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Original Article

Methods for conducting analysis, planning, and preservation of the historical and cultural potential of urban riverside areas

Liudmyla Ruban[1]

[1] *Department of Innovative Architecture and Design; Institute of Innovative Education; Kyiv National University of Construction and Architecture;*
4 Osvity St., 03-037 Kyiv, Ukraine;
knuba.landscape@gmail.com; ORCID: 0000-0002-5973-4362

Abstract: The article examines the decisive role of rivers in the historical, cultural, and civilizational development of the territories and peoples that inhabit them and explores possible ways of evaluating the historical and cultural potential of riverbanks for their integration into active urban planning. For this purpose, the principles and methodology of the architectural and landscape organisation of urban riverside areas have been outlined. One aspect of this methodology involves revealing the historical and cultural potential of riverside territories. Based on an analysis of UNESCO Heritage Sites regarding the connection of heritage objects with natural bodies of water, such as rivers, a specialised method has been proposed – for addressing these challenges – a method for identifying water bodies of historical and cultural heritage (using the Dnipro River in Kyiv, Ukraine, as a case study). It is noted that, for active urban planning and adaptation to climate change, riverside areas should be considered both as a unified territorial entity and as an independent object of urban planning design. This includes leveraging the unique historical and cultural potential of each city's riverside territories and implementing planning solutions to sustain the natural and ecological state of river valleys, such as through the organisation of "blue-green" urban infrastructure.

Keywords: rivers and riverside areas, architectural and landscape organisation, historical and cultural potential, UNESCO heritage, "blue-green" urban infrastructure, Dnipro River, Kyiv

1. Introduction

Cities are intricately connected to the rivers that flow through them, shaping their planning structures, microclimate conditions, and economic activities. These rivers also play a crucial role in the historical and cultural development of the cities and settlements along their banks. Modern urban planning policy focuses on adapting to climate change,

discovering innovative methods to enhance planning structures based on sustainability, and preserving the historical and cultural heritage of these territories.

The importance of such an approach is demonstrated by the "New Urban Development Program" – the Quito Declaration "On Ecologically Sustainable Cities and Human Settlements for All" (HABITAT III, 2017), which establishes a commitment to "the sustainable use of cultural and natural heritage" [1]. The need for the "protection of non-renewable open spaces, ... preservation of local flora and water heritage, protection of geological and archaeological heritage, groundwater, and ecosystems" as the key directions in the "conservation of space" for regional development was first announced in the Paris Declaration "On Cultural Heritage as a Driving Force of Development" in 2011 [2]. Thus, rivers, as elements of the natural landscape, require special planning approaches, while the recognition of the historical and cultural potential of their banks must align with modern global trends.

Accordingly, the issue of the city's river network, in the author's view, encompasses two interconnected aspects considered within the framework of this article: a) the river as a natural ecosystem, anthropogenically altered within the city; and b) the river as a factor in the creation and development of the city, contributing to the formation of a unique architectural and spatial urban environment. These aspects aim to emphasise the river's unique historical and cultural significance in the city from a historical perspective.

2. Literature review

An analysis of global theoretical and practical experience regarding the significance of natural water bodies, such as rivers, the planning of riparian areas, and the protection of the historical and cultural heritage of urban riverbanks, reveals a diversity of approaches.

A substantial body of historical research, directly related to rivers, was conducted at the beginning of the last century and even earlier. The exploration of the role of rivers in the origins and historical development of civilisations along their shores, often encompassing territories of multiple modern states or large regions of continents, was addressed in scientific studies from the late 19th and early 20th centuries. Notable examples include the theoretical work "Civilization and the Great Historical Rivers" by Metchnikoff L. (1889) [3]; historical, geographical, and archaeological studies of the Dnipro basin, such as "Dnipro Rapids" by Yavornytskyi D.I. (1928) [4] and "Sputnik on the Dnipro and Its Tributaries" (1910) [5]; and the historical-economic study of the Rhine basin, "The Rhine: Problems of History and Economy" by Demangeon A. and Febvre L. (1935) [6].

In contemporary historical and urban planning research, noteworthy examples include: Rada U.'s studies on the European rivers Vistula, Oder, and Elbe, and their influence on the development of modern Europe [7-9]; research on urban planning organisation of riverbanks in the context of defining riverside urbanity, as explored by Pattacini L. [10]; and studies on the utilisation of the historical-cultural potential of rivers to create an attractive image of modern cities for political management with a focus on direct-administered municipalities with populations exceeding 10 million [11]. Additionally, Lukomska I. [12] examined historical heritage as a factor in shaping the spatial framework of river valleys, particularly in mountainous regions. The works of Kitov D. [13], Petrashenko V.O.., and Kozyuba V.K. [14], among others, demonstrate a broad spectrum of issues related to historical heritage, ranging from archaeological sites on riverbanks to the cultural and spiritual significance of rivers in the lives of Ukrainians. These studies, alongside research on coastal areas, illustrate the role of aquatic systems in historical development of civilisations, confirming their enduring importance.

Regarding World Heritage sites in terms of their connection with rivers, it was found that rivers are protected individually or as part of World Heritage sites, encompassing river valleys (the natural landscape of entire river valleys) and their key elements (deltas, banks, and waterfalls). Examples include the banks of the Danube, Buda Castle Quarter, and Andrássy Avenue in Budapest (Hungary, 1987; expanded in 2002); Victoria Falls, Mosi-oa-Tunya (jointly managed by Zambia and Zimbabwe, 1989); the banks of the Seine in Paris (France, 1991); the Danube Delta (Romania, 1991); and the Loire River Valley (France, 2000. In each instance, project documentation affirming the high historical and cultural value of the protected site was developed in accordance with existing UNESCO methodologies, based on the 10 initial criteria for cultural and natural heritage designation [15,16].

The underwater cultural heritage, which UNESCO has focused on since 2001 [17], primarily pertains to coastal and marine environments, with assessment methods covering factors such as underwater and coastal antiquities, coastal archaeological sites, and traditional material cultures, including fishing communities, traditional tools, and equipment [18]. This assessment methodology can also be relevant for the protection of historical objects submerged in rivers, particularly in areas where reservoirs have been created.

In Ukraine, historical and architectural reference plans are being developed in accordance with legislation. This scientific and project documentation is prepared as part of the general plans for historical settlements and provides information on the immovable cultural heritage objects within a settlement, significant and ordinary historical buildings associated with them, lands designated for historical and cultural purposes, sites of lost buildings, structures, and defensive fortifications of historical or urban significance; disharmonious buildings and structures; natural attractions, reserves, and valuable landscapes; boundaries of historical areas; and protection zones of cultural heritage monuments that are in force at the time the historical-architectural reference plan is compiled (if available) [19]. These materials serve as a basis for delineating historical areas and developing or adjusting protection zones for cultural heritage monuments. In the development of the historical-architectural reference plan for a historic city, the natural characteristics of the area are studied to determine the uniqueness of its planning and spatial organisation, specifically: a) key elements of the natural landscape, including its primary axes and nodes; b) the extent to which the natural landscape has been altered by human activities during the settlement's urban development; and c) a description of the natural component of the landscape as a stable structural and formative element. The historical-architectural reference plan may be supplemented, if necessary, with diagrams such as "Landscape of the Settlement," "Architectural-Spatial Composition of the Historical Centre," and "Specific Disclosure of Architectural Monuments and Urban Planning".

According to this official methodology, rivers are considered elements of the urban landscape, with their role in shaping the spatial composition of historical centres or significant architectural ensembles being highlighted in certain cases.

Historical and urban planning studies have been conducted for cities in Ukraine such as Chernivtsi, Odesa (2008), Kyiv, Vasylkiv, Vinnytsia, Horlivka, Izmail (2011), Sumy, Myrhorod, Korets (2013), and Shumsk (2018), among others. Most of these researches were carried out by the Scientific Research Institute of Monument Preservation Studies in Kyiv [20-22].

The identification and protection of landscape monuments of cultural heritage, such as the historical landscape of the Kyiv mountains and the Dnipro River valley in Kyiv, are explored in the work of A. Zviryaka [23]. The architectural and urban planning principles for establishing buffer zones around UNESCO World Heritage sites are discussed in the research of Korotun I., which aims to align Ukrainian legislation with the standards for UNESCO

Heritage Site designation [24]. The historical identity of cities and the protection of their heritage sites are further examined in the urban planning studies by Dreval I.V [25], Korotun I., Popovych Y. [26], Leshchenko N. [27,28], Pleshkanovska A. [29], Tymokhin V., Shebek N. [30], Tovbych V. [28], Ustinova I., and Matsoha A. [31].

Various approaches to the definition and protection of historical, cultural, and architectural heritage along riverbanks, as well as their integration into project decisions, are demonstrated in scientific papers and project proposals. For example, in the work of Drapella-Hermansdorfer A., which studies the riverside landscapes of historical cities in Poland, the valley of the Ślęza River in Wrocław is considered part of the natural and cultural heritage—a "green chain" of forests, nature reserves, parks, meadows, and old river channels, combined with archaeological sites, a cemetery, an old mill, and a power station [32]. River valleys are highlighted as key planning axes of the landscape, around which a unique environment of historical city centres is formed, as seen in the historical and urban planning research of Shumsk in the Ternopil region of Ukraine, conducted by Isaiko N. [33]. The transformation of historical heritage and spatial perception of a region, with a focus on cultural landscape research on both banks of the Daugava River in Latvia, is explored in the scientific publication by Ziemelniece A. [34]. The method of riverside landscape assessment, based on a classification model of urban riverside landscapes, is detailed in the work of Orzechowska-Szajda I.D. using the Oder River facade in Wrocław as a case study. In this classification model, historically valuable buildings are evaluated alongside other parameters such as riverbed width, flora, landscape dominants, destructive elements, horizontal and vertical complexity, and colour diversity. Using a statistical method (discriminant function analysis), the model is considered an objective tool for classifying landscapes in spatial planning [35].

In recent decades, river valley planning projects have gained significant emphasis and demand globally due to the need to adapt to climate change and protect natural aquatic ecosystems. Numerous projects are focused on the ecological and recreational revitalisation of rivers for active urban planning use, such as the Lee River in London (UK) [36], the Haute Deule River in Lille (France) [37], the Manzanares River in Madrid (Spain) [38], and the Chicago River in Chicago (USA) [39]. This growing interest is reflected in various scientific works that highlight modern, innovative approaches to designing landscapes of settlements, including river valleys. Noteworthy examples include the book on eco-design for cities and suburbs by Barnett J. and Beasley L. [40], and the work on landscapes of change featuring innovative designs and site reinventions by Thoren R. [41]. The book Responsive Landscapes by Holzman J. and Cantrell B. focuses on strategies involving adaptive technologies in landscape architecture, many of which pertain to rivers and riparian areas [42].

3. Aim and objectives

The paper aims to address the issues related to the urban planning definition of the historical and cultural potential of urban riverside areas and to establish corresponding methodological approaches and principles for their planning. This goal entails the following objectives: a) to clarify the conceptual and terminological framework regarding the definitions of "riverside areas", "boundaries of the city's riverside areas," and the "historical and cultural potential" of urban riverside areas; b) to formulate planning principles and a methodological approach for the architectural and landscape organisation of riverside areas (with the identification of their historical and cultural potential as one component of the proposed methodology); c) to develop a specialised problem-solving method – a method for identifying water bodies of historical and cultural heritage; d) to explore the applicability of

the methodological approach for adaptation to climate change. The primary focus is on the riparian territories of the Dnipro River in Kyiv, Ukraine.

4. Methodology

The study's methodology is based on the comprehensive application of general scientific and urban planning methods for researching urban riverside areas and their historical-cultural potential as one aspect of the problem. Data were collected using various methods, including field surveys of rivers and their banks in urban areas; statistical, literary (regulatory documentation, legislative acts, specialised publications, scientific studies, etc.), and cartographic (historical maps, modern maps, etc.) analysis of urban river networks; planning analysis of city masterplans, historical and architectural reference plans, the UNESCO Heritage List, various riverside area projects, tender proposals, and other types of project documentation. All gathered data on theoretical and practical research related to the topic were analysed and systematised using methods such as analysis (comparative, systemic, critical, analytical), synthesis, systematisation, and comparison of the collected data. Visual and graphic analysis methods were used to present the research findings.

Experimental modelling was conducted based on the methodology for the architectural and landscape organisation of riverside areas, and a specialised problem-solving method—the method for identifying water bodies of historical and cultural heritage—was proposed. Both methodological approaches were developed by the author as a result of the research and are presented in detail below.

5. Results and discussion

5.1. The terms and concepts of the research

The conceptual and terminological framework for the study has been clarified.

"Riverside (or riparian, or riverine) areas" refer to lands located near the riverbank, which slope towards its channel and include the following structural elements: floodplain areas, slopes and original banks, zones of potential flooding, water protection zones, protective strips, and the boundaries of riparian territories.

"The boundaries of the city's riverside areas" are defined based on the river's hydrographic characteristics, planning constraints for riparian areas, and legislative requirements for their organisation.

These boundaries may coincide with those of a settlement, suburban area, or other planning entities (e.g., a national nature park).

To determine the depth of riparian areas, the following criteria should be applied:

- the pedestrian accessibility of the farthest points from the coast should not exceed a 20-minute walk (maximum distance of 1.5 km) on flat terrain. For areas with complex topography and natural obstacles, additional measures should be considered to improve access to riverside areas;
- consideration of the wind, moisture, and temperature regime to assess the river's microclimatic impact on the surrounding area;
- evaluation of the compositional influence of the water space, based on the visibility of water surfaces, shores, and adjacent buildings from a distance;
- consideration of the boundaries of existing and prospective functional zones and structural elements;

- alignment with legislative documents concerning the implementation of environmental protection measures;
- existing historical, cultural, and architectural heritage in riverside areas.

The final delineation of riverine boundaries should be based on a thorough assessment of the factors and criteria listed above, identifying a decisive factor for each specific case. The boundaries of riverside areas are determined individually during the development of project planning documentation [43, p. 11].

The term "historical and cultural potential" of a city's riverside areas refers to a set of tangible (historical, architectural, cultural monuments, green spaces, parks, significant modern architectural complexes and buildings, etc.) and intangible (historical epics, legends, musical works, etc.) cultural assets developed over the course of the society's historical evolution within the river basin area of the city. These assets reveal the role of the river (or river network) in the city's origin, formation, and development, holding urban planning, natural landscape, aesthetic, and other values that can enhance the city's planning structure and preserve its landscapes.

The terms and concepts are presented in the author's formulation.

5.2. Principles of planning riverside areas

Project decisions should be guided by the following principles: 1) "hierarchical planning organization" of natural water bodies in conjunction with the "territorial continuity" of coastal and water areas; 2) the "basin design principle", 3) ensuring that the architectural and landscape organisation of riparian and water areas is in "compliance" with natural processes in water ecosystems [43, pp. 61-63, 44, pp. 244-258, 45, pp. 104-110].

The principle of "hierarchical planning organization" of natural water bodies, combined with "territorial continuity", involves forming an integrated system of natural water bodies within a territory (or settlement). This system unifies all existing natural water bodies (seas, rivers, lakes, etc.) and their coastal zones into a cohesive territorial complex.

The basin design principle for riparian areas includes:

a) restoration measures (hydrological, cleaning, engineering and technological, administrative, etc.);
b) architectural and landscape organisation of the river and its adjacent areas, covering aspects such as planning, architectural and landscape design, compositional and spatial arrangements, and historical and cultural considerations.

In response to climate change and the need for adaptation, project solutions should be developed according to the principle of "compliance" with natural processes in freshwater ecosystems. This approach aims to: a) develop planning solutions that ensure the harmonious development of riverside areas by understanding the complex natural processes within water ecosystems; b) achieve sustainable development of water areas; c) create conditions for human coexistence with the aquatic environment on an equitable basis.

5.3. Methodology for the architectural and landscape organisation of riverside areas

The author's proposals for methods of analysing and designing urban riparian areas are integrated into the methodology for the architectural and landscape organisation of riverside territories under conditions of climate change. This methodology focuses on several key components:

1. Engineering and Technological Solutions (Unit 1): This involves adapting to the

requirements of climate change.

2. Functional and Planning Requirements (Unit 2): Based on principles of rational functional and planning zoning, it emphasises the polyfunctionality of territorial planning (residential, public, green zones, etc.) while considering the balanced functional distribution relative to the entire water ecosystem.
3. Landscape Composition Techniques (Unit 3): This includes incorporating the characteristics of natural landscapes in riverside areas into the spatial planning of cities and settlements, as well as exploring the compositional possibilities of the river (e.g., its compositional role, the "character" of the water, and identifying historical methods of landscape organisation).
4. Historical and cultural potential of riverside territories (Unit 4): Focused on uncovering the historical and cultural heritage of these areas and rivers, this component aims to develop an urban planning program to integrate these elements into the city structure.
5. Information and digital control and management for coastal territories (Unit 5): This entails establishing a management system for coastal areas in cities, based on the creation of an integrated specialisation module for the smart infrastructure of these areas according to the "Smart City" strategy, along with an algorithm for optimising information and digital control, (see Fig. 1).

The main principles of this methodology are detailed in the author's publications [43, pp. 65-73, 44, pp. 160-165, 45, pp. 133-163].

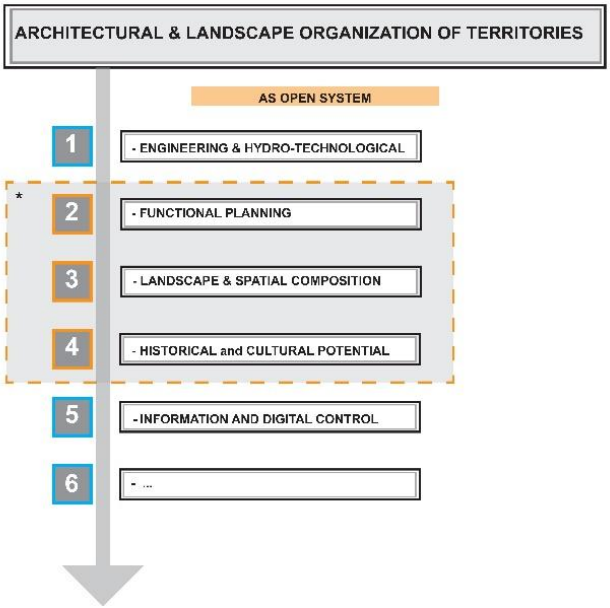


Fig. 1. Method for the Architectural and Landscape Organisation of Coastal Territories: unified block diagram, by L. Ruban, 2016, 2023. *Source:* [44]

To enhance the architectural and landscape organisation, riverside territories should be treated as unified, integral structural and territorial elements within the planning of cities and settlements. This approach necessitates the development of a comprehensive strategy aimed

at addressing contemporary urban challenges; ensuring adherence to ecological and sustainable development criteria; and protecting and restoring natural resources in response to climate change. Therefore, this methodology is designed as an open system, allowing for adjustments (additions, modifications, expansions, adaptations) in line with new processes and requirements [44,45].

To assess the historical and cultural potential of riverside areas, it is essential to utilise insights from historical and architectural reference plans, which serve as independent urban planning documents. Developing specialised reference plans for settlements, especially with a focus on riverside territories, is a critical step in this process. These plans should identify both existing and lost architectural, historical, and cultural monuments, along with their protection zones and areas that might impact adjacent structures. These reference plans form the foundational framework for urban planning proposals aimed at restoring lost architectural monuments, religious buildings, and establishing connections with riverside landscapes, as well as creating tourist routes. In areas where archaeological zones and findings are located within riverside territories, project proposals should be developed for their preservation, museumisation, and thematic excursions. Additionally, based on an analysis of historical and cultural heritage materials in preserved localities along riversides, such as battle sites, lost tributaries, and ethnographic structures, a system of memorial markers should be established [43, p. 72].

Given that a river within an urban setting is a natural water ecosystem, that can exist in anthropogenically transformed or even degraded states, it is crucial to integrate a wide range of approaches to natural-hydrological, ecological, and green planning solutions alongside modern water technologies to achieve sustainable architectural and landscape organisation of urban riverside areas, as recommended in the methodological guidelines.

In this context, an adaptive model of "blue-green" infrastructure for riparian cities has been developed, combining urban technologies and planning solutions with the historical and cultural heritage of the area. Key elements in demand include rain gardens, green roofs, vertical gardens, parks with water management functions, and water basins designed to protect areas from flooding. Additionally, various innovative water technologies are recommended, from the "Sponge City" strategy to specialised approaches for rainwater runoff management and the protection of plant roots, among others [46, pp. 147-156].

This methodological approach to the architectural and landscape organisation of riverside areas in both urban and suburban zones offers a viable method to support the freshwater ecosystem of urban rivers. It also serves as an additional tool in the development of modern riverside planning projects, considering the impact of changing climatic conditions and the need for adaptation, while simultaneously uncovering the unique historical and cultural potential of these areas.

5.4. Method for determining water bodies of historical and cultural heritage

One of the methods for addressing the historical and cultural heritage of riverside territories is the author’s proposed method for determining water bodies of historical and cultural heritage.

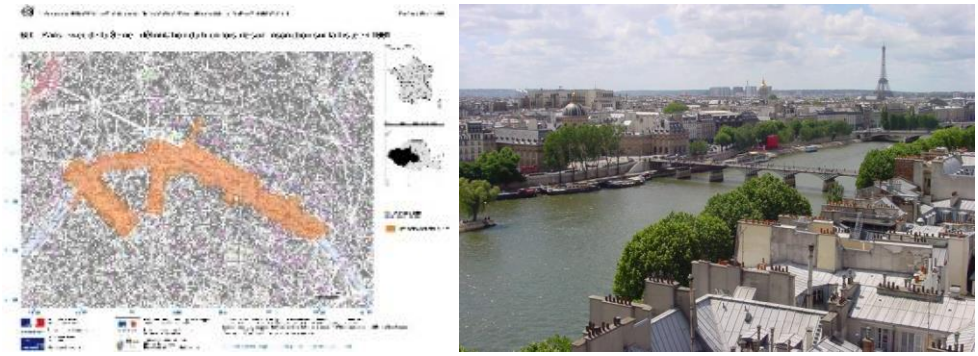
Recognising that the historical and cultural potential of coastal areas may, in the future, include natural water bodies, this methodological approach is developed to identify valuable properties of water bodies that fulfill the requirements of historical and cultural heritage. This approach aims to highlight the significance of such bodies by introducing a specific criterion the presence of a natural water body when assessing the historical and cultural potential of coastal areas [44, pp. 177-186, 45, pp. 151-160, 47, pp. 229-236].

The methodological approach to identifying natural water bodies of cultural heritage involves three stages: general preparation, analytical and search, and comparative analysis. The goal of applying this method is to provide a feedback mechanism in decision-making regarding the justification for elevating the "status" of a heritage object based on the presence of a natural water body, ranging from local to national levels, with the potential for achieving international recognition as a "UNESCO World Heritage Site" [44, p. 177, 48, pp. 406-412].

The proposed method is grounded in the typology of natural water bodies and their components as part of heritage objects (identified from the comprehensive list of UNESCO World Heritage Sites as of 2017).

A comparative analysis of the historical and cultural potential of the riverside areas of the Seine River in Paris (a UNESCO Heritage site, [49]) and the Dnipro River in Kyiv with both UNESCO Heritage status [50] and local protection demonstrates that the riparian territories of the Seine and Dnipro, which fall under protected status, are nearly identical in area and river length within the central parts of Paris and Kyiv (see Fig. 2, Fig. 3, and Table 1).

a)



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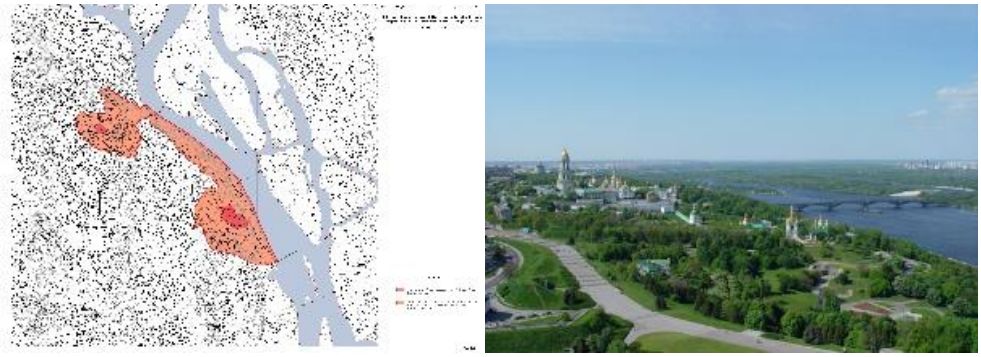

Fig. 2. City and the river: a) Paris and the Seine River, UNESCO Heritage list: the banks of the Seine in Paris (France, 1991). *Source:* [49]; b) Kyiv and the Dnipro River, 9th-10th century, UNESCO Heritage list: Saint-Sophia Cathedral and Related Monastic Buildings, Kyiv-Pechersk Lavra (Ukraine, 1990, modification 2005, 2021). *Source:* [50]

a) b)

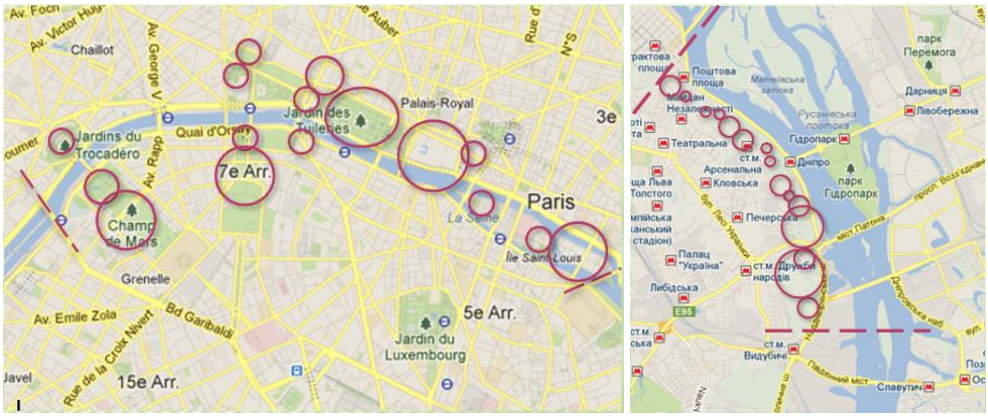

Fig. 3. Comparison of the historical and cultural potential of the riverside areas of Paris (UNESCO Heritage site) [49] and Kyiv (UNESCO Heritage site [50] with local protection status) (author's graphic)

In both cases, these two major rivers - the Seine in Paris and the Dnipro in Kyiv - played an undeniably crucial role in shaping the cities along their banks. However, these examples illustrate two slightly different approaches defining the boundaries of protected areas. In Paris, the banks of the Seine, along with historical buildings, are protected. In contrast, in Kyiv, two separate temple complexes have UNESCO protection status, but the Dnipro riverbed itself is not included within their protected zone.

A unique feature in Kyiv is the presence of a cluster of "green" islands on the Dnipro Trukhaniv, Venetsiansky, and Dolobetsky located in the city centre with untouched natural landscapes, which should be considered in future planning solutions (see Fig. 4).

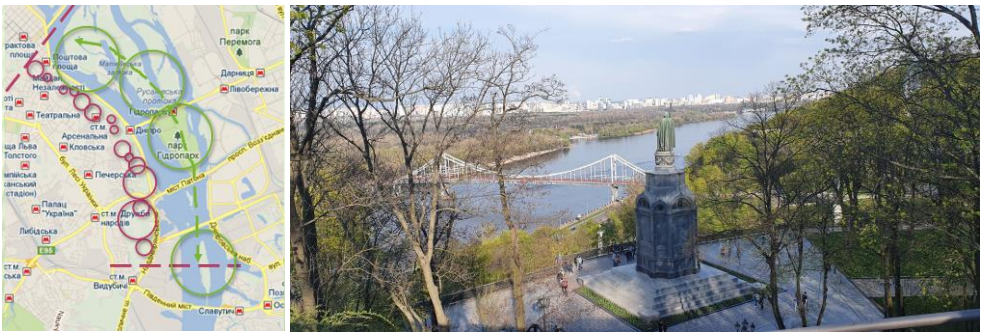

Fig. 4. Kyiv: the protected landscape zone of the riverine territories of the Dnipro, including the natural islands of the river valley, author's proposals, graphics and photo

The historical and cultural potential of the Dnipro River in Kyiv needs to be explored by considering the rich, unique, and diverse historical development of the right bank, along with the UNESCO Heritage sites and other significant architectural, historical, and cultural complexes. This should be done in connection with natural landscape elements, such as the group of natural islands in the central part of the historic city. Such an approach would enable a more comprehensive delineation of the boundaries of the historical landscape of the river

and its protection zone. To achieve this, a broader set of evaluation criteria should be applied, encompassing not only hydrological aspects but also historical and cultural heritage factors.

Table 1. Characteristics of the historical and cultural potential of riverside areas included in the UNESCO Heritage List. Source: own study based on [49,50]

No	City, river, country City population, mln Characteristic of the river, length, km; basin size, km^2	UNESCO Heritage List: title, year, link	Main historical-cultural heritage sites on riverbanks (including UNESCO Heritage List)	Length of protected river section in the city, km	Special features and notes
1	Paris, the Seine River, France				
	2,165,423 (2019) River in France 776 km long 78,650 km^2	Paris, the banks of the Seine between bridges: Pont de Bir-Hakeim and Pont de Sully Since 1991	Embankment between Pont de Bir Hakeim and Pont de Sully; Trocadero Gardens and Palace; Eiffel Tower, Champ de Mars, Military School; Esplanade des Invalides; Place de la Concorde, Rue Royale, Place de la Madeleine; Tuileries Garden, Louvre; Musée d'Orsay; School of Fine Arts Quarter; Île de la Cité, etc.	Approximately 6.3 km	The river is spatially integrated with major urban complexes along its course.
2	Kyiv, the Dnipro River, Ukraine				
	2,952,301 (2022) The third longest river in Europe. One of the major transboundary rivers of Europe. Originating in Russia it flows passing Belarus and Ukraine. 2,200 km long 504,000 km^2	Saint-Sophia Cathedral and Related Monastic Buildings, Kyiv-Pechersk Lavra Since 1990 Minor boundary modification: 2005, 2021; in danger since 2023	Saint-Sophia Cathedral, St. Andrew's Church, Mykhailivsky Golden-Domed Monastery, Historic Khreschatyk, Askold's Grave, Church of the Saviour at Berestove, Kyiv-Pechersk Lavra, Mystetskyi Arsenal National Art and Culture Museum Complex, etc.	Approximately 5 km	Contrast between the right and left banks of the Dnipro river; "Untouched nature" of islands within the Dnipro riverbed in the city's central area.

The effectiveness of applying this method lies in: a) identifying the unifying role of a natural water body in shaping historical and architectural zones, including the locations of existing and lost monuments of culture, history, archaeology, and architecture; b) supporting

the historically informed development of the city's "blue-green" infrastructure; c) enhancing the tourist appeal of coastal zones and districts. Thus, the method not only deepens the understanding of the role of natural water bodies in the historical development of local areas but also provides a practical approach to architectural and landscape practice yielding benefits both economically and socially.

The use of this method for determining water bodies of historical and cultural heritage aims to improve the methodological foundation for identifying anddeveloping protective complexes in Ukraine, enhancing national legislation in the field of heritage protection, and boosting the country's international reputation through the justified expansion of its list of UNESCO World Heritage Sites. This approach is also applicable to other countries, provided it aligns with their urban policies.

This methodological approach to the architectural and landscape organisation of riverside areas, both in urban centres and suburban zones, as discussed above, serves as a potential method for setting a modern urban planning “framework” for utilising river valleys. It aims to reveal the unique historical and cultural potential of these areas.

The central dilemma is as follows: either maintain the current urban planning policies regarding watercourses, including degraded or lost ones, or address a more complex yet highly relevant question contemporary urban planning: Should riverside areas be designated as independent design elements, combining them with natural restoration and support measures for aquatic ecosystems in urban spaces to enhance sustainable project outcomes? Leveraging the unique historical and cultural potential of a city’s riverside areas could enrich the urban environment, integrating both natural and historical-cultural dimensions. The author's arguments supporting this approach have been fully elaborated above.

6. Conclusions

In summary, it is essential to emphasize the significant role of rivers and their riverside areas in shaping the architectural and landscape layouts of cities and other settlements. This issue remains one of the most relevant in contemporary urban and landscape design practice.

The historical and cultural potential of a city's river network is understood as a combination of tangible and intangible cultural elements developed throughout the city's history. These elements hold multiple values (urban planning, natural landscape, aesthetic, etc.) that can enhance the city's planning structure and preserve its landscapes. It is proposed to evaluate the historical and cultural potential of riverine territories within the framework of a methodology for the architectural and planning organisation of these areas, which includes other components such as engineering and technological solutions, functional and planning requirements, landscape composition techniques, and information and digital management of riverine territories. Defining the historical and cultural potential of riverside areas using the proposed methodology (within specified boundaries, guided by defined principles) allows for the identification of these areas as unified territorial entities within historical cities. This approach lays the groundwork for comprehensive preservation and development, ensuring the integrity of the urban environment, and facilitating the architectural, spatial, and landscape-compositional integration of various monuments (including archaeological, aesthetic, ethnological, historical-architectural, scientific, natural-hydrological, or artistic sites) within the riverine boundaries. A specialised method – the method for determining water bodies of historical and cultural heritage, which introduces the criterion of a natural water body’s heritage status – can elevate the protection of these areas, potentially supporting efforts within the framework of UNESCO.

The unique historical and cultural significance of rivers in each city is vital for modern urban planning practices and should guide the restoration of natural riverbeds in urban areas, especially in the context of climate change adaptation. One potential strategy involves implementing "blue-green" infrastructure (using the author's adaptive model) to merge urban technologies and planning solutions with the historical and cultural heritage of these areas. This approach offers opportunities to develop urban policies that support natural watercourses in cities, enhance climate change resilience, and promote sustainable territorial development.

Future research could focus on validating the methodology across other historical riparian cities, such as Warsaw, Krakow, and Wroclaw in Poland. Additional research directions might include developing mechanisms for leveraging the underwater heritage of river valleys or exploring the historical and cultural potential of degraded or even lost rivers within urban contexts.

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