of spatio-temporal and landscape biographical approaches, the framework enhances the methodological capacity of conservation processes, enabling the simultaneous evaluation of tangible and intangible heritage components, including narratives, memories, and experiential knowledge. By incorporating oral histories and place-based memory into spatial analysis, it connects analytical and narrative dimensions of heritage.

The open-data structure of 'MeRiΔGIS' allows continuous updates and supports transdisciplinary collaboration, participation, and long-term knowledge production. The approach integrates local knowledge systems, narratives, and collective memory into conservation and management processes and promotes the active involvement of local communities. It redefines governance by moving away from centralized and technocratic models toward participatory landscape governance, strengthening communication between decision-makers.

Ultimately, this approach expands the conceptual definitions and boundaries of heritage to include processes, interactions, and lived experiences, while repositioning rivers as active agents in shaping landscape heritage (Figure 4.31). By defining the river as an initiator, generator, and transformer, riverine landscape heritage redefines heritage as a dynamic and continuously reproduced system. In doing so, it advances a comprehensive and transferable framework that contributes to both heritage theory and practice.

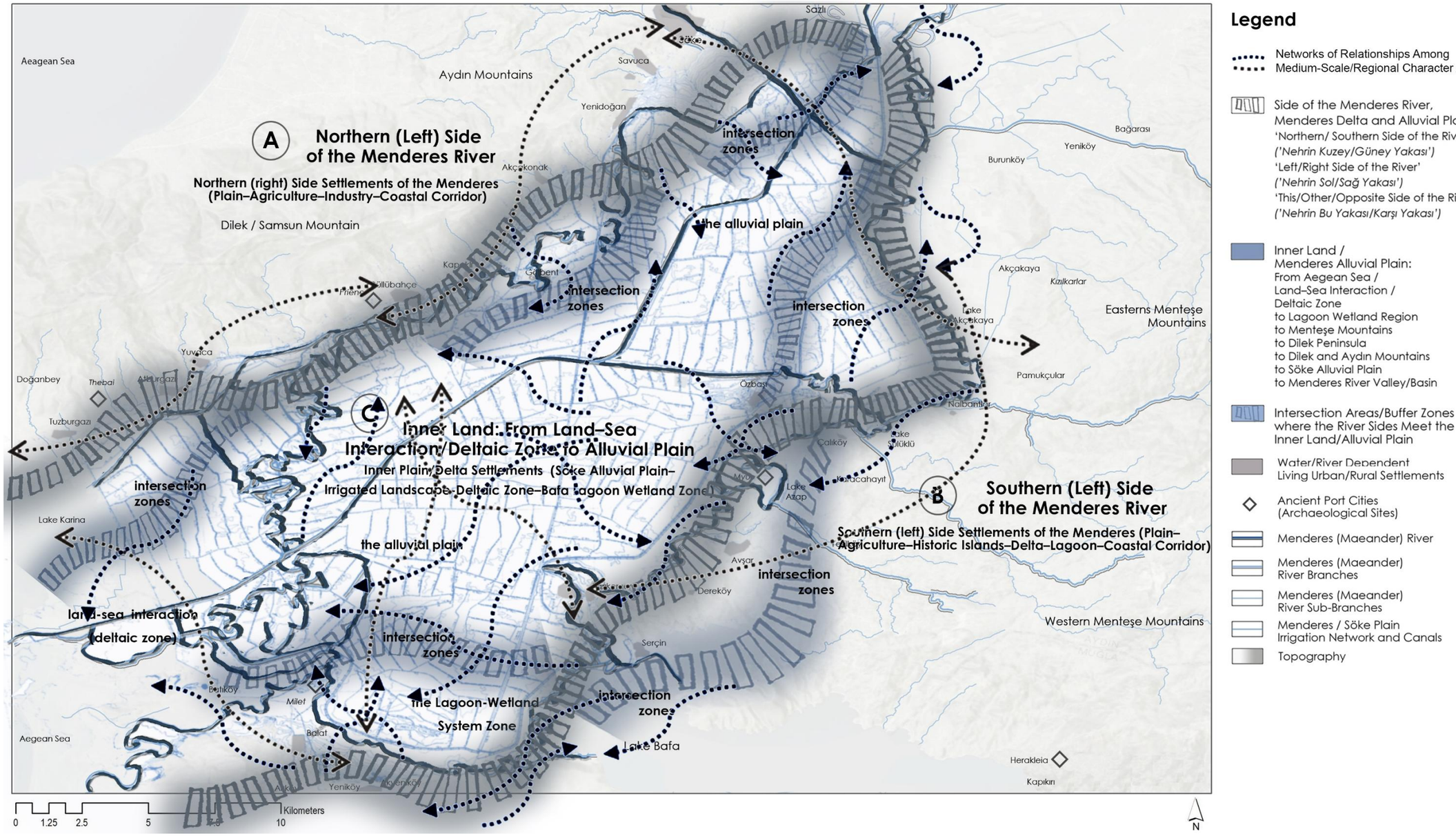

Figure 4.31 Managing and Reconnecting Fragmented Context: Power the 'Menderes River' Back Again and Revitalize the Menderes River and Landscape Heritage (Author, 2026)

4.4.2 Practical Framework for Local Landscape Communities

Under the heading “Contribution to the Local”, the riverine landscape heritage framework focuses on strengthening riverine communities, local authors, and local heritage within the Menderes River and Delta landscapes. It aims to ensure the active participation of local communities in conservation and management processes while sustaining socio-cultural and socio-economic continuity. The approach prioritizes an inclusive heritage management model that supports local life practices, identities, and historical relationships with water through knowledge, experience, and memory. Within the principle of “Recognition of Local Knowledge and Memory”, traditional knowledge, narratives, and spatial memory related to the Menderes River are systematically documented and mapped. These are organized under thematic categories including natural environment, water management, agriculture, physical–spatial structure, socio-cultural reflections, and socio-economic relations. Oral histories, memory places, and everyday practices—such as water use, rituals, and toponyms—are integrated into ‘MeRiΔGIS’, ensuring that local narratives and lived experiences become active components of conservation and management processes.

The governance model is structured around inclusivity, participation, and representation. The documentation of disappearing cultural elements and local knowledge contributes to reconstructing the identity of the riverine landscape. Field studies and interviews support the inclusion of local authors in decision-making processes, strengthening local ownership and responsibility. In this context, riverine landscape heritage proposes the establishment of riverine landscape heritage councils composed of local communities, village administrations, cooperatives, irrigation unions, and NGOs. Participatory mechanisms are institutionalized through meetings, workshops, forums, and advisory councils in settlements such as Güllübahçe, Doğanbey, Akyeniköy, and Sarıkemer.

The framework also addresses the “two sides of the river” condition, ensuring that northern and southern landscape components are evaluated both individually and within a unified system. It emphasizes the inclusion of different author groups such as farmers, fishers, irrigation unions, and cooperatives. Open call and proposal mechanisms further enable local authors to contribute directly to conservation and management processes, strengthening collective governance. Environmental and cultural awareness constitute another essential component of the framework. By preserving collective memory, water practices, and traditional knowledge, the approach seeks to re-establish the connection between local culture and the river. Participatory heritage co-production is supported through the documentation of oral histories, the visibility of river-related symbols, and the continuation of regional festivals and events.

In this context, supporting festivals and thematic events that highlight local river culture, strengthening the role of cooperatives in promoting local products and services, and ensuring that local communities directly benefit from tourism revenues are defined as key principles of local participation. Public engagement with archaeological sites through in-situ exhibitions, guided tours, and collaborations with NGOs contributes to increasing awareness and reinforcing a shared sense of heritage ownership. The use of social media further expands the visibility of cultural heritage beyond the local scale, strengthening public interaction and engagement (Figure 4.32). Experiential tools such as memory walks, participatory mapping workshops, and thematic routes are proposed to enhance awareness of environmental risks, cultural discontinuities, and sustainable living. Educational programs developed in collaboration with irrigation unions, cooperatives, and local institutions support knowledge transmission and strengthen connections between local communities and the river (Figure 4.32; Figure 4.33).

Within this framework, the “Menderes Riverine Landscape Heritage and Sustainable Tourism Integrated Management Plan” conceptualizes the fragmented yet multi-layered landscape as an interconnected whole. It defines a series of thematic routes,

including the Menderes Route, Travelers' Routes, River Progradation and Plain Route, Two Sides of the River Route, Delta Route, Ancient Port Cities Route, River Raft/Boat Journey Route, Agricultural History Route, and Water and Irrigation Management Route (Figure 4.32; Figure 4.33). These routes connect natural landscapes such as wetlands, lagoons, and bird observation areas; cultural and archaeological sites including Milet, Priene, Magnesia, Nysa, Didyma, and Myus; and settlement networks shaped by historical and contemporary socio-economic practices. River-based transportation routes preserved in collective memory are reinterpreted through connections between settlements such as Akköy, Balat, Milet, Doğanbey, Güllübahçe, Söke, Sarıkemer, Serçin, and Özbaşı. At the same time, these routes integrate local economic and cultural nodes such as markets, fisheries, lagoons, agricultural fields, and irrigation networks, reflecting the everyday practices and socio-economic structures of the landscape. Annual events—including agricultural festivals, water-related celebrations, birdwatching tours, and heritage workshops—further strengthen the relationship between community, nature, and landscape heritage (Figure 4.32; Figure 4.33).

The socio-economic dimension of the landscape is addressed through the concept of a "water and cotton landscape," where agricultural production, irrigation systems, and cooperative structures form a defining component of the region. The framework emphasizes the integration of sustainable rural development with conservation processes, ensuring that local livelihoods and landscape heritage evolve together. Traditional practices such as fishing, reed harvesting, and handicrafts represent another critical layer of the landscape. These practices, particularly in lagoon environments, are under pressure due to socio-economic changes. The framework proposes supporting these activities through cooperatives, local markets, and integrated water management strategies.

The tourism potential of the Menderes Riverine Landscape is recognized as a key opportunity. However, uncontrolled tourism and development pressures pose risks to ecological balance and cultural heritage. In response, riverine landscape heritage

adopts the principle of “sustainable and controlled tourism”, emphasizing visitor capacity management, environmentally sensitive infrastructure, and local participation. Tourism is integrated with local economic systems, river-based heritage routes, and sustainable production practices. Ecotourism, agro-tourism, and cultural routes are supported through thematic itineraries and river-guiding systems. Carrying capacity analyses, vulnerability assessments, and conservation-priority zoning are emphasized to ensure long-term sustainability. Knowledge management tools such as ‘MeRiΔGIS’ play a central role in maintaining the balance between conservation and use. By integrating multi-layered spatial data and supporting monitoring processes, the system enables the evaluation of relationships between natural, cultural, and socio-economic components, contributing to sustainable and participatory landscape management.

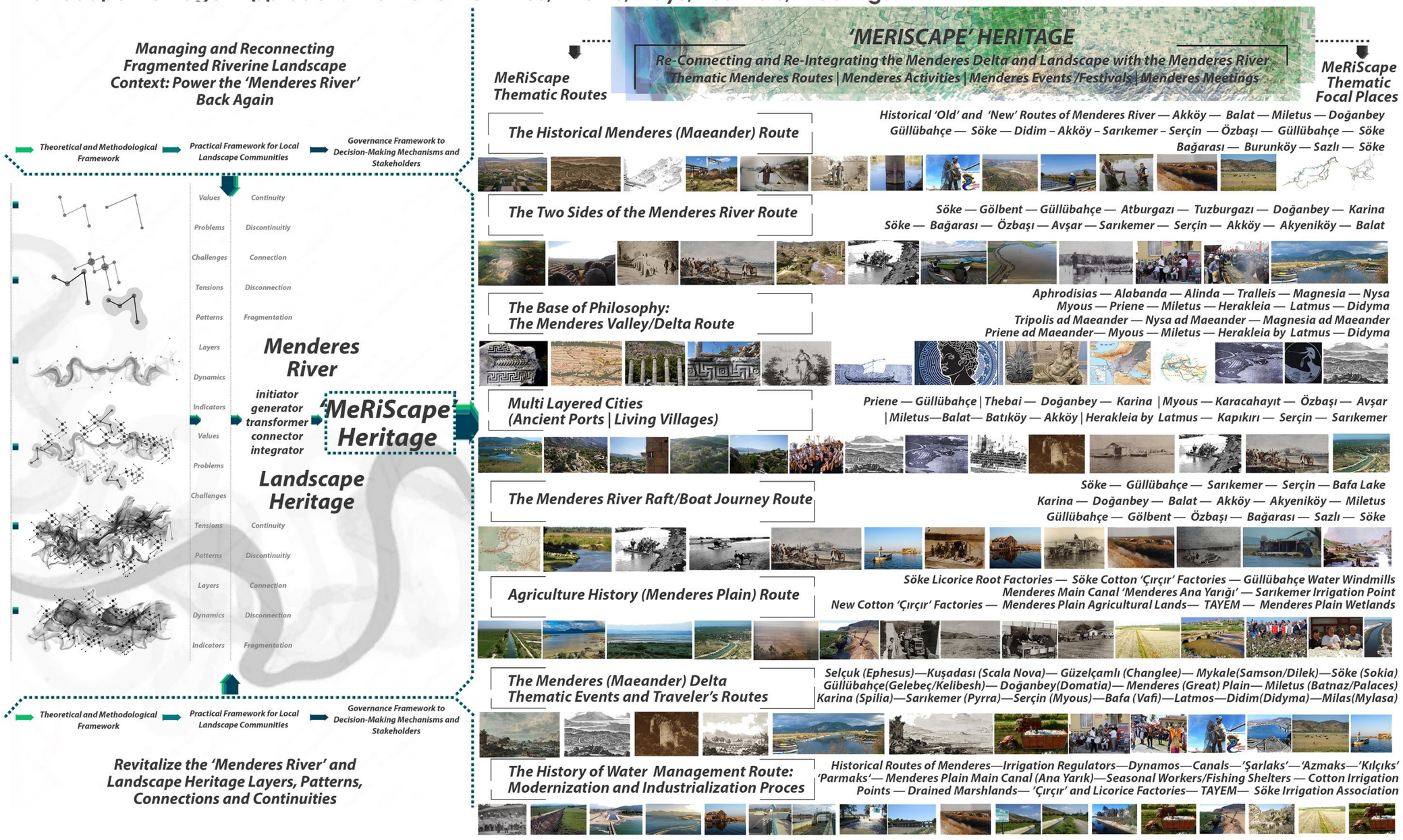

Figure 4.32 'Riverine Landscape Heritage' Approach: Proposed Thematic Routes, Events, Activities, and Meetings (Author, 2026)

‘MeRiScape Heritage’ Approach: Thematic Activities, Events, Days, Festivals, Meetings

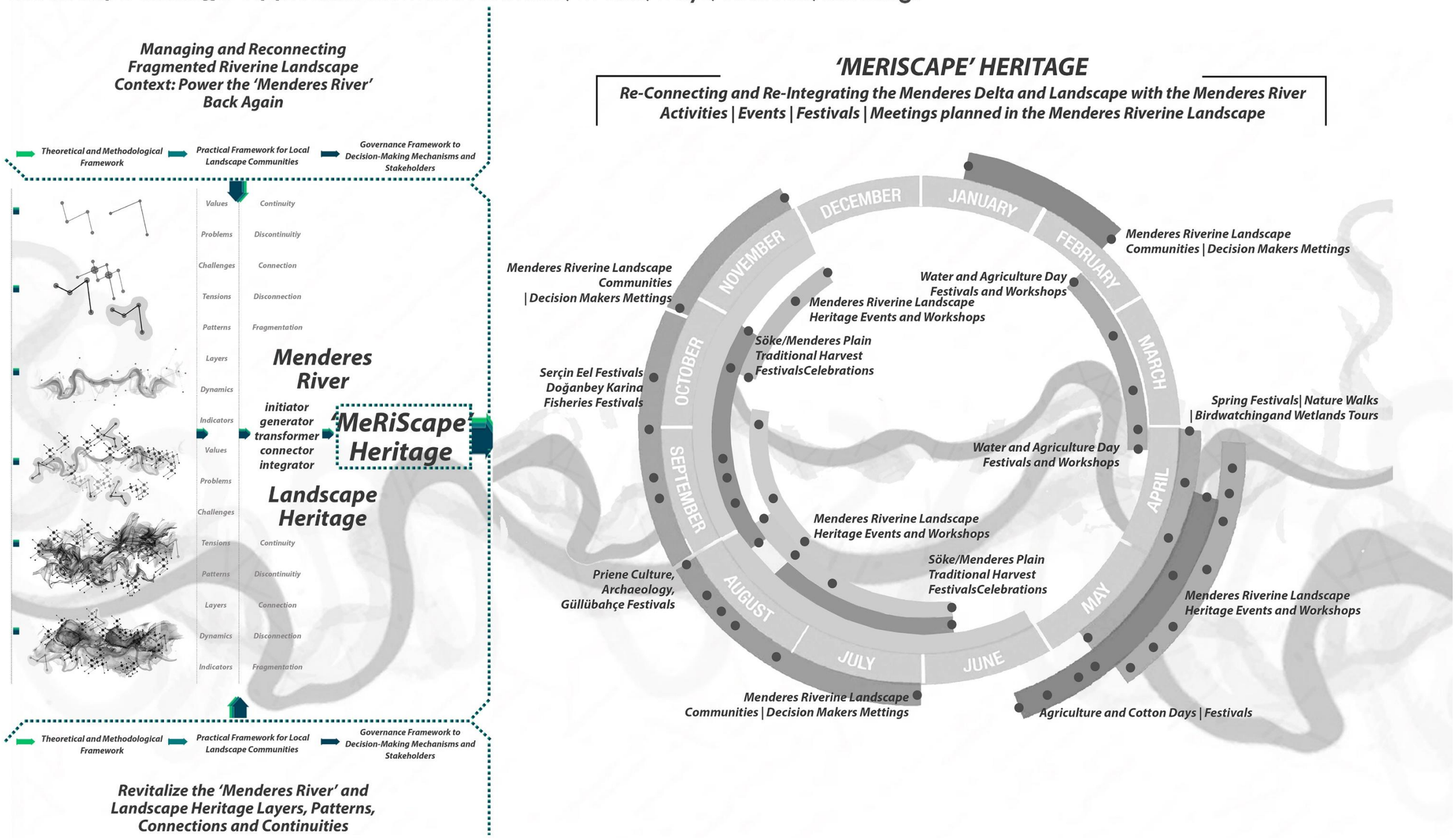

Figure 4.33 ‘Riverine Landscape Heritage’ Approach: Proposed Thematic Routes, Events, Activities, and Meetings (Author, 2026)

4.4.3 Governance Framework to Decision-Making Mechanisms

The governance of this complex landscape cannot be achieved through a single institutional authority. Responsibilities are distributed among the Ministry of Environment, Urbanization and Climate Change (Çevre, Şehircilik ve İklim Değişikliği Bakanlığı), the Ministry of Culture and Tourism (Kültür ve Turizm Bakanlığı), the Ministry of Agriculture and Forestry (Tarım ve Orman Bakanlığı), the State Hydraulic Works (Devlet Su İşleri – DSİ), irrigation unions, municipalities, provincial administrations, NGOs, and academic institutions. However, current practices remain fragmented, as natural and cultural heritage are often managed separately without establishing a direct relationship with the river (Figure 4.34).

To address this fragmentation, riverine landscape heritage proposes an integrated governance structure centered on institutional coordination, data sharing, and multi-scalar decision-making(Figure 4.34). The establishment of the Menderes Riverine Landscape Research Center forms the core institutional infrastructure of this system. Under this structure, two complementary platforms are defined: the Menderes Basin | Valley | Delta Scientific Research Platform and the Menderes Riverine Landscape and Heritage Action Platform. These platforms enable coordination among institutions, integration of planning instruments, and the implementation of conservation and management strategies across scales. A central component of the framework is the expansion and active use of the 'MeRiΔGIS' Heritage Information Management and Decision Support System. This system integrates multi-layered datasets related to natural, cultural, agricultural, and socio-economic components of the landscape. It provides shared access for central administrations, local governments, municipalities, and conservation boards, supported by training programs. By linking spatial, temporal, and narrative data, 'MeRiΔGIS' enables monitoring, scenario development, and data-driven decision-making processes.

The governance framework is further supported by the Menderes Riverine Landscape Integrated Spatial Planning Guide, which ensures the integration of plans,

policies, and strategies across national, regional, and local levels. This guide aligns conservation and planning practices with international frameworks such as UNESCO, Ramsar, and the European Landscape Convention. A five-year Policy, Strategy, and Action Plan is recommended to guide conservation and management practices across scales, supported by a multi-scalar governance system in which monitoring and evaluation processes are periodically updated. In addition, the framework proposes the establishment of an international "Living River and Riverine Landscape Heritage" conservation status and the preparation of a Riverine Landscape Heritage Conservation and Management Manual for national implementation. Within this structure, conservation and management are organized around key thematic dimensions:

The natural landscape dimension addresses wetlands, deltas, floodplains, and biodiversity systems, emphasizing ecosystem-based conservation, climate adaptation, and nature-based solutions. Policies include monitoring ecosystem services, applying for Ramsar status, regulating visitor capacity, and integrating Natura 2000 and similar frameworks. The historic and cultural landscape dimension integrates archaeological sites, urban and rural settlements, and built heritage into a unified river-based system. Ancient cities such as Milet, Priene, Magnesia, and Didyma are addressed together with living settlements, overcoming the separation between natural and cultural heritage. The framework proposes new conservation statuses, improved coordination among institutions, and the establishment of "Ancient Site Municipalities" for major excavation areas. It also introduces the Menderes Basin Excavation and Survey Activities Symposium under the Research Center to coordinate scientific research and knowledge sharing. When classical period settlement and trade networks, ancient port cities, Byzantine settlement traces, Ottoman archival records, and oral history studies are considered together, the riverine landscape can be interpreted not as fragmented snapshots but as a holistic continuum shaped along the axis of continuity and transformation. This approach enables a comparative analysis of the river's shifting roles across different periods—as a determinant of settlement, a production system, a transportation route, and a site

of cultural meaning-making. Current archaeological excavations often focus on specific ancient cities and periods, while their evaluation within a broader temporal continuity remains limited. Therefore, it is essential to develop a multi-layered research approach that extends beyond antiquity to include classical, Byzantine, and later periods. By integrating data from different excavation sites, surface surveys, and a transdisciplinary data environment, a comprehensive knowledge base can be established to reveal the long-term transformation processes of the riverine landscape.

The riverine and agricultural landscape dimension defines the region as a "production landscape", shaped by irrigation systems, agricultural production, and hydraulic infrastructures. Institutional responsibilities are coordinated among the Ministry of Agriculture and Forestry, DSİ, irrigation unions, and local authorities. The framework proposes the documentation and registration of traditional irrigation systems, the development of nature-based agricultural practices, participatory water governance models, and training programs that integrate traditional knowledge with modern engineering. The living and narrative landscape dimension emphasizes local communities, everyday practices, and intangible heritage. Oral histories, memory maps, and traditional ecological knowledge are systematically documented and integrated into 'MeRiΔGIS'. The framework establishes Riverine Landscape Heritage Councils and local advisory boards in settlements such as Güllübahçe, Doğanbey, Akyeniköy, and Sarıkemer. These structures ensure the participation of farmers, fishers, cooperatives, irrigation unions, and local communities in decision-making processes through open-call systems and continuous feedback mechanisms.

The framework also includes a comprehensive tourism and visitor management system. Recognizing the Menderes Riverine Landscape as a major tourism geography, it proposes a Menderes Riverine Landscape Heritage and Sustainable Tourism Integrated Management Plan. This plan includes carrying capacity analyses, visitor management strategies, protection of sensitive areas, and the development of alternative routes. The tourism model is based on thematic route systems connecting

natural, cultural, and socio-economic components of the landscape. Responsibilities are distributed among ministries, local governments, NGOs, and academic institutions, ensuring coordinated implementation. The framework promotes ecotourism, agro-tourism, and cultural tourism while emphasizing sustainability and local benefit.

To support participatory governance, the framework proposes local representation quotas in conservation councils, regular participatory meetings, and the integration of local knowledge into planning and management processes. Communication tools and digital platforms are developed to ensure the dissemination and continuity of both local and scientific knowledge. A key output of the framework is the 'Menderes Riverine Landscape Heritage Atlas', a GIS-based, multi-layered platform that integrates natural, spatial, and socio-cultural data. Organized into Natural Landscape, Historical (Built) Landscape, and Cultural Narrative Landscape atlases, it enables the visualization of change, continuity, and transformation through spatio-temporal analysis. The atlas supports monitoring, decision-making, and transdisciplinary research.

The digital heritage information management and decision-support system developed in this study, 'MeRiΔGIS', is conceived as a data storage platform and a multi-layered interface that facilitates participation in decision-making processes. Accordingly, the system is designed to offer differentiated levels of access and use based on user profiles. For local communities and general users, a visualization-oriented interface is proposed—such as story maps, memory layers, and experiential routes—while for local authorities and implementing institutions, more advanced spatial analysis tools, scenario comparison modules, and data query functions are envisaged. For academic users and experts, the system provides extended capabilities for data downloading, modeling, and analysis. This multi-layered structure aims to ensure accessibility with varying levels of knowledge and experience. However, the effective use of the system as a decision-support tool requires certain levels of technical and institutional capacity. Users actively involved

in planning, risk management, and conservation and management processes are expected to possess basic expertise in systems, data interpretation, and scenario development. More advanced analyses require proficiency in spatial modeling, data integration, and multi-criteria decision-making methods. In this context, training programs, user guides, and participatory workshops are proposed to support accessing and effectively utilizing the system (Table 4.13).

Table 4.13 Landscape Authors, Their Roles, and Influence in Heritage Information Management System and Decision-Making Processes

Landscape Author	Action	Influence Mechanism	Affected Process / Output
Local Communities	Share everyday practices and narratives; contribute to memory mapping	Reveal the meaning layers of the landscape through local knowledge and lived experience	Narrative layers, local priorities, scenario sensitivities
NGOs / Community Representatives	Organize participatory processes; contribute to data collection and validation.	Strengthen the representation of diverse groups and enhance participation	Data diversity, inclusive decision-making processes
Local Governments (Municipalities)	Conduct spatial analysis, develop scenarios, and produce planning decisions.	Translate technical data and local knowledge into implementation	Planning decisions, implementation strategies
Public Institutions (Ministries, etc.)	Develop policies, allocate resources, and establish regulatory frameworks	Guide and constrain local practices through higher-scale decisions	Policy orientations, legal framework
Academics / Researchers	Analyze data, develop models, and produce scientific outputs	Support decision-making processes with scientific knowledge and critical feedback	Methodology, indicator sets, scenario validation
Technical Experts (GIS specialists, planners)	Perform data integration, modeling, and analysis	Enable decision-making by linking different data layers	Spatial analyses, decision-support outputs
System Administrators	Manage data and users; maintain and update the system	Ensure system continuity and data security	System performance, data integrity

Finally, the framework integrates governance, open data systems, participatory mechanisms, and thematic landscape approaches into a holistic structure. By linking institutions, local communities, and knowledge systems, riverine landscape heritage establishes a model that supports the sustainable conservation and management of riverine landscapes while maintaining the balance between ecological systems,

cultural heritage, and socio-economic development (Figure 4.34) The effectiveness of the proposed structures should be assessed through their capacity to mediate between diverse value systems, knowledge types, and institutional priorities. In this respect, rather than functioning as regulatory authorities, these structures operate as relational and mediator platforms that enable dialogue and negotiation learning across decision makers. Tensions and conflicts within riverine landscapes are intrinsic to their dynamic and multi-dimensional nature. This mechanism is based on three core components: (i) recognition of co-produced landscape values; (ii) the establishment of interfaces through which institutional decision-makers, local communities, and knowledge producers can articulate their positions; and (iii) the development of alternative intervention scenarios instead of singular, top-down solutions.

The scenarios developed in this study conceptualize conflicts as dynamic fields of interaction shaped along the axis of continuity and change. For instance, a flood control or irrigation project along the Menderes River may initially emerge as a technical intervention focused on risk management. However, when evaluated from a living landscape heritage perspective, such interventions may weaken long-standing people–place relations, everyday practices, and mnemonic layers. At this critical juncture, the proposed governance model promotes alternative scenarios—such as nature-based solutions, phased intervention strategies, and spatial reconfigurations—thereby enabling a balance between economic imperatives and socio-spatial continuity. This process involves continuous reassessment through feedback mechanisms that monitor the impacts of implemented decisions on both the physical system and the living landscape.

The tension between Flood Control vs. Memory Landscapes exemplifies a fundamental conflict between technical safety priorities and the continuity of living landscape heritage. Similarly, within Agricultural Intensification vs. Ecological Continuity, increasing agricultural production in the Menderes basin acts as a key driver of economic sustainability, while simultaneously exerting pressure on water

regimes, biodiversity, and soil structure. In this context, the river is repositioned both as a generator shaping production processes and as a regulator defining their limits. Under Infrastructure Development/River Regulation vs. Socio-Spatial Practices, infrastructure projects (such as roads, bridges, and irrigation networks) enhance spatial accessibility but often disrupt everyday practices and spatial use patterns of local communities. In the Menderes River context, such interventions may weaken daily interactions with the river and fracture socio-spatial continuity. Within the Riverine landscape heritage framework, infrastructure is reconceptualized not as a disruptor but as a transformer that reproduces existing relations. Similarly, river regulation interventions (channelization, embankments, diversions) alter the morphological and ecological structure of the landscape by controlling natural flow regimes, thereby interrupting historically evolving dynamics. Riverine landscape heritage aims to preserve the river's transformative capacity through flexible, nature-based, and adaptive solutions, positioning the river as an initiator, generator, and connector of the landscape.

The tension between Tourism-Led Transformation vs. Local Identity and Belonging highlights how tourism-driven development creates economic opportunities while reshaping local identities and meanings of place. In the Menderes landscape, this may lead to the reduction of local ways of life into touristic representations. Riverine landscape heritage addresses this by integrating local narratives, everyday practices, and community-based production into tourism processes, thereby sustaining identity and belonging. In this approach, the river functions both as a place where narratives are produced and as a medium through which they circulate.

Within Conservation/Management Priorities vs. Everyday Life Dynamics, conservation approaches often prioritize physical continuity while neglecting the dynamic and evolving nature of everyday life. This may result in the detachment of living heritage from its social context. The tension of Institutional Fragmentation vs. Integrated Governance reflects the fragmented distribution of authority and responsibility among institutions, which often prevents holistic management of

riverine landscapes. In this context, the river operates as a connector that brings together diverse authors and scales.

Finally, under Risk Management vs. Cultural Landscape Continuity, disaster and risk management approaches tend to prioritize short-term safety concerns, often overlooking long-term cultural landscape continuity. This is particularly transformative in riverine landscapes. Riverine landscape heritage establishes an integrated relationship between risk management and heritage continuity through long-term scenarios, adaptive strategies, and local knowledge systems. In this framework, the river is understood as a landscape author that both generates risks and shapes the ways they are addressed.

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Proposals for Governance Framework to Decision-Making Mechanisms and Stakeholders

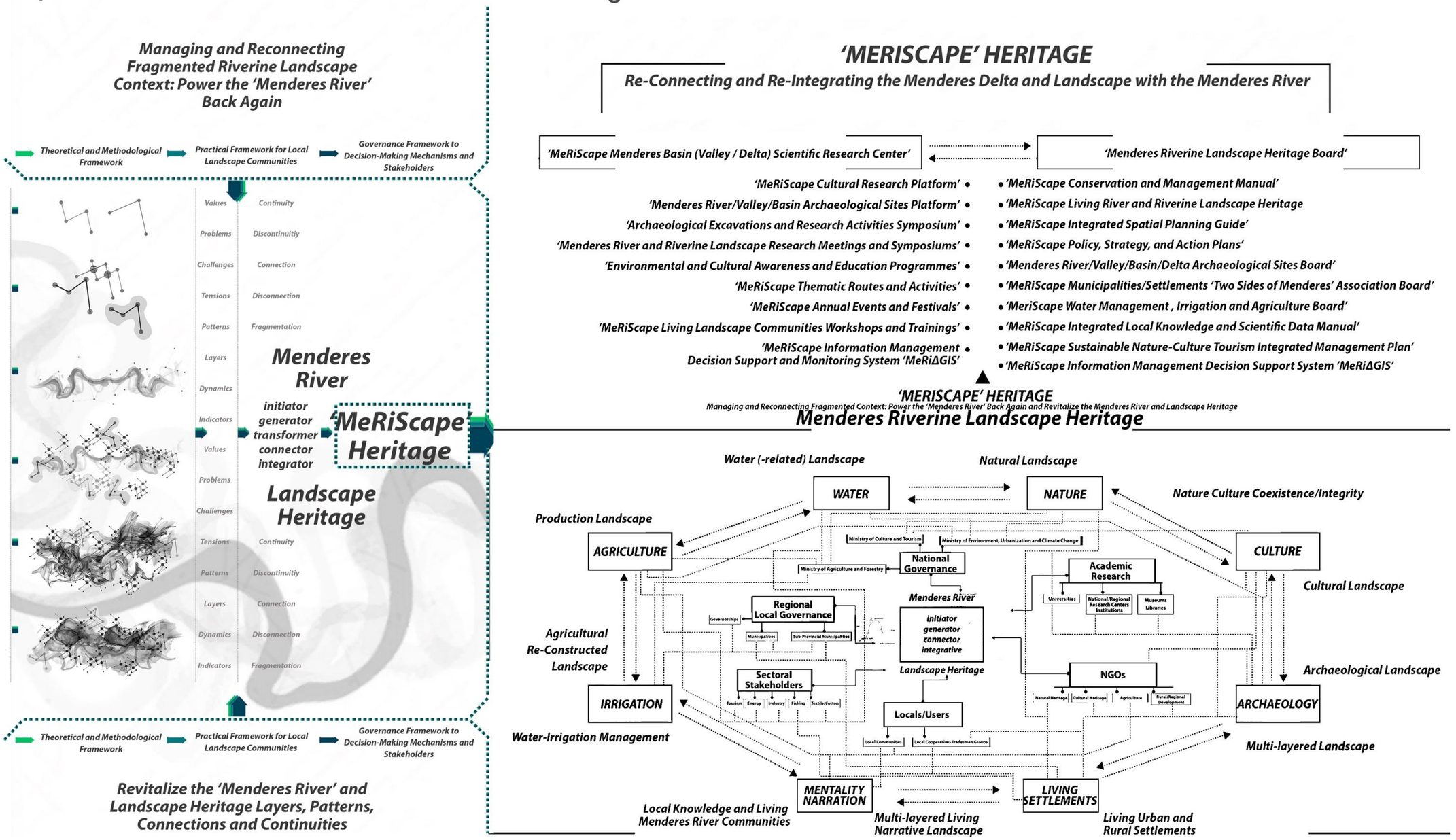

Figure 4.34 'Riverine Landscape Heritage' Approach: Proposed Decision Making and Governance Frameworks and Mediator Boards (Author, 2026)

4.5 Conservation and Management Scenarios to Future Risks, Challenges, and Threats

The conservation and management of the Menderes riverine landscape inherently require future scenario-based assessment tools that acknowledge multi-layered relationships, multi-dimensional uncertainties, ever-changing processes, and complex interactions. Within this context, the future scenarios developed aim to reveal how the Menderes River and Delta may evolve along different trajectories in response to current pressures, risks, and governance choices. The scenarios formulated within this study are structured around the natural–ecological, hydrological, cultural–historical, socio-cultural, mental and narrative, spatial, temporal, and managerial layers that constitute the riverine landscape; the key dynamics within each layer and the driving forces shaping these dynamics are identified (Figure 4.35; Figure 4.36). In order to prevent the scenarios from remaining merely conceptual frameworks, they are designed to be integrated with GIS-based monitoring, assessment, and decision-support systems. This approach conceptualizes the riverine landscape as a living heritage capable of producing multiple futures that are directly shaped by multiple decision–makers adopting conservation–management approaches.

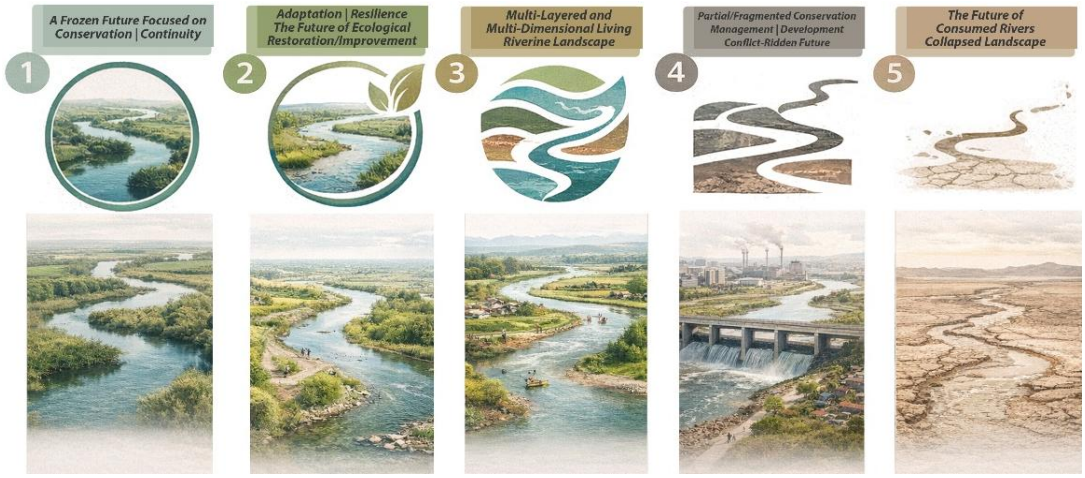

Figure 4.35 ‘Riverine Landscape Heritage’ Approach: Future Scenarios for the Menderes Riverine Landscape (3D images were generated by AI)

Scenario 1: A Frozen Future Focused on Conservation | Continuity

This scenario represents an approach that prioritizes preserving the existing ecological, spatial, and cultural conditions of the Menderes River and Delta as much as possible while limiting change. Conservation is largely defined through the continuity of the current physical and functional state, and the riverine landscape is approached as a fragile and fragmented heritage place. Although this approach may enhance the visibility and protection of natural and cultural values in the short term, it produces a future with limited adaptive capacity in the long term, as it insufficiently acknowledges the dynamic and evolving nature of the riverine landscape and vulnerability in the face of the climate crisis and socio-economic pressures.

Key issues emphasized within this scenario include the conservation of the existing ecological and hydrological regime, conservation decisions and limited-intervention policies, the safeguarding of water-related traditional practices, the continuity of agricultural and rural landscape patterns, and cultural memory grounded in the continuity of local ways of life (Table 4.14). Conservation within this scenario is predominantly framed as the freezing of the existing condition. Extreme droughts or flood events associated with climate change, the inability of agricultural water demand and ecosystems to adapt to new environmental conditions, the exclusion of socio-cultural and socio-economic transformation, the weakening of local communities’ ties with conservation practices, and the disconnection and fragmentation of conservation from everyday life constitute major pressures and risks for the future. This scenario may serve as a buffer or pilot scenario for certain sensitive natural, ecological, and hydrological core areas in the short term.

Table 4.14 Scenario 1: Layers, Dynamics, Driving Forces, and Indicators

Layers	Dynamics	Driving Forces	Indicators
Natural–Ecological	Conservation of the existing river regime and delta ecosystems as they are	Conservation legislation, ecological sensitivity discourse	Rate of temporal change in habitat areas
Hydrological	Controlled regulation of water flow, restriction of floodplains	Flood risk perception, engineering-oriented water management	Change in average annual discharge
Cultural–Historical	Conservation of water-related traditional practices	Memory-oriented conservation approach	Continuity level of water-related practices
Socio-cultural	Continuity of local ways of life	Local attachment, cultural identity	Proportion of local users
Managerial	Fragmented conservation and management decisions	Existing planning and conservation regime	Frequency of updates to conservation decisions

Scenario 2: Adaptation | Resilience: The Future of Ecological Restoration/Improvement

This scenario defines a future shaped through controlled interventions and ecological restoration processes in response to ecological degradation observed within the river and delta landscape. The riverine landscape is primarily approached as a natural and hydraulic ecosystem, with restoration, adaptation, and nature-based solutions emerging as the main instruments. Ecosystem restoration and habitat improvement initiatives, partial restoration of natural floodplains, sustainable agriculture and water-efficiency-oriented practices, and a scientific and project-based environmental management approach constitute the key components of this scenario. The scenario entails pressures and risks such as conflicts between ecological and socio-economic objectives, insufficient integration of local knowledge and practices into decision-making processes, fragmented and short-term restoration projects, the inability to link ecological gains with everyday life, and hydro-morphological interventions leading to water quality deterioration and agricultural pollution (Table 4.15). While there is a risk that the cultural heritage dimension of the landscape remains secondary, this scenario provides a strong foundation for the renewal of delta ecosystems and climate adaptation.

Table 4.15 Scenario 2: Layers, Dynamics, Driving Forces, and Indicators

Layers	Dynamics	Driving Forces	Indicators
Natural–Ecological	Ecosystem restoration, habitat improvement	Climate change, biodiversity loss	Percentage of restored areas
Hydrological	Restoration of natural floodplains	Nature-based solutions, flood risk management	Flood expansion area
Agricultural Landscape	Sustainable agricultural practices	Water scarcity and declining agricultural productivity	Water efficiency rate
Cultural Landscape	Multi-scalar protection of cultural and social values	Ecological prioritization	Number of protected cultural elements
Institutional	Water- and river-based project-oriented management	Academic and scientific knowledge production; nature, environment, and cultural heritage policies	Number of completed restoration projects

Scenario 3: Multi-Layered and Multi-Dimensional Living Riverine Landscape

This scenario represents a holistic future framework that conceptualizes the Menderes River and Delta as a living heritage area, grounded in nature–culture integrity and managing change without excluding it. The riverine landscape is defined as a system continuously reproduced through the interaction of ecological processes, cultural practices, everyday life, and governance mechanisms. Although this approach requires strong governance capacity due to its complexity, it holds the highest potential for long-term sustainability and resilience. It is a scenario in which conservation and sustainable transformation are addressed together, and the riverine landscape is reconfigured as a multi-layered, multi-dimensional, multi-author, and dynamic heritage network.

Key components of this scenario include the integrated consideration of ecological, hydrological, and cultural layers; the integration of water management, agriculture, cultural heritage, and local life; the reintegration of everyday life practices with the river; the active involvement of local authors and landscape communities in decision-making processes; data-based heritage information and decision-support systems; adaptive management mechanisms; and the recognition of the riverine landscape as holistic living heritage (Table 4.16). This scenario faces limitations and threats such as the inability to ensure institutional coordination at the basin scale,

conflicts of interest among multiple authors, participatory processes remaining at a symbolic level, data gaps and institutional fragmentation, managerial complexity and fragmented approaches and practices, and the need for long-term decision-support systems and financial resources (Table 4.16). Despite these challenges and constraints, it holds significant potential in terms of long-term conservation, management, and sustainability; the synthesis of local knowledge and scientific knowledge; and the capacity to serve as a national and international model.

Table 4.16 Scenario 3: Layers, Dynamics, Driving Forces, and Indicators

Layers	**Dynamics**	**Driving Forces**	**Indicators**
Natural–Ecological	Reproduction of ecological processes through conservation	Climate adaptation, ecological thresholds	Ecological connectivity index
Hydrological	Management of flow–sediment–flood process integrity	Basin-scale management	Sediment continuity indicator
Cultural–Historical	Continuation of water- and river-related practices through evolution	Living heritage approach	Number of active cultural practices
Socio-cultural	Reintegration of everyday life with the river	Local participation and river-related engagement	Intensity of daily river-related use
Spatial	Layered use, flexible spatial arrangements	Landscape approach	Proportion of multifunctional areas
Digital / Information	Heritage monitoring and decision-support systems	Data-based, holistic, and sustainable conservation and management	Number of updated data layers
Governance	Multi-author, participatory, holistic management	Need for institutional integration	Number of participatory processes

Scenario 4: Partial/Fragmented Conservation Management | Development Conflict-Ridden Future

This scenario represents a future in which sectoral policies (agriculture, tourism, energy) transform the riverine landscape in a partial and fragmented manner. The riverine landscape becomes increasingly fragmented through the interventions of different authors and interest groups, while ecological, cultural, and spatial integrity gradually weaken. Although short-term economic gains are prioritized, long-term environmental and social costs intensify. Prominent pressures and threats in this

scenario include sector-based and fragmented planning decisions, large-scale infrastructure and investment projects, and interventions affecting the hydrological system, ecological thresholds, ecological and environmental pressures arising from agricultural objectives and water-sharing crises, socio-political tensions and local conflicts, competition among agriculture, tourism, and energy sectors, and the loss of landscape integrity (Table 4.17).

Table 4.17 Scenario 4: Layers, Dynamics, Driving Forces, and Indicators

Layers	**Dynamics**	**Driving Forces**	**Indicators**
Natural–Ecological	Ecosystem fragmentation	Sectoral pressures and interventions	Proportion of fragmented habitats
Hydrological	Artificial flow control, regulation of floodplains	Infrastructure investments	Number of structural interventions
Agricultural	High production demand, intensive irrigation demand	Short-term production pressure	Intensity of chemical use
Cultural Landscape	Invisibility of historical layers	Economic priorities	Number of lost cultural elements
Socio-political	Conflicts of interest, local tensions	Centralized decision-making	Number of local objections/lawsuits
Planning	Fragmented and incompatible planning decisions	Institutional fragmentation	Rate of plan compatibility

Scenario 5: The Future of Consumed River and Collapsed Landscape

This scenario is defined by urban development, agricultural intensification, infrastructure, and tourism pressures shaping the riverine landscape, while heritage conservation becomes a secondary concern. The river is perceived not as a vital living system, but primarily as an economic resource. This scenario describes a collapsed landscape in which the Menderes River and Delta are addressed solely through an economic perspective, and conservation and governance mechanisms largely become ineffective. This scenario functions not as a target future, but as a warning scenario to be avoided. In the long term, irreversible ecological and cultural losses emerge in the Menderes River and Delta. Fragmentation of the riverbed and deltaic natural systems, strict control of the water regime, urbanization of floodplains, increased agricultural inefficiency due to intensive chemical use, socio-economic crises, ecosystem loss, the fading of cultural and historical layers, the

erosion of local memory, and the weakening of institutional and managerial capacity constitute the main components and critical points of this scenario (Table 4.18).

Table 4.18 Scenario 5: Layers, Dynamics, Driving Forces, and Indicators

Layers	**Dynamics**	**Driving Forces**	**Indicators**
Natural–Ecological	Ecosystem collapse, biodiversity loss	Overuse, imbalance of use	Biodiversity loss rate
Hydrological	Disruption of flow regime, salinization, and water quality impacts	Uncontrolled increase in water and irrigation demand	Salinity level
Agricultural	Soil degradation and declining productivity	Industrial agriculture	Decline in agricultural yield
Cultural	Erasure of cultural landscape layers	Lack of conservation policies	Decrease in the number of active cultural practices
Socio-economic	Migration and impoverishment	Ecological crisis	Net migration rate
Governance	Absence of governance and control	Short-term conservation and development policies	Number of unregulated activities

As a result, this spectrum, ranging from conservation and management approaches to consumption and collapse scenarios, reveals not only the vulnerability of the riverine landscape but also its significant conservation and management potential when appropriate governance and holistic approaches are adopted. In conclusion, this scenario-based assessment framework shifts the discussion on the conservation and management of the Menderes River and Delta from an axis focused on preserving the past or maintaining the present condition toward a critical question of how the future will be produced, under what conditions, by whom, and based on which values.

In this context, the riverine landscape heritage approach conceptualizes physical interventions in the landscape not as isolated projects, but as components of an integrated set of actions shaped in relation to the river's role as initiator, generator, and transformer. Accordingly, proposals such as the development of continuous pedestrian and experiential routes along the river, the establishment of spatial and economic backgrounds to support local production and entrepreneurship, the strengthening of spatial manifestations of intangible heritage practices, and the adaptive reuse of historical water structures, irrigation systems, and industrial

heritage components together represent a multi-layered transformation process aimed at reproducing people–river relationships.

Within this framework, decision-makers' consultations conducted to assess the feasibility of the proposed interventions provide an important feedback ground for understanding their practical relevance. Interviews with local authors, municipal representatives, and institutional authors indicate a generally positive reception, particularly regarding the re-establishment of river-related spatial continuity, the reuse of underutilized historical structures, and the support of local production practices. However, fragmented institutional responsibilities, limited access to financial resources, and bureaucratic constraints in implementation processes emerge as key challenges. In this regard, the next step of the proposed approach involves prioritizing the identified character areas, defining pilot implementation sites, and developing implementation tools that enable the active participation of relevant authors in the process.

4.6 Concluding Remarks and Reflections Regarding 'Menderes Riverine Landscape Heritage'

This concluding section synthesizes the theoretical, methodological, and empirical insights developed throughout the study and reflects on the contributions of the (**Menderes) Riverine Landscape Heritage** approach within the broader landscape and heritage discourse. Building upon the analyses of riverine landscape layers, dynamics, driving forces, indicators, and multi-scalar and multi-temporal landscape authors, it repositions the Menderes River Delta not as a set of fragmented contexts, but as a relational and continuously reproduced riverine landscape ensemble. In doing so, this chapter revisits the central argument of the thesis—that rivers function as initiators, generators, transformers, and 'connectors catalyst' in the production of landscape heritage—and discusses how this perspective redefines both the conceptualization and the conservation–management of riverine landscapes as heritage. It also evaluates the implications of the proposed framework in terms of

integrating fragmented knowledge systems, governance structures, and heritage values, while opening up new directions for future research and practice in water (-related) heritage and landscape governance.

To further elaborate on this framework and approach, the research begins by revisiting the multi-scalar and multi-dimensional structure of riverine landscapes. Natural processes such as the water cycle, coastal and deltaic dynamics, sediment regimes, and their spatial traces intersect with settlement patterns, production systems, cultural practices, and collective memory. Through these multiple and layered intersections, the river emerges not only as an ecological system but also as a cultural connector that continuously shapes and reshapes the landscape. In this sense, the Menderes River cannot be reduced to a passive natural element or a background condition; rather, it operates as an active and relational agent that produces, connects, and transforms landscape heritage across time and space.

This mediator and connector role of the river directly informs its position within conservation and management processes. Accordingly, within the conservation and management of riverine landscapes, water functions simultaneously as an initiator and generator of spatial formations, a relational mechanism linking different heritage layers, a determinant shaping how communities perceive, experience, and reproduce the landscape, and an integrative governance tool that brings together fragmented decision-making processes. Building on this perspective, this research conceptualizes the river through an integrated framework of initiator, generator, transformer, and connector roles. In doing so, it offers an original contribution to the conservation–management discourse by developing a context-specific yet transferable methodological and conceptual framework for the Menderes River Delta.

Following this conceptual positioning, the research highlights its practical and methodological contributions. The practical contribution of this research lies both in the methodological process applied to the Menderes River Delta and in the riverine

landscape heritage approach it proposes. Through this framework, landscape and cultural heritage values, approaches, and operational tools—often treated separately within institutional and disciplinary boundaries—are reconnected and integrated. This integration enables a coherent, relational, and process-oriented understanding of the delta's multi-layered heritage. In particular, the research addresses the fragmented contexts, fragmented layers, fragmented narratives, fragmented governance structures, and fragmented heritage places and patterns of the Menderes River Delta through a unifying conceptual lens that positions the river as a "connector and catalyst component." By doing so, it not only reveals the relational nature of landscape heritage but also provides a means to operationalize this relationality within conservation and management practices.

Beyond its methodological implications, the research also engages critically with existing heritage and landscape theoretical frameworks. Another significant contribution of this research is its critical re-evaluation of the dominant approaches that have shaped contemporary debates on landscape and heritage, including the nature–culture integrity perspective, the landscape approach, the spatio-temporal approach, and the landscape biography approach. Rather than treating these approaches as isolated or competing frameworks, this study situates them within the specific context of the Menderes River Delta and brings them into dialogue through the riverine landscape heritage perspective. In this sense, the proposed approach establishes a holistic conceptual basis by understanding landscape as a dynamic and multi-layered system in which material traces, narrative layers, institutional arrangements, and everyday practices are deeply intertwined and continuously reproduced.

Within this framework, rivers are conceptualized as a powerful agency of heritage and landscape. They initiate settlement patterns by providing the conditions for habitation and production; they generate economic and cultural landscapes through their role in shaping land-use systems and socio-cultural practices; and they act as transformers by continuously reconfiguring both the physical fabric and social

structures over time. Moreover, as connectors, rivers integrate different spatial, temporal, and socio-cultural layers, enabling the coexistence and interaction of multiple landscape authors operating at different scales. This multi-scalar and multi-authored understanding of landscape, combined with a multi-temporal perspective, allows for a more comprehensive reading of continuity and change as intertwined processes.

This perspective ultimately leads to a broader reconsideration of heritage and conservation itself. In this regard, the research also contributes to the reconceptualization of heritage itself. By questioning the definition, scale, and boundaries of heritage, it shifts the focus from static objects and bounded sites to relational processes and evolving systems. Consequently, conservation is reframed not as the preservation of fixed forms, but as the management of dynamic processes that sustain the continuity of change and negotiate multi-layered and multi-authored values. This perspective aligns conservation with the lived, experienced, and continuously reproduced nature of landscape heritage, particularly within complex and dynamic environments such as riverine landscapes. Furthermore, the methodological framework developed in this study—structured around recognition, assessment, and characterization—demonstrates how different types of knowledge (scientific, local, experiential), tools (GIS-based spatial analysis, narrative analysis, participatory methods), and scales (macro, meso, micro) can be integrated into a cohesive analytical and decision-support system. This integration not only enhances the understanding of riverine landscapes but also provides a practical basis for bridging the gap between fragmented institutional structures and disconnected governance mechanisms.

Finally, the thesis situates its contributions within broader debates and future challenges. In conclusion, the Menderes riverine landscape heritage generates a new conceptual and methodological ground for both local and broader-scale discussions on landscape and heritage. Particularly in an era characterized by multiple and overlapping crises—such as climate change, environmental degradation, socio-

economic transformations, and governance challenges—the riverine landscape heritage approach opens up new theoretical and practical questions. These questions have the potential to deepen ongoing debates on water (-related) heritage, landscape heritage, riverine landscape heritage, landscape governance, and environmental resilience. By positioning water/the river as a central connector and catalyst, this approach not only advances the understanding of riverine landscapes but also offers a transferable and scalable framework for the conservation and management of water-related landscapes in different geographical and cultural contexts. In this sense, it provides both a critical reflection on existing paradigms and a forward-looking proposal for more integrated, relational, and adaptive heritage practices.

CHAPTER 5

CONCLUSION

The final chapter provides a holistic summary of the answers to the main research questions and the overall conclusions of the thesis. It aims to synthesise the key findings and contributions, highlight the theoretical and methodological consequences, and present new issues and directions that may guide future research. The importance of considering rivers as initiators, generators, and transformers of heritage landscapes, methodological, practical, and managerial limitations, and the challenges encountered during the research are critically discussed. The findings of the thesis for future research issues, emphasizing the need to further develop transdisciplinary methods in the approach of riverine landscapes as heritage, to explore new approaches within the context of climate change and environmental pressures, to diversify participatory conservation approaches, and to test the 'riverine landscape heritage' approach across different geographies. It highlights that such an approach must operate within a holistic, multi-dimensional, multi-layered, and multi-scalar framework.

5.1 Beyond the Menderes River Delta: 'Riverine Landscape Heritage' Approach

This research, conducted through the case of the Menderes River Delta, has revealed the necessity of addressing the role of rivers in the formation and transformation of landscapes through a multilayered, multiscalar, and holistic definition, framework, and approach to heritage. In this context, the natural processes, historical accumulations, spatial reflections, and settlement patterns, modes of production, narratives, and managerial interventions observed in water (-related) and riverine landscapes clearly demonstrate that the river acts as a fundamental agent that

initiates, generates, and transforms the landscape. The ‘riverine landscape heritage’ framework and approach developed within the scope of this research, as a holistic heritage definition, framework, and approach, provides a comprehensive conceptual and methodological framework for understanding and managing water (-related) and riverine landscapes. Building upon the findings of the Menderes River Delta, this chapter extends the discussion toward the broader conceptual and methodological implications of the proposed approach.

Conceptual Background: The Role of Water/ River as an Initiator, Generator, and Transformer ‘Connector and Catalyst’ in Landscape Heritage

One of the key contributions of the approach developed in this research is the reconceptualization of the role of rivers within the landscape heritage. Accordingly, rivers are understood as: initiators, initiating and generating the emergence of settlements, production systems, and spatial organizations; generators, shaping the morphological structure of the landscape, land-use patterns, and spatial relationships; transformers, reconfiguring both natural and cultural processes over time. This reconceptualization simultaneously expands the role of rivers beyond these functions toward a mediator and connector position within the landscape heritage ensemble.

The ‘riverine landscape heritage’ approach is grounded in the recognition that water/rivers are not passive components or merely natural and ecological background within landscape heritage and heritage places; rather, they function as active, mediating creator agents. This research introduces the riverine landscape heritage through a holistic definition and approach to heritage that regards rivers, not only as natural elements or sources of life and sustenance, but also as creators and connectors of culture. Accordingly, rivers, as powerful natural and ecological agents, have historically been sources of life as well as the initiates, generators, and transformers of landscape heritage. In line with this perspective, the research further elaborates the multi-dimensional roles of water/rivers within landscape heritage.

In this framework, water/the river is conceptualized as: an ecological source/entity, forming the basis of natural, ecological system; a relational component/interface, generating human–place interactions, the production of meaning, and the processes of heritage formation and transformation; a mediator/connector, linking natural, physical, spatial, and socio-cultural layers within the integrity of the landscape. By performing multiple interconnected functions, water acts as a fundamental connector that underpins the formation, continuity, and transformation of landscape and landscape heritage. In this framework, water/river (-related) heritage is reconceptualized as a relational heritage system rather than a heritage category associated with particular physical remains or structures. It is constituted through the diverse ways in which water/river is circulated, utilized, perceived, represented, and experienced. As a result, water (-related) and riverine landscape heritage emerges as a dynamic and continuously evolving phenomenon produced through interactions among natural, spatial, temporal, socio-cultural, and governance-related processes.

Methodological Framework: Integration, Tools, and Knowledge Production

This thesis develops a holistic riverine landscape heritage approach through a critical examination of theoretical frameworks operating across different scales and contexts, including culture–nature coexistence, landscape approaches, spatio-temporal perspectives, and landscape biography. Drawing upon these perspectives, the study argues that water, as the primary component that initiates, generates, and transforms multi-scalar and multidimensional landscapes, should be employed as a fundamental connector and integrator in conservation and management processes. Accordingly, the proposed approach is structured as an analytical framework that systematically links the understanding, recognition, analysis, interpretation, valuation, and characterization of water (-related) and riverine landscape heritage. The riverine landscape approach further provides an operational methodological framework organized into three interrelated phases.

The first phase, Understanding and Recognition, focuses on identifying the spatialities, temporalities, authors, and constituent components of water (-related)

and riverine landscapes, together with their layers, dynamics, driving forces, and indicators. The second phase, Valuation and Assessment, examines water (-related) and riverine landscapes through their values, challenges, potentials, and inherent tensions. The final phase, Interpretation and Characterization, aims to reveal the distinctive character of water (-related) and riverine landscapes by defining their character areas, assessing vulnerabilities and risks, and exploring potential future scenarios.

In that sense, the riverine landscape heritage approach offers a holistic methodological structure that integrates multiple disciplines, data types, and analytical methods. In this framework, the approach enables the development of a more integrated and relational model of conservation and management by bridging fragmented structures and disconnected decision-making mechanisms. Accordingly, spatial analysis tools (GIS, layer-based analysis, mapping), qualitative data sources (narratives, oral histories, local knowledge), and participatory methods (engagement with local communities) are employed in combination. In this way, the relationship between natural and cultural heritage is addressed as a riverine landscape ensemble interconnected through water.

In conclusion, within the scope of the research, water/river has been reconceptualised not only as a natural entity and a source sustaining life, but also as a relational connector establishing relationships across the natural, spatial, socio-cultural, and managerial contexts of heritage and landscape, and as an integrative catalyst enabling integration between different layers (Figure 5.1). Accordingly, the river has been evaluated as a principal creator that initiates (initiator), shapes (generator), and reconstructs (transformer) the formation of the landscape over time. Accordingly, while addressing water (-related) and riverine landscapes as heritage, the research revealed the multi-dimensional nature of water and proposed a conceptual framework that conceptualises water/river simultaneously as an entity, a relational component/interface, and a mediator/connector. Within this framework, water (-related) and riverine landscapes have been interpreted as a holistic landscape heritage

that brings together multiple temporalities and landscape authors across different scales. In particular, the analytical framework developed through water (-related) and riverine landscape layers, dynamics, driving forces, and indicators has enabled the integrated reading of landscape production processes across macro-, meso-, and micro-scales (Figure 5.1).

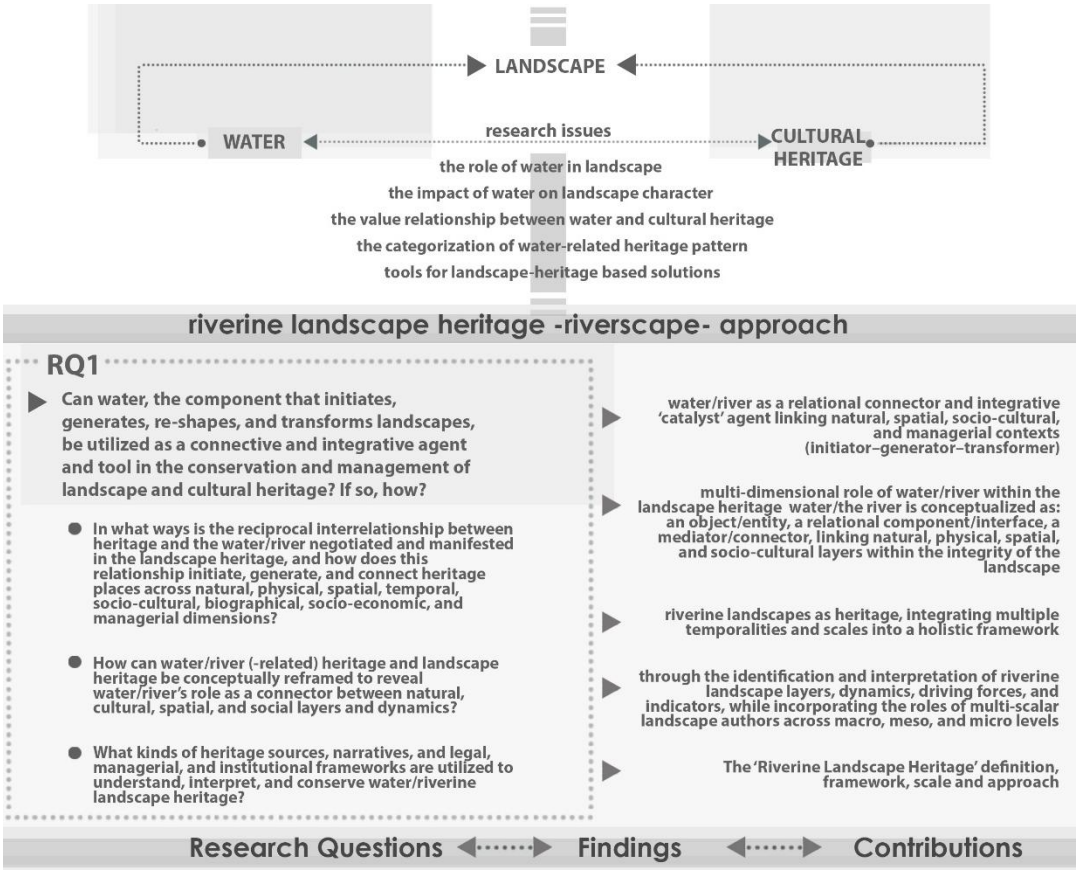

Figure 5.1 Findings/Contributions and Concluding Remarks Regarding the Research Questions – RQ1 (Author, 2026)

Riverine Landscape Heritage: Layers, Dynamics, Driving Forces ve Indicators

To further structure this methodological framework and approach, the research introduces a 'riverine landscape heritage approach' based on interconnected layers, dynamics, driving forces in multiple contextual relations, and multiple scales. The framework 'riverine landscape heritage' approach addresses heritage and landscape

through water (-related) and riverine landscape layers, dynamics, driving forces, and indicators. This structure enables the integrated analysis of the landscape. Water (-related) and riverine landscapes are thus conceptualized as multilayered systems characterized by continuous interaction among their components: the natural landscape (hydrological systems, flow regimes, deltas, wetlands, lagoons); the built environment/landscape (settlements, transportation networks, production systems, infrastructures); the narrative landscape (memory, narratives, perceptions, symbolic meanings, experiences, mnemonic places), the re-shaped and constructed landscape (macro-scale decisions, modern interventions, engineering projects, conservation and planning processes). These layers are not independent; rather, they constitute an integrated landscape ensemble that is continuously interacting and being reproduced through the water/river. The interactions among these layers generate the dynamics of the landscape. These dynamics are continuously evolving and restructuring the landscape through natural processes, spatial transformations, socio-cultural practices, economic activities, legal and managerial contexts, and interventions. The landscape driving forces shaping these dynamics are defined as: climatic and environmental processes, modes of economic production and use, managerial and political decisions and related interventions, technological and infrastructural developments and interventions, and social and cultural practices. The outputs of these processes, as they become visible in space, are conceptualized as landscape indicators. These indicators can be traced through both tangible and intangible components, such as spatial patterns and settlement relationships, modes of use and production systems, narratives and traces of memory (mnemonic places), socio-economic activities and relations, and the spatial manifestations of managerial and institutional interventions.

A Multi-Scalar Framework of Temporalities, Spatialities, and Landscape Authors

Beyond structural analysis, the research also integrates a multi-scalar and multi-temporal perspective. Water (-related) and riverine landscapes are complex heritage sites produced through multi-scalar and multidimensional temporalities, as well as

by diverse landscape authors. Accordingly, within the riverine landscape heritage approach, upper-scale authors (macro-scale) refer to institutions operating at national or international levels. These authors exert a structural influence on the landscape through legislation, governance frameworks, and large-scale interventions such as state planning, infrastructural investments, and land reclamation, often shaping long-term landscape transformations. Territorial and regional authors (meso-scale) occupy an intermediate position, comprising regional and local decision-makers as well as locally embedded actors. Although their influence is geographically bounded, they play a critical mediating role by translating upper-level frameworks into practice and implementing landscape-related decisions at the local scale. Local authors (micro-scale) encompass landscape communities and everyday user groups whose actions are rarely reflected in formal records, yet whose cumulative practices leave significant material and cultural traces. Agricultural practices, land-use patterns and routines, and settlement configurations constitute tangible expressions of lived experience and everyday interaction with the landscape. These authors operate within intertwined temporal frameworks. Accordingly, alongside upper-scale actors and interventions, everyday practices and local decision-making processes are equally decisive in shaping both the form and meaning of the landscape.

The emphasis on multi-scalar landscape authors, together with a focus on the longue durée, referring to the long-term, slowly evolving structural characteristics of landscapes, necessitates the incorporation of multiple temporal planes—conjonctures, referring to medium-term processes such as economic cycles, agricultural practices, demographic shifts, regional relations, and production systems that reshape landscapes over time, and l'histoire événementielle, eferring to short-term, event-based and everyday processes, including local events, mnemonic places, individual life cycles, and everyday practices of locals,—into the analysis. The integration of longue durée, conjonctures, and l'histoire événementielle enables the analysis of water (-related) and riverine landscapes across long-term structures, medium-term transformations, and short-term events. Within this multi-scalar

landscape authors, the river functions as a unifying and connector agency. Within this framework, landscape layers, dynamics, driving forces, and indicators are all interpreted through this multi-author reading across different contexts (natural and ecological, built environment and landscape, cultural and narrative, and legal–managerial frameworks). In this respect, water/the river is also conceptualized as a connector and unity agent that brings together diverse water (-related) and riverine landscape authors across scales and contexts.

The findings presented within the scope of the research demonstrate that the methodological framework for understanding, assessing, conserving, and managing riverine landscapes as heritage cannot be developed through a single analytical perspective and/or disciplinary approach; rather, it requires a holistic methodological structure that integrates different types of knowledge, analytical tools, and approaches. Accordingly, the research proposes a transdisciplinary approach for understanding water (-related) and riverine landscapes as heritage and supports this approach through a holistic heritage definition and framework based on layers–dynamics–driving forces–indicators, structured around the cross-scalar, multi-author, dynamic, multi-layered, and multi-dimensional nature of water (-related) and riverine landscapes. This framework enables the interpretation of water (-related) and riverine landscapes as an integrated and multi-layered heritage ensemble produced across different scales, temporalities, and landscape authors (Figure 5.2).

Within this scope, the research demonstrates that the combined use of spatial analytical tools (GIS), qualitative data sources (narratives, local knowledge), and participatory methods plays complementary roles in revealing the multi-layered values, challenges, and potentials of water (-related) and riverine landscapes. In particular, the integrated evaluation of the natural, physical, spatial, socio-cultural, and narrative/experiential dimensions interconnected through water/river has produced a new methodological structure that enables not only the representation of landscape, but also its interpretation, assessment, characterisation, and management. Accordingly, the research proposes a relational and adaptive methodological

framework for the recognition, understanding, assessment, representation, characterisation, and management of water (-related) and riverine landscapes (Figure 5.2).

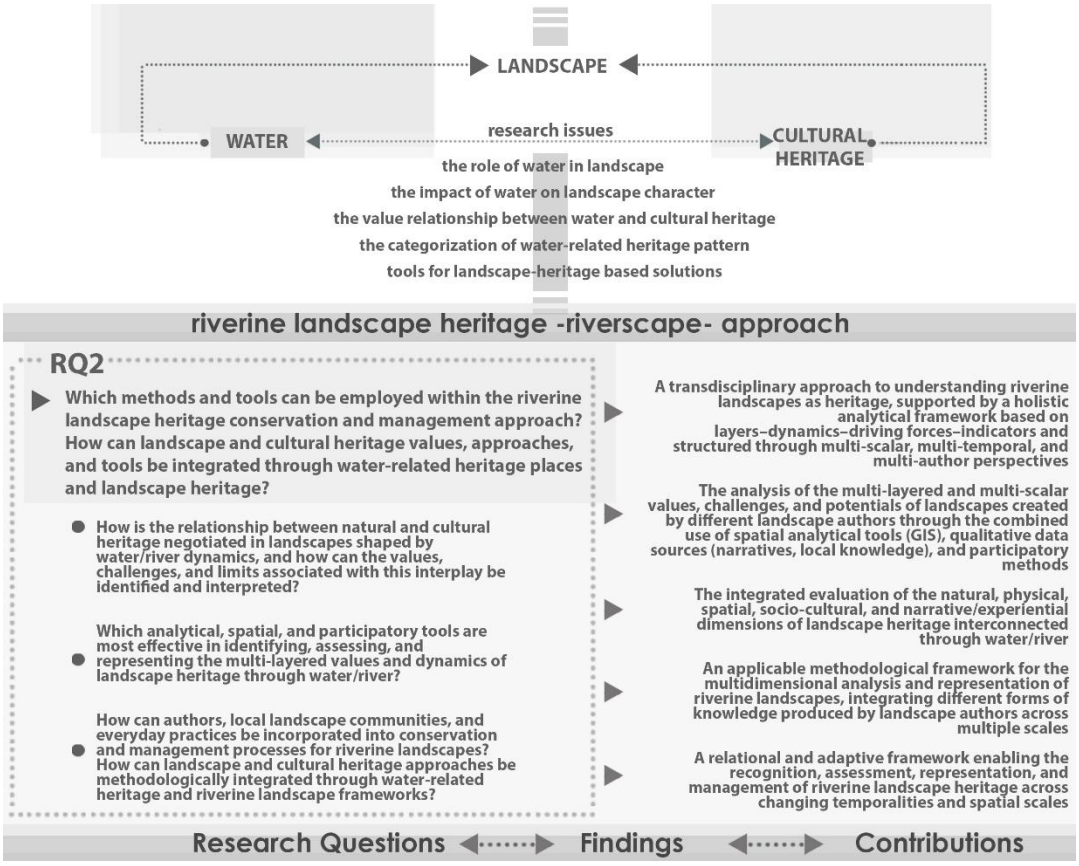

Figure 5.2 Findings/Contributions and Concluding Remarks Regarding the Research Questions – RQ2 (Author, 2026)

Extending this framework to decision-making processes highlights its governance implications. The 'riverine landscape heritage' approach, to overcome multi-scalar, multidimensional, and fragmented decision-making structures, proposes a holistic framework that brings together: decision-makers at different scales (institutions, local communities, individuals), different types of knowledge (scientific knowledge, local knowledge, lived experience), and decision-making mechanisms operating across different contexts. In this respect, water/the river also functions as a mediator

governance tool that integrates diverse decision-making mechanisms and processes (Figure 5.3).

The findings of this research reveal that one of the main challenges encountered in the conservation and management of water (-related) and riverine landscapes as heritage is not only the pressures of natural, ecological, and physical transformation, but also the understanding and integration of fragmented decision-maker structures, separated decision-making mechanisms, and institutional frameworks operating across different scales and authors. Accordingly, the research demonstrates that the primary issue in the management of water (-related) and riverine landscapes is not the development of new tools, but rather the establishment of relationships among existing decision-makers, knowledge types, and governance processes. In this context, water/river has been reconceptualised as a relational, connective, and integrative component that brings together fragmented contexts, spatial and cultural relationships, as well as different decision-makers, forms of knowledge, and levels of governance (Figure 5.3).

Within this framework, the research demonstrates that river dynamics may assume both connective and divisive roles among local communities, cultural practices, and heritage places; therefore, the management of these relationships requires not only institutional coordination but also a transdisciplinary relational framework. Accordingly, the approach develops a holistic, integrative, and relational conservation–management framework that addresses the interactions among local communities, experts, and decision-makers as landscape authors across multiple scales and reconfigures conservation and management through collective knowledge production and participation, rather than through fragmented policies and separately operating management tools (Figure 5.3).

In conclusion, this approach reconceptualizes rivers as connector agents—initiators, generators, and transformers—of landscape heritage, thereby offering a holistic conceptual and methodological expansion to existing definitions and frameworks of

heritage and landscape. In this context, the approach provides a transferable, scalable, and adaptable 'riverine landscape heritage framework' that serves as a reference point for the conservation and management of water/river-related landscapes as heritage across different geographical contexts.

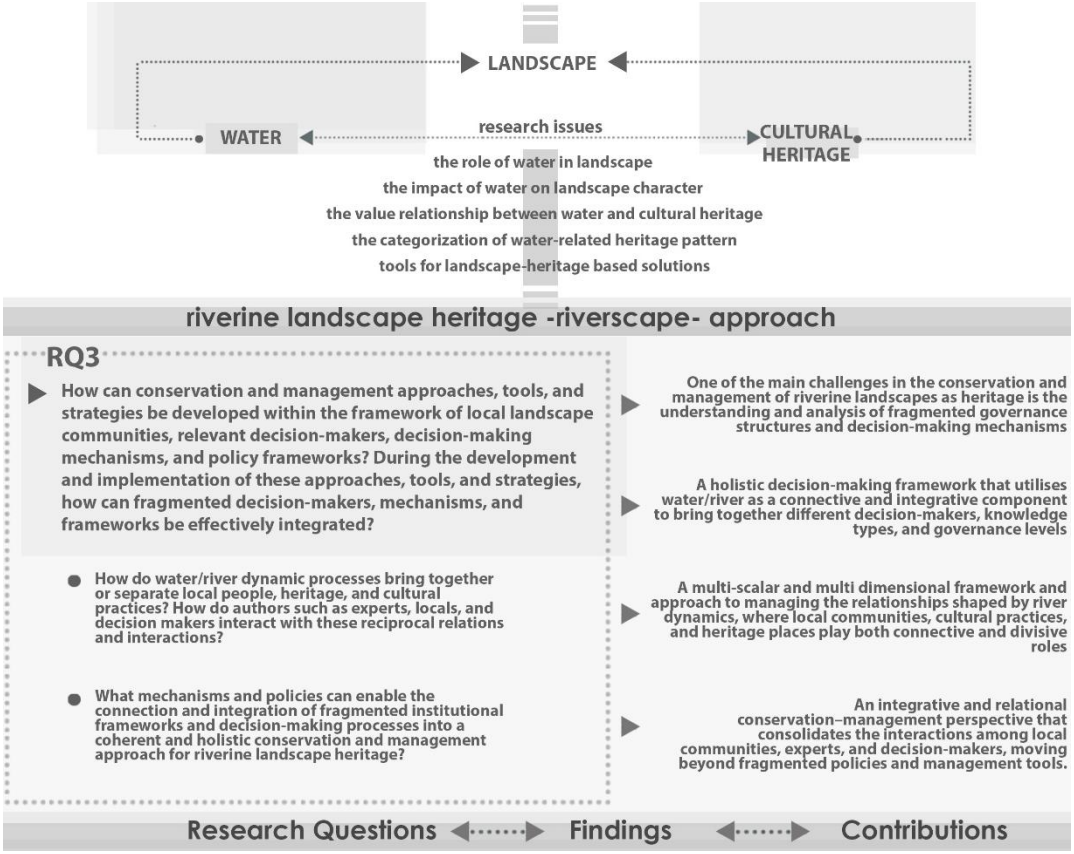

Figure 5.3 Findings/Contributions and Concluding Remarks Regarding the Research Questions – RQ3 (Author, 2026)

5.2 Further Research Issues and New Questions/Horizons

Approaching water (-related) and riverine landscapes as multi-layered, multi-dimensional, and multi-author heritage places opens new research issues across geography, history, archaeology, landscape ecology, water management, natural heritage, cultural heritage studies, and planning disciplines. In this regard, this

research broadens new horizons in topics such as the definitions of culture and heritage, scale, temporal boundaries, epistemological orientations, paradigm shifts, and discussions on fragility, resilience, and sustainability in a multiple crises era, as well as the integration of scientific data with local knowledge. Conceptualising rivers as a powerful main agency introduces new debates on definitions, boundaries, and scales within the literature on heritage, conservation, management, and landscape conservation and planning:

Understanding water (-related) and riverine landscapes requires the simultaneous consideration of multiple temporalities. In this regard, how can the geomorphological "deep temporality" of rivers and the everyday cycles and rhythms of landscape communities be approached within a holistic framework? How can water (-related) and riverine heritage assessment be strengthened through future-oriented uncertainty analyses, risk evaluations, and scenario-based methodologies? What kinds of new process-based conservation and management strategies can be developed by integrating this multidimensional conception of time, geomorphic and historical deep time, social and cultural time, and future time shaped by the contemporary multi-crisis era, into a holistic approach?

Water (-related) and riverine landscapes are also common ground for ecological fragilities, economic dependencies, and social inequalities. In this regard, there is an emphasis on the necessity of an alternative governance approach that considers riverine landscapes through the perspectives of "common heritage" and "common resource." How do changing water regimes, flood risk, drought, sea-level rise, salinization processes, biodiversity loss, land-use changes, and human interventions represent landscape communities more vulnerable within water (-related) and riverine heritage places? How can access to water, water management, and the conservation of riverine ecosystems be aligned with cultural heritage policies in a sustainable and holistic manner?

Water (-related) and riverine landscapes also generate collective memory, multilayered forms of remembrance and narrative, rituals, memories, and identities.

The memory practices and meaning-making processes that different landscape communities establish with the river should be documented and examined comparatively. Within the context of temporal examination, the integration of multilayered cultural narratives, such as mythologies, religious rituals, and production practices, and their associated narrative places into riverine landscape biographies requires the synthesis of diverse disciplines and heterogeneous data sources. In this framework, how can emotional/physical/ritual relationships established with rivers be incorporated into conservation and management policies? There is scope for further exploration into how local communities' connections with rivers, memory practices, spatial meaning production, and daily rhythms can be integrated into process-based conservation approaches.

The constantly changing nature of water (-related) and riverine landscapes requires data-driven, holistic approaches that go beyond conventional heritage inventories and control mechanisms. How can digital technologies, dynamic observation systems, digital story maps, participatory GIS, and similar tools incorporate the knowledge and experience of local communities into decision-making processes? How can holistic methodological frameworks be developed for natural, environmental, historical, cultural, economic, legal, and administrative data sets from uncertain, incomplete, and fragmented data from different sources? In this regard, issues such as the design of methodological and technological indicators, the creation of data standards, the inclusion of community participation in digital mapping processes, and the management of uncertain data require further research.

Riverine landscapes are embedded within a complex, multi-scale administrative structure and governance system involving multiple authors and sectors. In this context, how do water management, nature conservation, heritage conservation laws, and spatial planning tools conflict or intersect in defining riverine landscapes? How can a basin-scale governance approach be adapted into adaptive, multi-scale, and multi-author systems for the conservation and management of riverine heritage?

Furthermore, during the era of multiple crises, processes such as global water scarcity, energy production, food security, and climate change determine the future of water (-related) and riverine landscapes. In this respect, how does the deepening water crisis redefine the value, meaning, and fragility of water (-related) and riverine landscape heritage? How do infrastructures such as hydroelectric dams, irrigation mega-projects, and water management systems affect the heritage value of riverine landscapes? How can indicators of sustainability, adaptation, flexibility, and resilience for riverine landscapes be integrated? In this regard, riverine landscapes do not follow a linear history; they are open to multiple futures, scenarios, and projections. How will the geographical, ecological, and cultural components of water (-related) and riverine landscapes change under different climate scenarios? How should the landscape heritage of the future be defined?

In the Menderes riverine landscape, "unheard voices of authors" refer to invisible practices, suppressed narratives, and spatial relations that have been erased over time. The approach adopted in this study seeks to reveal how the water (-related) and riverine landscape is experienced and interpreted by different authors; however, the scope and duration of the interviews inevitably render certain narratives more visible while leaving others partial or unrepresented. Considering the diversity across age groups, professions, social roles, and forms of place-based belonging, it is evident that longer-term and more inclusive engagements would enable a deeper understanding of the landscape's multiauthor structure. In this sense, while the study highlights specific narrative patterns, it does not claim to encompass all narratives related to the water (-related) and riverine landscape. For future research, it is recommended to conduct longer-term fieldwork, to more systematically include diverse groups of authors (such as women, youth, producers, and migrant communities), and to diversify participatory methods (including memory mapping, walking-based narrative production, and digital storytelling).

In this context, this perspective enables the conceptualization of the river as a dynamic being with its own agency, impacts, and capacity to shape and direct processes. Accordingly, the thesis proposes reading the water (-related) and riverine

landscape through the contributions of more-than-human authors. These authors are not limited to natural elements; infrastructures and interventions related to the river, landscape-transforming plant species, fish populations, and other ecological components also actively participate in landscape production. By reshaping spatial organization, flows, patterns of use, and even narratives, these elements function as "authors." For instance, a dam is not only an engineering structure regulating water flow, but also a transformer that redefines the river's temporality, ecological relations, and people–place interactions. Similarly, fast-growing, water-intensive plant species can alter local ecological balances, transforming both the physical and perceptual structure of the landscape. The riverine landscape heritage approach, therefore, frames these more-than-human authors as active creator agents within the landscape. In this sense, the river is understood not merely as a natural resource or a risk factor but as a landscape author that, through its own dynamics, influences decision-making processes and generates new possibilities.

In conclusion, this dissertation has addressed these issues and questions through a holistic and systematic framework that spans from the conceptual and theoretical background to the case study, assessment, and characterization phases of the research. By combining different theoretical perspectives, methodological tools, and approaches within the context of the Menderes riverine landscape, the study demonstrates how riverine landscapes can be understood as living, multi-scalar, multi-layered, and multi-dimensional heritage. At the same time, it highlights that the proposed approach offers a transferable and adaptable framework that can be applied, tested, and further developed across different contexts and geographies, and further case studies. The riverine landscape heritage approach, as both a conceptual and methodological contribution, provides a basis for expanding this line of inquiry through comparative studies, diverse geographical experiments, and deeper negotiations and interviews with multiple landscape authors.

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APPENDICES

A. Ethics Approval Form for Field Study Interviews

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
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13 EKİM 2023

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Prof. Dr. A. Güliz Bilgin Altınöz

Danışmanlığını yürüttüğünüz Gökhan OKUMUŞ'un ***"Miras Alanlarının Başlatıcısı ve Üreticisi olarak Nehirler Üzerine Yeniden Düşünmek: Menderes Deltası (Meaendrum) Örneği"*** başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek **0418-ODTÜİAEK-2023** protokol numarası ile onaylanmıştır.

Bilgilerinize saygılarımla sunarım.

Prof. Dr. Ş. Halil TURAN
Başkan

Prof.Dr. İ. Semih AKÇOMAK
Üye

Doç. Dr. Ali Emre Turgut
Üye

Doç. Dr. Şerife SEVİNÇ
Üye

Doç.Dr. Murat Perit ÇAKIR
Üye

Dr. Öğretim Üyesi Süreyya ÖZCAN KABASAKAL
Üye

Dr. Öğretim Üyesi Müge GÜNDÜZ
Üye

B. Social Survey/Interview Sheets and Forms (Author, 2023; 2024; 2025)

	METU | GRADUATE PROGRAM IN CONSERVATION OF CULTURAL HERITAGE **ODTÜ | KÜLTÜREL MİRAS KORUMA LİSANSÜSTÜ PROGRAMI** PHD THESİS | DOKTORA TEZİ Reconsidering Rivers as Initiators and Generators of Heritage Places: The Case of Menderes (Meander) River and Delta Miras Alanlarının Başlatıcısı ve Üreticisi olarak Nehirler Üzerine Yeniden Düşünmek: Menderes Nehri ve Deltası Örneği	**SÖKE-DİDİM FIELD STUDY 2024-2025**

Gökhan Okumuş

Advisor | Danışman: Prof. Dr. Güliz Bilgin Altınöz - Co-advisor | Eş Danışman: Gerdy A. Verschuure-Stuip

Fiziksel-Mekansal Bağlam

- Mahallenizin/yerleşimin Menderes Nehri ile ilişkisini nasıl değerlendirirsiniz?

- Menderes Nehrinin ve suyun bu alanda nasıl kullanılıyor? Yerleşimleriniz için mekânsal olarak önemi nedir? Bu konuda örnekler?

- Yerleşimdeki bildiğiniz su kaynakları, su sistemleri, su ağları vb. hangi alanda ve mekanda?

- Bu alandaki yerleşimlere, nehre, bölgelere ait özel isimlendirmeler var mı? Yerel olarak tarif edilen alanlar, mekanlar ve isimlendirmeler var mı? (Özel bir isimle, sembolle tarif edilen, anlatılan bir yerleşim, alan var mı? Coğrafyaya dair Menderes için, ova için, tarım alanların için, balıkçılıkta kullanılan özel isimler, anlatılar var mı?

Üst ölçek*

- Nehrin/suyun doğrudan ilişkili olduğu ya da daha az ilişkili olduğu yerleşimler, bölgeler var mı?

- Menderes'in fiziksel olarak bu alandaki yerleşimlerin oluşumuna ve değişim-dönüşüm süreçlerine ne gibi etkileri olmuş? (nehrin aksının değişimi, peyzajın, deltanın oluşumu, nehrin yönünün-aksının değişimi, suyun kullanılması kaynaklı, yerleşimlerin taşınması, yer değişimleri, tarım alanları için su kanallarının açılması vb.)

- Somut olarak nehir etkisiyle fiziksel-mekansal olarak değişen dönüşen bir yerleşim ya da alan var mı? (Ekonomik sebeplerle, nehrin ve suyun değişimiyle ilgili örnekler, olumsuz veya sorunlu görülen dinamikler)

- Havza ve deltada hatırladığınız büyük bir afet var mı? (Su kıtlığı, sel vb.)

Sizin eklemek istediğiniz başka bir şey var mı?

Gökhan Okumuş
Advisor | Danışman: Prof. Dr. Güliz Bilgin Altınöz - Co-advisor | Eş Danışman: Gerdy A. Verschuure-Stuip

Sosyo-Kültürel Bağlam

- Menderes Nehrinin ve suyun bu alan için, yerleşimleriniz için önemi nedir?

- Bu bölgeyi değerli buluyor musunuz? Sizce hangi yönlerden, hangi bağlamlarda değerli?

- Günlük yaşantı rutininde nehrin/suyun yeri nedir?

- Su-kültür ilişkisine yönelik olarak anılarınıza ait aklınıza gelen şeyler nelerdir? Bununla ilgili bölgenin tarihinden örnekler biliyor musunuz?

- Bu coğrafya için su ve nehir geçmişte ne ifade ediyormuş, bugün ne ifade ediyor? Anlamlar ve hikayeler, semboller, atfedilen değerler vb?

- Mevsimsel olarak suya bağlı ya da su ile ilişkili bir sosyo-kültürel değişim söz konusu mu?

- Bölgede hangi etkinlikler, festivaller, şenlikler var mı? Hangi ilçe ya da yerleşimlerde?

Sizin eklemek istediğiniz başka bir şey var mı?

Gökhan Okumuş
Advisor | Danışman: Prof. Dr. Güliz Bilgin Altınöz - Co-advisor | Eş Danışman: Gerdy A. Verschuure-Stuip

Sosyo Ekonomik Yapı

- Menderes Nehrinin ve suyun bu alan için, yerleşimleriniz için kullanıma bağlı-ekonomik bağlamda önemi nedir? Bir geçim kaynağı ile öne çıkan yerleşim var mı? (Pamuk, balıkçılık, turizm, çiftçilik vb.)

- Nehrin suyu nasıl, ne amaçlarla kullanılıyor?

- Menderes Nehrinin ve suyun, bölgedeki üretim kültürünü nasıl etkilemiş? Çırçır fabrikaları, tarım makineleşmesi, pamuk hangi yıllardan sonra? Daha önce ovada hangi ürünler yetiştiriliyormuş?

- Üretim ve ekonomik bağlamda günlük ya da mevsimsel döngüler nelerdir?

- Üretim ilişkilerinde ve ekonomide mevsimsel olarak suya bağlı ya da su ile ilişkili bir değişim söz konusu mu? (tarım alanları, 1970ler sonrası su kanalları ve tarımda makineleşme, balıkçılık, diğer üretim faaliyetleri ve ekonomik bileşenler vb.) (Nehrin yönünün-aksının değişimi, suyun kullanılması, yerleşimlerin taşınması, yer değişimleri, tarım alanları için su kanallarının açılması vb.)

- Ekonomik olarak bölgenin en büyük sorunları, tehditleri, potansiyelleri sizce neler?

- Alana dair bildiğiniz plan ve projeler var mı? Hangi bağlamlarda? Geçmişte planlanmış, uygulanmış, yürürülükte olan ya da gelecek için planlanan?

Sizin eklemek istediğiniz başka bir şey var mı?

Gökhan Okumuş
Advisor | Danışman: Prof. Dr. Güliz Bilgin Altınöz - Co-advisor | Eş Danışman: Gerdy A. Verschuure-Stuip

Arkeolojik Alan ve Kazı Başkanlıkları ve Ekipleri
Milet | Priene | Myus | Herakleia- Latmos | Nysa | Magnesia | Tripolis

- Kentin/arkeolojik alanın Menderes Nehri ve su ile ilişkisini nasıl değerlendirirsiniz?

- Kentte hangi su ile ilişkili yapılar ya da sistemler bulunmakta? Hala ayakta ya da tespit edilebilmiş durumda mı?

- Çevredeki arkeolojik alanların/antik kentlerin bölgeye, bölgedeki yerleşimlere ve Menderes Deltası'na etkisini nasıl değerlendirirsiniz? Bölgenin korunmasına nasıl bir etkisi var?

- Antik kentin sunumunda Menderes ile ilişkisine ne kadar yer veriliyor? Veriliyorsa nasıl?

- Sizce bölgenin bugün ve gelecekteki en büyük değeri/önemi nedir? Değer konusunda antik dönemden bugüne antik kent için nasıl bir değişim var?

- Sizce bölgenin bugün ve gelecekteki en büyük problemi/problemleri nedir?

Sizin eklemek istediğiniz başka bir şey var mı?

C. Social Survey Observation Base Maps (Author, 2023; 2024; 2025)

METU | GRADUATE PROGRAM IN CONSERVATION OF CULTURAL HERITAGE
ODTÜ | KÜLTÜREL MİRAS KORUMA LİSANSÜSTÜ PROGRAMI

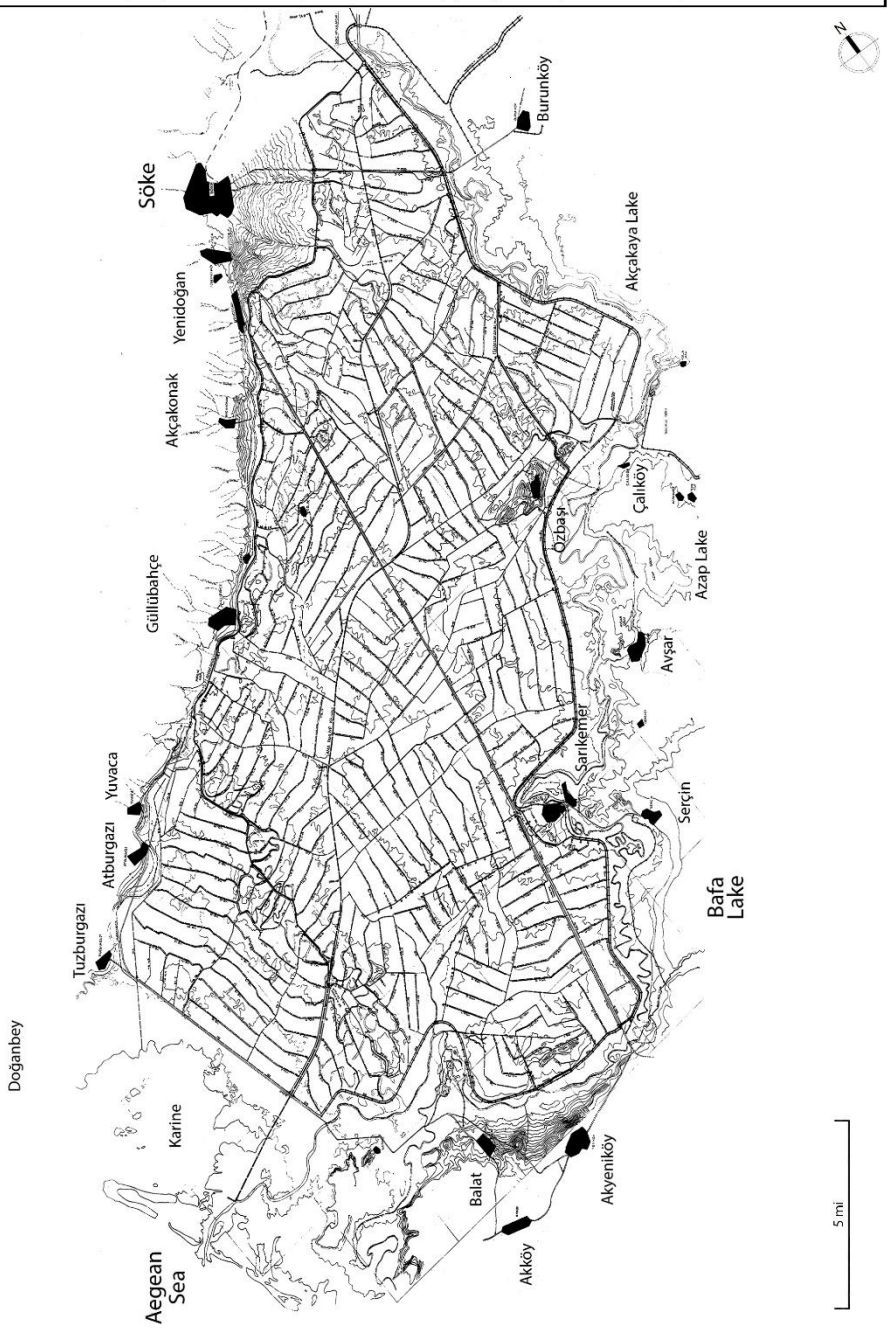
PHD THESİS | DOKTORA TEZİ

Reconsidering Rivers as Initiators and Generators of Heritage Places: The Case of Menderes (Meander) River and Delta
Miras Alanlarının Başlatıcısı ve Üreticisi olarak Nehirler Üzerine Yeniden Düşünmek: Menderes Nehri ve Deltası Örneği

SÖKE-DİDİM FIELD STUDY 2024-2025

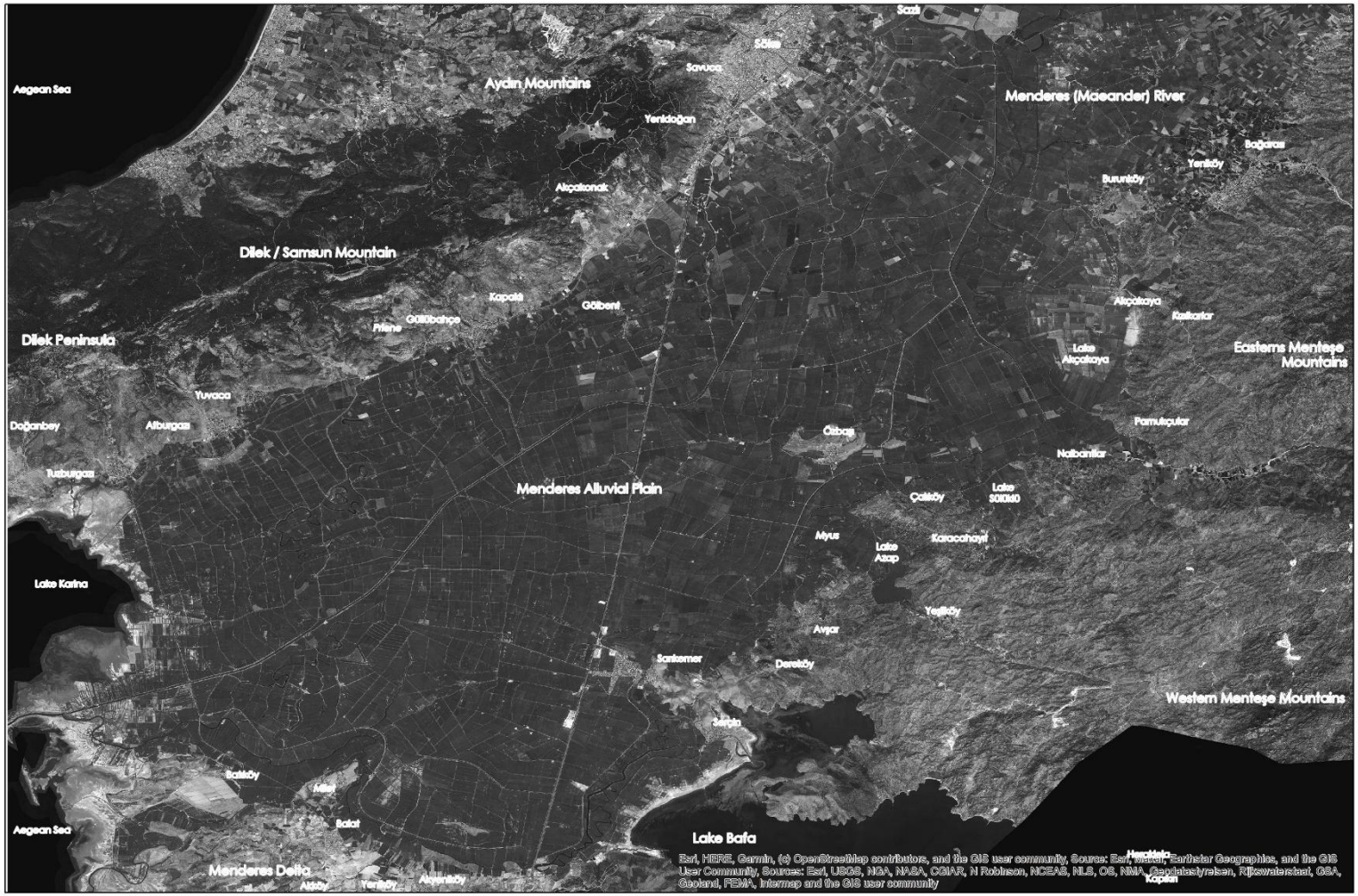
Gökhan Okumuş

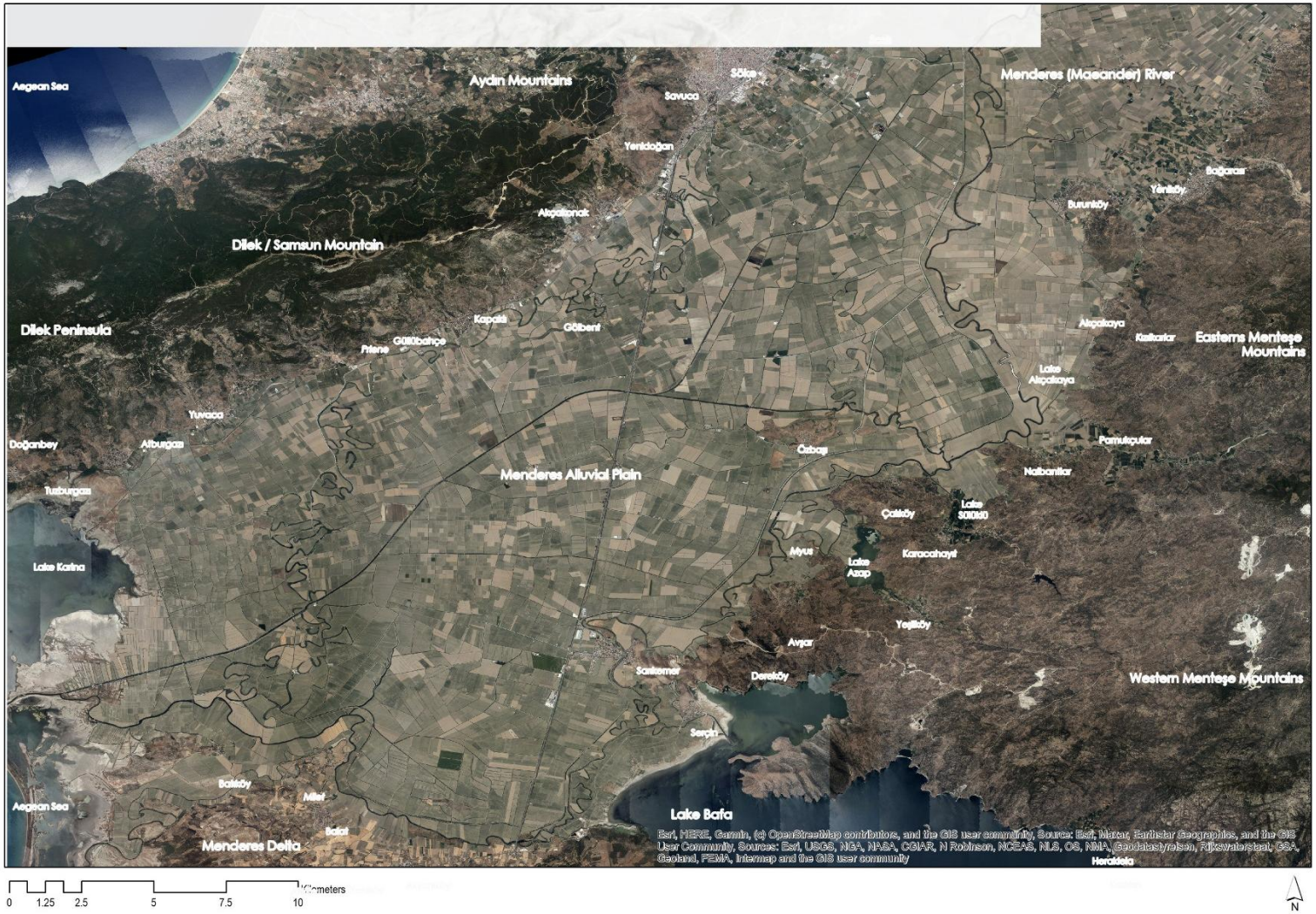
Advisor | Danışman: Prof. Dr. Güliz Bilgin Altınöz - Co-advisor | Eş Danışman: Gerdy A. Verschuure-Stuip



D. GIS Base Maps-Aerial Orthophotos (1977, 1993, 2011, 2021, 2024)

Menderes (Maeander) River
Menderes Alluvial Plain
Menderes Delta
Lake Bafa
Lake Karina
Lake Azap
Lake Akpınar
Lake Alaçatı
Lake Işıklı
Doğanbey
Altıburgaz
Tuzburgaz
Yuvacık
Kapaklı
Gölbent
Çıbıklı
Nalbantlar
Pamukçular
Sarıkemer
Pereköy
Balat
Kilometers
0 1.25 2.5 5 7.5 10
N
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DeLorme, Earthstar Geographics, and the GIS User Community, Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community


Aegean Sea
Aydın Mountains
Menderes (Maeander) River
Dilek / Samsun Mountain
Dilek Peninsula
Menderes Alluvial Plain
Eastern Menteşe Mountains
Western Menteşe Mountains
Lake Karina
Lake Bafa
Menderes Delta
Lake Alaçatıya
Lake Azap
Lake Södükö
Sazlı
Söke
Savuca
Yenidoğan
Alaçatonak
Kapaklı
Gölbent
Gölköbahçe
Priene
Yuvaca
Doğanbey
Alburgaz
Tuzburgaz
Özbağı
Çaltıköy
Myus
Karacahayıt
Avşar
Sarıkemer
Dereköy
Yeşilköy
Balatçık
Milet
Balat
Akköy
Yeniköy
Akçaköy
Bağarası
Yeniköy
Burunköy
Alaçatıya
Kaşkartar
Pamukçular
Nalbantlar
Hacıköy
Kapıkal
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, DeLorme, Earthstar Geographics, and the GIS User Community, Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLB, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
0
1.25
2.5
5
7.5
10
Kilometers
N


Aegean Sea
Aydın Mountains
Söke
Menderes (Maeander) River
Savuca
Yenidoğan
Bağarası
Yeniköy
Akçakonak
Burunköy
Dilek / Samsun Mountain
Dilek Peninsula
Kapaklı
Gölbent
Akçalaya
Priene
Gölbahçe
Kestanlar
Eastern Menteşe Mountains
Lake Akçalaya
Yuvacık
Doğanbey
Atburgaz
Çabaş
Pamuklçular
Menderes Alluvial Plain
Nalbantlar
Tuzburgaz
Çaltıköy
Lake Söğüt
Lake Karina
Akyus
Karacahayıt
Lake Azap
Yeşiltöy
Avşar
Sarıkemer
Derekköy
Western Menteşe Mountains
Serçin
Balatköy
Miletos
Aegean Sea
Lake Bafa
Menderes Delta
Balat
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Heraklela
0 1.25 2.5 5 7.5 10
N

Aegean Sea
Aydın Mountains
Sazlı
Söke
Savuca
Menderes (Maeander) River
Yenidoğan
Bağarası
Yeniköy
Akçalanak
Buruniköy
Dilek / Samsun Mountain
Dilek Peninsula
Kapaklı
Gölbent
Priene
Gölköhçe
Alçalaya
Kestanlar
Eastern Menteşe Mountains
Lake Alçalaya
Yuvaca
Doğanbey
Alburgazi
Özbaşı
Pamuklular
Menderes Alluvial Plain
Nalbantlar
Tuzburgazi
Çamköy
Lake Sarıköl
Myus
Karacahayıt
Lake Karina
Lake Azap
Yeşilköy
Avşar
Sarıkemer
Dereköy
Western Menteşe Mountains
Serçin
Balatçık
Aegean Sea
Milet
Lake Bafa
Balat
Menderes Delta
Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Sources: Esri, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community
Herakleia
0 1.25 2.5 5 7.5 10
Kilometers
N

CURRICULUM VITAE

PERSONAL INFORMATION

Surname, Name: Okumuş, Gökhan

EDUCATION

Degree	Institution	Year of Graduation
MS	METU Conservation of Cultural Heritage in Architecture	2019
BS	Uludağ University Architecture	2014
High School	Milli Piyango Anadolu High School, Bursa	2010

WORK EXPERIENCE

Year	Place	Enrollment
2016-Present	METU Department of Architecture	Research Assistant
2015-2016	BAIBU Department of Architecture	Research Assistant

FOREIGN LANGUAGES

Advanced English

PUBLICATIONS

THESIS

1. Okumuş G. "Principles and Strategies for Conservation and Management of Complex Multi-Layered Cultural Landscape: The Case Study Gölyazı (Apolyont) / Bursa", published Master's Thesis, METU. Supervisor: Assoc. Prof. Dr. A. Güliz Bilgin Altınöz, (2019)

BOOK

1. Okumuş, G. (2020). Karmaşık Çok Katmanlı Kültürel Peyzaj Alanlarının Korunması ve Yönetilmesi için İlke ve Stratejiler: Gölyazı (Apolyont) /Bursa Örneği (Principles and Strategies for the Conservation and Management of Complex Multilayered Cultural Landscapes: Gölyazı (Apolyont) / Bursa), Nilüfer Municipality Publications.

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1.Okumuş, G., Bilgin Altınöz A. G., Verschuure-Stuip G. (2026). Reconsidering 'Water' as Initiator and Transformer of River Landscape Heritage: The Case of Menderes (Maeander) Delta, Blue Papers: Water and Heritage for Sustainable Development, TU Delft.

2.Okumuş, G., Okumuş G. (2023). Following for the Traces of Modern Architecture in Bursa: Halit Femir-Feridun Akozan Collaboration (Modern Mimarlığın Bursa'daki İzlerini Aramak: Halit Femir-Feridun Akozan İş Birliği), TÜBA-KED Türkiye Bilimler Akademisi Kültür Envanteri Dergisi, pp. 11-30.

3.Okumuş, G., Okumuş G. (2021). A "Modern Khan" In Historic Environment: Bursa Bazaar And Market Buildings (Tarihi Çevrede 'Modern Bir Han': Bursa Hal ve Çarşı Binaları), Betonart, 70, p. 78-88.

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3.Okumuş, G., Bilgin Altınöz A. G. (2019). From Complexity to Sustainability": Proposing a Holistic Management Approach for Sustainable Development of Complex Multi-Layered Cultural Landscapes: The Case of Gölyazı (Apolyont) - Bursa / Turkey, Heritage and the Sustainable Development Goals, International LDE-Heritage conference, TU Delft, The Netherlands, pp. 118-120.

4.Okumuş, G. (2018). Use Of Timber Material In Construction Technique, In Religious Building Of Different Societies (Church/ Mosque): Hagia Triada Church in Ayvalık as a Method Proposal (Farklı Toplumların İbadet Yapılarında (Kilise / Cami) Ahşap Malzemenin Yapısal Sistemde Kullanımı: Bir Yöntem Önerisi Olarak Aya Triyada Kilisesi /Ayvalık), Uluslararası Katılımlı 6. Tarihi Yapıların Korunması ve Güçlendirilmesi Sempozyumu, Trabzon 6th International Symposium on Conservation and Consolidation of Historical Structures, Trabzon, pp. 91-101.

5.Okumuş, G., Cabbar N., Öztürk M. (2017). Structural and Ornamental Use of Timber in Hagia Triada Church, Ayvalık, Shatis 17’ 4th International Conference on Structural Health Assessment of Timber Structures, pp. 143-156.

6.Gökhan, A., Akti, I., Kocadağ, B., Kabakuşak, E., Aldemir, E., İmran, Z., Bilgin Altınöz, A.G., Özçakır, Ö., Okumuş, G., Ekici Üner, S.C. (2024). Mekân | İnsan | Hafıza: Bozcaada'nın Kültürel Mirasının CBS Aracılığı ile Bütünleşik Korunması (Space | People | Memory: Integrated Conservation of Bozcaada's Cultural Heritage through GIS), Türk Mühendis ve Mimar Odası Birliği (TMMOB) 8. Coğrafi Bilgi Sistemleri Kongresi 2024, Ankara.

7.Okumuş, G., Okumuş G. (2022) Femir-Akozan Mimarlığını İç Mekan Tasarımlarında Okumak (Historical Reading of Femir-Akozan Architecture from Interior Designs) Türkiye'de Modern İç Mekanlar Sempozyumu II, Seçki Kitabı (Modern Interiors in Turkey Symposium II, Selection Book), İzmir, pp. 225-247.

8.Okumuş, G., Şahin Güçhan, N. (2021). Tarihi Dokuda Uyum-Uyumsuzluk: Amasya Yalıboyu Evleri Üzerine Morfolojik Bir Değerlendirme (Harmony-Disharmony in Historical Tissue: A Morphological Evaluation on Amasya Yalıboyu Houses), Türkiye Kentsel Morfoloji Araştırma Ağı, III. Kentsel Morfoloji Sempozyumu (Turkey Urban Morphology Research Network, III. Urban Morphology Symposium), pp. 331-354.

9.Okumuş, G., Bilgin Altınöz A. G. (2018). Sürdürülebilir Koruma için Değişimi Anlamak ve Yönetmek: Karmaşık Çok Katmanlı Kültürel Peyzaj Alanı Olarak Gölyazı (Apolyont) / Bursa Örneği (Understanding and Managing Change for Sustainable Conservation: The Case of Gölyazı (Apolyont) / Bursa as a Complex Multilayered Cultural Landscape), Türkiye Kentsel Morfoloji Araştırma Ağı, II. Kentsel Morfoloji Sempozyumu (Turkey Urban Morphology Research Network, II. Urban Morphology Symposium), pp. 233-243.

10.Okumuş, G., Bilgin Altınöz A. G. (2017). Karmaşık Diyaloglar Ortamı Olarak Kültürel Peyzajlar ve Korunmaları: Gölyazı (Apolyont)/ Bursa Örneği (Cultural Landscapes and their Conservation as Environments of Complex Dialogues: Gölyazı (Apolyont)/ Bursa), Prof Dr. Gönül Tankut Anısına Sempozyum: KORUMA: Geçmiş | Bugün | Gelecek Arasındaki Diyalog (Symposium in Memory of Prof. Dr. Gönül Tankut: Conservation: Dialogue between Past | Present | Future), pp. 233-243.

ORAL PRESENTATION IN CONFERENCE AND/OR SYMPOSIUM

1. Teoriden Pratiğe: Çok Katmanlı Kültürel Peyzaj Alanı olarak Gölyazı (Apolyont)’daki Koruma Uygulamalarına Bakış (From Theory to Practice: Following of Conservation Practices in Gölyazı (Apolyont) as a Multilayered Cultural Landscape), Conservation Symposium in Bursa, Bursa, May, 2025.

’Modern’ i Korumak, Cumhuriyet Dönemi Kültürel Mirası (Conservation of the ‘Modern’, Cultural Heritage of the Republican Era) TMMOB Mimarlar Odası Bursa Şubesi, (2021).

2. Çok Boyutlu Miras Alanlarına Disiplinlerarası/ Çok Disiplinli Yaklaşımın Önemi: Gölyazı (Apolyont), Bursa Örneği (The Importance of Transdisciplinary / Transdisciplinary Approach to Multidimensional Heritage Sites: The Case of Gölyazı (Apolyont), Bursa), Miras Sohbetleri/ Heritage Talks, Heritage İstanbul: Restorasyon Arkeoloji Müzeciilik Teknolojileri Fuarı ve Konferansı (Heritage Istanbul: Restoration Archaeology Museology Technologies Fair and Conference), (2021).

3. Ankara'da Bir 'Sosyal' Konut Kooperatifi ve Yerleşimi: SSK Toplu İşçi Konutları (A ‘Social’ Housing Cooperative and Settlement in Ankara: SSK Collective Worker Housing), VEKAM Ankara’da İz Bırakan Mimarlar Panel 14: Orhan Dinç. (2020). (In process as a book chapter).

4. Water, Culture and Heritage- Connecting water management challenges with water-related heritage, “Pitches on Significance Water-related heritage for water management challenges”, Amsterdam International Water Week, 8 Kasım 2023.

RESEARCH INTEREST

Conservation and Management of Natural and Cultural Heritage, Multi-layered Cultural Landscapes, Water and Landscape Ensemble, Water-related and Riverine Landscape Heritage, 20th-century Modern Heritage.