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From The Lagos Lagoon To The Yangtze River

Memory and Urban Identity in the Morphological Parameters and Architectural Narratives of Waterfront Settlements in Lagos and Nanjing



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Master Thesis

From the Lagos Lagoon to the Yangtze River:
*Memory, and Urban Identity in the Morphological Parameters
of Waterfront Settlements in Lagos and Nanjing*

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Abstract

Waterfront settlements in cities like Lagos, Nigeria, and Nanjing, China, represent a unique typology of urban form. They represent complex urban spaces that embody layered socio-economic conditions, ecology, history, governance models, and the constant negotiation between the forces of urban transformation. Setting themselves as the site where these cities began, the relevance and impact of these spaces on these rapidly-evolving cities is a topic of exploration and research to offer adaptable urban renewal models. This thesis investigates the evolution, transformation and transference of “urban identity” within these settlements from their origins to current conditions. Examining how different urban elements are fixed and contested, and their relevancies in these sites and their urban fabric today. Through a comparative analysis of the Lagos Lagoon (Lagos, Nigeria) and Yangtze River waterfront (Nanjing, China), this research utilises urban morphology analysis—specifically analyzing architectural typologies, settlement patterns, and spatial organization—to interpret the socio-cultural, political, and physical dimensions that shape these urban typologies. Taking the settlements around Lagos Lagoon and the Yangtze River as examples to study, this research brings attention to the complexities that have contributed to the urbanization trends and models in each city. Going beyond the physical urban morphological elements, this work would be analyzing the anthropological aspect that contribute to historical adaptation and collective experience.

The aim of this research is to provide a substantial background and framework to propose an urban village design project along the Lagos Lagoon, using the findings of this morphological analysis to form an adaptable and replicable model that prioritizes lived experience, and social continuity, rather than projecting a fixed architectural language. Moving away the focus from visual and economic obligations, the aim is to address pressing challenges in housing, infrastructure, and socio-economic integration without erasing or marginalizing the existing urban fabric. Rather than treating these settlements as sites of urban failure, this proposal approaches them as integratable urban forms. The model aims to reconcile new development with existing socio-cultural practices, creating adaptable spaces that can serve the needs of Lagos’s rapidly growing population. By creating essential infrastructure and housing solutions

that respect the socio-economic realities of the waterfront community, this approach aligns with the broader vision of an inclusive urban morphology.

Methodologically, this thesis employs a combination of archival research, comparative morphological analysis, and design-based inquiry. The first part being an investigation into the historical and spatial origins of the waterfront settlements. What roles did trade, migration, colonialism, or industrialisation play in shaping the early urban form? How do local cultural practices and traditional land-use systems influence their spatial logic? The second part would examine the built forms and the typologies that have emerged under the pressures of modernization, informality, displacement, and state-led development. What tensions exist between inherited morphology and the demands of contemporary urban planning? Mapping out how typological transitions signal adaptation or erasure. The third part would be the design proposition, to demonstrate how a contextual urban reconnection model provides a flexible, equitable alternative to top-down redevelopment.

This thesis ultimately aims to contribute to scholarly discourse on waterfront development by providing a comparative study that examines how urban identity is constructed and reconstructed in spaces shaped by historical influences and contemporary pressures. Through an exploration of memory, cultural identity, and urban morphology, this research expands on the understanding of waterfronts not as blank canvases for development but spaces that require sensitive and adaptive planning approaches. By contextualizing the socio-economic and environmental challenges of each waterfront, this study brings attention to examples of how cultural, social, historical and functional dimensions are handled in two different contexts.

In conclusion, this thesis provides a reference for understanding waterfront development in rapidly urbanising contexts, and the complexities of urbanization in ways that ensure that growth is aligned to the unique identities of these urban landscapes. Through emphasis on contextually-sensitive urban design and the integration of cultural and environmental considerations, exploration of memory, identity, and urban morphology, this research contributes to a more nuanced understanding of how waterfront cities and their transformations.

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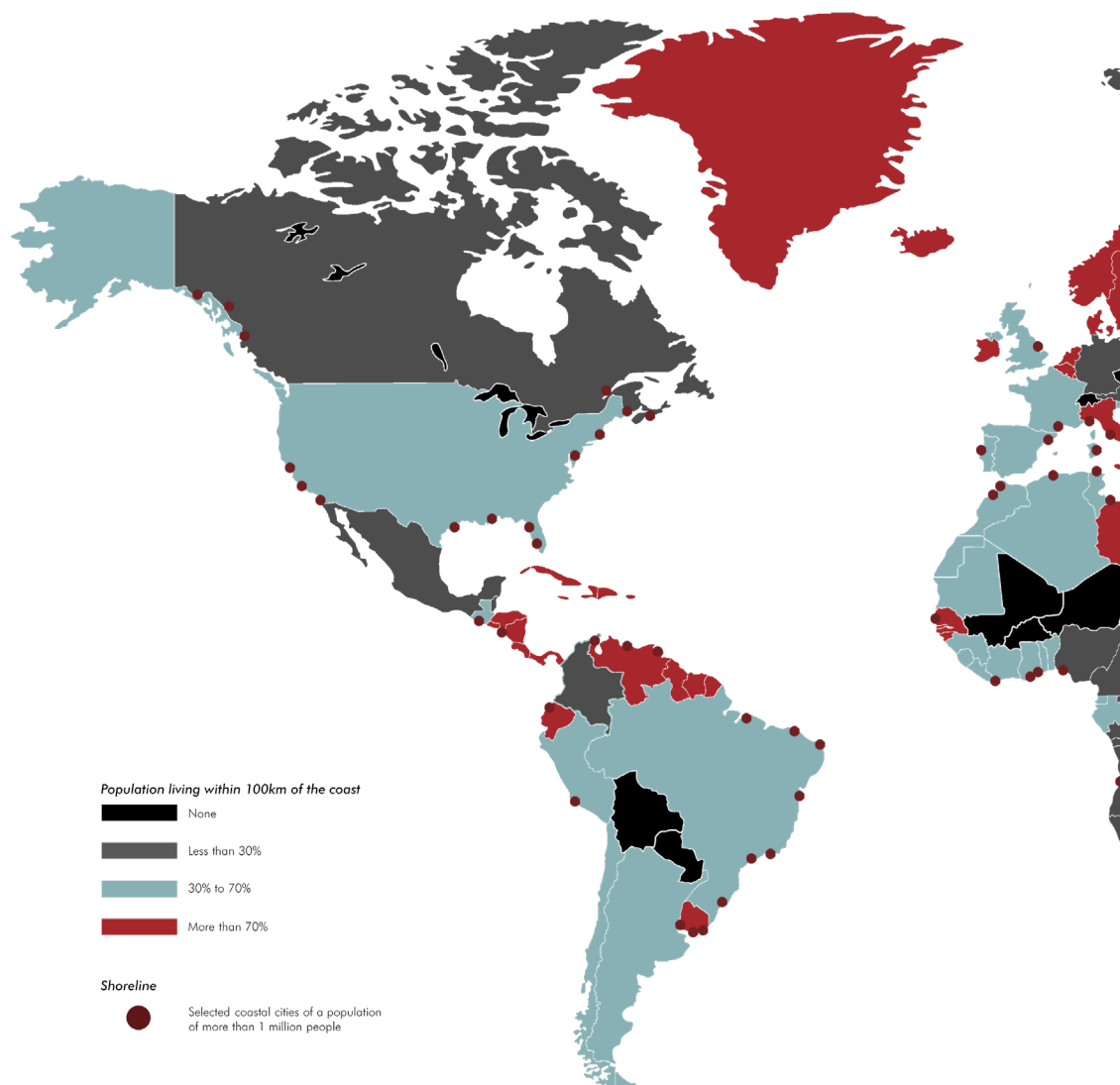
Memory, and Identity. What exactly does this mean in the context of urban forms that are constantly changing? And in such particular urban forms such as the waterfront settlements? Are these concepts realized in these urban forms or are just idealistic notions used to romanticise these spaces. Memory in this context of urban studies, is considered to be the lasting imprints and preservation of human narratives whether cultural, social or historical; persevering within the urban context. As cities undergo rapid transformation due to globalization, urbanization, and urgent demands of the modern day, questions arise: What has been deemed worth preserving in the face of urban evolution? Has the past even informed present-day urban experiences? And whose voices are heard in the transformation of urban landscapes? As we go along this research, the meaning of urban identity is also called into question. Should urban identity, the first impression and expression of the city's character, be relevant to the evolution of the city's urban morphology? Is the identity of urban form primarily dictated by history or can it be made – molded by contemporary needs and aspirations?

In their research “The Memory of Architecture and Its Continuity Behind the Urban Memory”, *Yuliia Batkova* and *Domenico Chizzoniti* explore this concept in the context of Warsaw, observing how architecture over time has been used as a medium of collective memory; with the erasure of certain influences to propagate a crafted image of a “new” urban identity. Forces within the urban form – such as political and social factors – create an interesting basis for establishing new ideologies, with selective memory guiding reconstruction efforts. (**Batkova and Chizzoniti 2021**) express how often, the race to craft a new urban identity with urban reconstructions excluded significant cultural narratives, such as the Jewish history of Warsaw. In Warsaw, the rebuilding was selective, focusing on Polish national identity while neglecting the city's Jewish heritage.

Aldo Rossi in his scholarship, also highlighted the relationship between physical structures and mental meaning in his theories. In his works, he continuously emphasized that urban forms are not just inhabited spaces but also defined by “memory”, with every urban fragment contributing to the overall narrative of human experience. He regarded memory as a critical element on both the architectural and urban scale, considering it an essential starting point that relates to historical and contemporary significance. He connected personal memory with the broader collective memory of society; that the urban form is a vessel through which these memories are transmitted and preserved.¹

Hence, we inquiry into the concept of memory in this type of urban space. As (Zejniliović, et al. 2024) explained, urban memory is not just about the preservation of physical structures; it is about how cities “remember” through their spaces, how people engage with these memories, and how urban forms are symbols of collective and sometimes competing memories (Zejniliović, et al. 2024, 82).

Diving deeper into the specificity of location and urban typology, memory and identity in urban form are multifaceted concepts in the study of urban morphology, especially when applied to rapidly-evolving cities. In the context of waterfront settlements, these ideas become even more critical as cities’ histories and cultural narratives are deeply linked with their waterfronts. Urban waterfronts have long been seen to be central to city development, acting as key connectors between the main urban fabric and the natural environment. It is a unique typology of urban form because the presence of a river or watercourse influences not just urban structure, but social structures by acting as both a physical and social boundary. Physical boundaries such as land use, landform, and settlement formation, while social boundaries consider population dynamics, education levels, income, and cultural backgrounds. This urban typology is crucial to consider as studies have shown that approximately (60% of the world’s population lives near coastlines, and this figure is expected to rise to 75% by 2020).



¹ Aldo Rossi's commentary in his seminal work, *The Architecture of the City*, 1982.

Waterfronts form an intersection where the human-made city meets ecology such as the water form it boundaries and the unique landforms. As settlements slowly manifested over time along these waterbodies, their relationship with them evolved. Initially, the interaction with these watercourses and the residents was heavily based on cultural and even spiritual concepts, but over time, human intervention began to reshape waterbanks to enhance safety and accessibility.

Waterfront areas play a vital role in the location and development of settlements as a result of their relevance to occupation, transportation, trade, agriculture, and overall sustenance. These areas often serve as focal points for commerce, cultural exchange, and governance, making them symbolic spaces where historical memory and contemporary identity intersect. As global urban centers like Lagos and Nanjing experience unprecedented urbanization, the challenge lies in understanding how these settlements have evolved and how the “memory” has changed over time as well. To understand better, we would be taking these two cities as case studies from similar and yet different regions and contexts.

The waterfronts of Lagos and Nanjing house several urban settlements that are rich with memory, as they have been central to the cities’ development over centuries, from their roles in trade and migration to their symbolic importance in cultural narratives.

For Lagos, the waterfront has long been a site of interaction between local, colonial, and global forces. The Lagos Lagoon has been not only an essential source of life for fishing communities that predated colonial rule but has also become the center stage for the dramatic transformations that have shaped Lagos into one of Africa’s largest cities. The influence of colonial urban planning, indigenous spatial practices, and rapid post-colonial urbanization can be seen in the architectural and spatial forms along the Lagoon, and these narratives rooted in this area reflect a confluence of identities – indigenous, colonial, and global – that continue to shape its development. As noted by (King 2004), cities like Lagos, which are positioned within global circuits of trade and culture, often experience profound tensions between preserving local identity and accommodating the demands of global modernity (King 2004, 34).

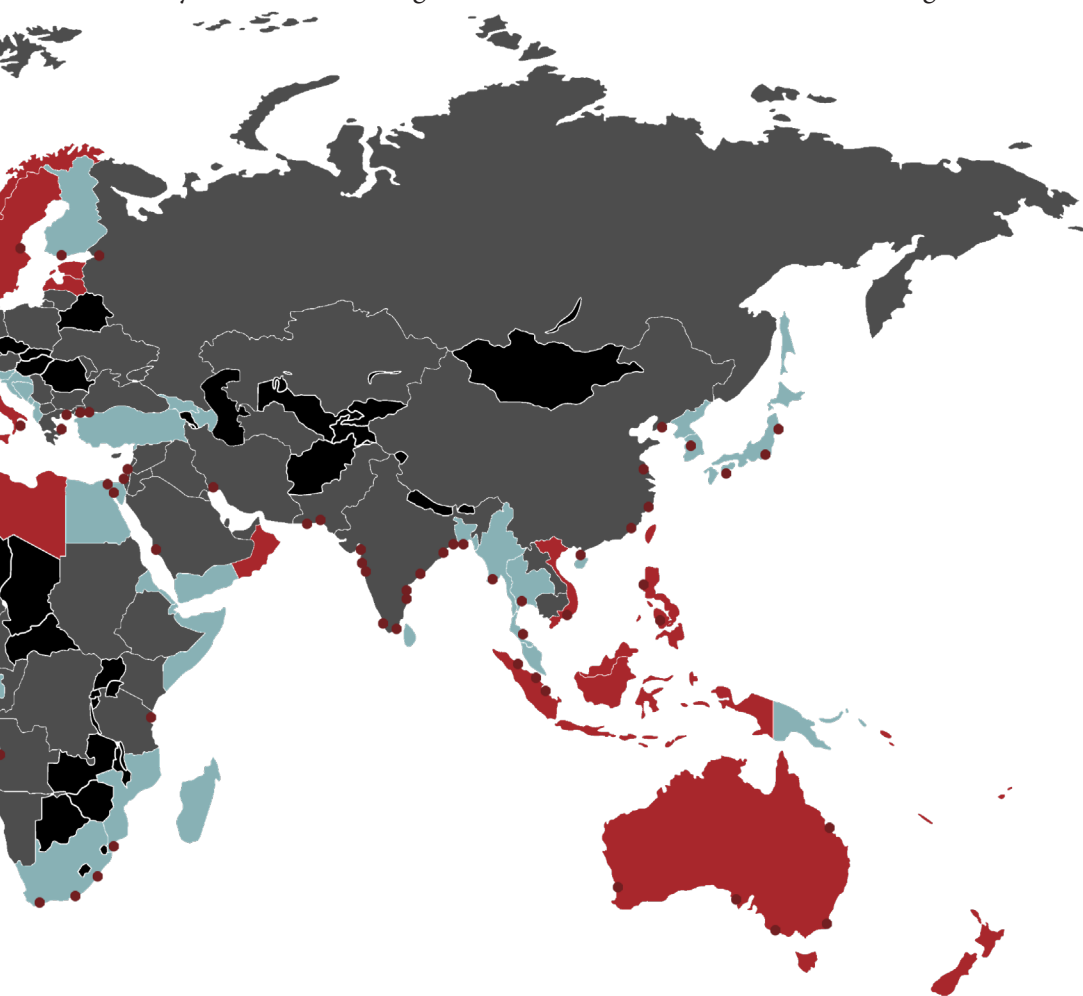


Fig. 1 Coastal Cities Statistics

Ripple effects: population and coastal regions. (n.d.). PRB. <https://www.prb.org/resources/ripple-effects-population-and-coastal-regions/>; redrawn by author.

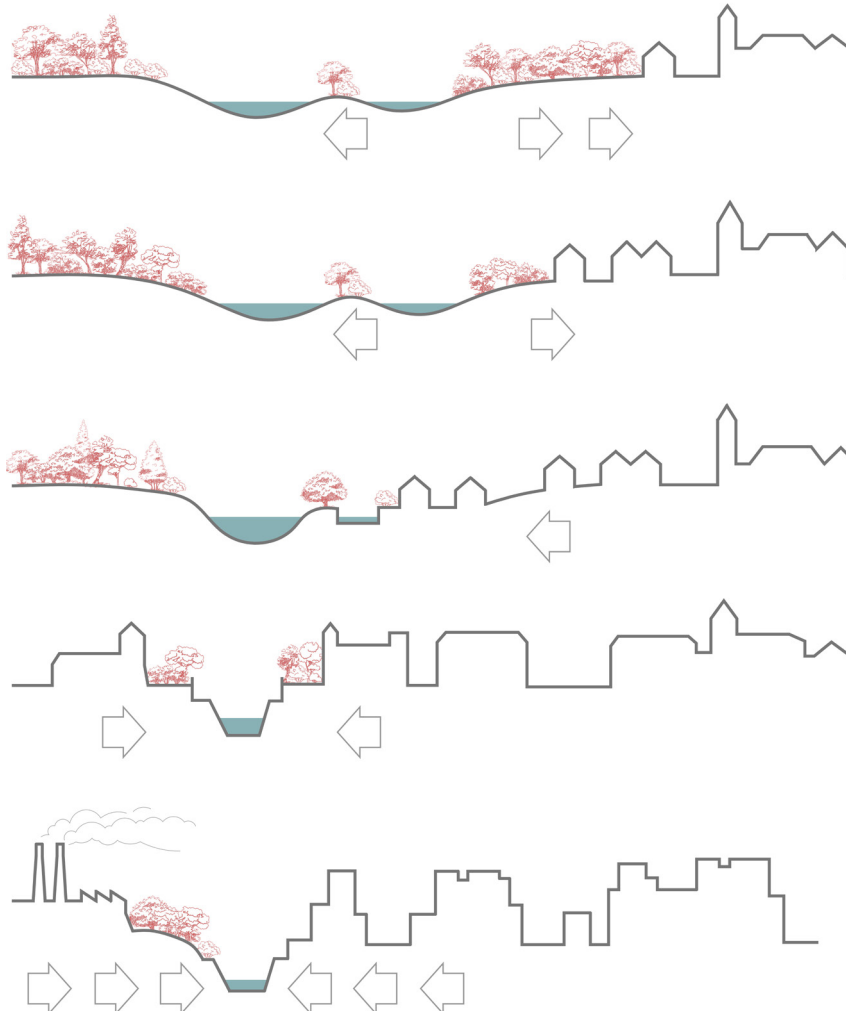


Fig. 2

The relationship between the city and a naturally-occurring water body
 Hradilová, I. (2013). Influence of urban waterfront appearance on public space functions. *Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis*, 60(8), 261–268. <https://doi.org/10.11118/actaun201260080261>; redrawn by author.

In a completely different region, Nanjing's Yangtze River waterfront represents a more "structured" evolution of urban morphology, so to speak; heavily influenced by its imperial past and modern industrialization. Nanjing, as one of China's ancient capitals, has historically been a city of great cultural and political significance, and this legacy is deeply rooted in its waterfront development. From its imperial history to its role in the industrialization campaigns of the communist era, the waterfront along the Yangtze River reflects a deliberate and often state-driven effort to balance the city's historical identity with modern urban needs (**Jong and Lu 2022**, 209). In this sense, Nanjing offers a counterpoint to Lagos, where urban memory is less about the preservation of indigenous or colonial identities and more about a state-sanctioned narrative of modernization.

A critical layer of this inquiry is the proliferation of informal settlements, particularly slums and shantytowns, in these waterfront areas. Socioeconomic disparities, further enhanced by classism, inadequate zoning regulations, and insufficient affordable housing, have led to the emergence of these marginalized spaces. These areas often exist outside the formal narrative of urban planning but remain integral to the socio-spatial fabric of cities like Lagos. Not only has their growth been explosive, but informal settlements challenge the material landscape and also introduce a "distorted rediscovery" of urban identity, where the city's formal efforts at modernization and development clash with the reality of spatial inequality (**Zejniliović, et al. 2024**, 85).

The informal waterfront settlements in Lagos expand as marginalized populations reclaim precarious spaces along the lagoon. These areas represent the tangible manifestation of exclusion, where government neglect and insufficient policy interventions have led to spatial and social fragmentation (Dovey 2010, 45). The presence of informal settlements within Lagos' waterfront points to broader urban dynamics, where the lack of effective urban governance and socio-spatial marginalization converge to produce a "competing memory" of the city's identity—one that contrasts starkly with the formal narratives of progress and development (Zejnilić, et al. 2024, 83). Nanjing, on the other hand, showcase stricter regulatory frameworks and redevelopment strategies, integrating some of its informal spaces within the broader scope of urban modernization. However, even here, informal settlements challenge the coherence of Nanjing's carefully constructed urban identity, revealing the gaps in formal planning approaches (Jong and Lu 2022, 213).

The idea of urban identity is important to explore here as it is central to understanding the spatial evolution of these waterfront settlements. Referring to the character or distinctiveness of a city, shaped by its history, culture, and social dynamics, it is expressed through the built environment – the architecture, urban form, and public spaces that define a city's sense of place. As (Dovey 2010) states, urban identity is not a static entity but a fluid and dynamic expression of a city's character, constantly being reshaped by the forces of urbanization, globalization, and cultural exchange (Dovey 2010, 60). The waterfronts of Lagos and Nanjing, therefore, can be rightly deemed as center stages where these identities are performed, negotiated, and sometimes contested.

In Lagos, the notion of urban identity is especially complex, given the city's rapid transformation from a colonial port to a sprawling metropolis. The Lagoon waterfront is illustrative of this transformation, where indigenous architectural forms and spatial practices co-exist alongside colonial-era structures and modern high-rises. This layering of identities is reflective of the city's broader struggle to define itself amidst the pressures of globalization. As (Chang 2005) argues, that in cities undergoing rapid modernization, the question of urban identity often becomes entangled with issues of place-making, where the desire to project a modern image can conflict with the preservation of historical and cultural memory (Chang 2005, 250). Lagos, in this sense, is a city constantly negotiating its

identity, where the waterfront serves as both a symbol of its past and a frontier for its future development.

Nanjing presents a more "intentional" approach to cultivating its urban identity, one that is strategically tied to its historical legacy. As a former imperial capital, Nanjing's identity is closely linked to its role as a center of Chinese culture and politics. The Yangtze River waterfront has been central to this identity, serving not only as a site of economic activity but also as a symbol of the city's historical continuity. The preservation of historical sites along the waterfront, alongside the development of modern infrastructure, reflects an attempt to maintain this identity in the face of modernization. As (Jong and Lu 2022) note, Nanjing's waterfront architecture is rich with historical and cultural symbols, revealing a deliberate effort to integrate the city's past with its present (Jong and Lu 2022, 215). This stands in contrast to Lagos, where the waterfront has been more of a site for contestation, with competing identities and narratives vying for space. The morphological continuity of these waterfront settlements is thus a reflection of the broader dynamics of memory and identity at play. In both Lagos and Nanjing, the waterfronts have undergone significant morphological changes, shaped by historical events, cultural practices, and modern urbanization pressures. However, the trajectories of these changes have been quite different, reflecting the unique histories and identities of each city.

The morphological transformation of the Lagos Lagoon waterfront can be seen as part of the city's broader pattern of rapid and often chaotic urban growth. The expansion of informal settlements, the encroachment of commercial developments, and the pressure on infrastructure have all contributed to a fragmented urban morphology, where historical continuity is often sacrificed for the sake of functionality. As (Neill 2004) argues, in cities experiencing rapid urbanization, there is often a tension between preserving historical identity and accommodating the needs of a growing population (Neill 2004, 36). This tension is evident in Lagos, where the waterfront is both a site of cultural memory and a space under immense pressure from the forces of modern development.

The divergent paths taken by Lagos and Nanjing in the development of their waterfronts and settlement patterns highlight crucial questions about the role of memory and identity in shaping urban morphology through architecture. In each city, the waterfront acts as a nexus where built form, historical narrative, and cultural identity intersect.

The waterfronts in Lagos and Nanjing can be seen as living archives, where historical memory is captured not only in preserved structures but also in the unique morphologies that reflect each city's identity. By comparing the architecture and urban forms of these waterfront areas, we can hopefully illuminate the broader processes of urban transformation. Through the research, we can observe how cities can evolve through its architecture and urban morphology and what connections to their historical identities remain; in terms of the role of human lived experiences in these urban forms, and the relevances of social, economic and spatial dynamics.

The Tangibility of Urban Identity

Urban identity, a concept frequently explored by architecture and urban studies scholars, has been a subject of discourse on what it means in regards to urban space and form; especially on the concept of its “tangibility”. Its ability to manifest itself in tangible and intangible ways makes it a complex subject of examination. The tangible aspects of urban identity are often more readily recognizable – the architecture, street layouts, monuments, and public spaces that form the physical fabric of a city.

However, the intangible elements of identity, such as cultural memory, collective experience, and social practices, are harder to quantify but are equally significant. Understanding how these two dimensions of identity interact within urban morphology is critical to analyzing cities like Lagos and Nanjing, where waterfronts serve as key sites for the expression of both tangible and intangible forms of identity. In his works, **Aldo Rossi** also touches on this; introducing the concept of “permanence,” referring to the lasting elements within cities that endure over time,

often through repeated use and reinterpretation.

These urban elements carry with them the memory of the city and serve as anchors for both personal and collective identity. Also, as **(Dovey 2010)** suggests, urban spaces are constantly “becoming” places, shaped not only by physical structures but also by the lived experiences, memories, and practices of the people who inhabit them **(Dovey 2010, 15)**. This idea points to the intangibility of urban identity – the ways in which people relate to and interpret the built environment based on their personal and collective histories.

In this sense, urban identity is not merely the sum of a city's physical features but also the narratives and memories that imbue these spaces with meaning. For instance, the Lagos Lagoon may not hold the same significance for every resident or visitor; for some, it represents a site of cultural memory linked to indigenous practices and colonial history, while for others, it may be seen primarily as a zone of economic activity.



Fig. 3
Qinhuai River Area, Nanjing
Credit: Yang Lei/Xinhua/Alamy Live News. Alamy Images.

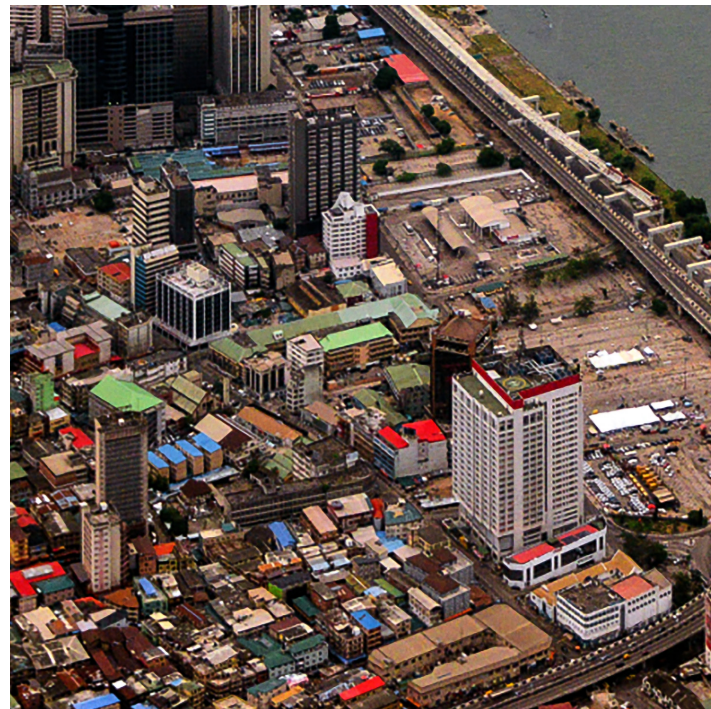


Fig. 4
Lagos Lagoon Area, Nigeria.
Afrodeemption, P. B. (n.d.). Inside Africa – Afrodeemption. <https://afrodeemption.com/>

Fig. 5
Nanjing Confucius Temple.
mindtrip. (n.d.). Mindtrip. [https://
mindtrip.ai/attraction/nanjing-jiangsu/nanjing-confucius-temple-qinhuai-river-scenic-area/](https://mindtrip.ai/attraction/nanjing-jiangsu/nanjing-confucius-temple-qinhuai-river-scenic-area/)



The intangibility of urban identity is also evident in the social and cultural practices that contribute to a city's sense of place. As (Zejnilić, et al. 2024) argue, memory and place-making are intertwined processes, where competing memories and the act of forgetting shape how cities evolve over time (Zejnilić, et al. 2024, 84). In many Eastern European cities, for example, memory is often contested, with different groups vying to assert their version of history through the urban landscape. Similarly, in Lagos and Nanjing, the waterfronts are sites where different narratives – colonial, indigenous, modern, and global – intersect and sometimes clash. These intangible layers of memory and meaning can be just as important in shaping urban identity as the physical structures themselves.

The tangible aspects of urban identity are more straightforwardly linked to the material culture of a city – its architecture, urban design, and spatial organization. The waterfronts of Lagos and Nanjing are both rich in tangible symbols of urban identity, though they reflect very different histories and development trajectories. The built environment along the Lagos Lagoon is characterized largely by its indigenous, colonial, and modern influences, and less by formal planning despite the efforts of governances. This has resulted in a fragmented and dynamic urban morphology, where different architectural styles and spatial practices coexist as an organic spatial entity. The tangible identity of Lagos, therefore, is one of diversity and constant evolution, where different layers of history and modernity are visible in the physical form of the city.

In Nanjing, by contrast, the tangible elements of urban identity are more deliberately curated, reflecting the city's imperial history and its role in China's modernization efforts. As (Jong and Lu 2022) note, the waterfront architecture along the Yangtze River is rich with historical and cultural symbols, many of which have been preserved or incorporated into modern developments (Jong and Lu 2022, 213). This represents a more structured approach to the "branding" of urban identity, where tangible elements of the city's past are integrated into its contemporary urban form. In this way, the waterfront serves as a physical manifestation of Nanjing's historical continuity, with government policies and urban planning efforts working to ensure that its history remains the city's identity and is preserved in its built environment.

The tension between the intangible and tangible aspects of urban identity raises important questions about how cities evolve and the role that memory plays in this process. (King 2004) argues that in the context of global cities, the pressures of modernization often result in the minimization of local identity, as global architectural forms and planning models are imposed on cities without regard for their historical and cultural context (King 2004, 57). This tension is particularly visible in Lagos, where rapid urbanization has often led to the displacement of local architectural forms, materiality and spatial practices in favor of more functional, globally-oriented developments. The Lagoon waterfront, in particular, has seen a shift from its historical role as a center of indigenous and colonial exchange to a zone of commercial and infrastructural expansion. This shift reflects a broader trend in global cities, where the tangible aspects of urban identity – the built environment – are often altered in ways that obscure or even erase the intangible elements of memory and place. In Nanjing, however, the relationship between the tangible and intangible aspects of identity is more carefully managed. The city's waterfront development has been shaped by a deliberate effort to balance modernization with the preservation of historical memory. This reflects a broader trend in Chinese urban planning, where the state plays a significant role in mediating the tension between development and preservation. As (Chang 2005) notes, in many Asian cities, the question of urban identity is often framed in terms of the need to balance the demands of modernization with the desire to maintain cultural continuity (Chang 2005, 251).

In Nanjing, this balance is evident in the preservation and restoration of historical sites along the waterfront, even as new developments have transformed the city's skyline.

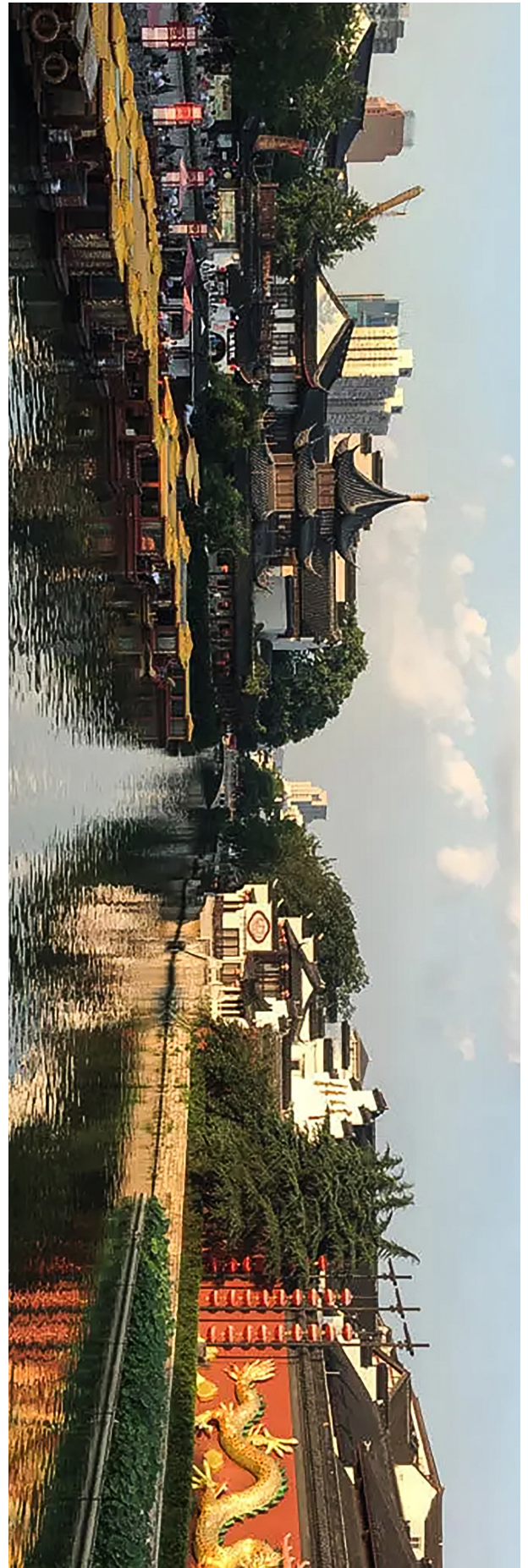


Fig. 6
Nanjing, China.
Zhuanlan Zhihu. (n.d.). Zhihu. Retrieved July 6, 2025, from <https://zhuanlan.zhihu.com/p/120161755>

Ultimately, the inquiry into the tangibility and intangibility of urban identity reveals that both dimensions are critical to understanding the approaches to revitalisation of these waterfront settlements in cities like Lagos and Nanjing. While the physical structures and spatial forms of these cities provide a tangible record of their histories, the intangible elements – the memories, narratives, and social practices that give these spaces meaning – are equally important in shaping how urban identity is constructed and experienced. The challenge for both cities on prioritizing between these two dimensions requires finding adept ways to manage the inevitable tensions as these cities continue to evolve in response to the pressures of urbanization, globalization, and cultural change.

For Lagos, this tension is perhaps more pronounced, as the city's rapid growth has often come at the expense of preserving cultural elements, and lived experiences contained in these spaces. The Lagoon waterfront, once a site of rich cultural exchange and memory, has become a contested space where different narratives of identity struggle for dominance. Nanjing, on the other hand, with the state's more active role in shaping urban development, has deliberate integration of tangible and intangible elements of identity, particularly along the Yangtze River waterfront; its smaller villages and river settlements having evolved in ways that highlights their physical form and cultural, social, and historical dimensions.

Urban Morphology, Identity, and Place-Making

The concept of urban identity emerges a response to the constant morphological change of an urban form. As *Anthony D. King (2004)* argues, urban forms are not static but are continuously reshaped by global cultures and the flows of capital, people, and ideas. In the context of Lagos and Nanjing, the waterfronts represent spaces where local identity interacts with global forces. The thesis addresses how these urban waterfronts, through processes of gentrification, slum development, and preservation, serve as symbols of memory and identity, bridging the past with the present in urban landscapes.

In examining the waterfronts of Lagos Lagoon and Nanjing's Yangtze River, we reference on *Jong and Lu's (2022)* analysis of city branding and regional identity, which explores how historical and cultural symbols in urban architecture reveal deeper narratives of identity. The redevelopment of waterfronts often involves the negotiation between preserving cultural heritage and accommodating modern economic demands. The processes through which city governances and authorities, as well as other urban shareholders manage these spaces reflect broader questions of what is taken into consideration to brand urban identities and what aspects of history and memory are prioritized. (*Dovey 2010*) emphasizes the role of architecture and place-making in constructing urban identity, highlighting that places become meaningful through their historical and social associations. As urban waterfronts evolve, traces of their past, whether as trade hubs or informal settlements, manifest in ways that influence the collective perception and lived experiences, influencing how occupants and visitors navigate, interpret, and attach meaning to spatial elements such as nodes, streets, landmarks, and even the water bodies themselves.

Fig. 7
The New Lagos City - Eko Atlantic Project, Lagos.
A new coastal city built on reclaimed land from the sea.
(n.d.). Haskoning. <https://www.haskoning.com/en/projects/a-new-coastal-city-built-on-reclaimed-land-from-the-sea>



Theoretical Constructs of Space and Identity

The notion of space as a product of social relations is central to *Lefebvre's (1991)* framework. According to Lefebvre, space is not merely a physical entity but is shaped by social practices and power dynamics. Applying Lefebvre's theory to the context of waterfront spaces and settlements in Lagos and Nanjing, it supports this school of thought as they have been socially produced through colonialism, industrialization, and post-colonial urban development. For instance, the colonial imposition of zoning in Lagos's waterfront areas, such as the European and Indigenous residential segregation, represents a form of spatial production that has long-term effects on the morphology and socio-economic dynamics of the city (*King 2004, 67*). That said, the historical significance of the Yangtze River as both a strategic and economic asset has similarly influenced the spatial production of the city. As (*Y. Chen 2016*) outlines, the expansion of Nanjing into a larger city region along the Yangtze River was driven by both the city's historical legacy as a capital and its evolving role as an industrial hub. The transformation of the riverfront from an imperial stronghold to a modern economic zone illustrates how power structures shape the production of urban space. Lefebvre's framework also helps to understand how memory is evident in the built environment. The stilt housing structures of Lagos's waterfront informal settlements and the preserved water towns along the Yangtze are exemplary of physical entities shaped by social practices, existing as storehouses of collective memory. These structures reflect the socio-economic struggles of their inhabitants and serve as visual markers of a city's historical and cultural identity.

Memory and the Morphological Continuity of Waterfronts

Memory is crucial to the continuity of urban forms, particularly in waterfront settlements that have long functioned as essential hubs of trade and communication. (*Chang 2005*) explores how memory and identity are imagined in urban spaces, particularly in Asian cities, which parallels the experience of Nanjing's Yangtze River waterfront. The morphology of waterfronts often retains elements of past uses, even as cities modernize. In Nanjing, the traditional water towns along the Yangtze River are a prime example of how architectural typologies

endure as symbols of cultural memory, despite the pressures of modernization (*Jong & Lu, 2022, p. 210*).

Similarly, the waterfront in Lagos has long been a space of opportunity and exclusion. The informal settlements along the Lagos Lagoon, such as Makoko, are sites where memory and survival intersect. As *Dovey (2010)* argues, these settlements are not just spaces of marginalization but are also places of resilience, where residents create meaningful relationships with their environment despite economic hardships. The morphological continuity of these spaces, from their unique architecture to their organic street patterns, reflects a deep connection to the lagoon and the cultural memory of its inhabitants.

The Global Forces and Local Identities

Both Lagos and Nanjing's waterfronts have been shaped by global economic and cultural forces; from colonial trade routes to modern-day globalization. *King (2004)* and *Jong and Lu (2022)* emphasize that the interaction between global and local forces creates multi-layered urban identity, where traditional architectural forms coexist with modern developments.

This tension is particularly evident in the redevelopment of waterfronts, where the preservation of cultural heritage often clashes with the demands of urban expansion and economic growth. In Nanjing, the Yangtze River waterfront has undergone significant transformations as part of China's broader efforts to integrate into the global economy. As *Chen (2016)* notes, the development of large-scale infrastructure along the river has facilitated the city's industrial growth, but it has also led to the displacement of traditional water towns. These changes reflect a broader trend in waterfront redevelopment, where economic imperatives often outweigh cultural preservation efforts.

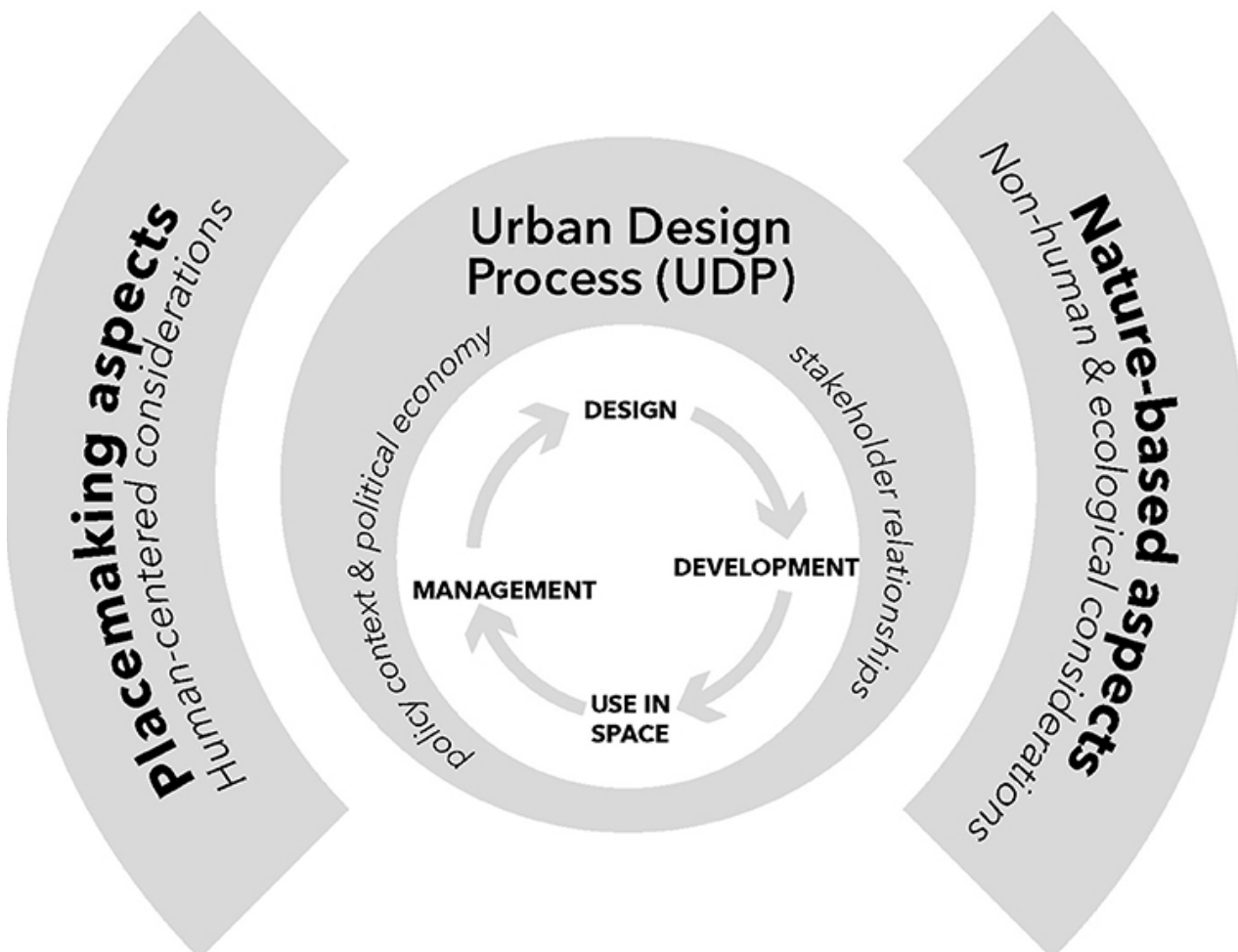
By contrast, Lagos's waterfront has seen a different kind of global-local interaction. The informal settlements along the lagoon, while often viewed as symbols of urban poverty, are also spaces where global forces—such as migration and international aid—interact with local survival strategies. As *Whiteman (2012)* details, the cultural and historical significance of Lagos's waterfront is strongly connected to its role as a gateway for trade and migration, both during the colonial period and in the present day.

Place-Making, Preservation, and Development

The preservation of cultural heritage in waterfront areas is a contentious issue, as cities must balance the need for economic development with the desire to maintain historical continuity. *Zejnilić, et al. (2024)* highlight the complexities of placemaking in urban spaces, where competing memories and narratives often influence which aspects of the past are preserved. In both Lagos and Nanjing, the waterfronts are spaces where the struggle between preservation and development is particularly visible.

In Nanjing, efforts to preserve the traditional water towns along the Yangtze River have been met with mixed success. As *Liu (2010)* notes, the regeneration of vernacular architecture in these towns has helped to maintain a sense of historical continuity, but it has also faced challenges from modernization pressures. Similarly, in Lagos, the regeneration of the waterfront has been fraught with difficulties, as informal settlements like Makoko resist government efforts to formalize or redevelop the area (*Whiteman 2012, 143*).

Fig. 9
Urban design process dimensions.
Boros, J., & Mahmoud, I. (2021). *Urban Design and the role of Placemaking in mainstreaming Nature-Based Solutions. Learning from the Biblioteca degli Alberi case Study in Milan.*





The Lagos Lagoon

The Lagos Lagoon is a water body in the heart of Lagos metropolis. Lagos Lagoon cuts across the southern part of the metropolis, linking the Atlantic Ocean (in the west and south) and Lekki Lagoon (in the east). It is about 6354.708 km² in area and 285 km in perimeter. (Okusipe 2000) discussed how the lagoon provides places of abode and recreation, means of livelihood and transport, but is also a “dumpsite” for residential and industrial discharges, and a natural “shock absorber” to balance forces within the natural ecological system. The Lagos Lagoon consists of three main segments – Lagos Harbour, the Metropolitan end, and Epe Division segments.

Historical Context of Lagos Lagoon and Its Role in Shaping Waterfront Settlement-

Lagos Lagoon is a significant geographic feature of the city, serving as both a physical and cultural boundary. It has been central to the urbanization of Lagos, shaping the expansion and settlement patterns of the city throughout its history. The lagoon forms a boundary between the mainland and Lagos Island, influencing settlement types and urban morphologies (Duerksen 2018).

Historically, waterfront settlements along the lagoon were key to trade and economic activities, as Lagos developed from a small *entrepôt* into one of Africa’s largest cities. The origin of Lagos’ settlements is tied to the Awori people, who are believed to have settled near the lagoon after fleeing internal conflict. Their settlements grew around the lagoon and nearby islands like Iddo Island and Lagos Island. These early settlements were unique for their adaptation to the lagoon’s geography, where trade routes formed along the water, connecting Lagos to other West African regions like Benin and Allada. These early settlements were unique for their adaptation to the lagoon’s geography, where trade routes formed along the water, connecting Lagos to other West African regions like Benin and Allada (Olukoju, 2019).

The early houses built by these settlers were designed to adapt to the natural conditions, such as frequent flooding and swampy terrain, typical of waterfront areas. The Lagos Lagoon has been central to the socio-economic and morphological evolution of Lagos as a waterfront settlement. From the 16th century through the 19th century, the lagoon served as a vital inland waterway, facilitating both local and trans-Atlantic trade. This geographical asset allowed Lagos to emerge as a key player on the “Slave Coast,”

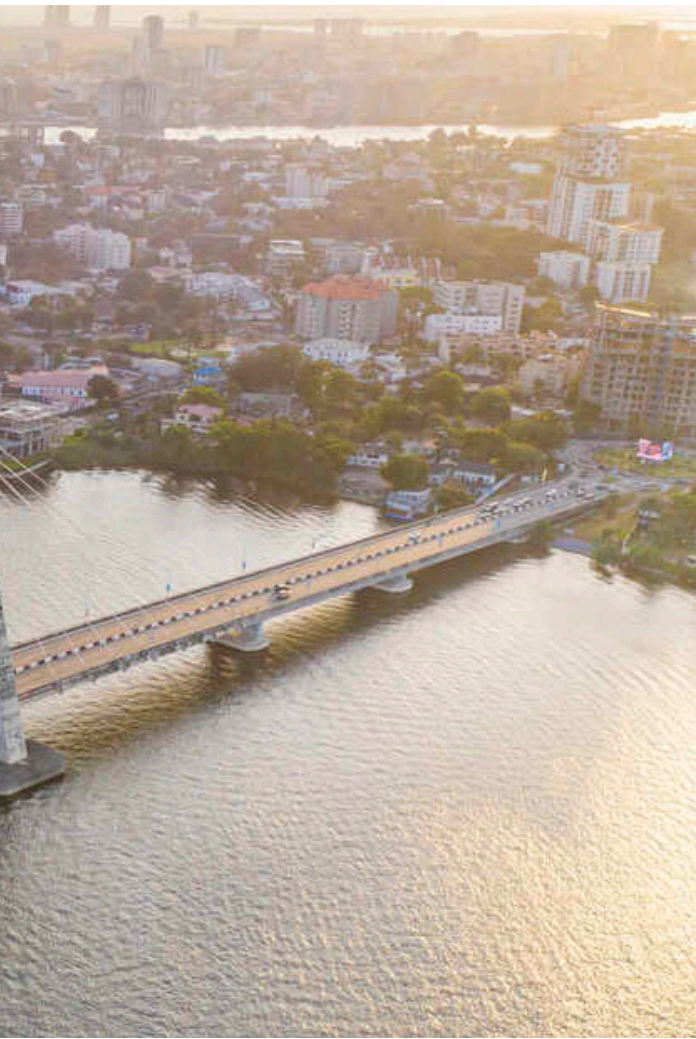


Fig. 10

Lagos Lagoon environs.

Lagos Nigeria Premium Images – Browse 138 stock photos, vectors, and video. (n.d.). Adobe Stock. <https://stock.adobe.com/mt/search/premium?k=lagos+nigeria>

a region that extended from the River Volta to the Niger Delta. The lagoon's system of creeks and waterways provided continuous communication routes over 400 miles of coastline, essential for both indigenous and European traders. This strategic importance extended beyond trade, as the lagoon and its surrounding watersheds shaped the political landscape of the region. The Benin Empire exerted influence over Lagos during this period, establishing it as a military and commercial base. By controlling the lagoon, Benin sought to dominate both the economic and political spheres of the region, using Lagos as a means to access the resources of the Yoruba states further inland. Lagos' status as a tributary state to Benin ensured that it remained a center of regional power well into the 18th century (Law 1983).

Urban and Economic Development

As the British colonized Lagos in the mid-19th century, the lagoon and other water bodies remained strategic assets for trade and urban expansion. The British developed infrastructure around these water features to facilitate the export of agricultural products like palm oil. Throughout the colonial period, waterfront settlements were often segregated, with Europeans developing

more planned areas while African communities continued to live in informal settlements along the lagoon's edges. The colonial government implemented measures to reshape the waterfront for their economic benefits, such as opening harbor channels and constructing new residential areas for colonial administrators and elite African merchants (Duerksen, 2018).

Robin Law's detailed study of the historical development of Lagos highlights the importance of the lagoon as a medium for economic interaction. In pre-colonial West Africa, the absence of overland transport systems like wheeled vehicles and pack animals, which were largely unavailable due to environmental factors such as trypanosomiasis, made waterborne trade along the lagoon indispensable for the movement of goods and people (Law, 1983). Canoe-based trade linked the coastal settlements of the Yoruba and other ethnic groups, with Lagos situated strategically at a permanent outlet from the lagoon to the Atlantic Ocean (Law, 1983). Lagos' status as a commerce hub was bolstered by its proximity to both inland and Atlantic trade routes. The lagoon allowed traders to transport commodities like textiles, salt, and, crucially, enslaved people from the Yoruba hinterlands, particularly from Ijebu and Oyo, to European traders stationed along the coast. European accounts, particularly those from the Dutch and Portuguese, reveal that Lagos traders played a central role in these exchanges, capitalizing on their advantageous position between the inland trade routes and the Atlantic slave trade (Law, 1983).

In the late 17th and early 18th centuries, Lagos was described as bustling with trading canoes from neighboring regions, reinforcing its role as a major port for the regional and international economy (Duerksen, 2018). The lagoon's social and economic dynamics extend beyond local trade to form part of a broader historical narrative of regional and international interactions. In the pre-colonial and colonial periods, Lagos' strategic location along the lagoon facilitated a flourishing trade in goods, with the lagoon serving as a transport route between Lagos and other regional trading centers like Ijebu (Ajayi, Soyinka-Airewele and Edewor 2019). These interactions helped Lagos grow into one of West Africa's most important commercial hubs, with settlements like Makoko becoming integral parts of the city's evolving urban fabric.

Settlement Patterns and Waterfront Communities

As trade routes through the lagoon continued to flourish, they also impacted the urban morphology of Lagos. Settlements grew around the lagoon's navigable channels, forming dense, interconnected urban clusters. These early waterfront settlements were shaped by their relationship with the water, with land use patterns centered on trade and transport needs. The spatial dynamics of the city were thus closely tied to the rhythms of the lagoon's traffic and the demands of both local and international trade (**Law 1983**).

The enduring influence of the Lagos Lagoon on the city's development highlights the role of waterways in shaping not only economic activities but also the identity and structure of urban settlements. As Lagos expanded, the lagoon remained a lifeline for its growth, facilitating the expansion of the urban fabric along its shores and anchoring the city's identity as a key waterfront settlement in West Africa. *Duerksen* explains that the proximity to the lagoon influenced the types of houses and layouts in Lagos. Elite houses, particularly those built during the late 19th and early 20th centuries, were constructed with views of the lagoon, signifying wealth and status.

Housing development also reflected the political economy of land, as homes closer to the lagoon were often reserved for the elite, while informal settlements like Makoko, built directly on the lagoon, housed marginalized communities. Makoko, a floating slum, became one of the most iconic waterfront settlements in Lagos. Despite the harsh living conditions, these settlements provided affordable housing and access to fishing, a key livelihood supported by the lagoon.

Environmental and Social Challenges

Pressures were placed on waterfront settlements due to rapid population growth in Lagos, which exacerbated housing shortages and pushed more people to settle near the lagoon, even in flood-prone areas. The growth of settlements along the lagoon often leads to environmental degradation, including pollution from human activities and solid waste disposal, which has worsened the water quality of the lagoon.

Additionally, climate change poses significant risks to lagoon-front communities, as rising sea levels and increased flooding threaten these low-lying areas. This particularly affects informal waterfront settlements like Makoko, which lack adequate infrastructure for flood prevention.

Postcolonial Changes and Housing Policies

After Nigeria gained independence in 1960, Lagos continued to expand around its waterfronts, with both government and private developers eyeing the lagoon areas for real estate development. However, much of the postcolonial housing development was focused on creating spaces for the wealthy, leaving informal settlements in areas like the lagoon to continue growing in poor conditions.

The "slum clearance schemes" of the 20th century displaced many lagoon-front residents, further pushing them to marginalized, flood-prone areas. Post-independence, houses near the lagoon became symbols of power and wealth, and many political elites invested in waterfront properties as part of the broader gentrification process that excluded poorer populations. (**Duerksen, 2018**) further expatiates on the uncertain future of Lagos' waterfront settlements, particularly in light of rising waters and ongoing urbanization.

Waterfront settlements like Makoko remain vulnerable, and there are concerns about their displacement as the city continues to develop. The population of these towns has increased substantially since 1962, although statistics on the settlement and its communities are vague, as the area appears as a near-blank void on maps, with no information about structures, density, or roads. This makes it nearly hard to effectively track land ownership, design infrastructure, optimize services, prepare for emergencies, or support development.

In short, not being on the map implies that authorities never allocate appropriate resources to Makoko. The settlements' proximity to the lagoon enabled its residents to engage in fishing, trading, and sand mining, sustaining the community economically. The lagoon not only provided resources but also shaped the community's structure. As *Ajayi, Soyinka-Airewele, and Edewor* highlight, the geographical location of Makoko and other lagoon-side settlements meant that these communities often developed informal land tenure systems, as they expanded into regions not formally recognized by the government (**Ajayi, Soyinka-Airewele and Edewor, 2019**).

The lack of formalized land rights has allowed these communities to flourish informally and independently but has also exposed them to frequent evictions and insecurity, especially as Lagos' urbanization pressures grew in the late 20th and early 21st centuries.



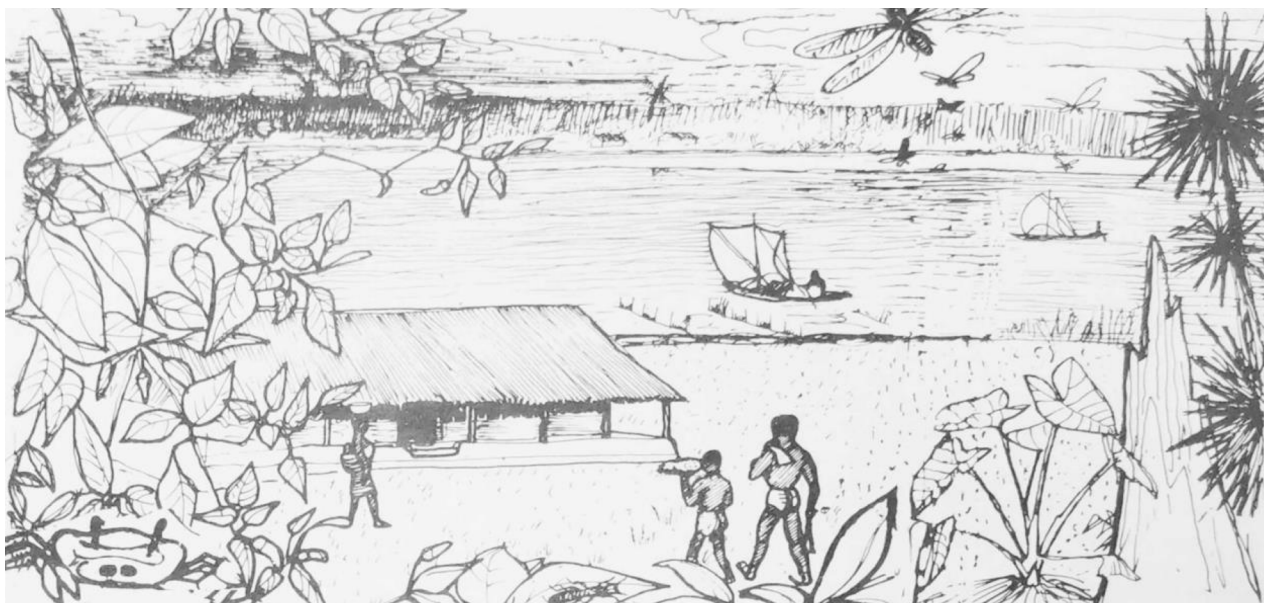
Fig. 11
Makoko Shores.

File:2014-04-02 09-51-41 Nigeria Lagos State - Bariga.jpg - Wikimedia Commons. (2014, April 2).

Fig. 12

Lagos and its origins.

Water urbanism in Lagos: A case study of Makoko community. (n.d.). CORE Reader. page 77. <https://core.ac.uk/reader/571212347>



Contemporary Challenges and Urbanization

Lagos' rapid urban growth has increasingly clashed with these informal waterfront settlements. The government, in its push to develop Lagos into a global megacity, has often regarded Makoko and similar communities as urban blights, characterized by overcrowded and inadequate housing infrastructure. For instance, a significant eviction order was issued in 2012 by the Lagos State Government, accusing the residents of illegally occupying the waterfront and disrupting the lagoon's potential for economic activities such as tourism and navigation (Ajayi, Soyinka-Airewele and Edewor, 2019).

Despite these challenges, the resilience of these settlements and their deep cultural ties to the lagoon has allowed them to persist and adapt to Lagos' urbanization pressures. As Lagos continues to modernize, the future of lagoon-side communities like Makoko remains uncertain. While their socioeconomic importance and historical significance are undeniable, they face increasing pressure from urban development policies that favor formalization and gentrification.

The Yangtze River

The Yangtze River, known as the Cháng Jiāng in Chinese, is the longest river in Asia and the third-longest in the world, stretching approximately 6,300km (3,917 miles) from the glaciers of the Qinghai-Tibet Plateau to the East China Sea at Shanghai. The river has played a central role in China's history, serving as a natural boundary between the northern and southern regions. Its vast basin, covering 1.8 million km², has been a cradle of Chinese civilization. It provides fertile land for agriculture and abundant water for transportation, making it an essential artery for economic and social development (Wang, Wong, and Duan. 2016).



Fig. 13
Yangtze River Environs
Cgtn. (2023, July 29). Live: Bird's-eye view of Chongqing Dongshuimen Yangtze River Bridge.

Nanjing, one of the most historically significant cities along the Yangtze River, has long been China's political and cultural center. Situated at the lower reaches of the Yangtze, Nanjing's development is intimately tied to the river and serves as the lifeline for cities throughout the region (Tian, et al. 2011). The river supported Nanjing's growth and fostered early agricultural settlements, later becoming a vital transportation route for the city's commerce. Settlements within the city were built along the river with interconnected canals, and water became central not only for economic purposes but also for cultural and social activities (Liu and Shu 2020).

Historical Context of Yangtze River and Its Role in Shaping Waterfront Settlements

The Yangtze River Delta region, particularly the Jiangnan area, has been home to distinctive water settlements for centuries. These "watertowns" represent a unique urban culture that emerged from the region's reliance on its vast network of interconnected waterways. This culture, though under threat from contemporary urbanization, is still visible in certain heritage towns like Zhouzhuang and Wuzhen, both of which serve as prime examples of traditional urban forms that have persisted in the face of modern development pressures (He and Henwood 2015). These watertowns along the Yangtze River have a long history, many established during ancient times due to the region's strategic importance for trade, transportation, and economic activities. These towns evolved along rivers and lakes, forming a network of settlements that utilized the water for commerce and daily life.

The area along the Yangtze River, especially near Taihu Lake, became one of China's most urbanized and industrialized regions. The river provided natural advantages, such as a convenient mode of transport for goods and people, making it a vital artery for ancient trade routes (Liu and Shu 2020). The Yangtze River Delta has historically been one of the most significant and densely populated regions of China due to its fertile lands and access to water-based transportation. The river has played a central role in supporting both agriculture and commerce throughout Chinese history. The river's banks became home to numerous towns and cities that relied on the river for trade, fishing, transportation, and irrigation. These waterfront settlements emerged as critical hubs connecting inland areas to coastal regions (Wang, Wong and Duan, 2016). The Jiangnan region has long been known for the integration of waterways into urban life. This reliance on water is seen not just in the region's small heritage towns, but also in larger, historically significant

like Suzhou, Songjiang, and Shanghai. However, the urban culture that flourished in Jiangnan has remained intact only in the smaller towns, which were less impacted by political and strategic transformations. Zhouzhuang and Wuzhen stand as some of the best-preserved examples of this tradition (He and Henwood, 2015).

Urban and Economic Development Settlements

Urban growth in this region was initially slow and largely based on agricultural production and small-scale local industries. However, with the rise of trade networks, many waterfront towns flourished, becoming important centers for commerce and cultural exchange. Waterfront settlements were historically centers of commerce, with their economies deeply tied to the waterways. Local industries, including fishing, boat building, and trade, thrived along the riverbanks, making the Yangtze River a vital lifeline for the local economy. Over time, with the growth of modern transportation networks like highways and air travel, the importance of the river for trade diminished. However, the canals and rivers retained significance as tourist attractions, shifting the economy from trade to cultural tourism. Nanjing's urban expansion accelerated significantly in the latter half of the 20th century, mirroring the broader industrialization seen in the Yangtze River Delta (YRD) region. Nanjing spans approximately 6,598 km² and, as of 2005, had a population of 5.99 million (Shan, et al. 2021).

While Shanghai, Suzhou, and other YRD cities experienced rapid industrial and commercial growth, Nanjing's expansion was more balanced, driven by both industrial development and its historical role as a political and academic hub. From 1990 to 2005, the Yangtze River Delta, including Nanjing, underwent intense urban growth. During this period, the region saw an increase of 137,000 hectares in urban land area. Nanjing's annual urban growth rate was 5.18% in 2000-2005, reflecting the city's steady expansion due to economic policies and infrastructural investments (Shan, et al. 2021).

However, its growth was more controlled compared to the rapid expansion of nearby cities like Suzhou, which saw the development of extensive industrial zones. With the rise of cultural tourism in China, these towns became major tourist destinations. The tourism boom brought both economic benefits and challenges (Shannon & Chen, 2013). On one hand, it provided the funds necessary for further conservation efforts, raised public awareness about the importance of heritage

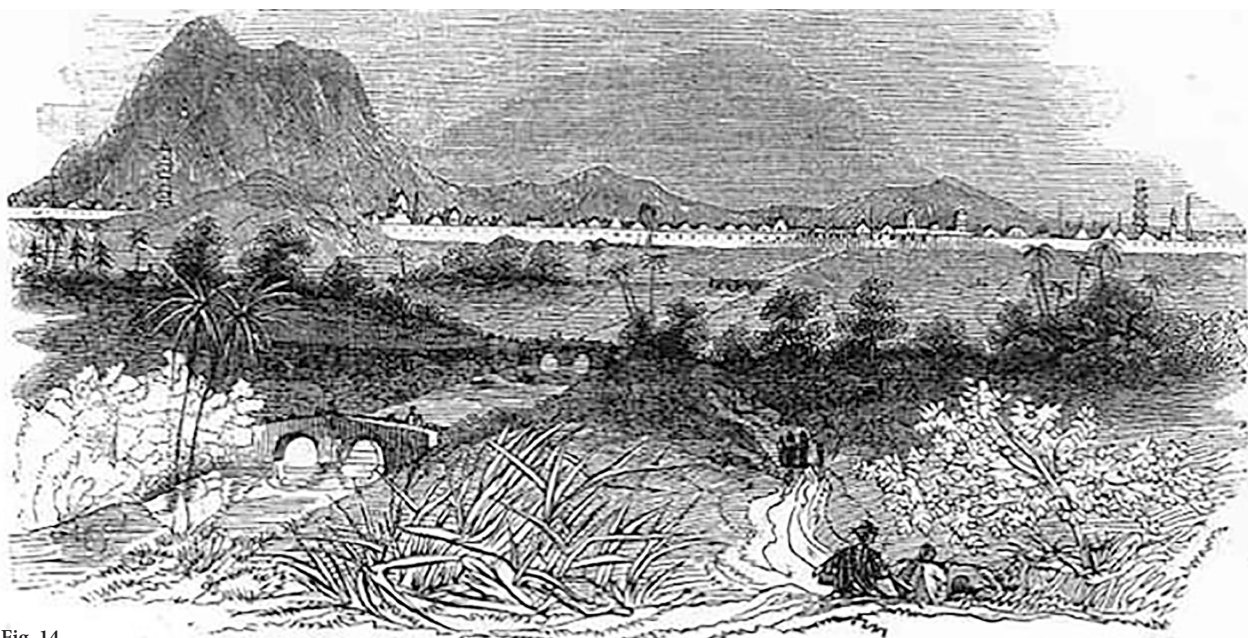


Fig. 14
Nankin (Nanjing). *The Illustrated London News* (12 November 1842)
Nankin. (n.d.). <https://victorianweb.org/history/empire/opiumwars/8.html>

NANKIN.

Settlement Patterns and Waterfront Communities

The settlement patterns along the Yangtze River reflect a long history of urban-rural interaction, shaped by the river's natural landscape and its importance as a trade route. The urbanization process along the Yangtze has been characterized by infill development and edge expansion. Infill development refers to the expansion of urban areas into previously unused land within city boundaries, while edge expansion occurs when urban growth extends outward into surrounding rural areas (He and Henwood, 2015). Both processes were dominant in Shanghai and other major cities in the YRD during the periods of rapid growth. The spatial analysis of urban growth in the YRD reveals that urban patches in the region merged significantly during the 1990-1995 period.

Cities like Nanjing and Wuxi experienced substantial urban consolidation, with small, isolated urban patches merging to form larger, more continuous urban landscapes. Conversely, between 1995 and 2000, urban growth slowed, leading to a more fragmented settlement pattern as new urban patches developed along the periphery of existing cities. The area-weighted mean patch fractal dimension (AWMPFD), a measure of the complexity of urban patch shapes, showed that urban patches became more irregular near city centers as expansion continued into previously undeveloped land (He and Henwood 2015). Zhouzhuang and Wuzhen are two of China's most well-known water cities, both providing insight into the history of urban structures influenced by rivers. Zhouzhuang, which dates back to the Eastern Zhou Dynasty (770-256 BC), had a distinct layout that

that incorporated streets and canals, and experienced tremendous growth as a commercial hub during the Yuan Dynasty, as seen by great courtyard houses such as Zhang Mansion. Its core, structured around a central island, expanded northward during the Ming Dynasty, with landmarks such as the Fu'an Bridge and Twin Bridges reflecting this growth. In contrast, Wuzhen features a linear urban form along the Xishi River, with waterfront homes uniquely designed for interaction with boat traders. While its origins are pre-Tang, much of Wuzhen's architecture showcases 19th-century and modern redevelopments. Key sites, like Zhao Academy and the Water Stage, highlight its historical boundaries, while recent tourism-driven changes preserve its traditional aesthetics. Both towns demonstrate the relationship of water, commerce, and urban development over centuries (He and Henwood, 2015).

Environmental and Social Challenges

The influx of tourists led to problems such as over-commercialization, where the authenticity of the towns was threatened by the development of tourist-centric services and attractions. Towns like Zhouzhuang, which had been historically commercial, faced the risk of losing their original charm due to excessive commercialization driven by tourism. To address these issues, towns like Tongli and Xitang focused on protecting the interests of residents by preserving the traditional way of life alongside tourism. By retaining the local population and safeguarding their cultural practices, these towns maintained a stronger connection to their historical identity (Liu and Shu 2020). The shift from trade-based economies to tourism-centric development brought with it new challenges,



Fig. 15

A bird's-eye view along the Qinhuai River in the ancient city of Nanjing

FlyOverChina | A bird's-eye view along the Qinhuai River in the ancient city of Nanjing. (n.d.). <https://english.news.cn/20230715/fjecaf5d723f4f759d-19fe57d616e0dc/c.html>

The rise in tourism brought challenges to China's ancient water towns, including over-commercialization, threatening their authenticity. Zhouzhuang, historically commercial, risked losing its original charm, while towns like Tongli and Xitang worked to balance tourism with preserving traditional lifestyles and cultural practices (Liu and Shu, 2020). The shift from trade to tourism diminished the functional importance of canals as roads became dominant, with waterways often repurposed for tourism rather than local transport. Urbanization and modernization further endangered architectural and cultural integrity, risking transformation into artificial tourist zones (Liu and Shu, 2020).

Starting in the 1980s, conservation efforts, led by figures like Professor Yisan Ruan, sought to protect these towns' heritage. Zhouzhuang's Shenting House, a Qing Dynasty structure restored in 1989, exemplifies these efforts. Conservation aimed to preserve authenticity while adapting to tourism. In 2012, eight towns, including Zhouzhuang, Tongli, and Wuzhen, were listed for World Cultural Heritage recognition. These "Venices of the East" are celebrated for their preserved architecture, canal systems, and the iconic "bridge-water-house" trinity that reflects their water-centric urban design (Liu and Shu 2020). By integrating economic growth with heritage preservation, these towns maintain their historical identity amid modernization pressures.



Fig. 16

Houses along the Qinhuai River (tributary of the Yangtze)
Qinhuai River-IslamiChina Travel. (n.d.). <https://www.islamichinatravel.com/destination-guide/nanjing/nanjing-attractions/qinhuai-river/>

The Role of Waterways and Public Spaces

In both Zhouzhuang and Wuzhen, the waterways serve as the primary organizing elements of the urban landscape. These canals and rivers were

not just methods of transportation; they played a central role in shaping the social and economic life of the towns. Public spaces were designed around the waterways, with small plazas, known as pocket spaces, located at regular intervals along pedestrian lanes and at key bridge connections. These spaces provided areas for social interaction, family gatherings, and communal activities, maintaining a close relationship between residents and their surrounding environment (He and Henwood 2015).

In Zhouzhuang, the town's layout incorporates a network of narrow lanes and wider waterfront areas, with the Twin Bridges on Bei Shi Lane serving as one of the key public gathering spots. Similarly, Wuzhen's Xizha Dajie Lane features pocket spaces adjacent to the river, many of which were located near significant public buildings like the town's post office or traditional wells. These public spaces were highly flexible and were often transformed throughout the day to accommodate different activities. For example, streets lined with retail shops during the day would turn into areas for food stalls and restaurants in the evening. Local events such as weddings, funerals, and religious festivals also took place in these public spaces, reinforcing their role as central hubs of community life (He and Henwood 2015).

identity is particularly concerning in regions like Jiangnan, where the interaction between urban form and water has historically defined the region's sense of place (He and Henwood 2015).

Contemporary Challenges and Urbanization

In the modern era, the rapid urbanization of China's cities, particularly in regions like Shanghai, has presented significant challenges to the preservation of traditional urban culture. Cities such as Songjiang, which historically played a central role in the Jiangnan region, have experienced large-scale redevelopment under the "One City and Nine Towns" policy, which promotes the expansion of Shanghai into surrounding towns. This policy has led to the adoption of Western architectural themes in cities like Songjiang, often without regard for the area's traditional urban form. For example, the development of "Thames Town", a British-themed residential and commercial district in Songjiang, is disconnected from the region's history, lacking the close relationship between water and public space that defines Jiangnan's watertowns (He and Henwood 2015).

The issue of "placelessness," or the loss of local identity in modern urban developments, has been noted by several scholars. The rapid pace of development, combined with the introduction of foreign architectural styles, has led to a situation where many of China's cities no longer reflect their traditional cultural roots. This loss of cultural

01

The Ergonomics within the Urban Form:

*Exploring Concepts of Memory, Legacy,
and Identity within Waterfront Urban
Forms*

1.1 Memory and Legacy

Memory and legacy are foundational concepts in urban morphology, forming the invisible yet powerful forces that influence the physical and cultural development of cities. In the context of waterfront settlements, these concepts manifest in unique ways, as these areas are often sites of historical significance and modern transformation. In Lagos and Nanjing, the legacy of the past, combined with the dynamic back-and-forth between natural landscapes and human interventions, has left lasting imprints on the urban fabric. Understanding how memory and legacy shape the morphology of these waterfronts is essential for a comprehensive analysis of their current forms and future trajectories. Urban memory extends beyond the preservation of physical structures. It includes how urban forms “remember” through spaces and the interaction of people with these urban environments, manifesting as symbols of collective and competing memories (Zejniliović, et al. 2024).

1.1.1. Memory

Memory and legacy are foundational concepts in urban morphology, forming the invisible forces that influence the physical and cultural development of cities. In the context of waterfront settlements, these concepts manifest in unique ways, as these areas are often sites of historical significance and modern transformation. In Lagos and Nanjing, the legacy of the past, combined with the dynamic back-and-forth between natural landscapes and human interventions, has left lasting imprints on the urban fabric. Understanding how memory and legacy shape the morphology of these waterfronts is essential for a comprehensive analysis of their current forms and future trajectories. Urban memory extends beyond the preservation of physical structures. It includes how urban forms “remember” through spaces and the interaction of people with these urban environments, manifesting as symbols of collective and competing memories (Zejniliović, et al. 2024).

The notion of urban memory, as outlined by Andreas Huyssen in his discussion of urban palimpsests, is evident in both Lagos and Nanjing’s waterfront settlements. In Lagos, memory is evident in communities like Makoko, where fishing practices have been sustained for generations. These traditions reflect pre-colonial lifestyles, resisting the urban development pressures that threaten to erase them. Makoko’s residents continue to live in stilt houses over the Lagos Lagoon, a reminder of their historical ties to the water and to the city’s cultural roots (Agamah 2018, 45).

Lagos’s informal settlements, particularly those along the waterfront, reflect a layered history of

colonial displacement and economic marginalization. Colonial planning policies forced indigenous communities to settle in areas bordering the Lagos Lagoon, forming the basis for today’s informal waterfront settlements like Makoko. Michael Hebbert notes that urban streets and spaces often serve as loci for collective memory, where social interactions and cultural practices cement shared histories (Hebbert 2005). In Makoko, the spatial dynamics of the community—its floating market, communal fishing practices, and religious traditions—reinforce this sentiment and the transmission of memory, even as the government seeks to redevelop these areas. The juxtaposition of these different layers of memory creates a complex urban landscape; where the past is not erased but continuously reinterpreted. Nanjing’s waterfront, on the other hand, is marked by a much more formalized engagement with memory.

As a former imperial capital, Nanjing’s riverfront has long been a symbol of political and cultural power. As one of China’s ancient capitals, Nanjing’s waterfront along the Yangtze River embodies imperial memory, with historical landmarks such as the ancient city walls symbolizing both political and cultural legacies (Jong and Lu 2022). The city’s historical landmarks, such as the ancient city walls and temples, serve as physical embodiments of its imperial legacy, anchoring the city’s identity in its historical past (Liu, et al. 2010, 98). The city’s proximity to the Yangtze River also plays a significant role in how its memory is preserved, for example, in relation to the Nanjing Massacre of 1937. The Yangtze River serves as a natural and symbolic marker of Nanjing’s history. As Huyssen argues, cities are often sites where traumatic events are physically inscribed, creating spaces where the past is continually remembered (Huyssen 2003). The Nanjing Massacre Memorial Hall, located near the river, is an example of how public memory is preserved and integrated into the urban fabric. However, the riverfront has also been subject to modern urban development, with new infrastructure projects and public spaces reflecting the city’s ongoing evolution.

1.1.2. Legacy

The concept of legacy in urban morphology is closely related to memory but extends beyond the preservation of the past. It emphasizes the material and symbolic inheritance passed from one generation to another. In the context of urban waterfronts, legacy can be seen in the physical structures that remain and the intangible cultural practices that persist despite changing socio-economic and political conditions. Legacy, as Nicolas Russell discusses in relation to Halbwachs’ theory of collective memory, shapes the long-term identity of communities.

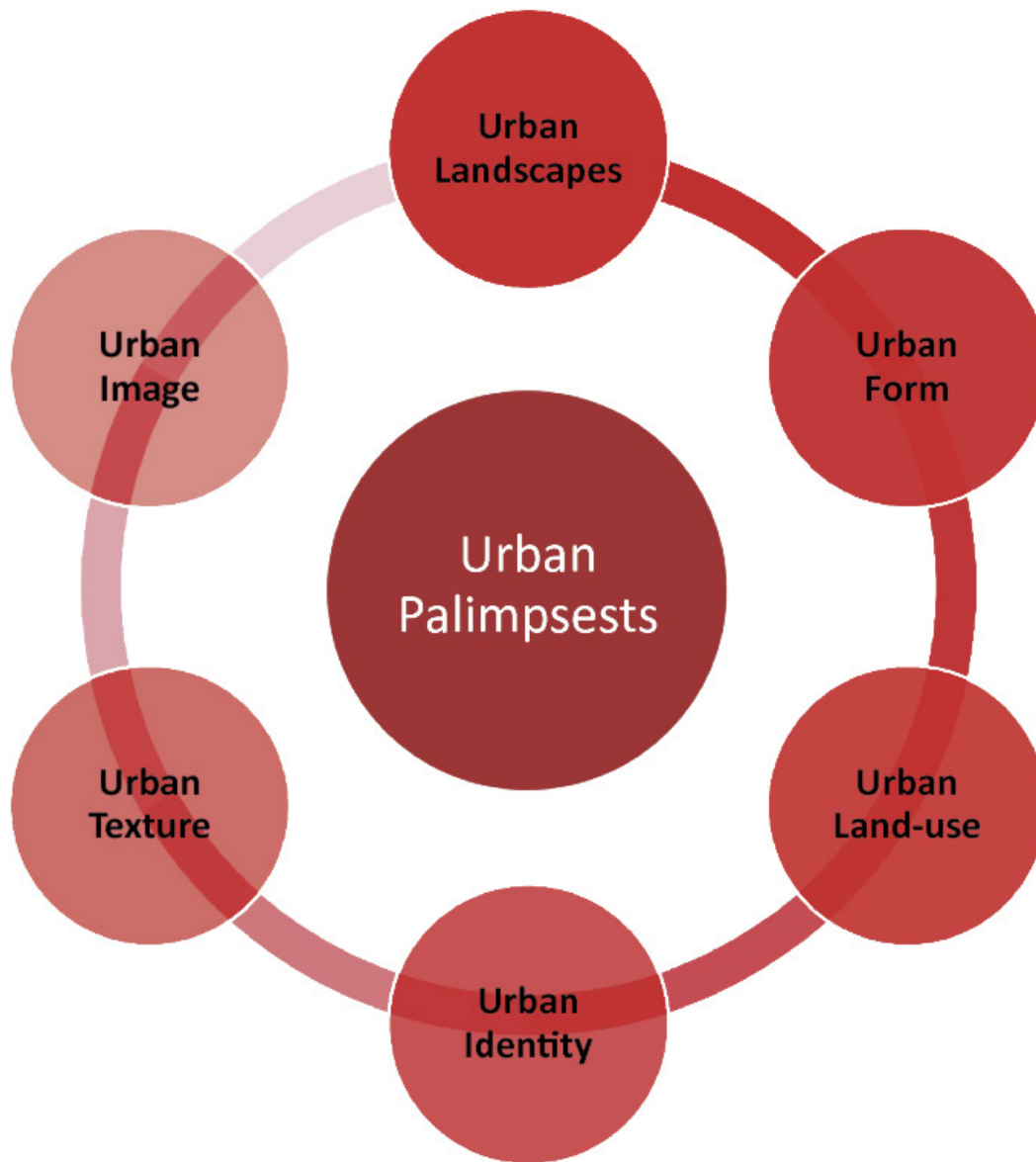


Fig. 17
Urban Palimpsests
 Cheshmehzangi, A. (2021). *Memory and Cities: Discovering Transitions through Urban Maps*. In Springer eBooks (pp. 27–60).

In Lagos, the legacy of colonialism and subsequent urban policies has contributed to the persistence of informal settlements like Makoko. These settlements, although marginalized, embody a legacy of resistance to displacement and economic exclusion. The physical structures—its stilt houses and floating platforms—reflect continuity with traditional construction methods that predate colonial rule (Russell, 2006). This legacy of resilience is crucial to understanding how collective memory informs the identity of Lagos’s waterfront communities, even as they face ongoing threats of eviction and redevelopment. These settlements’ resistance to urban redevelopment projects is a testament to the community’s subconscious preservation of its cultural and historical legacy. While the government often views informal settlements as obstacles to

modernization, these residents maintain their connection to Lagos’s historical past. As Huyssen notes, urban palimpsests allow for the coexistence of different historical layers, where the past remains visible within the present urban landscape (Huyssen 2003). In this context, the persistence serves as a form of urban memory that challenges the erasure of history through development.

Also, in this context, the legacy of colonialism is evident not only in the physical remnants of colonial-era infrastructure but also in the socio-spatial hierarchies that continue to shape the city’s waterfront. Informal settlements like Makoko, for example, are a direct result of the marginalization of certain groups during both the colonial and post-colonial periods. The neglect of these areas by formal urban planning policies has allowed them to evolve

outside the control of the state, creating a distinct urban morphology that reflects both resilience and exclusion (Aliu, Akoteyon and Soladoye 2021, 115). Nanjing's approach to its waterfront is characterized by a deliberate effort to integrate historical memory into its urban identity, contrasting with Lagos's more contested and informal preservation of waterfront legacy. Towns like Gaochun and Jiangning, located along rivers and canals, showcase a legacy of craftsmanship, trade, and water-based livelihoods. The design and function of these watertowns are a testament to Nanjing's historical integration of water management, commerce, and urban planning, ensuring their lasting significance (Niu, et al. 2021).

The legacy of water towns in Nanjing includes their role as hubs of the salt trade during the Ming and Qing dynasties. This historical economic activity shaped the layout of the towns, where waterways facilitated trade and social exchange, leaving a lasting imprint on the urban morphology of the region (Tang, Li and Ding 2023). This enduring relationship with water not only shaped the physical form of the towns but also contributed to a shared cultural identity rooted in their connection to the rivers and canals that sustain them. The traditional architecture, characterized by narrow canals, bridges, and waterside buildings, embodies the legacy of centuries of urban evolution and adaptation to local water systems (Niu, et al. 2022). In these watertowns, the legacy of social hierarchy is also visible in the layout and organization of space, with wealthier merchants historically residing in grander homes closer to the water. This spatial arrangement reflects both economic status and the cultural importance of water access, which remains a key element of Nanjing's identity today.

The continued preservation of these areas, despite pressures of urban development, illustrates the enduring significance of water-based urban forms in Nanjing's cultural memory (Zhang, et al. 2023). The city's riverfront is marked by a deliberate effort to preserve and celebrate this legacy, with historical structures and landscapes carefully maintained and integrated into the modern urban fabric (Jong and Lu 2022, 209). However, this preservation is not without its challenges. The pressures of urban growth and economic development have led to the alteration of certain historical sites, raising questions about the balance between preservation and progress in the city's morphological evolution. Nanjing's careful curation of its historical identity amidst modernization reflects an ongoing negotiation between the past and present (Zhang, et al. 2023).

1.1.3. Memory, Legacy and Cultural Identity

Cultural narratives are critical to how memory and legacy are perceived in the urban landscape and play out uniquely in urban spaces (Zejnilović, et al. 2024). The authors highlight how memory competes in urban spaces, particularly in cities undergoing significant socio-political changes. This leads to the disjointed coexistence of old and new spatial narratives, where the past is both preserved and erased, creating tension in how cities are remembered and represented. (Neill 2004) also touches on this, exploring how urban planning and the construction of cities are deeply intertwined with issues of cultural identity and memory, particularly in the context of urban forms undergoing change or conflict. He cites cities with a history of conflict, such as Belfast during the Troubles, where urban space became contested ground for different cultural and political groups. In these contexts, the built environment is not neutral but carries the weight of history, memory, and identity. Neill shows how certain landmarks or buildings become symbols of legacy and cultural narratives—either by being preserved, repurposed, or demolished. This can either heal or exacerbate social divisions.

In Lagos, the waterfront has long been a site of cultural exchange, shaped by the interactions between indigenous groups, colonial powers, and more recently, global economic forces. The architecture and spatial organization of the waterfront reflect these diverse influences, with a mixture of traditional structures, colonial-era buildings, and modern high-rises coexisting in a fragmented yet dynamic urban fabric (Sawyer 2016, 30). Despite efforts to redevelop the waterfront, the persistence of informal settlements like Makoko highlights the role of memory in maintaining cultural continuity in the face of urban change. Nanjing's waterfront, too, is imbued with cultural significance. The city's position along the Yangtze River has long made it a key site of trade, transportation, and cultural exchange. The river itself is a symbol of continuity, flowing through centuries of political and cultural change, and its banks are lined with structures that reflect the city's rich cultural heritage (Shan, et al. 2021, 22). However, as Nanjing continues to modernize, the challenge of preserving these cultural narratives while accommodating new developments has become increasingly apparent. The riverfront is now a site where historical memory and modern urban ambitions intersect, creating a complex and evolving urban landscape.

In both Lagos and Nanjing, the intersection between memory, legacy, and urban morphology is further complicated by the influence of socioeconomic factors. The spatial organization of these waterfronts reflects deep-rooted social and economic inequalities, with informal settlements in Lagos and preserved historical areas in Nanjing representing two extremes of how memory and legacy manifest in the urban landscape. In Lagos, the neglect of informal waterfront settlements by formal urban planning policies has created a physical and symbolic divide between the wealthy, well-planned areas of the city and the marginalized, informal settlements along the lagoon.

This divide is a legacy of both colonialism and post-colonial governance, which has prioritized certain areas of the city while neglecting others (Obiefuna, et al. 2013, 20). There are socioeconomic divides, with wealthier areas enjoying greater access to preserved historical sites and public spaces, while lower-income areas are often excluded from these benefits (Zhang, et al. 2023, 145). This spatial inequality reflects broader patterns of urban development in both cities, where memory and legacy are selectively maintained or erased in response to contemporary economic and political pressures.

Ultimately, the concepts of memory and legacy in the waterfront settlements of Lagos and Nanjing reveal the complex ways in which the past continues to shape the present and future of these cities. Memory is not a static concept; it evolves alongside the urban landscape, influencing how cities develop and how residents relate to their environment. Legacy, too, is an ongoing process, as the historical forces that have shaped these waterfronts continue to exert influence on their morphology. By examining the intersections of memory, legacy, and urban form in Lagos and Nanjing, we gain a deeper understanding of how these cities navigate the challenges of modernization while grappling for a sense of cohesive urban identity with the persistence of their historical and cultural pasts.

1.2 Theoretical Constructs of Memory and Urban Form

The relationship between memory and urban form has been a subject of significant scholarly inquiry, with various theoretical frameworks providing insight into how the built environment acts as a vessel for collective and individual memories. In the context of waterfront settlements, the interaction between memory and urban morphology is particularly pronounced, as these areas often embody deep historical, social, and cultural significance. Understanding the theoretical foundations of

this relationship is essential for analyzing the urban forms of Lagos and Nanjing's waterfronts.

One of the foundational concepts in this discourse is the idea of collective memory, a term popularized by sociologist Maurice Halbwachs. Halbwachs argued that memory is inherently social, shaped by the collective experiences of groups rather than solely by individuals (Russell 2006). This concept has significant implications for urban form, as cities themselves can be seen as physical manifestations of collective memory. Buildings, streets, and public spaces become symbols of shared histories, anchoring communities in their pasts while also influencing their future development. In Lagos, for example, the persistence of colonial-era structures and the organic growth of informal settlements reflect not only historical events but also the collective memory of colonialism and indigenous resilience (Sawyer 2016, 31). The spatial arrangement of these areas can be seen as a materialization of the city's collective memory, where the past continues to shape the present.

The concept of place memory further extends this discussion, emphasizing the role of specific locations in the preservation and transmission of memory. Edward Casey's work on place and memory highlights how certain places become repositories of memory, where the physical environment triggers recollections of past events and experiences (Casey 1987, 89). In urban contexts, this means that certain sites—such as historic waterfronts—act as focal points for collective memory, where the spatial form of the city becomes intertwined with its historical and cultural narratives. The Lagos Lagoon and Nanjing's Yangtze River waterfronts are prime examples of this phenomenon. In Lagos, the lagoon is not just a body of water but a site of historical significance, representing the city's colonial past, trade history, and indigenous practices. Similarly, in Nanjing, the Yangtze River serves as a historical axis around which the city's imperial and modern identities have coalesced (Shan, et al. 2021, 25).

Another significant theoretical construct is the idea of urban palimpsest as discussed earlier, which conceptualizes cities as layered texts where traces of past urban forms are inscribed into the present landscape. Andreas Huyssen's work on urban palimpsests suggests that cities are not static, but constantly evolving, with each new layer of development building upon and transforming what came before (Huyssen 2003, 7). This concept is particularly relevant to waterfront settlements, where the pressures of modernization often lead to the erasure or modification of historical structures. In Lagos, for instance, the rapid urbanization of the waterfront has resulted in a palimpsest-like

layering of colonial architecture, modern high-rises, and informal settlements, each representing a different phase in the city's history (Agamah 2018, 47). Similarly, in Nanjing, the ancient city walls and temples coexist with modern infrastructure projects, creating a palimpsest where the city's imperial past is overlaid with contemporary urban forms (Liu, et al. 2010, 102).

The theory of spatial identity also plays a crucial role in understanding how memory interacts with urban form. This theory, which draws on the work of Henri Lefebvre and other urban theorists, posits that urban spaces are not neutral, but are imbued with social, cultural, and political meanings (Lefebvre 1991, 34). The spatial identity of a city is shaped by its historical experiences, as well as by the ways in which different social groups engage with the urban environment. In the case of Lagos, the spatial identity of the waterfront is shaped by the city's colonial past, its role as a major economic hub, and the persistence of informal settlements (Aliu, Akoteyon and Soladoye 2021, 118). The waterfront's morphology reflects these diverse influences, creating a complex spatial identity that is both global and local, modern and traditional. In Nanjing, the spatial identity of the waterfront is similarly multifaceted, with the Yangtze River serving as both a symbol of the city's imperial history and a site of modern development (Jong and Lu 2022, 212). The river's role in shaping Nanjing's spatial identity is evident in the preservation of historical landmarks alongside the construction of new public spaces and infrastructure.

Theories of place attachment and urban resilience further enrich the discussion of memory and urban form. Place attachment refers to the emotional bonds that people develop with specific places, which in turn influence how they perceive and engage with the urban environment (Manzo and Devine-Wright 2021, 22). In waterfront settlements, place attachment is often heightened due to the historical and cultural significance of these areas. In Lagos, residents of informal waterfront settlements like Makoko exhibit strong place attachment despite the precariousness of their living conditions, as these areas represent not only their homes but also their cultural heritage and identity (Obiefuna, et al. 2013, 22). In Nanjing, place attachment is similarly evident in the preservation of historical sites along the Yangtze River, where local communities and the government work together to maintain the cultural and historical significance of these areas (Shan, et al. 2021, 27).

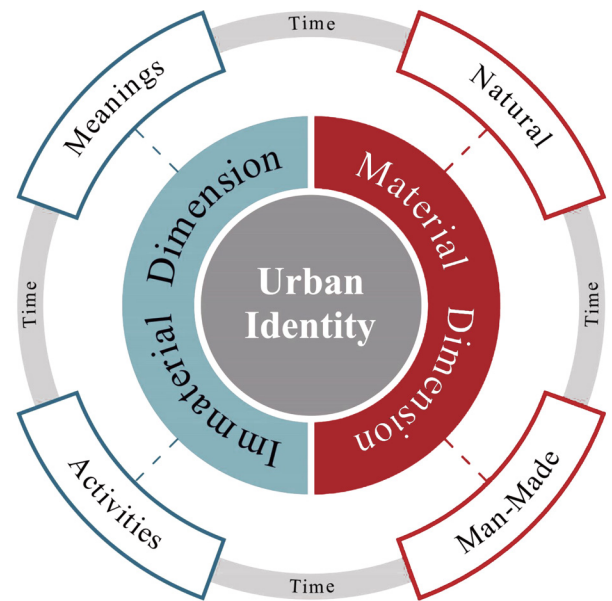


Fig. 18
Urban Identity Dimensions

Mansour, H. M., Alves, F. B., & Da Costa, A. R. (2023). A comprehensive methodological approach for the assessment of urban identity. *Sustainability*, 15(18), 13350. through *Urban Maps*. (pp. 27–60).

The concept of urban resilience, meanwhile, refers to the capacity of urban areas to adapt to change while maintaining their core identity and functions. Waterfront settlements are particularly vulnerable to environmental, social, and economic pressures, yet they often maintain the same impression of “place” in the face of these challenges. In Lagos, the informal settlements along the lagoon have adapted to changing environmental conditions, such as flooding and sea-level rise, while continuing to serve as vital centers of economic and social activity (Aliu, Akoteyon and Soladoye 2021, 120). In Nanjing, the Yangtze River waterfront has also demonstrated resilience, balancing the pressures of modern development with the need to preserve its historical and cultural legacy (Zhang, et al. 2023, 147).

In summary, the theoretical constructs of memory and urban form provide a rich framework for analyzing the morphology of waterfront settlements. Concepts such as collective memory, urban palimpsest, spatial identity, and place attachment reveal how historical and cultural narratives are inscribed into the urban landscape, influencing both the physical form of cities and the ways in which their inhabitants engage with these spaces. In the waterfronts of Lagos and Nanjing, these theoretical frameworks offer valuable insights into the complex interplay between memory, identity, and urban development, revealing how these cities navigate the challenges of modernization while remaining anchored in their historical and cultural pasts.

1.3 Cultural Narratives and Collective Memory

Cultural narratives and collective memory significantly impact urban forms, particularly in waterfront settlements where we can see a convergence of historical, social, and cultural legacies, deeply embedded in the built environment. In Lagos and Nanjing, the waterfronts serve as stages where collective memories are preserved and expressed through spatial arrangements, architectural features, and urban design. Analyzing these narratives and their materialization in the urban landscape reveals how cultural practices and local histories inform the development of waterfront areas and highlights the contrasts between how Lagos and Nanjing incorporate these narratives into their respective urban morphologies.

1.3.1. The Lagos Lagoon

The Lagos Lagoon is far more than a geographical feature in the city's urban landscape—it is a central character in the cultural and historical narrative of Lagos, imbuing the city with layers of collective memory that span generations. The settlements along the stretch of the Lagos Lagoon serve as living repositories of Lagos' complex cultural history, embodying the interaction between indigenous heritage and the city's trajectory of urbanization. In Kaye Whiteman's *Lagos: A Cultural and Literary History*, he explores the history of this water body, as a living entity—a space rich with social and cultural memory, extending back to pre-colonial times when the lagoon served as the backbone of fishing and trading communities (Whiteman 2012). The lagoon embodies layers of cultural and historical meaning, with its waters long serving as a conduit for trade, migration, and colonial interactions; a site where the local indigenous culture, colonial history, and post-colonial urban growth intersect, creating a complex cultural landscape.

The history of the lagoon settlements reflects the enduring legacy of Yoruba-speaking groups, such as the Awori, who were among the earliest settlers of the region. Their relationship with the water—as fishers, traders, and craftsmen—was essential to the formation of Lagos' early identity as a commercial and cultural hub. This connection to the lagoon is deeply ingrained in their collective memory and has persisted despite the waves of colonialism and modernization that have reshaped the city's landscape. Historically, the lagoon has served as a spiritual axis for the indigenous people of Lagos, particularly the Awori and other Yoruba-speaking communities who settled along its banks. The lagoon was often revered as a sacred space, with its waters

believed to be the dwelling place of deities. These spiritual associations with the lagoon are embodied in the worship of Olokun, the Yoruba deity of the sea, wealth, and prosperity. The lagoon thus became intertwined with the religious and spiritual practices of the people, and its cultural significance continues to manifest in rituals, festivals, and ceremonies that are still observed today (Whiteman 2012).

The relationship between cultural narratives and urban form is further illuminated through the lens of rituals and tribal practices. Festivals such as the Eyo Festival reflect the city's Yoruba heritage and are often centered around the lagoon, using the waterfront as a ceremonial and symbolic space (Adejumo 2016, p. 29). The Eyo masquerades that parade through the streets during the festival carry with them the collective memory of Lagos's past as a Yoruba kingdom, colonial outpost, and thriving port city. The routes taken by the processions, often near the water's edge, reassert the historical significance of the waterfront in the city's cultural memory. These rituals not only mark time and space but also shape the way these urban spaces were and still are perceived and used by the inhabitants.

The lagoon also holds a prominent place in the oral histories of Lagos. Many traditional stories describe it as a gateway to the world beyond, and its presence in the lives of the people extends into myth and legend. The lagoon is seen as both a protector and a force of nature to be respected—providing for the community while demanding respect through reverence. For centuries, Lagosians have drawn on these narratives to explain the natural rhythms of the water and the city's relationship with it (Whiteman 2012). Economically, the lagoon facilitated trade, both within Lagos and with external markets, long before the colonial era. As Whiteman points out, it was integral to the development of Lagos as a maritime and commercial hub, allowing Lagosians to connect with communities along the West African coast and beyond. It was through the lagoon that fishing and trading communities thrived, solidifying its role not just as a natural resource but as a cultural connector—a space where people, goods, and ideas flowed. Over time, the lagoon became symbolic of Lagos' cosmopolitanism, reflecting its identity as a crossroads of cultures and its openness to external influences.

The cultural narrative of the lagoon, however, is not solely defined by prosperity and connection. The colonial and post-colonial periods introduced tensions between the traditional uses of the lagoon and the modernization efforts of the city. During colonial rule, the lagoon became both a barrier and a facilitator of European dominance, as British

traders and officials exploited its access for economic gain. Despite this, local communities around the lagoon maintained their cultural practices, navigating a changing world while holding on to the lagoon as a symbol of their enduring heritage.

Nevertheless, the lagoon remains a powerful symbol in Lagos' collective memory. It continues to be featured prominently in the city's cultural productions, from literature to art, where it is often depicted as a site of nostalgia, longing, and reflection. For many Lagosians, the lagoon represents a space of continuity—despite the relentless march of progress, it endures as a reminder of Lagos' past, a place where the city's cultural and spiritual roots are still visible beneath the surface of modernity (Whiteman 2012). Whiteman suggests that the lagoon's dual role—as a cultural symbol and a natural resource—

places it at the heart of the city's ongoing struggle to balance tradition and progress.

While modern Lagos increasingly looks outward, toward becoming a global city, the lagoon and its associated cultural memory anchor it firmly in its past, preserving the narratives of those who lived in harmony with its waters for centuries. The lagoon is not merely a body of water; it is a reflection of the cultural consciousness, permeated with the memories, stories, and rituals of a city that has continually reinvented itself, yet still returns to its lagoon for a sense of identity and belonging. It is central to cultural narratives and collective memory of Lagos, representing both the historical foundation of the city and a site of ongoing cultural significance. It serves as a touchstone for Lagosians, embodying the tension between preservation and change; between local tradition and global ambition.

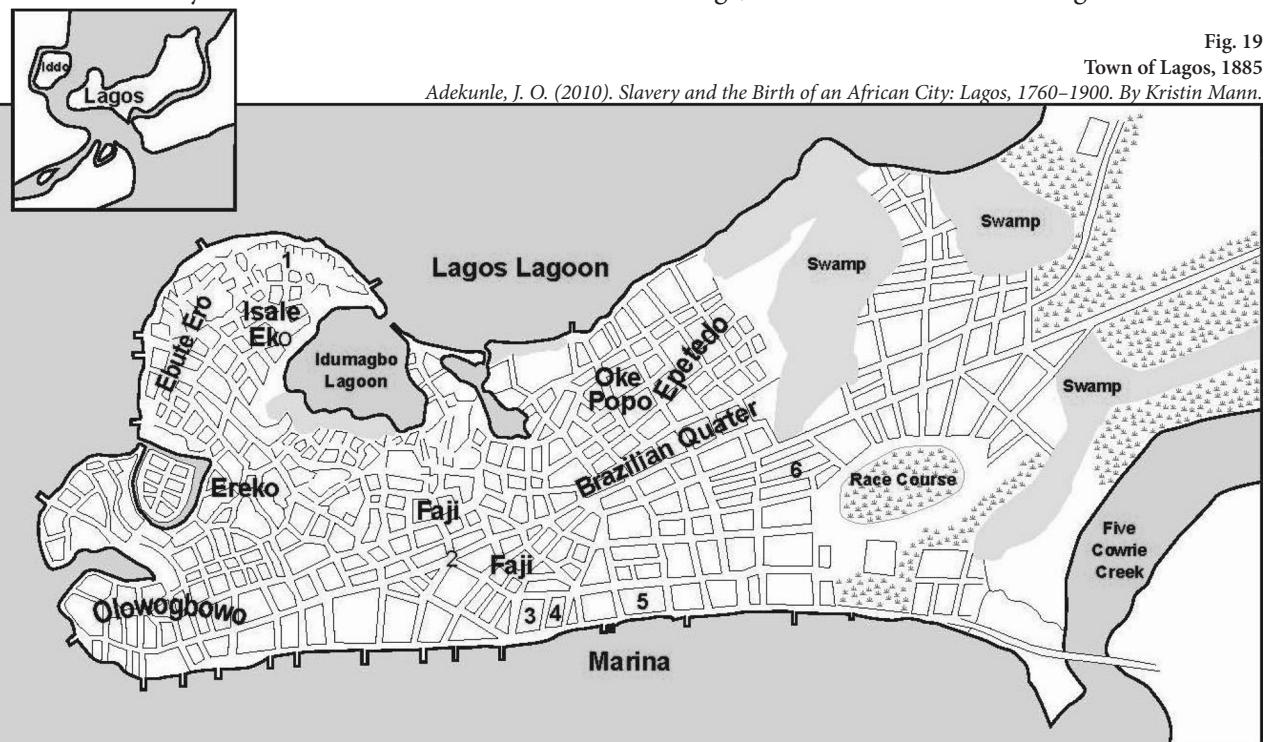


Fig. 19

Town of Lagos, 1885

Adekunle, J. O. (2010). *Slavery and the Birth of an African City: Lagos, 1760–1900*. By Kristin Mann.

1. Oba's Palace, 2. Tinubu Square, 3. Church Missionary Society, 4. Government House, 5. Wesleyan Mission, 6. Housa Barracks

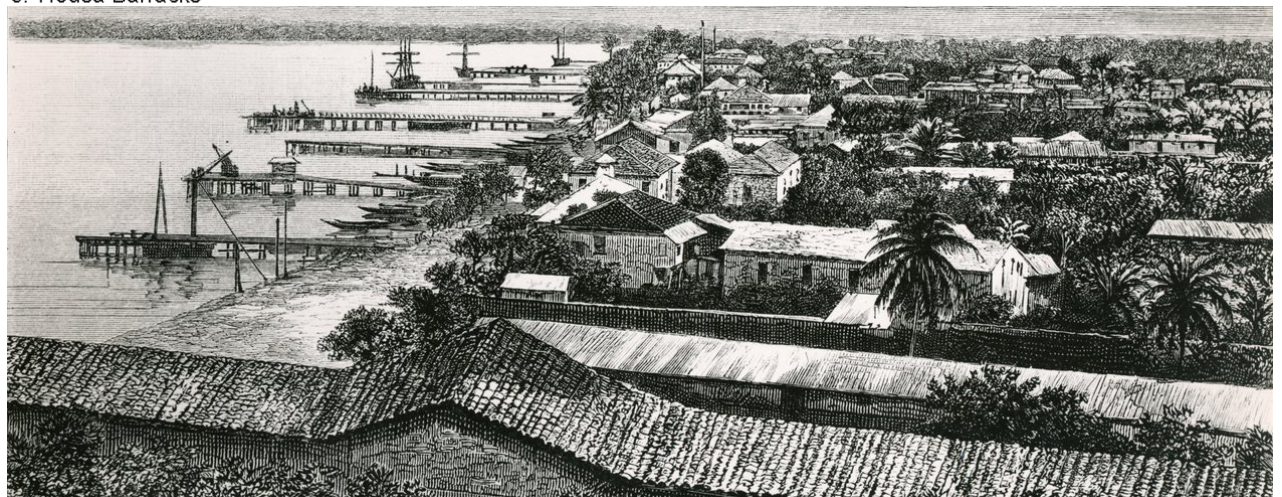


Fig. 20

European Quarter in Lagos, Nigeria, 1887

MeisterDrucke. (n.d.). *European Quarter in Lagos, Nigeria, 1887* by Edouard Riou. MeisterDrucke. <https://www.meisterdrucke.uk/fine-art-prints/Edouard-Riou/200123/European-Quarter-in-Lagos,-Nigeria,-1887.html>

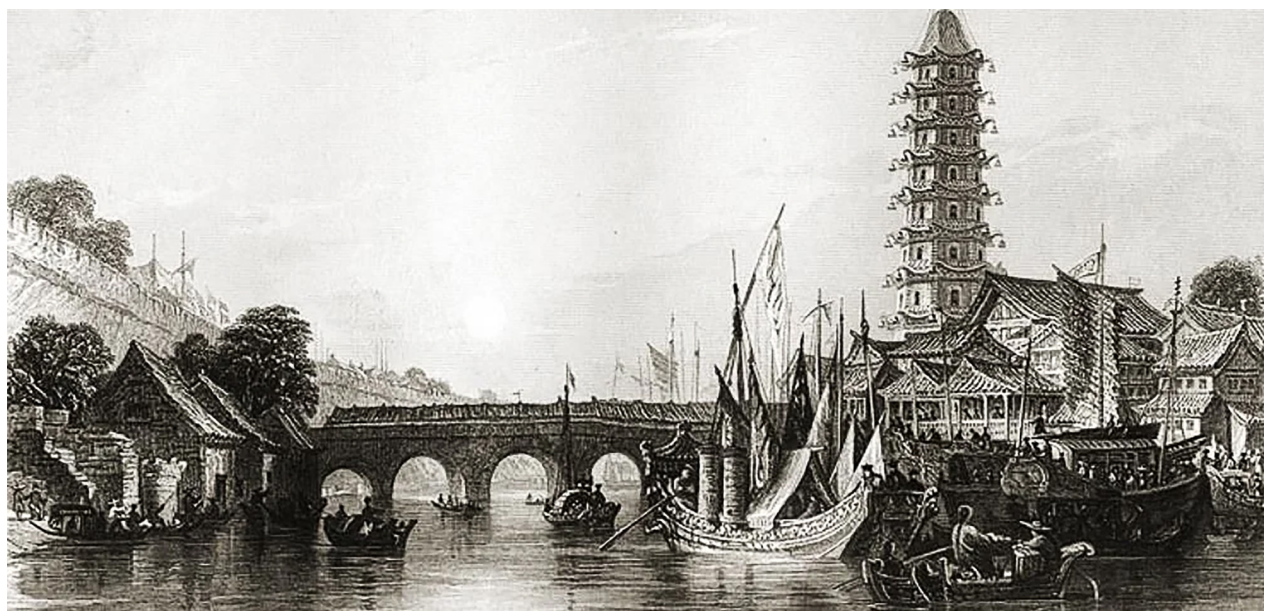


Fig. 21: The Bridge of Nanjing

World4.eu. (2025, January 2). *The Bridge of Nanjing. Ancient China sceneries. World4 Costume Culture History.* <https://world4.eu/bridge-nanjing/>

1.3.2. The Yangtze River (Nanjing)

In contrast, Nanjing's Yangtze River waterfront reflects a different cultural narrative—one steeped in imperial history, Confucian ideals, and the city's role as a former capital of China. Many ancient cities in China, including those around the middle Yangtze, were founded on riverbanks due to the ease of transportation, water supply, and agricultural irrigation provided by these waterways (Shan, et al. 2021). Settlements thrived on the floodplains, adapting to the periodic flooding cycles, and constructing intricate hydraulic systems to manage these natural phenomena.

Nanjing's urban development along the Yangtze is shaped by the city's strategic importance as a center of power throughout various dynasties, most notably the Ming Dynasty. Here, the waterfront serves as a symbolic link between the past and present, with key historical landmarks such as the Zhonghua Gate and the Confucius Temple offering tangible connections to Nanjing's imperial past. In particular, Nanjing developed its urban fabric in close connection with the river's dynamics. The rise of walled towns during the Neolithic period in the middle Yangtze River valley reflects this relationship between water and settlement. These walled towns, such as those discovered at the Zoumaling site, signify the emerging social complexities driven by water-based agriculture. The construction of such towns required massive labor and centralized coordination, illustrating how rivers influenced not just the physical settlement patterns but also the social and political hierarchies of the region (Shan et al., 2021). These sites, positioned along the riverfront, not only anchor the city's collective memory in its architectural heritage but also play a role in the ongoing cultural identity of the city as a place of national historical significance.



Fig. 22: Chinese painting of Xituo ancient town

Hu, R. (2019, August 5). *Yunti Street: First Street along the Yangtze River. iChongqing.* <https://www.ichongqing.info/2019/07/26/yunti-street-first-street-along-the-yangtze-river/>

Beyond the practical aspects of water, and similar to the Lagos Lagoon, the Yangtze held deep symbolic and mythological importance in Chinese culture. In ancient Chinese cartography, rivers were central to depicting the natural world, as seen in the earliest maps engraved in stone during the Song dynasty. These maps reflected the reverence for rivers, particularly the myth of Yü the Great, credited with taming the rivers and establishing hydraulic engineering that benefited ancient Chinese societies (Shannon & Chen, 2013). This cultural relationship with water is also evident in practices like feng shui, where the flow of water is seen as a key element in harmonizing human settlements with the environment.

The Yangtze River, often depicted in historical texts and maps, represents not only a source of life but also a cosmic force that governs the balance of human existence. Cities along the Yangtze, including Nanjing, have historically been aligned with these cultural ideals, integrating water into their spatial and architectural forms (Shannon & Chen, 2013). The Yangtze River has been deeply embedded in Chinese mythology and cosmology, symbolizing the power of nature and its influence over human life. In Chinese culture, water is often associated with life, purity, and transformation, and the Yangtze, as the longest river in Asia, has been viewed as a vital force that shapes both the landscape and the destiny of those who live along its banks.

One of the most enduring myths related to the Yangtze is that of Yü the Great, the legendary founder of the Xia dynasty, who is credited with controlling the devastating floods of the river. Yü's mythological achievement of taming the waters is seen as an early triumph of human ingenuity and perseverance over nature. According to legend, Yü spent years dredging riverbeds and constructing channels to divert floodwaters, thus saving the lives of countless people and enabling the development of agriculture and settlement along the river (Shannon & Chen, 2013). Yü the Great's association with water management became a foundational element in Chinese governance and culture, where controlling rivers was synonymous with ruling the land. Over time, Yü's story was immortalized in Chinese cartography and historical texts, which often depicted the Yangtze as a symbol of civilization's victory over chaos. For instance, the "Shan Hai Jing" (The Classic of Mountains and Seas), a Chinese geographical treatise dating back to the 4th century BCE, emphasizes the importance of rivers, including the Yangtze, as central features of China's physical and mythological landscape. These ancient texts reflect the belief that water was both a source of life and a force to be controlled and respected (Shannon & Chen, 2013).

In addition to its mythological importance, the Yangtze River played a central role in the daily life and culture of the communities along its banks. The river was not only a vital resource for drinking, farming, and fishing but also a focal point for religious practices and social gatherings. Festivals, rituals, and offerings to river deities were common in these communities, as water was seen as a divine force that needed to be honored and appeased (Shannon and Yiyong 2013). In Nanjing, the Dragon Boat Festival, held annually on the Yangtze River, serves as a key cultural practice that intertwines local tradition with the spatial dynamics of the waterfront. The event, rooted in Chinese history and mythology, connects the people of Nanjing with their cultural heritage,

while the use of the river as the festival's main stage emphasizes the significance of water in Chinese cosmology and urban life (Han, Meng and Zhou 2017). The design of waterfront spaces in Nanjing often accommodates these public celebrations, reinforcing the cultural narrative through the creation of public spaces that facilitate both modern recreational activities and traditional practices.

1.3.2. Relevance to the Urban Form

As we can see, in contexts rooted in rich traditions and culture, cultural narratives manifest in the urban morphology of these cities through the historical layering of architecture and space. In Lagos, colonial architecture coexists with indigenous designs, creating a spatial narrative that tells the story of the city's complex history. Colonial-era structures, such as those found in Tinubu Square, serve as reminders of Lagos's past as a British colony, as the organic growth of informal settlements around the lagoon speaks to the resilience and adaptability of local cultures in the face of foreign impositions (Duerksen 2018). The juxtaposition of formal colonial architecture with informal indigenous settlements creates a palimpsest where the city's layered history is inscribed into its urban form.

Similarly, in Nanjing, the juxtaposition of ancient city walls, such as the Nanjing City Wall, with modern developments along the waterfront illustrates how the city's imperial past is preserved even as the city continues to evolve. The spatial arrangement of these features reflects a deliberate effort to maintain a dialogue between past and present, where ancient structures are integrated into modern urban life without losing their historical significance (Han, Meng and Zhou 2017). This architectural layering is not merely a reflection of Nanjing's cultural memory but a conscious attempt to root the city's identity in its imperial past while embracing the demands of modernization.

The materiality of the urban fabric itself serves as evidence of the existence of this relevance. In Lagos, the use of local materials such as bamboo and wood in stilt houses construction in informal settlements along the lagoon reflects the practical and cultural aspects of the community's relationship with the environment (Obiefuna, et al. 2013). These materials, often sourced locally, tie the architecture to the land and water, creating a direct link between the built environment and the cultural practices of the people. In Nanjing, the use of traditional building materials such as grey bricks and wooden beams in the restoration of historical structures along the Yangtze waterfront reflects the city's cultural commitment to preserving its architectural heritage. These materials, which have been used for centuries in Chinese construction, serve as

tangible links to the city's imperial past while also being integrated into contemporary urban design. In both cities, the waterfronts serve as sites of cultural memory, where the physical environment reflects historical and cultural resilience. However, the ways in which Lagos and Nanjing incorporate these narratives into their waterfronts reveal distinct approaches to urban development. Lagos's waterfront is characterized by a seemingly chaotic relationship between formal and informal spaces, where indigenous practices coexist with colonial legacies and modern developments. This creates a complex urban fabric that reflects the city's multifaceted history and cultural memory. The persistence of indigenous practices and informal settlements alongside colonial architecture creates a dynamic urban landscape that reflects the city's cultural resilience. In contrast, Nanjing's waterfront development is more controlled, with a clear emphasis on preserving the city's imperial heritage while integrating modern amenities and infrastructure. The result is a more cohesive spatial narrative, where the city's cultural memory is preserved and celebrated through the careful curation of its urban form. The careful preservation of historical sites and traditional architectural forms along the Yangtze River demonstrates the city's commitment to maintaining its imperial heritage while embracing modernity.

Comparing these two cities gives a deeper insight into how cultural narratives manifest and shape these spatial patterns, the urban development of waterfronts, and the broader relationship between memory, identity, and urban morphology.

1.4 Urban Identity

1.4.1. Organic Evolution vs. Designed Imposition

Urban identity is a concept that has been a topic of contradiction in discourse among architectural and urban scholars. As a product of both physical form and social processes, some scholars agree that it is a complex and dynamic concept shaped organically by historical, cultural, and locational dimensions that influence the development of a city's urban landscape and that rapid, artificial changes, particularly through urban regeneration, can threaten the integrity of historical layers and erode the distinctiveness of the urban identity. Oktay defines it as a distinctive character—defining urban identity as a cumulation of unique characteristics that differentiate one city or place from another. Referring to theorists like Relph (1976), elaborates further that people need to connect with places that hold significance and reflect the variety of human experiences. Cities that

fail to develop this identity risk becoming “placeless” and lose their connection with their inhabitants. However, some scholars such as Uzunboy in *Artificial Identity Elements of an Historical City as Cultural Accumulation of Civilizations* contradict this, stating that while urban identity cannot be fully manufactured or created instantaneously, artificial elements, especially those built across different historical periods by successive civilizations, contribute significantly to the urban identity of cities. This layering of civilizations creates a “palimpsest” effect, where traces from different periods coexist, providing a unique urban identity.

Much like Uzunboy, Cheshmehzangi highlights the growing tension between organic urban identity and global forces of homogenization due to globalization in his research on ‘Urban Identity as a Global Phenomenon’. In particular, his paper contributes to the discussion by emphasizing the importance of hybridity and contextualization of urban identities, suggesting that urban identity is not fixed but rather fluid, constructed through various scales of interaction between humans and their environments. He points out that modern cities face challenges from globalization, that can erode unique, place-specific identities in favor of more standardized urban forms that cater to globalized markets and aesthetics. He states the remedy is through the concept of “placeness,” contradicting Oktay’s “placeless,” adding depth to the discussion on artificially-created urban identity by arguing that such identities are often designed to resist or adapt to the pressures of globalization.

1.4.2. In the context of Waterfront Settlements

Waterfronts are highly visible, often regarded as the “face” of the city, and hold significant symbolic and political importance. They are prime locations for economic activities, shifting from industrial uses to spaces for leisure, retail, tourism, and cultural venues (Avni and Teschner 2019). This centrality makes them attractive for modern developments, as they offer high economic returns and opportunities for urban revitalization. This typology of urban form, especially in recent years, is typically often subjected to drastic forms of contemporary urban planning, resulting in monotonous and standardized designs that lack the organic connections of traditional settlements. As a result of being located in the vicinity of these water bodies, these spaces are attractors of modern developments that tend to create spaces that, more often than not, feel artificial, detached from residents, and disconnected from local culture. This undermines the sense of belonging and identity among residents.

This further emphasizes the complexity of urban identity, and how the approaches in both contexts differ despite exhibiting similarities in cultural and social dimensions. These spaces have evolved into prominent expressions of their respective cities' identities, where the past and present converge in architectural form, spatial organization, and social interaction. Both Lagos Lagoon and Nanjing's Yangtze River waterfront reflect a convergence of organic evolution and designed impositions but in distinct ways shaped by different historical, cultural, and socio-economic influences.

The Lagoon waterfront reflects a merge of indigenous, colonial, and modern architectural forms, creating a layered identity. These waterfronts are central to the city's urban identity, serving as spaces that connect the city to its past as a major trading hub while also reflecting its contemporary socio-economic challenges. Historically, as being the heart of commerce and transportation, it linked Lagos to the broader Atlantic trade networks during the pre-colonial, colonial, and post-colonial periods. This historical function remains embedded in the city's identity, with the waterfront continuing to serve as a key economic zone, albeit one marked by stark contrasts between affluence and deprivation. For example, waterfront areas such as Victoria Island, a symbol of wealth and modernity, exist alongside informal settlements like Makoko, where economic inequality and socio-political marginalization are visible in the

urban fabric (Uduma-Olugu and Oduwaye 2010).

The informal settlements along the waterfront, particularly Makoko, challenge formal narratives of development by reflecting local cultural practices and indigenous ways of living amidst modern urban growth. Reflecting on (Dovey 2010)'s argument that architecture and place-making are instrumental in constructing urban identity, the coexistence of traditional structures, colonial relics, and modern skyscrapers —while in tension between maintaining local identity and accommodating globalization—define the waterfront's identity. Socioeconomic pressures continually reshape this layered identity and (Sawyer 2016) further highlights the importance of informal spaces in shaping Lagos's evolving urban identity.

The coexistence of these spaces within the same urban landscape creates a fractured urban identity for Lagos, one that constantly shifts between aspirations of global modernity and the resilience of local, informal urbanism. The physical forms of these waterfront areas, from the towers of Eko Atlantic City to the floating houses of Makoko, reflect the socio-economic divides that characterize Lagos's urban identity. The stark contrast between formal, state-sanctioned development and informal, self-built settlements highlights the socio-political dynamics that have shaped the waterfront, with government policies often prioritizing the interests of elite developments at the expense of marginalized communities (Aliu, Akoteyon and Soladoye 2021).

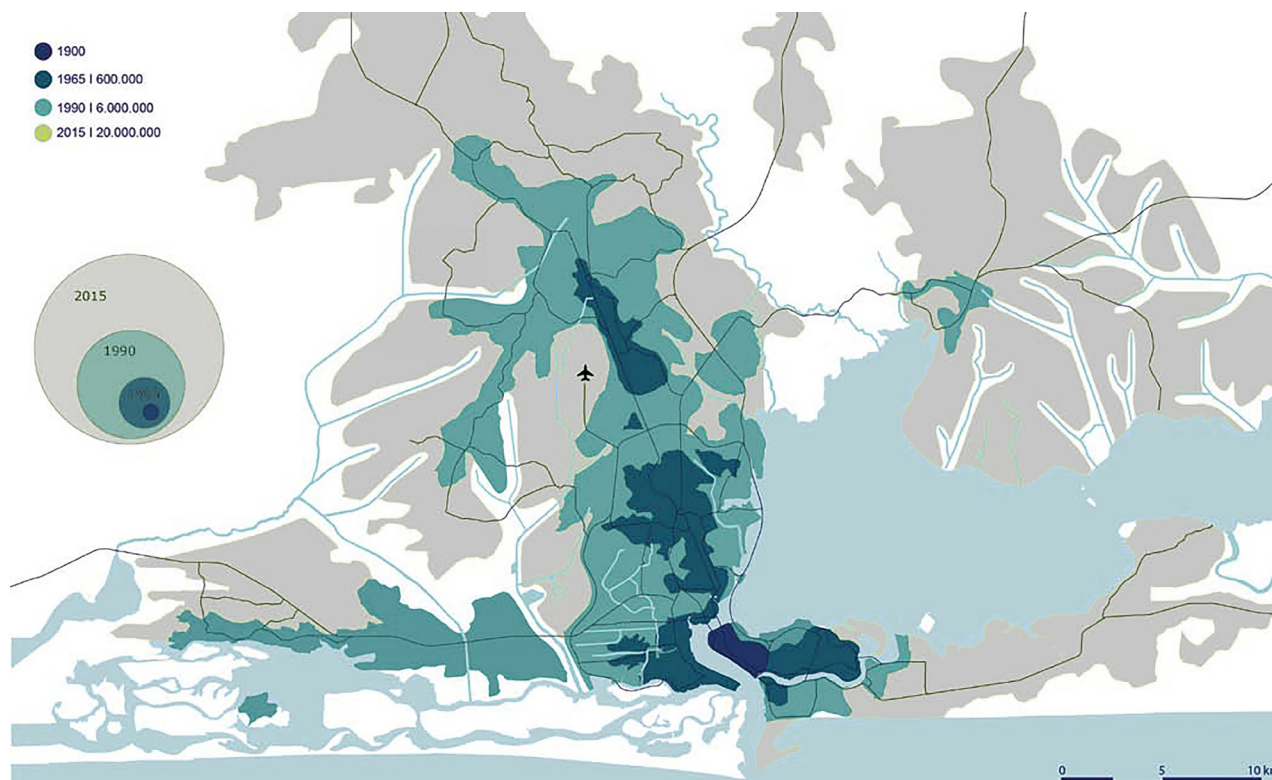


Fig. 23

The growth of Lagos from the 19th century to 2015

Internet Geography. (2024, March 17). The growth of Lagos - Internet geography. <https://www.internetgeography.net/topics/the-growth-of-lagos/>

In contrast, Nanjing's waterfront along the Yangtze River has a different expression of urban identity, one rooted in reverence for the city's long history as a center of imperial power and cultural significance. This reverence is not just perceived by the residents and indigenes of these spaces, but also by the authorities and government, which can be seen in the city rebranding approaches. (Jong and Lu 2022) explain that Nanjing's identity is carefully curated, with its waterfront development reflecting a balance between preserving historical memory and meeting modern needs. This identity is reflected in the preservation of ancient city walls, temples, and public spaces along the waterfront, creating a narrative of cultural pride and historical continuity.

The city's approach to integrating its imperial past with its modern identity contrasts sharply with Lagos, where competing forces of identity often create a fragmented urban form. The Yangtze River serves not only as a geographical feature but as a cultural and historical symbol that defines Nanjing's identity as a city of great historical depth. Nanjing's urban identity is closely tied to its role as the former capital of multiple Chinese dynasties, particularly during the Ming Dynasty, when the city flourished as a center of political and cultural influence (Yuan, Gao and Wu 2016). This imperial legacy is prominently reflected in the city's waterfront development, where historical structures such as the Zhonghua Gate and the Nanjing City Wall are preserved alongside modern urban developments, creating a

sense of continuity between the past and present.

Nanjing's approach to urban identity prioritizes cultural dimensions, with the waterfront serving as a key space for showcasing the city's historical significance. The integration of historical monuments into the urban fabric, alongside contemporary architectural forms, reflects a desire to maintain a connection to the city's imperial past while also positioning it as a modern metropolis. This duality is an essential part of Nanjing's urban identity, where the spatial organization of the waterfront stresses the city's role as a cultural and historical touchstone within China's broader national narrative.

1.4.3. Physical and Social Dimensions

The socio-economic factors influencing the construction of urban identity in these cities also diverge significantly. In Lagos, the informal settlements along the waterfront, particularly in areas such as Ajegunle and Ijora, reflect the city's ongoing struggles with economic inequality, housing shortages, and rapid urbanization. These settlements are emblematic of a broader urban identity shaped by resilience and adaptability, where marginalized communities forge spaces for themselves in the face of government neglect and urban planning challenges. The growth of these informal settlements has become a defining feature of Lagos's urban identity, with the physical environment bearing the marks of socio-economic exclusion and informal modes of urban development (Ajayi, Soyinka-Airewele and Edewor 2019).



Fig. 24
Contrast between housing situations around the Lagos Lagoon.
The Nation (2016, April 2). <https://thenationonline.net>

On the other hand, Nanjing's waterfront reflects a more controlled and state-directed approach to urban identity construction, where socio-economic factors are managed through government policies prioritizing cultural preservation and modernization. The development of high-tech zones, such as the Hexi New Town along the Yangtze River, illustrates the city's focus on creating a modern, economically prosperous identity that coexists with its historical legacy (Yuan, Gao and Wu 2016). The waterfront serves as a symbol of Nanjing's economic aspirations. Modern skyscrapers and technologically advanced infrastructures represent the city's ambition to position itself as a key player in China's urban future.

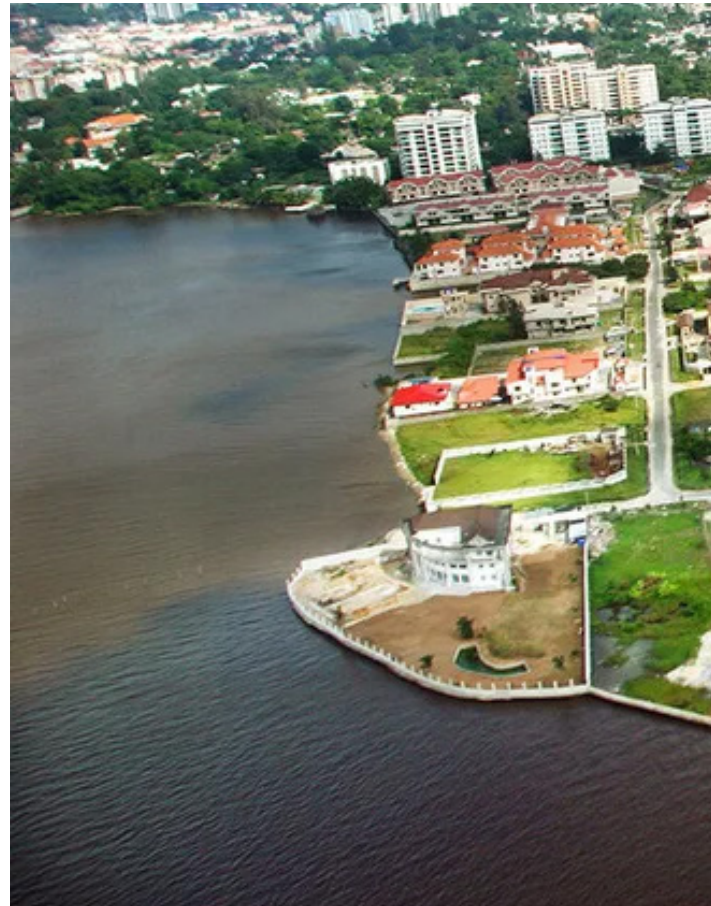
As evident in both contexts, the waterfront functions as a site where social and cultural identity is negotiated. While Nanjing's waterfront portrays continuous interventions for preserving historical identity, Lagos's waterfront is characterized by a negotiation of multiple identities, often in conflict. In Lagos, the informal settlements along the waterfront embody a form of urban identity that is shaped by the everyday experiences of its residents, where survival, socioeconomic status, and community are central to the way space is used and perceived. These settlements challenge the notions of urban identity, offering an alternative narrative that centers on the agency of marginalized groups in shaping the city's development. In contrast, Nanjing's waterfront identity is more aligned with state-led narratives of progress and cultural preservation, where the physical environment is carefully curated to reflect the city's historical significance and its aspirations for the future.

This highlights how both cities engage with urban identity differently: Nanjing through state-driven preservation efforts and Lagos through informal settlements that preserve its indigenous identity despite neglect by formal planning efforts. (Neill 2004) argues that cities experiencing rapid modernization, such as Lagos, often struggle with this tension, where historical identity may be sacrificed for functionality.

1.5 Preservation vs. Development

1.5.1. The "Rebranding" Movement

The tension between preservation and development is a defining feature of the waterfront urban typology. These areas, often the focus of both historical significance and economic development, face immense pressure to modernize at the expense of cultural and historical integrity. In the last few decades, urban waterfronts have gained unprecedented attention, leading to extensive rebranding and modernization initiatives that



transform the character and utility of these areas. As cities increasingly engage in global competition for tourism, economic growth, and cultural prestige, the image and functionality of urban waterfronts have become critical to a city's brand identity. This "rebranding" movement seeks to revitalize waterfronts, making them vibrant hubs for commerce, tourism, and cultural activities, but it also raises complex issues regarding preservation, authenticity, and social equity.

The motivations behind waterfront rebranding are a pressing subject of inquiry in this regard, along with the socio-economic forces driving such projects and the tensions that arise between development interests and the preservation of historical identity. Modernization efforts can result in both positive transformations and unintended consequences for local communities. The challenge of balancing preservation and development is central to the evolving narratives of waterfront spaces in major urban centers like Lagos and Nanjing. As cities rapidly expand and modernize, the pressure to accommodate economic growth, increased population, and infrastructure demands often compete with the desire to maintain the historical and cultural significance of these spaces. In both Lagos and Nanjing, the waterfronts serve as pivotal zones of this tension, where conservation efforts must contend with the imperatives of contemporary development.



Fig. 25
Banana Island - a stretch of
luxurious housing along the
Lagos Lagoon.
Property listings. (n.d.). Land
for sale Zone P, Banana Is-
land Ikoyi Lagos. Private-
Property.ng. Retrieved July
6, 2025, from <https://private-property.ng/listings/land-for-sale-zone-p-banana-island-ikoyi-lagos-DELZ0021>

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Waterfronts, by virtue of their geographical position, often serve as a city's interface with the world. Historically, these areas have been hubs of commerce, with ports and docks connecting urban centers to global trade networks. The economic importance of waterfronts has evolved with changing industrial needs, and today they are more commonly seen as spaces of consumption and leisure rather than production. This transformation aligns with a broader shift in urban economies from industrial to service-oriented activities. Consequently, waterfronts are redeveloped to appeal to tourists, residents, and businesses alike, creating spaces that combine luxury housing, recreational amenities, and cultural attractions (Hoyle, 2002).

The desire for economic revitalization drives much of this transformation, as cities aim to convert formerly industrial or underutilized waterfront areas into lucrative real estate and commercial spaces. In many cases, the rebranding of waterfronts follows a similar pattern: old docks, warehouses, and factories are replaced by mixed-use developments that feature shopping malls, museums, hotels, and high-rise apartments. This shift from production to consumption on the waterfront reflects broader trends of urban gentrification and the commodification of public spaces (Avni and Teschner 2019).

With the rise of globalization, cities worldwide compete for visibility and investment, making the creation of a compelling urban image increasingly crucial. Waterfronts, due to their historical and symbolic significance, become focal points for rebranding strategies aimed at positioning cities as attractive destinations on the global stage. Scholars (Niemann and Pramel 2018) argue that branding has become an essential component of urban development, especially for areas with significant "face value," like waterfronts. By investing in these areas, cities craft an image that emphasizes modernity, cultural richness, and economic vitality (Niemann and Pramel 2018). Notably, waterfront rebranding often emphasizes the preservation of heritage, using historical elements as selling points. The aesthetic of "authenticity" is leveraged to attract tourists and residents seeking unique experiences. This approach can create a paradox, where the commercialization of historical sites sometimes undermines their cultural value and excludes local communities from reaping the benefits of redevelopment (Hurley, 2006).

1.5.2. Conflicts of Interest in Waterfront Redevelopment

The "rebranding" of waterfronts is often accompanied by significant planning conflicts, particularly between public and private interests, as well as between development advocates and



conservationists. According to (Avni and Teschner 2019), these conflicts generally revolve around four main areas: land ownership, heritage preservation, social justice, and environmental resilience. For instance, land ownership disputes arise when public waterfronts are partially privatized to facilitate high-end development, restricting access for the broader community and altering the historical connection between residents and the waterfront (Avni and Teschner 2019).

One of the most significant conflicts centers on preserving heritage versus the pressure for modernization. Historical structures on the waterfront often serve as physical reminders of a city's past, yet their potential as economic assets frequently overshadows their value as cultural landmarks. In cities like Baltimore and Boston, the preservation of old warehouses and docks has been achieved by converting them into commercial spaces, such as shopping centers and restaurants, effectively maintaining the structures while repurposing their original function.

However, this approach can risk reducing heritage sites to mere aesthetic backdrops, diluting the authentic history of these areas in favor of sanitized, tourist-friendly versions (Hurley 2006).



Fig. 26: Ereko Church, circa 1900s. Lagos Island.

A Photo Captures Ancient Ereko Area , Lagos Island in1900's. (2024, August 22). Aprokosay Facts and News. <https://aprokosay.com/a-photo-captures-ancient-ereko-area-lagos-island-in1900s/>

1.5.3. Socioeconomic Impact and Gentrification

As waterfronts are rebranded, they often become symbols of urban regeneration, drawing affluent residents and tourists. However, this influx can contribute to gentrification, pushing out long-standing residents who can no longer afford to live in the newly desirable waterfront areas. This phenomenon has been observed in cities globally, where waterfront rebranding leads to an increase in property values, rents, and the cost of living. Such changes can alter the social composition of waterfront neighborhoods, replacing working-class communities with wealthier populations attracted by the waterfront's "rejuvenated" image (Hoyle, 2002).

The rise of green gentrification is a related trend, as cities incorporate eco-friendly features into waterfront designs to appeal to environmentally conscious consumers. These efforts, though beneficial for the urban ecosystem, often contribute to the exclusivity of waterfront areas. The addition of parks, green spaces, and sustainable infrastructure can make waterfronts highly desirable, thereby excluding lower-income communities from the rebranded areas (Avni & Teschner, 2019).

1.5.4. Community Involvement in Waterfront Rebranding

Efforts to rebrand waterfronts are not solely driven by developers and city officials. In some cases, community-based initiatives have played an instrumental role in shaping the image and function of these areas. (Hurley 2006) underscores the importance of public history projects in waterfront redevelopment, emphasizing that grassroots efforts to narrate and preserve local history can help foster a sense of belonging among residents. Public history projects—such as oral histories, community events, and heritage tours—allow local voices to be part of the rebranding process, potentially creating a more inclusive narrative that reflects the area's full historical and social fabric (Hurley 2006).

Community participation in rebranding efforts can also counterbalance the negative impacts of commercialization by ensuring that waterfront developments serve local interests. However, the success of these initiatives depends on the willingness of developers and policymakers to incorporate community input into the planning process. Without genuine collaboration, community-driven efforts to preserve heritage and social values may be overshadowed by commercial pressures.



Fig. 27: The Marina, circa 1900s. Lagos Island.

MAR- SOUTHERN NIGERIA MARINA ROAD LAGOS CPA RARE | For sale on Delcampe. (n.d.). Delcampe. https://www.delcampe.net/en_US/collectibles/postcards/nigeria/mar-southern-nigeria-marina-road-lagos-cpa-rare-410031806.html



Fig. 28: The Marina, circa 2020s. Lagos Island.

Odukoya, J. (n.d.). Marina, Lagos, Nigeria. Flickr. <https://www.flickr.com/photos/jidefx/8104996964>

1.5.5. The Lagos Dilemma: Modernization at What Cost?

In Lagos, this balance is particularly fraught due to the city's complex socio-economic landscape, its history of colonialism, and post-colonial urban growth. The Lagos Lagoon area has historically been a vital part of the city's economic and cultural life, but it is also a site of rapid urbanization, with luxury developments such as Eko Atlantic rising alongside slums and informal settlements like Makoko. The struggle between preserving the historical and cultural heritage of the lagoon versus embracing large-scale development projects has produced

a fragmented urban landscape. For instance, while some waterfront areas have seen state-led efforts toward urban renewal, these projects often prioritize globalized, high-end development at the expense of local history and community interests (Ajayi, Soyinka-Airewele and Edewor 2019). In Lagos, there is a push for modernization through a "Western" vision. Lagos' recent push for this has thrown the city into a state of constantly going through fast-paced change, with a growing tension between conserving its historical character and

accepting the imperatives of growth. Nowhere is this tension more evident than around the Lagos Lagoon waterfront settlement area. While the vision of transforming Lagos into a “global city” is enticing, it raises profound questions about the cost of this transition. Specifically, the cultural and historical identity of the city, particularly in the lagoon regions, is under threat as large-scale development projects erase centuries of urban memory (Olajide, Agunbiade and Bishi 2018).

As mentioned in the earlier chapter, the Lagos Lagoon has long been a vital part of Lagos’ identity, both as a trading hub and a cultural landmark. Historically, the lagoon and its surrounding settlements were integral to the socio-economic fabric of the region. For centuries, the lagoon’s waterways were crucial for trade, communication, and the transport of goods, particularly during the height of the trans-Atlantic slave trade (Law, 1983, p. 321). Even after the colonial era, the waterfront areas of Lagos remained rich in Yoruba cultural traditions, embodied in the architecture, spatial organization, and social structures of the communities that lived there (Jolaoso, Umaru and Bello 2019). However, Lagos’ rapid urbanization has placed immense pressure on these traditional communities over the years. The development vision for Lagos, which includes making it an African “megacity,” has led to massive infrastructural projects reshaping the city’s waterfronts. These projects, while aimed at positioning Lagos as a global financial hub, are often undertaken without considering their impact on the cultural and historical memory embedded in these spaces (Olajide, Agunbiade and Bishi 2018, 23) (Allen 2020, 3).

Lagos’s aggressive urban development agenda has led to the gradual disappearance of significant architectural and cultural elements that defined the city’s historical identity. In particular, the waterfront communities, which once flourished with traditional Yoruba architecture—characterized by courtyard houses, verandas, and symbolic carvings—have been replaced with modern high-rise buildings and commercial complexes (Jolaoso, Umaru and Bello 2019, 6). The implications of this shift are profound. The erasure of traditional architecture signals a loss of cultural continuity. These structures were more than just buildings; they were manifestations of a way of life, influenced greatly by nature, by the lagoon, and the communal ethos of the people (Jolaoso, Umaru and Bello 2019). As these buildings are replaced by Western-style developments, the collective memory of the city is also being compromised (Olajide, Agunbiade and Bishi 2018, 25). The modernization of Lagos has also disproportionately affected the livelihoods of the

urban poor, many of whom reside in informal settlements along the lagoon. These areas, despite being viewed as “slums,” are often rich in cultural history and serve as living archives of Lagos’ past (Olajide, Agunbiade and Bishi 2018, 26). However, government policies that aim to clear these settlements in favor of modern development projects have led to widespread displacement and the loss of community ties (Olajide et al., 2018, p. 28). The displacement not only disrupts the social fabric but also severs the connection between residents and the land, which holds deep historical significance (Akunnaya and Adedapo 2014, 19).

The consequences of the ongoing development projects around the Lagos Lagoon are multifaceted, impacting both the physical environment and the socio-cultural landscape. From an environmental perspective, the reclamation of land and the construction of high-rise buildings along the waterfront have contributed to significant ecological degradation. The once-thriving mangrove ecosystems that bordered the lagoon are shrinking at an alarming rate due to unchecked urban expansion (Alademomi 2017, 12). This environmental degradation, in turn, exacerbates the city’s vulnerability to flooding, a problem that is already severe due to Lagos’ low-lying topography and inadequate drainage systems (Akunnaya and Adedapo 2014, 22). Projects like Eko Atlantic, intended to showcase Lagos as a leading African financial hub, have garnered international attention but have also raised concerns about environmental degradation and the displacement of local communities. The reclamation of land from the lagoon for this development symbolizes the city’s ambition to engage with global economic trends but at the cost of erasing the traditional livelihoods and cultural practices of the fishing communities that once dominated the waterfront.

From a socio-cultural standpoint, the development projects have led to a growing sense of alienation among Lagosians, particularly those from the indigenous communities. The introduction of modern housing estates, luxury apartments, and commercial complexes caters primarily to the elite and foreign investors, leaving little room for the city’s original inhabitants. These developments are altering the city’s identity, transforming it into a space that is increasingly inaccessible to those who shaped its history (Allen 2020, 7). Furthermore, the commercial logic driving these projects often prioritizes economic growth over social equity. As noted in several studies, the push for urban transformation in Lagos reflects a “speculative urbanism” where land is viewed primarily as a commodity to be developed for profit (Olajide, Agunbiade and Bishi 2018, 24).

This approach often disregards the cultural and historical value of the spaces being transformed, leading to a homogenization of the urban landscape. The waterfront's diverse communities and distinct histories are being flattened under the weight of glass-and-steel skyscrapers (Allen 2020, 9). The development of the Banana Island project represents a clear example of how large-scale developments can lead to the displacement of local communities and the destruction of natural ecosystems. Built on reclaimed land from the lagoon, Banana Island was designed as an exclusive enclave for the city's elite, with little regard for the environmental and social costs of such a project. This type of development reflects a broader pattern in Lagos, where waterfront regeneration efforts are often driven by private interests, leaving little room for the preservation of cultural and historical assets (Emordi and Osiki 2008).

The challenge for Lagos lies in finding a balance between the demands of modernization and the need to preserve its cultural heritage. Urban planners and policymakers must recognize that development does not have to come at the cost of erasing the past. There are numerous examples from around the world where cities have successfully integrated

modern infrastructure with the preservation of historical landmarks and cultural spaces. In Lagos, a similar approach could involve the adoption of more inclusive, and less invasive urban development policies that respect the cultural heritage of waterfront communities while still promoting economic growth. A possible solution would be the implementation of heritage conservation zones, particularly around the lagoon and other historically significant areas. These zones would protect key architectural and cultural sites from demolition and ensure that new developments are designed in a way that complements, rather than replaces, the existing urban fabric. Additionally, the government could invest in restoring and maintaining traditional buildings, such as Yoruba courtyard houses, to keep the city's historical memory alive. Greater community participation in the planning process would be beneficial as well, in the formal planning. Rather than imposing top-down development projects, urban planners could work with local communities to design spaces that reflect their cultural identity and meet their needs. This would not only preserve the city's historical and cultural heritage but also foster a sense of ownership and pride among residents.

Fig. 29: Colonial House, circa 1900s, Ebute Metta, Lagos Island.

Omo-Oba, L. (2019, November 25). *Violent changes at the heart of a society rapidly losing its roots*. *Premium Times Opinion*. Retrieved July 6, 2025, from <https://opinion.premiumtimesng.com/2019/11/25/violent-changes-at-the-heart-of-a-society-rapidly-losing-its-roots-by-lande-omo-oba/?tztc=1>



Fig. 30: Idumagbo, Lagos Island. 4th of February 1902. *Oxford Research Encyclopedia of African History*. (n.d.). *Lagos in the 19th Century*. In *Oxford Research Encyclopedia of African History*. Oxford University Press. Retrieved July 6, 2025, from <https://oxfordre.com/africanhistory/display/10.1093/acrefore/9780190277734.001.0001/acrefore-9780190277734-e-281>



1.5.6. Balancing Priorities: A New Face for Nanjing's Riverfront

Nanjing, a city with a storied history as one of China's Four Great Ancient Capitals, also grapples with balancing its preservation responsibilities with the pressures of modernization, particularly along its Yangtze River fronts. Known for its heritage of river-adjacent watertowns, Nanjing has developed a distinctive urban identity shaped by centuries of trade and culture along the Yangtze. These watertowns, situated within the boundaries of Nanjing, have served as vital cultural hubs, facilitating trade, preserving local identity, and enriching the city's cultural fabric (Yuan, Gao and Wu 2016, 82). Yet, as China's economic growth drives intense urbanization, the preservation of heritage in these historic areas clashes with demands for rebranding and urban expansion, creating a challenging landscape for Nanjing's municipal planners. The watertowns along the Yangtze near Nanjing, such as Yuhuatai and Pukou, hold profound historical significance, with features like historic temples, arching stone bridges, and traditional architecture that reflect centuries-old cultures. These towns and their

historical landmarks embody the legacy of ancient trade routes while preserving the architectural influences of successive Chinese dynasties (Yuan, Gao and Wu 2016, 85). Nanjing's waterfront towns, including iconic sites like the Confucius Temple and ancient Ming and Qing-style buildings, are more than just structures; they are repositories of both local and national cultural memory.

Beyond architecture, these watertowns serve as "cultural corridors" that merge Nanjing's historical identity with the natural environment of the Yangtze. These corridors integrate the river's landscape and surrounding green spaces with historic pagodas, temples, and ancient pathways. Such spaces enable both residents and visitors to engage deeply with the cultural heritage of the city, preserving traditional practices such as silk and tea trading, as well as longstanding religious festivals (Zhang, et al. 2023, 2). For Nanjing, the challenge lies in ensuring these elements remain intact amidst ongoing urban expansion, safeguarding a cultural continuity that has persisted through the centuries. Rapid urban expansion along Nanjing's waterfront has brought new infrastructures, including bridges,

Fig. 31: Wende Bridge, adjacent to the Confucius Temple.

Kelly, D. (2013, June 8). *China: A nation's spirit felt in Nanjing* - Los Angeles Times. Los Angeles Times. <https://www.latimes.com/travel/la-tr-nanjing-20130609-story.html>



highways, and commercial developments, which introduce economic benefits but risk undermining the cultural essence of these historically rich sites. Economic development in recent decades has accelerated, propelled by goals to elevate Nanjing's status within the Yangtze River Delta region through city rebranding efforts (Wu, et al. 2017, 69). This rebranding emphasizes a modern urban aesthetic to attract tourism and investment, an approach that, while economically advantageous, often overshadows historic preservation. City planners face the challenge of balancing these modern developments with the preservation of Nanjing's traditional watertowns. Initiatives aimed at establishing Nanjing as a central cultural and economic hub have led to the construction of large commercial complexes and entertainment zones along the waterfront. These areas, designed to appeal to a broader, more global audience, sometimes prioritize a stylized interpretation of heritage over genuine preservation efforts (Yuan, Gao and Wu 2016, 87). The result is an urban landscape where historical continuity is at risk, as modernization reshapes local identity, potentially erasing the visual and social markers that connect Nanjing to its historical roots.

To maintain a balance between economic growth and cultural preservation, Nanjing's planners have adopted strategies that attempt to incorporate heritage preservation into development plans. A central approach has been adaptive reuse, where historical buildings within waterfront towns are repurposed for contemporary use without altering their structural integrity. This strategy has enabled watertowns to attract visitors and serve as active cultural hubs by transforming older buildings into spaces like cafes, art galleries, and cultural centers (Zhang, et al. 2023, 8). Such adaptive reuse protects the town's unique character while promoting economic sustainability. Additionally, the establishment of cultural heritage protection zones in watertown areas such as Zhonghua Gate has created regulatory frameworks that restrict new construction and mandate that any renovations align architecturally with the surrounding historical buildings. For example, restoration projects in these areas use locally sourced materials and traditional building techniques to ensure visual continuity with the past, even as new structures emerge (Wu, et al. 2017, 73). These measures illustrate Nanjing's commitment to retaining its historic character, even as the city strives to modernize. The development of heritage corridors along the Yangtze further represents Nanjing's efforts to preserve and highlight its cultural legacy. These corridors link significant cultural sites along the river through designated trails and pathways, allowing for thematic exploration of the city's

cultural evolution. This approach not only preserves the physical spaces but also fosters a deeper connection between Nanjing's history and the community by encouraging residents and visitors to experience the city's living heritage. These corridors, as described by (Zhang, et al. 2023, 6), integrate natural landscapes with historic landmarks, promoting both accessibility and sustainability.

Several of Nanjing's waterfront towns provide models for how development and preservation can coexist. Yuhuatai, for instance,



demonstrates successful integration, where ancient temples and traditional structures are surrounded by green spaces and minimal commercial encroachment. This combination of natural and cultural preservation provides a sustainable urban model, blending environmental considerations with historical integrity to create a dynamic and respectful urban landscape (Yuan, Gao and Wu 2016, 89). However, challenges remain, especially in areas like Pukou, where rapid residential expansion has

encroached upon historical sites. Although the local government has introduced stricter zoning laws to protect heritage sites, economic incentives still often encourage developers to extend beyond regulated boundaries (Wu, et al. 2017, 75). This highlights a persistent tension in the balancing act between preserving the historical fabric of these watertowns and meeting the needs of a growing urban population. Pukou's experience underscores the importance of collaboration among government bodies, developers, and community groups to find sustainable solutions



Fig. 32: The Nanjing Yangtze River Bridge opened in 1968 CNN. (n.d.). *The bridge that changed China forever.* CNN Style. Retrieved July 6, 2025, from <https://edition.cnn.com/style/article/nanjing-yangtze-river-bridge-revival/index.html>



Fig. 33: The Nanjing Yangtze River Bridge in 2019 F. (n.d.). *Spring scenery of Nanjing, E China (3)* - People's Daily Online. <https://en.people.cn/n3/2019/0423/c90000-9570826-3.html>

that respect both cultural heritage and economic realities. Nanjing's waterfront expansion has had notable environmental impacts, particularly from land reclamation projects that alter the natural riverine environment. This reshaping of the Yangtze River's banks affects water quality and biodiversity, creating ecological challenges in addition to cultural ones (Chen, et al. 2017, 224). Land reclamation projects and industrial activities have increased pollution levels, which not only harm the waterfront's

environmental health but also compromise the aesthetic and recreational appeal of these historic areas (Tian, et al. 2011, 873).

While Nanjing's waterfront revitalization is intended to beautify and modernize, it must also address the ecological impacts associated with such development. The experience of Nanjing's waterfront towns illustrates the complex dynamics of preservation and development, as the city seeks to preserve its historical legacy while embracing economic growth. Nanjing's adaptive reuse practices, heritage protection zones, and cultural corridor initiatives show that it is possible to integrate economic goals with cultural sensitivity, albeit through a challenging and evolving process. Continued collaboration between city officials, heritage experts, and community stakeholders will be essential to ensure that Nanjing's watertowns retain their historical and cultural significance.

The city's approach will need to prioritize sustainability and cultural integrity to preserve its unique heritage. With the continuous balancing of these priorities, Nanjing has the potential to create a model of urban transformation that respects its historical identity and adapts responsibly to modern demands, offering valuable insights for other cities undergoing similar transitions.

1.6 Theoretical and Practical Perspectives in the Context of Urban Development of Waterfronts

Urban development at waterfronts—particularly in historically and culturally rich cities—presents unique challenges, as modern infrastructure and economic growth often come at the expense of local history, informal settlements, and traditional lifestyles. Scholars have developed multiple theories around sustainable and inclusive urban development, and these ideas are increasingly tested in the evolving landscapes of major cities like Lagos and Nanjing. The following exploration provides an overview of key urban theories and evaluates how their principles might apply to the waterfront contexts in these two cities, assessing whether practical approaches in urban regeneration reflect, challenge, or evolve these theoretical perspectives.

1.6.1. The Right to the City - Henri Lefebvre

Henri Lefebvre's concept of the "Right to the City" advocates for inclusive urban spaces that prioritize residents' social and cultural needs over commercial and elite interests. Lefebvre emphasized that urban spaces belong to all inhabitants and should be designed to support communal well-being rather than be co-opted for profit-driven motives (Lefebvre, 1968). In practice, however, the implementation of such inclusive ideals often clashes with the economic imperatives of urban development. Waterfront redevelopment projects, especially in high-value areas, often prioritize investment and high-income residents, side-lining long-standing communities. In the Lagos Lagoon, for example, informal settlements and traditional waterfront communities face displacement as land values rise, with development catering primarily to affluent urbanites and investors. This contradiction suggests a gap between Lefebvre's ideal of inclusive space and the reality of modern, profit-oriented urban regeneration.

1.6.2. Community-Based Urbanism - Jane Jacobs

Jane Jacobs argued for urban planning that preserves the social fabric and diverse uses of neighborhoods. In *The Death and Life of Great American Cities*, Jacobs championed mixed-use development and pedestrian-friendly environments, which she saw as critical to maintaining vibrant, socially connected communities (Jacobs, 1961). Jacobs' ideas are particularly relevant to waterfront

regeneration projects where the social cohesion of traditional communities often competes with top-down, homogenous designs. Nanjing's attempts to balance modern amenities with the heritage of its watertowns—through adaptive reuse and heritage protection zones—demonstrate how Jacobs' principles can be applied to create economically viable spaces while honoring communal life. Yet, practical challenges arise, as large-scale projects can homogenize spaces, undercutting the organic, community-oriented design Jacobs advocated.

1.6.3. Gentrification and Displacement - Neil Smith

Neil Smith's work on gentrification focuses on the economic forces that drive the redevelopment of urban areas, often resulting in the displacement of lower-income residents. Smith argued that as land values rise, developers increasingly target once-marginalized areas for luxury projects, displacing long-standing communities in favor of new, wealthier occupants (Smith, 1982). This pattern is visible in Lagos, where waterfront development has led to the gradual replacement of informal settlements with upscale residential and commercial buildings. Similarly, in Nanjing, projects that rebrand the waterfront for tourism and elite appeal can alienate local communities, risking the gentrification of culturally significant watertowns. Both examples underscore Smith's warnings about gentrification, as real-life applications of development can prioritize financial returns over social stability.

1.6.4. Sustainable Urbanism and Green Infrastructure - Ian McHarg

Ian McHarg's *Design with Nature* presents a vision for urban development that harmonizes with natural systems, advocating for ecological sustainability as a foundation for city planning (McHarg, 1969). This theory has influenced contemporary practices of green infrastructure, particularly in waterfront areas prone to flooding and climate change. In practice, cities like Nanjing have applied McHarg's principles by integrating green spaces and flood-resistant infrastructure into their waterfront developments. The concept of heritage corridors along the Yangtze, where green spaces are interwoven with cultural sites, reflects a sustainable approach that aligns with McHarg's ideals. Conversely, Lagos faces challenges in implementing green infrastructure due to rapid urbanization and limited resources, which sometimes prioritize short-term economic gains over ecological resilience.

1.6.5. Practical Approaches and Their Alignment with Theory

In Lagos and Nanjing, urban development along waterfronts shows varied alignments with these theories. Practical urban regeneration efforts in Lagos tend to conflict with Lefebvre's and Jacobs' ideas of inclusive, community-centered spaces. Development here often caters to speculative investors, displacing informal communities that lack legal recognition and resources to resist relocation. Waterfronts become exclusionary, reflecting a gentrified landscape at odds with Lefebvre's vision of urban inclusivity and Jacobs' ideal of neighborhood vitality. In Nanjing, urban projects have attempted to incorporate aspects of Jacobs' community-centered planning and McHarg's ecological priorities, but they sometimes fall short in retaining authentic cultural identity. While heritage zones and green corridors suggest respect for Nanjing's historical and natural heritage, the pressures of rebranding and tourism can override these goals, leading to curated versions of tradition. This approach risks diluting the cultural authenticity that Jacobs emphasized in her advocacy for diverse, genuine urban spaces.

In both Lagos and Nanjing, the application of theoretical concepts to urban development has varied significantly, influenced by each city's historical trajectory, governance structures, and socio-economic contexts. In Lagos, urban development is often driven by pragmatic concerns, such as the need to address population growth and economic expansion, but without a cohesive application of theoretical perspectives. The development of the Lagos Lagoon waterfront tends to reflect the city's focus on economic modernization and global competitiveness, as evidenced by projects like Eko Atlantic, which seeks to establish Lagos as a global financial hub. However, the disconnect between theory and practice becomes apparent when examining the impact of such projects on local communities and historical landscapes. While urban theorists emphasize the importance of preserving cultural memory and fostering a sense of place in development, Lagos' waterfront regeneration often prioritizes elite-driven, large-scale developments over the preservation of local cultural practices and historical narratives. The displacement of informal settlements such as Makoko, a floating slum with deep historical roots, illustrates how practical planning decisions can undermine the theoretical principles of inclusivity, memory preservation, and sustainable urban growth.

The informal nature of many waterfront developments reflects a lack of structured urban planning. (Aliu, Akoteyon and Soladoye 2021) argue that the absence of government intervention in informal settlements like Makoko leads to a unique form of urban development, where residents shape their environment based on necessity rather than formal design principles. This has led to a fragmented urban morphology, where informal settlements coexist with modern commercial developments, creating a patchwork of urban forms. (Uduma-Olugu and Oduwaye, The regeneration of Lagos Lagoon waterfronts for recreation and tourism 2010) discuss how urban regeneration efforts in Lagos have often failed to address the needs of informal communities, leading to the marginalization of these areas in urban planning efforts.

The theoretical concepts of urban continuity, as proposed by scholars like Henri Lefebvre and Jane Jacob, resonate in Nanjing's development approach. These theories argue that urban spaces should reflect a city's historical evolution and collective experiences, creating a sense of place that connects past and present. In practical terms, Nanjing's urban planners have implemented policies that protect historical sites along the Yangtze River while allowing for new developments that do not overshadow or disrupt the city's historical fabric. This balance is particularly evident in the Hexi New Town project, where modern urban design has been harmonized with the preservation of nearby cultural heritage sites. The success of Nanjing's approach demonstrates how theory can be effectively translated into practice when there is a clear alignment between proposed insights and policy objectives. The city's development strategy reflects a broader understanding of how urban memory and identity contribute to the sustainability and resilience of urban spaces. By maintaining key historical landmarks along the Yangtze River, Nanjing ensures that its waterfront remain a functional and symbolic space, deeply connected to the city's identity.

In contrast, Lagos presents a more fragmented approach to integrating theory into urban practice. While scholars have argued for the importance of preserving local cultural narratives and fostering community-led development (Zhang, et al. 2023), the practical realities of urban governance in Lagos often prioritize short-term economic gains over long-term cultural sustainability. Projects like Banana Island and Lekki Free Trade Zone exemplify this tension, as they cater to elite and international

interests while neglecting the cultural and historical significance of the lagoon as a space of local identity and memory (Akunnaya and Adedapo 2014). The lack of a cohesive urban identity in Lagos' waterfront development can be attributed, in part, to the absence of a robust regulatory framework that integrates theoretical insights into practical planning processes. Unlike Nanjing, where urban policies are informed by a clear vision of historical continuity and cultural preservation, Lagos struggles to balance the competing demands of rapid urbanization, economic expansion, and the need for cultural sustainability. This disconnect between theory and practice has contributed to the marginalization of local communities and the erosion of the city's historical landscapes, particularly in waterfront areas where informal settlements are routinely displaced in favor of private development projects (Aduwo, Edewor and Ibem 2016).

The integration of theoretical perspectives into urban development also plays a critical role in shaping the environmental sustainability of waterfront spaces. Lagos and Nanjing face significant environmental challenges related to their waterfronts, including rising sea levels, flooding, and pollution. Theories of sustainable urbanism emphasize the need for waterfront development to prioritize ecological resilience and environmental justice. However, the practical approaches vary significantly between the two cities. In Lagos, waterfront development projects often exacerbate environmental vulnerabilities rather than mitigate them. The construction of high-end developments like Eko Atlantic has led to concerns about the impact of land reclamation on the lagoon's natural ecosystems, and the displacement of local communities that rely on the waterfront for their livelihoods. Despite theoretical calls for more sustainable and inclusive urbanism, the practical reality in Lagos is one where environmental and social concerns are frequently side-lined.

Nanjing, by contrast, has made more concerted efforts to incorporate environmental sustainability into its waterfront development strategies. The city's urban planners have adopted principles of green urbanism and sustainable design, ensuring that new developments along the Yangtze River are environmentally responsible and resilient to climate change. This approach is informed by both theoretical insights and practical considerations, as Nanjing seeks to balance its historical preservation efforts with the need for sustainable urban growth (Zhang, et al. 2022). Nanjing's waterfront development follows a more structured and state-driven approach. (Wang, Wong and Duan, Urban growth and spatial

restructuring patterns: The case of Yangtze River Delta Region, China 2016) emphasize how Chinese urbanization policies have prioritized historical sites and their preservation while promoting modern infrastructure development. This approach reflects a more cohesive vision for urban development, where cultural preservation and economic growth are complementary rather than conflicting goals. Nanjing's riverfront, with its carefully preserved historical landmarks and modern amenities, serves as an example of how urban development can balance the needs of the past and the future.

02

The Architecture within the Morphology:

*Transitional Urban Morphology and
Architectural Typologies*

Fig. 34: The Town Plan of Lagos, 1960
Mouton & Co., Lagos, 1960. (n.d.-b). The Map House. <https://www.themaphouse.com/private-views/c8cf66048a6294e9ccb278/255925-mouton-co.-lagos-1960/>



2.1 Evolution of the Urban Morphology

Urban morphology—the study of the form, structure, and layout of cities—has always been crucial to understanding the unique spatial dynamics of urban form. Waterfronts have witnessed the unfolding of historical events in cities like Lagos and Nanjing that have dramatically altered their urban landscapes. These turning points, which range from colonial incursions to industrial revolutions and post-colonial urban planning, have left a lasting mark on the urban spaces, shaping their physical structure and also their socio-political and economic organization. The spatial patterns of waterfront areas reflect the intersection between natural features like rivers or coastlines and human intervention. By examining these patterns, and using typo-morphological analysis, comes the exploration of how waterfronts adapt to historical, economic, and environmental pressures while continuing to shape the broader dynamics of urban spaces.

2.1.1. The Lagos Lagoon: Streets, Plots, and Buildings

In Lagos, the urban form near the Lagoon is and has been shaped significantly by socio-economic factors, community-based land management, and informal ownership structures. The street patterns in waterfront settlements, particularly in areas like Makoko, typically emerge organically without formal planning intervention, leading to narrow, irregular paths that conform to the topography of the lagoon. These paths not only provide essential access to the water but also act as extensions of communal spaces where residents conduct daily activities, socialize, and engage in small-scale trading (Adenaike, Opoko and Kosoko 2020, 53). Despite the lack of formal planning, these pathways reflect an organized response to community needs, prioritizing functionality over aesthetic conformity.

In terms of plot configuration, or “lot” arrangements as referred to in local terminology, waterfront communities exhibit irregular and adaptive parcelling. Plots are typically small and variably shaped, reflecting the influence of communal land allocations rather than state-controlled zoning. These organic configurations mirror the social structure of the communities, where plots are often allocated according to family groupings or communal associations rather than rigid boundaries (F. M. Adedire 2017, 89). Buildings in the area are modest, single-story constructions, primarily using affordable materials such as wood, corrugated metal, and bamboo. These structures are densely packed, resulting in a compact urban grain that supports high population density in minimal space. The spatial layout within these informal



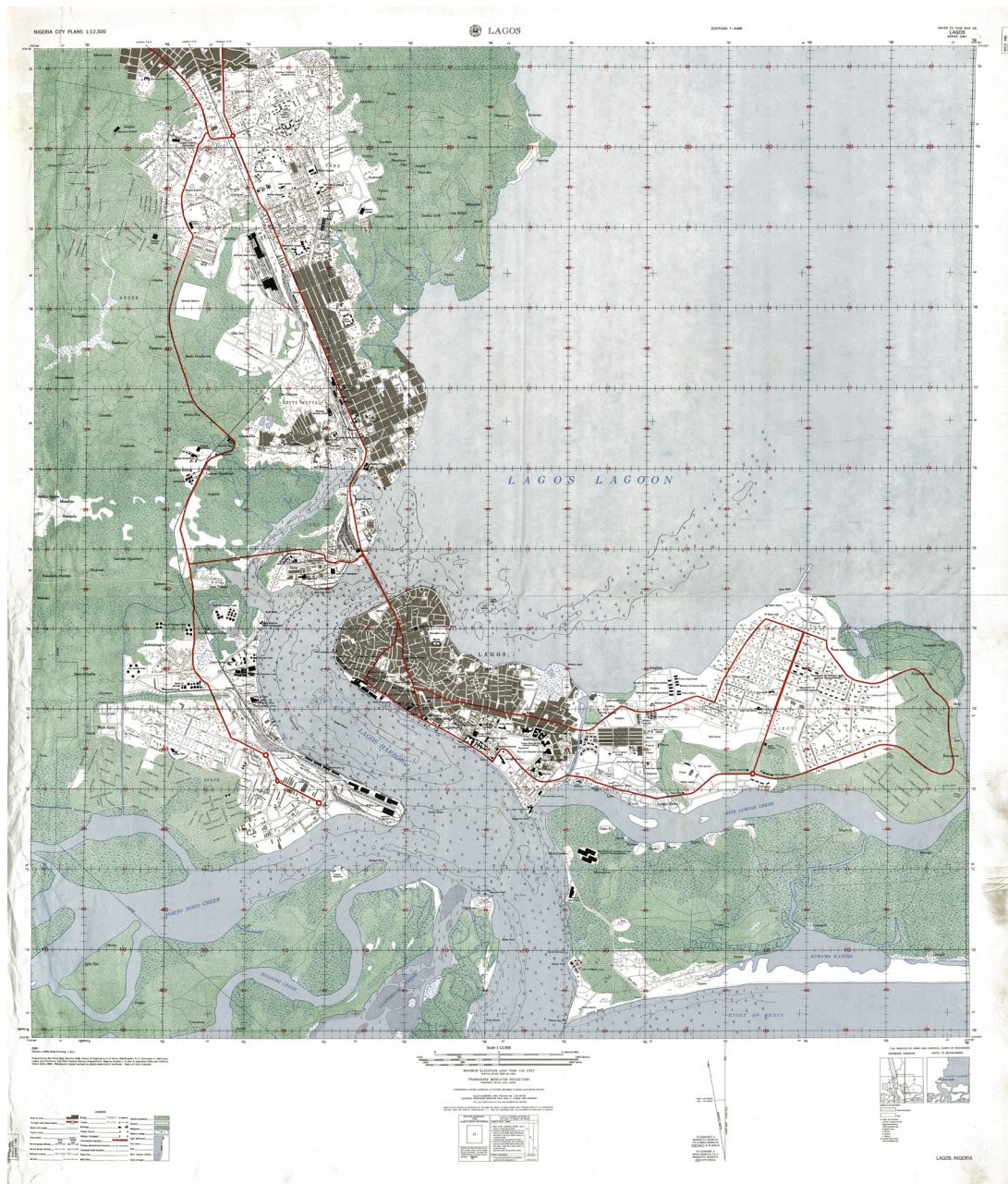


Fig. 35: The Town Plan of Lagos, 1962

File:1962 Lagos Island map detail2 Lagos Nigeria txu-oclc-441966035-lagos-1962.jpg - Wikimedia Commons. (1962). https://commons.wikimedia.org/wiki/File:1962_Lagos_Island_map_detail2_Lagos_Nigeria_txu-oclc-441966035-lagos-1962.jpg

settlements reflects a layered urban fabric where public and private spaces are blurred.

2.1.2. The Lagos Lagoon: History and Cartographic Analysis

The evolution of Lagos Lagoon's urban form is visible through historical maps dating back to the colonial era. In the late 19th century, cartographic records show small, dispersed fishing communities along the lagoon, with a structure centered on proximity to fishing sites and essential resources (A. Olukoju 2019, 9). These early settlements expanded slowly, adapting to Lagos's natural landscape and water availability. By the mid-20th century, these communities began to coalesce

into larger informal settlements, partly due to an influx of migrants escaping economic pressures in rural areas. These developments, driven by rural-to-urban migration, marked the initial stages of Lagos's expansion along the waterfront. As urbanization accelerated, land reclamation projects increased the buildable area near the lagoon, catalysing further population growth. By the 1980s, extensive informal settlements had emerged along the lagoon's edge, giving rise to a dense and continuous urban fabric that defied traditional zoning constraints (Duerksen, 2018, p. 26). The rapid expansion of informal settlements, facilitated by a lack of restrictive zoning enforcement, allowed the lagoon to evolve into one of Lagos's most densely populated and socioeconomically diverse areas.

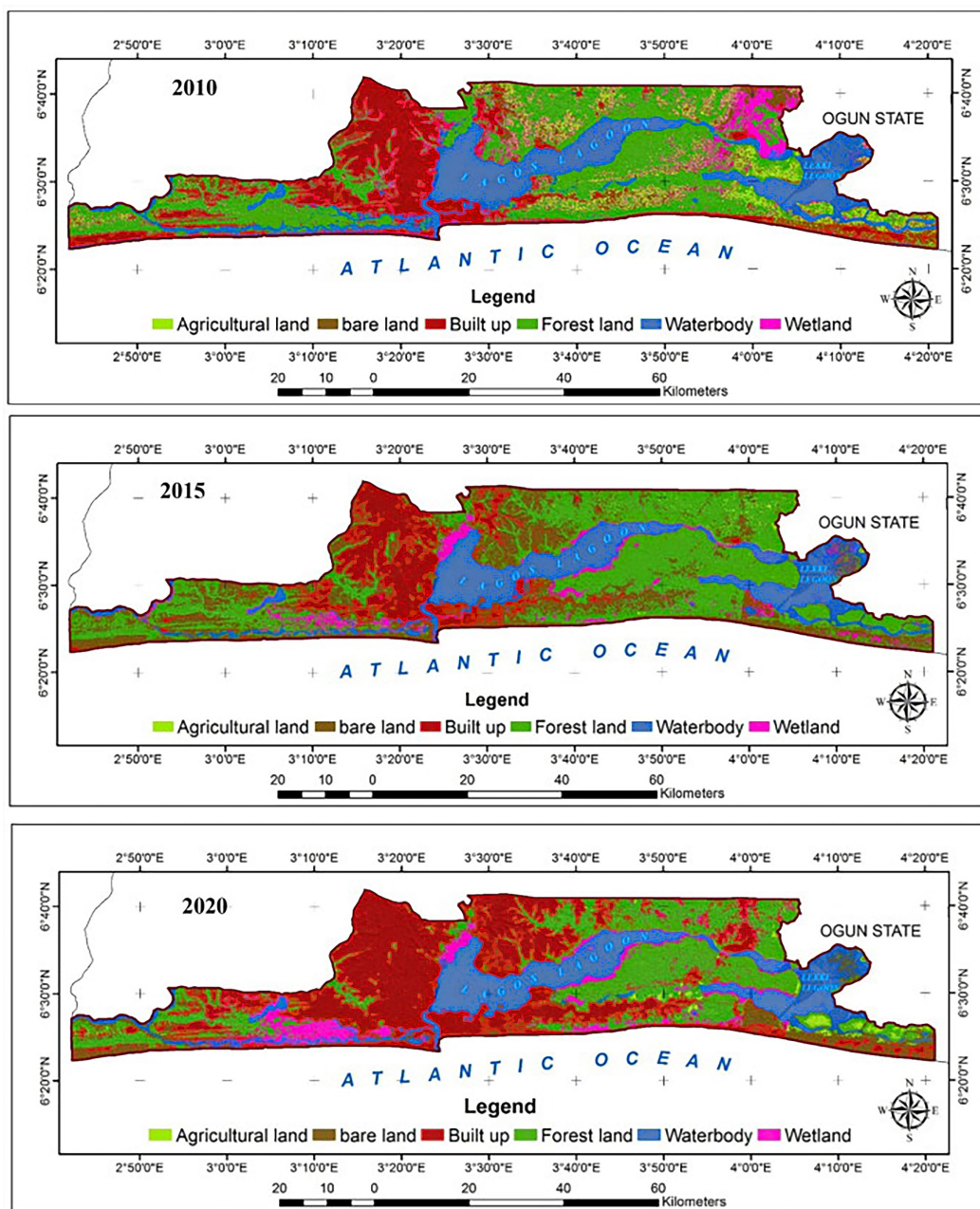


Fig. 36: Changes in land use and land cover in Lagos, Nigeria, from 2010 to 2020

Asuquo Enoch, M., Njoku, R. E., & Okeke, U. C. (2023). Modeling and mapping the spatial-temporal changes in land use and land cover in Lagos: A dynamics for building a sustainable urban city. *Advances in Space Research*, 72, 694–710. <https://doi.org/10.1016/j.asr.2022.07.017>

However, this expansion often occurred without basic infrastructural planning, resulting in spatial irregularities that mirror the socioeconomic disparities between informal communities and formally planned areas.

2.1.3. The Lagos Lagoon: Socio-Spatial Forms

The physical layout of settlements around Lagos Lagoon reflects the area's socio-economic and cultural dynamics, revealing a strong interdependence between the built environment and social organization. The dense, clustered buildings, often grouped according to family lines or communal ties, allow for flexible adaptation to the lagoon's environmental challenges, such as seasonal flooding.

The proximity of homes encourages communal activities within narrow alleys and open areas, which serve multifunctional purposes ranging from trade to social gatherings and community celebrations (Ajayi, Soyinka-Airewele and Edewor 2019, 56). In this way, the physical layout fosters strong social cohesion, with public and private spaces seamlessly integrated into the urban tissue. Lagos Lagoon's urban form creates a spatial framework that reinforces social bonds within the community. Shared open spaces, while limited, become crucial for fostering neighborhood identity and supporting communal functions. The morphology of the settlement demonstrates how physical space in informal communities often serves as an extension of social relationships. This adaptive

morphology illustrates the “social logic of space” described by Hillier and Hanson (1984), who argue that spatial configurations can facilitate or inhibit social interactions. The compact housing arrangement, communal paths, and open spaces reflects an urban grain that encourages communal interaction and economic interdependence.

2.1.5. The Lagos Lagoon: Urban Tissue and Environmental Adaptation

The urban tissue in Lagos Lagoon’s waterfront settlements is highly adaptive, responding to environmental pressures through localized building practices and shared resource management. Many buildings are constructed on stilts to mitigate flood risk, reflecting a traditional architectural response to the lagoon’s water dynamics. This adaptation, combined with narrow, interconnected pathways that rise and fall with the lagoon’s water levels, demonstrates the community’s resilience in the face of environmental constraints (Adenaike, Opoko and Kosoko 2020, 193). The cohesive neighborhood morphology reflects a unique type of urban resilience, where community members collectively maintain infrastructure, such as raised walkways, to ensure navigability during flooding events. This adaptive capacity is visible in the settlement’s clustered buildings and shared spaces, which are arranged to maximize accessibility and resource sharing. The urban tissue displays an interconnected network of functional and social spaces, merging environmental needs with community practices. This morphological approach to resilience aligns with Gospodini’s (2007) observations on place identity and urban adaptation, as Lagos Lagoon’s informal morphology is both a product and a reflection of its unique environmental and social context.

2.1.6. The Lagos Lagoon: Informality as Chaos

Lagos Lagoon’s informal settlements challenge the perception that unplanned environments lack structure or are inherently chaotic. Despite the absence of formal planning, the spatial arrangements in these areas reveal a functional regularity driven by community needs. Narrow, irregular streets, variable lot sizes, and diverse building types are often viewed as disorganized from a traditional planning perspective. However, these morphological elements reflect a coherent response to the economic, social, and environmental conditions of Lagos’s waterfront communities (F. M. Adedire 2017, 118). This perception of structure within informality aligns with Lynch’s (1960) *The Image of the City*, where he argues that urban spaces—even those that appear unstructured—have inherent order recognized by

residents. The configuration of Lagos Lagoon’s buildings, pathways, and open spaces supports this view, with residents demonstrating a clear cognitive map of their environment, recognizing both formal and informal boundaries. This cognitive understanding contributes to the functionality of informal settlements, where the lack of rigid zoning allows for flexible adaptation to community changes.

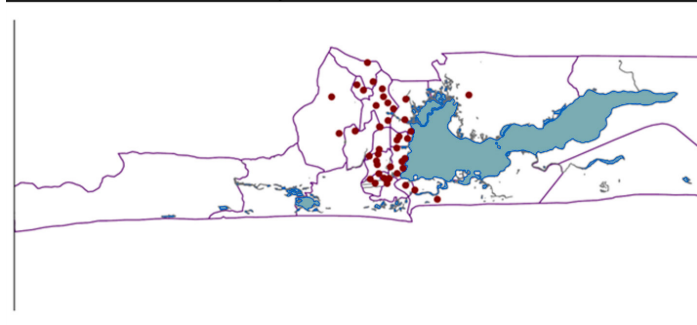
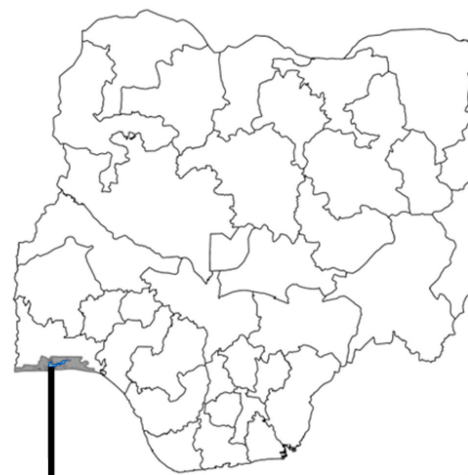
2.1.7. The Lagos Lagoon: Resources and Contained Economy

The sustained morphology of Lagos Lagoon settlements is closely linked to the continuous flow of resources, both material and social, that maintain its urban form. The community’s economy, grounded in fishing and trade, sustains the settlement’s physical layout and social structure. The informal economy within these settlements provides residents with essential resources, allowing them to adapt their living environments to meet changing needs. Building materials are locally sourced and recycled, and the community collaborates to maintain shared infrastructure, such as raised walkways and drainage systems, which are critical for mitigating seasonal flooding (Aliu, Akoteyon and Soladoye 2021, 34). These flows of resources reinforce the resilience of Lagos’s waterfront morphology, with the community adapting both spatially and socially to economic and environmental fluctuations.



Fig. 38: Map indicating the development of slum settlements around the Lagos Lagoon, 1984

Obaitor, O. S., Stellmes, M., & Lakes, T. (2024). *Exploring Spatio-Temporal pattern of gentrification processes in intracity slums in the Lagos Megac-*



This resilience is crucial for the persistence of informal waterfront settlements, where traditional architecture and locally embedded practices enable continuous habitation despite the lack of formal infrastructure. As Suttles (1972) argues in *The Social Construction of Communities*, the persistence of such communities depends on their ability to manage internal resources and adapt collectively, a principle visible in the adaptive morphology of Lagos Lagoon.

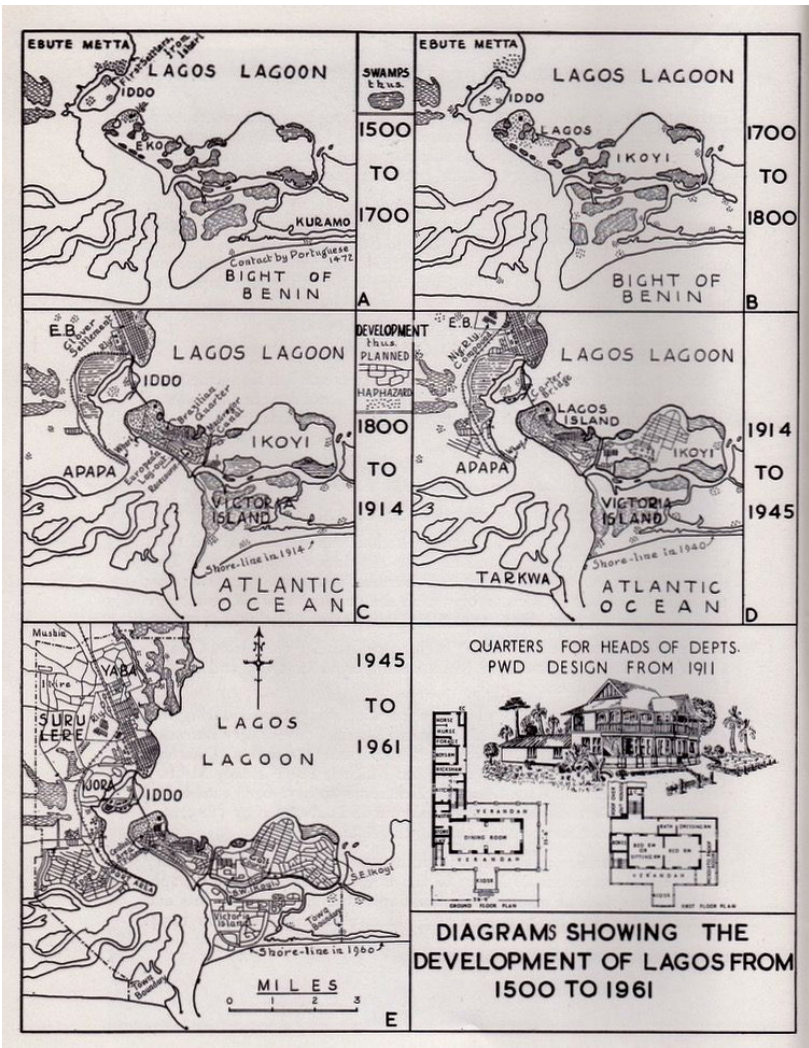
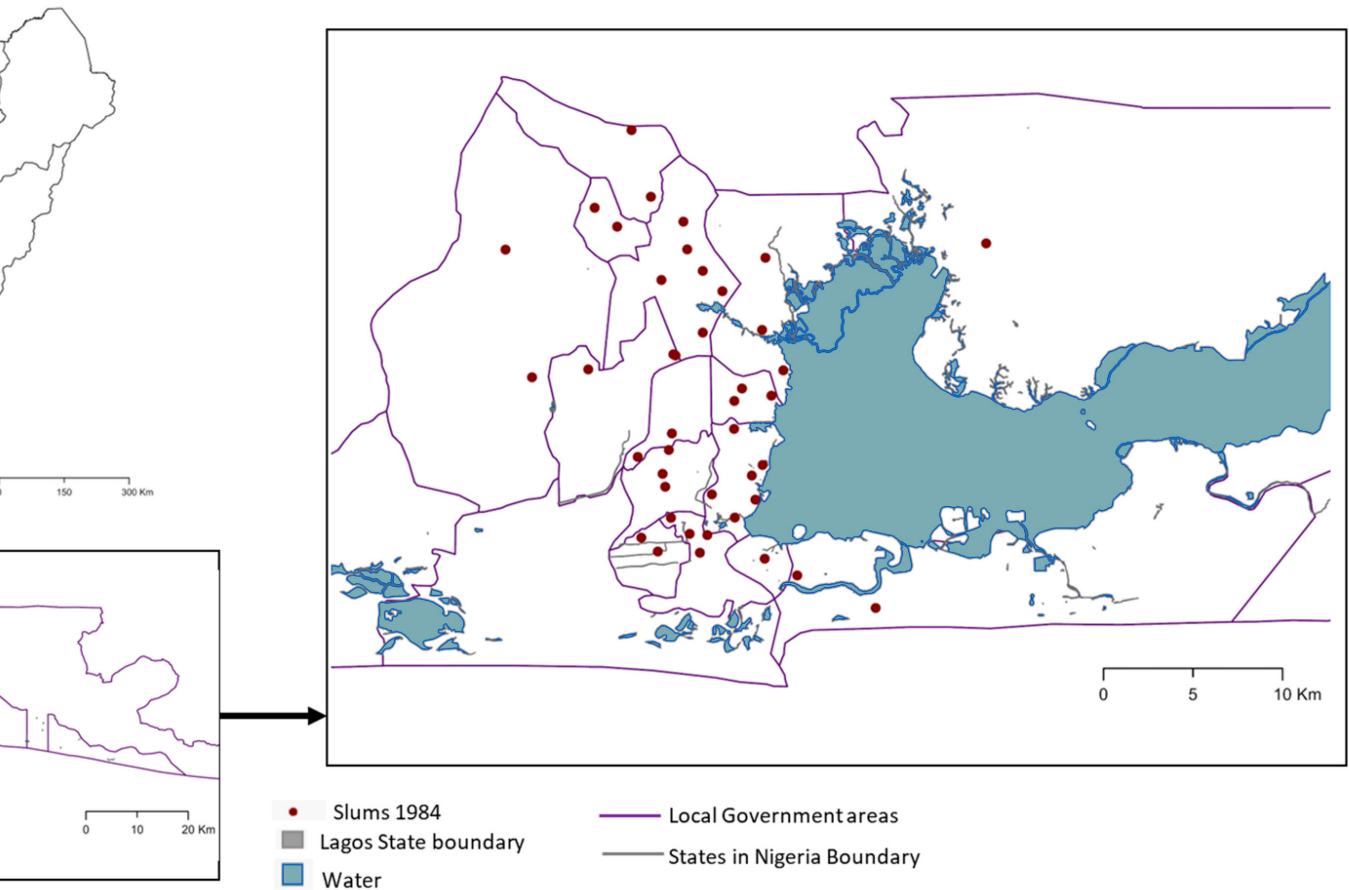


Fig. 37: Diagrammatic illustration of the development of Lagos from 1500 to 1961 Kobrigama. (2023, February 9). LAGOS STATE @ 50 May 27, 2017. Nomad4Now. <https://nomad4now.com/2017/05/19/lagos-state-50-may-27-2017/>



2.1.8. The Yangtze River (Nanjing): Streets, Plots, and Buildings

Nanjing's urban morphology along the Yangtze River Delta, particularly in historical water towns like Gaochun and Pukou, reveals a structured layout shaped by centuries of governance, trade, and cultural exchange. The traditional street patterns of these waterfront towns embody a structured, grid-like organization that extends from a central core of public spaces, including temples, markets, and town squares. Streets are arranged hierarchically, with broader thoroughfares for trade and narrower alleys leading into residential areas. This layout reflects a historically significant structure designed to promote both commercial activities and community cohesion (Y. Chen 2016, 53). Unlike informal settlements, where streets and lots emerge organically, the lot configurations in Nanjing's water towns adhere to traditional Chinese principles of spatial organization. These plots, typically rectangular, are delineated with precision to maximize land use and optimize access to both the river and communal spaces. Building forms within these plots are primarily courtyard-style homes with tiled roofs, constructed from wood and stone in adherence to Ming and Qing architectural styles. Such building typologies reflect the socio-economic status of the area's residents, who belong to a legacy of merchants and craftspeople that settled in these regions for proximity to the river trade routes (Chen, et al. 2017, 214).

2.1.9. The Yangtze River (Nanjing): History and Cartographic Analysis

Historical maps dating back to the Tang and Song dynasties indicate that Nanjing's waterfront towns developed as centers of trade and cultural exchange. Initially, these settlements were small agricultural communities, but they expanded significantly during the Ming and Qing dynasties when Nanjing became an essential node along the Yangtze River. Cartographic records reveal the growth of water towns with a focus on public squares and temples, often radiating outward with residential and commercial plots arranged methodically around central areas. These maps reflect a spatially controlled development pattern, with zones dedicated to different functions—such as markets, administrative centers, and temples—anchoring the town's urban fabric (Y. Chen 2016, 58). In the late 20th and early 21st centuries, Nanjing's riverfront area experienced further transformation as industrialization and urban expansion intensified. Cartographic comparisons from this period illustrate a shift in land use along the Yangtze, with traditional water towns increasingly surrounded by industrial parks, modern residential

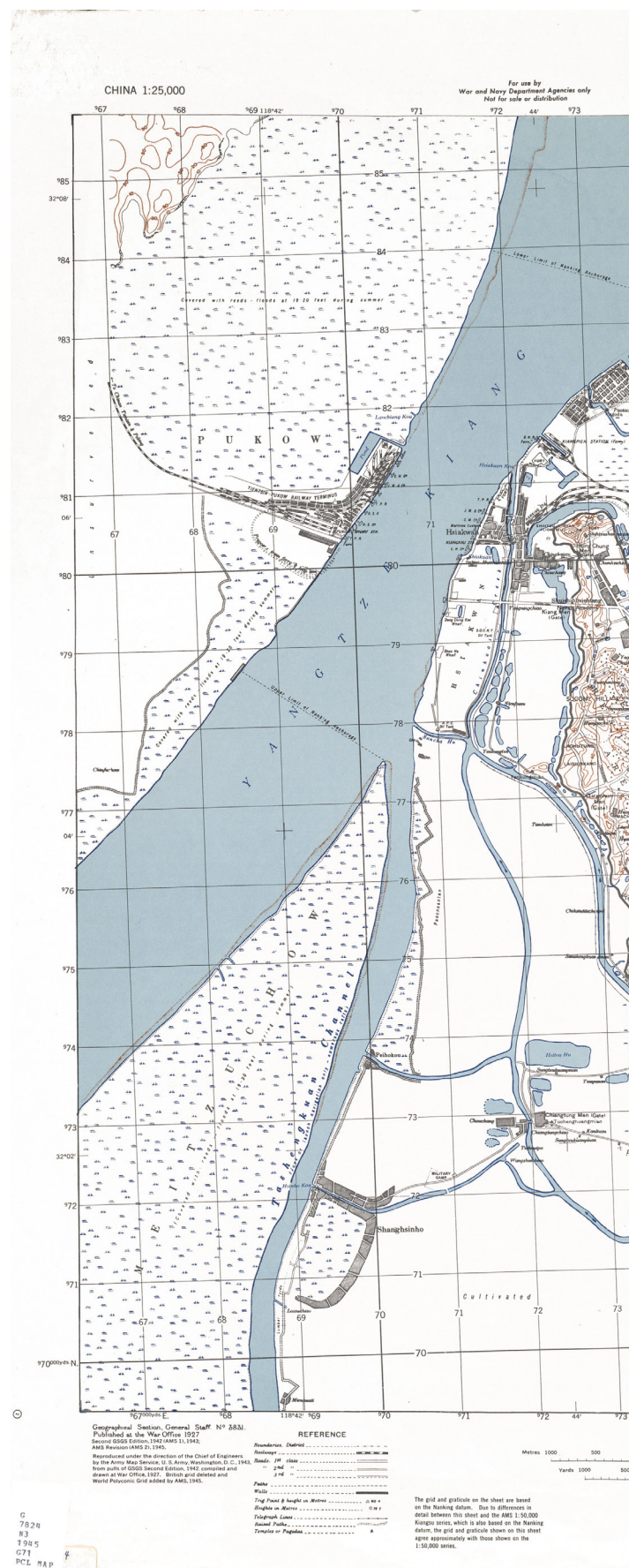


Fig. 39: Map of Nanking (Nanjing), 1927
Nanjing. (n.d.). DBpedia. <https://dbpedia.org/page/Nanjing>

NANKING



SECOND EDITION - AMS 2

0° 0' 0" 1° 0' 0" 2° 0' 0" 3° 0' 0" 4° 0' 0" 5° 0' 0" 6° 0' 0" 7° 0' 0" 8° 0' 0" 9° 0' 0" 10° 0' 0" 11° 0' 0" 12° 0' 0" 13° 0' 0" 14° 0' 0" 15° 0' 0" 16° 0' 0" 17° 0' 0" 18° 0' 0" 19° 0' 0" 20° 0' 0" 21° 0' 0" 22° 0' 0" 23° 0' 0" 24° 0' 0" 25° 0' 0" 26° 0' 0" 27° 0' 0" 28° 0' 0" 29° 0' 0" 30° 0' 0" 31° 0' 0" 32° 0' 0" 33° 0' 0" 34° 0' 0" 35° 0' 0" 36° 0' 0" 37° 0' 0" 38° 0' 0" 39° 0' 0" 40° 0' 0" 41° 0' 0" 42° 0' 0" 43° 0' 0" 44° 0' 0" 45° 0' 0" 46° 0' 0" 47° 0' 0" 48° 0' 0" 49° 0' 0" 50° 0' 0" 51° 0' 0" 52° 0' 0" 53° 0' 0" 54° 0' 0" 55° 0' 0" 56° 0' 0" 57° 0' 0" 58° 0' 0" 59° 0' 0" 60° 0' 0"



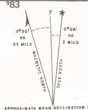
Scale 1:25,000

Contour interval 10 meters every 50 m. accentuated.
1 meter = 1/25,000 feet.

ONE THOUSAND YARD WORLD POLYCONIC GRID, BAND 111, ZONE "D"

THE LAST THREE DIGITS OF THE GRID NUMBERS ARE OMITTED

HEIGHTS IN METRES



REFERENCE	
Waterway	Blue line
Canal	Blue line
Forest	Green area
Barren or Paddy Fields	Yellow area
Marsh	Blue area
Swamp	Blue area
Salt Ponds	Blue area
Grass	Green area
Barren	Yellow area
Water	Blue area

NANKING
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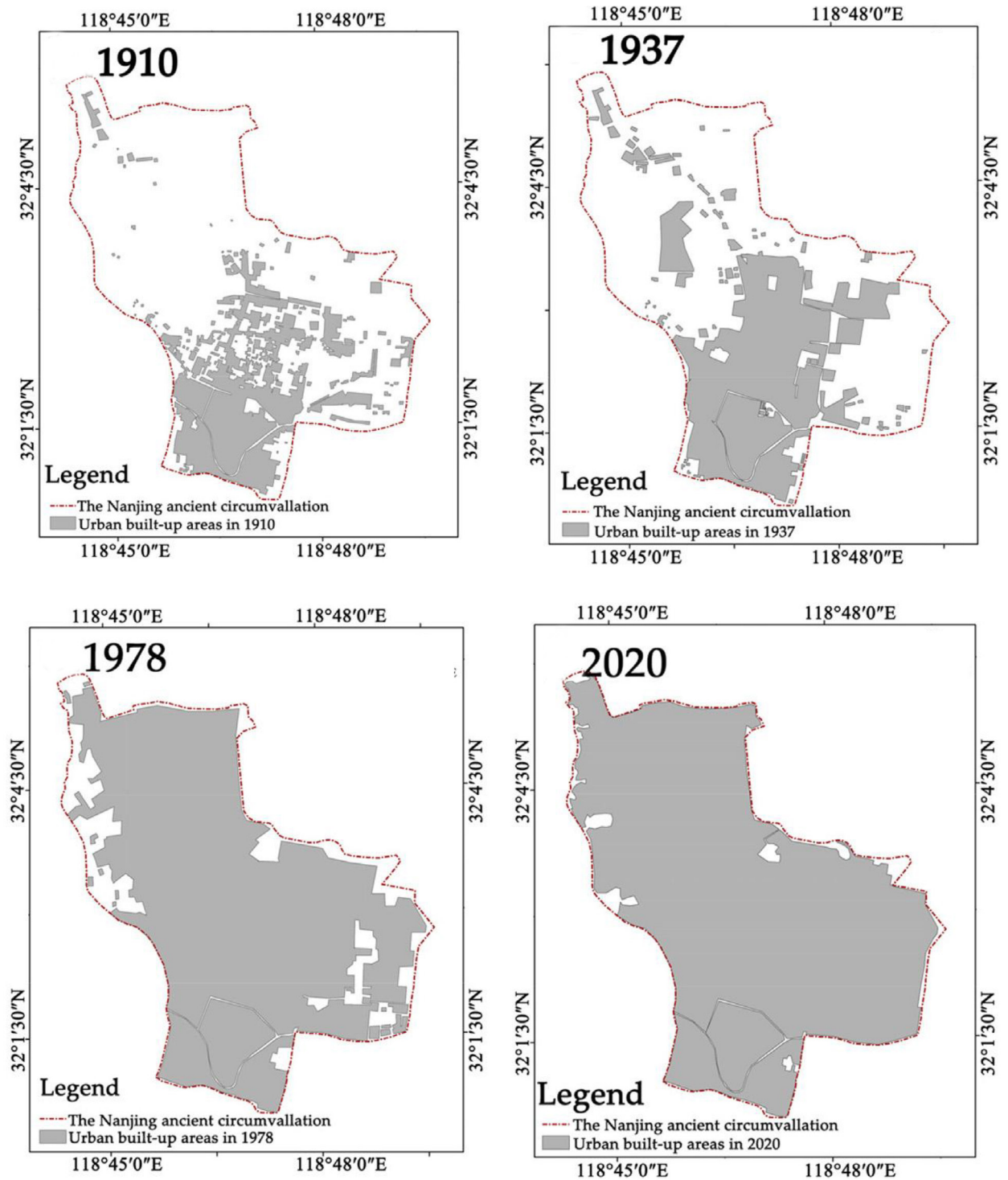


Fig. 40: Built-up area of the old city of Nanjing in 1910, 1937, 1978, 2020.

Bai, X., & Xu, H. (2022). Understanding spatial growth of the old city of Nanjing during 1850–2020 based on historical maps and Landsat data. *The Egyptian Journal of Remote Sensing and Space Science*, 26(1), 25–41. <https://doi.org/10.1016/j.ejrs.2022.12.005>

In the late 20th and early 21st centuries, Nanjing's riverfront area experienced further transformation as industrialization and urban expansion intensified. Cartographic comparisons from this period illustrate a shift in land use along the Yangtze, with traditional water towns increasingly surrounded by industrial parks, modern residential zones, and infrastructural developments that accommodate the region's economic growth. The juxtaposition of traditional and modern urban forms exemplifies Nanjing's attempt to balance heritage preservation with contemporary development (Chen et al., 2017, p. 216).

Today, maps of Nanjing's waterfront reveal a complex urban morphology that incorporates historical water towns, industrial districts, and green corridors, all of which shape the city's identity.

2.1.10. The Yangtze River (Nanjing): Socio-Spatial Forms

The spatial organization of Nanjing's waterfront towns embodies a social hierarchy that is deeply embedded in the physical structure. At the core of these water towns are public squares, temples, and marketplaces, which serve as focal points for

social, economic, and religious activities. These spaces foster community interaction, reinforcing social bonds through organized gatherings, cultural festivals, and daily commerce. The radial layout of streets that emanates from these communal areas signifies a planned morphology where the physical environment is intended to support social life and hierarchy (Liu and Shu 2020, 19). This spatial form also reflects a class-based organization, where central areas traditionally housed wealthier merchant families, while lower-income residents lived further from the town core. The layout and architectural style of the buildings indicate socio-economic distinctions, with wealthy families occupying larger, multi-room courtyard houses and lower-income residents inhabiting simpler, one-room structures. This socio-spatial arrangement reinforces the social fabric of Nanjing's water towns, as proximity to public squares and marketplaces enhances the status of those who can afford to live centrally.

2.1.11. The Yangtze River (Nanjing): Urban Tissue and Environmental Adaptation

The urban tissue of Nanjing's Yangtze waterfront towns reveals a balance between architectural tradition and environmental sustainability. Many of these towns have adapted their built forms to accommodate seasonal changes and the environmental conditions associated with riverfront living. Elevated foundations, drainage canals, and green buffers around buildings are among the features

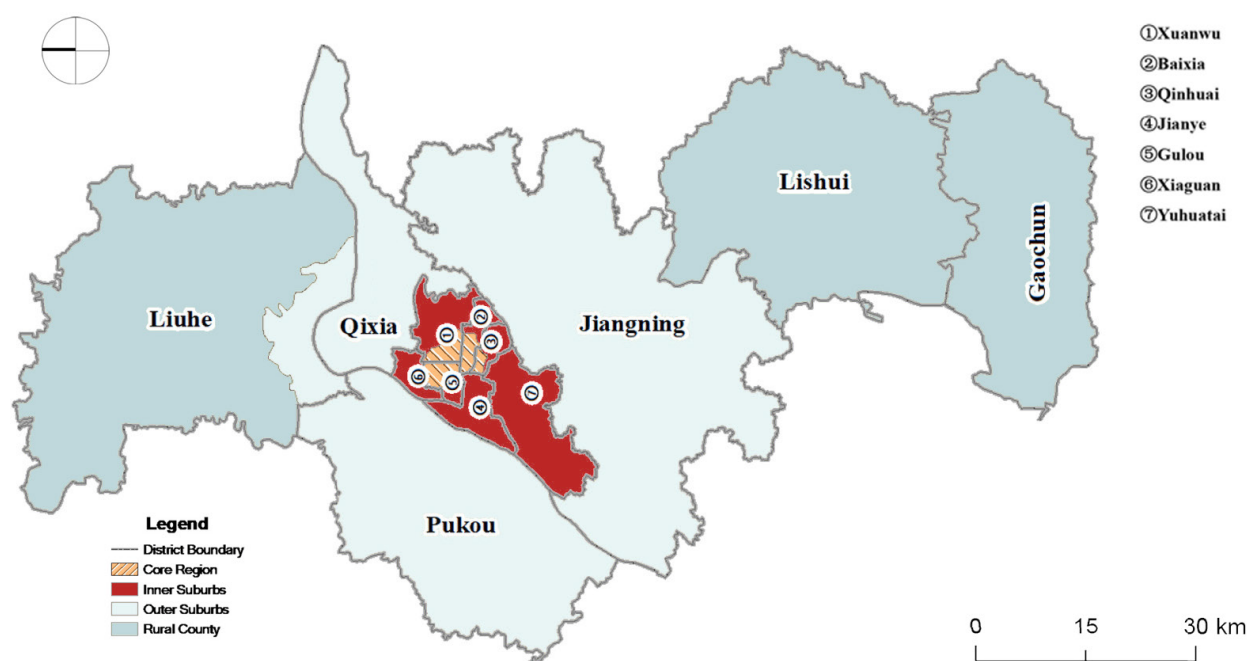
that enhance flood resilience. This morphology reflects a cohesive urban fabric designed to withstand the Yangtze's flood cycles, highlighting a sustainable architectural legacy (Chen, et al. 2017, 223). The use of traditional materials, such as wood and clay, contributes to the environmental integration of the urban fabric. These materials not only support the aesthetic continuity of Nanjing's riverfront towns but also respond well to the humidity and temperature fluctuations typical of the Yangtze Delta region. This morphological resilience, achieved through architectural adaptations and green infrastructure, demonstrates a long-standing environmental consciousness embedded within the city's spatial and architectural forms.

2.1.12. The Yangtze River (Nanjing): Perceptions of Order and Flexibility in Traditional Urban Morphologies

Nanjing's waterfront towns, while highly structured, reveal a nuanced blend of order and adaptability that challenges the rigid perception of planned environments. Though government-regulated, these areas maintain traditional layouts that provide spatial flexibility for residents and visitors. Public squares serve multifunctional purposes, transitioning from markets to festival grounds as needed, while residential layouts allow for gradual adaptations within the constraints of Nanjing's zoning laws. This organized yet adaptable urban morphology reflects the city's capacity to embrace both historical continuity and modern development.

Fig. 41: Location and zone of Nanjing

Qin, X., Wei, Y. D., Yu, Z., & Xiong, N. (2022). Urbanization, suburbanization, and population redistribution in urban China: A case study of Nanjing. *Journal of Urban Planning and Development*, 148(4), Article 05022034. [https://doi.org/10.1061/\(ASCE\)UP.1943-5444.0000882](https://doi.org/10.1061/(ASCE)UP.1943-5444.0000882)



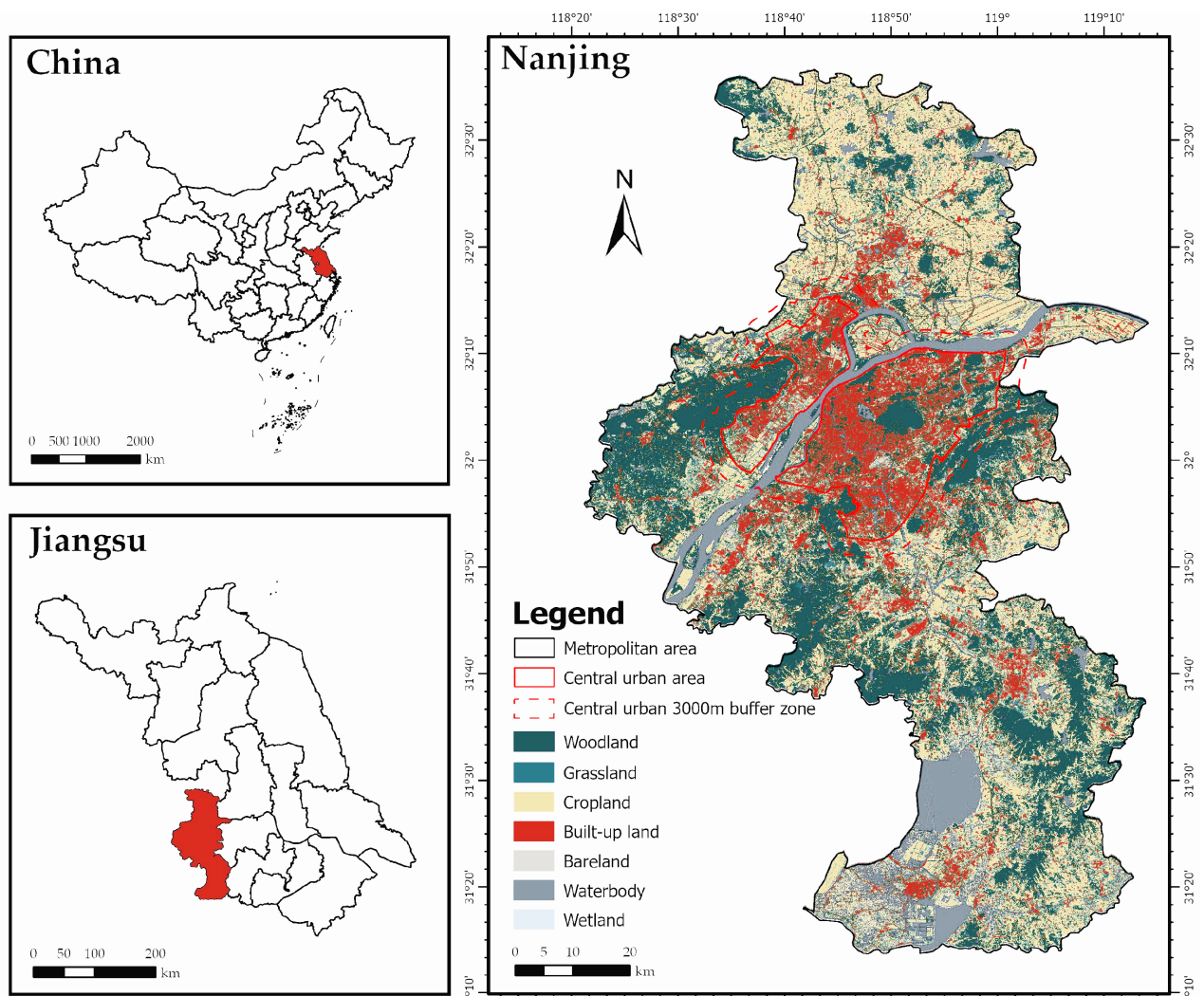


Fig. 42: The geographic location & land use composition of Nanjing.
Zhu, Y., Yang, J., Zhu, L., & Sun, L. (2024). Identification of ecological priority areas based on Nested-Scale Analysis: a case study of Metropolitan Nanjing, China. *Land*, 14(1), 60. <https://doi.org/10.3390/land14010060>

This existence of order and flexibility aligns with Conzen's (1960) principles, which argue that urban areas possess inherent flexibility even within planned frameworks. Nanjing's traditional urban form exemplifies this adaptability, where government planning accommodates social practices, economic changes, and cultural preservation in a coherent urban structure.

2.1.13. The Yangtze River (Nanjing): Resilience in Nanjing's Waterfront Morphology

The sustained urban morphology of Nanjing's Yangtze River area depends on continuous material and energy flows that reinforce its spatial and functional coherence. As a hub of tourism and heritage preservation, Nanjing's water towns attract both local and international visitors, generating economic flows that contribute to the upkeep of its historic architecture and public spaces. The local economy, built around artisanal crafts, tourism, and retail, supports the socio-economic fabric of these waterfront settlements, sustaining their distinct morphology (Liu and Shu 2020, 23). Additionally, state-led preservation efforts ensure that essential resources, including infrastructure

maintenance, flood protection, and tourism promotion, are consistently available to sustain the urban fabric. These state investments align with local traditions, such as seasonal festivals and markets, which draw upon Nanjing's heritage and reinforce the cultural value of its riverfront settlements. This sustained energy flow supports the resilience of Nanjing's waterfront morphology, allowing it to remain economically viable and culturally relevant in a rapidly modernizing city. The evolution of Nanjing's urban morphology along the Yangtze River reflects a complex blend of historical, social, and environmental influences. The structured street layouts, adaptive architecture, and central public spaces showcase a morphology that is as resilient as it is culturally significant.

Through typo-morphological analysis, we observe how Nanjing's waterfront towns balance organized planning with flexibility, reflecting a spatial coherence that accommodates both historical preservation and modern economic needs. The urban fabric of Nanjing's riverfront thus exemplifies a successful integration of traditional morphology within a modernizing urban context, supported by sustained resource flows and state-driven preservation efforts.

2.2 Influences on the Urban Morphology

Beyond culture and history, the urban morphology of these waterfront settlements is shaped by various factors, including economic pressures, demographic shifts, and government policies. These influences drive changes in land use, spatial organization, and architectural development, creating distinct patterns in waterfront morphology. These influences in waterfront cities like Lagos and Nanjing are particularly pronounced, as the cities' locations near water make them highly vulnerable to environmental pressures and socio-economic disparities.

2.2.1. The Lagos Lagoon

The waterfront morphology of Lagos Lagoon's informal communities reflects a complex layering of socioeconomic demands, cultural practices, and environmental constraints. Makoko and other lagoon settlements have evolved through adaptive strategies in response to government neglect, economic marginalization, and environmental pressures, creating a unique urban fabric that embodies both resilience and community-led organization. This section will explore how the

morphology of Lagos Lagoon is influenced by these intertwined forces, focusing on the way they manifest in the community's spatial forms, public space utilization, neighborhood cohesion, and environmental adaptation.

2.2.2. The Lagos Lagoon: Cultural Forms and Social Patterns

The distinct cultural identity within Lagos Lagoon's communities profoundly influences their spatial arrangements. The urban fabric in areas such as Makoko is not just a response to physical or economic constraints; it is also a spatial embodiment of longstanding cultural practices and social structures. For example, Yoruba customs regarding family compounds and social clustering influence how households are arranged, with family groups often occupying clustered housing blocks that facilitate strong kinship bonds and localized economies (Whiteman, 2012, p. 17). Rapoport (1969) argues that house forms and settlement layouts are deeply informed by cultural contexts, and in Lagos Lagoon, these influences are readily visible. Community structures

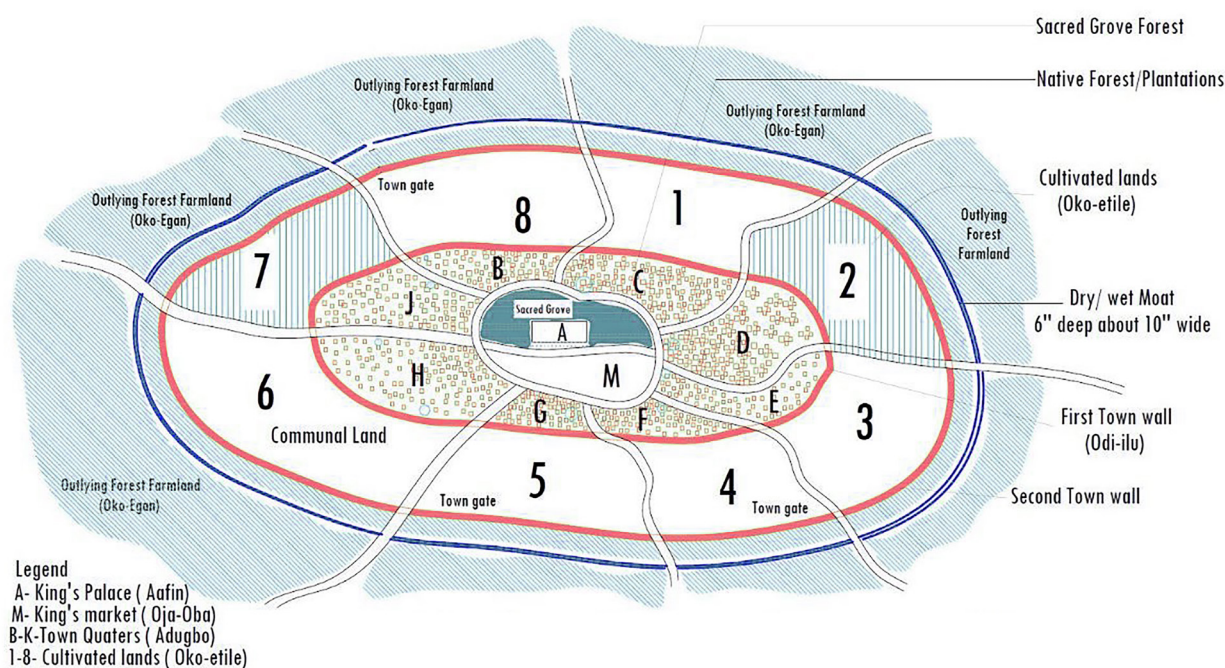


Fig. 43: Typical Yorùbá indigenous planning model

Myths and metaphors of the Yorùbá landscape | AJLA. (n.d.). <https://www.ajlajournal.org/articles/myths-and-metaphors-of-the-yoruba-landscape>

prioritize flexibility in shared spaces, fostering the daily social and economic activities that form the backbone of the lagoon's communal life. Public spaces are multipurpose, serving as hubs for trade, social gatherings, and cultural rituals, reinforcing a sense of shared identity. This multifunctional use of space also reflects social resilience, as residents adapt spaces dynamically based on daily needs rather than rigid planning frameworks (Ajayi et al., 2019, p. 66). The lagoon community's informal morphology reflects not only the social practices of its residents but also a shared resistance to exclusion from formal city planning. Castells' (1983) *The City and the Grassroots* provides insight here, noting that marginalized groups often organize space in ways that express collective identity and autonomy. In Lagos Lagoon, social bonds and economic interdependence foster a unique spatial order that differs markedly from planned urban forms, emphasizing inclusivity and resilience in shared spaces.

2.2.3. The Lagos Lagoon: Socioeconomic Factors Shaping Neighborhood Morphology

The socioeconomic landscape of Lagos Lagoon exerts significant influence on the urban morphology, shaping the community's economic adaptations and space utilization patterns. Due to economic marginalization, waterfront residents largely operate within informal economies, with limited access to formal employment and infrastructure (Dano et al., 2020, p. 1041). This economic isolation encourages the clustering of

workspaces—such as fishing, artisanal crafts, and small-scale trading—within residential areas, where household spaces double as sites of production and commerce. These multifunctional spaces contribute to a cohesive neighborhood structure, where economic activity is embedded within the community's fabric.

In *A Pattern Language*, Alexander et al. (1977) highlight how neighborhoods in economically constrained environments often develop layered spatial configurations to optimize resources. In Lagos Lagoon, the interconnected structure of housing units and communal spaces exemplifies this principle. Residential blocks are closely grouped, enabling resource sharing and mutual support networks essential for economic survival. Informal pathways facilitate trade and mobility, supporting a neighborhood morphology that sustains localized economies and reflects the ingenuity of residents adapting to economic constraints (Adenaike et al., 2020, p. 82). Economic factors also impact land use practices in Lagos Lagoon, as families modify their homes and communal spaces to accommodate fluctuating income sources. These alterations are visible in the adaptive use of building materials, with houses often constructed from locally sourced wood,

2.2.4. The Lagos Lagoon: Community-Driven Responses to Environmental Constraints

Environmental factors, particularly those related to water, flooding, and soil stability, play a central role in shaping the spatial dynamics



Fig. 44: Aerial view of Makoko
Unequal Scenes - Lagos. (n.d.). <https://unequalscenes.com/lagos>

of Lagos Lagoon. The lagoon's residents face regular flooding and water level fluctuations, necessitating unique adaptations in housing and infrastructure. Raised walkways and stilted homes, both defining features of the lagoon's morphology, provide critical resilience against seasonal flooding (Aliu et al., 2021, p. 36). The physical layout of homes on stilts not only addresses flood risk but also establishes a spatial coherence that aligns with the natural ebb and flow of the lagoon environment. Environmental adaptation in Lagos Lagoon reflects principles from Aldo Rossi, who posits that urban forms should respond organically to local geography and climate. In the lagoon, the interplay of water-based infrastructure and clustered housing exhibits a morphology that adapts to and embraces its aquatic setting, creating a settlement pattern that both reflects and respects the natural environment. The built environment functions in tandem with the natural landscape, as stilted homes and interconnected walkways allow residents to navigate and sustain daily life amid ecological challenges.

Gospodini (2007) also underscores the importance of place identity in resilient urban morphology. The adaptations found in Lagos Lagoon—such as housing elevations and raised walkways—are not merely functional; they contribute to the unique identity of the community, visually and culturally distinguishing it from other urban forms. This morphology has thus evolved as a place-specific response, where environmental adaptation shapes not only physical layout but also the social identity of the community.

2.2.5. The Lagos Lagoon: Political and Zoning Dynamics in Informal Urban Growth

The absence of formal zoning regulations in Lagos Lagoon has fostered a morphology that reflects community-led planning rather than top-down city governance. While the Lagos State government has occasionally proposed redevelopment or relocation of waterfront communities, the lack of consistent policy enforcement has left these settlements largely self-regulated. This autonomy allows for flexible land use, where residents can adjust housing and communal spaces to meet shifting needs without the constraints of official zoning codes (Duerksen, 2018, p. 28). Dovey's (2012) concept of informal urbanism and complex adaptive assemblies is especially relevant here. In Lagos Lagoon, informal governance structures have generated adaptive layouts that respond to local economic and social needs, circumventing formal planning restrictions. This "informal urbanism" results in a complex, self-regulating morphology where community-led modifications continuously reshape the urban fabric. Residents, rather than officials, are the primary drivers of land use patterns, exemplifying how unregulated environments can yield spatial coherence through collective adaptation and community agency. In contrast to state-planned areas, Lagos Lagoon's informal zoning reflects a bottom-up regulatory structure, where social norms and community consensus dictate land use. Marshall's (2005) *Streets and Patterns* explains that order can emerge



Fig. 45: Close-up aerial view of Makoko
Unequal Scenes - Lagos. (n.d.). <https://unequalscenes.com/lagos>

organically from informal spatial arrangements, and this principle is evident in Lagos Lagoon. Residents configure their spaces with an understanding of communal needs and environmental pressures, creating a spatial order that, while informal, sustains a coherent neighborhood structure. The growth of informal settlements in Lagos is closely tied to the city's socio-political context. (Adenaike, Opoko and Kosoko 2020) discuss how physical planning policies in Lagos have historically favored commercial and high-income residential development, pushing low-income residents to the city's periphery and onto the waterfronts (p. 54). This exclusionary zoning has created a fragmented urban morphology, where formal, planned areas exist alongside informal, unplanned settlements.

The resulting urban form is one of stark contrasts, with modern high-rises and commercial buildings dominating the city center, while informal, self-built structures occupy the waterfronts and other marginal areas. In Lagos, rapid urbanization following the country's independence in 1960 was one of the most significant forces shaping the city's waterfront. Lagos's population exploded from 1.4 million in 1960 to over 20 million today, making it one of the fastest-growing cities in the world (Duerksen 2018, 23). This population boom placed immense pressure on land, particularly in waterfront areas where space was already limited. Unable to meet the growing demand for formal housing, the Lagos State government saw a dramatic rise in informal settlements like Makoko, which expanded as low-income residents were forced to seek shelter in the environmentally precarious areas surrounding the lagoon. Economic exclusion also played a central role in shaping the morphology of Makoko and other informal waterfront settlements. The disparity between rich and poor in Lagos is starkly visible in the spatial organization of the city's waterfront, where affluent areas like Victoria Island and Lekki—dominated by modern high-rise buildings—exist in sharp contrast to the slums and stilt houses of Makoko (Aliu, Akoteyon and Soladoye 2021, 320). The inability of the urban poor to access land in these affluent zones has driven them into informal, unplanned settlements, where the architecture reflects the economic precarity of its residents. Makoko's stilt houses, for example, are constructed from the most readily available materials, without regard for long-term durability or environmental resilience (Ajayi, Soyinka-Airewele and Edewor 2019, 88).

2.2.6. The Lagos Lagoon: Economic and Material Resource Flows

The morphology of Lagos Lagoon is also sustained by continuous flows of resources, both material and economic, that support the community's spatial and structural resilience. The informal economy in the lagoon settlements heavily relies on fishing, crafts, and small-scale commerce, all of which influence the built environment. Homes are constructed and frequently modified using recycled or locally sourced materials, as residents adapt their structures to changing environmental and economic conditions (Aina, 1989, p. 23). This material flexibility enables a sustainable cycle of construction and reconstruction, reinforcing the adaptability of the community's morphology. In *The Social Construction of Communities*, Suttles (1972) argues that urban resilience often depends on communities' capacity to manage internal resources effectively. Lagos Lagoon exemplifies this principle, as residents collectively maintain and adapt their infrastructure based on resource availability. The collaborative efforts to construct walkways, elevate buildings, and maintain common spaces illustrate a self-sustaining morphology where resource flows are central to the urban fabric's continuity and resilience. Moreover, the reliance on local materials and labor underscores a model of community-driven sustainability. The adaptive reuse of materials and the maintenance of structures through collective labor highlight a responsive and enduring morphology. This adaptation cycle, in which residents continuously respond to economic fluctuations and resource scarcity, sustains the lagoon's distinct urban morphology and solidifies its role as a resilient community structure.

2.2.7. The Yangtze River (Nanjing)

Nanjing's waterfront near the Yangtze River is shaped by a diverse range of cultural, economic, and environmental factors that have influenced its evolution from historical water towns to modern urban areas. This area reflects both a continuity of traditional practices and a response to modern pressures of urbanization, as Nanjing balances historical preservation with contemporary development. Here, the urban morphology is examined in light of sociocultural influences, economic drivers, adaptive environmental responses, and political regulation.

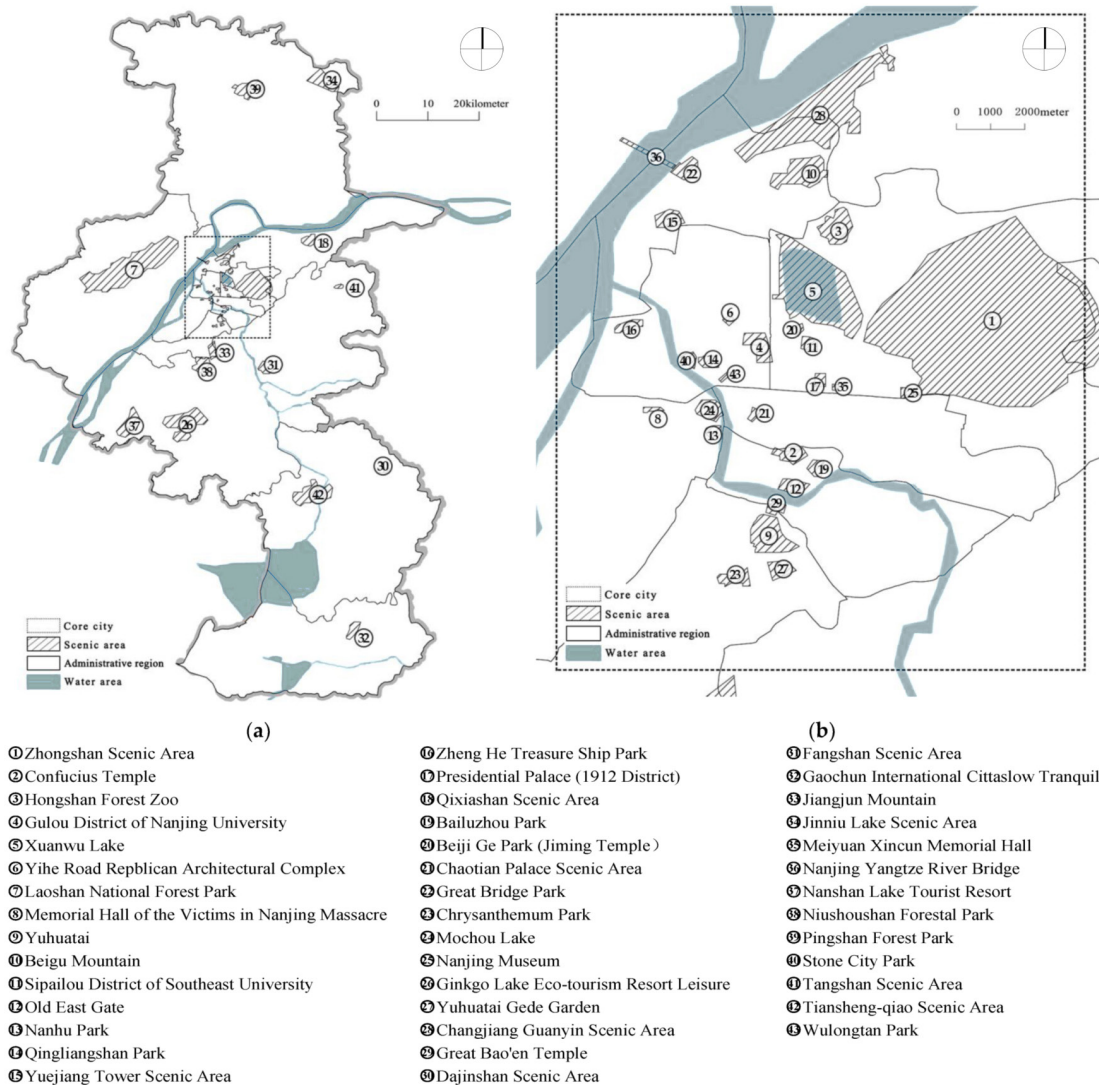


Fig. 46: Scenic spots of the entire city of Nanjing, and the core city of Nanjing.

Wang, L., Wu, X., & He, Y. (2021). Nanjing's Intracity Tourism Flow Network Using Cellular Signaling Data: A Comparative Analysis of Residents and Non-Local Tourists. *ISPRS International Journal of Geo-Information*, 10(10), 674. <https://doi.org/10.3390/ijgi10100674>

2.2.8. The Yangtze River (Nanjing): Cultural Influences and Social Patterns on Urban Layout

The traditional water towns along Nanjing's Yangtze River are deeply rooted in cultural practices, which shape their spatial configurations and public spaces. Settlements such as Pukou and Gaochun showcase a historically structured layout that includes central public spaces, temples, and marketplaces. These elements serve as focal points around which residential and commercial zones are organized, illustrating the embedded social hierarchies and cultural norms that define these communities. Rapoport (1969) emphasizes that built forms often reflect the values and practices of their inhabitants, and Nanjing's layout reinforces this notion as physical spaces facilitate social life and reinforce community cohesion. Public squares and courtyards, which are prominent in Nanjing's water towns, serve multiple purposes. These areas are not only commercial centers but also gathering places for community

events, celebrations, and daily social interactions. This multifunctional use of space exemplifies Gehl's (1987) concept of "life between buildings," where vibrant public spaces foster social interaction. Streets leading into these communal areas are often arranged radially, facilitating accessibility and creating a cohesive neighborhood morphology that supports both traditional lifestyles and commercial activities (Liu & Shu, 2020, p. 19). The cultural importance of these spaces in Nanjing's water towns underpins the social fabric, allowing residents to engage in communal activities that reinforce cultural identity and a shared sense of place. This multifunctional use of space exemplifies Gehl's (1987) concept of "life between buildings," where vibrant public spaces foster social interaction. Streets leading into these communal areas are often arranged radially, facilitating accessibility and creating a cohesive neighborhood morphology that supports both traditional lifestyles and commercial activities (Liu & Shu, 2020, p. 19). The cultural

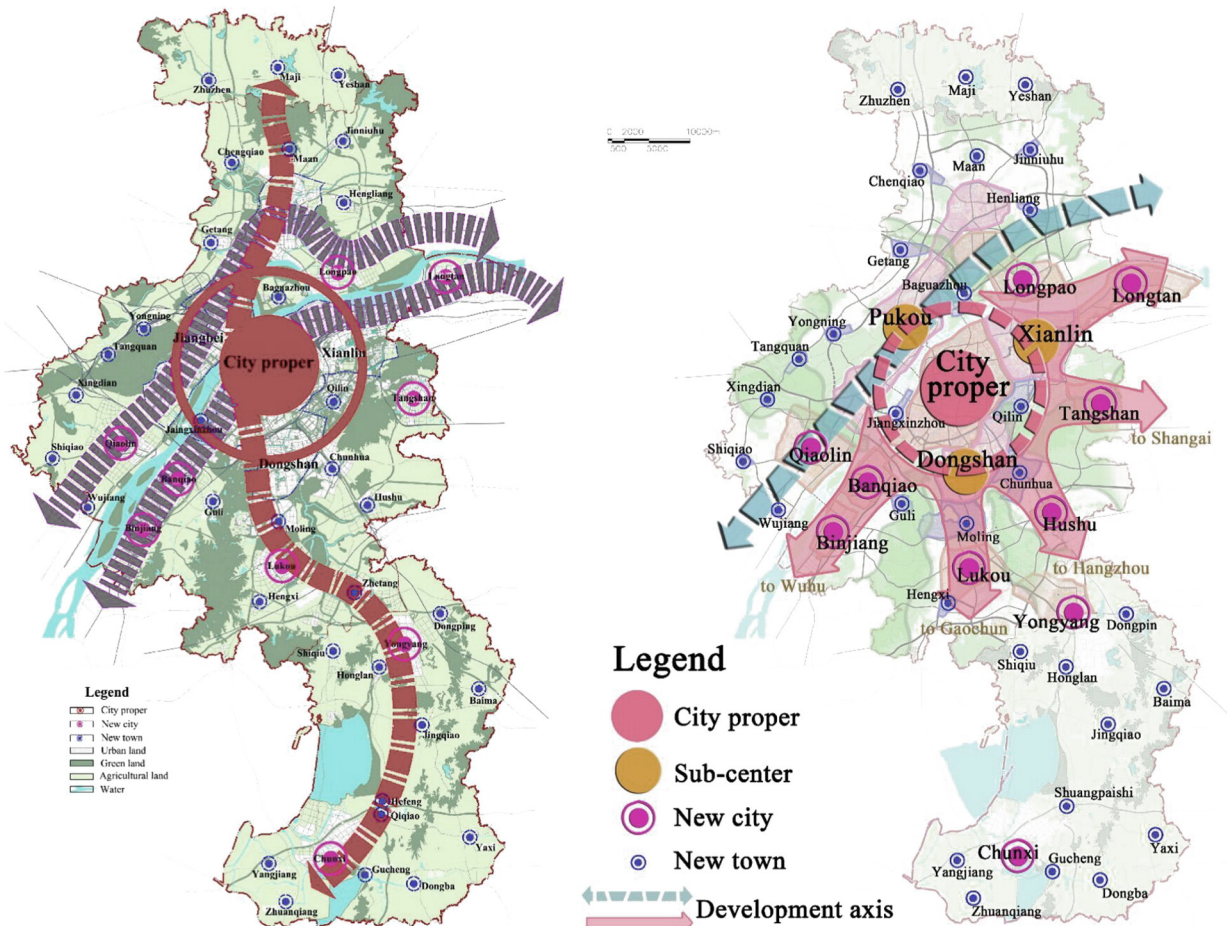


Fig. 47: Spatial planning of Nanjing in different periods: Nanjing Master Plan (2007–2020) - left, and Nanjing Master Plan (2011–2020) - right. Yuan, F., Gao, J., & Wu, J. (2015). *Nanjing-an ancient city rising in transitional China*. *Cities*, 50, 82–92. <https://doi.org/10.1016/j.cities.2015.08.015>

importance of these spaces in Nanjing's water towns reinforces social interactions, allowing residents to engage in communal activities that reinforce cultural identity and a shared sense of place. These spatial arrangements also reveal the social hierarchies within the community. Wealthier families traditionally occupy homes closer to the town center, where larger courtyard-style residences reflect their status, while lower-income families reside further from the core. This spatial hierarchy exemplifies Hillier and Hanson's (1984) "social logic of space," where physical configurations mirror social stratification, reinforcing a sense of order and community within Nanjing's riverfront areas.

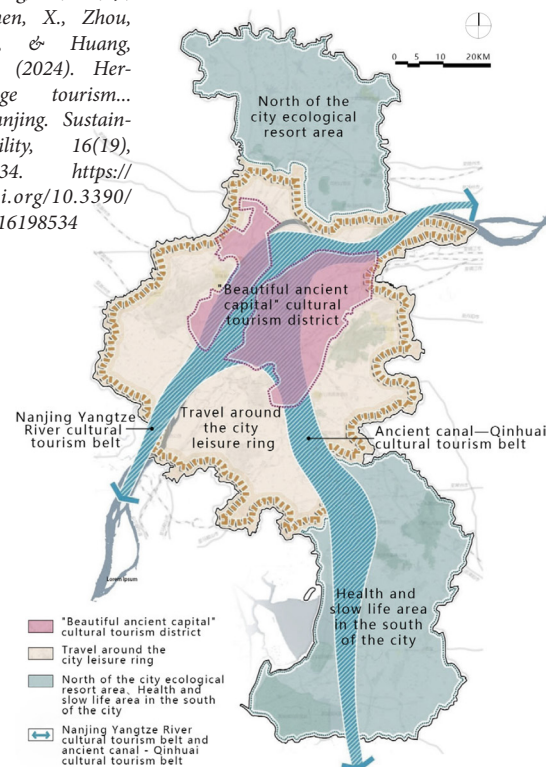
2.2.9. The Yangtze River (Nanjing): Economic Influences and Adaptive Urban Forms

Economic factors have played a significant role in shaping Nanjing's urban morphology along the Yangtze River, especially as these water towns evolved from agricultural hubs to prominent trade centers. Historically, Nanjing's location along the river enabled it to become a significant node in trade networks, fostering the growth of markets and economic activity in waterfront areas. This economic prominence is reflected in the spatial organization of the towns, with central marketplaces, commercial alleys, and warehouses situated close to the river for efficient access to trade

routes (Han et al., 2017, p. 1041). The rise of tourism in recent decades has further influenced Nanjing's waterfront morphology, as traditional towns adapt to accommodate an influx of visitors. This shift has prompted the adaptive reuse of historical

Fig. 48: The cultural and tourism development pattern of Nanjing during the "14th Five-Year Plan".

Wang, H., Ge, J., Chen, X., Zhou, Q., & Huang, K. (2024). *Heritage tourism... Nanjing. Sustainability*, 16(19), 8534. <https://doi.org/10.3390/su16198534>



Moreover, Nanjing's proximity to the Yangtze has fostered a diversified economic landscape that includes manufacturing, port trade, and cultural industries. This economic diversity influences the urban fabric, as waterfront towns adapt their spatial organization to accommodate these industries. Homes are often adjacent to workshops or small factories, creating a mixed-use morphology that integrates living and working spaces within the same area. Jacobs (1961) supports this integration, noting that urban neighborhoods thrive when they allow for a mix of residential and commercial uses, creating a dynamic and resilient economic environment.

2.2.10. The Yangtze River (Nanjing): Environmental Adaptations

The environmental setting along the Yangtze River significantly impacts the urban morphology of Nanjing's waterfront towns, necessitating architectural adaptations and infrastructural resilience. Given the area's susceptibility to seasonal flooding, traditional buildings in these towns often feature elevated foundations and drainage systems that mitigate flood risks. Many structures are designed with open courtyards and drainage canals, allowing water to flow through without causing extensive damage. These adaptations illustrate Rossi's idea that sustainable architecture responds to the specific environmental conditions of a place, embedding resilience into the urban fabric (Han et al., 2017, p. 1044). Green corridors along the Yangtze waterfront further enhance Nanjing's adaptive morphology, serving as natural buffers that absorb excess water and reduce flood risk. These corridors also provide recreational spaces that support community well-being and biodiversity. The use of green infrastructure reflects Mumford's (1961) principle that urban forms should integrate natural elements, creating spaces that support ecological sustainability and enhance residents' quality of life. Nanjing's commitment to environmental sustainability is evident in these design choices, as they balance flood resilience with public access to green spaces. Traditional building materials, such as wood and clay, are also prevalent in Nanjing's water towns. These materials are well-suited to the region's climate, providing insulation during cold seasons and cooling during warmer months. The use of local materials contributes to an environmentally integrated morphology, where architectural choices reflect an understanding of local conditions. Gospodini (2007) emphasizes the importance of place identity in resilient urban forms, and Nanjing's use of native materials and architectural styles reinforces the unique identity of its waterfront areas while supporting environmental sustainability.

2.2.11. The Yangtze River (Nanjing): Political Influences and Regulatory Frameworks

The regulatory landscape in Nanjing has shaped its waterfront morphology, as government policies aim to balance historical preservation with urban development. Nanjing's water towns are designated as cultural heritage sites, which limits the types of new construction that can occur and enforces guidelines to maintain the traditional aesthetic. These restrictions support the preservation of Nanjing's historical identity, preventing modern structures from overwhelming the area's traditional character (Chen et al., 2017, p. 215). However, this regulatory framework also presents challenges, as preservation restrictions can limit economic growth and constrain local businesses. To address these issues, Nanjing has adopted policies that encourage adaptive reuse, allowing historical buildings to serve contemporary functions while maintaining their architectural integrity. This approach aligns with Dovey's (2012) notion of "informal urbanism," where regulatory flexibility enables cities to adapt historical spaces to modern needs. In Nanjing, the adaptive reuse of waterfront buildings creates a hybrid morphology that respects cultural heritage while supporting economic vitality. Additionally, urban planning initiatives have sought to integrate modern infrastructure within these traditional towns. Roads, public transit systems, and utilities have been carefully introduced to enhance accessibility without disrupting the historical layout. This approach supports Marshall's (2005) observation that effective urban planning requires a balance between order and flexibility, as seen in Nanjing's hybrid morphology where historical preservation coexists with modern infrastructure.

2.2.12. The Yangtze River (Nanjing): Resource Flows and Morphological Sustainability

The sustained urban morphology of Nanjing's Yangtze River waterfront is closely tied to continuous flows of material and cultural resources that support its resilience. The water towns rely on tourism revenue, cultural events, and artisanal industries to maintain the traditional urban form, ensuring that preservation efforts are economically sustainable. Sassen's (2000) analysis of global cities emphasizes that local economies can thrive by leveraging cultural assets, a principle visible in Nanjing's water towns where cultural heritage is a cornerstone of economic vitality. The adaptive reuse of historical buildings for cultural tourism creates a sustainable cycle that generates revenue for maintenance and preservation efforts. Local businesses and government agencies collaborate to organize festivals, art exhibitions,

and cultural tours, drawing tourists who contribute to the area's economic and cultural sustainability. This flow of resources reinforces the resilience of the waterfront morphology, ensuring that Nanjing's historical identity remains relevant in a modern urban context (Liu & Shu, 2020, p. 25). The use of local materials and traditional building techniques also supports morphological sustainability. Buildings in Nanjing's water towns are constructed with materials that can be easily sourced and maintained, reducing the environmental impact and enhancing the area's cultural authenticity. This emphasis on sustainability reflects Suttles' (1972) theory that community resilience is built on resource management, as Nanjing's resource flows enable the area to adapt to changing economic and environmental conditions while preserving its historical form. (Liu, et al. 2014) examine how traditional rural settlements in China's floodplains have evolved in response to environmental challenges, including flooding and seasonal changes in water levels (p. 325). In Nanjing, this environmental adaptability is evident in the city's waterfront architecture, where buildings are often raised on stilts or constructed with flood-resistant materials. These architectural typologies, which have been in use for centuries, continue to influence modern developments along the Yangtze River. For example, many of the city's new residential and commercial buildings incorporate flood mitigation features, such as elevated foundations and drainage systems.

Nanjing's urban morphology is also shaped by the government's central role in urban planning. (Han, Meng and Zhou 2017) discuss how the Chinese government has implemented long-term planning strategies to manage the city's growth and protect the waterfront from environmental degradation (p. 1050). These strategies include zoning regulations that restrict industrial development in certain areas and promote the preservation of historical sites along the river. Urban morphological shifts have been more tightly controlled by state-driven policies that emphasize both economic development and historical preservation. The government's focus on developing the Yangtze River Delta as a major economic hub has led to significant changes in the waterfront's land use, with industrial zones, transportation infrastructure, and commercial developments dominating much of the riverbank (Liu, et al. 2023). The shift from historical preservation to industrial development began in the early 20th century, as Nanjing's strategic location along the Yangtze made it a key site for industrial growth. However, Nanjing's government has also made efforts to preserve the traditional architecture of its water towns, where centuries-old courtyard homes and

wooden structures remain intact. These preservation efforts are driven by a desire to maintain the city's historical and cultural heritage, even as it undergoes rapid modernization. The government's ability to balance industrial growth with cultural preservation is reflected in the dual nature of the city's waterfront, where traditional water towns coexist with modern high-rise developments (Liu, et al. 2023). Economic and policy-driven forces have thus shaped the urban morphology of both cities' waterfronts differently. In Lagos, the lack of formal governance and economic exclusion has led to the proliferation of informal settlements that evolve organically in response to environmental and socio-economic pressures. In Nanjing, by contrast, the government's emphasis on planning and preservation has ensured that urban morphological shifts are more structured, with clear zoning regulations that separate industrial, commercial, and residential areas.

2.3 The Architectural Typologies

Architectural typologies serve as the foundational elements of a city's urban morphology, representing the physical manifestations of its cultural, economic, and environmental influences. In waterfront cities like Lagos and Nanjing, these typologies range from informal, self-built structures to formal, government-planned developments.

2.3.1. The Lagos Lagoon

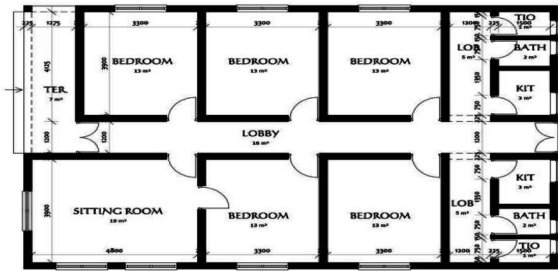
The architectural landscape of Lagos, particularly around the Lagos Lagoon, is marked by a spectrum of typologies that reflect the socio-economic diversity and resilience of its communities. From the high-density informal settlements in areas like Makoko to more formal peri-urban housing developments, each typology is informed by environmental pressures, economic conditions, and cultural heritage. The adaptive reuse of materials, the spatial organization of settlements, and the multifunctional nature of these buildings reflect a distinct architectural response to the unique challenges and opportunities of life near the Lagoon.

2.3.2. The Lagos Lagoon: The Typology of Resilience and Adaptation

Makoko is one of the most notable informal settlements on the Lagos Lagoon. Its architectural typology is characterized by elevated wooden structures on stilts, a direct response to the constant threat of flooding from the Lagoon. These homes, constructed primarily from reclaimed wood and metal, are suspended above the water on stilts, creating a typology that is at once adaptable and economical (Ajayi et al., 2019, p. 243). This design strategy

enables the community to thrive in a challenging environment, where permanent land is scarce, and the water level fluctuates with seasonal tides. According to Adedire and Iweka (2017), the choice of materials in Makoko reflects both economic necessity and environmental adaptability. Wood, the primary building material, is abundant and affordable, allowing residents to build quickly and inexpensively (Adedire & Iweka, 2017, p. 50). However, this reliance on wood also exposes the structures to weathering and decay, necessitating frequent repairs and replacements. Corrugated metal sheets are commonly used for roofing, offering some protection from the heavy rains typical in the region's climate, though they do little to regulate indoor temperatures in the hot and humid environment. The spatial organization within Makoko highlights

Fig. 49: Typical Lagoon Informal Stilt Housing
Samba. (2023, May 23). 8 amazing hidden gems of lagos - Away Africa. Away Africa. <https://www.away.africa/8-amazing-hidden-gems-of-lagos>

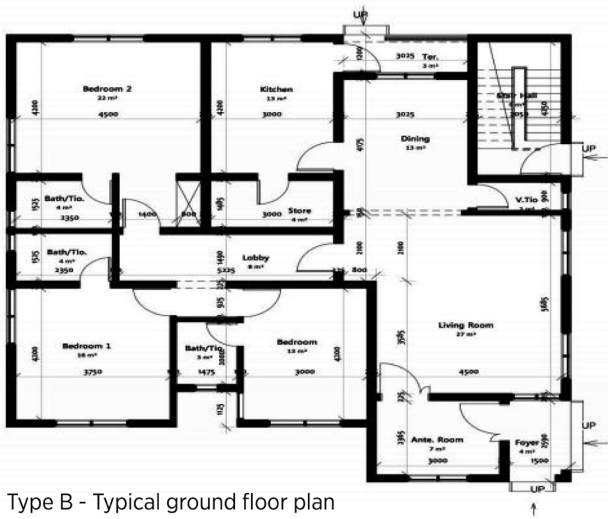


Type A - Rental housing development
Typical ground floor plan of a tenement bungalow

Fig. 50: Typical Family Housing Layouts in Lagoon environs
Adedire, F. M., and A. C. O. Iweka. 2017. "Typological Analysis of Housing Development in Lagos Peri-urban Settlements." *ATBU Journal of Environmental Technology*, Volume 10, No. 2.



Type C - Typical floor plan
of a single family bungalow housing



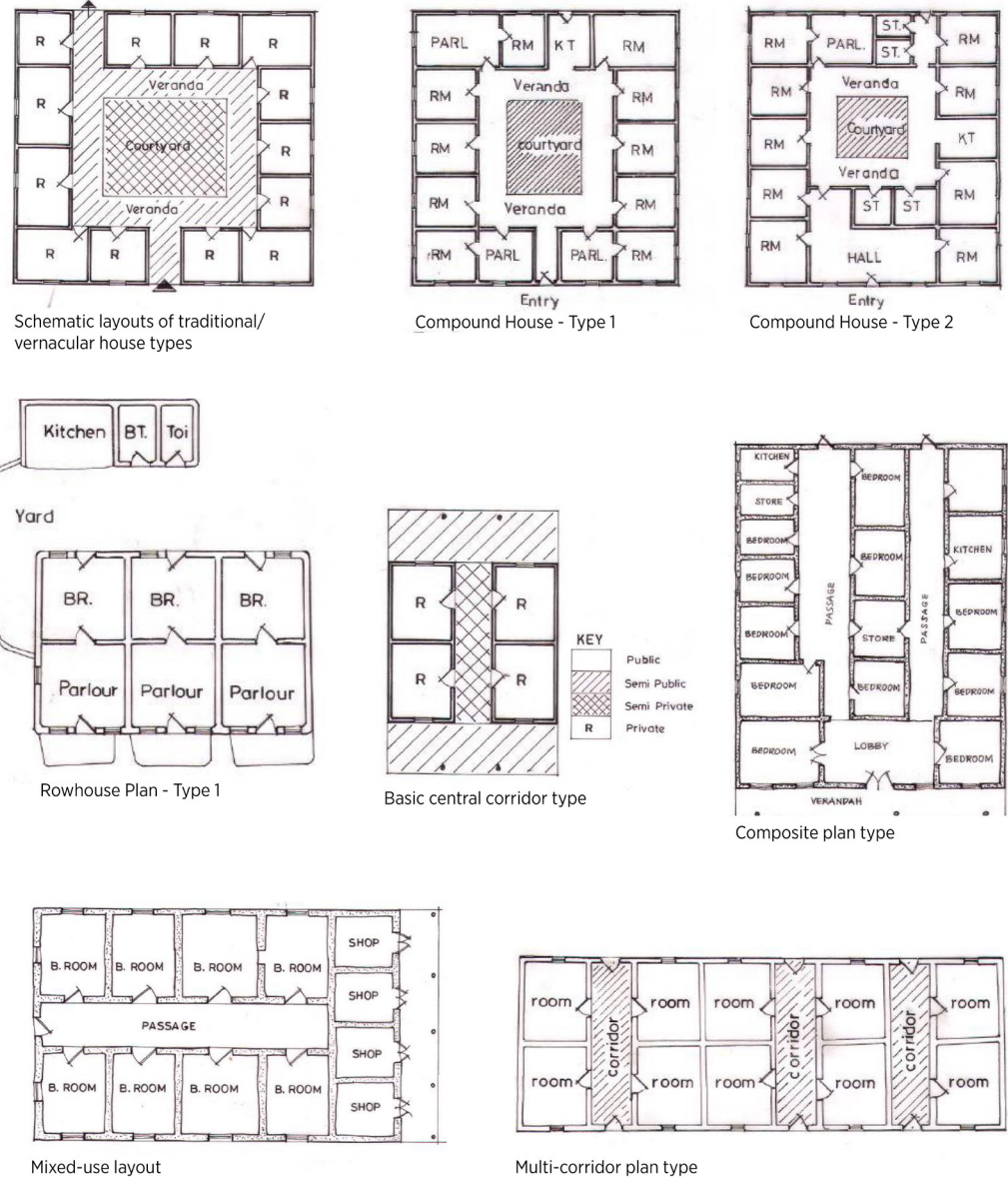
Type B - Typical ground floor plan
of a single storey housing unit



Type B - Typical first floor plan
of a single storey housing unit

Fig. 51: Variations of the residential typology in southwest Nigeria

Osasona, C.O., 2008. *From traditional residential architecture to the vernacular. Cultural geographies*, Volume 147447402091118. Retrieved from SciSpace



the multifunctional nature of these informal structures. Houses often serve as both residential spaces and places of commerce, with families operating small businesses from their homes. This hybrid use of space is essential in a high-density community where economic opportunities are limited, and residential areas must serve multiple functions (Adedire & Iweka, 2017, p. 54). Walkways are narrow and largely improvised, connecting homes and providing a means of navigation across the settlement. These walkways also function as communal spaces where social interactions occur, reflecting a communal architectural approach that integrates both private and public realms within the same spatial framework.

2.3.3. The Lagos Lagoon: Socio-Cultural Influence on Informal Typologies

The architecture of Makoko and other informal waterfront settlements is deeply rooted in the socio-cultural fabric of the community. The residents of Makoko are predominantly from fishing communities, and their livelihoods have historically depended on the Lagoon. This connection to the water is reflected in the architectural design, with homes built to accommodate the ebb and flow of the tides and with direct access to the water for fishing activities. This symbiotic relationship with the water influences not only the physical structure of the buildings but also the spatial layout of the

community, where homes are positioned to facilitate fishing and transportation by canoe, a primary mode of movement through the settlement (Aina, 1989). Makoko's typologies are also shaped by cultural values that prioritize communal living and social cohesion. The compact arrangement of homes and the shared spaces between them facilitate a lifestyle where resources and responsibilities are communal. According to Aina (1989), this cultural emphasis on community is manifested architecturally through the close proximity of homes and the integration of communal areas within residential zones. Social structures, therefore, directly inform the physical layout, with family units clustering together and forming tight-knit communities within the broader settlement. This form of social organization is critical for resilience, enabling residents to rely on communal support for everything from childcare to the maintenance of shared infrastructure.

2.3.4. The Lagos Lagoon: Material Constraints and Environmental Adaptation

The use of local, affordable materials in Makoko is not solely an economic decision but also a pragmatic adaptation to the environment. In a region prone to flooding and high humidity, traditional building materials such as wood and bamboo offer flexibility and ease of repair. However, these materials also present limitations in durability and insulation. As Adedire and Iweka (2017) note, the material choices in Makoko reflect a delicate balance between cost and functionality, as more durable materials like concrete are often inaccessible due to cost and logistical challenges (p. 52). The use of lightweight materials also allows for greater resilience in the face of potential displacement, as structures can be rebuilt relatively quickly and with minimal resources in the event of damage. This typology of resilience through material choice is evident in how the community adapts to seasonal weather patterns. Homes are elevated on stilts to mitigate flood risks, and roofs are often angled to facilitate water runoff during heavy rains. In a region with limited access to formal infrastructure, these architectural solutions are vital for sustaining the community. The lagoon setting imposes constraints on waste management, sanitation, and clean water access, all of which are reflected in the typologies that have emerged in response. For example, stilts not only raise homes above floodwaters but also provide a form of separation from the water's pollutants, though this remains an imperfect solution given the health risks associated with living in close proximity to contaminated water.

2.3.5. The Lagos Lagoon: Comparison to Formal Peri-Urban Typologies

In contrast to the adaptive, vernacular architecture of Makoko, the formal housing developments in Lagos' peri-urban areas present a more standardized architectural typology. These developments, driven by urban planning policies and influenced by modern building standards, feature concrete structures, planned road networks, and defined boundaries. Adenaike et al. (2020) describe these formal typologies as reflecting an effort by urban authorities to impose order and standardization on the city's rapidly expanding peripheries (p. 58). Concrete and other industrial materials are prevalent in these developments, contributing to longer-lasting structures that require less frequent maintenance than the wooden homes of Makoko. Formal peri-urban housing also embodies a different relationship with public and private space. In these developments, public areas such as streets and recreational spaces are planned and managed by local authorities, contrasting sharply with the improvised and communal spaces of Makoko. This planning approach mirrors the broader objectives of Lagos' urbanization policies, which seek to create functional and organized spaces that support Lagos' status as a burgeoning megacity (Adenaike et al., 2020). However, these formal developments often lack the adaptability seen in informal settlements, as they are less responsive to environmental and economic pressures that affect the peri-urban population. The typologies in these formal developments are largely residential but also incorporate commercial zones that align with urban planning frameworks. These zones are generally separated from residential areas, unlike in Makoko, where commerce and residence are often intertwined. This separation reflects a shift towards Westernized urban planning ideals, which favor compartmentalization of functions. However, it also reduces the spatial efficiency and multifunctionality inherent in the typologies of informal settlements. Thus, while formal developments offer structural stability and a more organized urban form, they often fail to replicate the social and economic flexibility that characterizes the architecture of Makoko.

2.3.6. The Lagos Lagoon: The Role of Policy and Urban Planning in Shaping Architectural Typologies

The divergence between informal and formal typologies in Lagos is also a product of urban policy and planning strategies. Policies aimed at

controlling urban sprawl and enhancing housing quality have driven the construction of formal peri-urban developments, yet they often overlook the unique socio-economic needs of informal communities (Agamah, 2018). For instance, policies focused on standardizing building materials and layouts tend to marginalize the adaptive and resourceful typologies of informal settlements. As Dano et al. (2020) suggest, these policies frequently clash with the reality of Lagos' urban growth, where informal settlements continue to proliferate due to the lack of affordable housing alternatives (p. 1042). The Lagos State government has undertaken several initiatives to redevelop waterfront areas, including plans to modernize Makoko. However, these efforts have faced resistance from residents, who argue that the redevelopment would erode the community's unique architectural and cultural identity. This tension underscores the complex interplay between policy-driven urban morphology and the organically evolved typologies of informal settlements, where architectural forms are intimately tied to cultural and environmental contexts. The architectural typologies in formal areas of Lagos, by contrast, are heavily influenced by the city's colonial past. The grid layouts and low-rise commercial buildings that dominate Lagos Island are a legacy of British colonial planning, which introduced new building materials such as concrete and steel, as well as European architectural styles.

(Adenaike, Opoko and Kosoko, Physical Planning Policies on Lagos Island and Their Effects on Urban Morphology 2020) discuss how these formal typologies continue to shape Lagos' urban landscape, particularly in the central business district, where colonial-era buildings have been adapted for

modern use (p. 55). However, these formal areas remain disconnected from the informal settlements on the periphery, creating a fragmented urban fabric. The architectural typologies found in Lagos and Nanjing's waterfronts serve as physical manifestations of socio-economic realities, environmental adaptations, and cultural traditions. In Lagos, the stilt house is the defining typology in informal settlements like Makoko. These homes, built from inexpensive materials such as wood, bamboo, and corrugated iron, are designed to accommodate the unique challenges of living on water. Elevated on stilts to avoid flooding during the rainy season, these structures demonstrate how architecture in marginalized communities often evolves out of necessity rather than choice (Aina 1989, 45). The spatial organization of these stilt houses, typically clustered around narrow water channels, further reflects the settlement's informality, where pathways and infrastructure are makeshift and ever-changing. In addition to residential stilt homes, Makoko also features floating structures that serve as schools, churches, and marketplaces. These communal spaces have adapted to the environmental context of the lagoon, illustrating how architectural typologies can expand beyond domestic uses to serve broader social functions (Ajayi, Soyinka-Airewele and Edewor 2019, 88). The floating school designed by architect Kunlé Adeyemi in 2013, for instance, is an example of how local architectural traditions can inspire innovative responses to the challenges of urban informality and flooding (Simon, Adegoke and Adewale 2013, 150). However, the reliance on these types of materials and the lack of formal infrastructure mean that these buildings are highly vulnerable to environmental risks such as storms and rising sea levels.

Fig. 52: Jaekel House - existing colonial architecture in Lagos Lagoon environs

Oliver, E. (2025, March 27). *Revive and Thrive: Digital collaboration across continents - The International National Trusts Organisation (INTO). The International National Trusts Organisation (INTO).* <https://www.into.org/revive-and-thrive/>



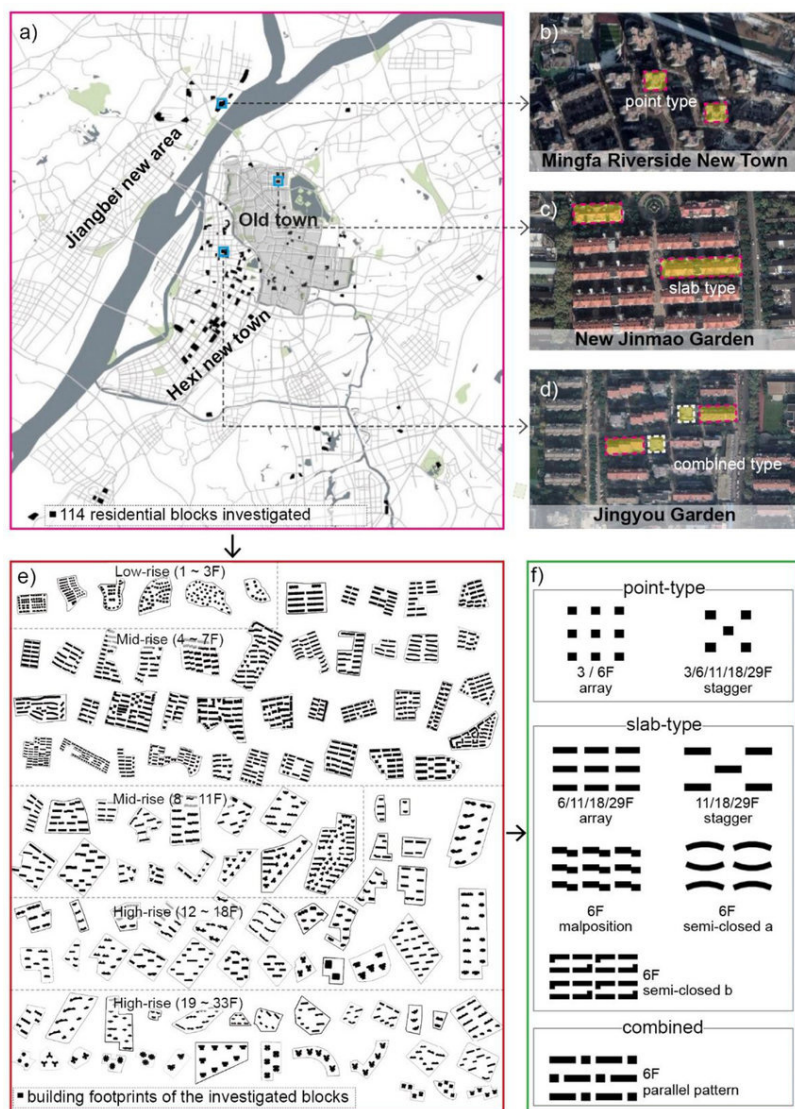
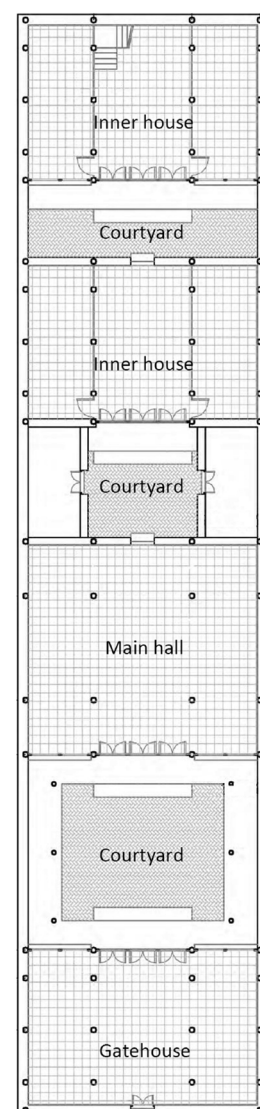


Fig. 53: Survey of 114 samples of residential blocks in Nanjing
Shi, Q., Zhao, Y., & Li, R. (2022). Investigation of typical residential block typologies and their impact on pedestrian-level microclimate in summers in Nanjing, China. *Frontiers of Architectural Research*, 11(2), 459–473. [https://doi.org/10.1016/S2095-2635\(21\)00082-0](https://doi.org/10.1016/S2095-2635(21)00082-0)

Fig. 54: Layout of traditional residential buildings in Nanjing
Dong, Y., Han, D., & Trisciuglio, M. (2022). A graphical method of presenting property rights, building types, and residential behaviors: A case study of Xiaoxihu historic area, Nanjing. *Frontiers of Architectural Research*, 11(4), 1077–1091. <https://doi.org/10.1016/j.foar.2022.04.003>



2.3.7. The Yangtze River (Nanjing)

In Nanjing, the evolution of architectural typologies along the waterfront has been more structured, with the government playing a central role in managing the city's growth. The city's waterfront architecture reflects a balance between modernization and preservation, with new developments being carefully integrated into the existing urban fabric. (Wang, Wong and Duan 2016) discuss how the Chinese government has implemented strict zoning regulations along the Yangtze River to protect historical sites while allowing for the construction of modern infrastructure (p. 522). This approach has resulted in a unique architectural landscape, where traditional Chinese buildings coexist with modern skyscrapers and industrial complexes. The architectural typologies along the Yangtze River in Nanjing represent a unique confluence of traditional Chinese building principles and adaptive strategies that respond to the river's ecological conditions. This region's architectural landscape is deeply rooted in Chinese cultural values, with spatial configurations that reflect philosophical ideals of harmony between humans and nature. Nanjing's architecture near the Yangtze River also demonstrates

a continuity of traditional materials and construction techniques, even as modern influences increasingly shape urban development. By examining these architectural typologies in terms of spatial organization, materiality, and their relationship to public and private spaces, this section will explore how Nanjing's riverfront architecture reflects both historical continuity and contemporary innovation.

2.3.8. The Yangtze River (Nanjing): Traditional Architectural Typologies

In Nanjing, traditional Chinese architectural typologies near the Yangtze are characterized by a centripetal spatial schema that focuses on communal spaces and hierarchical organization. According to Jia and Wang (2024), this spatial organization is designed to foster a strong sense of community and social cohesion, with public spaces like courtyards serving as focal points around which residential and communal buildings are arranged (p. 15). The courtyard houses, or siheyuan, are emblematic of this typology. These structures are typically arranged around a central courtyard, which

serves as a shared space for social interaction and cultural rituals, reinforcing the traditional Chinese emphasis on collective living and community values. The configuration of courtyard houses along the Yangtze is not merely aesthetic but also functional, as it facilitates airflow and natural cooling, an essential adaptation in the region's humid climate. Additionally, the inward orientation of these buildings aligns with principles of Feng Shui, which emphasize harmony between built and natural environments. This typology is indicative of a broader Chinese cultural value known as *renwen heyi*, or the integration of human and environmental harmony, which remains a guiding principle in the architecture of this region (Jia & Wang, 2024, p. 20). This philosophy is visible in the placement of structures relative to the river and other natural features, highlighting a spatial awareness that integrates environmental factors with cultural and spiritual practices. In addition to courtyard houses, temples and ancestral halls in the Nanjing area also reflect this centripetal schema. These buildings are often placed at the heart of communities, serving as spiritual and social centers that anchor the spatial organization of surrounding residential areas. The hierarchical placement of these structures reinforces a traditional social order, where communal spaces are prioritized, and private residences radiate outward from the public core. This layout not only supports social cohesion but also ensures accessibility to communal facilities, emphasizing the importance of shared resources in traditional Chinese settlements (Jia & Wang, 2024, p. 22).

2.3.9. The Yangtze River (Nanjing): Materiality and Construction Techniques

The choice of materials in Nanjing's architectural typologies reflects a deep connection to the environment, as well as a commitment to sustainability. Traditional buildings in the Yangtze area often employ materials like wood, stone, and rammed earth, which are locally sourced and have low environmental impact. Liu et al. (2010) highlight the durability and thermal properties of rammed earth, which has been a popular material in the region for centuries due to its natural insulation capabilities (p. 94). Rammed earth structures are especially common in rural areas along the upper reaches of the Yangtze River, where the material's low cost and thermal efficiency make it a practical choice. The use of wood in Nanjing's traditional architecture is also significant, as it symbolizes longevity and resilience in Chinese culture. Wooden beams and columns are integral to the structural framework of courtyard houses and temples, where they provide both strength and flexibility. This use of timber construction allows

buildings to absorb seismic shocks, an important feature in a region prone to minor earthquakes. Moreover, wood's natural ability to "breathe" helps regulate indoor humidity, an essential adaptation in the Yangtze region's climate (Liu et al., 2010, p. 96). Despite the modern push towards concrete and steel, wood remains a favored material in the restoration and preservation of traditional structures, as it maintains the authenticity of architectural heritage while meeting modern safety standards.

In recent years, architects in Nanjing have experimented with combining traditional materials like wood and rammed earth with modern technologies to enhance durability. For instance, reinforced rammed earth techniques have been introduced, where stabilizing agents are added to the earth mixture to improve its load-bearing capacity and resistance to weathering. These advancements allow for the preservation of traditional architectural styles while ensuring that the structures meet



Fig. 55: Part of property typological map of Xiaoxihu area (left); Part of speculative typological map of Xiaoxihu area (right)
Dong, Y., Han, D., & Trisciuglio, M. (2022). A graphical method of presenting property rights, building types, and residential behaviors: A case study of Xiaoxihu historic area, Nanjing. *Frontiers of Architectural Research*, 11(4), 1077–1091. <https://doi.org/10.1016/j.foar.2022.04.003>

contemporary building codes and environmental regulations. This hybrid approach demonstrates a respectful modernization of traditional typologies, where new materials are integrated without compromising the aesthetic and functional integrity of historical designs (Liu et al., 2010, p. 97).

**2.3.10. The Yangtze River (Nanjing):
Adaptation to Environmental
and Urban Pressures**

The Yangtze River’s natural landscape exerts a significant influence on Nanjing’s architectural typologies, necessitating adaptations to seasonal flooding, humidity, and temperature fluctuations. In areas close to the river, buildings are often elevated or constructed on raised foundations to mitigate flood risks. This design approach is visible not only in rural areas but also in urban Nanjing, where riverfront developments have incorporated raised walkways and elevated structures to accommodate rising water levels. These adaptations

are essential in a city that has historically relied on the Yangtze for commerce, transportation, and cultural sustenance, making it imperative to design buildings that can withstand the river’s fluctuations. Shannon and Chen (2013) discuss the concept of “living with water,” which has long guided architectural practices in riverine communities in China (p. 29). In Nanjing, this principle is evident in the way residential and public buildings are constructed to accommodate water flow, with structures designed to direct floodwaters away from inhabited areas. This approach to architecture not only reduces flood risk but also enhances the relationship between urban development and natural water systems, a philosophy that aligns with China’s recent “sponge city” initiative, which aims to create urban areas that absorb and utilize rainwater efficiently (Shannon & Chen, 2013, p. 30). In response to Nanjing’s rapid urbanization, there has also been a shift towards integrating traditional architectural elements with modern urban design principles. For example, the



the government has implemented policies that promote the conservation of historical buildings along the river, while also encouraging the development of new structures that reflect traditional aesthetics. This blending of old and new typologies is visible in the adaptive reuse of courtyard houses, which are often converted into museums, cultural centers, or boutique hotels, allowing them to serve modern functions while preserving their historical and cultural significance (Jia & Wang, 2024, p. 24).

2.3.11. The Yangtze River (Nanjing): Public and Private Space Dynamics

A defining feature of architectural typologies in Nanjing is the deliberate balance between public and private spaces, particularly in riverfront communities. Traditional courtyard houses, for instance, provide a seamless transition between private and communal spaces, with the central courtyard serving as a public area accessible to family members and visitors alike. This open layout reflects Chinese values of community and shared living, where the courtyard functions as a social hub for family gatherings, cultural events, and daily interactions (Canizaro, 2007, p. 92). The courtyard is not only a physical space but also a symbolic representation of unity, reinforcing the social fabric of the community. Temples and ancestral halls also play a crucial role in the public-private dynamic, as they are often located near residential areas and serve as gathering points for both spiritual and social activities.

The proximity of these structures to residential spaces exemplifies the traditional Chinese approach to integrating sacred and secular life, where public worship and family rituals coexist within the same architectural environment. This typology of spatial integration is central to the cultural identity of communities along the Yangtze, where public and private realms are not strictly divided but rather interwoven to support a cohesive community life (Canizaro, 2007, p. 94). In modern developments along Nanjing's waterfront, the emphasis on public space continues, with parks, plazas, and pedestrian pathways designed to enhance accessibility to the river. These public spaces are influenced by traditional designs but are adapted to meet contemporary needs, providing recreational areas that accommodate the growing urban population. The integration of green spaces along the river reflects a modern adaptation of traditional courtyard aesthetics, where the focus remains on creating open, communal areas that foster social interaction and cultural expression (Shannon & Chen, 2013, p. 32).

The evolution of Nanjing's waterfront architecture is also shaped by environmental considerations. (Liu, et al. 2014) highlight how the city's flood-prone location has influenced the design of waterfront buildings, with modern developments incorporating flood-resistant features such as elevated foundations and drainage systems (p. 326). These environmental adaptations, combined with the government's emphasis on historical preservation, have created a cohesive architectural narrative along the Yangtze River, where the city's past and future are seamlessly integrated.

The architectural typologies along the Yangtze River reflect a blend of traditional Chinese forms and modern, state-driven developments. (Jia and Wang 2024) explore the typology of traditional Chinese settlements, highlighting the importance of axial symmetry, hierarchical layouts, and the integration of natural elements like water and greenery in the design of residential buildings (p. 12). These traditional typologies are still evident in Nanjing's preserved imperial architecture, particularly in the city's historical core, where temples, pagodas, and residential compounds maintain their original layout and design. Modern architectural typologies in Nanjing, particularly along the waterfront, have been shaped by the city's role as an economic hub. The Yangtze River, which serves as a major transportation route for goods and raw materials, has driven the development of large-scale industrial and commercial buildings along the waterfront. (Wang, Wong and Duan 2016) discuss how these modern typologies, including high-rise office buildings, warehouses, and shipping terminals, reflect the city's economic priorities and its focus on industrial growth (p. 518). However, the government's emphasis on historical preservation has ensured that these modern developments do not overwhelm the city's traditional architectural forms.

2.4 Adaptation of the Architectural Typologies to Waterfront Contexts

2.4.1. The Lagos Lagoon: Architectural Adaptation in Lagos Lagoon

The informal settlement of Makoko in Lagos Lagoon is a unique example of architectural adaptation to a challenging waterfront environment. Established as a fishing community and known for its stilt-based structures, Makoko's architectural style is shaped by both socio-economic necessity and environmental resilience. Residents have built homes on stilts that elevate their dwellings above the water,

allowing them to adapt to the lagoon's fluctuating water levels and protect their homes from flooding. This practical yet innovative architectural solution reflects the community's deep knowledge of their environment, where building techniques are passed down through generations (Uduma-Olugu & Oduwaye, 2010, p. 758). Makoko's structures are primarily built from locally sourced and affordable materials, such as timber and corrugated metal, which allow for quick repairs and adjustments to withstand the lagoon's humid and sometimes corrosive climate. While lacking in durability, these materials provide the flexibility needed for incremental building, a common practice in low-income communities where residents expand or modify their homes as family and income levels grow.

This adaptive approach aligns with broader global trends in waterfront architecture, where typologies evolve in response to environmental conditions, but in Makoko, adaptation is driven largely by necessity rather than planned design (Uduma-Olugu & Oduwaye, 2010, p. 760). The stilted architecture in Makoko not only serves as housing but also enables a multifunctional use of space, creating a unique urban morphology where residential, commercial, and communal functions blend seamlessly. Shops, schools, churches, and marketplaces are integrated into the settlement's floating layout, with many communal spaces also constructed on stilts to maintain cohesion and accessibility across the community. As noted by Hurley (2006), waterfront areas often hold a distinct cultural and social significance, shaping the way communities interact with their surroundings. In Makoko, the stilted typology is not only practical but also a symbol of resilience and cultural identity, reflecting the community's adaptation to the lagoon environment over time (Hurley, 2006, p. 14).

2.4.2. The Lagos Lagoon:

Community-Driven Innovations

Makoko's architectural typology is also a testament to community-driven innovation, where residents adapt available materials and techniques to create resilient and sustainable structures in a resource-limited context. The stilted structures and floating pathways support the local fishing economy, as they provide direct access to the water for fishing and trade, while also facilitating the mobility of residents and goods. This configuration reflects the community's adaptation to the lagoon's unique conditions, as well as its reliance on the water for economic sustenance. The layout fosters a distinctive spatial organization, where the boundaries between public and private spaces

are fluid, mirroring the interconnectedness of the community's social and economic life (Uduma-Olugu & Oduwaye, 2010, p. 762). The lagoon's influence on Makoko's architecture also aligns with Avni and Teschner's (2019) analysis of urban waterfronts, where contemporary architectural adaptations reflect both environmental constraints and planning conflicts. In Makoko's case, the community's informal structures face regulatory challenges, as state authorities frequently view these unplanned areas as obstacles to urban modernization. This perspective has led to periodic threats of eviction, undermining the long-term security of residents and their ability to invest in durable materials or formal infrastructure. Despite these challenges, the community has managed to develop a self-sustaining architectural style that aligns with its socio-economic context, illustrating how waterfront communities can thrive through adaptive, context-specific architecture (Avni & Teschner, 2019, p. 9). Moreover, the communal structures in Makoko, such as stilted schools and churches, reflect the social and cultural significance of shared spaces in the community. These structures enable social cohesion and provide essential services, fostering a sense of identity and unity within the settlement. The schools, in particular, serve as symbols of resilience, as they represent the community's commitment to education despite the absence of formal state support. By situating these communal structures on the waterfront, Makoko residents reinforce their connection to the lagoon, embodying Hurley's (2006) concept of waterfronts as places of public memory and community identity (Hurley, 2006, p. 16).

2.4.3. The Lagos Lagoon: Architectural Typology and Environmental Sustainability

The stilted architectural style in Makoko also exemplifies an eco-conscious approach to waterfront living. By elevating structures above the water, residents minimize their impact on the lagoon's ecosystem and adapt to seasonal changes in water levels, reducing the risk of property damage during floods. This approach aligns with the principles of ecological resilience, where built environments harmonize with natural systems rather than imposing rigid structures. Shannon and Yiyong (2013) emphasize this approach in their study of China's urban rivers, advocating for architectural typologies that respect and integrate with natural landscapes. In this context, Makoko's stilted typology provides a model for flood-resilient architecture that could inform similar waterfront developments worldwide (Shannon & Yiyong, 2013, p. 30). However, while Makoko's architecture is adaptive, the settlement faces significant

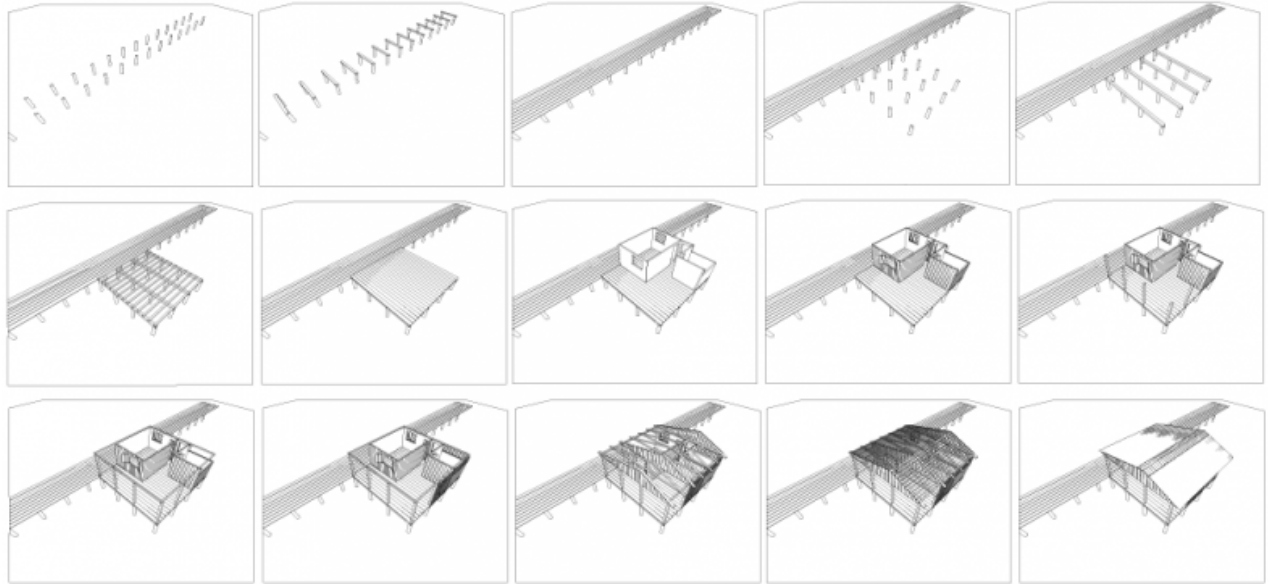


Fig. 56: Typical construction sequence of stilt housing in informal settlements

A--D -- makoko. (n.d.). <https://architectureindevelopment.org/project/173>



Fig. 57: Materiality of local architecture, utilising locally sourced wood
A--D -- makoko. (n.d.). <https://architectureindevelopment.org/project/173>

environmental challenges, particularly pollution and waste management. The lack of formal infrastructure means that waste is often disposed of directly into the lagoon, affecting water quality and threatening residents' health and the lagoon's biodiversity. Addressing these issues requires innovative waste management solutions tailored to the settlement's unique morphology, such as floating waste collection systems or decentralized water treatment facilities. By integrating sustainable infrastructure into Makoko's existing architectural typology, Lagos could enhance both the community's quality of life and the environmental health of the lagoon (Uduma-Olugu & Oduwaye, 2010, p. 764).

2.4.4. The Lagos Lagoon: Potential for Integration into Waterfront Revitalization

Makoko's architectural typology also offers significant potential for integration into broader waterfront revitalization efforts in Lagos. Uduma-Olugu and Oduwaye (2010) discuss the untapped

potential of the Lagos Lagoon for recreation and tourism, suggesting that formalizing and improving Makoko's unique architecture could transform the settlement into an attractive destination. By incorporating Makoko's stilted architecture into waterfront regeneration plans, Lagos could develop a model of sustainable tourism that respects the community's cultural heritage while providing economic opportunities. This approach would align with international trends in waterfront revitalization, where cities repurpose historically significant areas to create multifunctional public spaces that benefit both residents and visitors (Uduma-Olugu & Oduwaye, 2010, p. 762). However, successfully integrating Makoko into Lagos's waterfront development requires careful planning to avoid displacement and gentrification. Ensuring that residents have secure land tenure and are included in decision-making processes would protect the community's cultural heritage and prevent exploitation. Additionally, investments in infrastructure, such as waste management and transportation, could improve living conditions and facilitate Makoko's transition into a formalized urban neighborhood. By recognizing the architectural and cultural value of Makoko's stilted structures, Lagos could set a precedent for inclusive waterfront development that values community-led innovations and promotes socio-economic resilience (Hurley, 2006, p. 20). Formal regeneration efforts in Lagos, particularly in the waterfront areas, have focused on introducing modern architectural typologies that cater to the city's growing middle class and tourism industry.

(Uduma-Olugu and Adebamowo 2015) describe how the Lagos government has attempted to redevelop parts of the waterfront for recreation and tourism, introducing modern typologies such as luxury hotels, shopping malls, and recreational facilities (p. 116). These developments, however, have often been met with resistance from local communities, who view them as a threat to their homes and livelihoods. The tension between informal evolution and formal redevelopment is a defining feature of Lagos' waterfront architecture, creating a fragmented and contested urban landscape. The stilt house typology has evolved as a response to the growing population density and the environmental conditions of the Lagos Lagoon. Initially, stilt houses in Makoko were simple one-room structures built for fishermen and their families. Over time, as the settlement expanded and its population increased, these homes have become more complex, incorporating additional rooms and communal spaces (Aina 1989, 46). This typological evolution also reflects the socio-economic dynamics of Makoko, where space is increasingly scarce, and residents are forced to adapt their homes to accommodate extended families and small businesses. Floating structures, which serve as schools, markets, and churches, have emerged as a way to maximize the limited space available in the lagoon. These communal structures, while often makeshift and vulnerable to environmental risks, illustrate the resilience of the settlement and its capacity to adapt to changing conditions (Ajayi, Soyinka-Airewele and Edewor 2019, 89). The architecture of Makoko is thus in a constant state of flux, shaped by the pressures of population growth, poverty, and environmental degradation.

2.4.5. The Yangtze River (Nanjing)

The informal settlements near the Yangtze River in Nanjing exhibit a unique architectural typology shaped by a combination of historical, environmental, and regulatory influences. Located near heritage sites along the riverbank, these settlements have developed architectural adaptations that balance the need for affordable housing with the preservation of historical landscapes. Unlike the elevated stilt structures seen in the Lagos Lagoon, the settlements in Nanjing reflect a low-rise, compact morphology that responds to both limited land availability and cultural heritage considerations. The layout of these settlements is characterized by dense, horizontal expansion, with narrow alleys and shared courtyards that maximize space within regulatory constraints (Shannon & Yiyong, 2013, p. 29). This architectural typology draws on traditional Chinese housing forms, such as siheyuan (courtyard houses), adapted to suit the spatial and economic needs of a modern yet marginalized population.

Each housing cluster often incorporates a shared courtyard, which serves as both a communal space and a place for economic activities like street vending and small workshops. This arrangement reflects the social and economic interdependencies among residents, as shared courtyards foster community interaction while providing space for small-scale enterprises. The low-rise buildings and narrow walkways further contribute to the compact, human-scale feel of the settlement, contrasting sharply with the high-rise, modernized urban core of Nanjing (Shannon & Yiyong, 2013, p. 31).

2.4.6. The Yangtze River (Nanjing): Historical Influence and Cultural Significance of Architectural Typologies

The architectural forms along the Yangtze River in Nanjing are shaped not only by practical necessities but also by the cultural and historical legacy of the area. As Hurley (2006) notes, waterfronts are often sites of public memory and cultural identity, where architecture serves as a repository of community values and heritage. In Nanjing, the preservation of low-rise, courtyard-based structures near the Yangtze reflects a commitment to maintaining the visual and spatial integrity of historical sites. The buildings' modest height and traditional design elements honor the architectural heritage of the area, even as informal settlements grow to accommodate an increasing population of low-income residents (Hurley, 2006, p. 16). This historical preservation comes with regulatory constraints that prevent the construction of high-rise buildings near heritage sites, resulting in a predominantly horizontal settlement pattern. While this layout preserves the visual coherence of the historic landscape, it limits the housing capacity of the area, as new residents cannot build vertically to save space. The result is a densely populated, horizontally expanding settlement that encroaches upon surrounding rural areas, creating tensions between the need for housing and the desire to maintain cultural landscapes. This dynamic is a common challenge in heritage-rich waterfronts, as Avni and Teschner (2019) observe, where urbanization pressures conflict with the mandates of historical preservation, leading to a complex negotiation between architectural adaptation and regulatory compliance (Avni & Teschner, 2019, p. 10).

Moreover, the architectural typology along the Yangtze serves as a link to traditional Chinese architectural aesthetics, which value harmony with the natural landscape. The settlements' design emphasizes open, communal spaces and avoids disrupting the area's natural and cultural contours. This alignment with traditional values resonates with

Shannon and Yiyong's (2013) discussion of Chinese rivers as public spaces, where architecture plays a role in preserving the cultural landscape while accommodating contemporary needs. In this sense, the informal settlements near the Yangtze are not merely adaptations to economic and spatial constraints; they also embody a cultural resilience that reflects Nanjing's historical relationship with the river and the surrounding land (Shannon & Yiyong, 2013, p. 33).

2.4.7. The Yangtze River (Nanjing): Environmental Impact and Challenges of Sustainability

Despite the cultural resonance of these architectural adaptations, the informal settlements near the Yangtze River face significant environmental challenges. The dense clustering of buildings and limited infrastructure for waste disposal contribute to pollution in the Yangtze, as untreated waste from households and small businesses flows directly into the river. This pollution threatens both the health of residents and the environmental integrity of the river, which is central to Nanjing's ecosystem and regional economy. As Avni and Teschner (2019) observe, the lack of coordinated planning for informal settlements along waterfronts often exacerbates environmental degradation, as these areas fall outside the scope of formal urban policies and investments (Avni & Teschner, 2019, p. 13). The environmental challenges faced by the Yangtze River settlements underscore the need for sustainable architectural and infrastructural solutions that address both human and ecological needs. Implementing decentralized waste management systems, such as composting or on-site greywater recycling, could reduce the ecological footprint of these settlements without disrupting their existing morphology. Furthermore, introducing green spaces within the architectural layout could help absorb runoff and provide recreational areas for residents, enhancing both environmental quality and quality of life. These measures would align with Shannon and Yiyong's (2013) recommendations for riverfront revitalization in China, where ecological restoration is essential for sustaining the role of rivers as public and economic resources (Shannon & Yiyong, 2013, p. 35).

The architectural design in Nanjing's waterfront settlements also faces sustainability challenges due to the frequent flooding of the Yangtze River. While traditional courtyard layouts foster communal resilience, the absence of flood-adaptive infrastructure makes these settlements vulnerable to water damage during seasonal floods. To address this, Nanjing could explore flood-resilient building techniques, such as elevated foundations or

water-resistant materials, which would provide additional protection while maintaining the settlements' low-rise, compact typology. By integrating these sustainability measures into the existing architectural forms, Nanjing could enhance the resilience of its waterfront communities and reduce the environmental impact on the Yangtze River.

2.4.8. The Yangtze River (Nanjing): Potential for Integration with Broader Urban Planning and Heritage Conservation

The architectural typology along the Yangtze River also presents opportunities for integration into Nanjing's broader urban planning initiatives, especially within the context of heritage conservation. Hurley (2006) emphasizes the role of community-driven initiatives in waterfront revitalization, where local residents play an active role in shaping development that aligns with their cultural values and economic needs. In Nanjing, a participatory approach to urban planning could involve residents in decision-making processes, allowing them to retain control over their architectural heritage while introducing infrastructural upgrades that improve living conditions. Such an approach would support both cultural preservation and socio-economic development, fostering a balanced urban fabric that respects historical continuity while addressing contemporary needs (Hurley, 2006, p. 18). One potential strategy for integrating the Yangtze River settlements is to establish "controlled transition zones" around heritage sites, where selective densification is permitted within defined limits. This would allow for modest vertical expansion that accommodates population growth while preserving the architectural character of the area. By adopting controlled densification, Nanjing could create new housing opportunities without disrupting the visual and cultural coherence of the heritage landscape. This strategy has been effective in other heritage-rich cities, such as Kyoto, where zoning adjustments have enabled sustainable growth that respects traditional architectural aesthetics (Shannon & Yiyong, 2013, p. 37).

Another promising avenue for integrating the Yangtze River settlements into Nanjing's urban framework is through eco-tourism and cultural preservation initiatives. By positioning these waterfront communities as unique cultural assets, Nanjing could promote sustainable tourism that generates revenue for infrastructure improvements and community development. This approach would create a mutually beneficial relationship between residents and visitors, where tourism supports both the preservation of traditional architecture and the enhancement of local amenities.

Moreover, eco-tourism aligns with Nanjing's broader environmental goals, as it encourages sustainable practices that protect the Yangtze River while fostering economic resilience (Avni & Teschner, 2019, p. 15).

2.5 The Urban Morphology in relation to the City

2.5.1. The Lagos Lagoon

Lagos' urban fabric is highly fragmented, with a clear distinction between formal and informal areas. The informal settlements along the waterfront, particularly in areas like Makoko, have developed organically, without formal planning or infrastructure. (Aina 1989) describes how these settlements are characterized by narrow, winding streets, haphazard building layouts, and a lack of basic services such as sanitation and electricity (p. 92). This informal urban fabric stands in stark contrast to the more organized grid layouts of formal areas like Lagos Island, where streets are wider, buildings are aligned according to zoning regulations, and infrastructure is more developed.

2.5.1. The Lagos Lagoon: Spatial Patterns and Disruption of the Urban Grid

The informal settlements along Lagos Lagoon, especially the stilted community of

Makoko, create a spatial morphology that deviates significantly from Lagos's formal grid. While the central areas of Lagos are characterized by planned neighborhoods, high-rise developments, and structured road systems, Makoko exhibits an organic, radial growth pattern adapted to its aquatic environment. Houses in Makoko are built on stilts, interconnected by narrow wooden walkways and waterways rather than roads. This structure suits the lagoon's geography but contrasts starkly with the rest of Lagos, where grid-based layouts dominate. The informal layout disrupts the continuity of Lagos's urban grid, resulting in a spatially and functionally isolated community that lacks integration into the city's transportation and infrastructure systems (Alademomi, 2017, p. 55).

Makoko's morphology reflects the immediate, adaptive responses of its residents to socio-economic exclusion, limited land availability, and the need for proximity to the lagoon for fishing and trade. Instead of following a predetermined plan, structures are added according to residents' needs and resource availability, resulting in a dense, intertwined spatial arrangement. This organic development pattern creates a compact but disorganized urban form, where living spaces blend with commercial areas, and public spaces overlap with private ones. Consequently, Makoko's spatial structure disrupts the formal city grid and reinforces its separation from Lagos's planned urban core (Aina, 1989, p. 396).



Fig. 58: Disruption in the planned urban grain by the rapid growth of informal settlements Google Earth. (2025). Satellite imagery. Retrieved May 11, 2025, from <https://earth.google.com>

2.5.2. The Lagos Lagoon: Broader Influence on Lagos's Urban Fabric and Connectivity Typologies

Despite its physical separation, Makoko plays an essential role in Lagos's economic ecosystem, primarily through its contributions to the city's fishing industry. Makoko supplies a large portion of Lagos's seafood, linking its informal economy with formal city markets. However, the settlement's physical isolation and lack of transport infrastructure limit its economic potential. The absence of roads that connect Makoko to the city center impedes efficient movement of goods and services, forcing residents to rely on local markets and informal economic networks. This limitation reduces income opportunities for residents, while reinforcing a sense of exclusion from Lagos's broader economic framework (Alademomi, 2017, p. 59). Moreover, Makoko's spatial detachment affects its residents' access to essential services, such as healthcare and education, which are available mainly in Lagos's urban core. The narrow, makeshift walkways restrict vehicular access, making it challenging for emergency services to reach residents quickly. This spatial isolation reflects broader socio-economic divides within Lagos, where affluent areas are integrated within the city's infrastructural network, while marginalized communities remain disconnected and underserved. As a result, Makoko and similar lagoon communities function almost as separate entities within Lagos, contributing to a fragmented urban structure that reinforces socio-economic inequalities across the city (Alademomi, 2017, p. 62).

2.5.3. The Lagos Lagoon: Urban Sprawl and Environmental Implications

The morphology of Lagos Lagoon's settlements also contributes to Lagos's urban sprawl. As the city's central areas become increasingly unaffordable, low-income populations are pushed to settle in peripheral regions, including the lagoon's waterfront. This outward growth creates a parallel city structure where informal communities expand horizontally over the lagoon, contrasting with the vertical expansion seen in Lagos's affluent neighborhoods. This dual urban grain, where some areas grow vertically while others sprawl horizontally, reflects socio-economic and spatial divides that characterize Lagos's urban landscape. Makoko's horizontal expansion over the lagoon is emblematic of how spatial constraints in central Lagos force marginalized groups to occupy less accessible and vulnerable areas (Sepe, 2013, p. 601). The environmental impact of this sprawl is profound. Makoko's dense layout and lack of formalized waste

management lead to severe pollution within the lagoon. Trash and human waste are disposed of directly into the water, threatening the lagoon's biodiversity and compromising water quality. This contamination not only affects Makoko residents but also impacts neighboring areas, as polluted water circulates through Lagos's waterways, increasing public health risks for other communities. Additionally, the expansion of settlements over the lagoon reduces the area's natural buffer capacity, exacerbating flood risks for surrounding regions. This impact highlights the interconnectedness between informal settlements and the city at large, as environmental degradation within Makoko affects the wider urban ecosystem (Alademomi, 2017, p. 65).

2.5.4. The Lagos Lagoon: Urban Planning Challenges

Makoko's spatial layout challenges Lagos's urban planners, who must balance rapid urbanization with limited land availability and increasing housing demands. The dense, informal arrangement of structures in Makoko complicates any integration efforts, as traditional infrastructure—such as paved roads or drainage systems—cannot be easily implemented without disrupting the community's stilted housing. Attempts to formalize Makoko's morphology would require comprehensive redesigns that accommodate both the settlement's unique layout and the residents' reliance on lagoon-based resources (Sepe, 2013, p. 605). In this context, urban planners could draw on successful in situ upgrading models from other cities, like Rio de Janeiro's slum improvement projects, to integrate informal settlements into Lagos's urban fabric. By enhancing infrastructure without displacing residents, in situ upgrading could improve connectivity within Makoko, enabling better access to healthcare, education, and economic opportunities. For instance, constructing floating walkways and docks could facilitate movement within the community while providing connections to nearby areas. Such strategies would preserve Makoko's distinct water-based design while improving its integration within Lagos's urban system, transforming the settlement from an isolated community into a connected urban neighborhood (Aina, 1989, p. 404).

2.5.5. The Lagos Lagoon: Socio-Cultural and Economic Implications of Morphological Divergence

Makoko's morphology, while functionally distinct from Lagos's grid, carries socio-cultural significance that influences both the settlement itself and the larger city. The spatial closeness fostered by Makoko's dense layout promotes strong social networks and

community bonds, which are essential for residents facing socio-economic challenges. This community cohesion is evident in shared spaces and collaborative local economies that thrive despite the lack of formal infrastructure. Such social resilience emphasizes the value of informal settlements as socio-culturally rich communities, challenging the perception of these areas as temporary or undesirable (Alademomi, 2017, p. 68). Economically, Makoko's spatial organization allows it to maintain a self-sufficient local economy centered on fishing, small-scale trade, and artisanal production. However, the isolation from Lagos's formal market networks limits residents' economic opportunities and prevents them from participating fully in the city's economy. This spatial and economic exclusion underscores the need for policies that recognize Makoko's contributions to Lagos's identity and economy, promoting integration strategies that respect the community's spatial and cultural uniqueness.

2.5.6. The Lagos Lagoon: Prospects for Integration and Morphological Evolution

The future of Makoko within Lagos depends on policies that support gradual integration without erasing the community's distinct spatial character. Given Makoko's compact, stilted morphology, planners could adopt flexible, resilient infrastructure solutions tailored to the settlement's aquatic environment. Floating platforms, modular docks, and eco-friendly waste treatment systems could improve living conditions while preserving Makoko's stilted structures. Additionally, connecting Makoko to Lagos's transportation grid through boat-based public transit could increase residents' mobility and economic access, enabling broader participation in the city's economy (Alademomi, 2017, p. 70). Makoko's morphology reflects the complex socio-spatial dynamics of Lagos, where marginalized communities adapt to spatial constraints and exclusionary policies. Recognizing the settlement as a legitimate urban area rather than an anomaly could inspire policies that incorporate adaptive, community-centered designs. For instance, zoning policies that accommodate stilted, mixed-use housing could support Makoko's integration within Lagos's formal landscape, fostering a more inclusive urban fabric that bridges the gap between formal and informal zones. Additionally, Makoko's unique architecture and culture contribute to Lagos's identity as a diverse, evolving city. By embracing Makoko's distinct morphology within urban planning, Lagos could redefine its approach to inclusivity, valuing informal settlements as integral components of the city's socio-economic and environmental framework. Future

urban development in Lagos could incorporate resilient, eco-friendly designs modeled after Makoko's adaptive layout, transforming marginalized areas into integrated, sustainable neighborhoods that enhance the city's diversity and resilience.

2.5.7. The Yangtze River (Nanjing)

Nanjing's urban fabric reflects the city's dual identity as both a historical and modern metropolis. The preservation of traditional architectural typologies in the city center, combined with the development of modern infrastructure along the waterfront, creates a unique morphological pattern that balances the old with the new. (Wang, Wong and Duan 2016) note that the government's strict zoning regulations have helped maintain this balance, ensuring that the city's historical sites are protected while allowing for modern growth (p. 523).

2.5.8. The Yangtze River (Nanjing): Historical Constraints and Morphological Adaptation

The informal settlements near the Yangtze River in Nanjing offer a distinct spatial dynamic influenced by both economic necessity and historical preservation constraints. Unlike the sprawling waterfront settlements in Lagos, the Yangtze River settlements are limited in their expansion by cultural preservation laws, which impose restrictions on vertical and large-scale development. These constraints have resulted in dense, low-rise clusters with narrow pathways and shared courtyards, creating a compact urban grain that contrasts with the high-rise architecture prevalent in Nanjing's urban core. The settlements' spatial form echoes traditional Chinese urban layouts, with architectural features like *siheyuan*, or courtyard homes, that foster a sense of community and reflect cultural continuity (Wang et al., 2016, p. 518). The proximity to historical sites also shapes the informal settlement's morphology. To maintain the visual and structural integrity of the Yangtze heritage zone, these settlements cannot develop vertically, leading to horizontal expansion along the riverbanks.

This constraint produces a unique morphological adaptation, where residents maximize limited land by building close-knit, multi-functional spaces that blend residential and commercial uses within a single area. This horizontal growth follows the contours of the Yangtze, creating a spatial morphology defined by both tradition and economic adaptation, which contrasts sharply with the orderly, grid-based structures in other parts of Nanjing (Niu et al., 2022, p. 15). This morphology reflects the economic challenges faced by the residents, many of whom are low-income workers or recent rural migrants. The clustered

layout of the Yangtze settlements is an immediate response to the need for affordable housing and proximity to employment opportunities in nearby urban centers. This spatial organization maximizes land efficiency but also creates a compact, dense settlement pattern that preserves a traditional architectural identity even as it accommodates a growing population. The resulting morphology highlights the community's adaptive response to both environmental and cultural constraints, emphasizing low-rise, high-density structures that respect heritage laws while meeting the needs of local residents (Wang et al., 2016, p. 522).

2.5.9. The Yangtze River (Nanjing): Impact on Nanjing's Broader Urban Fabric and Connectivity

The Yangtze River settlements act as transitional zones that bridge the densely built urban core of Nanjing and the surrounding rural peripheries. However, their informal status and unique morphology create a degree of spatial and social separation from the formal urban layout. This separation reflects a broader disconnect within Nanjing's urban system, as the compact, low-rise morphology of the Yangtze River settlements contrasts with the city's high-density, high-rise districts. The lack of integration into the city's formal infrastructure leaves these settlements isolated from primary transportation routes and key urban services, limiting residents' mobility and reinforcing socio-economic marginalization (Sepe, 2013, p. 606). The morphology of these settlements imposes a barrier to effective connectivity within Nanjing's urban fabric. The organic, non-linear layout of narrow alleys and shared courtyards does not align with Nanjing's grid-based transportation systems, which rely on larger road networks that cater to vehicular traffic. This mismatch restricts the flow of goods and people between the Yangtze settlements and the rest of the city, forcing residents to rely on local economies and limiting their access to formal job markets.

Consequently, these settlements disrupt the continuity of Nanjing's urban grid, reinforcing their marginal position within the city's socio-economic hierarchy and contributing to a fragmented urban landscape (Wang et al., 2016, p. 519). Moreover, the Yangtze River settlements' morphology affects Nanjing's urban growth patterns. The restriction on vertical expansion means that these settlements expand horizontally along the riverbanks, gradually encroaching into peri-urban and rural lands. This outward expansion reflects a different type of urban sprawl than seen in Nanjing's high-rise areas, resulting in a spatial separation that differentiates the waterfront communities from the rest of the city.

This horizontal sprawl challenges Nanjing's urban planners, who must balance the preservation of cultural heritage with the need to accommodate a growing population. Thus, the morphology of the Yangtze River settlements highlights the tensions between preserving historical areas and enabling urban expansion (Niu et al., 2022, p. 18).

2.5.10. The Yangtze River (Nanjing): Environmental and Cultural Implications

The location of the Yangtze River settlements in ecologically sensitive areas along the river poses environmental challenges that affect both the settlements and Nanjing's larger urban ecosystem. The dense, low-rise structures and limited waste management infrastructure contribute to environmental degradation, as waste and sewage often end up in the river, affecting water quality and endangering local biodiversity. This environmental impact extends beyond the settlement, impacting water quality for downstream communities and posing public health risks. Given the cultural and ecological importance of the Yangtze River, these issues underscore the need for sustainable infrastructure improvements within these settlements (Wang et al., 2016, p. 520). Heritage preservation efforts further complicate the environmental landscape in the Yangtze settlements. Preservation policies focus on maintaining the visual and structural elements of historical sites but often do not consider the ecological or infrastructural needs of nearby informal communities. This oversight leads to a preservation paradox: while the historical aesthetics of the area are protected, the settlements themselves struggle with pollution and inadequate infrastructure. This situation highlights a divide between Nanjing's focus on cultural preservation for tourism and the actual needs of residents who rely on the river for their livelihoods. Balancing these preservation goals with sustainable practices is essential to maintain both the cultural and environmental integrity of the area (Sepe, 2013, p. 608). Sustainable urban planning for the Yangtze settlements could involve the introduction of decentralized waste management systems and the integration of green spaces to absorb pollution and enhance biodiversity. Green spaces would not only improve residents' quality of life but also reduce the environmental impact on the Yangtze, contributing to both ecological and cultural preservation.

2.5.11. The Yangtze River (Nanjing): Prospects for Urban Integration and Morphological Evolution

The future of the Yangtze River settlements within Nanjing's urban framework involves

addressing both infrastructural integration and heritage preservation. Given the limitations on vertical development, one possible approach is controlled densification, which would allow limited, carefully planned vertical expansion within defined zones to increase housing availability without encroaching on historical areas. This strategy could also introduce essential infrastructure improvements, like localized transit systems or pedestrian pathways, that enhance connectivity without disrupting the settlements' unique morphology (Sepe, 2013, p. 610). Transition zones could be established to bridge the spatial gap between these low-rise settlements and Nanjing's formal urban core. These zones would allow for the gradual introduction of modern infrastructure, such as expanded roadways and pedestrian pathways, that integrate with the settlements' existing layouts. This approach could help ease connectivity issues by linking the settlements with nearby urban hubs, enabling residents to access city services more readily while preserving the traditional architectural forms. Examples from Kyoto, where heritage conservation is balanced with infrastructural upgrades, demonstrate the feasibility of this approach, providing a model for Nanjing's waterfront areas (Wang et al., 2016, p. 522). Another approach to integration involves participatory planning, which would engage local residents in the decision-making processes for infrastructure and development. By involving the community, Nanjing could ensure that upgrades are both culturally sensitive and aligned with residents' needs, allowing the Yangtze settlements to evolve while maintaining their distinct spatial and social character. This participatory framework would empower residents, fostering a sense of ownership over their neighborhoods and ensuring that morphological changes reflect local values and priorities.

03

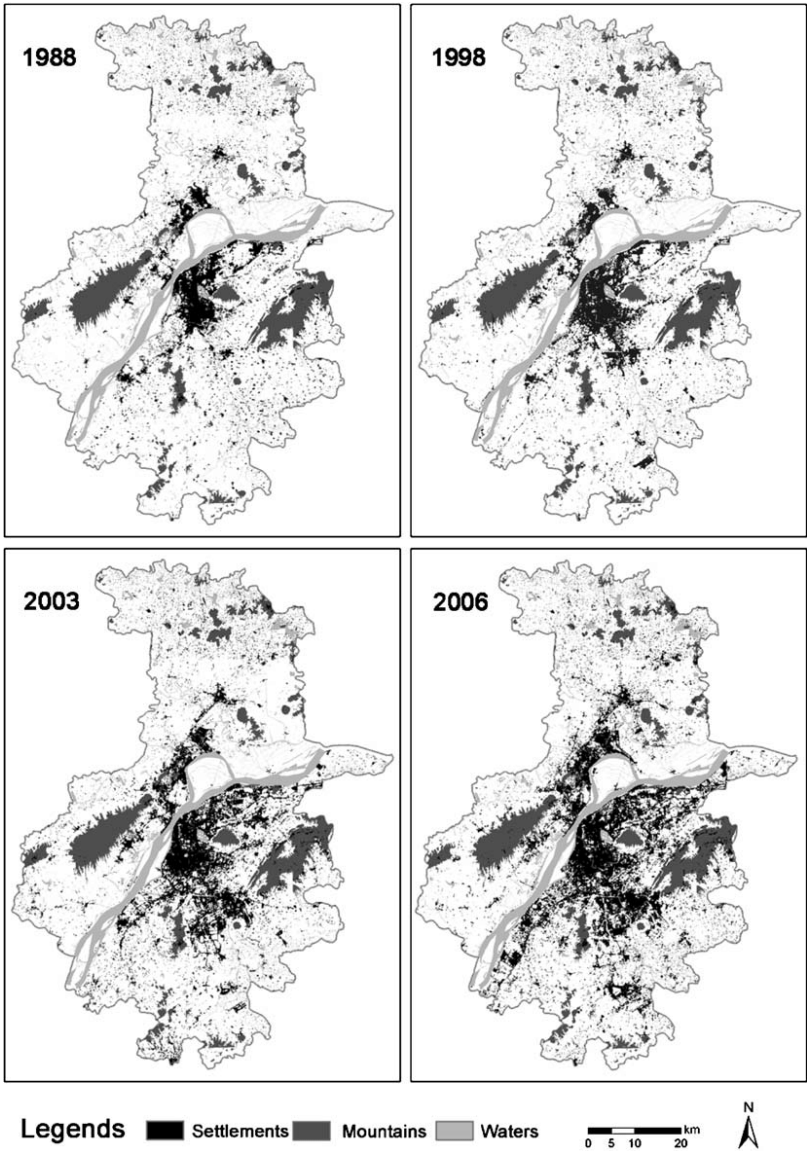
Urban Sprawl:

*Socioeconomic Factors and the
Emergence of Informal Settlements*

Urban settlements along waterfronts like those in Lagos and Nanjing are significantly shaped by socioeconomic factors, including classism, zoning policies, and economic inequality. The emergence of informal settlements in these regions reflects not only rapid urbanization but also the inadequacies of formal urban planning systems in addressing the housing and livelihood needs of marginalized populations. This chapter explores how these factors converge to shape settlement patterns and urban morphology, comparing Lagos and Nanjing as case studies.

3.1 Spatial Distribution

The spatial distribution of settlements is a necessary indicator of the socioeconomic dynamics and governance challenges within urban regions experiencing rapid sprawl. As cities expand, settlement patterns reveal how informal communities are formed, where they take root, and how they navigate limited resources and precarious land tenure. Waterfront areas, in particular, illustrate sporadic growth, as their natural resources and relative affordability attract low-income populations unable to access formal housing markets. The proximity to these water bodies shapes settlement patterns in specific ways, as the economic, cultural, and environmental characteristics of waterfronts influence how informal communities develop. This section explores how two significant urban water bodies—the Lagos Lagoon in Lagos, Nigeria, and the Yangtze River in Nanjing, China—have shaped the evolution and structure of informal settlements within their respective cities. Waterfronts offer opportunities and challenges for informal settlements. On one hand, they



Legends ■ Settlements ■ Mountains ■ Waters 0 5 10 20 km N

Fig. 59: Settlement distribution in the Nanjing metropolitan region in 1988, 1998, 2003, and 2006

Xu, J., & Chi, G. (2009). Detecting the spatial differentiation in settlement change rates during rapid urbanization in the Nanjing metropolitan region, China. *Landscape and Urban Planning*, 93(3-4), 135–146. <https://doi.org/10.1016/j.landurbplan.2009.07.002>

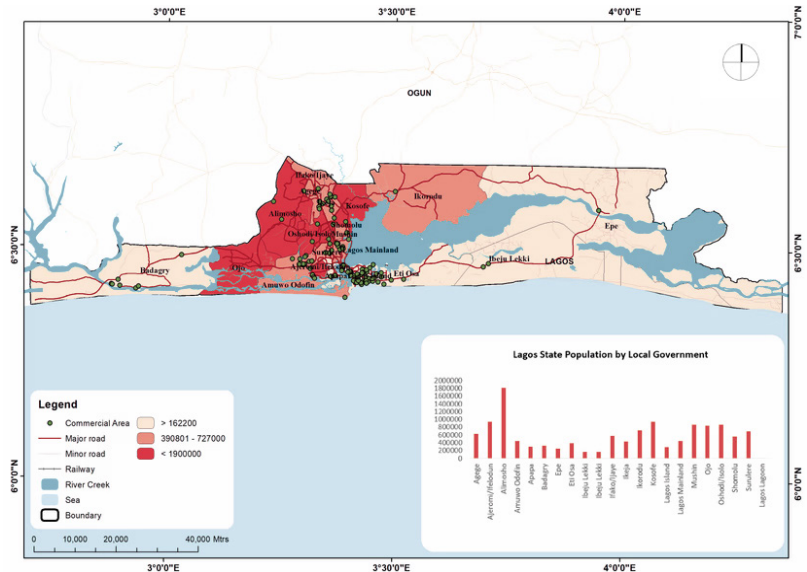


Fig. 60: Population of Lagos state across the 20 local governments in the state.

Ajeyomi, A. (n.d.). Lagos state population map | Spatialnode. Spatialnode. <https://www.spatial-node.net/projects/lagos-state-population-map-92036f>

provide economic benefits to residents who rely on fishing, small-scale trade, and water-based transportation. This access to natural resources allows residents to build livelihoods that align with traditional practices and the local economy. On the other hand, waterfront settlements often face infrastructural neglect and environmental vulnerability. Flooding, pollution, and weak access to essential services create a precarious environment for residents who are often excluded from formal development agendas. In both Lagos and Nanjing, these dynamics have led to distinctive settlement patterns along the waterfronts, where informal housing clusters coexist with natural and industrial landscapes.

In Lagos, the settlement of Makoko along the Lagos Lagoon exemplifies how informal communities adapt to their environment by constructing stilt houses and relying on water-based networks for transportation and trade. Originally a small fishing village, Makoko has transformed into a dense informal settlement that now houses thousands of residents, largely as a result of population growth and the housing crisis in Lagos. Here, settlement patterns are marked by horizontal expansion along the lagoon's shoreline, driven by spatial constraints and governmental restrictions on building heights. This unique layout

reflects both the ingenuity of residents and the challenges they face, from lack of infrastructure to eviction threats from city authorities who view the lagoon as prime land for commercial development. In contrast, the informal settlements along the Yangtze River in Nanjing reflect a more fragmented spatial structure. Driven by China's rapid economic reforms and industrial growth along the Yangtze River Economic Belt, low-income residents and rural migrants have settled along the river's banks in clusters of low-density housing. These settlements are scattered and discontinuous, often located near industrial facilities or open green spaces, resulting in a fragmented landscape. The leapfrog development pattern seen here leads to limited infrastructure connectivity, leaving residents with minimal access to public services and greater exposure to pollution and environmental hazards. By examining the distinctive spatial characteristics of each context, we can better understand the forces that drive informal settlement growth and the ongoing challenges facing waterfront communities in rapidly urbanizing cities. Settlement patterns around major waterfronts such as Lagos Lagoon and the Yangtze River in Nanjing reveal the complexities between history, geographical constraints, and socio-economic factors. These patterns offer insights into how urban landscapes have evolved and how formal planning interacts



Fig. 61: Water channels used as means of transportation within the community

The Economist. (2012, July 31). A journey to the heart of Lagos. *The Economist*. <https://www.economist.com/baobab/2012/07/31/a-journey-to-the-heart-of-lagos>

with informal growth. Both Lagos and Nanjing have experienced significant transformations over time, with their waterfronts serving as focal points for settlement due to their strategic geographical positions. However, the settlement patterns that emerged in these cities differ considerably, influenced by local governance structures, historical events, and socioeconomic conditions.

3.1.1. The Lagos Lagoon

The Lagos Lagoon has historically been a critical site for indigenous and colonial settlement. The geographical proximity to the water facilitated trade and transportation, making the lagoon a natural hub for the development of informal settlements. Indigenous communities constructed stilt houses to adapt to the region's frequent flooding, a practice that continues in areas like Makoko. (Uduma-Olugu and Oduwaye 2010) highlight how these indigenous practices were interrupted by colonial urban planning, which prioritized the needs of European settlers and later, economic growth over local customs. The colonial imposition of grid systems and the expansion of formal urban areas into indigenous settlements during the 20th century drastically altered the spatial dynamics of Lagos. Formal zoning policies pushed marginalized groups into less desirable, often flood-prone areas of the lagoon. Informal settlements grew in these neglected spaces, with residents building makeshift housing out of necessity. This pattern of urban exclusion persisted into the post-colonial era, with the rapid expansion of informal settlements in response to urban population growth outstripping the government's ability to provide affordable housing.

3.1.2. The Lagos Lagoon: Historical Context and Socioeconomic Drivers

The informal settlement of Makoko, along the Lagos Lagoon, represents one of Lagos's most visible examples of urban sprawl on waterfronts. Established in the 18th century as a fishing village, Makoko originally served as a communal settlement for fishing communities, primarily the Egun people, who migrated from the Republic of Benin and other neighboring regions to Lagos. The settlement has since expanded substantially, transforming from a small fishing enclave into a sprawling urban settlement that houses thousands of residents, many of whom rely on the lagoon's resources for their livelihoods (Ajayi et al., 2019, p. 1371). The historical development of Makoko reflects both cultural continuity and adaptation. The Egun people, alongside other indigenous groups, retain a cultural and economic connection to the water, as the lagoon offers a vital source of sustenance and income. Fishing, sand mining, and small-scale

trading are integral to Makoko's economy, and the community has evolved to sustain these activities despite the urbanization and industrialization of surrounding Lagos. This attachment to place has fostered a sense of identity and community resilience, where residents rely on traditional practices to sustain their livelihoods in the absence of formal support systems (Ajayi et al., 2019, p. 1370). As Lagos's population grew—reaching over 21 million by 2022—informal settlements like Makoko became critical sites for housing migrants and low-income workers. Makoko's population surge can be linked to the migration influx driven by Lagos's economic opportunities, which offer both formal and informal employment prospects. However, housing scarcity in Lagos has led to steep rental prices, making formal housing inaccessible to the urban poor.

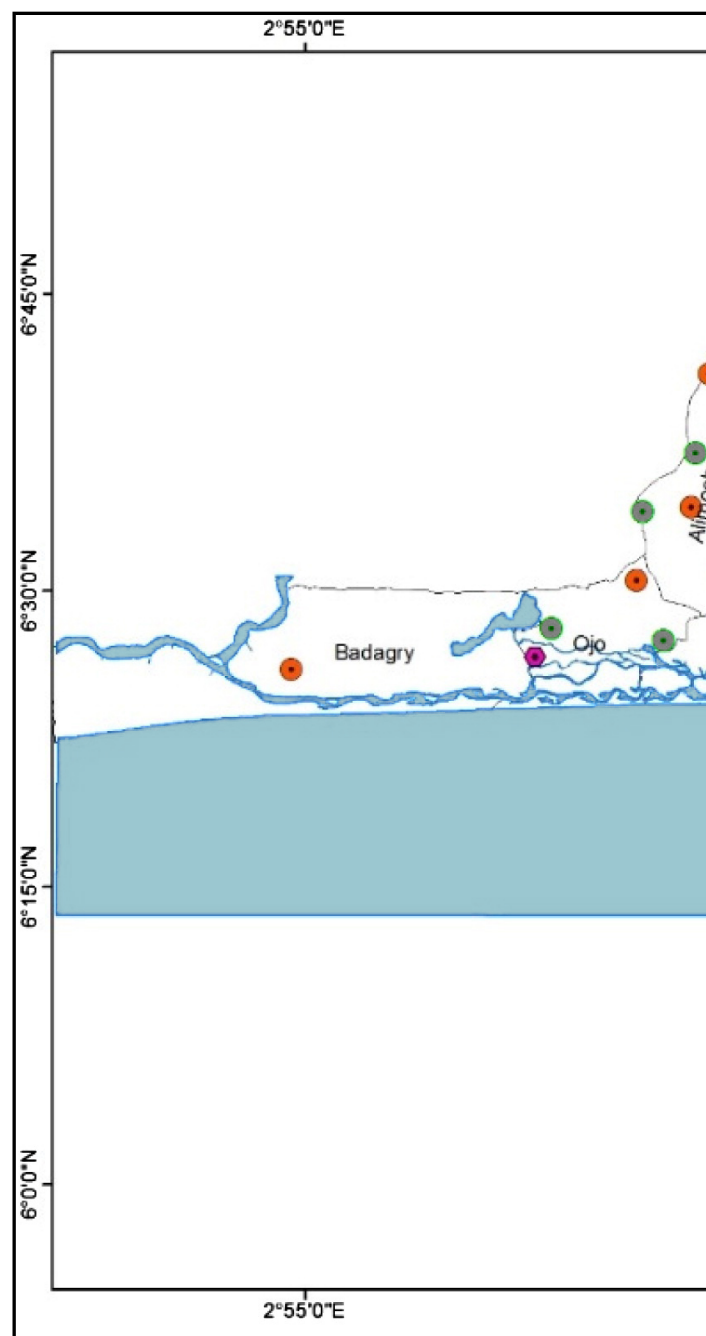
Consequently, many migrants seek residence in informal waterfront settlements where they can access affordable, if precarious, housing. The high demand for informal housing has contributed to Makoko's transformation from a fishing settlement into a densely populated urban slum characterized by overcrowded conditions, inadequate sanitation, and limited infrastructure (Adedire & Iweka, 2018, p. 18). Social stratification within Lagos further drives the proliferation of informal settlements along the lagoon. Socioeconomic inequalities in the city have concentrated wealth and land ownership among a small segment of the population, while marginalizing low-income communities to peripheral areas like Makoko. Many Makoko residents lack formal recognition and security of land tenure, making them vulnerable to government eviction orders, as seen in 2012 when the Lagos State government issued a notice demanding that residents vacate the lagoon area. The notice described the settlement as an environmental nuisance and a risk to public safety, thereby justifying the removal of Makoko's residents without providing resettlement plans (Ajayi et al., 2019, p. 1369). This pattern of forced evictions reflects the broader socioeconomic exclusion of waterfront communities, which are effectively isolated from Lagos's urban development agenda.

3.1.3. The Lagos Lagoon: Spatial Dynamics and Urban Structure

Makoko's unique spatial structure is specifically influenced by its lagoon environment. The settlement is composed primarily of stilt houses built on wooden platforms, which create a distinct physical layout that adapts to the lagoon's tidal patterns and limited dry land. These stilt houses, interconnected by narrow wooden walkways, form a dense network of residential and commercial spaces that spans several kilometers along the lagoon's

edge. The houses are built from reclaimed materials such as wood, tin, and bamboo, which residents' source from the surrounding area. This construction approach enables Makoko residents to build homes that can withstand the lagoon's changing water levels while providing affordable shelter that suits their economic constraints (Adedire & Iweka, 2018, p. 18). Horizontal growth is a defining feature of Makoko's settlement pattern. As housing needs increased, Makoko expanded outward along the lagoon's shoreline, constrained by both the water and Lagos's urban policies that inhibit vertical expansion. Vertical expansion is limited in Makoko due to the cost and engineering challenges associated with stilt-based structures, as well as the community's informal status, which restricts access to development permits and formal architectural support. Instead, residents extend their living areas horizontally, occupying more of the lagoon's surface and creating new stilted structures to accommodate the growing population. This horizontal expansion, however, is increasingly constrained by environmental limitations and governmental pressures, as the Lagos State government has repeatedly sought to redevelop the lagoon for commercial and recreational purposes (Ajayi et al., 2019, p. 1370).

Accessibility within Makoko is defined by its waterfront location and reliance on water-based transportation. Canoes serve as the primary means of travel within the settlement, used to navigate the network of stilted houses and floating markets that characterize Makoko's urban fabric. Canoe operators transport residents and goods between different sections of the community, creating a distinct economic niche within the settlement. This transportation mode, while culturally significant, highlights the infrastructural disconnect between Makoko and the larger Lagos metropolis. Roads, bridges, and formal transportation networks remain inaccessible to most Makoko residents, reinforcing their spatial and socioeconomic isolation from the city's core (Ajayi et al., 2019, p. 1371). In terms of public services, Makoko suffers from critical infrastructural gaps. Basic amenities like potable water, sanitation, electricity, and healthcare are largely unavailable or severely limited within the settlement. Sanitation facilities are rudimentary, often consisting of makeshift latrines and open drainage systems that increase residents' exposure to health risks, particularly waterborne diseases. Access to potable water is limited, with residents frequently relying on untreated lagoon water for bathing and other household needs. Electricity, when available, is typically sourced through informal wiring systems that pose safety hazards, highlighting the infrastructural neglect



facing Makoko (Ajayi et al., 2019, p. 1370). Makoko's infrastructure challenges show the marginalization of waterfront settlements within Lagos's urban development policies. The government's prioritization of upscale projects around the lagoon contrasts with the neglect of informal communities, leaving Makoko without the infrastructure or resources necessary for sustainable development. This reflects a broader trend in Lagos's urban planning, where development is often concentrated in affluent areas, while low-income waterfront communities are excluded from access to essential services. Makoko's residents remain vulnerable to environmental hazards and are forced to rely on self-organized solutions to address basic needs.

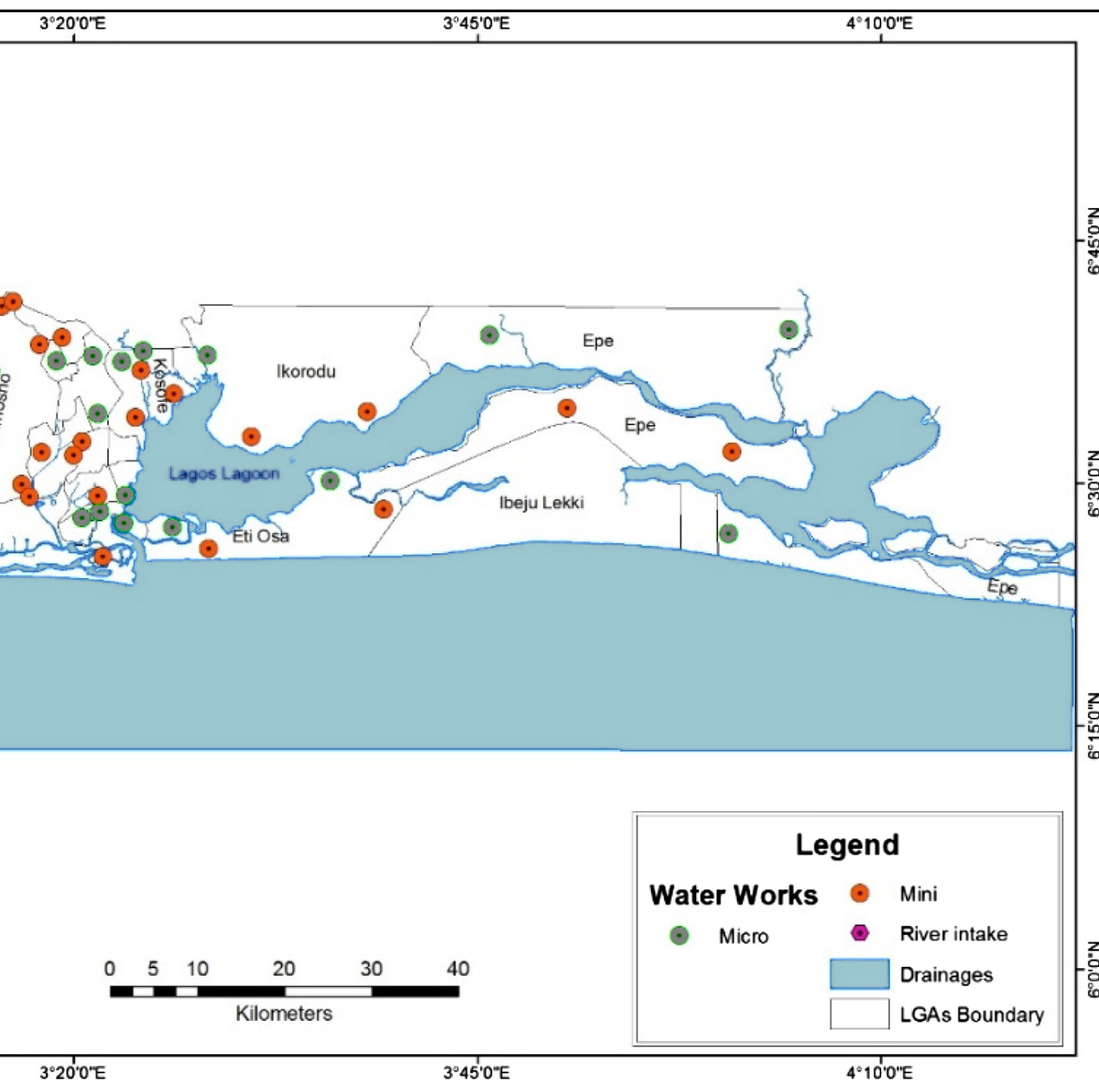


Fig. 62: Locations of the mini and micro-waterworks and river intakes in Lagos State
 Olanrewaju, D. O., & Fadairo, G. (2017). *Informal settlements and urban sustainable development in Nigeria: The Lagos mega city scenario*. *Cogent Social Sciences*, 3(1), Article 1329776. <https://doi.org/10.1080/23311916.2017.1329776>

3.1.4. The Lagos Lagoon: Environmental Impacts and Vulnerability

The environmental implications of Makoko's settlement pattern are significant, as the community's reliance on the lagoon for water, waste disposal, and transport has direct consequences for both the environment and residents' health. Waste management is a major challenge in Makoko due to the absence of formal disposal systems. Household waste is frequently dumped into the lagoon, where it accumulates and contaminates the water, creating health risks for residents who depend on the lagoon for fishing and daily activities. The lagoon's ecosystem is further compromised by pollution

from nearby industrial activities, which introduce heavy metals and other contaminants into the water, affecting fish populations and undermining Makoko's fishing-based economy (Ajayi et al., 2019, p. 1369). Makoko's vulnerability to climate-related hazards, such as flooding and rising sea levels, is heightened by its location on the lagoon. Seasonal flooding poses a recurring threat, as elevated water levels inundate stilt houses and disrupt daily life. Climate change exacerbates this issue by increasing the frequency and severity of floods, posing a long-term risk to the stability and safety of the settlement. The lack of formal flood control infrastructure, such as levees or drainage systems, leaves Makoko's residents largely unprotected

from these hazards, further contributing to their socioeconomic and environmental vulnerability (Ajayi et al., 2019, p. 1371). In response to these challenges, Makoko's residents have developed adaptive strategies that reflect their resilience and resourcefulness. Building stilted houses, using canoes for transport, and relying on traditional fishing techniques are examples of how the community has adapted to its unique environmental context. However, these adaptations can only partially mitigate the environmental risks posed by government neglect and climate change. Without formal infrastructure investment or policy support, Makoko's resilience remains constrained by its informal status, leaving residents in a cycle of vulnerability that is difficult to escape.

3.1.5. The Yangtze River (Nanjing)

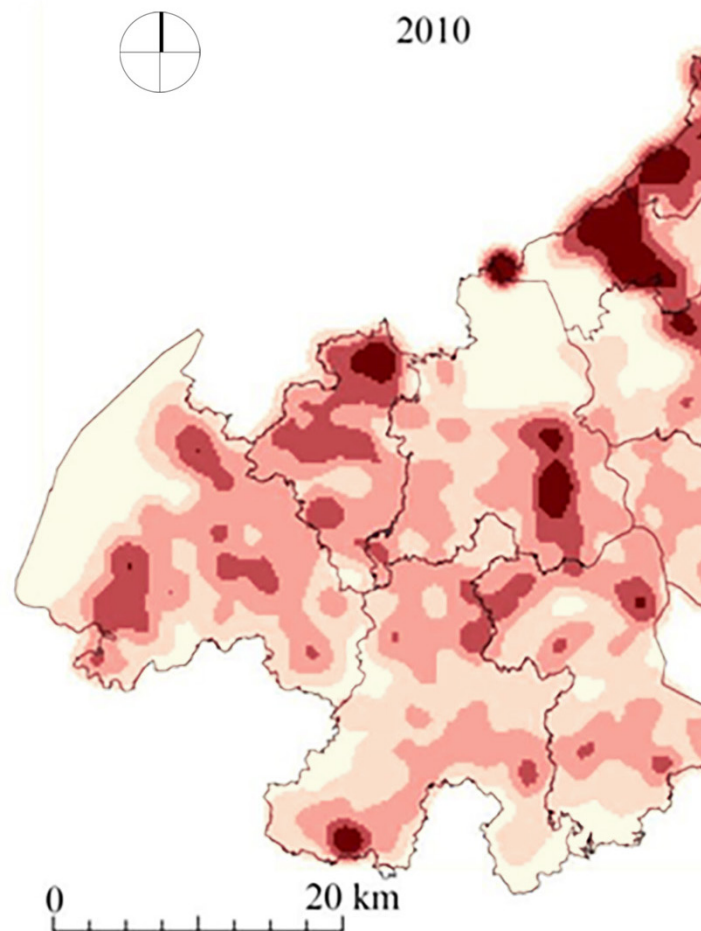
In Nanjing, the settlement patterns along the Yangtze River were similarly influenced by socioeconomic factors. As a former imperial capital, Nanjing's core urban areas were organized around significant historical landmarks, including city walls, palaces, and temples. The settlement of waterfront areas occurred in a more planned manner, with the government delineating zones for residential, commercial, and industrial use. However, informal settlements still emerged on the periphery of these zones as rural-to-urban migration accelerated during the industrialization period. (Liu, et al. 2014, 58) note that informal settlements in Nanjing typically developed in areas outside the formal urban grid, often on the urban fringe, where land was more affordable but infrastructure and services were lacking. The distinction between formal and informal areas in Nanjing is less pronounced than in Lagos due to the city's historical emphasis on central planning, yet socioeconomic disparities remain a key factor in where informal settlements emerge.

3.1.6. The Yangtze River (Nanjing): Historical Context and Urban Expansion

Nanjing's evolution along the Yangtze River corridor reflects the transformative impact of China's economic reforms, rapid industrialization, and population growth. Beginning in the 1980s, the Yangtze River Economic Belt (YREB) became a key region for national development, catalysed by policies encouraging industrial and urban growth. These policies turned Nanjing, a city strategically located along the Yangtze River, into a prominent hub within the YREB, attracting an influx of rural migrants seeking employment in the city's growing industrial and commercial sectors (Yue et al., 2016, p. 44). This migration has contributed significantly to Nanjing's urban sprawl, especially along the

river's banks, where affordable housing options for low-income residents are limited. China's economic reforms, particularly the transition to a market-based economy, have accelerated Nanjing's population growth and urbanization.

Consequently, Nanjing's urban area expanded dramatically, often at the expense of agricultural land and green spaces along the Yangtze River. The rapid conversion of land for urban use created new neighborhoods, some of which were formally planned, while others grew informally, primarily due to the demand for affordable housing from rural migrants and low-income residents (Yue et al., 2016, p. 47). The YREB's development strategies have contributed to Nanjing's urban sprawl, characterized by a mix of high-density and low-density developments. While central Nanjing has undergone intensive development with high-rise buildings and commercial complexes, the peripheral areas along the river have witnessed low-density sprawl, often with unregulated construction and limited infrastructure. Informal settlements along the Yangtze are a direct result of these policies, as land adjacent to the river provides an affordable option for migrants who cannot afford formal housing within the city center. These areas are often located on land that is not suitable for high-value real estate,



3.1.7. The Yangtze River (Nanjing): Spatial Structure and Accessibility

Rural settlements along the Yangtze River in Nanjing are defined by a fragmented spatial pattern, where scattered clusters of low-density housing form a discontinuous urban fabric. Unlike densely packed settlements in the city's central zones, these riverfront settlements are marked by open spaces, fragmented land use, and the intermittent presence of small industrial or agricultural plots. The spatial structure of these areas reflects the lack of cohesive urban planning, as residents construct housing in available spaces without adherence to formal zoning or infrastructure standards. This pattern has resulted in a patchwork of informal housing clusters interspersed with industrial facilities, vacant land, and transportation corridors, creating a spatially fragmented landscape along the Yangtze (Yue et al., 2016, p. 45). The discontinuous nature of Nanjing's riverfront settlements is also a result of the limited regulatory oversight in these areas. The urban sprawl along the Yangtze has been driven by a leapfrog development pattern, where low-density housing developments are interspersed with green spaces and industrial zones. This leapfrogging effect, which skips over sections of land between urban clusters, has led to a fragmented

layout that lacks the connectivity typically found in planned urban areas. Such discontinuous development poses significant challenges for infrastructure provision, as utilities and public services are unable to reach all segments of these settlements efficiently, leaving residents with limited access to basic amenities (Yue et al., 2016, p. 47).

Accessibility is a critical issue for rural settlements along the Yangtze River in Nanjing. Public transportation infrastructure, such as buses and subways, is limited in the riverfront areas, particularly in the low-density sections where housing is dispersed. Many residents of these informal settlements rely on private or semi-formal transportation options, such as motorcycles and shared taxis, to access the city's employment centers, markets, and healthcare facilities. This dependence on informal transportation underscores the spatial disconnection between Nanjing's riverfront settlements and the main urban grid, exacerbating the social and economic isolation of low-income residents (Yue et al., 2016, p. 46). The lack of infrastructure in Nanjing's informal riverfront settlements also affects residents' access to essential services. Basic utilities, including water supply, electricity, and sanitation, are often inconsistent or entirely unavailable in these areas. While some settlements have access to informal

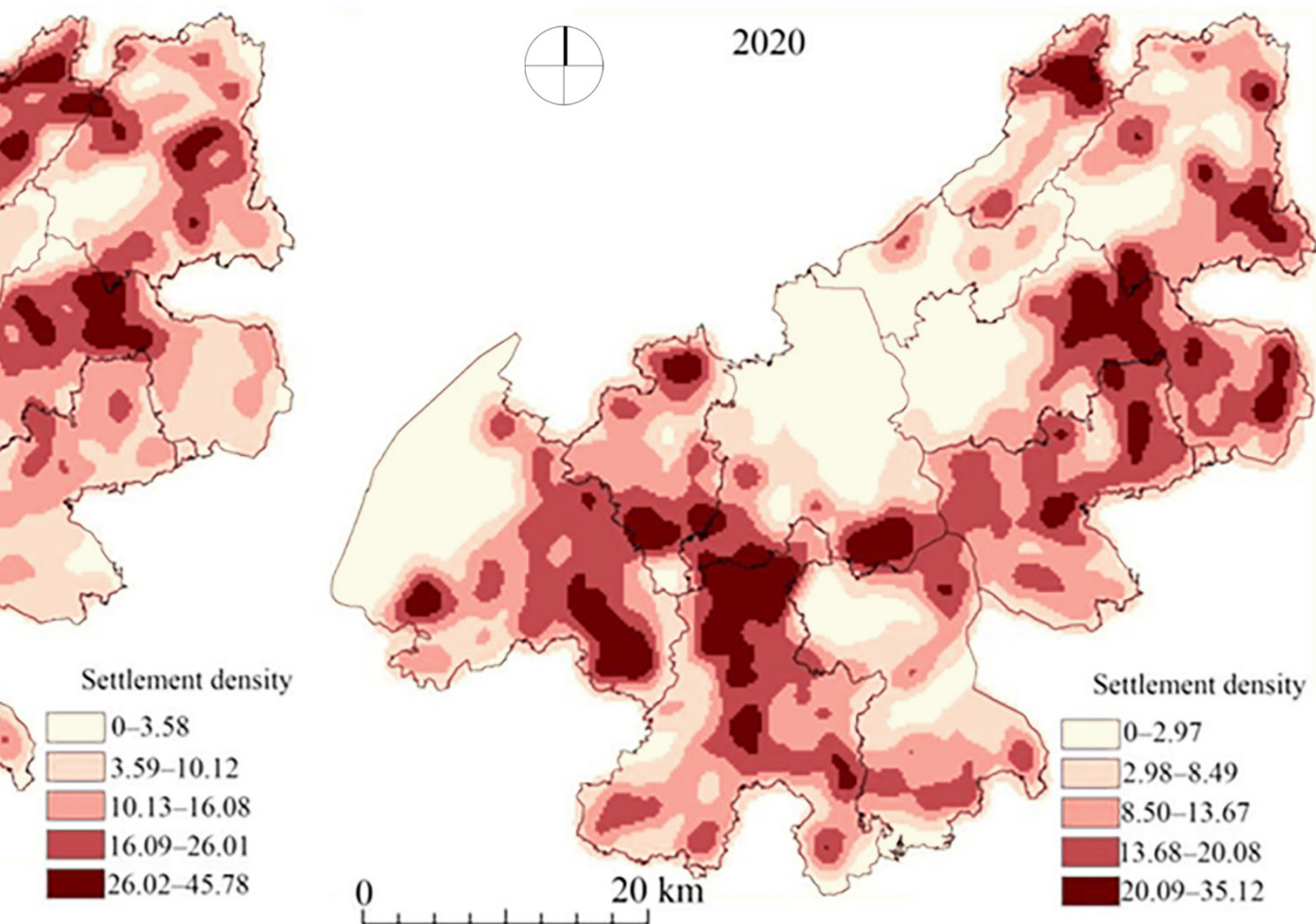


Fig. 63: Density distribution of rural settlements in Jiangning from 2010 to 2020. Zhang, R., & Zhang, X. (2023). Spatial pattern evolution and driving mechanism of rural settlements in rapidly urbanized areas: a case study of Jiangning District in Nanjing City, China. *Land*, 12(4), 749. <https://doi.org/10.3390/land12040749>

water sources, such as wells or rivers, the absence of formal water infrastructure leads to challenges in securing clean drinking water. Sanitation facilities are similarly limited, with many residents relying on makeshift latrines or shared facilities, contributing to health risks in these densely populated, under-serviced areas. This infrastructure gap further isolates riverfront settlements from Nanjing's formal urban areas, where public services are more readily available (Yue et al., 2016, p. 45).

3.1.8. The Yangtze River (Nanjing): Environmental Impacts and Vulnerability

The environmental risks facing informal settlements along the Yangtze River are exacerbated by the proximity of these areas to industrial zones and the river itself. Due to the Yangtze's critical role as an industrial and transportation corridor, many riverfront areas are exposed to pollution from factories, shipping traffic, and waste disposal. Industrial facilities along the river often discharge pollutants, including chemicals and heavy metals, directly into the water, which can have harmful effects on the health of nearby residents who rely on the river for fishing and other activities. This pollution poses a significant environmental hazard, particularly for low-income residents who lack alternative resources or the means to relocate to less polluted areas (Yue et al., 2016, p. 48). Flooding is another major environmental challenge for settlements along the Yangtze, as seasonal rains and rising water levels pose a recurring threat to riverfront communities. Due to the lack of formal flood control infrastructure in many informal settlements, residents are frequently exposed to flooding, which damages property, disrupts livelihoods, and increases the risk of waterborne diseases. Climate change is expected to exacerbate this issue, with projections indicating an increase in the frequency and severity of floods in the Yangtze River basin. For residents of informal settlements, who often occupy low-lying areas with limited structural protections, the vulnerability to climate-related flooding is particularly acute (Yue et al., 2016, p. 47).

The environmental degradation of the Yangtze River also affects the economic stability of informal settlements, where fishing and small-scale agriculture are common livelihoods. As pollution levels rise and fish populations decline, residents who rely on the river for income face increasing challenges in sustaining their livelihoods. The environmental impact of industrial activity and urban sprawl not only endangers the ecosystem but also threatens the socioeconomic well-being of riverfront communities that depend on natural resources.

Without adequate environmental protections or access to alternative economic opportunities, these residents remain trapped in a cycle of poverty and vulnerability, exacerbated by their proximity to the Yangtze's industrialized zones (Yue et al., 2016, p. 48). In response to these environmental and socioeconomic challenges, residents of Nanjing's riverfront settlements have developed adaptive strategies to cope with their marginalization. For instance, communities often organize informal associations to address shared concerns, such as waste management and transportation, that are not provided by the city's infrastructure. Despite these grassroots efforts, however, the residents' ability to improve their living conditions is constrained by their informal status and the government's reluctance to invest in infrastructure or environmental protections in unregulated areas. This lack of formal support underscores the precarious existence of riverfront communities, whose resilience is continually tested by both natural and human-made risks (Yue et al., 2016, p. 46).

3.1.9. The Yangtze River (Nanjing): Governance and Policy Challenges

The governance landscape surrounding informal settlements along the Yangtze River presents significant challenges to sustainable development in Nanjing. The rapid expansion of urban areas along the river has often outpaced the government's regulatory and planning capabilities, leading to a situation where informal settlements emerge without official oversight or urban planning support. Although Nanjing's local government has introduced policies aimed at controlling urban sprawl, these measures have generally been more effective in formal urban areas, where land use is strictly regulated. In contrast, riverfront settlements remain largely unregulated, as residents occupy land without formal approval or access to land titles (Yue et al., 2016, p. 47). The lack of formal governance in riverfront areas reflects the Chinese government's broader approach to managing urban sprawl, where economic priorities frequently take precedence over environmental and social considerations. Local governments, incentivized by economic gains, often prioritize industrial and commercial development over the needs of low-income residents, resulting in a skewed development landscape where informal settlements are neglected. In Nanjing, this dynamic has contributed to the proliferation of unregulated housing along the Yangtze, where residents are excluded from formal development initiatives and lack access to the protections afforded to formal urban communities (Yue et al., 2016, p. 48).



Fig. 64: Guanyindian Village in Jiangning District of Nanjing, east China's Jiangsu Province.

Xinhua Daily. (2020, July 28). Nanjing's main urban riverside shoreline will be fully opened to citizens. Xinhua Daily. https://jres2023.xhby.net/js/yaow-en/202007/t20200728_6746801.shtml

Despite the challenges facing rural settlements, recent policy discussions in China have begun to emphasize the need for more inclusive urban planning that addresses the needs of low-income and marginalized communities. Initiatives focused on improving housing quality, enhancing environmental protections, and providing access to infrastructure are gaining traction at both local and national levels. For informal settlements along the Yangtze, these policy shifts represent a potential pathway toward greater security and integration within Nanjing's urban landscape. However, the success of these initiatives depends on the government's willingness to prioritize social equity alongside economic growth, particularly in areas like the YREB, where rapid development pressures frequently overshadow the needs of vulnerable communities (Yue et al., 2016, p. 45).

3.2 Evolution of Informal & Rural Settlements

Informal settlements, often characterized by unplanned, spontaneous development, evolve in response to socio-economic conditions, regulatory frameworks, and urban pressures. Their dynamic nature reflects broader urban development trends and poses challenges for integrating these areas into formal urban structures. The emergence and evolution of informal settlements in both Lagos and Nanjing reflect broader patterns of urbanization, migration, and economic inequality. Informal settlements are often a direct response to the

housing crisis created by rapid population growth, inadequate formal housing provision, and the socio-spatial exclusion of low-income populations.

3.2.1. The Lagos Lagoon: Origins and Historical Background

In Lagos, informal settlements have expanded along the Lagos Lagoon, shaped by a combination of historical policies, urbanization pressures, and economic necessity. The lagoon's informal communities, especially Makoko, one of Lagos's most recognized informal settlements, represent the city's resilience and adaptability in the face of limited housing infrastructure and complex social dynamics. Makoko's history can be traced back to the colonial era, when policies segregated housing and concentrated resources in urban centers primarily for European officials and elite Nigerian administrators. This colonial approach to urban planning, which neglected adequate housing for the indigenous and low-income populations, set the stage for the informal housing crisis in post-colonial Lagos (Aina, 1989, p. 394). As Nigeria's independence approached in 1960, Lagos continued to expand as the nation's economic and administrative center, attracting thousands of rural migrants each year. These migrants, driven by economic opportunity and Lagos's growing job market, found themselves without sufficient formal housing options upon arrival. While higher-income neighborhoods grew in areas supported by the colonial administration and, later, by Nigerian elites, low-income migrants resorted to settling on marginal lands, particularly along the lagoon.

Makoko, initially a small fishing village founded by the Egun people in the 19th century, grew as migrants from various ethnic groups, including the Yoruba and Hausa, settled in the area to join its informal economy and establish a sense of community within the dense city (Aduwo et al., 2016, p. 348).

Makoko's architecture and settlement layout reflect its water environment. Built on stilts and accessed primarily by canoe, Makoko's wooden shanties and interconnected walkways allow residents to adapt to the swampy terrain. This construction style evolved as residents repurposed materials and skills familiar from rural life to create structures that could withstand the environmental challenges of the lagoon. Makoko's organic, incremental development represents a self-sustaining solution to Lagos's housing shortage, with residents adapting both their building techniques and livelihoods to fit the waterlogged environment. These distinctive adaptations have turned Makoko into a floating ecosystem, blending fishing, trade, and residential life within the lagoon, forming one of the most unique urban communities within Lagos (Aina, 1989, p. 396).

3.2.2. The Lagos Lagoon: Socioeconomic Factors and Growth

Makoko and similar lagoon settlements have grown alongside Lagos's economic and population booms. With an estimated 20 million residents, Lagos is Africa's largest city, yet its infrastructure and housing supply are persistently inadequate to meet demand. This gap between population growth and housing supply has catalyzed the expansion of informal settlements as low-income residents seek affordable living spaces. Makoko's location along the lagoon's edge and its aquatic design make it a natural settlement choice for migrants who cannot afford formal housing in the increasingly high-cost urban market (Aduwo et al., 2016, p. 347). The resilience of Makoko's residents is apparent in the economic ecosystem they have built around the lagoon. Fishing is the primary occupation, supplying Makoko with a steady food source while also sustaining its residents economically. Fishermen sell their catch within the community and other parts of Lagos, contributing to Lagos's food supply chain. Many residents are also involved in the construction of canoes, which serve as the main mode of transport and are essential to Makoko's economy and daily life.

Petty trading and artisanal crafts further diversify the community's economy, allowing residents to sustain themselves independently from Lagos's formal economy. Although disconnected from formal urban infrastructure,

Makoko's self-sustained economy highlights informal settlements' adaptability and community-based resourcefulness (Aina, 1989, p. 398). Makoko's internal economy has also supported the development of essential community services. Residents have established makeshift schools, churches, markets, and health clinics that operate without state support, addressing needs that formal urban systems often overlook. These community initiatives illustrate the cooperative approach that has enabled Makoko to thrive in challenging circumstances. Through informal channels and localized networks, residents access essential services and contribute to a cohesive, self-sustaining social structure that meets the community's needs. This adaptability has turned Makoko into a model of resilience and grassroots urbanism, where low-income residents take on roles typically managed by formal institutions in more developed areas of Lagos (Aduwo et al., 2016, p. 349).

Despite its functionality, Makoko's status as an informal settlement has made it a frequent target of demolition by government authorities. The Lagos State Government has periodically attempted to clear Makoko and other lagoon settlements, often under the pretext of environmental concerns, health risks, or urban beautification. However, these clearance efforts typically prioritize commercial and residential developments for high-income groups, sidelining the socioeconomic needs of low-income residents. While the government emphasizes the health risks posed by overcrowded conditions and inadequate sanitation in lagoon settlements, these clearance campaigns often neglect the long-term displacement issues they create. Many residents are left with no viable relocation options, as government-provided alternatives are limited or unaffordable, pushing them to rebuild informally along the lagoon after each demolition attempt (Aina, 1989, p. 399).

3.2.3. The Lagos Lagoon: Contributions to Urban Identity and Ecosystem

Makoko and other lagoon settlements contribute significantly to Lagos's urban identity, functioning as symbols of resilience, adaptability, and community strength. The settlement's unique architectural and lifestyle adaptations, shaped by the lagoon's water-based ecosystem, distinguish Makoko from other urban areas, emphasizing Lagos's close relationship with its natural environment. The settlement has drawn international attention, with visitors and researchers often recognizing it as a cultural landmark within Lagos. This recognition underscores Makoko's status not only as a residential area but also as a heritage site, where traditional occupations and indigenous lifestyles have persisted

amidst urbanization pressures (Aina, 1989, p. 401). Culturally, Makoko represents a convergence of ethnic traditions, particularly from the Egun and Yoruba communities, whose fishing practices, festivals, and crafts reflect their historical and cultural heritage. Traditional fishing techniques, communal festivals, and unique architectural styles characterize Makoko's daily life, drawing a connection to Lagos's pre-urban history while adapting to contemporary realities. Makoko's strong community ties demonstrate cultural coherence that binds its residents, who often come from different regions but share a common identity shaped by the lagoon's environment. These cultural contributions enhance Lagos's identity as a city capable of accommodating diverse lifestyles within a single urban ecosystem (Aduwo et al., 2016, p. 349).

Economically, Makoko provides essential services and resources to Lagos. The settlement's fish supply is a staple for many Lagos residents, supporting local food security and offering an affordable protein source for the city's low-income populations. Artisans in Makoko also craft canoes, fishing nets, and other traditional tools, supplying both the community and broader markets within Lagos. The community's reliance on lagoon resources minimizes the ecological footprint of their livelihood activities, offering an environmentally adaptive economic model that aligns with sustainable urbanism principles. These economic roles highlight Makoko's interconnectedness with Lagos's formal and informal markets, reinforcing its importance as an economic

partner in the city's ecosystem (Aina, 1989, p. 398). Despite Makoko's contributions, the community remains vulnerable due to its informal status and the government's redevelopment ambitions. The Lagos State Government's periodic attempts to clear Makoko for luxury waterfront developments have fueled tension between preservation of cultural heritage and modern urban development. While government officials cite public health and environmental concerns, critics argue that these clearance campaigns prioritize commercial interests over the well-being of low-income residents. Efforts to redevelop the waterfront area often overlook the social, cultural, and economic contributions of lagoon settlements, framing them as temporary or expendable. This approach ignores the cultural significance and the historical role of these communities in Lagos's urban evolution, favoring a homogenized vision of modernity that fails to account for the city's grassroots diversity (Aduwo et al., 2016, p. 350).

Makoko's residents, however, have consistently shown resilience in the face of eviction threats, often rebuilding their homes after demolitions. Their attachment to the lagoon and its unique lifestyle reflects the deep cultural and economic ties that bind them to the settlement. This tenacity challenges conventional narratives about informal settlements, illustrating the value that these communities place on their environment and their autonomy within Lagos's dense urban landscape. For Makoko residents, the lagoon is

Fig. 65: Fisherfolk in Lagos Lagoon, Nigeria.

The News Diet. (2022, October 25). *X-raying coastal communities' role in combating maritime security threats.* *The News Diet.* <https://thenewsdietng.com/x-raying-coastal-communities-role-in-combating-maritime-security-threats/>



not merely a place of residence; it is a space of cultural expression, economic livelihood, and social connection. These elements combine to make Makoko an integral part of Lagos's identity and a crucial reminder of the diversity and resilience that characterize the city's urban fabric. Research suggests that informal settlements often arise in response to economic exclusion and the inability of formal systems to meet the housing needs of rapidly growing urban populations (Niu, et al. 2021, 156). The limited effectiveness of government policies in addressing these issues exacerbates the problem, leading to the proliferation of informal areas.

outpaced the city's formal housing infrastructure. Migrants arriving in Nanjing were often met with high living costs and restrictive housing policies, resulting in the growth of informal settlements along the city's peripheries and riverbanks. These settlements emerged on marginal lands, particularly near the Yangtze River, where land was cheaper and government regulation less intense. The Yangtze's banks provided not only accessible land but also vital water resources for agricultural practices among rural migrants. In response to the housing gap, migrants built makeshift dwellings using bamboo, wood, and recycled materials, incrementally



Fig. 66: Nanjing Residence in rural outskirts.

Doopedia. (n.d.). Nanjing Yangtze River Bridge [Photograph]. Retrieved July 6, 2025, from https://www.doopedia.co.kr/photobox/comm/community.do?_method=view&GAL_IDX=131119000891103

3.2.4. The Yangtze River: Origins and Historical Background

The informal settlements along the Yangtze River in Nanjing reflect China's rapid economic growth and urbanization, particularly since the economic reforms of the late 20th century. As one of the most industrialized areas within the Yangtze River Delta, Nanjing has long been a significant urban center, attracting an influx of rural laborers seeking work in manufacturing, construction, and services (Wu et al., 2017, p. 68). This migration, intensified by policies encouraging internal labor mobility, led to a surge in Nanjing's population, which

constructing homes as they established themselves in the city (Wu et al., 2017, p. 71). Over time, what began as temporary shelters evolved into semi-permanent communities, cementing their presence in Nanjing's urban landscape and creating what some scholars describe as "urban villages" that blend rural lifestyles with city life. The organic growth of these communities also mirrors the historical rural-to-urban migration patterns within China, where individuals typically retain strong ties to their rural roots. Many migrants initially regarded their stay in Nanjing as temporary, creating structures that could be dismantled if needed. However, as economic opportunities

grew and families began settling, these rural communities became more permanent, with successive generations creating a localized sense of identity within Nanjing's diverse urban fabric. This transformation reflects both economic necessity and persistence of culture, as migrants adapted traditional rural practices to fit the realities of urban living along the Yangtze (Yuan, 2016, p. 85).

3.2.5. The Yangtze River: Socioeconomic Factors and Growth

Nanjing's informal settlements have grown under the pressures of socioeconomic inequality and limited affordable housing, underscoring a critical gap in the city's urban planning. The migrants residing in these riverbank communities often work in low-wage positions, providing essential labor to the city's industrial and service sectors. Yet, their wages are frequently inadequate to cover formal housing costs, creating a two-tiered housing system. While middle- and upper-income groups access regulated, urban housing, low-wage workers are largely excluded, leading them to establish informal settlements along Nanjing's riverbanks (Wu et al., 2017, p. 69). This housing divide reflects broader structural inequalities within Nanjing, where urban development plans often prioritize commercial and residential projects aimed at wealthier residents. Migrant communities, in contrast, find themselves marginalized, and excluded from policies that fail to consider their economic realities. Consequently, these informal settlements operate outside of formal city planning, evolving through grassroots efforts as residents build networks and support systems to meet their daily needs. Community-based economies, local markets, and informal services enable these riverfront settlements to function independently, highlighting the residents' adaptability and resourcefulness in addressing the gaps left by formal urban infrastructure (Yuan, 2016, p. 87). As these communities grew, they became increasingly self-sufficient, establishing informal markets, repair shops, and schools that cater to local needs. Such developments have led to a localized economy within these riverbank settlements, reducing dependency on formal services and enabling residents to access essential goods and services within their own community.

This self-sustained ecosystem reflects the pragmatic response of low-income residents to Nanjing's exclusionary housing policies, creating an informal urban economy that supports thousands of families. Through these localized networks, riverbank settlements have formed a distinct social structure that both contrasts with and complements Nanjing's formal urban economy (Wu et al., 2017, p. 74).

The government's response to informal settlements in Nanjing has varied over time. While initial policies largely overlooked these communities, recent redevelopment efforts have increasingly targeted riverfront areas, viewing them as prime locations for commercial and aesthetic developments. However, such redevelopment initiatives often result in the displacement of established informal communities, disrupting the social networks and support systems that residents have developed over decades. Although the government recognizes the economic contributions of migrant workers, urban policies frequently prioritize modernization and beautification over the preservation of established communities. This approach reflects a tension between economic growth and social inclusivity, as urban redevelopment often overlooks the contributions and needs of informal settlements in Nanjing (Yuan, 2016, p. 88).

3.2.6. The Yangtze River: Contributions to Urban Identity and Ecosystem

The informal settlements along the Yangtze River play a crucial role in defining Nanjing's urban identity, adding a layer of cultural diversity that reflects China's internal migration patterns. Unlike Nanjing's formal neighborhoods, where residents often share a relatively homogenous urban lifestyle, riverbank communities bring together individuals from diverse provinces, each with unique traditions and cultural practices. These communities offer a glimpse into rural Chinese traditions within the urban context, from provincial cuisine and dialects to regional festivals and religious practices (Wu et al., 2017, p. 69). By blending rural and urban lifestyles, these settlements contribute a grassroots cultural identity to Nanjing's broader urban narrative. Riverbank communities have established spaces for religious worship, local festivals, and cultural gatherings, integrating elements of rural Chinese life into Nanjing's urban landscape. These practices have transformed the informal settlements into culturally rich microcosms that reflect the experiences of China's migrant population. Markets within these settlements, for example, are known for offering products and foods unique to specific provinces, creating an informal economy that connects Nanjing's residents with rural China.

This cultural diversity contributes to a distinct urban identity, where traditional practices coexist with modernity, highlighting Nanjing's role as a city shaped by both history and migration (Wu et al., 2017, p. 73). Beyond their cultural contributions, the Yangtze River settlements are also integral to Nanjing's economic ecosystem. The low-wage labor provided by these communities supports key industries,

including manufacturing, construction, and servicesectors, which rely heavily on migrant workers. By providing affordable housing near industrial and commercial centers, these settlements act as a buffer within Nanjing's housing market, supporting the labor force that sustains urban growth. This economic interdependence demonstrates how informal settlements, often perceived as peripheral, are essential to the functioning of rapidly growing cities like Nanjing (Yuan, 2016, p. 89). However, these contributions are frequently overlooked in formal urban planning, which tends to prioritize the modernization and aesthetic improvement of riverfront areas. Redevelopment efforts aimed at clearing these settlements often disregard their cultural and economic value, framing them as obstacles to urban progress rather than integral parts of Nanjing's identity. This approach risks erasing the unique social fabric and economic contributions that these communities bring to the city. For Nanjing's policymakers, the challenge lies in balancing the demands of urban growth with the preservation of informal settlements that add depth to the city's identity and support its economy.

3.3 Spatial Dynamics and Growth Patterns

The spatial dynamics and growth patterns of informal settlements are crucial for understanding their impact on urban morphology. These patterns reveal how informal areas interact with formal urban zones and the challenges of managing their growth.

3.3.1. The Lagos Lagoon: Population Pressures and Spatial Constraints

The Lagos Lagoon is home to some of Lagos's most densely populated informal settlements, notably Makoko, which has become emblematic of the challenges and resilience associated with urban sprawl in Nigeria's economic hub. With an urban population exceeding 20 million and steadily rising, Lagos faces a pressing housing shortage, which drives low-income populations to seek alternative housing solutions in the city's marginal areas. This trend has pushed people to establish informal communities on the lagoon's edge, where waterlogged, low-lying land offers a rare source of affordable housing within the otherwise costly urban landscape (Badmos et al., 2019, p. 5). Makoko's spatial growth patterns reflect these intense population pressures, resulting in a settlement style that adapts to limited land availability by embracing vertical and lateral expansion. Homes in Makoko are built on stilts to accommodate the lagoon's marshy terrain, with each stilt-supported

house elevated above water to withstand seasonal flooding and tides. The community's expansion over time has followed a pattern of spatial clustering around shallow zones of the lagoon, where proximity to land and water facilitates easy access to essential services and transportation routes. This clustering forms a densely packed neighborhood in which land scarcity and high demand for housing lead to significant spatial layering, with multiple homes built closely around limited walkways and floating paths (Badmos et al., 2019, p. 3). The spatial distribution within Makoko reflects a pattern of organic growth constrained by the lagoon's physical boundaries. Homes are linked by narrow wooden walkways, while clusters of stilted buildings create a network of interconnected spaces that cater to both residential and economic functions. Over time, the community has expanded incrementally, with new structures added adjacent to existing clusters. This layout creates a spatial configuration that, while fragmented, allows for functional integration through shared resources and communal spaces. The continuous adaptation to Lagos's demographic pressures underscores Makoko's resilience in managing its spatial growth within a confined area, responding to land limitations by layering and interconnecting its residential zones in innovative ways (Badmos et al., 2019, p. 4).

3.3.2. The Lagos Lagoon: Economic Factors and Functional Spatial Integration

In Lagos, informal settlements around the lagoon, particularly Makoko, are not isolated entities but crucial components of the city's informal economy. Fishing, which has sustained Makoko since its establishment, remains the primary occupation and economic driver within the community. The lagoon serves as both a food source and an economic resource, with fishing activities spatially integrated into Makoko's structure. Economic hubs, including floating markets and trading areas, are positioned strategically within the settlement, creating focal points of economic activity that serve both residents and visitors (Badmos et al., 2019, p. 2). These informal economic zones foster a functional spatial integration within the community, as trade and labor converge in key areas near the water's edge. In these zones, fishermen, artisans, and petty traders form a cohesive network that supports the community's economic resilience. The spatial organization around these economic nodes creates a dynamic environment where informal businesses and trade flourish, reinforcing the settlement's role as a vital part of Lagos's broader economic system. This spatial distribution of economic activities helps to maintain social and economic cohesion within the community, making Makoko both a residential area and a self-

sustaining economic entity (Badmos et al., 2019, p. 6). Makoko's economy shapes its spatial layout by directing growth toward areas with better access to the lagoon's resources. Homes and communal areas cluster around shallow zones, providing easy access to fishing spots and market hubs. This spatial organization minimizes travel distances and promotes efficient use of limited space, especially as Makoko expands and population density rises. As the community grows, residents further densify these economic nodes by building additional structures along established paths, reinforcing spatial networks that support both daily livelihoods and trade activities. This clustering effect illustrates how economic drivers influence Makoko's spatial dynamics, as proximity to resources and economic hubs dictates the configuration and growth of new residential clusters (Badmos et al., 2019, p. 7).

3.3.3. The Lagos Lagoon: Environmental and Spatial Adaptation

Makoko's location within the Lagos Lagoon exposes it to various environmental pressures, including seasonal flooding and tidal fluctuations, which have strongly influenced its spatial growth patterns. Building homes on stilts and establishing elevated walkways demonstrate Makoko's adaptive response to these environmental constraints. The settlement's spatial resilience, evident in its stilted architecture and modular construction practices, enables it to withstand water-level changes while preserving functional living and commercial spaces. This approach creates a distinct layered structure within the lagoon, where homes, markets, and communal areas coexist in a vertically organized space that adapts fluidly to seasonal changes (Badmos et al., 2019, p. 3). Spatial adaptation in Makoko is further evident in its flexible expansion patterns, where residents extend or rebuild homes in response to both environmental and social needs.

The stilted housing model, although necessitated by the waterlogged terrain, has allowed for vertical spatial development that accommodates growing populations without expanding horizontally. Residents often rebuild or reinforce structures with bamboo and wood to improve durability, underscoring a pattern of spatial resilience that prioritizes adaptability to the lagoon's conditions. This architectural and spatial resilience highlights Makoko's ability to sustain growth within its challenging environment, as community members employ resourceful construction methods that reinforce the settlement's connection to its aquatic landscape (Badmos et al., 2019, p. 5). In addition to their architectural adaptation, residents also organize communal resources around the

natural landscape, using stable zones for shared functions, such as markets, schools, and places of worship. This functional zoning adapts to the environment's limitations by positioning critical facilities on accessible, stable land, creating a hybrid spatial configuration that aligns with the lagoon's ebb and flow. These adaptations collectively form a spatial resilience framework that combines environmental awareness with socio-economic pragmatism, enabling Makoko to continue expanding even within the constraints of its aquatic setting (Badmos et al., 2019, p. 6).

3.3.4. The Lagos Lagoon: Government Policies and Impact on Spatial Distribution

The spatial distribution of settlements in the Lagos Lagoon has also been influenced by intermittent government interventions aimed at redevelopment. Historically, Lagos city authorities have regarded informal lagoon settlements as impediments to the city's modernization efforts, resulting in periodic clearance campaigns that displace residents and interrupt spatial continuity. These interventions often aim to reclaim waterfront land for high-income development projects, overlooking the social, cultural, and economic value that settlements like Makoko contribute to the city (Badmos et al., 2019, p. 8). Each displacement wave initiates a cycle where evicted residents either rebuild within Makoko or relocate nearby, creating an unstable yet resilient spatial dynamic in response to governmental pressure. This forced relocation disrupts existing spatial networks, pushing residents to adapt their spatial distribution while maintaining proximity to the lagoon, which remains essential for their economic livelihoods. The cyclical nature of these displacements underscores a distinct spatial pattern where settlement locations shift yet remain within the lagoon's vicinity, reflecting both the resilience and tenacity of the community (Badmos et al., 2019, p. 9).

The government's focus on commercializing the lagoon waterfront has consistently disregarded the need for inclusive spatial planning that incorporates informal settlements. As a result, Makoko's spatial expansion has been largely informal, driven by necessity rather than regulated urban policies. The absence of consistent government support or recognition of Makoko's role within Lagos's urban ecosystem has led to a spatial structure that prioritizes internal cohesion over formal zoning regulations. This unplanned spatial growth, however, highlights the community's ability to self-organize, establishing a functional layout that aligns with the environmental and economic realities of lagoon life (Badmos et al., 2019, p. 7).



Fig. 67: Fragmented urban fabric with two opposing urban layouts situated right next to each other, in Lagos Lagoon environs
Unequal Scenes - Lagos. (n.d.). <https://unequalscenes.com/lagos>



The government's focus on commercializing the lagoon waterfront has consistently disregarded the need for inclusive spatial planning that incorporates informal settlements. As a result, Makoko's spatial expansion has been largely informal, driven by necessity rather than regulated urban policies. The absence of consistent government support or recognition of Makoko's role within Lagos's urban ecosystem has led to a spatial structure that prioritizes internal cohesion over formal zoning regulations. This unplanned spatial growth, however, highlights the community's ability to self-organize, establishing a functional layout that aligns with the environmental and economic realities of lagoon life (Badmos et al., 2019, p. 7).

3.3.5. The Lagos Lagoon: Social Cohesion and Community-Based Spatial Patterns

The social structure of Makoko also plays a significant role in shaping its spatial dynamics. Community-based organizations and informal leadership structures govern the allocation of space, ensuring that new construction and extensions respect communal boundaries and functional zones. This internal governance fosters spatial cohesion within Makoko, as residents collectively negotiate land use and expansion in ways that prioritize shared resources and communal stability. Such organization has enabled Makoko to manage its spatial growth autonomously, adapting effectively to both environmental constraints and population increases (Badmos et al., 2019, p. 4). Communal ties within Makoko have led to the development of spatial patterns that support social resilience. Shared spaces, such as schools, churches, and marketplaces, are typically positioned in central locations, making them easily accessible from various parts of the settlement. This centralization strengthens social cohesion by facilitating regular interaction among residents, reinforcing the community's collective identity and supporting communal resilience. As Makoko continues to grow, these socially oriented spatial patterns remain essential for managing the settlement's increasing density, allowing it to expand without compromising its close-knit social fabric (Badmos et al., 2019, p. 3).

3.3.6. The Yangtze River (Nanjing)

In Nanjing, the spatial dynamics of informal settlements are more controlled due to comprehensive urban planning. Informal areas are often situated on the fringes of planned urban zones or within redevelopment areas. (Liu and Shu 2020, 95) discuss how these settlements are integrated into

the broader urban framework, reflecting a more structured approach to managing informal growth.

3.3.7. The Yangtze River (Nanjing): Economic Development and Spatial Restructuring

The spatial dynamics of informal settlements along the Yangtze River in Nanjing are closely tied to the economic shifts that transformed the Yangtze River Delta into an industrial hub in the late 20th century. Following China's economic reforms in the 1980s, Nanjing became a magnet for rural migrants seeking work in its growing manufacturing and service sectors. However, the city's formal housing infrastructure was unable to accommodate this surge in population, particularly among low-income migrant workers who could not afford formal housing options. This housing gap prompted the establishment of informal settlements on the outskirts and along the riverbanks, where land was cheaper and faced fewer regulatory restrictions (Wang et al., 2016, p. 515). Spatial restructuring in Nanjing has been characterized by a land-centric approach to urban growth, with emphasis on developing commercial and industrial zones along major transportation routes. As a result, informal settlements emerged in peripheral areas and around these transport corridors, allowing residents to live near employment opportunities without the prohibitive costs of formal urban housing. Initially, these settlements consisted of small, loosely connected clusters, but over time, they grew into denser communities as more migrants arrived, creating an intricate pattern of spatial clustering. Each cluster expanded outward as new housing structures were incrementally added, establishing a non-linear, organic growth pattern along the Yangtze that aligns with available land and resource constraints (Yao & Wu, 2023, p. 1741).

In response to the demands of Nanjing's industrial zones, informal settlements have tended to form near major economic centers, such as the industrial parks established along the Yangtze River. These zones acted as spatial anchors, attracting labor and supporting the growth of nearby informal communities. The expansion of these settlements often followed a pattern in which residential areas are strategically located within walking or cycling distance of employment hubs, resulting in a fragmented yet interconnected spatial structure. These clusters often developed along transport routes, enhancing the spatial efficiency of these informal settlements and connecting them functionally to Nanjing's economic landscape (Wang et al., 2016, p. 519).

3.3.8. The Yangtze River (Nanjing): Influence of Land Policies and Administrative Boundaries

Land-use policies and administrative boundaries have also played a central role in shaping the spatial growth of informal settlements in Nanjing. China's urban-rural land division system, where land within urban boundaries is regulated differently than rural land, has historically limited the legal avenues available for migrants seeking housing in the city. As rural-to-urban migrants settled in Nanjing, they often found themselves excluded from formal housing due to this system, leading to the informal repurposing of rural land for residential use on the city's outskirts. This spatial dynamic resulted in informal settlements emerging on parcels of land that lay outside direct urban governance, allowing these communities to grow with minimal interference (Yao & Wu, 2023, p. 3). The expansion of Nanjing's urban boundaries over time has further complicated the spatial distribution of these settlements. As Nanjing's formal city limits extended, certain informal settlements found themselves absorbed into newly urbanized areas, bringing them under stricter regulatory oversight. This transition has often led to legal disputes over land tenure, with city authorities frequently pushing for redevelopment or repurposing of land for commercial uses. Informal communities that were once peripheral now find themselves within the city's sprawl, resulting in denser settlement patterns as land availability becomes increasingly restricted. These changes have contributed to a dynamic spatial structure within Nanjing, where informal settlements are forced to adapt to shifting urban boundaries (Wang et al., 2016, p. 517). This absorption of rural settlements into formal urban zones also means that residents face heightened risks of eviction as the city pursues modernization projects. In some cases, city authorities have attempted to redevelop informal areas by converting them into green spaces, commercial complexes, or upscale residential developments. Such policies further intensify the density of remaining informal clusters as residents relocate to nearby areas, creating concentrated nodes of informal housing within the urban fabric. These spatial dynamics reflect the ongoing tension between Nanjing's urban growth priorities and the persistence of informal settlements within the city's changing landscape.

3.3.9. The Yangtze River (Nanjing): Environmental Constraints and Adaptive Spatial Patterns

The physical geography of the Yangtze River has shaped the adaptive spatial growth of Nanjing's

rural settlements, with many communities located on low-lying, flood-prone land. The river's natural environment presents both opportunities and challenges for informal communities, as the riverbanks provide accessible land but are subject to seasonal flooding and water fluctuations. In response to these environmental pressures, residents in these areas have developed adaptive construction techniques, building structures on raised platforms or using materials that can withstand moisture and water exposure. This resilience reflects a spatial adaptation strategy that prioritizes environmental suitability and enables communities to remain along the river despite seasonal risks (Yao & Wu, 2023, p. 5). The spatial pattern of settlements along the Yangtze's floodplain is characterized by dense clustering in areas that are less prone to flooding, often near embankments or elevated terrain. Informal communities typically avoid the lowest-lying areas, which serve as natural flood zones, instead clustering along higher points that offer some protection from seasonal river overflow. This spatial configuration enables settlements to maximize safety while still retaining access to the river, which remains a critical resource for water, transportation, and, in some cases, small-scale agriculture (Wang et al., 2016, p. 520). The spatial resilience demonstrated in these adaptive patterns underscores the capacity of Nanjing's informal communities to navigate and survive environmental pressures through strategic spatial arrangements. Informal roads, footpaths, and water access points create a connected spatial network within these clusters, allowing residents to move freely and access resources despite the irregular terrain. This organic connectivity within the informal communities reflects a spatial efficiency that aligns with environmental constraints, allowing the community to function effectively within its physical limits. Such patterns reveal how environmental adaptation plays a critical role in the spatial organization of Nanjing's riverbank settlements, as residents prioritize land stability and resource access in their settlement structures (Yao & Wu, 2023, p. 6).

3.3.10. The Yangtze River (Nanjing): Socioeconomic Cohesion and Spatial Organization

The physical geography of the Yangtze River has shaped the adaptive spatial growth of Nanjing's. The spatial organization of informal settlements along the Yangtze River also reflects the socioeconomic interdependence of these communities. Migrants from various parts of China have established informal communities as support networks, offering social cohesion and economic interdependence within these



Fig. 68: The Golden Flower Festival takes place each year when Gaochun's yellow rapeseed flowers bloom by the river, in Nanjing Smith, M. (2020, January 27). Experience the best of Nanjing through its cultural festivals. Lonely Planet. <https://www.lonelyplanet.com/articles/cultural-festivals-nanjing-china>

marginalized spaces. These settlements operate as self-contained socio-economic zones where residents rely on each other for goods, services, and mutual support, reinforcing spatial clustering patterns within the community. Small businesses, local markets, and informal repair services are often concentrated in central areas, creating focal points of economic activity that serve residents and connect the community to the broader urban economy (Wang et al., 2016, p. 518). Local businesses and community-based services contribute to the spatial integration of informal settlements within Nanjing's urban landscape. These businesses form around communal gathering spaces, such as public squares or main thoroughfares, supporting a spatial organization where economic and social interactions reinforce community bonds. The spatial clustering around economic hubs supports local livelihoods and anchors residents' social networks, creating a strong sense of place and community identity.

These spatial patterns indicate the role of economic necessity in shaping the layout and functionality of informal settlements, as residents organize themselves around shared resources and support systems that facilitate daily life and social resilience (Yao & Wu, 2023, p. 7). The social dynamics within these communities also inform spatial arrangements in more intangible ways. Migrants bring cultural traditions from rural China, manifesting in local festivals, culinary practices, and communal gatherings, creating a culturally distinct environment within each settlement. These traditions reinforce social bonds, while central gathering spaces in the settlements serve as sites for cultural exchange and celebration. In this way, the spatial layout of informal settlements along the Yangtze River is a product of economic and environmental pressures and also a reflection of cultural adaptation, as residents bring aspects of their rural identities into the urban environment, thereby shaping the social and spatial fabric of these communities.



3.3.11. The Yangtze River (Nanjing): Government Policies and Spatial Resistance

Government intervention in Nanjing has further influenced the spatial distribution and growth patterns of informal settlements, with city authorities frequently targeting riverbank areas for redevelopment. Given the high-value potential of riverfront land, the government has pursued various projects aimed at beautifying and commercializing these areas, often clashing with the needs and rights of residents. However, informal communities along the Yangtze have demonstrated resilience by adapting their spatial layout in response to these pressures, with residents re-establishing homes and businesses in nearby areas when faced with eviction. This pattern of spatial resilience illustrates the determination of these communities to maintain their presence along the river, even under regulatory and economic pressures (Wang et al., 2016, p. 522). In recent years, limited efforts have been made to formalize and upgrade parts of Nanjing's informal settlements through infrastructure improvements and recognition of land tenure. These initiatives, though small in scale, reflect an emerging acknowledgment of the need for spatial integration of informal communities within the urban landscape.

Infrastructure enhancements, such as sanitation and water services, provide residents with greater security and reinforce the spatial cohesion of these settlements. By gradually formalizing select riverbank communities, Nanjing's policies show the potential for a more inclusive urban strategy that accommodates informal spatial dynamics rather than displacing them entirely (Yao & Wu, 2023, p. 8). The spatial dynamics and growth patterns of informal settlements along the Yangtze River in Nanjing illustrate a complex interaction of economic, environmental, and social factors. From clustering around economic hubs to adapting to flood-prone terrain, these communities navigate the challenges of urban exclusion. As Nanjing continues to expand, the persistence of these informal settlements raises important questions about urban inclusivity and the future of marginalized communities within rapidly modernizing cities. Recognizing the spatial contributions of these communities could pave the way for urban planning approaches that value resilience and integration, fostering a more inclusive urban landscape that respects the spatial needs of all residents.

3.4 Socioeconomic Classism and Zoning Policies

Socioeconomic classism and zoning policies are key factors in the emergence and persistence of informal settlements. In both Lagos and Nanjing, these policies have shaped the spatial organization of informal settlements, determining which areas of the city are developed and which are neglected. These factors influence where and how informal settlements emerge and their integration into the urban fabric.

3.4.1. The Lagos Lagoon

Lagos, the economic capital of Nigeria, has grown at an unprecedented pace, fueled by urban migration, population expansion, and industrial growth. This rapid urbanization, however, has amplified spatial inequalities and deepened socioeconomic divisions. Zoning policies in Lagos have historically catered to the needs of high-income residents and commercial interests, often at the expense of lower-income populations who are relegated to informal settlements on the city's periphery or in environmentally vulnerable areas. By examining the zoning policies that shape Lagos's spatial dynamics, we can see how these regulations reinforce socioeconomic classism, creating stark divides between affluent areas and the marginalized zones where the majority of the urban poor reside.

3.4.2. The Lagos Lagoon: The Impact of Zoning on Urban Segregation

Zoning regulations play a pivotal role in determining access to land and resources, often reinforcing economic divides by favoring commercial and high-income residential developments. As Nigeria's largest city and economic hub, Lagos has extensive zoning policies aimed at organizing urban land use to facilitate economic growth. However, these policies have primarily targeted areas with high commercial potential, pushing residential zoning, particularly for low-income housing, to less desirable parts of the city. For instance, Lagos Island, historically accessible to a diverse socioeconomic population, has seen zoning policies increasingly geared toward high-density commercial use and elite residential developments. This change has displaced many long-standing communities and informal markets that once thrived in central locations, driving lower-income groups to less desirable, peripheral areas with limited infrastructure (Adenaike, Opoko, & Kosoko, 2020, p. 53). Zoning in Lagos is governed by a mix of policies at both the state and local levels. However, despite Lagos's urban diversity, zoning guidelines typically promote segregated, high-density commercial hubs that limit affordable housing in prime areas.

This division in land use has driven a spatially fragmented urban form, where affluent areas enjoy centrality, resources, and services, while informal settlements, housing millions, are restricted to areas with inadequate infrastructure, high environmental risks, and limited access to economic opportunities (Olajide, Agunbiade, & Bishi, 2018, p. 24). The result is a clear-cut socioeconomic divide, spatially organized and institutionally reinforced, where zoning rules effectively exclude lower-income populations from central, well-resourced areas.

3.4.3. The Lagos Lagoon: The Consequences of Land Regularization Policies on Informal Settlements

In recent years, Lagos has pursued land regularization policies as part of an effort to formalize informal settlements and promote urban organization. While these policies are intended to improve land tenure security and reduce informal housing, they have often led to unintended consequences that worsen socioeconomic divides. For instance, land regularization typically results in rising property values in previously informal areas, which can increase rents and ownership costs beyond the means of current residents. This economic shift often benefits wealthier investors and developers who acquire regularized land, thereby accelerating gentrification and driving out low-income residents (Olajide et al., 2018, p. 26). As regularized land becomes increasingly valuable, communities that had long occupied these spaces are priced out, relocating further into underdeveloped and unregulated areas. In essence, regularization policies, rather than integrating low-income residents into the urban core, create economic barriers that encourage displacement, perpetuating a cycle of exclusion. The displaced communities then seek cheaper land elsewhere, often in flood-prone areas near the Lagos Lagoon or on the outskirts of the city where zoning oversight is limited. Consequently, land regularization in Lagos serves as a mechanism of exclusion rather than integration, reinforcing the socioeconomic divides that prevent equitable access to urban space (Adenaike et al., 2020, p. 58).

3.4.4. The Lagos Lagoon: Environmental Vulnerabilities and Zoning Policies

The zoning policies in Lagos not only affect where people can live but also have significant implications for the environmental safety and quality of life for marginalized populations. Due to zoning restrictions and limited infrastructural investment, informal settlements located near environmentally vulnerable zones, such as the Lagos Lagoon, face recurring threats from flooding and inadequate

sanitation. While zoning laws theoretically protect the natural waterfront by restricting high-density development, in practice, these restrictions often apply selectively, resulting in minimal infrastructure support in informal settlements near the lagoon. In contrast, more affluent neighborhoods enjoy advanced infrastructure mandated by zoning laws, including flood protection measures, improved drainage systems, and regularly maintained roads. This disparity in infrastructure provision reflects how zoning policies perpetuate socioeconomic exclusion, as lower-income communities bear the brunt of environmental risks without adequate government intervention. In these areas, flooding is exacerbated by a lack of drainage, sanitation, and waste management systems, which further complicate the daily lives of residents in informal settlements (Olajide et al., 2018, p. 25). Furthermore, zoning policies prohibit many infrastructure improvements in informal settlements by labeling these areas as “unplanned” or “informal,” thus excluding them from government-funded urban development initiatives. Although these policies ostensibly protect ecological areas, they often serve as pretexts to limit investment in marginalized communities. This exclusionary zoning structure deepens the vulnerability of lower-income residents and underscores the class-based nature of zoning policies in Lagos, as affluent zones are given access to infrastructure that informal settlements are denied (Adenaike et al., 2020, p. 59).

3.4.5. The Lagos Lagoon: Elite-Driven Development and Government Intervention

In line with the vision of transforming Lagos into a global city, the government has increasingly promoted urban transformation projects that prioritize high-end commercial and residential developments, particularly in waterfront areas. These projects, designed to attract international investment, often cater to high-income groups, excluding the city’s substantial low-income population. A significant example is the ongoing redevelopment of the waterfronts around the Lagos Lagoon, where zoning policies favor elite-oriented commercial projects. As these developments take shape, informal settlements in the vicinity face heightened displacement pressure, as they are pushed out to make way for profitable, aesthetically pleasing developments (Adenaike et al., 2020, p. 56). These elite-focused development initiatives underscore a class-based urban transformation model, which regards informal settlements as obstacles to modernization. By classifying

informal settlements as incompatible with urban development goals, the government can justify zoning policies that prioritize high-value uses of prime land. Displacement frequently follows, as communities with deep roots in these areas are forced to relocate without adequate compensation or resettlement options. This spatial marginalization perpetuates cycles of poverty and limits the socio-economic mobility of lower-income residents, reinforcing class divides within the city’s urban fabric (Olajide et al., 2018, p. 27).

3.4.6. The Lagos Lagoon: Implications for Inclusive Urban Planning and the Need for Reform

The zoning framework in Lagos has, to a large extent, reinforced socioeconomic class divisions, highlighting a need for more inclusive urban planning practices. To address the widening gap between affluent and marginalized zones, Lagos requires a reformed zoning model that prioritizes social equity alongside economic development. Such reforms could involve reimagining zoning policies to incorporate mixed-income housing within central business districts and affluent neighborhoods, facilitating access to essential resources, infrastructure, and economic opportunities for all residents (Adenaike et al., 2020, p. 57). Additionally, a more participatory approach to urban planning—one that actively includes residents from informal settlements in the planning and decision-making processes—could bridge some of the socioeconomic divides reinforced by zoning. Engaging communities in the design and implementation of zoning policies would ensure that these regulations reflect a broader range of interests, rather than disproportionately catering to elite and commercial stakeholders. This inclusive approach could provide affordable housing options within central areas, reduce forced displacement, and address the pressing infrastructure needs of low-income communities (Olajide et al., 2018, p. 29). A shift toward such inclusive policies would require significant political will and a commitment to urban planning that prioritizes equity over profit. The existing zoning framework in Lagos underscores the importance of balancing urban development with social inclusion, as current practices continue to isolate and marginalize lower-income populations. Without substantial reform, zoning policies in Lagos will likely continue to serve as mechanisms of socioeconomic exclusion, creating a city in which only certain areas and populations benefit from urban growth and infrastructural investments.

3.4.7. The Lagos Lagoon: Zoning Policies as Mechanisms of Socioeconomic Classism

Zoning policies in Lagos have consistently catered to high-income interests and elite commercial ventures, leading to a city marked by stark socioeconomic and spatial divisions. The prioritization of elite zones and commercial hubs within the zoning framework excludes informal settlements from access to urban resources, perpetuating cycles of poverty and environmental vulnerability for low-income residents. These policies reinforce Lagos's existing social hierarchies, shaping an urban landscape that marginalizes informal settlements and denies them the benefits associated with prime urban areas. For Lagos to move towards equitable urban development, a reformed zoning strategy is essential—one that recognizes the social rights of all residents to access safe, resource-rich, and sustainable environments. By implementing zoning reforms that prioritize inclusive growth, affordable housing, and infrastructural equity, Lagos could work toward a city where socioeconomic divides are minimized, and urban prosperity is shared more broadly. Such an approach would not only challenge the classist tendencies embedded in current zoning practices but also lay the foundation for a more just and inclusive urban future.

3.4.8. The Yangtze River (Nanjing)

Nanjing, one of China's historically significant cities and a major urban center along the Yangtze River, exemplifies the impact of zoning policies on socioeconomic divides. As China's rapid urbanization has progressed, Nanjing's zoning regulations have often favored high-income residential and commercial developments along the Yangtze, while lower-income populations are relegated to peripheral zones with fewer resources and infrastructural support. This section explores how Nanjing's zoning policies reinforce socioeconomic class distinctions, analyzing the spatial dynamics, environmental implications, and government interventions that shape settlement patterns near the Yangtze River.

3.4.9. The Yangtze River (Nanjing): Zoning Policies and Spatial Hierarchies Along the Yangtze River

Nanjing's urban landscape has been significantly influenced by zoning policies aimed at maximizing economic productivity, especially within the Yangtze River Delta—a critical economic and industrial region. Zoning regulations in

Nanjing prioritize areas along the riverfront for high-value commercial developments and luxury residential projects, positioning these zones as prime real estate that cater to affluent residents and investors. In contrast, low-income residents are often limited to the city's outskirts, as zoning policies restrict affordable housing developments in these premium areas (Chen et al., 2017, p. 216). This prioritization has created spatial hierarchies within the city, where the areas near the Yangtze River embody economic affluence, while other neighborhoods, especially those further from the river, receive fewer infrastructural investments. Consequently, zoning policies in Nanjing not only shape the physical landscape but also reinforce class-based spatial segregation by limiting access to the city's most economically prosperous zones (Chen et al., 2017, p. 220). Such zoning practices contribute to a socially stratified urban layout that privileges high-income groups while marginalizing lower-income populations, mirroring the exclusionary zoning seen in other major Chinese cities.

3.4.10. The Yangtze River (Nanjing): The Role of Economic Incentives in Zoning Decisions

In Nanjing, zoning policies are heavily influenced by economic incentives, often driven by local officials who prioritize GDP growth and land revenue as measures of performance. These incentives encourage zoning practices that prioritize commercial and industrial developments over inclusive residential planning. Nanjing's municipal government has historically awarded officials based on economic achievements, such as increases in high-value land developments, encouraging a focus on profitable uses of urban space (Chen et al., 2017, p. 224). As a result, zoning decisions frequently emphasize expanding urban construction land in the Yangtze River area to attract foreign investment and promote regional economic growth, rather than catering to the needs of the city's low-income residents. This incentive structure leads to the prioritization of elite interests, resulting in the development of luxury apartments, corporate offices, and high-end retail centers along the riverfront. The construction of such exclusive zones serves the interests of the wealthy and foreign investors, while neglecting affordable housing and community services for Nanjing's lower-income residents. Consequently, economic incentives have reinforced the socioeconomic divides within Nanjing's zoning framework, creating an urban environment where zoning policies reflect profitability rather than inclusivity (Chen et al., 2017, p. 226).

3.4.11. The Yangtze River (Nanjing): Environmental Zoning and Infrastructural Inequities

Environmental zoning policies along the Yangtze River further reinforce class divides in Nanjing, as they disproportionately affect marginalized communities. While Nanjing has implemented environmental protection measures for areas along the Yangtze, these protections tend to prioritize affluent zones, where advanced infrastructure mitigates the impact of flooding and other environmental hazards. Elite residential areas near the riverfront are equipped with state-of-the-art drainage systems, flood barriers, and well-maintained public spaces, providing a buffer against environmental risks (Chen et al., 2017, p. 225). In contrast, lower-income communities located in peripheral areas lack such infrastructural safeguards. As environmental zoning laws restrict improvements in certain zones deemed ecologically sensitive, lower-income residents often live in areas more exposed to environmental hazards without adequate protection or government support. This discrepancy reflects a broader pattern in Nanjing's zoning approach, where environmental protections reinforce existing inequalities by prioritizing affluent areas and neglecting marginalized communities (Chen et al., 2017, p. 223). Moreover, while environmental zoning aims to prevent overdevelopment along the Yangtze River, the enforcement of these policies tends to favor developments that generate economic returns. High-end projects often receive exceptions to environmental restrictions, allowing luxury apartments and commercial buildings to be constructed in ecologically sensitive areas. This selective enforcement further exacerbates class-based exclusion, as it effectively reserves prime riverside land for affluent communities while denying low-income residents access to these spaces.

3.4.12. The Yangtze River (Nanjing): Government-Led Redevelopment and the Marginalization of Informal Settlements

Nanjing's redevelopment policies near the Yangtze River showcase the government's commitment to rebranding the city as a modern, global metropolis. However, this focus on urban modernization frequently results in the displacement of lower-income residents to make way for high-profile projects. Government-led redevelopment initiatives, particularly along the Yangtze River, have prioritized projects that enhance the city's appeal to tourists and investors, including waterfront parks, shopping centers, and luxury residences. While beneficial to the local economy, these initiatives systematically overlook the needs

of informal settlements and low-income residents who reside near the river (Chen et al., 2017, p. 227). The displacement of informal settlements is often justified under zoning policies that categorize these areas as unsuitable for urban living due to their informal status. As a result, residents in these settlements face significant challenges, as the government does not provide adequate resettlement options or compensation for those displaced by redevelopment projects. This approach displaces communities and erases the social and cultural fabric of these neighborhoods, as long-standing residents are scattered across different parts of the city, breaking up community networks and weakening social cohesion.

3.4.13. The Yangtze River (Nanjing): Socioeconomic Exclusion in Zoning-Driven Urban Transformation

The focus on economic-driven zoning and redevelopment in Nanjing has led to the exclusion of lower-income groups from prime areas near the Yangtze River, reinforcing a pattern of spatial inequality. This exclusionary zoning practice confines affordable housing and low-income communities to the city's peripheries, where access to resources, employment opportunities, and services is limited. As the zoning policies favor elite developments, informal settlements and affordable housing are marginalized, preventing lower-income residents from benefiting from Nanjing's urban growth and economic prosperity (Chen et al., 2017, p. 229). Unlike cities with mixed-use zoning models that integrate residential, commercial, and public spaces across various income levels, Nanjing's approach to zoning creates a segmented urban structure. High-income residents dominate riverfront zones, which offer better services, transportation, and proximity to employment centers, while lower-income populations are confined to isolated zones lacking basic infrastructure. This disparity not only hinders economic mobility for marginalized groups but also perpetuates a sense of exclusion and disconnection from the city's prosperity.

3.4.13. The Yangtze River (Nanjing): Environmental and Social Consequences of Exclusionary Zoning

The exclusionary nature of Nanjing's zoning policies also brings about environmental and social consequences, particularly in the context of the Yangtze River. As high-value developments encroach upon ecologically sensitive zones, environmental degradation becomes a growing concern. Luxury developments along the riverfront often bypass environmental regulations through special permits

or selective enforcement, leading to increased pollution and habitat disruption in these areas. In contrast, lower-income communities in peripheral zones lack the means to address environmental issues and are more exposed to risks such as flooding and poor air quality (Chen et al., 2017, p. 228). Socially, the divide enforced by zoning policies has long-term implications for urban cohesion. The concentration of wealthier residents in the riverfront areas contributes to a social stratification that isolates affluent zones from lower-income areas, which are not only distant but lack the amenities that make urban living convenient. This isolation limits interactions across socioeconomic lines and perpetuates stereotypes and social barriers between classes, deepening the socioeconomic divides within Nanjing.

3.4.14. The Yangtze River (Nanjing): The Path Toward Inclusive Zoning Reform in Nanjing

To bridge these divides and promote equitable urban development, Nanjing's zoning framework would need to adopt a more inclusive approach that balances economic growth with social equity. This could include creating mixed-use zoning policies that encourage a blend of affordable and high-end housing along the Yangtze River, ensuring that lower-income residents are not excluded from high-resource zones. Furthermore, the government could implement zoning reforms that protect informal settlements and prioritize affordable housing in central areas, providing access to critical resources and economic opportunities (Chen et al., 2017, p. 230). Another approach would involve community engagement in zoning policy formulation. By involving residents of lower-income communities in the decision-making process, Nanjing could create zoning policies that reflect a wider array of needs and perspectives. This participatory model would help to address the disparities caused by exclusionary zoning and foster a more inclusive urban environment, where all residents have a stake in the city's growth and development.

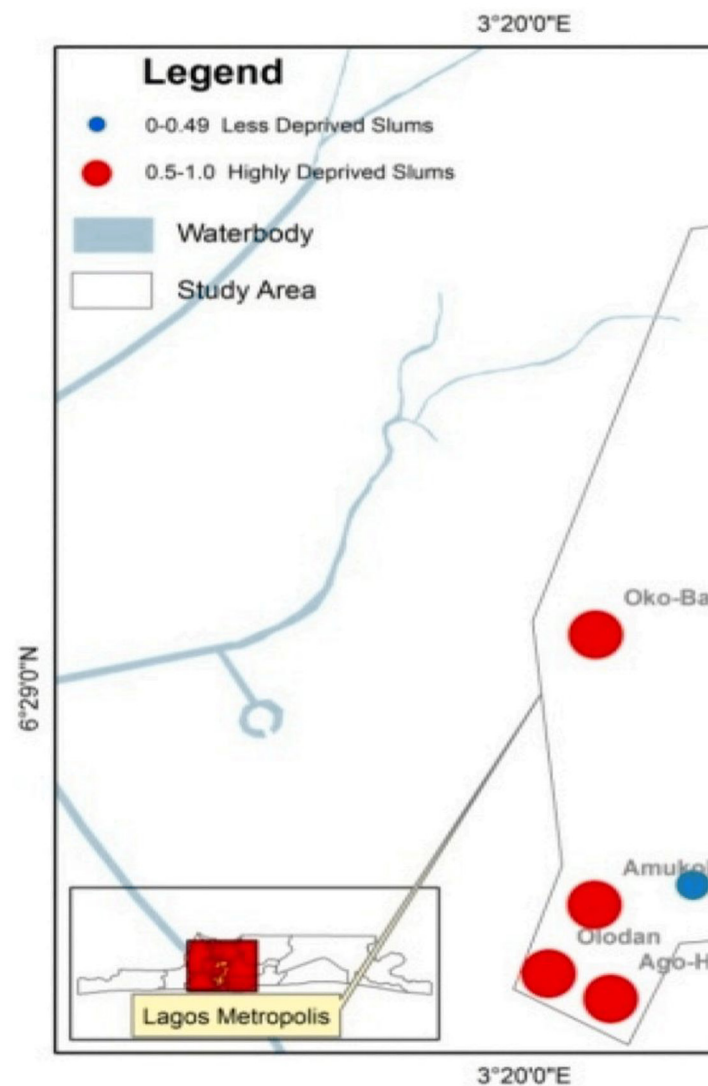
3.4.15. The Yangtze River (Nanjing): Zoning Policies as a Mechanism of Socioeconomic Classism

Nanjing's zoning policies along the Yangtze River highlight how urban planning can be shaped by socioeconomic class interests, reinforcing spatial and social divides. The emphasis on economic growth and elite residential development along the river has resulted in a segmented urban structure that marginalizes low-income residents and informal settlements. As a result, zoning policies in Nanjing serve as a

tool for socioeconomic exclusion, concentrating wealth and resources in high-value areas while restricting access for marginalized populations. For Nanjing to move toward a more equitable urban future, zoning reforms that prioritize inclusivity, sustainability, and community involvement are essential. Such reforms would allow Nanjing's growth to benefit all socioeconomic groups, bridging the divides that zoning policies currently reinforce. By restructuring zoning practices to foster a more integrated and inclusive city, Nanjing could transform its urban landscape into one that supports social cohesion and equitable access to resources, setting a model for cities facing similar challenges in rapidly urbanizing regions.

3.5 Informal Settlements and Interventions

Government policies and interventions play a critical role in addressing the challenges posed by informal settlements. Effective policies can help integrate informal areas into the urban fabric and improve living conditions.



3.5.1. The Lagos Lagoon

In Lagos, government interventions have been inconsistent and often ineffective in addressing the needs of informal settlements. (Uduma-Olugu and Oduwaye, The regeneration of Lagos Lagoon waterfronts for recreation and tourism 2010) highlight the challenges of policy implementation, with many interventions failing to address the root causes of informal growth. The sprawling informal settlements along the Lagos Lagoon, particularly in communities such as Makoko, reflect a profound intersection of socioeconomic deprivation, urban migration, and government oversight issues. Makoko originated as a fishing community predominantly inhabited by ethnic Egun migrants from Benin and Togo, who traditionally built homes on stilts over the lagoon. This area, despite its historical and cultural richness, has evolved into one of Lagos's most visible symbols of poverty and urban marginalization due to decades of rural-to-urban migration and the consequent population boom (Aina, 1989, p. 394; Omoniyi, 2017, p. 2). As Lagos has expanded into one of Africa's largest cities, informal settlements like Makoko have grown due to a severe housing shortage. The city's formal

housing market remains largely unaffordable for low-income earners, pushing many into these self-built, unregulated settlements. Approximately 66% of Lagos's population resides in informal housing, where residents lack secure tenure and often face dire living conditions with minimal access to basic amenities such as clean water, sanitation, and electricity (Omoniyi, 2017, p. 3). Makoko has two main segments: the water-based area, where residents live in stilted structures on the lagoon, and the land-based part. The latter has been a repeated target for government-led demolition efforts, aimed at reclaiming land for the city's ambitious urban development projects. While residents contribute to the city's informal economy, primarily through fishing and small-scale trading, they are marginalized within Lagos's vision of itself as a future "megacity" (Omoniyi, 2017, p. 5). Makoko has two main segments: the water-based area, where residents live in stilted structures on the lagoon, and the land-based part. The latter has been a repeated target for government-led demolition efforts, aimed at reclaiming land for the city's ambitious urban development projects. While residents contribute to the city's informal economy,

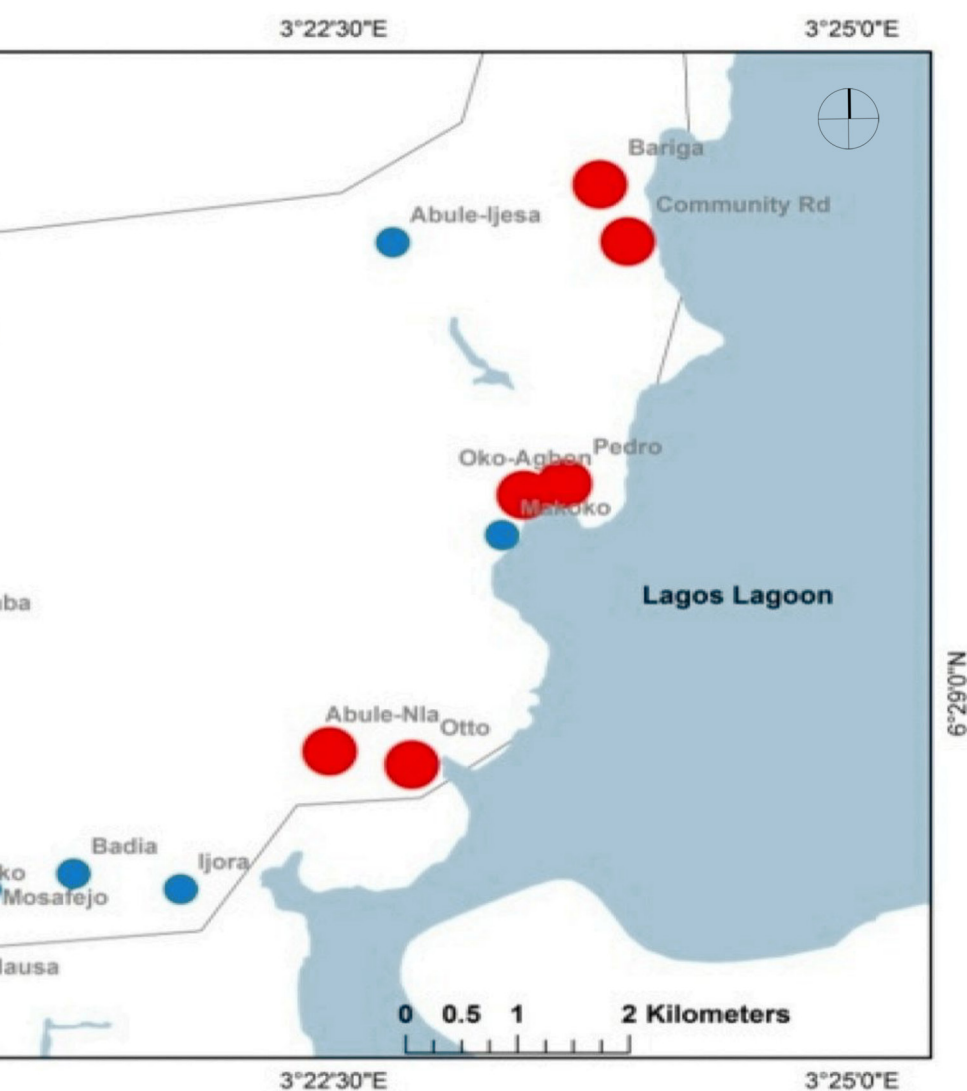


Fig. 69: Hygiene indicator of the slum deprivation index. Olanrewaju, D. O., Fadairo, G., & Ayedun, C. A. (2021). Household levels of deprivation to WaSH and residential conditions in slum settlements of Lagos, Nigeria. *GeoJournal*. Advance online publication. <https://doi.org/10.1007/s10708-021-10374-z>

primarily through fishing and small-scale trading, they are marginalized within Lagos's vision of itself as a future "megacity" (Omoniyi, 2017, p. 5).

3.5.2. The Lagos Lagoon: Government Intervention Approaches and Forced Evictions

Over the years, the Lagos State Government has implemented a series of aggressive interventions to reclaim the waterfront. These measures often involve forced evictions justified under environmental and public health grounds but are also driven by economic interests tied to real estate development and the city's modernization agenda (Aina, 1989, p. 395). In the most notable example, the 2016 forced eviction of the Otodo-Gbame community displaced over 30,000 residents, with the government citing safety risks due to flooding and unsanitary conditions. However, residents and advocates argue that the evictions were largely motivated by the potential profitability of redeveloping the land for luxury housing or commercial projects (Omoniyi, 2017, p. 3). A lack of due process marks the eviction process in Lagos Lagoon communities. According to residents, forced evictions often proceed without prior consultation or meaningful notice. Many residents receive eviction notices only days before demolitions are executed, depriving them of the time to seek alternative housing or legal recourse.

The 2009 Lagos State Model City Development Law, which grants the state authority to demolish structures deemed unlawful, is frequently cited as the legal basis for these actions. However, this law does not account for the complex realities of informal settlements where residents may have customary claims to the land, complicating the application of modern land tenure policies (Omoniyi, 2017, p. 5). In addition to lacking transparency, the eviction efforts are characterized by violent enforcement. The Otodo-Gbame evictions involved armed police and, in some cases, resulted in fatalities as residents resisted forced removal. The government's actions have drawn condemnation from international organizations, including Amnesty International, which criticized the Lagos State Government for violating residents' human rights and disregarding international standards on housing rights and forced evictions (Omoniyi, 2017, p. 3). The forceful nature of these interventions reflects the government's approach of seeing informal settlements as impediments rather than assets, dismissing the communities' potential for contributing to the urban fabric if integrated and supported effectively.

3.5.3. The Lagos Lagoon: Socioeconomic Outcomes and Implications of Forced Evictions

The impact of these forced evictions on residents is profound, affecting their economic stability, access to essential services, and overall quality of life. Most affected individuals are relocated to already overcrowded informal areas on the city's outskirts, far from their sources of livelihood. Many lagoon residents rely on fishing, trading, and small businesses tied to the lagoon's resources, making relocation economically disruptive. Displaced individuals often face significant barriers in securing housing in other parts of Lagos, as the high costs of rent and limited availability of affordable housing compound their hardship. In addition to economic challenges, displacement severs social and familial networks. Forced evictions often scatter extended families and community members, disrupting social structures that provide critical support systems for coping with poverty and urban challenges. Displaced residents also face intensified discrimination, as they are labeled as "squatters" or "illegal settlers," further marginalizing them within Lagos's competitive housing market (Aina, 1989, p. 395). Furthermore, the government's lack of adequate resettlement or compensation strategies exacerbates the vulnerability of displaced populations. Without financial assistance or alternative housing options, many find themselves homeless or forced into exploitative rental arrangements. This cycle of displacement perpetuates poverty, reinforcing the exclusion of these populations from the formal economic and social structures of the city.

3.5.4. The Lagos Lagoon: Resistance and Advocacy for Informal Settlement Rights

Civil society organizations have also called for the establishment of an informal settlements protection law, proposing a policy framework that respects the rights of marginalized urban dwellers and promotes inclusive urban development. Despite these challenges, some informal settlement communities have organized resistance movements to counter the government's actions. Advocacy groups such as the Justice and Empowerment Initiative (JEI) have become vocal defenders of Lagos Lagoon communities, offering legal representation and mobilizing residents to demand compensation and legal protection against forced evictions (Omoniyi, 2017, p. 6). JEI's work has been instrumental in bringing international attention to the issue, with efforts to challenge the Lagos State Government in court. These groups

have advocated for the implementation of policies that acknowledge the socioeconomic importance of informal settlements and seek to incorporate them into the Lagos urban planning framework. Civil society organizations have also called for the establishment of an informal settlements protection law, proposing a policy framework that respects the rights of marginalized urban dwellers and promotes inclusive urban development. The advocacy efforts underscore the resilience of Lagos's informal communities, whose residents are not only demanding their right to the city but are also redefining the terms of urban citizenship in a rapidly modernizing metropolis.

3.5.5. The Lagos Lagoon: Critique of Government Intervention Strategies

The intervention strategies in Lagos Lagoon reveal significant flaws in the state's approach to urban development, highlighting a critical disconnect between the government's vision for Lagos as a "megacity" and the realities faced by its marginalized communities. By focusing on forced evictions rather than inclusive planning, the Lagos State Government disregards the fundamental socioeconomic contributions that informal settlements make to the city's economy and social fabric. Communities like Makoko are integral to the local economy, particularly through fishing, small-scale trade, and the production of goods. Ignoring these contributions in pursuit of high-value real estate development undercuts the government's stated goals of reducing poverty and promoting economic growth. Furthermore, the lack of participatory planning and consultation with affected communities reflects a top-down, authoritarian approach that fails to recognize the value of community knowledge and local needs. Models from other cities, such as Medellín, Colombia, demonstrate the viability of slum upgrading and participatory urban planning as effective alternatives to eviction. Medellín's success in integrating informal settlements into the formal urban fabric through infrastructure improvements and social programs provides a potential roadmap for Lagos.

By contrast, Lagos's eviction-driven approach fosters social instability, disrupts established communities, and exacerbates the city's housing crisis. Sustainable urban development in Lagos requires a shift from eviction-centered policies to more integrative strategies that offer legal recognition and support for informal settlements. Such an approach could involve land regularization programs, which have been successfully

implemented in other parts of Africa and Latin America, offering residents security of tenure and integrating them into the formal economy. In addition to more inclusive policy-making, international standards on housing rights and the right to adequate housing could inform Lagos's policies on informal settlements. The UN's Basic Principles and Guidelines on Development-Based Evictions and Displacement, for instance, advocate for eviction alternatives that include consultation, compensation, and resettlement planning. Adopting such frameworks could help the Lagos State Government approach informal settlement issues with greater equity and respect for residents' rights. The case of Lagos Lagoon underscores the urgent need for reimagining urban policies in Lagos. Forced evictions have proven unsuccessful in addressing the housing crisis or in achieving equitable urban development. Instead, they have deepened socioeconomic inequalities, increased homelessness, and marginalized communities that are essential to the city's identity and economic ecosystem. Moving forward, Lagos must adopt a rights-based approach that recognizes informal settlements as legitimate components of the urban landscape, deserving of protection, support, and integration into formal urban planning frameworks.

3.5.6. The Yangtze River (Nanjing)

The Yangtze River basin, home to some of China's most culturally rich and historically significant sites, is also characterized by a rapidly urbanizing landscape that has led to the proliferation of informal settlements. In Nanjing, informal communities have developed alongside ancient waterfront towns such as Zhouzhuang and Tongli, which are known for their unique cultural heritage, architecture, and economic reliance on the Yangtze. Unlike the informal settlements in Lagos, which arose primarily due to socioeconomic exclusion, informal settlements near the Yangtze River are influenced by both migration patterns and a rich history that connects residents to the region's cultural landscape (Liu & Shu, 2020, p. 15). The growth of informal settlements in Nanjing is tied to the city's transformation as a major hub for industrial and commercial activities along the Yangtze. Many residents of these informal areas are rural migrants who came to Nanjing in search of work but were priced out of the formal housing market. Consequently, they built communities in neglected areas near the river, developing self-sustaining settlements that utilize the river for livelihoods, including small-scale fishing, trading, and informal tourism-related services. However, this proximity to historic waterfront towns has put informal settlements in

conflict with government efforts to preserve cultural heritage sites, resulting in intervention policies aimed at controlling, preserving, or even displacing these communities (Liu & Shu, 2020, p. 19). In contrast to the eviction-driven model in Lagos, Nanjing's government has approached the issue of informal settlements with an emphasis on heritage preservation. The area's high tourism potential, combined with China's national policy on cultural conservation, has led local authorities to implement policies that balance tourism development with urban preservation. Yet, these policies often prioritize economic interests, leading to "heritage tourism" that displaces low-income residents to make way for tourist infrastructure. The result is a complex interplay between conservation, economic development, and the social displacement of vulnerable groups (Liu & Shu, 2020, p. 21).

3.5.7. The Yangtze River (Nanjing): Government Interventions: Preservation and Tourism Development

In Nanjing, interventions targeting informal settlements are largely guided by policies that combine cultural preservation with tourism. The local government has launched several initiatives that aim to regulate and restructure informal areas near heritage sites, framing these efforts as essential for maintaining the historic and aesthetic integrity of the Yangtze waterfront towns. These areas, branded as the "Venice of the East," are valuable not only for their architectural and historical significance but also for their potential as revenue-generating tourist destinations. The entry fees collected from visitors to core areas, for instance, are funneled into maintenance and conservation funds, supporting infrastructure improvements such as roads, lighting, and sanitation facilities (Liu & Shu, 2020, p. 17). One key example of this strategy can be seen in the ancient towns of Zhouzhuang and Tongli, where the government has implemented a "protected zone" policy. Under this model, core heritage areas are subject to strict building codes and entry restrictions. Informal settlers residing near these zones are often barred from expanding their homes or conducting unlicensed businesses, thereby limiting their economic activities. In some cases, residents are relocated to suburban areas under government-sponsored resettlement programs, with the rationale that this will protect the heritage landscape from unauthorized development or environmental degradation (Liu & Shu, 2020, p. 23).

The government has also introduced a public-private partnership model in managing these cultural sites, where private companies are given operating rights to heritage towns. These companies

are responsible for managing tourist services, such as guided tours and ticket sales, while adhering to government-mandated conservation protocols. Although this arrangement has brought in significant revenue and facilitated infrastructure upgrades, it has also led to increased commercialization and a loss of local cultural authenticity. Residents report feeling that their homes and traditions are being packaged as commodities for tourists, diminishing their sense of ownership and connection to their community (Liu & Shu, 2020, p. 19).

3.5.8. The Yangtze River (Nanjing): Outcomes and Economic, Social, and Cultural Impacts

The economic outcomes of Nanjing's intervention strategies have been largely positive in terms of tourism revenue and heritage preservation. The cities and towns along the Yangtze have gained international recognition as cultural heritage sites, drawing millions of tourists each year. This influx has created numerous job opportunities in the tourism sector, particularly in hospitality, guiding services, and local crafts. Additionally, the tourism-related revenue has provided resources for further restoration projects, creating a cycle of economic growth that supports both local and regional economies (Liu & Shu, 2020, p. 18). However, while the economic benefits of these interventions are evident, they have come at a social cost, especially for the low-income residents of informal settlements near these heritage sites. The development of heritage tourism has led to significant increases in the cost of living, making it challenging for long-time residents to afford housing and basic amenities. With the rise in property values, local residents are often pressured into selling their homes to private developers who convert these properties into tourist accommodations, cafes, or souvenir shops. Those who are unable to keep up with the rising expenses are forced to relocate, breaking apart established communities and social networks.

The cultural implications of these interventions are equally complex. While the preservation of historical architecture and landscapes has maintained the physical heritage of the region, the social and cultural practices tied to these areas are gradually eroding. The government's emphasis on tourism has resulted in a phenomenon known as "pseudo-cultural tourism," where traditional cultural practices are exaggerated or altered to cater to visitors' expectations. This dynamic distorts local culture, reducing it to a commercial spectacle and undermining the authenticity of the heritage that conservation efforts aim to protect (Liu & Shu, 2020, p. 23). The transformation of these spaces into tourist attractions has therefore

led to a paradox: while cultural tourism is intended to preserve heritage, it often accelerates the decline of local traditions and identities.

3.5.9. The Yangtze River (Nanjing): Analysis of Intervention Strategies

The intervention strategies in Nanjing reveal both the potential and the limitations of a tourism-centric approach to heritage preservation. While the policies have succeeded in drawing investment and fostering economic growth, they have inadvertently marginalized the very communities that maintain the cultural practices central to the region's heritage. In this sense, the interventions prioritize economic and aesthetic considerations over social equity, a trend that is common in urban development schemes focused on heritage tourism. A major critique of Nanjing's approach lies in its lack of inclusive planning. By prioritizing tourism and preservation at the expense of low-income residents, the government risks creating "museum cities" where historical authenticity is preserved only in form, not in substance. The relocation of residents and the commercialization of traditional practices indicate a top-down approach that excludes the community's voice. This approach contrasts with more participatory models found in other parts of China, where urban development is balanced with community interests. For example, in Beijing's Hutong renovation projects, the government has allowed residents to remain in their homes while implementing preservation efforts, ensuring that the living culture of these areas remains intact. Moreover, Nanjing's model of privatized heritage management, while financially effective, creates a dependency on tourist revenue that may not be sustainable. The reliance on private companies to manage cultural sites places profit motives at the forefront of conservation decisions, often leading to policies that favor tourism over community needs. The emphasis on commercialized tourism leaves little room for local economic activities that do not align with the government's vision of heritage preservation, effectively narrowing residents' opportunities for livelihood within their own communities (Liu & Shu, 2020, p. 19).

The socioeconomic disparity exacerbated by this approach is visible in the differences between tourist and resident spaces. While tourists enjoy well-maintained, visually appealing sites, displaced residents often relocate to less developed suburbs, where infrastructure and job opportunities are limited. This dualism creates a visible socioeconomic divide, where the benefits of heritage conservation are enjoyed primarily by tourists and businesses, while local residents bear the burdens

of dislocation and cultural commodification. The case of Nanjing's interventions in the Yangtze River region highlights the potential for heritage conservation to drive economic growth but also underscores the need for balanced, inclusive approaches that account for the social fabric of these communities. While Nanjing's policies have preserved the architectural heritage of its waterfront towns, they have yet to effectively integrate the needs and identities of local residents. Moving forward, sustainable urban development in Nanjing requires a shift from top-down, tourism-centered models to approaches that value local participation, economic inclusivity, and cultural authenticity.

3.6 Morphological Implications of Informal Settlements

The morphological implications of informal settlements are significant, impacting the overall structure and functionality of urban areas. The presence of informal settlements affects land use, infrastructure, and spatial organization, with implications for urban planning and development.

3.6.1. The Lagos Lagoon

In Lagos, informal settlements contribute to a fragmented urban morphology, with irregular land use patterns and inadequate infrastructure. Niu et al. (2021, p. 60) discuss how the proliferation of informal areas affects overall urban functionality and coherence.

3.6.2. The Lagos Lagoon: Spatial Configuration and Patterns of Growth

The informal settlement of Makoko in Lagos Lagoon showcases an extraordinary adaptation to its geographic and socio-economic environment. Makoko has grown in response to both limited land availability and the exclusion of low-income residents from Lagos's formal housing markets. Built primarily on stilts, the settlement floats above the water, expanding horizontally over time as population growth outpaces available housing. This stilted architecture represents a specific spatial solution that combines resilience with ingenuity, utilizing water as a foundation for structural stability and local livelihood (Agamah, 2018, p. 52). The spatial arrangement of Makoko follows a sporadic, radial growth pattern centered around communal spaces, which serve as vital nodes within the community. Housing units are arranged in dense clusters, with narrow walkways and bridges providing connectivity within the settlement. The resulting morphology resembles a maze, with homes, markets, and gathering spaces forming a compact

and interconnected spatial network. This informal pattern is a consequence of both socioeconomic pressures—such as the need for affordable housing—and cultural practices that prioritize communal living and local economic activity (Aina, 1989, p. 394). The close quarters and multi-use spaces blur the boundaries between public and private realms, creating a unique spatial fabric that fosters both social cohesion and economic interdependence. However, this compact arrangement also leads to overcrowding and intensifies pressure on essential services like sanitation and waste disposal. Without access to formal infrastructure, the settlement relies on improvised solutions that often fall short of meeting the population's needs. For instance, waste and sewage disposal are typically unregulated, leading to pollution within the lagoon. As a result, Makoko's spatial configuration, while adaptive, also contributes to environmental degradation and public health risks (Agamah, 2018, p. 54).

3.6.3. The Lagos Lagoon: Influence on the Larger Urban Fabric of Lagos

Though Makoko may seem isolated within the lagoon, its influence extends significantly into the larger urban fabric of Lagos. Functionally, Makoko plays a critical role in Lagos's informal economy, supplying the city with seafood through its fishing and trade activities. The settlement's fish markets are integral to local food supply chains, illustrating the economic interdependencies between Makoko and the formal sectors of Lagos. However, the physical isolation of Makoko and similar lagoon settlements limits their economic potential. Without formalized infrastructure or transportation networks, the community's contributions are confined to local markets, and residents struggle to expand their businesses beyond the settlement's boundaries (Agamah, 2018, p. 60). This disconnect from Lagos's transportation network and urban infrastructure emphasizes the socio-spatial exclusion of Makoko from the broader city.

Accessibility within the settlement is restricted to foot traffic and small boats, limiting residents' mobility and reinforcing their reliance on local resources. Furthermore, the lack of integration with the city's road systems impedes access to essential services, like healthcare and education, and limits residents' ability to interact with the city's formal economy. This isolation mirrors broader patterns of exclusion, where low-income communities are pushed to peripheral areas that lack basic infrastructure and connectivity (Aina, 1989, p. 396). The morphology of Makoko also affects Lagos's urban sprawl, as housing shortages within the city center drive low-income populations to settle in

informal communities along the periphery. As Lagos's formal housing market fails to accommodate the needs of these groups, the growth of Makoko and similar settlements exacerbates the spatial fragmentation of Lagos, with informal and formal areas expanding side-by-side but remaining disconnected. This pattern of spatial fragmentation creates a dualistic urban fabric, where affluent neighborhoods and high-rise buildings in the city center contrast sharply with the dense, organic layout of informal settlements on the outskirts (Agamah, 2018, p. 62). Consequently, Makoko's growth underscores the challenges of urban inequality in Lagos, where marginalized communities exist in close proximity to economic opportunity but remain physically and functionally excluded.

3.6.4. The Lagos Lagoon: Environmental Impact and Sustainability Challenges

Makoko's stilt-housing and water-based morphology pose unique environmental challenges that extend beyond the settlement's boundaries. The proximity of homes to the water, coupled with inadequate waste management, has led to substantial pollution in the lagoon. Human waste, garbage, and other pollutants accumulate in the water, threatening both the lagoon's ecosystem and the health of Makoko's residents. This contamination affects not only Makoko but also surrounding areas, as polluted water flows through the city's waterways, impacting urban sanitation and increasing public health risks (Aina, 1989, p. 395). This environmental impact highlights the urgent need for sustainable infrastructure that aligns with Makoko's unique morphology. Traditional waste management systems may not be feasible in such a densely packed, water-based settlement, but alternative solutions, such as floating waste collection systems or decentralized sanitation facilities, could mitigate the environmental strain. Additionally, promoting eco-friendly construction materials, such as treated wood, would reduce the ecological footprint of new buildings.

Implementing these measures requires a nuanced understanding of Makoko's spatial layout and environmental constraints, as well as collaboration with residents to ensure that interventions respect the community's way of life (Agamah, 2018, p. 64). The settlement's environmental sustainability is further complicated by the city's climate risks. Lagos is highly vulnerable to flooding, a threat that has already impacted low-lying areas like Makoko. As sea levels rise and extreme weather events become more frequent, the resilience of Makoko's stilted architecture will be tested. Planning for environmental sustainability in Lagos's

informal settlements, therefore, requires a long-term strategy that considers climate adaptation. Floating infrastructure, resilient building designs, and localized flood management could enhance Makoko's capacity to withstand environmental pressures, offering a model for adapting informal settlements to the realities of climate change.

3.6.5. The Lagos Lagoon: Prospects for Future Integration and Morphological Evolution

Integrating Makoko into Lagos's broader urban fabric involves challenges but also presents an opportunity to rethink urban inclusivity and resilience. Given the dense, adaptable layout of stilted structures, an "in situ" development approach—upgrading infrastructure without displacing residents—could improve living standards while preserving the community's unique morphology. For example, building floating walkways and piers could enhance internal connectivity and enable residents to access nearby neighborhoods. Expanding boat-based transportation options could also facilitate economic integration, allowing Makoko's residents to connect with Lagos's markets more efficiently (Agamah, 2018, p. 65). Adopting such an approach aligns with international examples, like Medellín's participatory urban upgrading initiatives, which have successfully integrated informal settlements into the formal city framework.

For Makoko, involving residents in planning and decision-making could enhance the sustainability of interventions, as community members bring invaluable knowledge of local needs and constraints. Such collaboration could foster a sense of ownership over improvements and ensure that development aligns with residents' priorities and cultural practices (Aina, 1989, p. 404). Additionally, Makoko's morphology offers a valuable model for flood-prone urban design. By studying the stilted structures and adaptive layout of Makoko, Lagos could develop new architectural solutions for flood resilience, such as modular, elevated housing that withstands seasonal flooding. Integrating such elements into the city's flood management strategy could protect vulnerable areas while addressing housing shortages, enhancing the city's adaptability to climate-related challenges.

3.6.6. The Lagos Lagoon: Influence on Broader Urban Planning and Cityscape

The morphology of the Lagos Lagoon settlements presents a case for flexible, inclusive urban planning that values adaptive, community-based designs. Rather than viewing Makoko as an informal

settlement in need of eradication, recognizing it as a legitimate urban space could inspire policies that integrate similar marginalized areas. Zoning reforms that support mixed-use, water-adapted structures could help incorporate these communities into Lagos's urban landscape without compromising their distinct spatial character (Agamah, 2018, p. 68). Future urban planning in Lagos could also experiment with green and resilient infrastructure tailored to peripheral zones. Incorporating features from Makoko's water-based design could transform flood-prone neighborhoods into resilient urban spaces that accommodate diverse housing needs. This adaptive approach could serve as a foundation for inclusive urban growth, where informal settlements are embraced as part of the city's identity and economic ecosystem. If effectively integrated, Makoko could become a model for sustainable, inclusive development, promoting a city-wide shift toward resilience and inclusivity. By recognizing Makoko's contributions to Lagos's economic and cultural landscape, urban planners can develop a more cohesive, equitable urban fabric that harmonizes formal and informal spaces, ultimately strengthening Lagos's resilience in the face of urban and environmental pressures.

3.6.7. The Yangtze River (Nanjing)

In Nanjing, informal settlements are more integrated into the urban structure, but they still reflect socio-economic disparities and challenges. (Liu and Shu 2020, 106) describe how informal areas influence the overall morphology, with implications for urban planning and development.

3.6.8. The Yangtze River (Nanjing)

The informal settlements near the Yangtze River in Nanjing offer a unique case of how historical preservation pressures and rapid urbanization converge, shaping a distinct morphology that contrasts sharply with the high-rise cityscape of Nanjing's formal zones. These settlements, often situated on the periphery of historically significant areas, adopt a dense, low-rise morphology influenced by traditional Chinese architectural forms. Unlike Lagos, where the stilted structures respond directly to water-based environments, the Nanjing settlements along the Yangtze are influenced by land-based constraints—especially those relating to heritage preservation, economic pressures, and limited space. The compact, horizontal layout is a consequence of regulations limiting vertical expansion to maintain the visual and cultural integrity of heritage sites nearby (Niu et al., 2022, p. 15). The spatial structure of these settlements is compact and labyrinthine, with narrow alleys, shared courtyards, and tightly packed homes that maximize the limited land. This arrangement

fosters community interaction and economic interdependence, as small-scale businesses and communal areas blend with residential spaces, supporting social cohesion. The morphology, while functional within the spatial restrictions, creates a distinct separation from Nanjing's modern, vertical architecture. The settlements lack the tall buildings and wide roads found in the formal city center, resulting in a horizontal spread that extends the settlement boundaries into peri-urban and rural areas (Niu et al., 2022, p. 17). This horizontal growth is an adaptation to the legal constraints against building upwards, leading to a different form of urban sprawl that absorbs rural lands on the city's periphery.

The spatial organization within these settlements reflects a blend of traditional housing layouts, such as siheyuan-style courtyards, and the economic needs of low-income residents. Each household often occupies a multi-purpose space where living, trading, and socializing occur within a single shared courtyard or small street cluster. This structure maintains cultural practices of communal living while adapting to the limited resources and housing options available to residents who are typically recent migrants or low-income workers excluded from the formal housing market (Niu et al., 2022, p. 18).

3.6.9. The Yangtze River (Nanjing): Influence on the Larger Urban Fabric of Nanjing

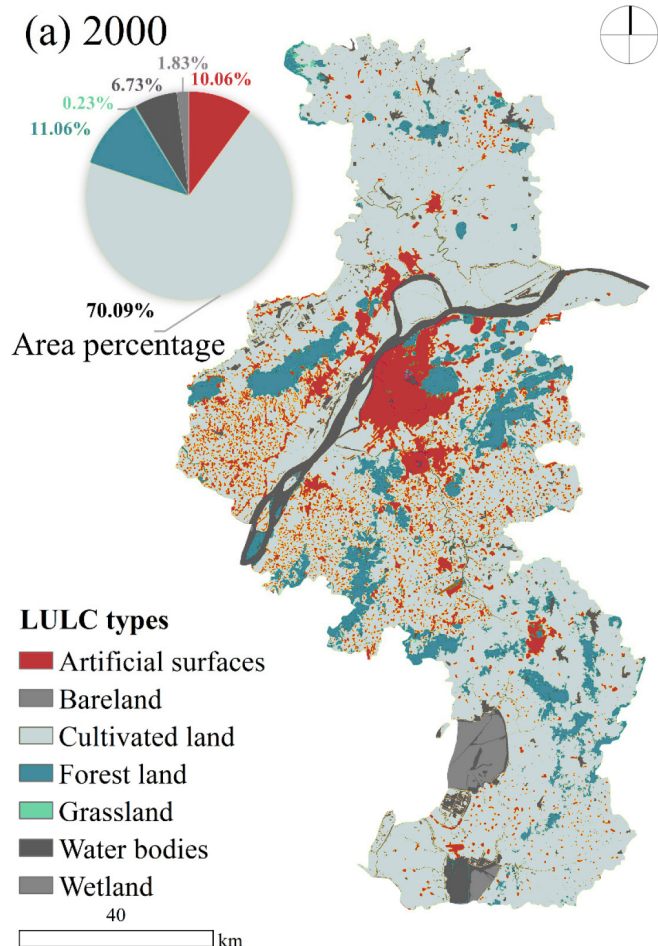
The informal settlements along the Yangtze serve as transitional spaces between urban and rural areas, effectively bridging the gap between Nanjing's modern cityscape and its surrounding countryside. However, these settlements are spatially isolated due to both geographic factors and the restrictive heritage regulations that prevent their formal incorporation into the city's infrastructure network. This isolation has broader implications for Nanjing's urban morphology, as these informal areas are cut off from main transportation routes and urban amenities, limiting residents' mobility and access to the formal economy. As a result, they exist on the periphery of Nanjing's economic and social framework, reinforcing a pattern of marginalization that hinders socio-economic mobility and perpetuates inequality (Sepe, 2013, p. 607).

Despite their physical disconnection from the city center, these settlements fulfill essential functions within Nanjing's economic ecosystem. They provide low-cost housing for rural migrants and low-income workers, supporting labor demands in the city's industrial and service sectors. As such, the settlements serve as entry points for newcomers to the city, providing a foothold for individuals seeking

economic opportunity. This role is significant in maintaining labor mobility, which is essential for Nanjing's economy, yet the settlements' informal status and spatial disconnection limit residents' capacity to contribute to the broader urban economy.

This disconnect reinforces the economic dualism in Nanjing, where informal spaces are crucial to the city's functioning but remain marginalized from formal city systems (Niu et al., 2022, p. 20). Additionally, the restrictions on vertical development and the lack of integration into Nanjing's formal urban planning contribute to urban sprawl. As these settlements cannot expand upward, they push outward into neighboring rural areas, accelerating the city's spatial expansion. This type of horizontal sprawl complicates Nanjing's urban planning efforts, as the need to accommodate low-income housing collides with heritage conservation goals, leaving informal settlements in a state of limbo. As such, Nanjing's urban morphology is fragmented, with low-rise informal settlements juxtaposed against high-rise developments, reflecting a city divided by economic and spatial inequalities.

3.6.10. The Yangtze River (Nanjing): Environmental Impact and Heritage Conservation Challenges

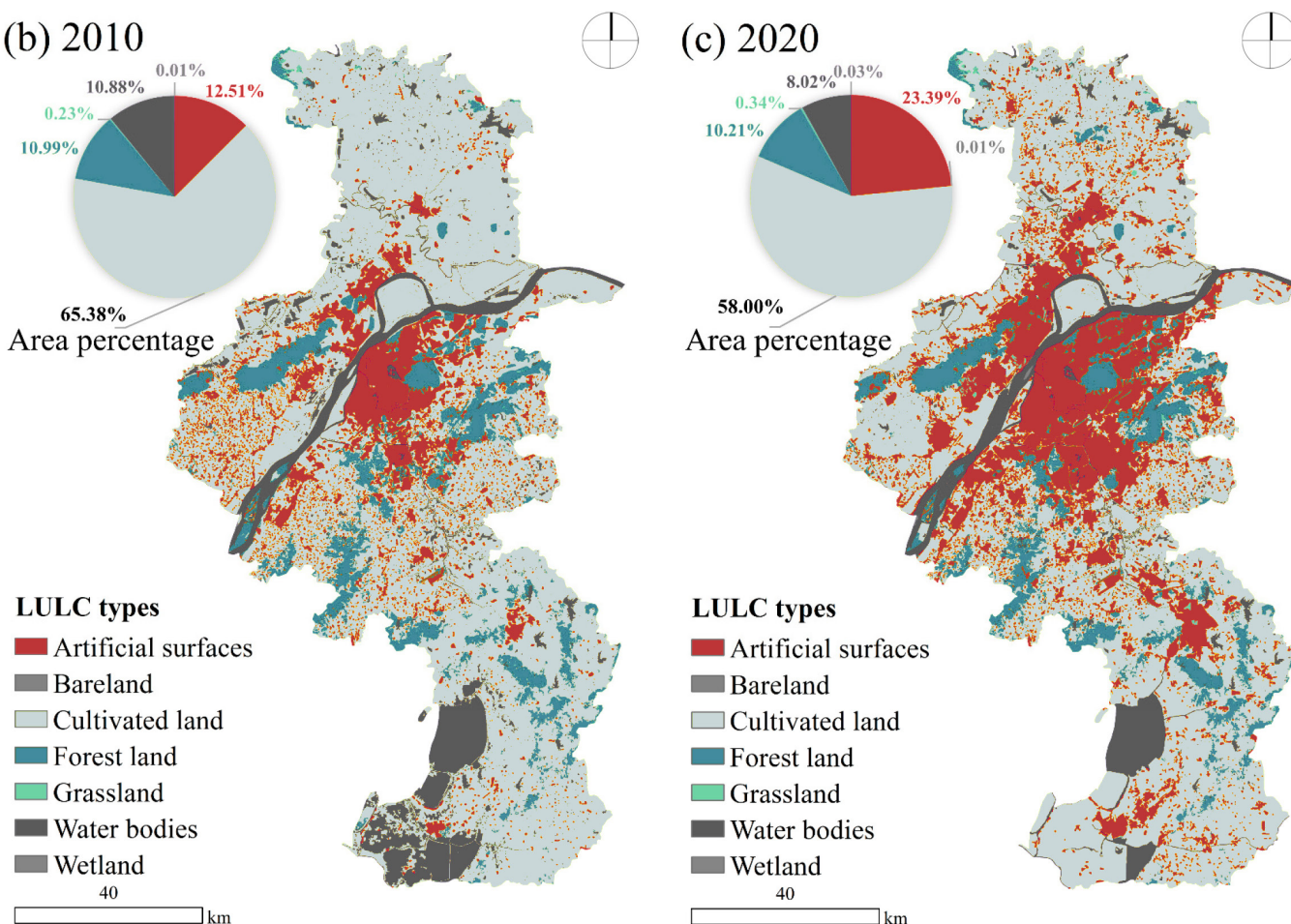


The environmental implications of Nanjing's informal settlements are complex, especially given their proximity to ecologically sensitive areas along the Yangtze River. The dense clustering of housing units, combined with inadequate waste management, leads to environmental degradation that affects both the settlements and the surrounding historical sites. Waste disposal systems are minimal, and as a result, trash and untreated sewage accumulate in local waterways and soil, impacting both water quality and soil health. These environmental issues not only threaten the health of the settlement's residents but also degrade the natural and cultural resources of the Yangtze region (Sepe, 2013, p. 610). Heritage preservation efforts further complicate the environmental landscape, as regulations prioritize aesthetic and structural conservation of historical sites but often overlook the socio-environmental needs of nearby informal communities. The focus on maintaining historical authenticity in the area means that traditional waste management systems, such as those used in urban centers, are not always feasible. This oversight has led to an environmental double standard, where resources are allocated to preserving the visual and architectural aspects

of heritage sites, while the ecological and human health of nearby settlements receive less attention (Niu et al., 2022, p. 23). Consequently, both cultural preservation and environmental sustainability are undermined by a lack of coordinated urban management that addresses the needs of all residents, not just tourists and affluent communities.

In terms of sustainability, integrating eco-friendly infrastructure within these informal settlements could enhance the area's environmental resilience while preserving the historical character of the surroundings. For example, adopting decentralized waste management systems, such as small-scale composting or greywater recycling facilities, could alleviate some of the environmental pressures without compromising heritage values. Moreover, introducing green spaces within the settlement layout could improve residents' quality of life and reduce pollution levels, contributing to both environmental and social sustainability. However, achieving these improvements requires careful planning and cross-sector collaboration to balance heritage conservation with the practical needs of informal communities.

Fig. 70: Dynamic changes in the LULC distribution pattern and its area percentage in Nanjing in 2000, 2010 & 2020. Jin, H., Xu, X., Li, W., & Zhao, S. (2024). *Interactions and conflicts between urbanization and greenness: A case study from Nanjing, China. Sustainable Cities and Society*, 102, 105638. <https://doi.org/10.1016/j.scs.2024.105638>



adjustments have allowed for sustainable growth that respects cultural preservation (Niu et al., 2022, p. 25). Another key consideration for future integration is the implementation of participatory planning frameworks that involve community input in decision-making processes. Community engagement could ensure that development projects align with the needs of residents, preserving social networks and economic practices that are vital to the settlements' identity. This participatory approach would foster a sense of ownership among residents, enhancing the sustainability of interventions and reducing resistance to change.

3.6.11. The Yangtze River (Nanjing): Future Prospects for Morphological Integration and Urban Planning

The potential for integrating the Yangtze River settlements into Nanjing's broader urban framework presents both challenges and opportunities for future urban planning. Given the unique constraints imposed by heritage preservation, one possible approach is to develop controlled transition zones around the historical sites. These zones would allow for low-rise, high-density housing that aligns with the area's architectural character while gradually introducing essential infrastructure. Such a strategy could preserve the settlements' distinct spatial morphology while improving connectivity and access to urban services (Sepe, 2013, p. 612). Controlled densification could enable vertical expansion within defined spatial limits, providing more housing without encroaching on the historical integrity of the area. Additionally, establishing pedestrian pathways and localized public transit options within these transition zones could improve mobility for residents, integrating them more effectively into the city's transportation network. This approach has been successful in other cities with heritage constraints, such as Kyoto, where zoning adjustments have allowed for sustainable growth that respects cultural preservation (Niu et al., 2022, p. 25). Another key consideration for future integration is the implementation of participatory planning frameworks that involve community input in decision-making processes. Community

engagement could ensure that development projects align with the needs of residents, preserving social networks and economic practices that are vital to the settlements' identity. This participatory approach would foster a sense of ownership among residents, enhancing the sustainability of interventions and reducing resistance to change.

3.6.12. The Yangtze River (Nanjing): Influence on Broader Urban Planning and Cityscape in Nanjing

The morphology of Nanjing's informal settlements underscores the need for flexible urban planning that accommodates both growth and heritage preservation. Rather than treating these settlements as temporary spaces, recognizing their role within the city's social and economic fabric could inform policies that balance heritage conservation with inclusive urban development. For instance, integrating these settlements into Nanjing's zoning plans as designated low-rise, mixed-use areas could maintain their spatial character while formalizing infrastructure support. Future urban planning in Nanjing could also draw inspiration from heritage integration models in cities like Venice, where informal settlements have been transformed into sustainable tourism and cultural zones. In these models, tourism revenue is reinvested in infrastructure improvements that benefit local communities, creating a mutually beneficial relationship between residents and visitors. By positioning the Yangtze River settlements as unique cultural and economic assets, Nanjing could leverage their proximity to heritage sites for sustainable tourism that supports both conservation and community development.

Adopting this inclusive, adaptive planning model would also help reduce Nanjing's urban fragmentation, bridging the gap between high-rise developments and traditional low-rise settlements. This would create a more cohesive urban landscape that accommodates diverse housing and economic needs without compromising the city's cultural heritage. By embracing the unique morphology of the Yangtze River settlements, Nanjing has the potential to redefine its approach to informal spaces, creating an integrated urban form that respects both tradition and modernity.

04

Intersections And Disparities:

*Comparative Analysis of Waterfront
Development Strategies*

4.1 Cultural Parallels

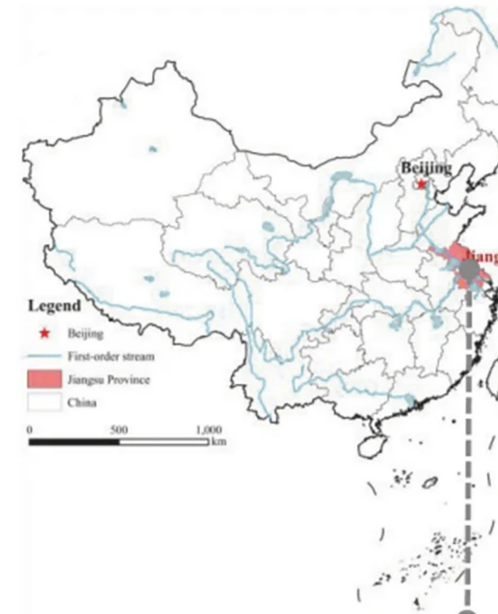
Waterfront settlements hold cultural significance as they exist as a space where human activity and day-to-day livelihood converge with natural environments, often serving as cradles of tradition and economic hubs. The Lagos Lagoon in Nigeria and the Yangtze River waterfront in Nanjing, China, represent two distinct cultural contexts. Despite their geographical and socio-economic differences, these settlements share cultural parallels in their reliance on waterbodies, communal living, and architectural styles adapted to environmental constraints. This section explores the cultural commonalities and divergences between these settlements, focusing on their socio-spatial practices, traditional architectural forms, and the influence of urbanization on their morphology.

4.1.1. Indigenous Cultural Practices and Adaptations

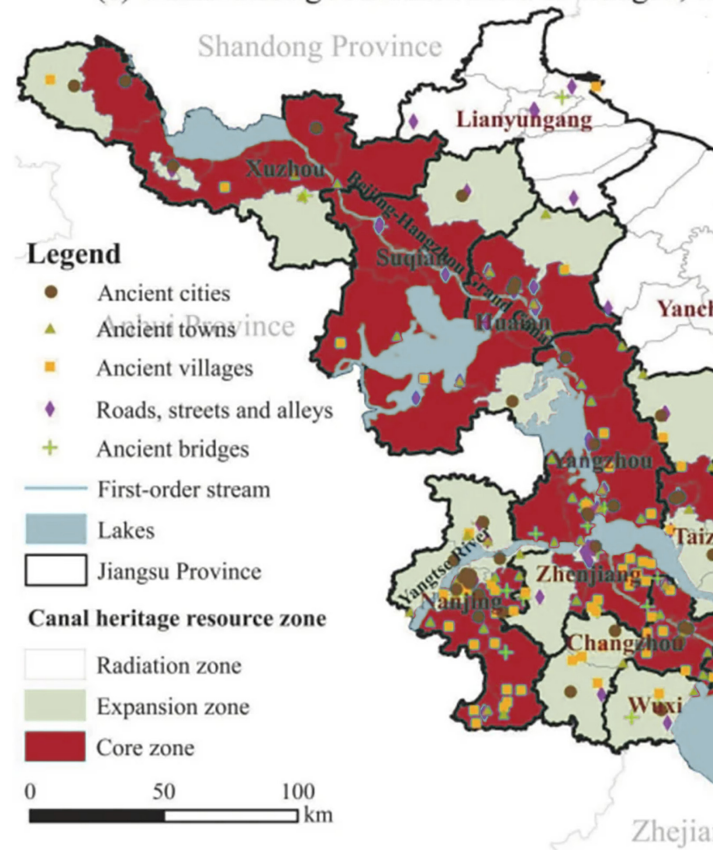
Both Makoko in Lagos and the Yangtze waterfront communities in Nanjing exhibit a deep-rooted connection to their natural environments. The stilted houses and water-based livelihoods reflect a long history of adaptation to the Lagos Lagoon. This indigenous settlement has evolved from a fishing village to a densely populated urban enclave, retaining its communal and economic reliance on the water. Similarly, the Yangtze River settlements have historically relied on fishing, trade, and agriculture. The Jiangnan region, which includes Nanjing, is renowned for its water towns, characterized by a harmonious relationship between architecture and waterways (Wang, 2016, p. 518). In both contexts, the spatial arrangement of homes, communal spaces, and marketplaces reflects socio-cultural priorities. In Makoko, narrow walkways and clustered stilted homes foster close-knit communities, emphasizing collective living and shared economic endeavors (Alademomi, 2017, p. 59). On the other hand, the courtyard-style homes along the Yangtze maintain traditional Chinese spatial hierarchies, separating private and public realms while encouraging familial cohesion (Niu, 2022, p. 15).

4.1.2. Divergence in Socio-Spatial Practices

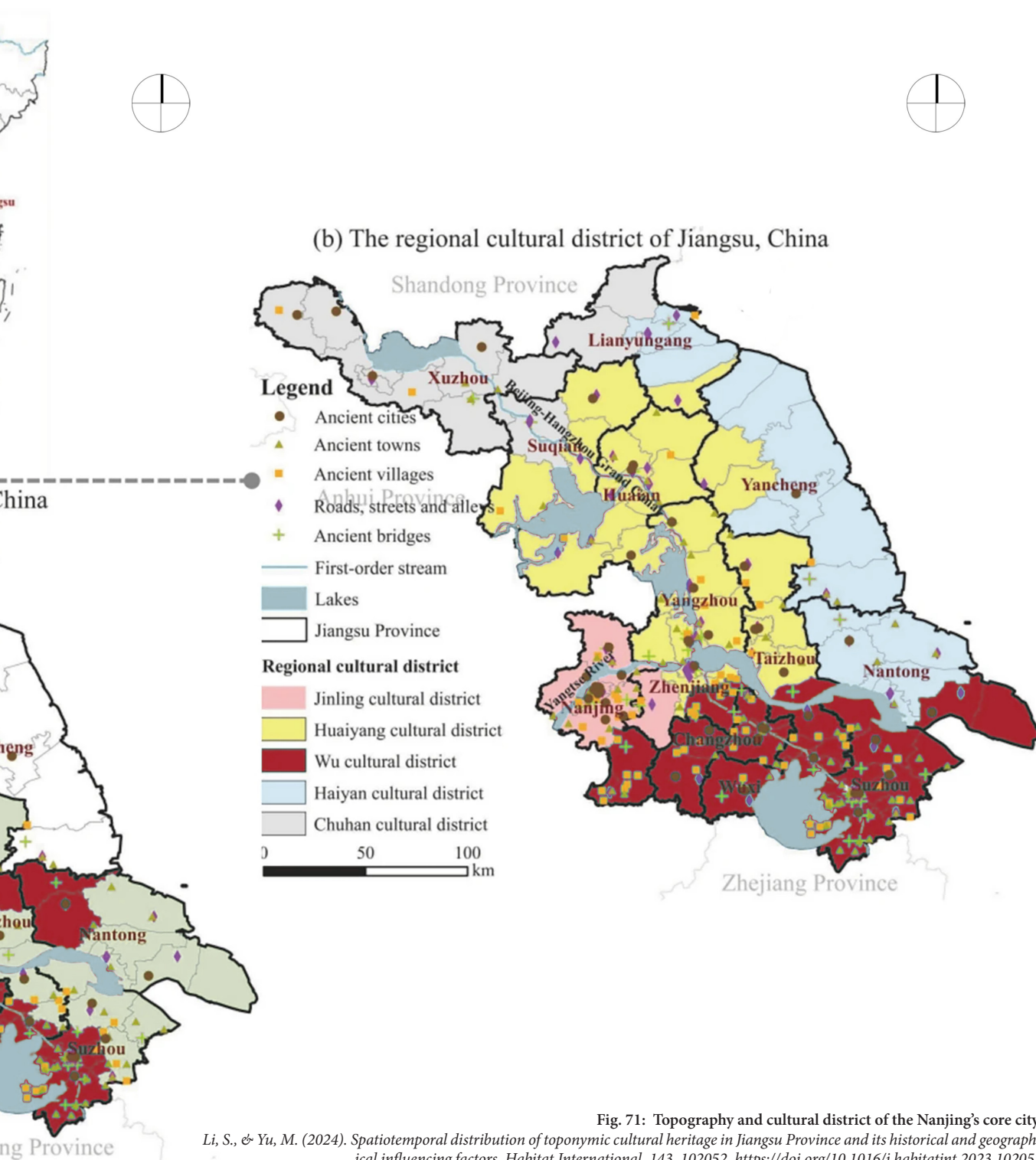
Despite these commonalities, significant cultural divergences arise from historical and socio-political influences. In Lagos, Makoko's identity has been shaped by colonial urban policies that marginalized indigenous communities. Informal settlements like Makoko are often viewed as obstacles to Lagos's modernization agenda, resulting in their cultural and spatial exclusion from formal city planning (Aina, 1989, p. 396).



(a) Canal heritage resource zone of Jiangsu, C



In Nanjing, the Yangtze waterfront communities, particularly those in heritage zones, benefit from state-led conservation efforts that valorize their cultural significance. Preservation policies ensure the maintenance of traditional architecture, blending cultural heritage with tourism-driven urban development (Wang, 2016, p. 522).



4.1.3. Waterfronts as Spaces for Community and Tradition

Waterfronts in both Lagos and Nanjing serve as critical spaces for community rituals, economic activities, and daily life. In Makoko, the lagoon is not just a source of livelihood but also a stage for communal and spiritual practices. Traditional

ceremonies related to fishing seasons and water spirits are integral to the community's cultural fabric. These rituals reinforce Makoko's identity as a water-based society, connecting its residents to their environment and ancestors (Agamah, 2018, p. 54).

Similarly, Nanjing's waterfronts have historically been sites of cultural gatherings, from local festivals to public markets. The integration of natural elements into urban life, such as the use of waterways for transportation and irrigation, underscores the spiritual and practical significance of the river. In the Jiangnan water towns, temples and ancestral halls often overlook the rivers, symbolizing the connection between the community, its ancestors, and the natural world (Sepe, 2013, p. 606).

4.1.4. The Role of Spatial Layout in Cultural Practices

The spatial organization of these settlements also facilitates specific cultural practices. In Makoko, the clustering of homes around central markets and meeting points supports collective decision-making and economic collaboration. These communal spaces serve as venues for conflict resolution, celebrations, and informal education, reinforcing social cohesion (Alademomi, 2017, p. 60). Conversely, in the Yangtze waterfront towns, the hierarchical spatial layout—dividing public courtyards from private living spaces—ensures both community interaction and familial privacy. This dual structure allows for collective rituals while maintaining personal boundaries, reflecting Confucian values of order and respect within society (Niu, 2022, p. 18). The spatial organization of these settlements

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4.1.5. Impacts of Rapid Urbanization on Cultural Expression

Modernization poses significant threats to the cultural heritage of both waterfront communities. In Lagos, urban development pressures have led to forced evictions and the demolition of parts of Makoko. These actions undermine the community's cultural continuity, as residents are displaced from their historical habitat and traditional livelihoods are disrupted (Omoniyi, 2017, p. 5). The government's framing of Makoko as a "slum" in need of redevelopment neglects its cultural value and the adaptive ingenuity of its spatial organization. In contrast, the Yangtze waterfront towns face a different challenge: cultural commodification. As these areas become increasingly popular for tourism, traditional practices risk being altered or staged for tourist consumption. This phenomenon, often termed "pseudo-cultural tourism," distorts authentic



Fig. 72: Lagos Master Plan for Lagoon Environs, focusing on infrastructure and little to no solutions for displaced locals. Emordi, U. (2024, November 19). *Ibeju Lekki: All you need to know - The New Lagos*. Ownahome.ng. <https://ownahome.ng/blog/12-reasons-why-you-should-invest-in-ibeju-lekki-the-new-lagos>

cultural expressions, turning living traditions into performances for economic gain (Wang, 2016, p. 525). The balance between heritage preservation and modernization remains a delicate issue, as authorities aim to protect historical architecture while promoting economic development.

4.1.5. Strategies for Cultural Preservation

Efforts to preserve cultural heritage in both contexts reveal differing approaches and levels of success. In Nanjing, government-led initiatives, supported by international frameworks like UNESCO, have prioritized the conservation of traditional architecture and the promotion of sustainable tourism. These policies ensure that the Yangtze waterfront towns retain their historical character while adapting to modern needs (Niu, 2022, p. 23). By contrast, in Lagos, preservation efforts are largely community-driven, with limited state support. Organizations like the Justice and Empowerment Initiative (JEI) advocate for the recognition of Makoko's cultural and spatial significance, pushing for inclusive urban policies that integrate rather than displace informal settlements (Omoniyi, 2017, p. 6).

4.2 Identity and Architecture

As seen, waterfront settlements, with their unique environmental and socio-economic conditions, often develop architectural typologies that reflect their communities' identities and adaptive strategies. In both Lagos Lagoon and the Yangtze River region in Nanjing, architecture plays a dual role: it embodies the historical and cultural values of the settlements while adapting to modern urban pressures. This section explores how the architectural forms in these waterfront areas reflect their socio-cultural identities, interact with their environments, and respond to urban development challenges.

4.2.1. Adaptive Architectural Forms

In Lagos Lagoon, the stilted architecture of Makoko has become a defining symbol of the community's identity. These structures, built from locally sourced wood and corrugated metal, are designed to withstand the lagoon's tidal fluctuations. The use of stilts elevates homes above water, mitigating flood risks and maximizing limited space. This architectural typology is not only functional but also deeply tied to the community's way of life, reflecting their resilience and resourcefulness in the face of socio-economic exclusion (Alademomi, 2017, p. 56). The stilted structures serve as homes, shops, and schools, creating a multi-functional urban fabric that blends residential, commercial, and social functions.

Similarly, the Yangtze River waterfront towns showcase architectural forms deeply rooted in Chinese cultural traditions. The siheyuan, or courtyard house, is a prominent feature, reflecting Confucian values of family hierarchy and community. These low-rise, inward-facing structures provide privacy while fostering social interaction within shared courtyards. The use of wood and stone in construction not only ensures durability but also harmonizes with the natural environment. The architectural layout of these towns, with narrow lanes and water channels, emphasizes connectivity and communal living while maintaining a distinct historical character (Wang et al., 2016, p. 518).

4.2.2. The Role of Materials and Techniques in Defining Identity

Both contexts utilize locally available materials, which contribute to the settlements' unique architectural identities. In the Lagos context, the reliance on wood and recycled metal reflects the community's economic constraints and adaptive ingenuity. The lightweight, flexible materials allow for quick construction and modifications, accommodating the dynamic needs of a growing population. By contrast, the Yangtze River towns use traditional materials such as brick, stone, and timber, and the emphasis on traditional craftsmanship in Nanjing reinforces the historical and cultural identity of these settlements, preserving architectural techniques passed down through generations (Niu, 2022, p. 18). The architectural evolution of both waterfront settlements reflects the tension between traditional forms and embracing modern innovations. Around the Lagos Lagoon, There are proposals for redevelopment projects, such as the Makoko Floating School, designed by Nigerian architect Kunlé Adeyemi. This structure, built on a floating platform, combines traditional stilt architecture with modern engineering, offering a sustainable solution to flooding and space constraints. The project highlights the potential for architectural innovation to address socio-environmental challenges while preserving the community's identity (Alademomi, 2017, p. 60). In contrast, Nanjing's waterfront towns face stricter regulations aimed at preserving their historical character. Government policies prioritize the conservation of traditional architectural forms over modern functionality. While this approach protects the visual and cultural integrity of the area, it limits the introduction of modern infrastructure, such as reinforced materials or climate-resilient designs. However, some adaptive innovations have emerged, such as integrating modern utilities within traditional building envelopes, ensuring that heritage preservation coexists with contemporary needs (Wang et al., 2016, p. 522).

4.2.3. Challenges of Architectural Integration

In both contexts, integrating traditional architecture into the broader urban framework presents significant challenges. In Makoko, the informal nature of stilted structures complicates their incorporation into Lagos's formal urban planning. The settlement's architecture is often perceived as temporary or substandard, leading to tensions between the community and government agencies. Efforts to formalize or redevelop the area risk erasing its unique architectural identity, highlighting the need for inclusive policies that recognize and support indigenous building practices (Omoniyi, 2017, p. 6). Similarly, in Nanjing, the architectural preservation efforts in the Yangtze River towns create spatial and functional constraints. The emphasis on maintaining historical aesthetics limits the scope for vertical expansion or large-scale redevelopment. This constraint poses challenges for accommodating population growth and improving infrastructure, underscoring the need for innovative approaches that balance preservation with modernization. For example, projects that retrofit traditional buildings with sustainable materials and energy-efficient systems could enhance their resilience without compromising their historical significance (Sepe, 2013, p. 608).

4.2.4. Architecture as a Marker of Socio-Economic Stratification

The architectural forms in both Lagos and Nanjing's waterfront settlements reveal underlying socio-economic disparities. The improvisation of stilted structures in Makoko highlight the community's exclusion from formal housing markets. The visible contrast between the informal architecture and the high-rise developments of Lagos's affluent neighborhoods reflect the city's spatial and economic inequalities, and the broader socio-economic divide within Lagos by which marginalized communities adapt to their exclusion through innovative but precarious housing solutions (Alademomi, 2017, p. 62).

In the Yangtze River towns, the preserved traditional architecture serves as a visual symbol of cultural pride but also marks a socio-economic boundary. While these settlements are celebrated for their heritage value, they often house low-income residents who cannot afford modern urban housing. The preservation policies that maintain the historical character of these towns sometimes exacerbate socio-economic disparities by limiting access to modern amenities and infrastructure. This dynamic creates a layered urban identity, where architectural preservation coexists with socio-

economic marginalization (Wang et al., 2016, p. 520).

4.2.5. The Role of Architecture in Urban Integration

Despite these disparities, architecture in both contexts holds potential for fostering urban integration. In Makoko, initiatives like the Makoko Floating School demonstrate how innovative architectural interventions can bridge the gap between informal and formal urban systems. By introducing sustainable, scalable designs that respect the community's spatial and cultural context, such projects can enhance Makoko's integration into Lagos's urban framework. Similarly, in Nanjing, adaptive reuse projects that modernize traditional buildings without altering their external appearance could improve living conditions while preserving the towns' historical identity (Niu, 2022, p. 23).

4.2.6. Responding to Climate Challenges

Both waterfront settlements face significant environmental challenges, including flooding and pollution. In response, their architectural forms have evolved to enhance resilience. Makoko's stilted structures, elevated above water, provide a natural defense against flooding, while the use of lightweight materials allows for quick reconstruction in the event of damage. This adaptive architecture reflects the community's deep understanding of their environment, offering lessons for other flood-prone areas in Lagos (Agamah, 2018, p. 63). In the Yangtze River towns, traditional architectural elements such as raised foundations and sloped roofs mitigate flood risks and facilitate water drainage. However, these historical solutions are increasingly inadequate in the face of intensified climate challenges. Modern interventions, such as flood-resistant materials and improved drainage systems, are necessary to enhance the resilience of these settlements. Integrating such innovations within the traditional architectural framework could help safeguard both the built and natural environments (Sepe, 2013, p. 610). Sustainability is a critical consideration for the future of waterfront architecture. In both contexts, sustainable architectural practices can address environmental risks while supporting cultural preservation. For instance, the use of renewable materials and energy-efficient designs could reduce the ecological footprint of new constructions. Additionally, participatory design processes that involve community members in architectural decision-making can ensure that sustainability initiatives align with local needs and values (Wang et al., 2016, p. 525).

4.3 Urban Development Patterns

Urban development patterns are shaped by a complex interplay of socio-economic, political, and environmental factors. In waterfront settlements like those in Lagos Lagoon and the Yangtze River region, development is further influenced by the unique challenges and opportunities presented by their geographical contexts. This section compares the urban development trajectories of these two waterfront areas, examining how historical contexts, socio-economic dynamics, and urban policies have shaped their growth patterns. It also explores how these settlements impact and interact with the broader urban systems of Lagos and Nanjing.

4.3.1. Organic Growth in Response to Socioeconomic Marginalization

The urban development pattern of Lagos Lagoon, particularly in Makoko, reflects a response to historical and socio-economic exclusion. Initially established as a fishing village, Makoko has grown into a dense, informal settlement due to rapid urbanization and a severe lack of affordable housing in Lagos. Unlike the grid-based expansion of Lagos's formal urban areas, Makoko's development follows an organic pattern dictated by immediate functional needs rather than planned growth. Structures are built haphazardly, expanding horizontally over the lagoon, with stilted homes and wooden walkways forming a spatially fluid yet dense urban fabric (Alademomi, 2017, p. 56). This unregulated expansion highlights the settlement's adaptive strategies in the face of exclusionary urban policies. While Lagos's formal city core grows vertically with high-rise developments, Makoko exemplifies a horizontal sprawl over water, driven by the need to accommodate a growing low-income population. This pattern of development not only reflects socio-economic disparities but also reinforces spatial segregation within Lagos (Aina, 1989, p. 394).

4.3.2. Controlled Growth and Heritage Preservation

In contrast, the Yangtze River waterfront settlements near Nanjing exhibit a more controlled growth pattern influenced by historical preservation policies and urban planning. These settlements, characterized by traditional low-rise, courtyard-style homes, have historically expanded within the constraints of heritage conservation regulations. Unlike Makoko, where growth is largely unplanned, the Yangtze settlements follow a semi-organized development trajectory, with horizontal expansion constrained by both

physical geography and government-imposed preservation boundaries (Wang et al., 2016, p. 518). The focus on maintaining the cultural and architectural integrity of these settlements has led to a slower, more regulated urban growth. However, this controlled expansion also limits opportunities for large-scale modernization or infrastructure improvement. The resulting development pattern is a blend of traditional spatial organization and incremental adaptations to modern urban demands, reflecting the dual pressures of preserving heritage while supporting contemporary urban needs (Niu, 2022, p. 17).

4.3.3. Informal Economies and Urban Expansion

The economic base of both waterfront settlements plays a crucial role in shaping their urban development patterns. In Lagos Lagoon, Makoko's economy is primarily driven by fishing, small-scale trade, and artisanal activities. These informal economic activities influence the spatial layout of the settlement, with markets and community hubs forming around central water routes. The organic clustering of commercial and residential spaces mirrors the interdependence of economic and social life within the community, reinforcing a decentralized but functional urban structure (Agamah, 2018, p. 54). Similarly, the Yangtze waterfront towns rely heavily on local economies, including fishing, agriculture, and tourism. However, the presence of a heritage-driven tourism industry introduces a different dynamic. The spatial organization of these towns accommodates both local economic activities and tourist-oriented developments, such as heritage museums, guided tours, and hospitality services. This dual economic role shapes the settlement's development pattern, creating zones specifically tailored to tourist engagement while maintaining areas for local use (Wang et al., 2016, p. 520).

4.3.4. Population Growth and Spatial Pressures

Population growth in both contexts increases spatial pressures, leading to distinct urban development challenges. In Makoko, the lack of available land forces residents to expand further into the lagoon, intensifying the density and creating precarious living conditions. This unregulated growth leads to overcrowding and puts immense pressure on the settlement's limited infrastructure, such as walkways and sanitation systems. The horizontal sprawl over water also complicates any efforts to formalize or upgrade the area, perpetuating a cycle of informal growth and infrastructure deficits (Alademomi, 2017, p. 62).

In the Yangtze waterfront towns, population pressures are managed through stricter zoning regulations. However, these regulations limit the ability of the settlements to adapt to increasing urban demands, resulting in a form of spatial stagnation. The constrained horizontal growth due to preservation policies prevents large-scale urban expansion, creating a tension between maintaining historical integrity and accommodating modern urban needs. This controlled but rigid growth pattern often leads to socio-economic stratification, as wealthier residents move to better-serviced urban areas, leaving low-income populations concentrated in these heritage zones (Niu, 2022, p. 20).

4.3.5. Interactions with Broader Urban Systems: Integration and Fragmentation

The development patterns of these waterfront settlements highlight varying degrees of integration with their respective urban systems. In Lagos, Makoko remains largely fragmented from the formal city. Its organic growth pattern, coupled with inadequate infrastructure, creates a physical and functional disconnection from Lagos's broader urban network. This fragmentation is further exacerbated by the city's lack of comprehensive policies aimed at integrating informal settlements into the urban fabric, leaving Makoko isolated both spatially and socio-economically (Aina, 1989, p. 396). Conversely, the Yangtze River settlements are better integrated into Nanjing's urban framework, albeit within specific constraints. The heritage-driven development pattern aligns these settlements with Nanjing's tourism and cultural industries, fostering functional links with the city's economy. However, the rigid spatial organization limits the scope for infrastructural integration, particularly in terms of modern transport and utility networks. As a result, while the Yangtze settlements are more connected than Makoko, they still experience a form of partial integration, shaped by their historical and economic roles within Nanjing (Wang et al., 2016, p. 522).

4.3.6. Influence on Urban Policy and Planning

The development trajectories of both settlements have significant implications for urban policy and planning. In Lagos, the unregulated expansion of Makoko highlights the need for inclusive urban policies that address the challenges of informal growth. Policies aimed at upgrading infrastructure and integrating Makoko into Lagos's formal urban framework could promote spatial equity and reduce socio-economic disparities. However, such interventions must respect the settlement's unique morphology and socio-cultural dynamics to avoid further marginalization (Omoniyi, 2017, p. 5).

In Nanjing, the controlled growth of the Yangtze waterfront towns offers lessons in balancing heritage preservation with urban development. The integration of tourism-driven economies within these settlements demonstrates the potential for leveraging cultural assets to support sustainable urban growth. However, to address the spatial and infrastructural limitations, urban policies must adopt a more flexible approach, allowing for selective modernization while preserving the historical character of the settlements. This balance could be achieved through adaptive reuse projects and targeted infrastructure upgrades that enhance connectivity and service delivery without

4.4 Socioeconomic and Environmental Adaptation to Urban Intensification

Urban intensification, characterized by increased population density and development pressures, presents significant challenges for waterfront settlements in Lagos Lagoon and the Yangtze River region in Nanjing. These settlements must adapt socioeconomically and environmentally to cope with the demands of rapid urban growth, limited resources, and climate change. This section explores how these communities navigate the pressures of urban intensification, focusing on their adaptive strategies, the socio-economic dynamics at play, and the environmental challenges they face.

4.4.1. Socioeconomic Responses to Urban Intensification

In both Lagos and Nanjing, waterfront settlements rely heavily on informal economies as a means of survival and adaptation. In Makoko, fishing, small-scale trading, and artisanal work are the backbone of the community's economy. These activities not only provide livelihoods for residents but also contribute significantly to Lagos's informal economic sector. Despite limited access to formal markets, Makoko's residents have developed a resilient economic system that leverages the lagoon's resources. This system adapts quickly to urban pressures, with residents diversifying their income sources as new economic opportunities arise (Alademomi, 2017, p. 59). Similarly, the Yangtze River waterfront towns maintain a robust local economy centered on agriculture, fishing, and tourism. These economic activities are deeply rooted in the community's cultural practices, which attract tourists seeking authentic experiences. The integration of tourism into the local economy has provided an additional revenue stream, helping the towns adapt to the pressures of urbanization. However, the reliance

on tourism also introduces vulnerabilities, as fluctuations in tourist numbers can significantly impact the local economy (Wang et al., 2016, p. 520).

4.4.2. Social Networks and Community-Based Adaptation

Both Makoko and the Yangtze waterfront communities benefit from strong social networks that facilitate collective adaptation to urban intensification. In Makoko, social cohesion plays a critical role in resource sharing and mutual support. Communal decision-making and collective action are common, particularly in areas such as waste management and housing construction. These networks enable residents to pool resources and navigate the socio-economic challenges posed by rapid urbanization (Omoniyi, 2017, p. 6). In the Yangtze River towns, community-based adaptation is evident in the preservation of traditional practices and the maintenance of shared spaces. The communal courtyards and public squares serve as hubs for social interaction and collective problem-solving. These spaces not only strengthen social bonds but also support economic activities, such as local markets and festivals, that foster resilience in the face of urban pressures (Niu, 2022, p. 18).

4.4.3. Inequality and Marginalization

Despite their adaptive strategies, both waterfront communities face significant socio-economic challenges, including inequality and marginalization. In Lagos, Makoko's residents are often excluded from formal urban planning processes, leaving them vulnerable to evictions and displacement. The informal nature of the settlement limits residents' access to essential services such as education, healthcare, and infrastructure, exacerbating socio-economic disparities within the city (Alademomi, 2017, p. 62). In Nanjing, the preservation of the Yangtze waterfront towns as heritage sites often comes at the expense of the local population's socio-economic well-being. While the towns benefit from tourism revenue, the strict preservation regulations limit opportunities for modern development, such as improved housing and infrastructure. This dynamic creates a socio-economic divide, where the benefits of heritage conservation are often skewed towards external stakeholders, such as tourists and government bodies, rather than the local community (Wang et al., 2016, p. 522).

4.4.4. Coping with Climate Risks and Natural Hazards

Both Makoko and the Yangtze waterfront settlements face significant environmental challenges, including flooding, pollution, and habitat degradation. In Makoko, the stilted architecture

provides a degree of resilience against flooding, as homes are elevated above water. However, the settlement remains highly vulnerable to extreme weather events and rising sea levels, which threaten the structural integrity of the stilted homes. The lack of formal drainage and waste management systems exacerbates these risks, as accumulated waste clogs waterways and increases flood severity (Agamah, 2018, p. 63). In the Yangtze River towns, traditional architectural features such as raised foundations and sloped roofs help mitigate flood risks. However, climate change has intensified these challenges, with more frequent and severe flooding events impacting the region. The settlements' proximity to the river, while historically advantageous for agriculture and trade, now poses significant risks to both the built environment and the local ecosystem (Sepe, 2013, p. 608).

4.4.5. Pollution and Environmental Degradation

Pollution is a major concern for both settlements, driven by unregulated waste disposal and industrial runoff. In Makoko, the lack of formal waste management systems leads to the accumulation of garbage in the lagoon, affecting water quality and marine biodiversity. This environmental degradation not only threatens the community's health but also undermines its economic activities, particularly fishing. Efforts to address this issue have included community-led waste collection initiatives, but the scale of the problem requires more comprehensive interventions (Alademomi, 2017, p. 65). The Yangtze River towns face similar challenges, with industrial runoff and agricultural waste contributing to water pollution. The pressure to maintain the region's heritage aesthetic often limits the implementation of modern waste management systems, further exacerbating environmental degradation. This pollution affects both the local population and the broader ecosystem, including downstream urban areas that rely on the Yangtze for water and resources (Wang et al., 2016, p. 520).

4.4.6. Sustainable Adaptation Strategies

To address these environmental challenges, both waterfront settlements are exploring sustainable adaptation strategies. In Makoko, the introduction of floating infrastructure, such as the Makoko Floating School, demonstrates the potential for innovative architectural solutions to improve resilience. These floating structures, designed to withstand rising water levels, offer a model for sustainable development in flood-prone areas. Additionally, community-driven initiatives to implement waste management systems and promote eco-friendly practices highlight the settlement's capacity for self-organized environmental adaptation (Agamah, 2018, p. 65).



Fig. 73: Nanjing Qiqiaoweng Wetland Park.

Nanjing Qiqiaoweng Wetland Park Tickets [2025] - Promos, prices, reviews & opening hours | Trip.com. (n.d.). TRIP.COM. <https://www.trip.com/travel-guide/attraction/nanjing/qiqiaoweng-wetland-park-10535592/>

Fig. 74: Nanjing's classical gardens, highlighting the city's green infrastructure.

GoNanjingChina. (n.d.). Nanjing's weather, seasons, and zoning. Retrieved July 6, 2025, from <https://www.gonanjingchina.com/explore-nanjing-china/nanjing-travel-overviews/nanjings-weather-seasons-and-zoning>



In the Yangtze River towns, efforts to integrate green infrastructure, such as constructed wetlands are gaining traction. These initiatives aim to enhance the settlements' environmental resilience while preserving their historical character. The use of traditional materials in modern applications, such as bamboo for construction and water filtration, exemplifies how heritage and sustainability can coexist. However, scaling these solutions requires supportive policy frameworks and financial investment (Sepe, 2013, p. 610).

4.4.7. The Role of Policy and Governance

The success of adaptation strategies in both contexts depends heavily on policy and governance. In Lagos, the lack of formal recognition for Makoko hinders the implementation of large-scale adaptation measures. Government policies often prioritize urban expansion over the needs of informal settlements, leading to a reactive rather than proactive approach to environmental and socio-economic challenges (Omoniyi, 2017, p. 5). Conversely,

the Yangtze River towns benefit from heritage conservation policies that provide a framework for environmental management. However, these policies often focus more on preserving aesthetics than addressing the underlying socio-environmental vulnerabilities (Wang et al., 2016, p. 525). Community involvement is critical to the success of adaptation strategies in both contexts. In Makoko, participatory planning initiatives have empowered residents to take an active role in shaping their environment. These initiatives, often led by NGOs, focus on building local capacity for sustainable development and resilience. In the Yangtze River towns, community-led conservation efforts ensure that local knowledge and traditions inform environmental and heritage preservation. By involving residents in decision-making processes, these initiatives foster a sense of ownership and accountability, enhancing the long-term sustainability of adaptation measures (Niu, 2022, p. 23).

4.5 Governance Policies and the Future of Waterfront Settlements

Governance plays a pivotal role in determining the development trajectories of waterfront settlements, influencing their integration into urban systems and their resilience to socio-economic and environmental pressures. This section examines governance frameworks in Lagos and Nanjing, analyzing zoning laws, housing policies, environmental regulations, and their impact on waterfront settlements. The discussion integrates international policy

frameworks, including UN-Habitat and the World Bank, to offer a comprehensive understanding of current strategies and future directions.

4.5.1. Governance Frameworks Influence on Waterfront Settlements

Lagos's informal waterfront settlements, particularly Makoko, have historically operated on the margins of governance. Policies in Lagos have often oscillated between neglect and aggressive urban renewal, without offering The Lagos State Urban and Regional Planning Law (2010) underscores this challenge by focusing on zoning for formal urban areas, with limited provisions for informal settlements (Alademomi, 2017, p. 56). The 2012 partial demolition of Makoko exemplifies how governance policies have marginalized waterfront communities. Framed as an urban renewal effort, the demolition displaced hundreds of residents without providing adequate resettlement options. Such actions highlight the absence of inclusive urban policies that recognize the socio-economic contributions of informal settlements. Makoko's stilted architecture and economy, based on fishing and trade, are integral to Lagos's food supply chain, yet governance frameworks often fail to account for these dynamics (Omoniyi, 2017, p. 5).

Nanjing's governance approach to its Yangtze River waterfront towns reflects a different dynamic, where heritage preservation is a key priority. The Nanjing Historic and Cultural City Protection Plan imposes strict regulations to safeguard traditional architectural forms and spatial layouts. These policies promote the conservation of low-rise courtyard homes and narrow lanes,

Fig. 75: Lagos Lagoon water channels, with natural vegetation; which are utilised by locals

Chilaka, E. (2025, June 29). *The jostle for the rivers of Lagos: NIWA, Lagos Govt, Fed. Ministry of Mines, to the fray*. Dredge Drill and Haul Magazine. <https://www.ddhmag.com/the-jostle-for-the-rivers-of-lagos-niwa-lagos-govt-fed-ministry-of-mines-to-the-fray/>



ensuring that the settlements retain their historical character (Wang et al., 2016, p. 522). However, this focus on preservation comes with trade-offs. Strict zoning laws limit opportunities for modernization and vertical expansion, constraining the socio-economic development of the communities. Residents face challenges in improving their living standards due to these spatial restrictions. Moreover, while tourism provides economic benefits, it also introduces vulnerabilities, as the settlements become increasingly dependent on external revenue streams tied to fluctuating visitor numbers (Niu, 2022, p. 18).

4.5.2. International Policy Frameworks and Their Relevance: UN-Habitat - Inclusive and Sustainable Urbanization

UN-Habitat's New Urban Agenda emphasizes the importance of inclusive urban governance, particularly for integrating informal settlements. It advocates for participatory planning and in situ upgrading, which involve improving infrastructure and services within existing informal settlements rather than resorting to evictions. This framework is highly relevant to Lagos, where policies often prioritize displacement over integration. By adopting UN-Habitat's principles, Lagos could develop policies that formalize land tenure in Makoko and improve infrastructure while preserving the community's unique spatial and cultural characteristics (UN-Habitat, 2016, p. 12). In Nanjing, UN-Habitat's focus on sustainable urban development aligns with ongoing heritage preservation efforts. The organization emphasizes leveraging cultural heritage as a driver for economic growth, promoting sustainable tourism and conservation. This approach supports Nanjing's dual goals of preserving the Yangtze River waterfront towns' historical identity while fostering economic resilience through tourism (UN-Habitat, 2016, p. 18).

4.5.3. International Policy Frameworks and Their Relevance: World Bank - Climate Resilience and Urban Planning

The World Bank's Resilient Cities Program offers strategies for enhancing the resilience of urban areas to climate risks. This program is particularly relevant for waterfront settlements like Makoko, which are vulnerable to flooding and environmental degradation. The World Bank advocates for investments in resilient infrastructure, such as flood defenses and improved drainage systems, which could significantly benefit Makoko. For instance, floating infrastructure could enhance the settlement's adaptability to rising water levels, ensuring long-term sustainability (World Bank, 2019, p. 15).

In Nanjing, the World Bank's emphasis on green

infrastructure could inform efforts to integrate sustainable practices within the Yangtze River towns. Projects such as the development of constructed wetlands and the use of permeable materials for pathways could reduce flood risks while maintaining the towns' historical character. Additionally, the World Bank's focus on economic resilience aligns with Nanjing's goal of diversifying income sources for waterfront communities, particularly through sustainable tourism (World Bank, 2019, p. 22).

4.5.4. Governance Challenges and Future Directions: Addressing Policy Gaps in Lagos

Lagos's governance challenges stem largely from a lack of inclusive policies that address the unique needs of informal waterfront settlements. Current zoning laws often classify these areas as environmentally sensitive, restricting development without providing alternatives for residents. Future policies must focus on regularizing land tenure, providing legal protections for Makoko residents against forced evictions. This legal recognition would enable the community to access public services and infrastructure, fostering better integration into Lagos's urban framework (Omoniyi, 2017, p. 8). Participatory planning is another critical area for improvement. By involving Makoko residents in the decision-making process, Lagos can develop urban renewal projects that align with community needs. For example, upgrading stilted housing and introducing floating schools and healthcare facilities would enhance living conditions without displacing residents. These initiatives could serve as a model for integrating informal settlements into formal urban systems, promoting spatial equity and socio-economic inclusion (Agamah, 2018, p. 65).

4.5.5. Balancing Heritage and Modernization in Nanjing

In Nanjing, the primary governance challenge is balancing heritage preservation with the socio-economic needs of waterfront communities. While strict zoning laws have successfully preserved the Yangtze River towns' historical character, they have also limited opportunities for modernization and economic growth. Future policies should adopt a more flexible approach, allowing for selective modernization that improves living conditions without compromising cultural heritage (Wang et al., 2016, p. 525). Adaptive reuse projects offer a promising path forward. These initiatives involve retrofitting traditional buildings with modern amenities, such as energy-efficient heating systems and improved sanitation, while preserving their external appearance. Such projects can enhance the quality of life for residents while maintaining the towns' aesthetic and cultural

value. Additionally, policies that support small-scale, sustainable tourism infrastructure could diversify income sources and reduce dependency on large-scale tourism (Niu, 2022, p. 23). Both Lagos and Nanjing could benefit from adopting elements of international frameworks like UN-Habitat's participatory planning and the World Bank's climate resilience strategies. In Lagos, integrating community-led planning initiatives with resilient infrastructure projects could transform Makoko into a sustainable, inclusive urban village. Similarly, in Nanjing, the integration of green infrastructure within heritage zones could enhance environmental resilience while supporting sustainable tourism. These approaches would align local governance with global best practices, promoting long-term sustainability and inclusivity.

4.5.6. Memory Preservation through Architectural Design

In waterfront settlements like Makoko and the Yangtze River towns, architecture is more than a functional necessity—it is a repository of collective memory. These settlements, shaped by their unique socio-environmental histories, embody the lived experiences of their residents through spatial and structural forms. Urban design interventions must prioritize the preservation of these memories, ensuring that any new developments respect and reflect the cultural and historical narratives embedded within these communities. For Makoko, stilted architecture has long symbolized resilience and adaptation to the lagoon environment. Urban design at the architectural scale should enhance these elements rather than replace them. For instance, integrating traditional stilt techniques with modern materials could produce structures that are both durable and contextually appropriate. Floating or elevated pavilions designed as community hubs—such as schools, cultural centers, or market spaces—could serve as physical markers of memory, celebrating the community's history while addressing present-day needs (Alademomi, 2017, p. 62). Similarly, in the Yangtze River towns, traditional courtyard homes represent a historical lineage of family and community life. Adaptive reuse of these structures could preserve their historical essence while modernizing internal functions. For example, converting ancestral halls into multi-purpose community centers would maintain their symbolic value while creating spaces for contemporary activities, such as education or cultural exhibitions. Architectural interventions should retain key visual and structural elements, such as wood carvings and stone foundations, as a nod to the community's historical identity (Niu, 2022, p. 23).

4.5.7. Context Integration: Building within the Natural and Urban Fabric

Waterfront settlements present a unique challenge for urban design as they sit at the intersection of natural and urban systems. Effective design must integrate these settlements seamlessly into their broader ecological and urban contexts. In Makoko, this integration involves not only connecting the settlement to Lagos's urban framework but also aligning it with the lagoon's ecological dynamics. At the architectural scale, context-sensitive designs could include eco-friendly housing units that incorporate passive cooling and solar energy systems. Such designs would reduce reliance on external energy sources and minimize environmental impact. Additionally, public spaces designed as floating platforms could facilitate greater interaction between residents and the lagoon, reinforcing the community's symbiotic relationship with its environment. These platforms could serve as flexible spaces for communal activities, enhancing both social cohesion and ecological stewardship (Agamah, 2018, p. 68). For the Yangtze River towns, integration with the surrounding urban context involves addressing the dual imperatives of heritage preservation and modern urbanization. Here, architectural interventions could focus on creating hybrid spaces that merge traditional forms with modern functions. For example, waterfront promenades with integrated stormwater management systems could enhance the towns' resilience to flooding while providing recreational and cultural amenities. These spaces could be designed to harmonize with the existing urban grain, using materials and design motifs that reflect the towns' historical character (Sepe, 2013, p. 608).

4.5.8. Designing for Social Cohesion

One of the most critical aspects of urban design in waterfront settlements is fostering social cohesion and supporting economic vitality. In both Makoko and the Yangtze River towns, architecture can play a pivotal role in enhancing community interaction and economic opportunities. In Makoko, public spaces designed at the architectural scale could function as marketplaces, community centers, and educational hubs. For instance, modular raised market designs could provide flexible, adaptable spaces for economic activities while facilitating social interaction. These structures could be equipped with solar panels and rainwater harvesting systems, demonstrating a commitment to sustainability while improving residents' quality of life. (Omoniyi, 2017, p. 8).

In the rural towns in Nanjing, architectural interventions could continue to focus on enhancing the tourism economy without compromising local social structures. Designing small-scale guesthouses within the fabric of traditional courtyard homes could provide additional income streams for residents. These guesthouses could offer immersive cultural experiences, such as traditional crafts, attracting tourists while reinforcing local identity and traditions. At the same time, multi-purpose community centers could host local markets and cultural events, strengthening social ties and promoting economic resilience (Wang et al., 2016, p. 525).

4.5.9. Architectural Resilience and Adaptation to Climate Challenges

Both waterfront settlements face significant climate risks, including flooding, extreme weather, and rising water levels. Architectural design must prioritize resilience, ensuring that structures can withstand environmental stresses while maintaining functionality and comfort. For Makoko, climate-resilient design could involve the widespread adoption of modular floating structures. These units could be anchored securely to withstand tidal variations and storms, providing a safe and adaptable living environment. Furthermore, these structures could be designed for scalability, allowing for future expansions as population and community needs grow. Incorporating materials such as treated wood and reinforced bamboo could enhance durability while maintaining compatibility with the settlement's traditional stilt architecture (Agamah, 2018, p. 65). In the Yangtze River towns, architectural resilience could be achieved through the integration of green infrastructure. Permeable pavements, rain gardens, and green roofs could be incorporated into new and existing structures to manage stormwater and reduce flood risks. Additionally, raised platforms and flood-resistant foundations could be implemented in new constructions to enhance resilience without altering the towns' historical aesthetic. These interventions would not only protect the settlements from environmental hazards but also demonstrate a forward-thinking approach to heritage conservation in the context of climate change (Sepe, 2013, p. 610).

4.5.10. Multi-Scalar Design Interventions

Urban design in waterfront settlements must also consider multi-scalar interventions, linking architectural-scale solutions to broader urban and regional strategies. For instance, the introduction of integrated transportation could connect Makoko to Lagos's larger economic and social networks. Proper docks and water taxis could serve as

improve mobility and economic access for residents. These provisions could be designed as multifunctional spaces, integrating market stalls, cultural exhibits, and social services, thereby enhancing their role as community anchors. Similarly, in the Yangtze River towns, architectural-scale interventions could support regional tourism and cultural initiatives. Designing visitor centers at key points along the waterfront could provide educational and interpretive resources about the towns' historical and ecological significance. These centers could also serve as launch points for guided tours, enhancing the towns' visibility within the regional tourism network. By embedding these interventions within the existing urban fabric, they would support local economies while preserving the settlements' cultural and historical identity.

4.5.11. Toward a Comprehensive Urban Design Framework

The design recommendations for waterfront settlements like Makoko and the Yangtze River towns should be informed by a comprehensive understanding of their socio-cultural, environmental, and economic contexts. These interventions should aim to preserve collective memory, integrate seamlessly with natural and urban systems, and enhance resilience and adaptability. Drawing on the broader themes discussed throughout this thesis, architecture and urban design are tools for creating urban spaces that adapt well to the context as well as present trends and necessities.

4.6 Comparisons with Other Case Studies of Urban Development Strategies

Waterfront urban development poses a unique set of challenges and opportunities, from balancing modernization with cultural preservation to ensuring ecological sustainability in flood-prone environments. This section explores two influential urban development models—the “Project Site-and-Services” and the “Sustainable Cities Programme” (SCP) by UN-Habitat—examining their potential applications in the context of waterfront development in cities like Lagos and Nanjing. Each model offers insights into fostering community-driven growth, integrating environmental resilience, and prioritizing inclusivity, essential components for sustainable urbanization along waterfronts.

4.6.1. Project Site-and-Services: Incremental Housing and Infrastructure Development

Introduced by the World Bank in the 1970s, the “Project Site-and-Services” model was developed as a response to rapidly increasing urban populations and the resulting rise of informal settlements in developing countries. This approach shifted the role of governments from providers of completed housing to enablers of incremental development by providing basic infrastructure on designated plots of land. With essential utilities like water, electricity, sanitation, and minimal building frameworks in place, residents were empowered to construct and expand their dwellings over time, according to individual needs and financial resources (UN-Habitat, 2012) (Site and Service Schemes, 2012, p. 2). The Site-and-Services model was significant in recognizing and leveraging the agency of low-income communities, encouraging residents to take an active role in their housing and community development. By allowing gradual, incremental building, this model not only provided affordable housing options but also fostered community ownership. As described by Cohen (1983), this strategy marked a departure from traditional housing solutions, reframing residents not merely as beneficiaries but as contributors capable of using their skills and resources in building their homes (Cohen, 1983, p. 3).

While the Site-and-Services approach was groundbreaking in its focus on self-help and affordability, it encountered significant challenges in practice. A common limitation was the location of these projects on city fringes, where land costs were lower but access to employment, services, and transportation was limited. This spatial disconnect imposed extra commuting costs on residents and affected project sustainability. For example, the Dandora Site-and-Services project in Nairobi struggled with delays in infrastructure provision, a challenge compounded by bureaucratic inefficiencies and a lack of coordination among implementing agencies (Loeckx et al., 2000, p. 9). Furthermore, administrative obstacles, such as securing land tenure and coordinating between multiple agencies, slowed progress and led to uneven development outcomes. In some cases, standards of construction set by implementing agencies were too high for low-income families, who were the intended beneficiaries of these projects. Such standards increased the financial burden on residents and limited the scope of self-construction, diminishing the affordability that Site-and-Services projects sought to achieve. Challenges in cost recovery were another persistent issue, as many residents struggled to keep up with the payments due to financial pressures of housing

construction, utilities and transportation (World Bank, 1987). This is one of the complexities in implementing Site-and-Services in socio-economically and geographically diverse urban contexts. The issue, as many residents struggled to keep up with payments due to the cumulative financial pressures of housing construction, utilities, and transportation (World Bank, 1987).

4.6.2. Project Site-and-Services: Implications for Waterfront Development in Lagos and Nanjing

For waterfront communities, especially informal settlements like Lagos’s Makoko, the Site-and-Services model offers an alternative to traditional redevelopment strategies that often prioritize large-scale displacement. Current policies in Lagos tend toward formalizing and commercializing waterfront areas, as seen with projects like Eko Atlantic. This approach often disregards the socio-cultural and environmental adaptations of informal waterfront settlements. By adopting Site-and-Services principles, Makoko’s existing resilience framework—characterized by self-built floating structures and locally adapted sanitation solutions—could be formalized and enhanced rather than disrupted. Through infrastructure provision in place, rather than relocation, Lagos could provide essential services while allowing residents to retain their cultural identity and social networks. This approach offers a pathway for addressing the socio-economic isolation and infrastructure deficits faced by marginalized waterfront communities (Omoniyi, 2017, p. 8).

In Nanjing, where Yangtze River waterfront communities often include historical sites, the incremental and adaptable nature of Site-and-Services could support controlled growth that respects cultural preservation. As opposed to imposing high-density development in heritage zones, Site-and-Services would allow for measured upgrades that align with the architectural style and environmental needs of Nanjing’s waterfronts. By enabling selective modernization, this model provides a framework to maintain Nanjing’s unique low-rise riverfront aesthetics while incrementally improving infrastructure for local residents (Wang et al., 2016). The adaptability of the Site-and-Services approach to environmental pressures, such as flooding, also makes it well-suited to riverfront settings, where periodic flooding can be managed through locally appropriate, community-led solutions.

4.6.3. Sustainable Cities Programme (1990-2000): Integrating Environmental and Social Sustainability

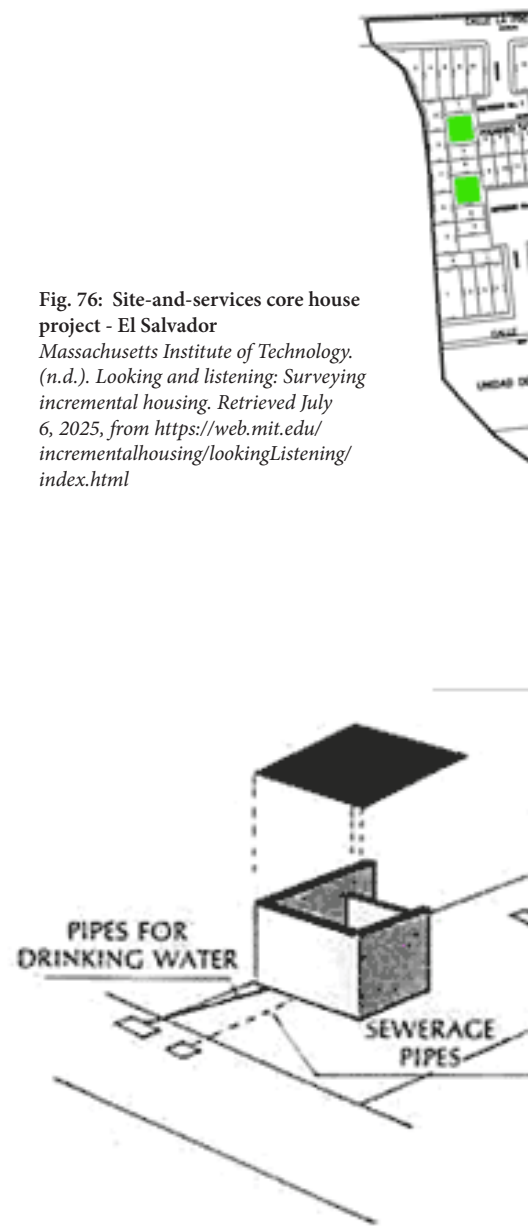
The Sustainable Cities Programme (SCP), a collaborative initiative by UN-Habitat and UNEP, was launched in the 1990s to promote sustainable urban development through participatory governance and environmental management. The SCP emphasized a holistic approach, focusing on environmental resilience, community participation, and local government capacity building. The program encouraged cities to prioritize ecological sustainability alongside economic growth, engaging local stakeholders in the decision-making process and building capacity within municipal authorities to manage natural resources sustainably (UN-Habitat & UNEP, 2001). The SCP was structured into several stages to ensure inclusive planning. Initial stages involved creating a City Environmental Profile, followed by extensive consultations with local stakeholders, enabling a shared understanding of key urban challenges. Based on these insights, cities formulated environmental action plans with specific, localized projects designed to improve urban sustainability. SCP's bottom-up approach empowered cities to focus on local priorities and provided tools for collaborative management, reflecting the SCP's commitment to participatory urban planning.

A hallmark of SCP projects was their focus on green infrastructure and environmental resilience. For instance, cities participating in the SCP implemented measures like urban greening, constructed wetlands, and integrated waste management, all aimed at minimizing ecological footprints. These interventions were designed to withstand urban environmental challenges such as flooding, air pollution, and waste disposal, making SCP's strategies particularly relevant for waterfront developments facing climate-related hazards. In addition to physical infrastructure, SCP projects emphasized building governance capacity within local authorities, equipping them to manage urban growth sustainably and effectively (UN-Habitat & UNEP, 2001). Community involvement was another cornerstone of the SCP approach. SCP relied on inclusive consultations and decision-making processes to ensure that urban planning reflected the interests and needs of local communities. This participatory model not only fostered a sense of ownership among residents but also helped avoid the socio-economic fragmentation often associated with top-down urban interventions. By prioritizing local stakeholder input, SCP projects enabled cities to address complex environmental and social issues

collaboratively, which was crucial for the long-term sustainability of urban improvements (Sepe, 2013).

Nanjing has already undertaken significant steps to integrate green infrastructure into urban planning, such as incorporating green roofs and ecological corridors, which align with SCP principles. Expanding on these efforts through SCP's participatory framework could further enhance Nanjing's ability to manage environmental risks while conserving its cultural heritage. By establishing green tourism initiatives and reinvesting in local infrastructure, Nanjing could sustain economic activities without compromising environmental quality, thereby supporting SCP's vision of cities as both ecologically resilient and economically vibrant (Liu and Shu 2020, 25).

Fig. 76: Site-and-services core house project - El Salvador
Massachusetts Institute of Technology.
(n.d.). Looking and listening: Surveying incremental housing. Retrieved July 6, 2025, from <https://web.mit.edu/incrementalhousing/lookingListening/index.html>





Little or no expansion



Site and Services - Core House Project - El Salvador

05



The Site:

*The Proposed site for a new Urban Village
in Somolu, Lagos, Nigeria*



From the Lagos Lagoon to the Yangtze River

The Site



150 — 151

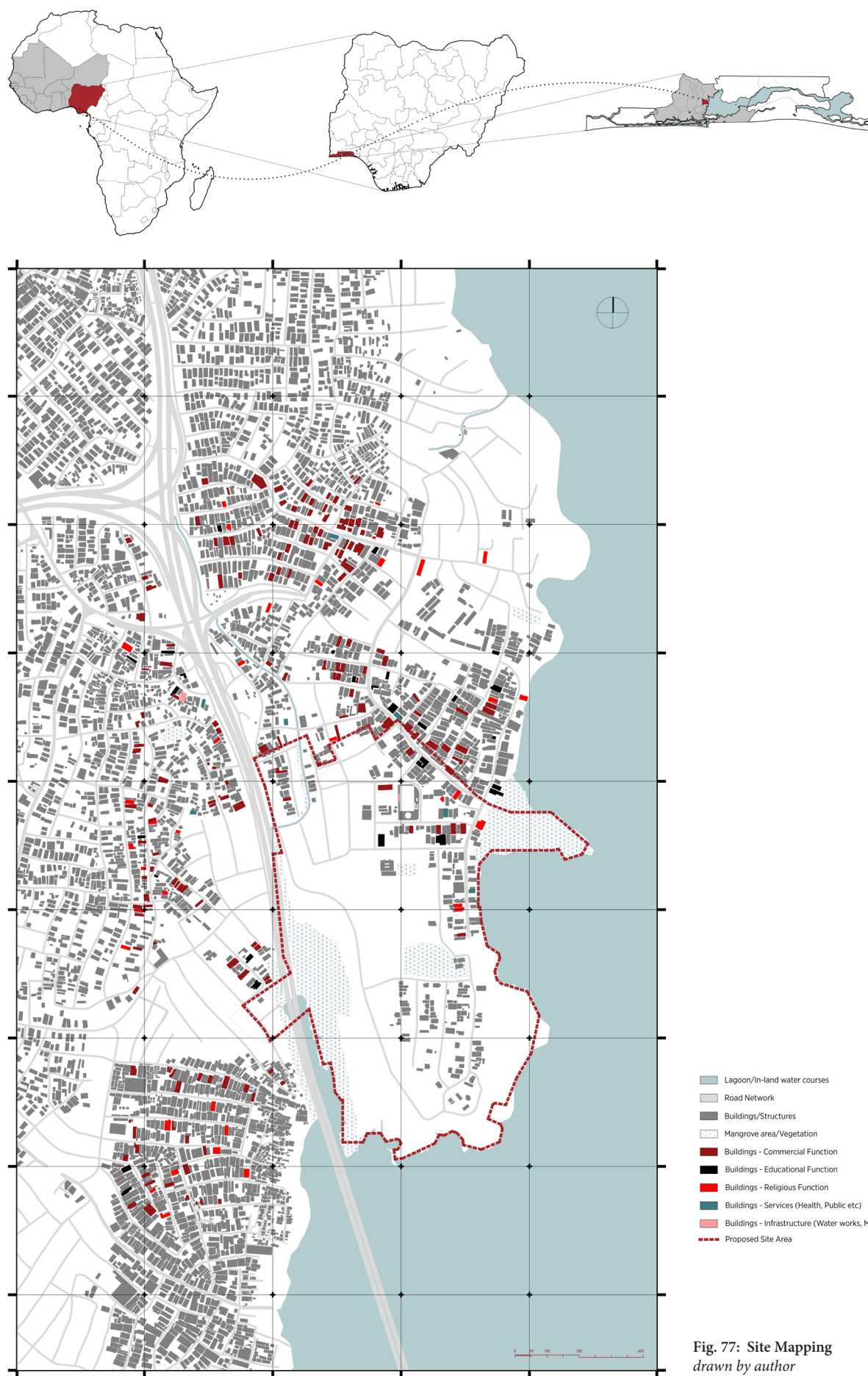


Fig. 77: Site Mapping
drawn by author

The selection of a suitable site for this research was driven by the need to test urban renewal models under realistic and challenging conditions. As discussed in previous chapters, urban interventions must consider existing tangible and intangible elements to avoid the displacement or erasure of communities without well-rounded planning logic and mitigate the tension between existing social-ecological systems and disruptive interventions.



Fig. 78: Proposed site before phase one of the Oworonshoki Reclamation Project
 Osodi, G. (n.d.). Oworo 2015[Photograph]. Retrieved June 9, 2025, from <https://georgeosodi.photoshelter.com/portfolio/G00001O4PNHIW0AM/10000kIZOoF1ul3k>

5.1 Site Location and Context

The chosen site is located at 6°32'07.2"N 3°24'10.3"E within Oworonshoki, Lagos, Nigeria. Oworonshoki is situated in Kosofe Local Government Area, strategically connecting Lagos Mainland and Island via the Third Mainland Bridge (Bonews, 2023). This area comprises approximately 29.5–29.6 hectares (approximately 300,000 m²) of reclaimed land, a project initiated under Governor Akinwunmi Ambode (2015–2019) through the Lagos State Waterfront Infrastructure Development Commission, with Commissioner Ade Akinsanya overseeing its implementation (Punch, 2017). The land reclaimed comprises of low-lying wetlands and marginal lagoon edges, which previously supported stilt houses and clustered fishing communities. Historically, Oworonshoki was characterised by ecosystems critical for flood mitigation, biodiversity, and traditional

fishing activities (ResearchGate, n.d.). From 1965 to 2004, wetlands in the Ogudu–Oworonshoki corridor shrank from 142 hectares to 38 hectares, reflecting a loss of 2.6 hectares per year (Scribd, n.d.). The site lies at 0–3 m above sea level, with reclamation mounds raising terrain to 2–5 m, thereby disrupting natural drainage, amplifying flood risks, and exacerbating climate vulnerability for adjacent communities (EnviroNews Nigeria, n.d.). The wetlands were critical ecological assets, comprising mangrove swamps that helped regulate flooding. Losing partially some of these wetlands is part of Lagos' broader trend of ecosystem degradation due to urban expansion and land reclamation (Adekola et al., 2012). Local communities continue to report worsening flood conditions and heightened vulnerability to climate change-induced sea-level rise (EnviroNews Nigeria, 2023).

Parameter	Details
Reclaimed area	29.5 ha (300,000 m ²)
Wetlands lost	100 ha (1965–2004)
Elevation	50% between 0–3 m; reclaimed mounds 2–5 m
Ecology	Former mangrove-wetland, now disrupted
Occupants	Informal fishing and low-income residents
Flood status	Severe; worsened by reclamation
Development plan	Multi-modal transport hub and entertainment zone
Environmental risk	Habitat loss, flooding, displacement

Tab. 1 Site Parameters
Lagos State Ministry of Physical Planning and Urban Development (Kosofe LGA Plans), GIS land use overlays (2021–2024), Heinrich Böll Stiftung & Nigerian Slum/Informal Settlement Federation reports, World Bank & UN-Habitat (2018–2022).

5.1.1. Existing Surrounding Land Use Functions

The surrounding land use of Oworonshoki is predominantly residential, characterised by high-density informal settlements that consist largely of self-built structures occupied by low-income residents. Further inland, formal residential areas emerge, comprising low-rise apartment blocks and single-family dwellings that reflect a relatively planned urban morphology. Commercial activity is concentrated along major transport corridors such as the Lagos–Ibadan Expressway and the approach to the Third Mainland Bridge. These areas host a mix of roadside markets, small retail kiosks, motor spare parts shops, and food stalls, supporting the daily economic activities of residents. Larger commercial enterprises are located closer to Bariga and further inward towards Ifako, where land availability and road access are more favourable for such functions. Educational and religious institutions are integral within the neighbourhood fabric. Several primary and secondary schools serve Oworonshoki and adjoining districts like Bariga, while numerous mosques and churches are interspersed within residential blocks, reflecting the area's religious diversity and social organisation.

The Third Mainland Bridge, which directly runs along the site, is a critical infrastructural feature that connects Lagos Mainland to Lagos Island, forming part of the city's primary arterial road network. The Oworonshoki–Bariga interchange hosts major bus stops and informal terminals, facilitating intra-city mobility and reinforcing the area's role as a transport node. In terms of landmarks, the Lagos Lagoon waterfront is an important feature for fishing, informal boat transport, and sand mining. Although the Makoko fishing settlement lies further southeast along the lagoon, it remains a significant cultural reference point for lagoon-edge communities. Nearby, the Bariga Arts and Cultural Centre functions as a creative hub, while the University of Lagos (UNILAG), located across the lagoon to the southeast, constitutes a major educational and research landmark within

within visual proximity of Oworonshoki. Industrial activity within Oworonshoki itself is minimal, with no significant heavy industries. However, light marine-related industrial uses occur along parts of the Lagos Lagoon towards Apapa and further east, reflecting broader metropolitan industrial land use patterns. Recreational and formal green spaces are largely absent within Oworonshoki. The wetlands and mangrove areas that once offered ecological and recreational value are under severe threat from reclamation activities and informal waste dumping, resulting in the erosion of natural assets that could otherwise have supported local resilience and environmental quality (Lagos State Ministry of Physical Planning, 2021–2024; Heinrich Böll Stiftung, 2022; UN-Habitat, 2018).

5.1.2. Government Development Vision

The Lagos State Government's vision is to transform 70 hectares of Oworonshoki waterfront into a mega transport, tourism, and entertainment hub with ferry terminals, shopping malls, hotels, art galleries, sports and recreational facilities, and a 1,000-capacity car park (Premium Times, n.d.), as well as a multi-modal interchange linking water transport to roads, easing vehicular congestion to Lagos Island, while creating “investment opportunities in water transportation and socio-economic activities” (Premium Times, n.d.). This vision, part of the Kosofe Model City Plan 2020–2040, has been noted by critics on its exclusion of displaced residents in planning, raising urgent questions of social justice and environmental sustainability. The original reclamation plan, is intended to be executed in three phases. The first phase consisted of sand-filling of 29.5 hectares, then phase two would be initiated with the shoreline protection and construction of 2.8 km of new roads. The third and final phase would be the development of a mega jetty, transport hub, entertainment and tourism facilities, and parking (Premium Times, 2017).

The first phase of reclamation was executed by dredging and sand-filling along the lagoon edge (Maritime First, 2017). Approximately 50%

of the site lies between 0–3 m above sea level, with reclaimed sand mounds reaching 2–5 m elevation. However the land was not vacant in a social sense; it was reclaimed from informal communities and original wetlands along the Lagos Lagoon. The affected areas included adjoining settlements, resulting in the demolition of an estimated 1,000–7,000 homes and displacement of 7,000 to over 10,000 people or households (Tribune, 2023). The demolitions peaked in mid-2023, particularly between July–August, and continued into late 2023–2024 (Socialist Workers League, 2023). The state government justified the demolitions and reclamation with the main goal of the reclamation project, and also as an attempt at crime reduction, claiming that “criminal elements” occupied these informal settlements (Guardian, 2023).

However, civil society groups countered the government’s narrative, arguing that these communities were established fishing settlements bordering the lagoon, not “illegal squatters,” and that their demolition violated housing rights

and erased cultural livelihoods (Guardian, n.d.). While government ambitions focused on transforming Oworonshoki into a transportation and entertainment hub, the plan failed to provide for displaced residents, effectively removing their homes and means of livelihood. The fishing community of Ago-Egun, located outside Bariga, also faced livelihood disruption due to siltation from dredging blocked canoe navigation routes. Residents reported the inability to fish for months, loss of income, children being sent home from school due to unpaid fees, and heightened food insecurity (Premium Times, n.d.). Residents reported total income loss and damage to fishing equipment, exacerbating poverty and preventing children from attending school (Premium Times, 2017). Despite attempts by community representatives, including the Justice and Empowerment Initiative (JEI), to engage contractors and government officials for mitigation, there was no official response or remedial action (Premium Times, 2017).



Fig. 79 Livelihood of surrounding fishing communities compromised by land reclamation project
 Ibekwe, N. (n.d.). Premium Times, investigations. <https://www.premiumtimesng.com/news/headlines/241748-special-report-livelihood-lagos-fishing-community-cut-off-govts-land-reclamation-project.html?tztc=1>

5.2 Contextual Significance

5.2.1. Connectivity and Access

Located at the end of the 11.8km Third Mainland Bridge, Nigeria's longest bridge, Oworonshoki serves as a vital gateway connecting Lagos Mainland to Lagos Island. As of 2019, this bridge recorded approximately 117,000 daily crossings, linking key suburbs such as Ikeja, Yaba, and Gbagada to commercial hubs on the Lagos Island (Nigeria News Source, 2019). Moreover, Oworonshoki functions as a major transport junction, intersecting significant routes including the Apapa–Oworonshoki–Ojota Expressway, Lagos–Badagry Expressway, and Ikorodu Road, thereby positioning it at the heart of the city's transport infrastructure (Nigeria News Source, 2019).

5.2.2. Economic Role of Waterfront

The site's adjacency to the Lagos Lagoon has impacted its economic relevance. The wetlands and lagoon edges support activities such as fishing, sand mining, and dredging, which have been integral to local livelihoods and Lagos's broader urban development (Nigeria News Source, 2019). Contemporary planning leverages this waterfront location for economic transformation; the state's proposed ferry terminal and entertainment complex aim to integrate water transport with road networks, enhancing regional trade and mobility flows (Daily Trust, 2021).

5.2.3. Historical and Cultural Identity

The name "Oworonshoki," loosely meaning "market on smoke," references its early function as a trading and gathering point, marked by shrines and Ifa rituals that reflect deep Indigenous spiritual heritage (Nigeria News Source, 2019). This cultural identity persists through community traditions, including annual crown festivals and reverence for deities such as Olokun, demonstrating a continuing connection to ancestral practices and local cosmology.

5.2.4. Urban Morphology

The urban fabric of Oworonshoki is characterised by dense, predominantly low to middle-income residential areas, with widespread informal housing and minimal urban amenities (Independent, 2021). Infrastructure deficits are severe: approximately 50% of residents lack access to piped water, and streets frequently flood due to the area's low elevation and poor drainage systems (Independent, 2021). Additionally, the area functions as a major node in Lagos's transit network, hosting multiple bus stops and informal motor parks that facilitate daily mobility across the city (Olalekan Olafusi, 2020).

5.3 Environmental and Infrastructural Assessment

Prior to reclamation, the Oworonshoki site comprised extensive wetlands and mangrove swamps, serving as vital ecological zones that supported biodiversity, moderated microclimates, and regulated flooding within the Lagos Lagoon system (Bonews, 2023; ICSF, 2021). These habitats were largely obliterated following sand-filling and revetment works, undertaken to create stable land for infrastructure development. Residents also report that formerly passable streets now flood during even moderate rain events, largely due to blocked natural drainage channels and increased surface runoff from the 2–5 m elevation gain resulting from sand-filling (Tell, 2022). Furthermore, fisherfolk have documented ecological disruption in adjacent lagoon areas, with mud-laden waters and diminished fish catch, forcing them to navigate further offshore to sustain their livelihoods (Tell, 2022). This transformation compounds climate vulnerability in Oworonshoki. Approximately 50% of the site lies within 0–3 m above sea level, rendering it susceptible to flood events and sea-level rise, in the absence of natural wetland buffers (Bonews, 2023).

5.3.1. Infrastructural Assessment

The reclamation process involved the dredging of sand from lagoon beds to infill approximately 29.5 ha of land, with shoreline revetments installed to stabilise the newly formed platform (Vanguard, 2017). Although project engineers asserted that dredging improved some aspects of natural water flow, local community assessments indicate persistent drainage failure and worsening flood impacts (Tell, 2022). From an infrastructural perspective, the site is earmarked for development as an intermodal transport hub, integrating a shoreline access road, and emergency response facilities situated under the Third Mainland Bridge (Vanguard, 2017).

5.3.2. Environmental Oversight

While contractors have claimed that an Environmental Impact Assessment (EIA) was conducted prior to commencement, community groups argue that local residents were not consulted in any meaningful manner (Tell, 2022). The absence of participatory engagement undermines the legitimacy and inclusiveness of the planning process. Moreover, environmental advocates continue to warn of heightened risks of ocean surges, sea-level rise, and ecosystem loss, concerns that parallel the environmental critiques raised against similar reclamation projects in Lekki and Bar Beach (Wikipedia, 2023).



Fig. 80 Aerial view of current site conditions, and highlighting proximity to Third Mainland bridge
 Wikipedia. (n.d.). Aerial shot of Makoko community in Lagos, 3rd Mainland Bridge (view 2) [Photograph]. Wikimedia Commons. Retrieved June 9, 2025, from <https://vec.m.wikipedia.org/wiki/File:Aerial-shot-of-makoko-community-in-lagos-3-third-mainland-bridge-aview2.jpg>

5.4 Socio-Economic Factors

The demographic profile of Oworonshoki reflects patterns typical of Lagos State's urban settlements, with a young population structure predominating. Approximately 60–65% of residents are under 30 years of age, with children and youth (0–24 years) forming the largest demographic. Working-age adults (25–59 years) represent the next significant group, while elderly residents comprise a relatively small minority (Lagos State Bureau of Statistics, 2020; NPC, 2018). Household structures are primarily large and extended, with average household sizes ranging from four to six persons per household. Informal rental or shared living arrangements are common, and the area demonstrates a high child dependency ratio due to its youth-heavy population (UN-Habitat, 2018). Economically, Oworonshoki is characterised by by informal sector activities. Key occupational groups include fisherfolk, traders, market workers, artisans such as carpenters, welders, and mechanics, as well as transport operators, including “keke” (tricycle), “okada” (motorcycle), and “danfo” (minibus) drivers. A smaller proportion of residents

engage in formal employment as clerks, teachers, or public servants in nearby urban districts. Although some middle-income earners reside in formal housing clusters within Oworonshoki, the area remains economically marginalised relative to central Lagos (Heinrich Böll Stiftung, 2019).

5.4.1. Displacement and Housing Crisis

In July–August 2023, mass demolitions swept across communities such as Mosafejo, Precious Seed, Coker Oke-Eri, and Oluwaseyi, resulting in the destruction of over 7,000 homes and displacement of an estimated 10,000–40,000 people, many of whom had lived there for decades (Socialist Workers League, 2023). The demolition compounded Lagos's existing housing deficit, adding thousands of newly homeless households (Tribune, 2023). Displaced residents were forced to sleep in churches, undertarps, or in unfinished buildings, scrambling for alternative shelter amidst widespread homelessness. Livelihoods tied to waterfront activities such as boating, fishing, sand mining, and small-scale trading were abruptly erased, eradicating unrecognised yet crucial informal economies (Punch, 2023).

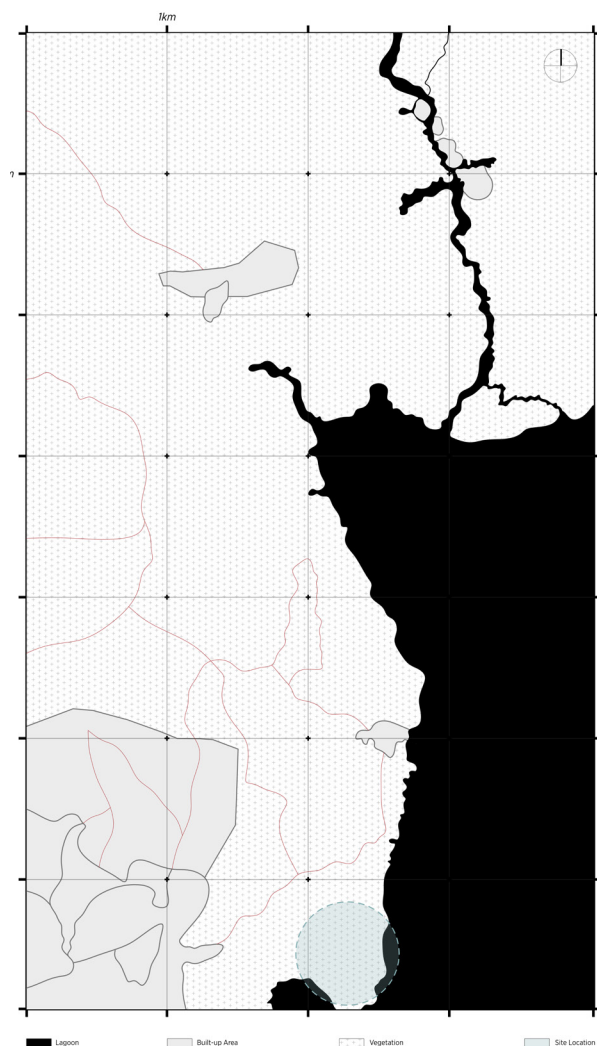


Fig. 1 Land cover analysis of site context - 1964
 Obiefuna, J. N., Idris, S. O., & Uduma-Olugu, N. (2011). *An assessment of the changes in the landscape of Ogudu-Oworonshoki development-prone area of Lagos Metropolis, Nigeria.* Redrawn by author

5.4.2. Displacement and Housing Crisis

With formal safety nets absent, displaced residents sought refuge in local churches, while some reportedly paid bribes of 1,000–10,000 naira to delay demolition and salvage belongings (Vanguard, 2023). Community advocacy groups such as HOPE CDA and SEA-FLOW CDA petitioned state authorities for compensation, demolition halts, and meaningful inclusion in redevelopment planning (Kosofe Post, 2023). While some youth leaders expressed optimism about prospective roads and infrastructure promising long-term economic benefits, immediate livelihood losses have outweighed such projected gains (The Nation, 2023). Over a year after demolitions, most affected residents, including legal

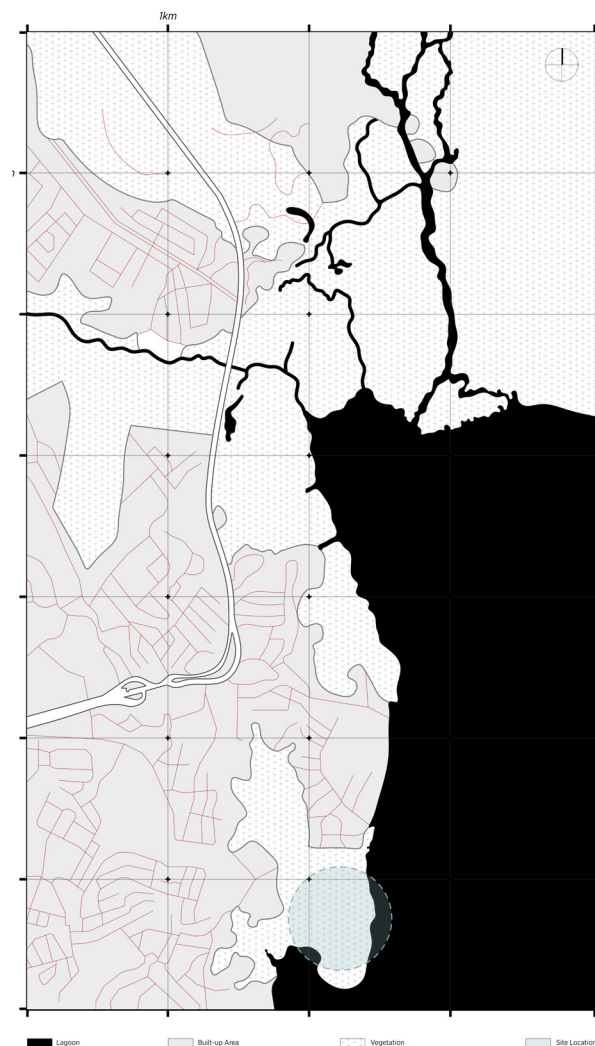


Fig. 1 Land cover analysis of site context - 1984
 Obiefuna, J. N., Idris, S. O., & Uduma-Olugu, N. (2011). *An assessment of the changes in the landscape of Ogudu-Oworonshoki development-prone area of Lagos Metropolis, Nigeria.* Redrawn by author

landholders, had not received any compensation despite government assurances (Punch, 2023). Officials argued that under Lagos State laws, settlements located on wetlands or drainage channels were ineligible for compensation, fuelling perceptions of inequity and exacerbating tensions between communities and authorities (Punch, 2023). The demolitions also dismantled long-standing social networks, erasing entire communities alongside their mosques, churches, and markets (Ubuntu Times, 2023). Residents reported deaths linked to the stress of displacement, while vulnerable groups, including pregnant women, children, and elderly persons, face heightened exposure to malnutrition, health risks, and lack of shelter.

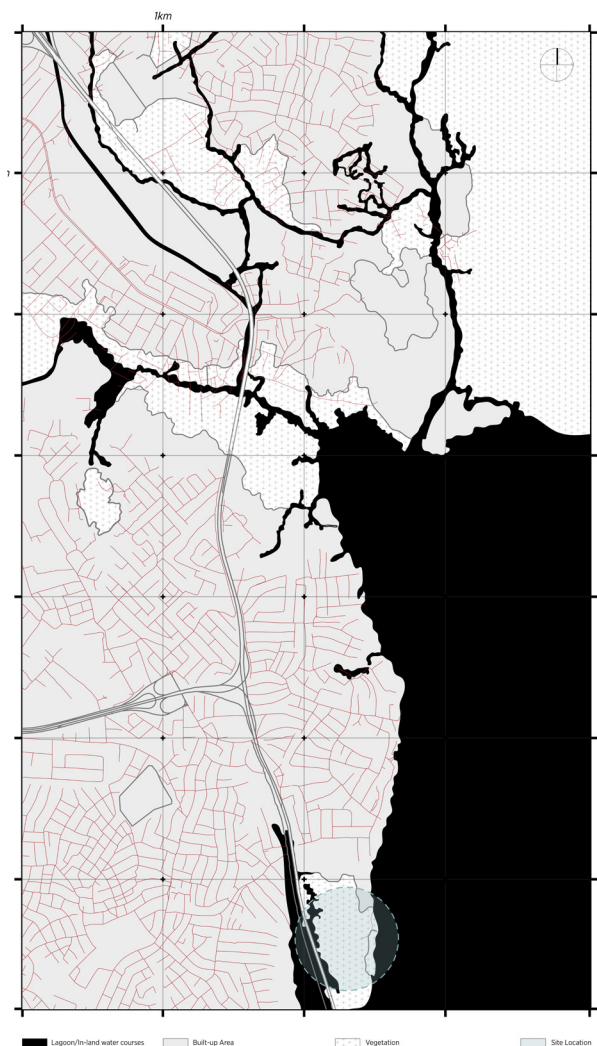
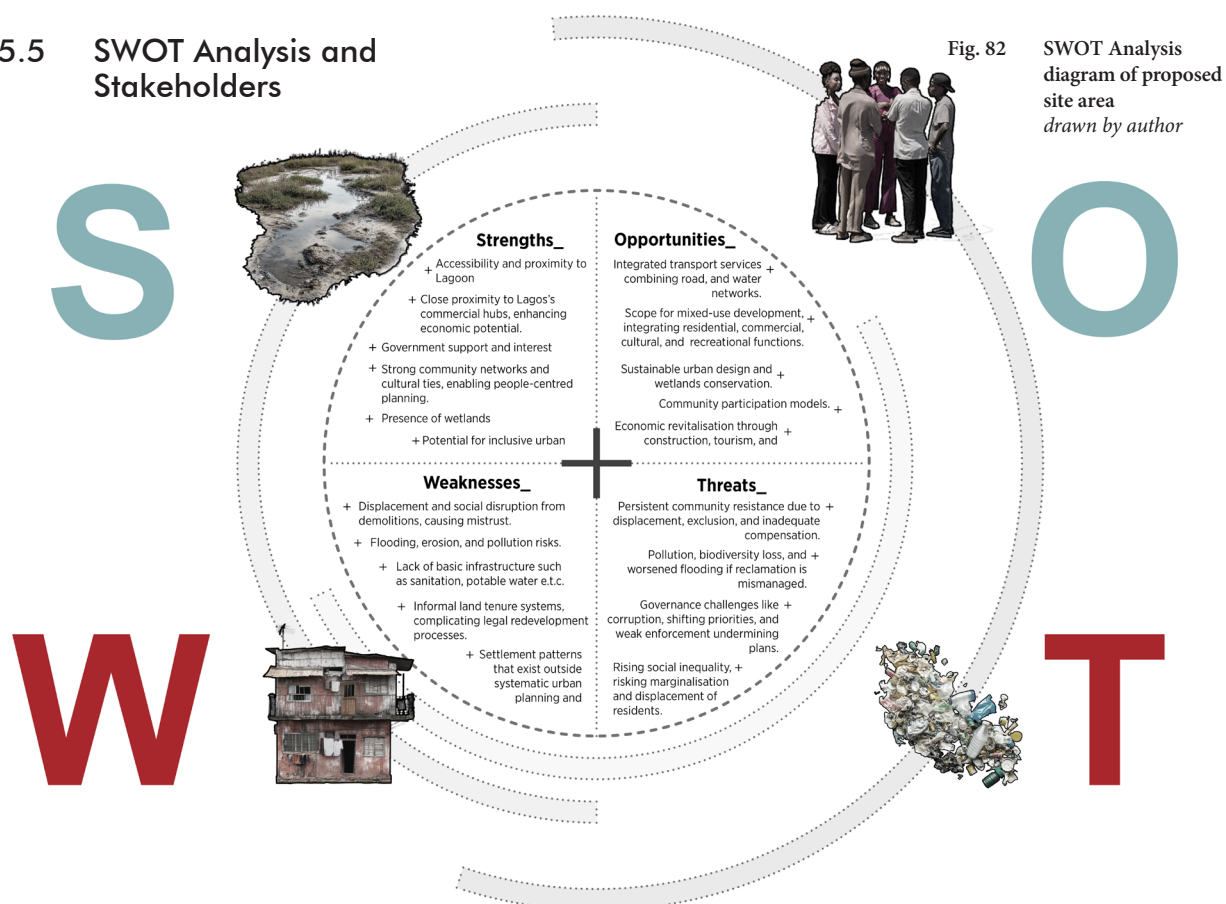


Fig. 81 Land cover analysis of site context - 2004
Obiefuna, J. N., Idris, S. O., & Uduma-Olugu, N. (2011). An assessment of the changes in the landscape of Ogudu-Oworonshoki developmentprone area of Lagos Metropolis, Nigeria. Redrawn by author.

5.5 SWOT Analysis and Stakeholders



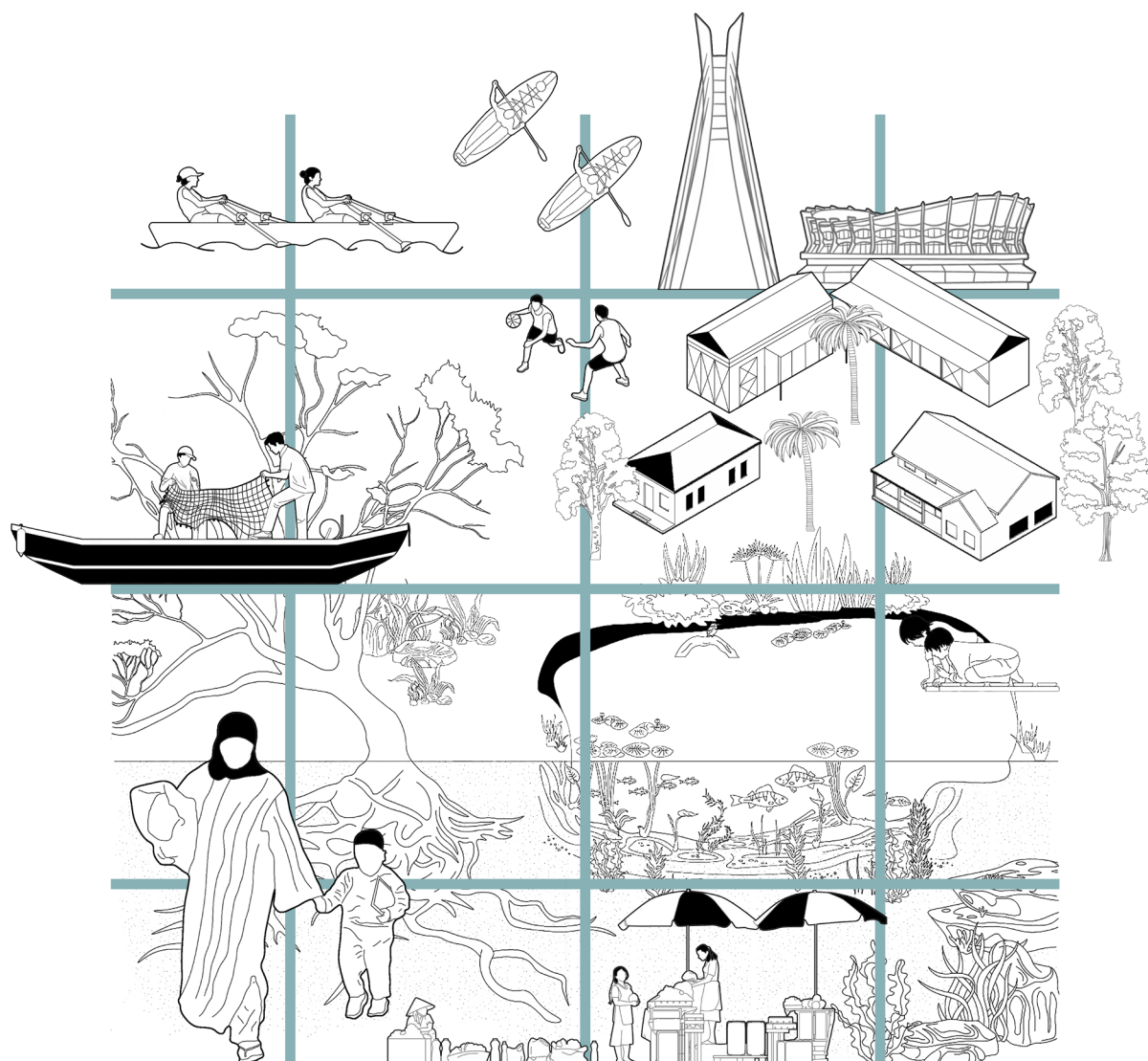


Fig. 83 Visual Representation of Proposed Site's Strengths and Opportunities
Drawn by author.

Tab. 2 Stakeholders of Urban Revitalisation Project
UN-Habitat 2016-2021. Habitat Country Programme Document: Nigeria.

Stakeholder Group	Role / Interest
Local Residents	Primary stakeholders seeking housing security, compensation, employment opportunities, and cultural continuity.
Informal Settlement Associations & Community Leaders	Represent community interests, mediate with authorities, and advocate for equitable redevelopment outcomes.
Lagos State Government (Ministry of Physical Planning & Urban Development; Ministry of Waterfront Infrastructure Development)	Responsible for policy formulation, project approval, funding allocation, and implementation oversight.
Lagos State Urban Renewal Agency (LASURA)	Drives urban renewal initiatives, resettlement planning, and integration of informal settlements within formal frameworks.
Developers and Private Investors	Provide financing and construction expertise, primarily motivated by commercial viability and returns on investment.
Environmental NGOs and Advocacy Groups	Focus on wetlands conservation, biodiversity protection, and climate resilience amid reclamation and urbanisation.
Traditional Institutions and Chieftaincy Houses	Hold cultural and historical authority over land, governance, and community acceptance of projects.
Academics and Research Institutions (e.g. University of Lagos)	Provide empirical data, analyses, and expertise on environmental, social, and economic impacts of redevelopment.
Transport Authorities (LAMATA)	Oversee integration of proposed multimodal transport hubs with broader metropolitan transit networks.
Federal Government Agencies (e.g. National Inland Waterways Authority - NIWA)	Regulate inland waterway use and issue approvals for waterfront development projects.
International Development Partners and Donors	Potential funders and technical partners promoting sustainable, socially inclusive, and resilient redevelopment initiatives.

5.5 The Lagoon

5.5.1. Physical Characteristics

The Lagos Lagoon is a defining geographical and ecological feature of southwestern Nigeria. It stretches over 50 km in length and spans 3–13 km in width, covering approximately 6,354 km². Although expansive, it is relatively shallow, with typical depths ranging between 0.5–3.2 m, while dredged channels in harbour areas reach depths of 18–25 m (Wikipedia, 2023). The lagoon's brackish nature results from tidal seawater inflow through connecting channels and freshwater inputs from rivers such as the Ogun and Osun, leading to salinity levels that fluctuate seasonally from 0–16‰ in the wet season to near marine levels (~35‰) during dry spells (The Free Library, 2023).

5.5.2. Pollution and Water Quality

Lagos Lagoon is recognised as one of Africa's most polluted lagoon systems. It receives substantial industrial, domestic, and agricultural wastewater, including effluents from oil production, textile processing, sewage discharges, and runoff laden with heavy metals such as lead, zinc, copper, chromium, and nickel (Wikipedia, 2023). Microplastic contamination is severe, with sediment samples showing concentrations between 310–2,319 particles/kg and water samples containing 139–303 particles/L, predominantly comprising polypropylene and polyethylene, especially near densely populated areas like Makoko (MDPI, 2022). Toxic compounds such as phenols, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and organotins have been detected in lagoon sediments, posing significant ecological risks (The Conversation, 2023). Ecotoxicological studies demonstrate that exposure to PAH-contaminated sediments induces embryotoxic, teratogenic, and genotoxic effects in aquatic organismssuchaszebrafishembryos (PubMed, 2022).

5.5.3. Biodiversity

Despite these challenges, the lagoon remains a critical ecological asset. It supports commercially significant fish populations, accounting for over half of Nigeria's fisheries production (800,000 tonnes annually), and sustains the livelihoods of fishing communities such as Makoko and Ilaje (Lagoon Network, 2023). Fringe mangrove swamps and mudflats serve as nursery habitats, natural flood buffers, and water quality regulators, although these ecosystems have been significantly diminished by urbanisation and reclamation (UN-Habitat, 2018).



Fig. 84 Lagos Lagoon, and relation to site location
drawn by author

5.5.4. Cultural Significance and Attachment

The lagoon is central to the cultural identity and livelihood practices of adjacent communities. For centuries, it has provided food, transport, and commerce, shaping a distinct “lagoonaire” cultural identity (The Conversation, 2023). Communities like Makoko describe themselves as “floating city” dwellers, with life deeply rooted in the aquatic environment.

5.5.5. Visual and Sensory Qualities

Sensory experiences of the lagoon are characterised by its brown and murky water appearance, due to high silt loads from soil erosion, discharge from floodplains, and dredging-induced resuspension. Odours are typically neutral which allows it to be utilised as a visual and sensory strength (123PDF, 2023).

5.5.6. Cultural Practices, Festivals, and Urban Identity

Makoko, dating back to nearly 200 years ago, hosts approximately 100,000 residents, primarily fisherfolk using traditional fishing methods such as acadja, which nurture rather than deplete fish stocks, embodying sustainable aquatic resource management (MDPI, 2022). Ritual practices, as well, reinforce cultural attachment to the lagoon. Makoko residents, for example, annually gather at a cross marking where a community leader died during a 2012 eviction, asserting resistance and place-memory (City Limits, 2023). In Epe, traditional midwives conduct births within mangrove zones, and water hyacinth is woven into craft and ritual artefacts (ThisDay Live, 2023). Residents showcase strong attachment to lagoon identity: “lagoonaires” consider themselves integral to Lagos’s urban character rather than peripheral. Fisherfolk express pride in nighttime fishing traditions, though lament reduced crayfish harvests and deteriorating water quality forcing them further afield for viable yields (Blueprint, 2023). Environmental arts initiatives, such as Lagos Lagoon Climate Response, utilise performances and water hyacinth craft to link ecological threats with cultural identity (ThisDay Live, 2023). Exhibitions like Lagos Lagoon Chronicles integrate environment, community memory, and folklore into public consciousness (Eyes of a Lagos Boy, 2023). The lagoon continues to foster intergenerational cultural reproduction through ecological knowledge, craft, dance, and ritual, embodying a living collective memory central to urban identity and community resilience (Blueprint, 2023).





Fig. 85 Current site conditions

BonewsSNG. (n.d.). Wetland encroachment, flood, poverty & homelessness continue to ravage residents of Lagos community. Retrieved July 6, 2025, from <https://bonewssng.com/wetland-encroachment-flood-poverty-homelessness-continue-to-ravage-residents-of-lagos-community/>

06

The Urban Village

*A design proposal for urban regeneration
within Lagos Lagoon environs*

The proposed urban village is guided by a commitment to contextual responsiveness, cultural continuity, and ecological integration. Rather than imposing an external architectural language, the proposal draws from the existing typologies, settlement patterns, and material cultures that have shaped Oworonshoki over time.

The site and its context contains layers of history – from colonial-era buildings to informal stilt houses and the modern American-style villas popular among Lagos elites. Each of these building types reflects a specific period in the story of Lagos's waterfront communities, and together they tell the area's urban history.

By combining these building types and lot arrangements within the masterplan, the design reinforces the local urban form, creating spaces that feel familiar, clear, and culturally meaningful to residents while also accommodating new users across economic hierarchies. The main idea is that architecture should grow naturally from the realities of the place, allowing the city to extend in a connected way rather than through disconnected, imposed projects.

This is achieved through a design language that focuses seamless integration into the existing context by creating low-rise structures (not exceeding 12m in height), ecological restoration, and inclusive spaces that reflect both traditional Yoruba urban layouts and the spatial logic of informal settlements.

6.2 Conceptual Framework

6.2.1. Ecological Integration and Revitalisation

The design foregrounds the ecological significance of the site, preserving wetlands where feasible, rehabilitating mangrove zones, and creating hybrid habitat systems such as constructed wetlands to function as buffer zones between built areas and the lagoon. This ecological integration enhances biodiversity, provides natural flood management, and improves community well-being.

6.2.2. Cultural Memory and Spatial Identity

Drawing inspiration from Yoruba urbanism, particularly the radial configurations centred around communal hubs such as the Oba's palace (Adedeji & Bigon, 2024), the design incorporates a commercial market hub, strategically designed to reflect Lagos's polycentric urban character. Lagos has historically evolved into a polycentric city, with multiple centres anchored by major markets such as Ikeja, Bariga, Oshodi, and Yaba, each functioning not only as commercial nodes but also as spaces for social exchange, cultural interaction, and urban identity formation. These market centres have emerged organically over time, cementing their status as integral nodes within the metropolitan system. They perform critical roles as sites of employment, entrepreneurship, and daily provisioning, while simultaneously acting as communal gathering points that reinforce local social networks and cultural ties.

Although the proposed market square and commercial hub within the urban village is a planned intervention, distinct from the organic emergence of traditional markets, its design intention is to mimic the functional logic of these urban centres, providing a space that draws diverse users into the site and catalyses economic, social, and cultural activities. By adopting a circular plan layout inspired by historical Yoruba radial city configurations (Adedeji & Bigon, 2024), the market ensures equal accessibility from all directions, enhancing legibility and integration within the broader urban morphology. In this way, the planned market square is envisioned not merely as a commercial facility but as a new urban anchor, capable of generating place attachment, economic resilience, and social

6.2.3. Multifunctional Land Use

The proposal includes diverse functional spaces: residential units for displaced and new occupants; commercial stalls and market centres; touristic and recreational spaces; and cultural programming venues. A mixed-use building

located near the lagoon edge integrates shopping functions at ground level, rentable office spaces on the first floor, and hotels on the upper floors, strategically leveraging scenic views to attract tourism and generate economic activity.

6.2.4. Urban Morphology Continuity

The design adapts organic street patterns observed in existing settlements, where main routes meander and branch into smaller streets, ensuring spatial familiarity for current residents. This continuity bridges the new development with the old fabric, supporting social integration and minimising spatial alienation.

6.2.5. Ecological Enhancement

An artificial lake is proposed by joining two inland-running channels from the lagoon, enhancing site biodiversity, regulating microclimate, and providing recreational and aesthetic value within the urban village.

6.3 Design Objectives

The design proposal for the urban village is grounded in a set of objectives and principles that seek to integrate housing provision, social equity, ecological stewardship, cultural continuity, and urban connectivity into a coherent spatial strategy. At its core, the project prioritises housing and social inclusion. Recognising the displacement crises that have affected thousands of residents, the proposal aims to provide affordable and adequate housing for original occupants while also creating residential options for diverse economic groups. This is achieved through the incorporation of architectural typologies that reflect the site's layered history, including colonial-era layouts, stilt-house configurations from informal settlements, and the modern American-style dwellings favoured by Lagos elites. By introducing these typologies within the masterplan, the design maintains cultural memory and social inclusivity, ensuring that new interventions resonate with existing urban identities rather than erase them.

The principle of functional diversity and land use organisation guides this proposal. A deliberate integration of residential, commercial, touristic, and recreational spaces aims to optimise land utility while enhancing economic resilience and user experience. Central to this approach is the creation of a roofed market space, conceived as a commercial hub that serves both economic and socio-cultural functions and reinforces its urban relevance. Another prioritization is the preservation and

rehabilitation of wetlands and mangrove zones, recognising their critical role in supporting biodiversity, regulating floods, and maintaining ecological health. Green buffer systems are integrated into the spatial plan to protect water quality and enhance environmental resilience. Moreover, wide landscaped parks and recreational facilities are proposed to bolster ecological well-being while providing spaces for community gathering and leisure.

Spatial connection and language is addressed through a design approach that adapts the organic street networks characteristic of the existing settlement fabric. Streets meander and branch off into smaller roads and pathways, creating a seamless extension of the city that is familiar and navigable to current residents. The design also takes into consideration the visual and noise impacts of the Third Mainland Bridge, incorporating landscape buffers and careful building orientation to mitigate potential disruptions to residential and recreational areas.

Major Roads, that connect to main accessibility network

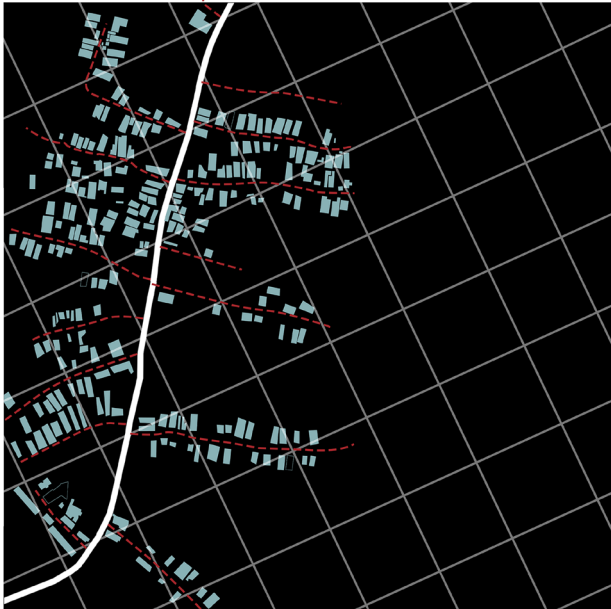
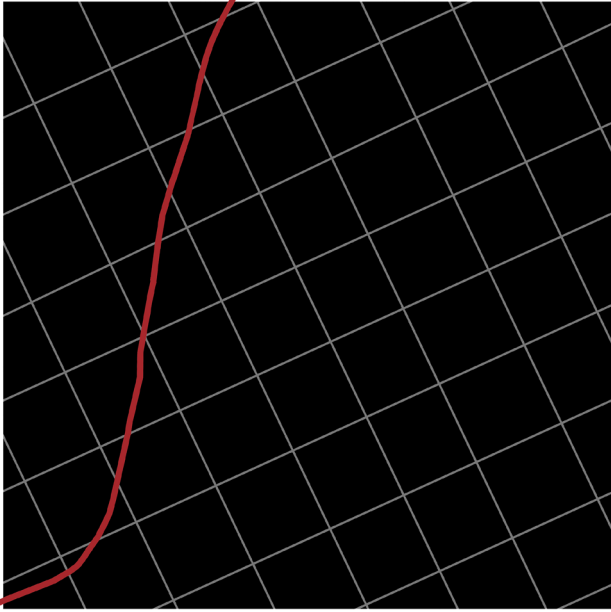
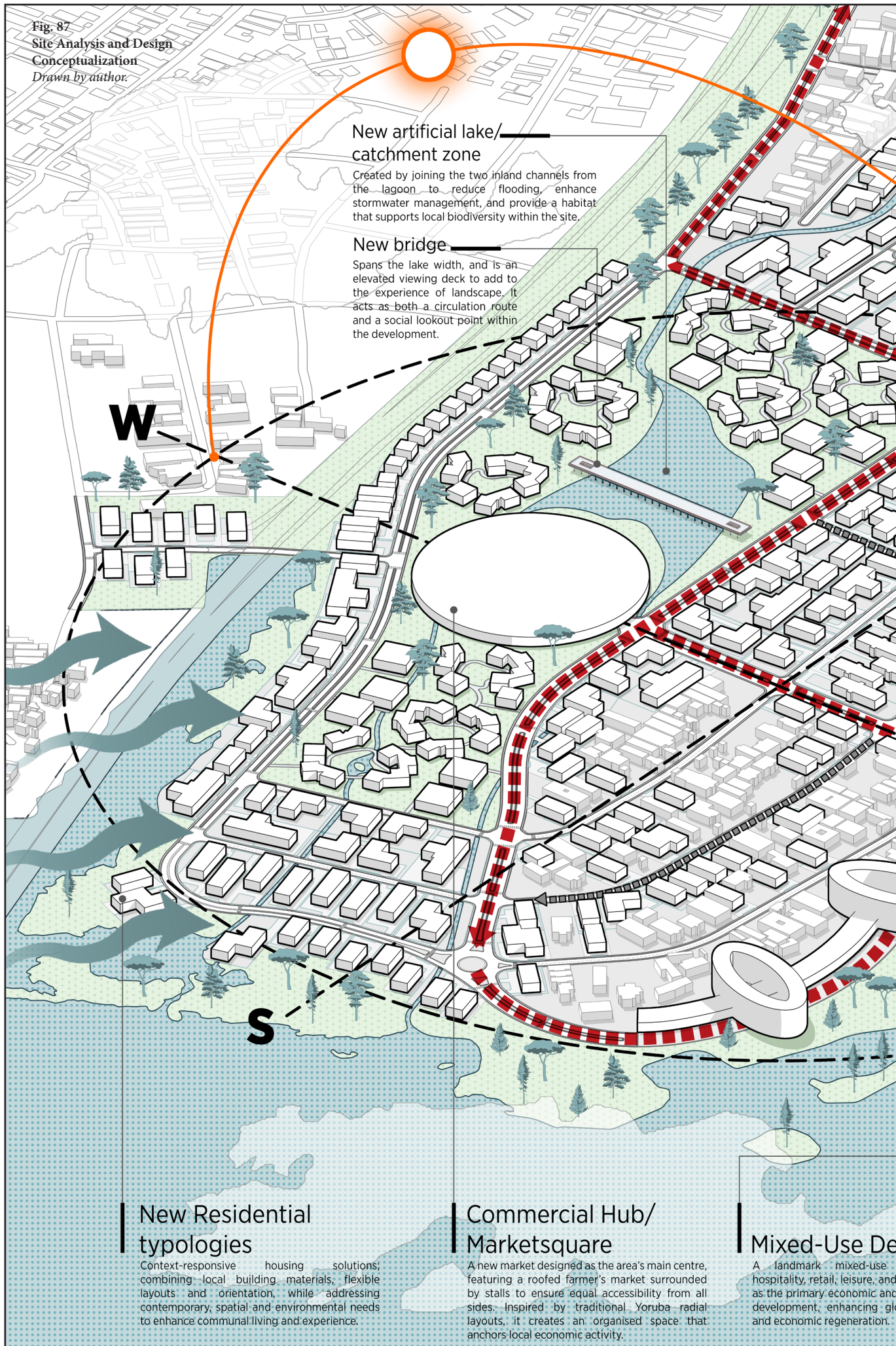


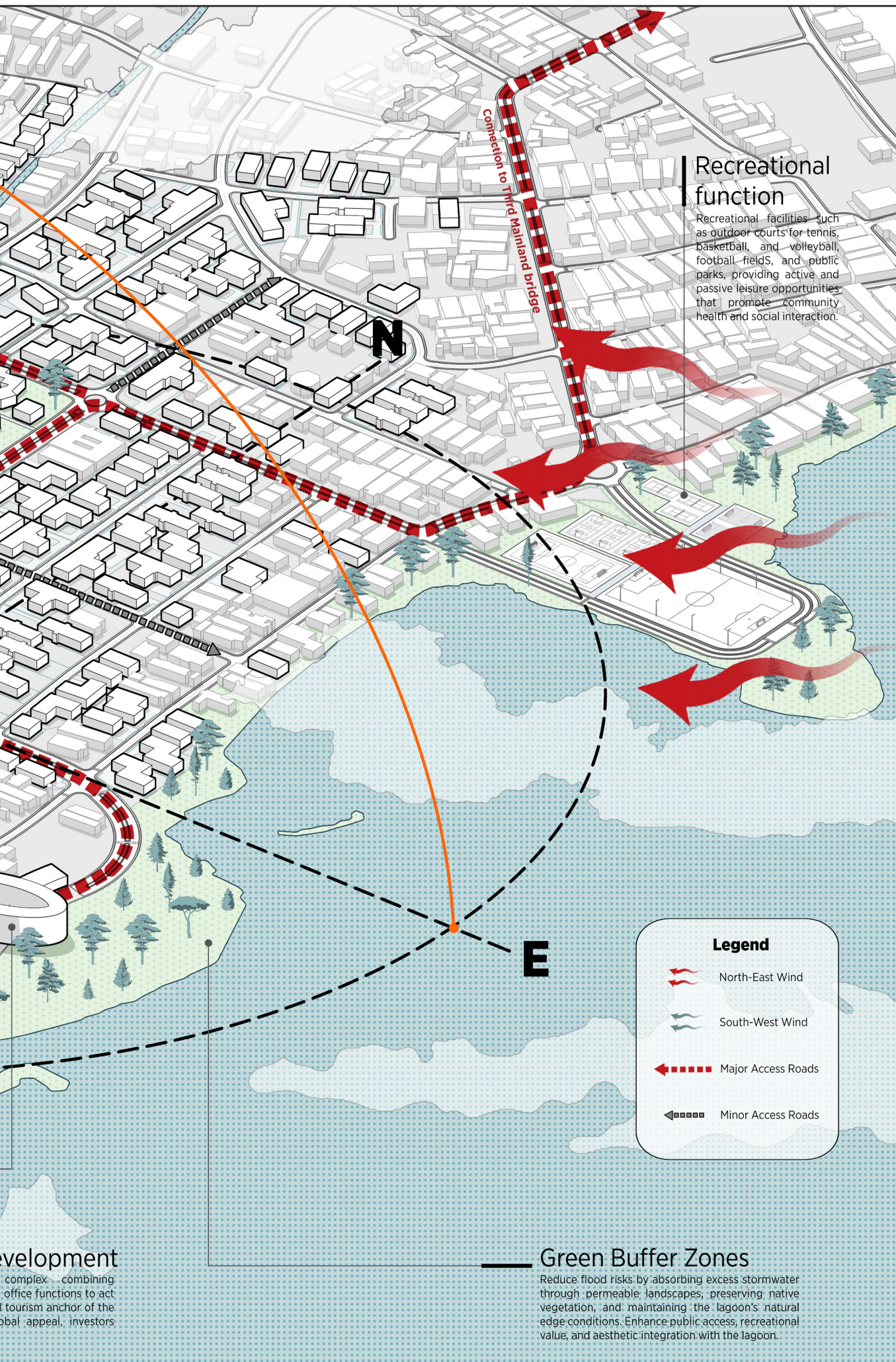
Fig. 86 Speculative diagrams of how street layouts around the Lagos Lagoon were formed

(left) Colonial urban layout of Ebute-Metta with regular and even-spaced grid (as is in the 1960 town plan and is existing today)

(top right to bottom right) Urban layout of Somolu, another settlement around Lagos

Fig. 87
Site Analysis and Design
Conceptualization
Drawn by author.





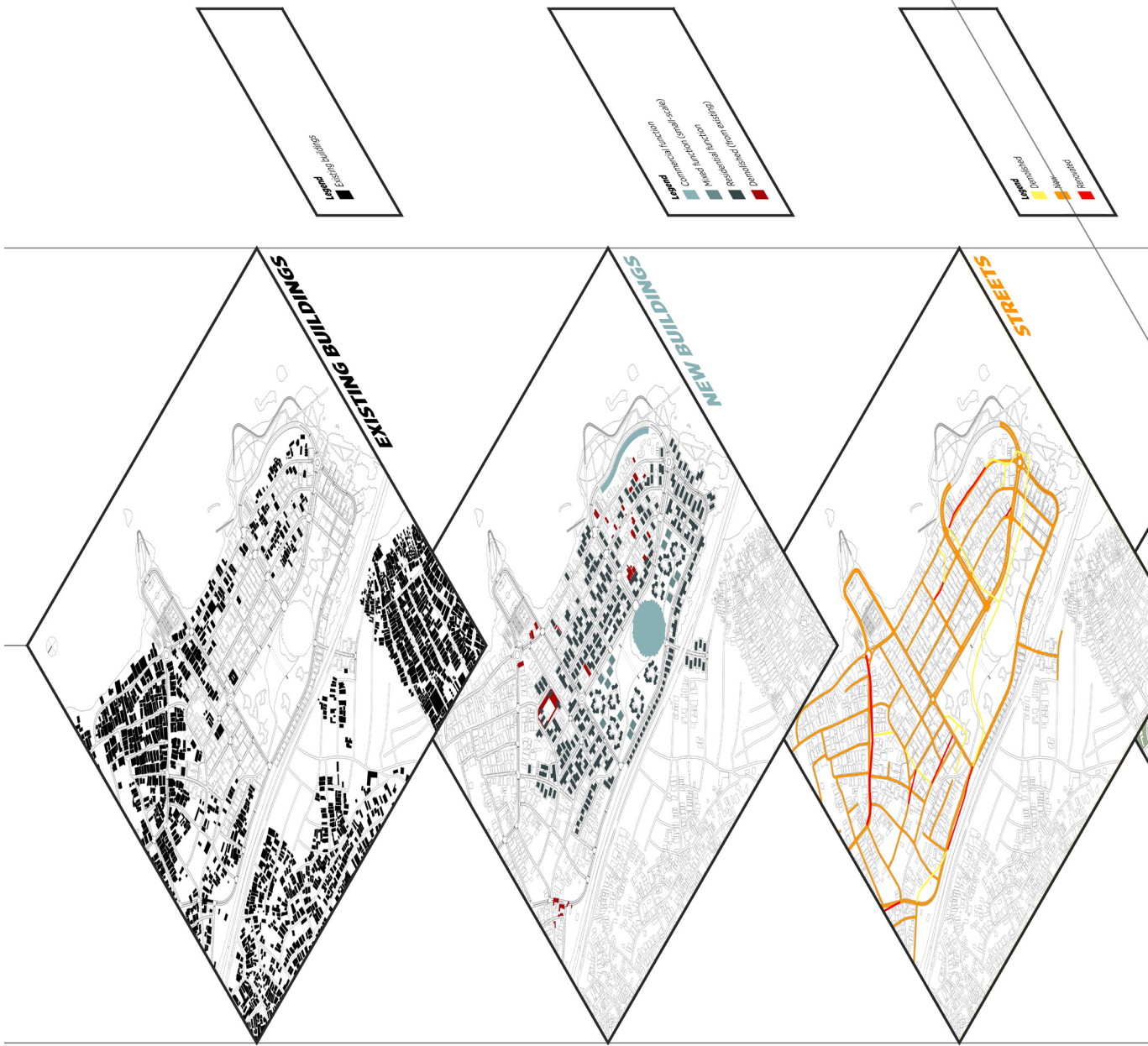
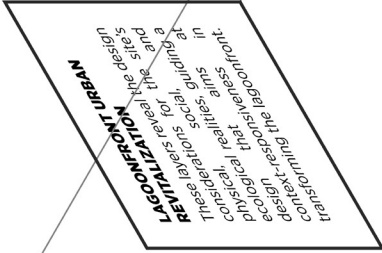


Fig. 88
Mapping of Design Layers and Infrastructure
Drawn by author.



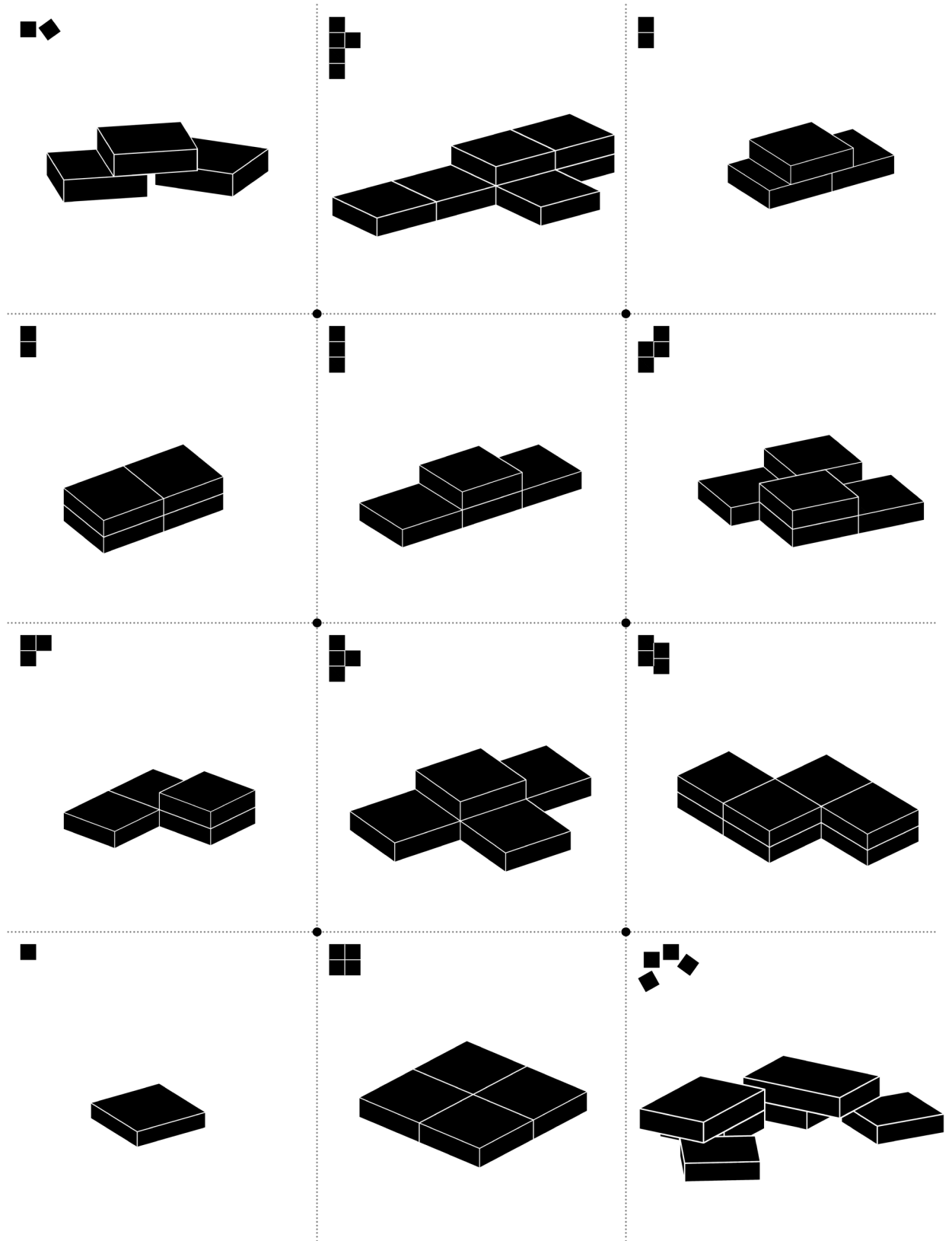


Fig. 89

Catalogue of block models of proposed new architecture typologies

Utilising a 12m x 12m grid, to create different typologies adapted to different housing situations. Drawn by author.

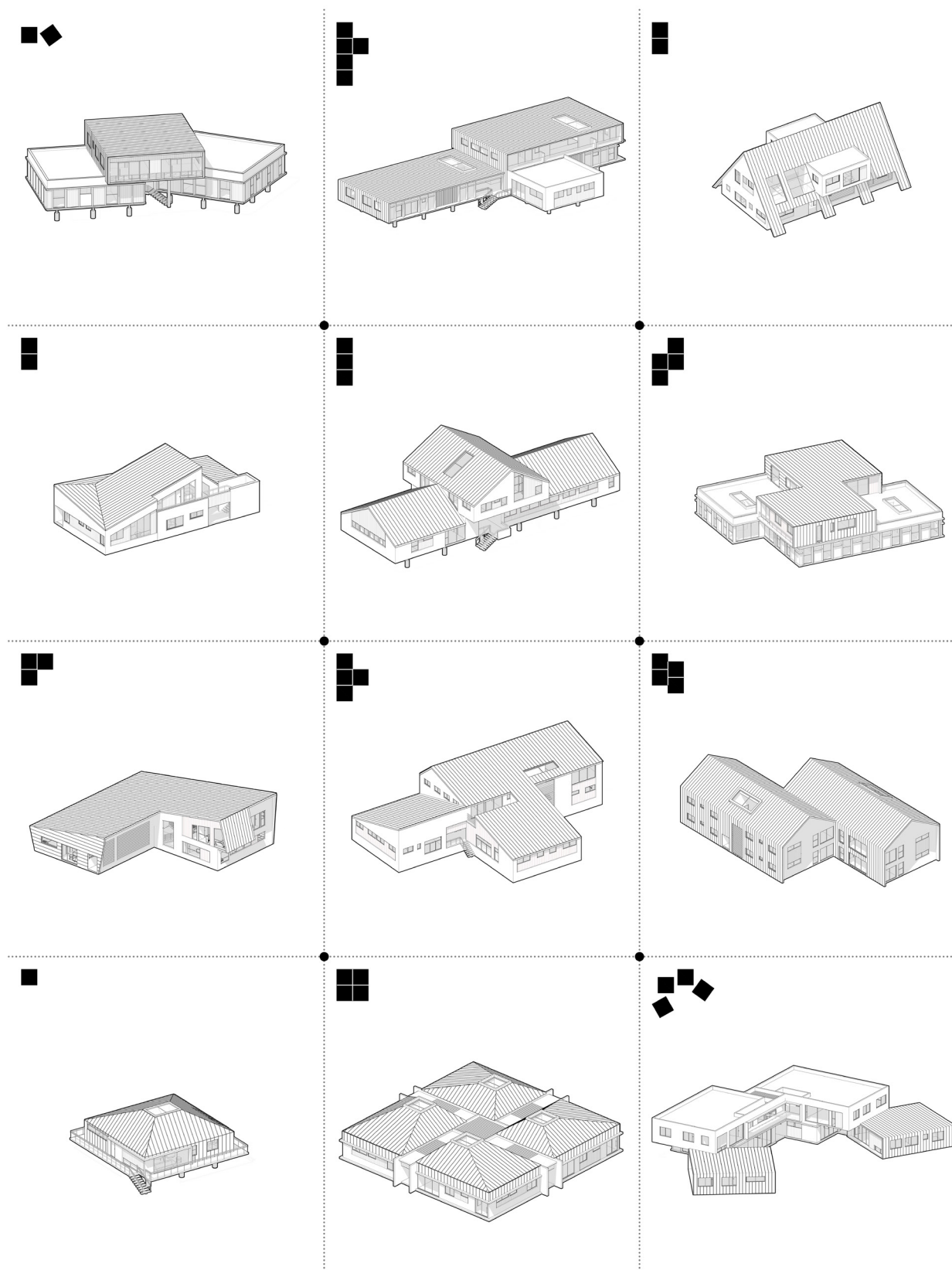


Fig. 90
 Catalogue of proposed new architecture typologies
Drawn by author.



Fig. 91 Masterplan.
Drawn by author.





Fig. 92 Axonometric view of design proposal
Drawn by author.





Fig. 93 Section A-A of Masterplan
Drawn by author.





Fig. 94 Axonometric view of residential typologies
Drawn by author.





Fig. 95 Axonometric view of commercial typologies
Drawn by author.



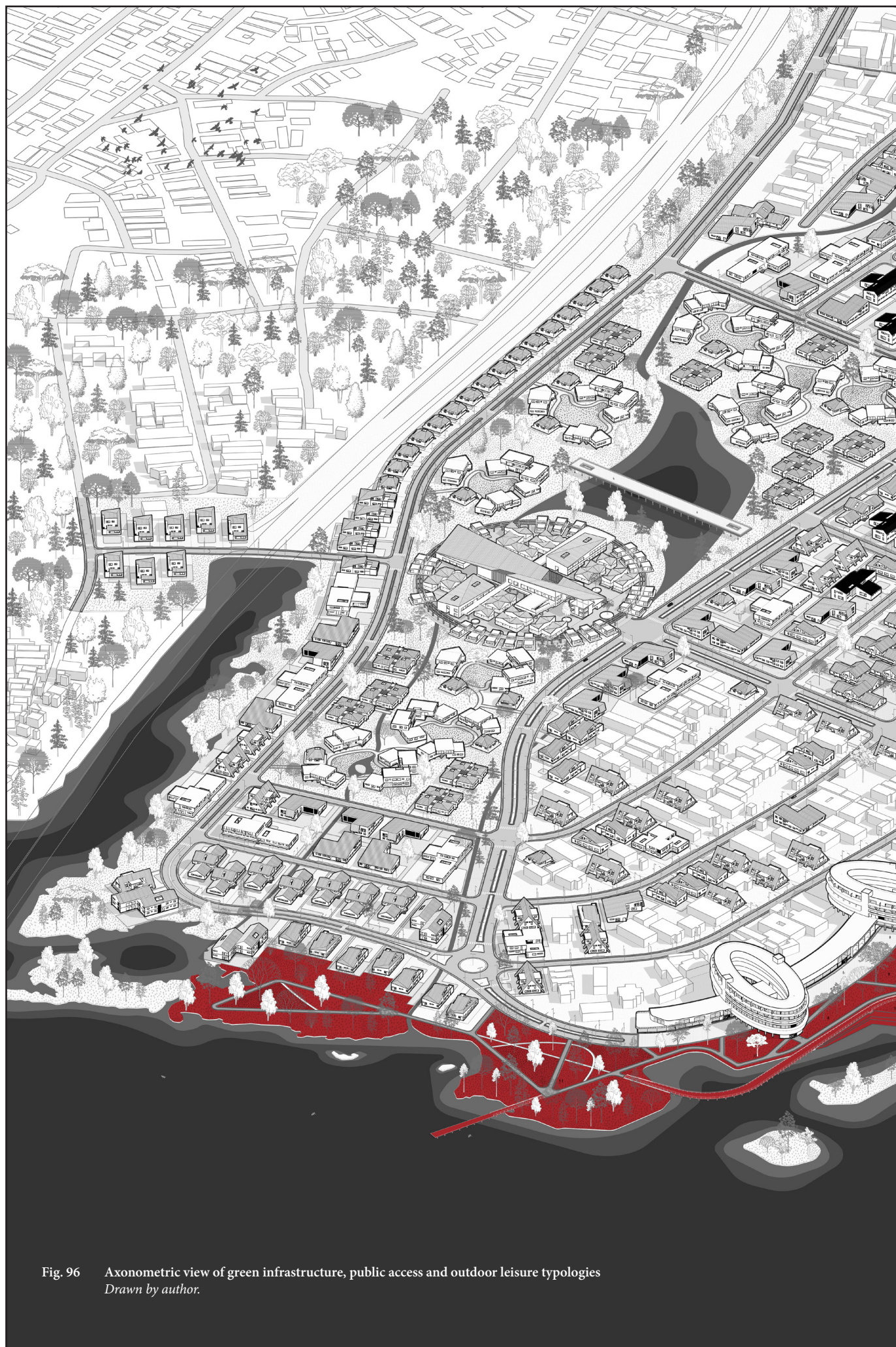


Fig. 96 Axonometric view of green infrastructure, public access and outdoor leisure typologies
Drawn by author.



Recreational typologies

- Recreational and outdoor leisure facilities; with public access

Fig. 97 Section B-B of Masterplan
Drawn by author.



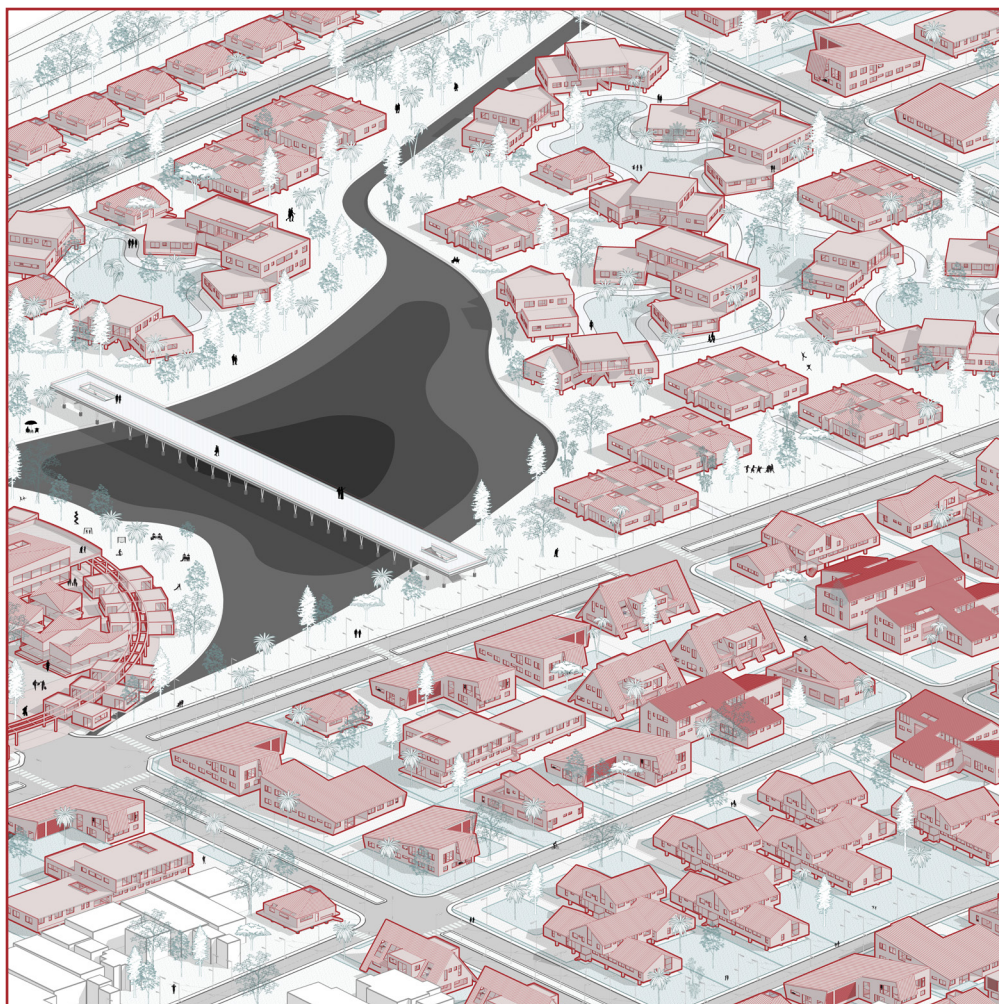


Fig. 98
Aerial Axonometric view of
masterplan.
Drawn by author.

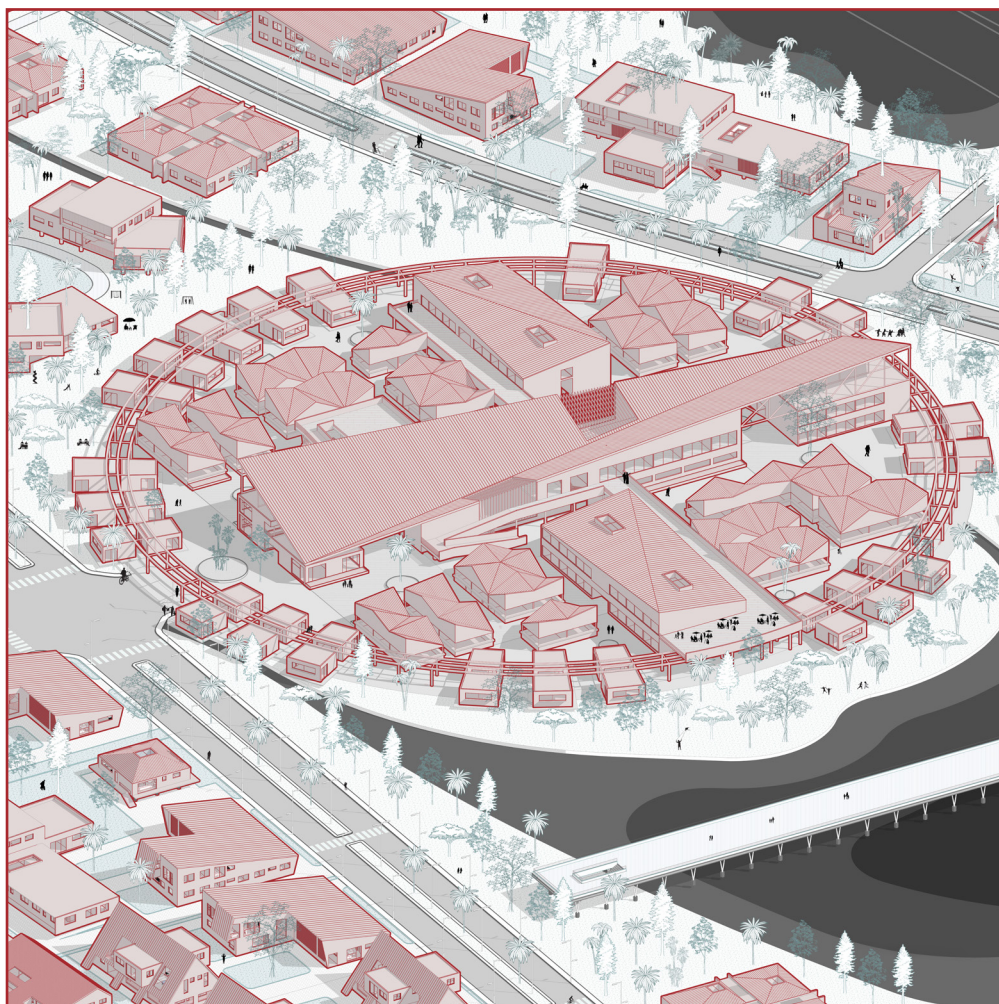


Fig. 99
Aerial Axonometric view of
masterplan.
Drawn by author.

Fig. 100
Aerial Axonometric view of
masterplan.
Drawn by author.

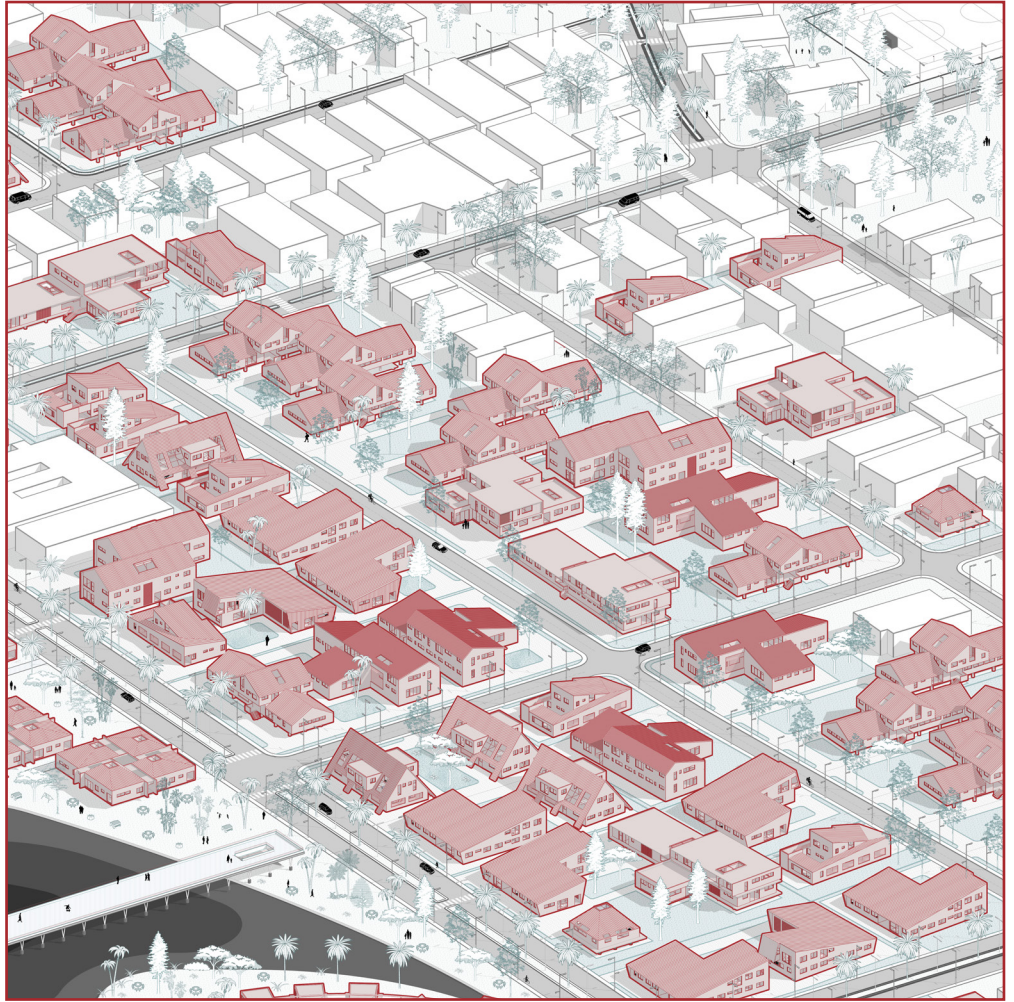
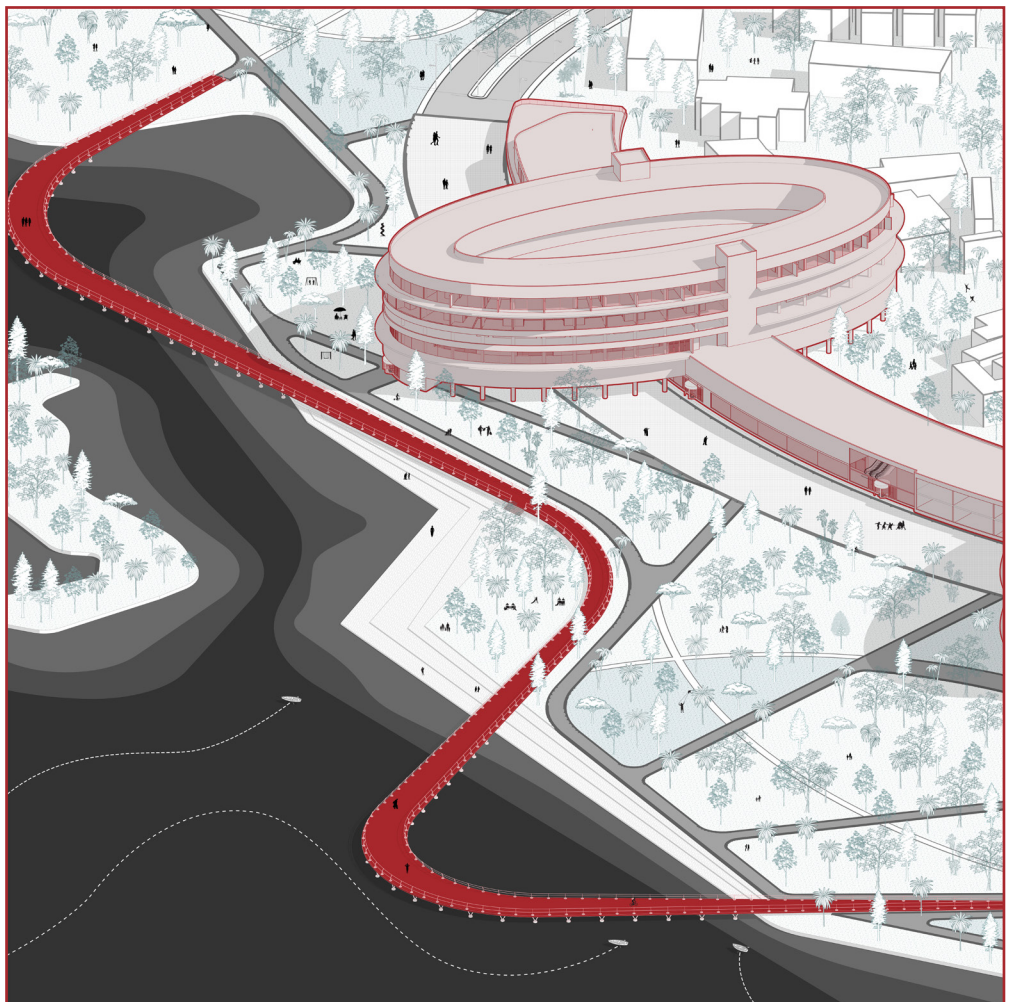


Fig. 101
Aerial Axonometric view of
masterplan.
Drawn by author.



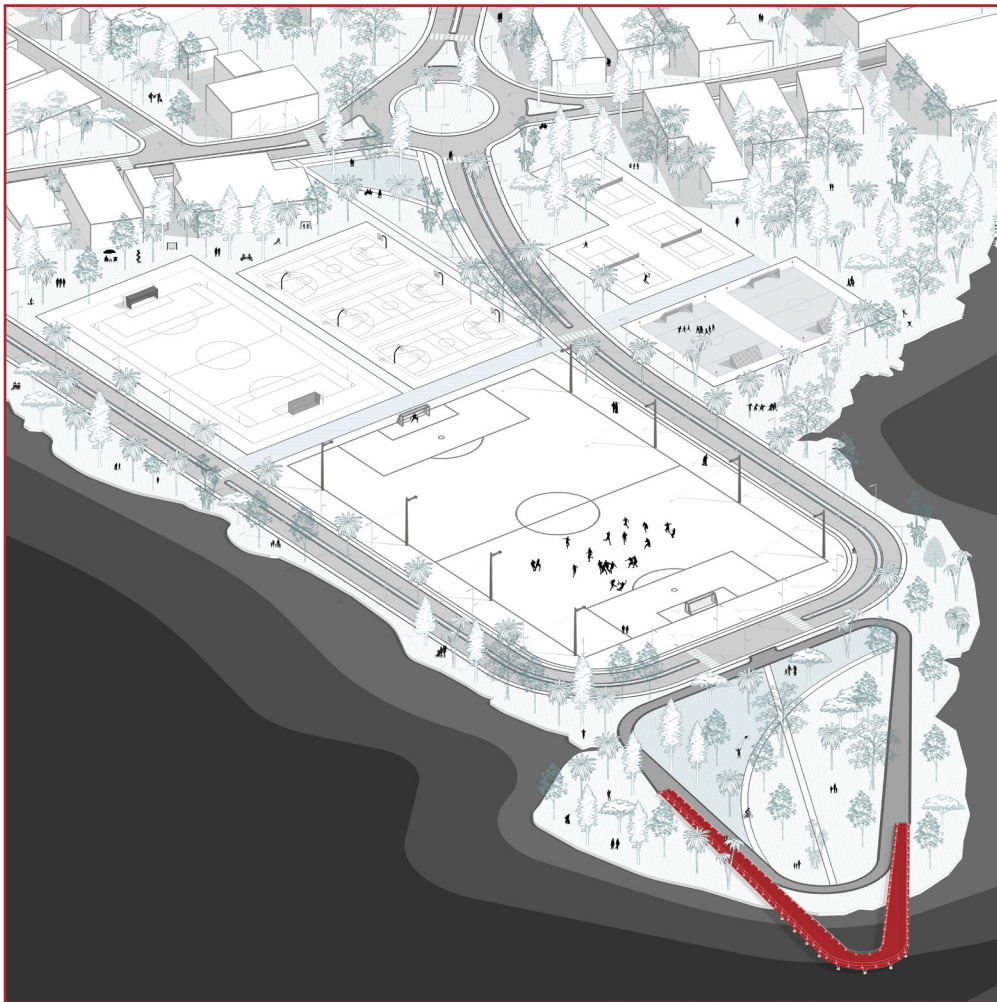


Fig. 102
Aerial Axonometric view of
masterplan.
Drawn by author.

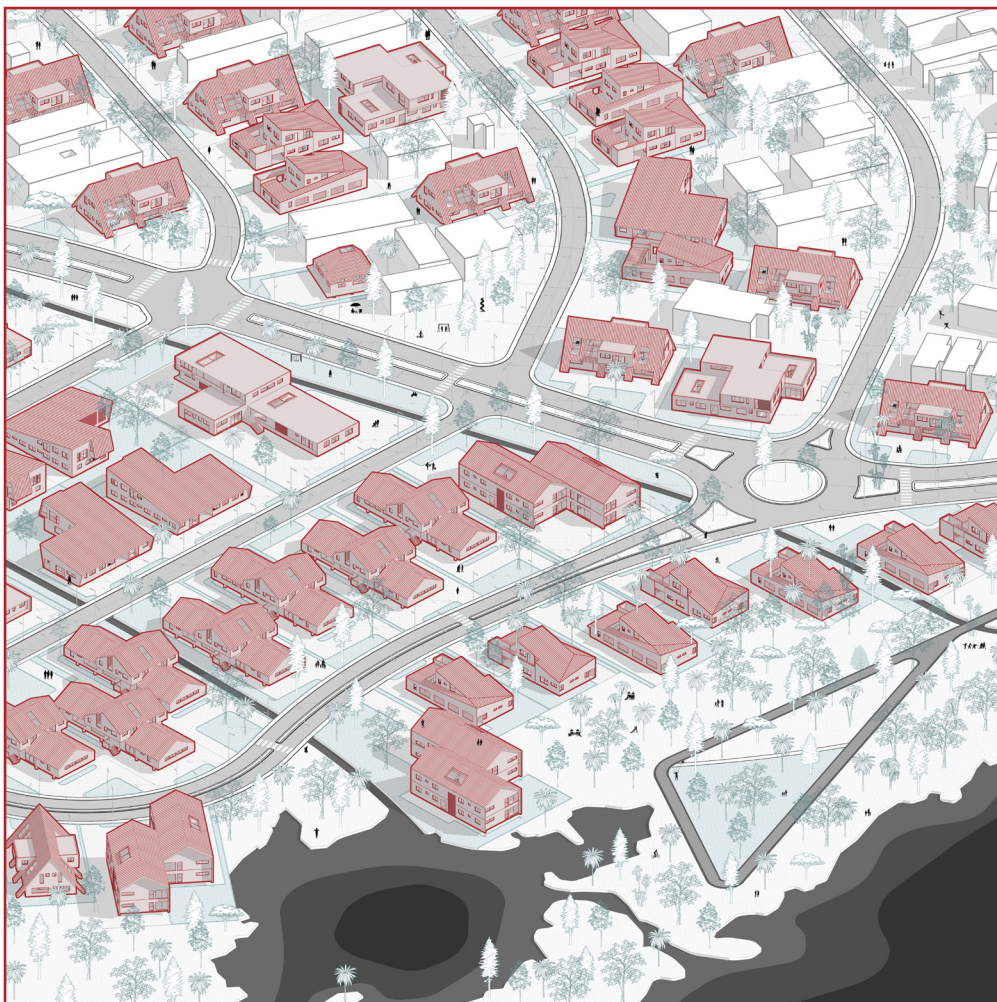


Fig. 103
Aerial Axonometric view of
masterplan.
Drawn by author.

Fig. 104
Perspective view of site.
Drawn by author.

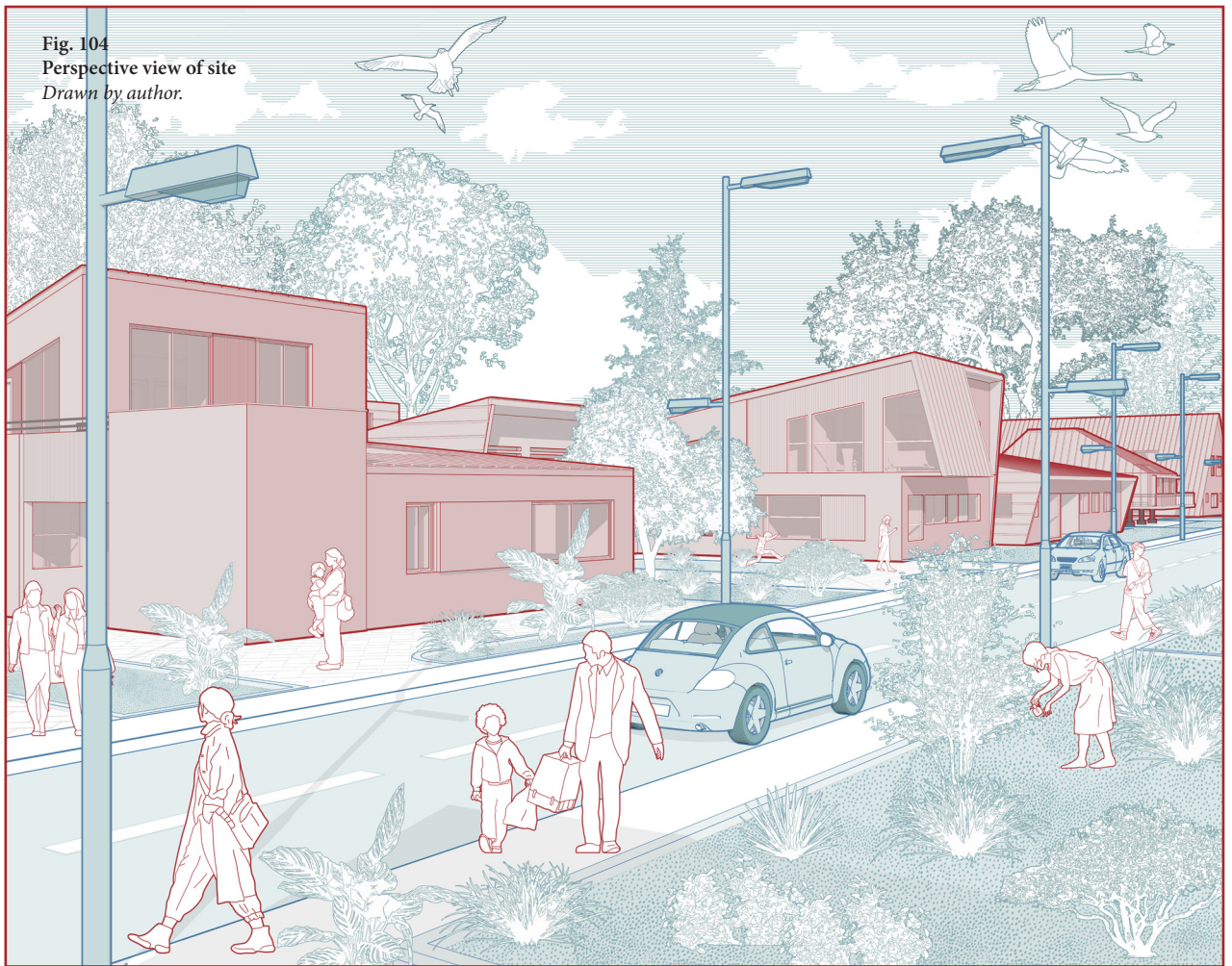


Fig. 105
Perspective view of site.
Drawn by author.





Fig. 106
Perspective view of site.
Drawn by author.

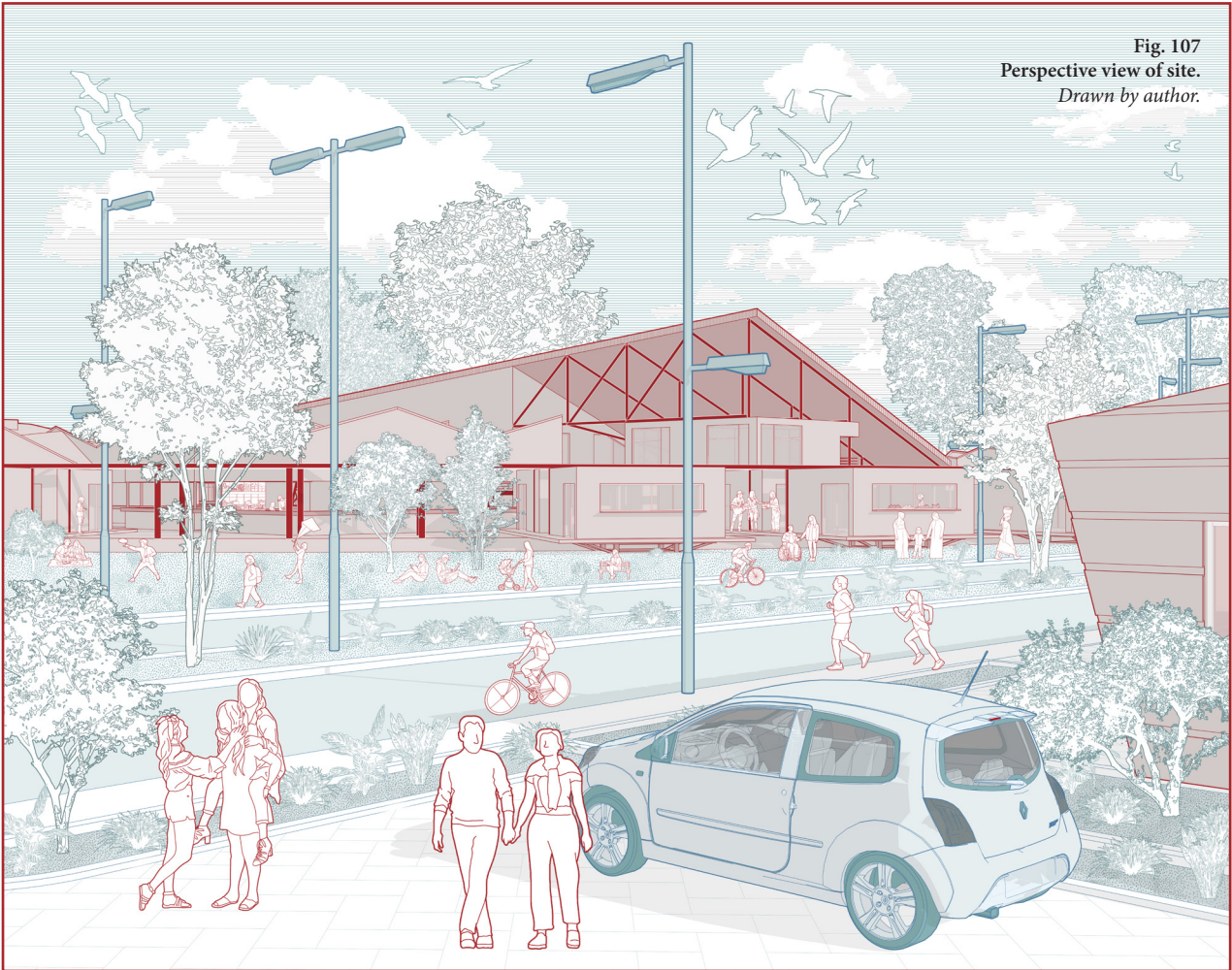


Fig. 107
Perspective view of site.
Drawn by author.

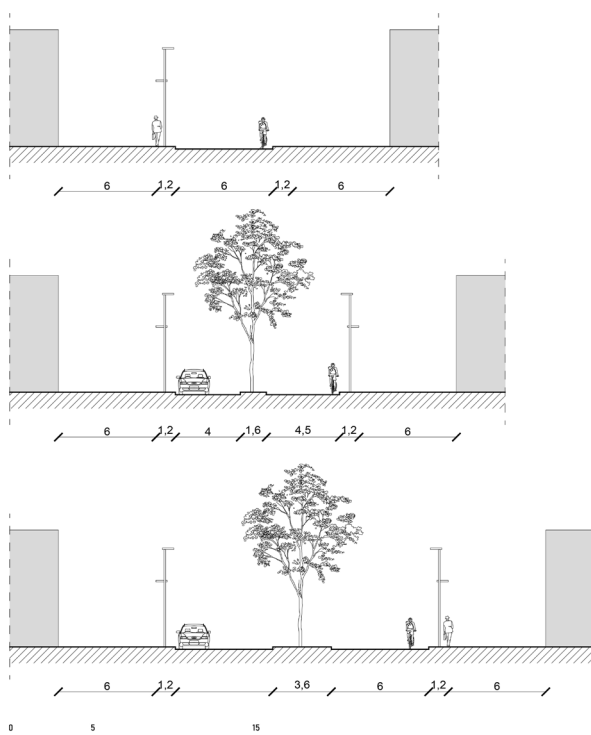
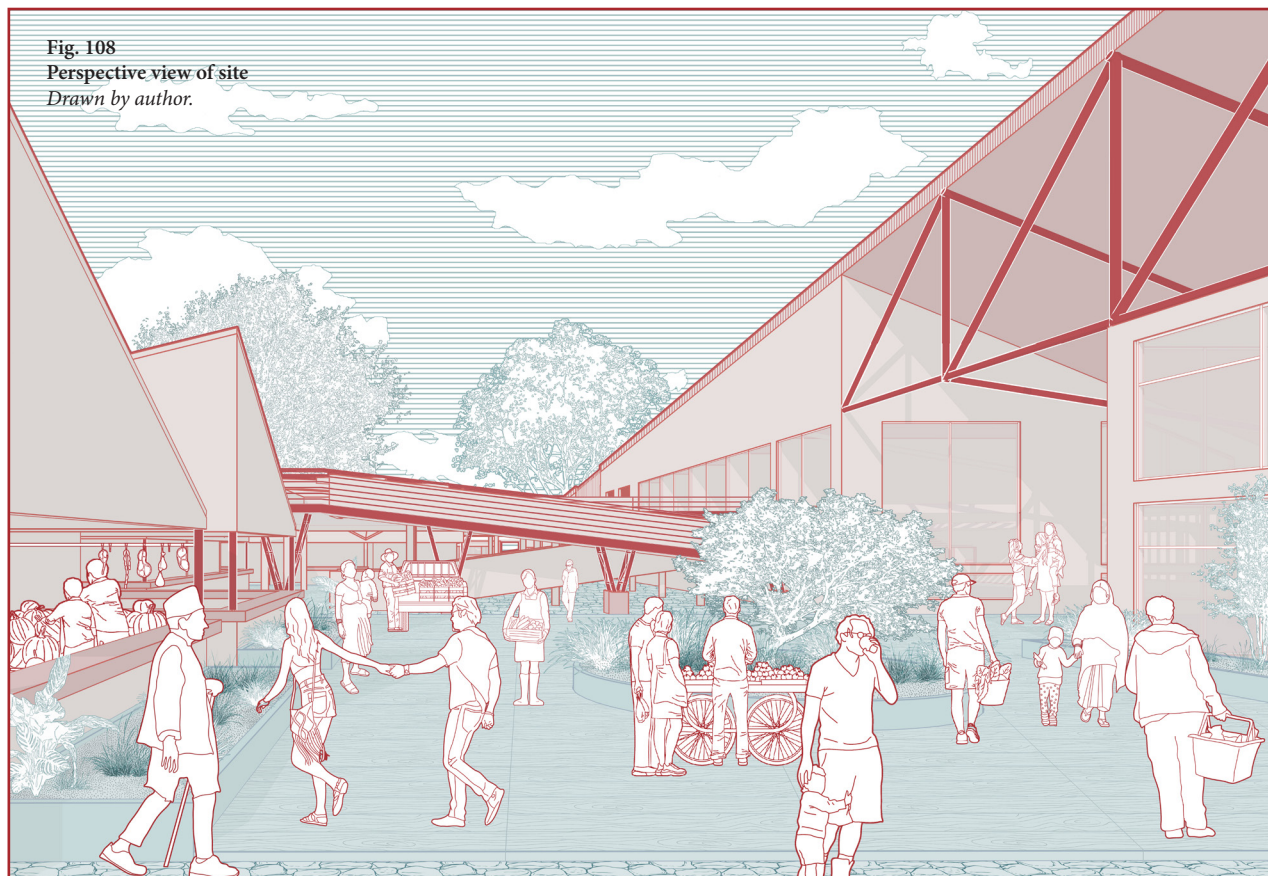


Fig. 109 Road Sections of design proposal.
Drawn by author.

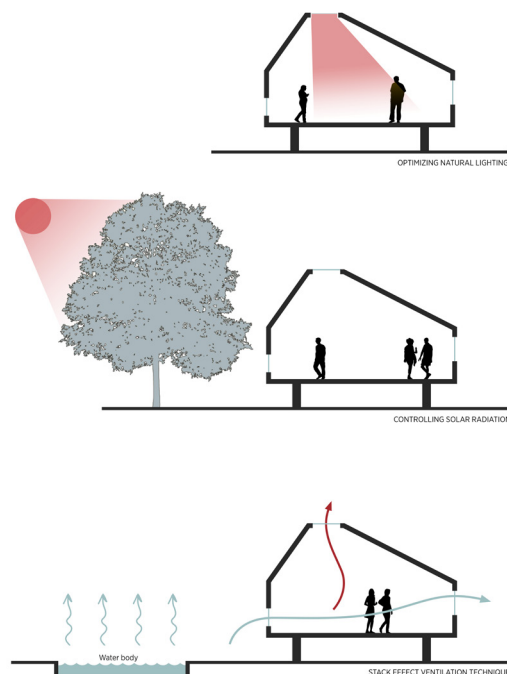


Fig. 110 Thermal comfort strategies and heat mitigation.
Drawn by author.

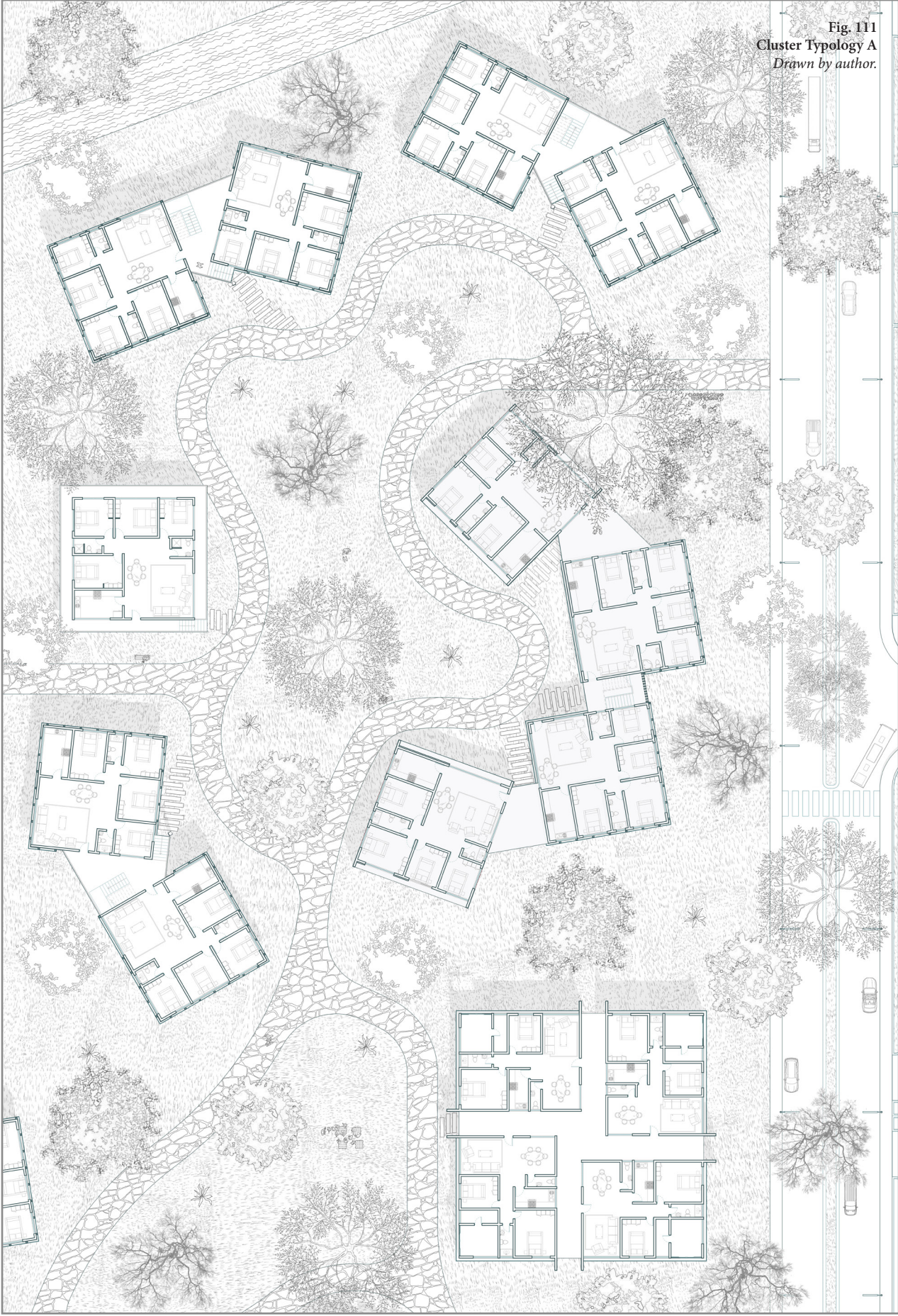
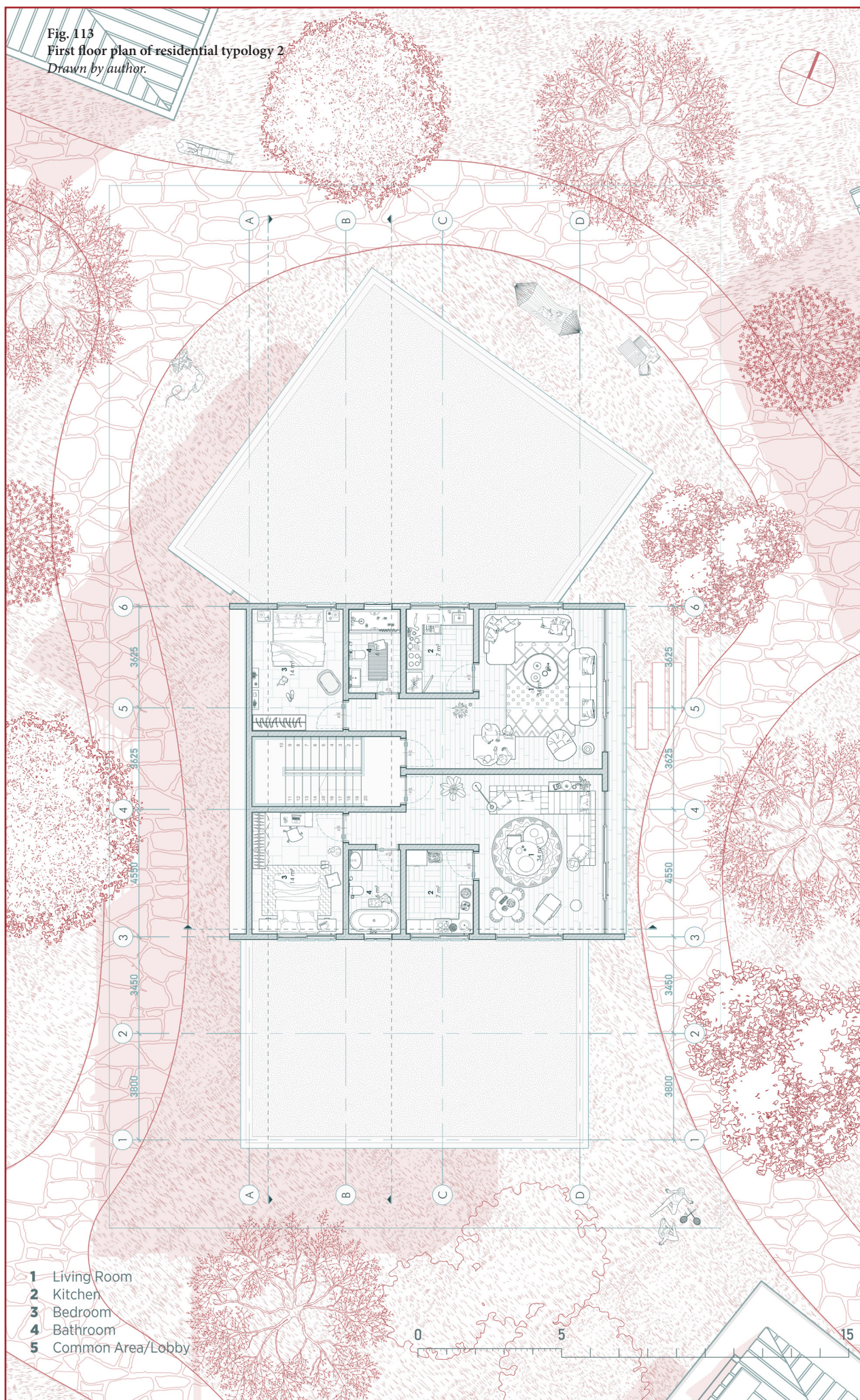


Fig. 111
Cluster Typology A
Drawn by author.

Fig. 112
Ground floor plan of residential typology 2
Drawn by author.



Fig. 113
First floor plan of residential typology 2
Drawn by author.



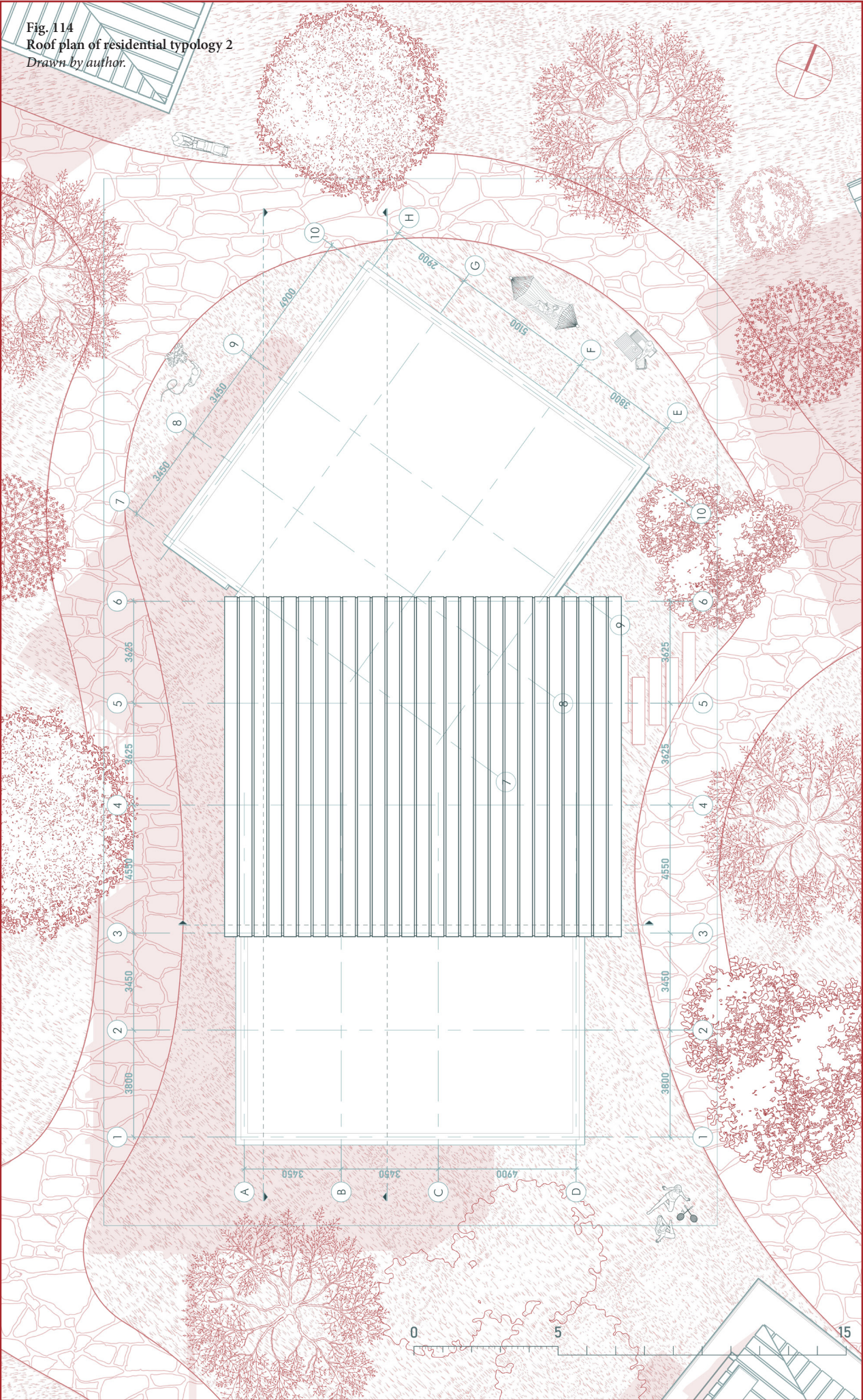


Fig. 115
North Elevation. *drawn by author.*



Fig. 116
West Elevation. *drawn by author.*



Fig. 117
South Elevation. *drawn by author.*

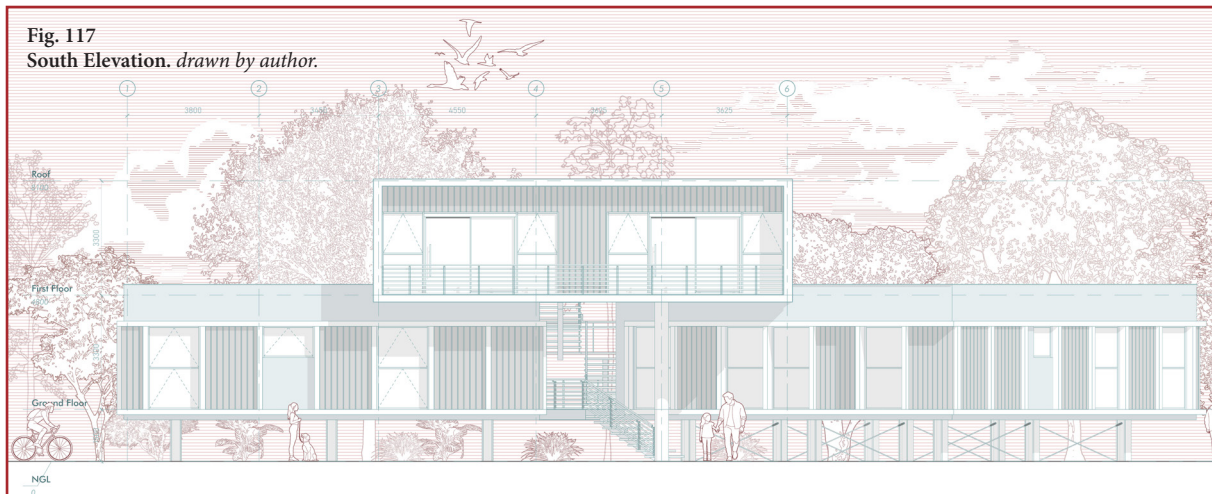


Fig. 117
South-East Elevation. *drawn by author.*



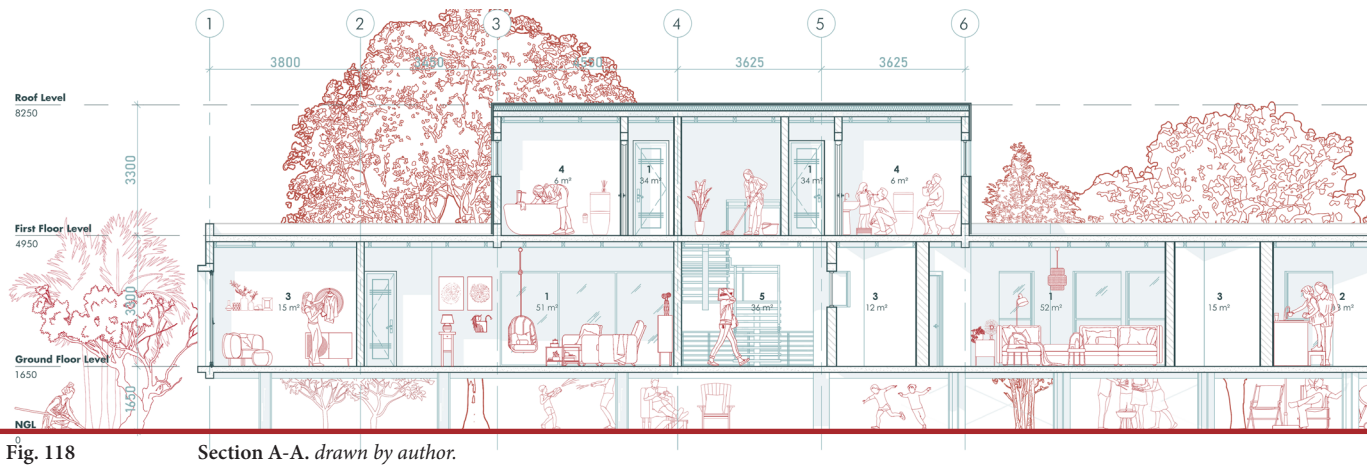


Fig. 120 Section C-C. drawn by author.



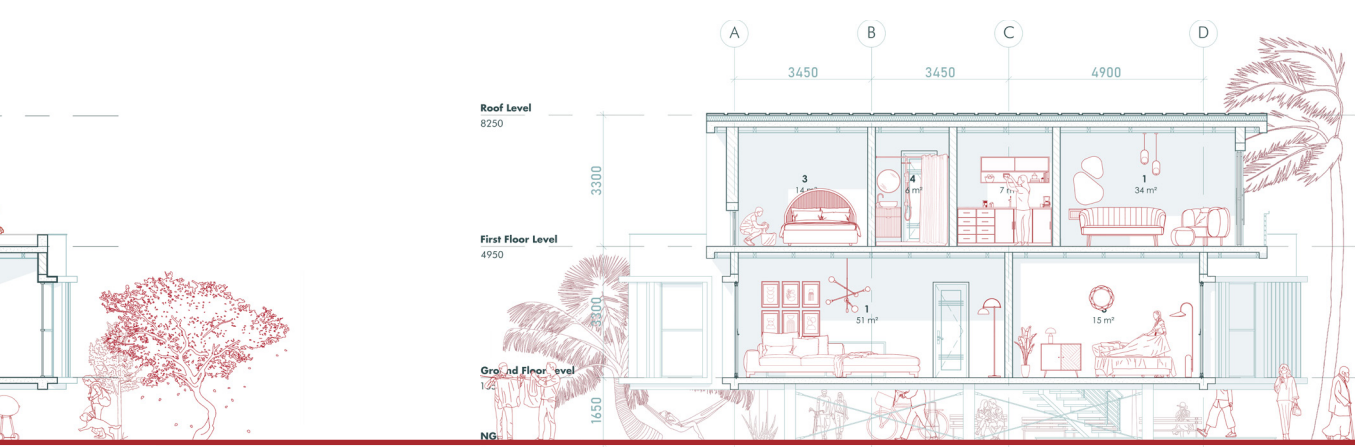


Fig. 119

Section B-B. drawn by author.

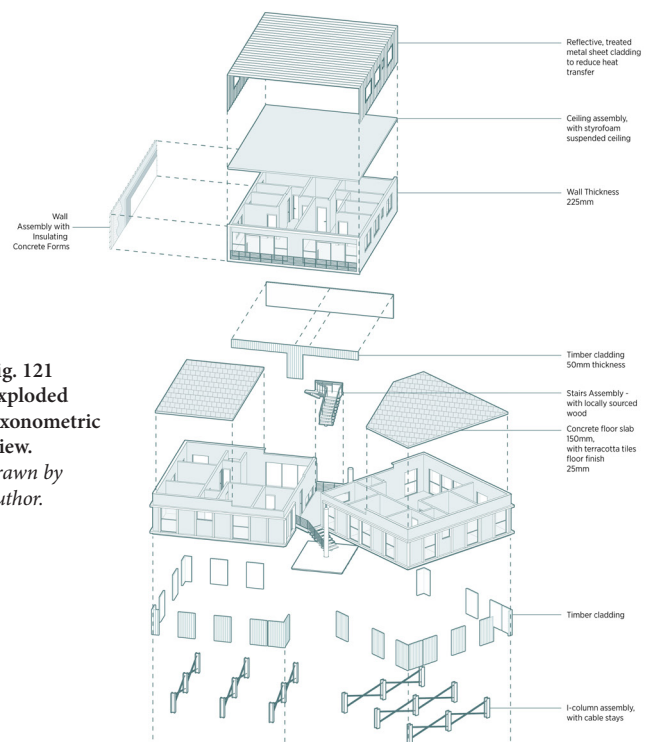


Fig. 121
Exploded
Axonometric
View.
drawn by
author.

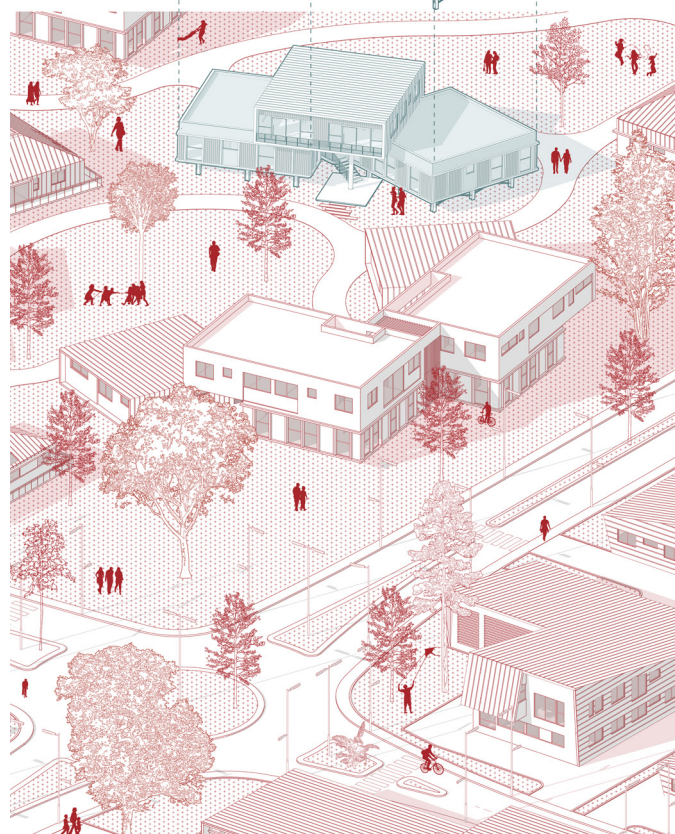
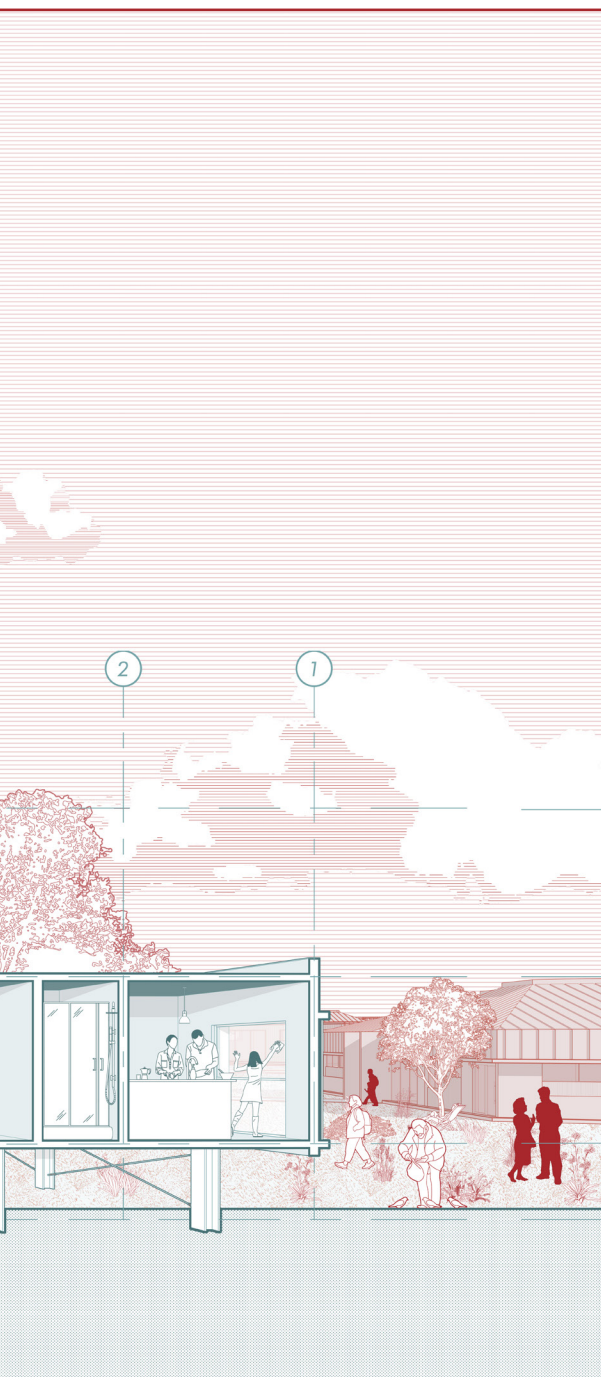


Fig. 122

Realistic Rendering of residential typology.
by author.







Fig. 123

Realistic Rendering of residential typology.
by author.



6.8 Logic of Implementation

The implementation strategy for this urban village model is rooted in the recognition that context is paramount. The design proposed here is not intended to be replicated as a fixed blueprint across different sites; rather, its underlying logic serves as a template or guide for future urban renewal projects within Lagos and other similar metropolitan contexts. Its strength lies not in prescriptive form-making, but in the adaptability of its conceptual framework, design ideology, and objectives to specific socio-ecological, cultural, and morphological conditions. This project positions itself as an experiment in hypothesis-driven urban revitalisation, demonstrating that sustainable and inclusive redevelopment requires architectural and spatial solutions tailored to the lived realities, historical evolution, and ecological context of each site. The integration of wetlands restoration, housing provision across economic hierarchies, cultural programming, a market square, and mixed-use tourism development are all context-derived interventions responding to Oworonshoki's unique identity. Thus, the proposed model advocates for site-specific design logic rather than the uncritical transplantation of a singular urban form.

In terms of institutional delivery, the proposal is predicated on government-led implementation rather than private sector-driven development. This is critical to safeguarding the public interest, housing equity, and long-term urban integrity. The residential components, in particular, are envisioned to remain under government ownership upon project completion, with units rented out to occupants under a public housing scheme. This approach ensures that the government retains control as the "landlord," preventing early transfer of ownership that could lead to partitioning, subletting, squatting, or informal alterations that undermine the design's calculated provisions for water supply, sanitation infrastructure, minimum square metre area per person, and intended population density. Lessons from other large-scale housing projects in Nigeria, such as the Jakande Estates in Lagos, illustrate how early transfer of ownership without regulatory frameworks led to unplanned partitioning, informal extensions, and commercial encroachment, ultimately overburdening infrastructure systems and eroding spatial and design quality (Agunbiade et al., 2012).

Maintaining government ownership during the initial years allows time for the establishment of regulatory provisions, management bodies, and legal constructs that ensure the sustainable

use and upkeep of housing units. Only after such frameworks are operational and community governance structures stabilised should ownership be transferred to individuals and households. For the tourism hub component, private sector participation is encouraged to harness investment capital and operational expertise required for such facilities. However, the commercial market hub is proposed as a government-delivered and operated facility, safeguarding its purpose as an inclusive space prioritising access and opportunity for all demographic groups, rather than becoming exclusive or gentrified under private management. Ultimately, the logic of implementation foregrounds contextual specificity, public sector leadership, and phased regulatory consolidation as conditions for successful replication of this urban village model. By adopting these principles, future urban renewal projects can deliver spatial justice, ecological resilience, and cultural continuity while avoiding the pitfalls of decontextualised, profit-driven development paradigms.

6.8.1. Evaluation Framework

To ensure accountability and continuous improvement in the execution of such a project, an evaluation framework is proposed, structured around three main dimensions

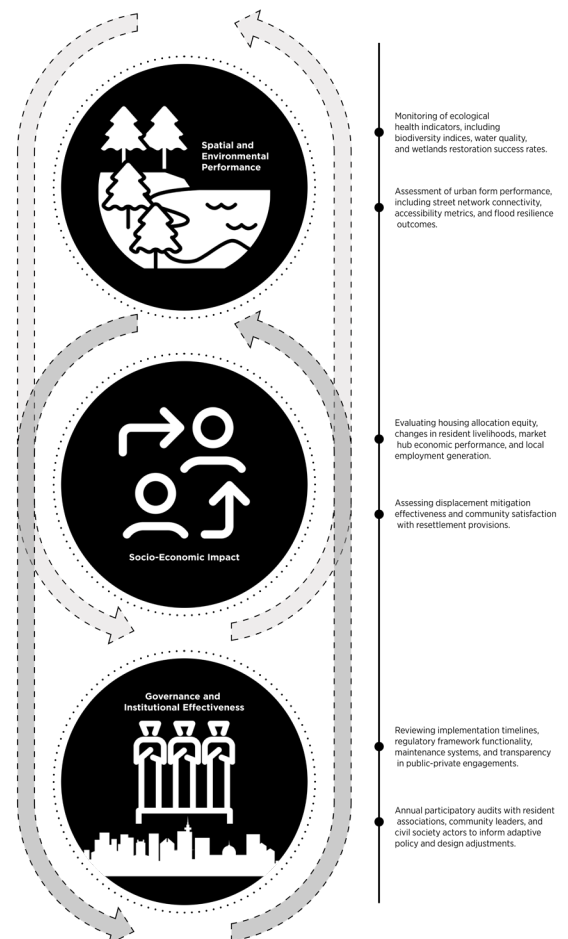


Fig. 124 Evaluation Framework
Based on author's design hypothesis

6.8.2. Policy Recommendations


The success of the urban village model requires supportive policy frameworks.

Policy	Details
Government-Led Urban Renewal Policies	Positioning the government as the primary implementer and manager of urban revitalization projects, especially housing components, to safeguard public interest and prevent market-driven exclusion.
Contextual Urban Design Guidelines	Developing citywide guidelines mandating context-responsive design, heritage integration, and ecological preservation in waterfront redevelopment.
Inclusive Housing Policies	Legislating for minimum per capita living space, anti-subletting regulations, and affordable rent controls to maintain design integrity and social equity.
Ecological Protection Policies	Strengthening wetlands conservation laws and enforcing Environmental Impact Assessments (EIAs) with community consultation as a mandatory requirement.
Public-Private Partnership (PPP) Frameworks	Creating clear frameworks for PPPs in tourism and commercial development that prioritize environmental compliance, local employment, and cultural programming obligations.

Tab. 2 Policy Recommendations
Based on author's design hypothesis

6.8.3. Implementation Phasing

The implementation of the urban village proposal is envisioned as a phased process, allowing for manageable execution, evaluation, and adaptive learning. The proposed phasing is as follows:



Phase	Details
Site Preparation and Ecological Restoration	This phase focuses on preparatory works, including site clearance, ecological assessments, and wetlands rehabilitation. Rehabilitating mangrove zones and establishing hybrid habitats/constructed wetlands are prioritized to restore ecological balance and provide natural flood buffers. Detailed hydrological modelling should be undertaken to inform infrastructure layout and building placement, ensuring resilience to flooding.
Infrastructure and Service Provision	The essential infrastructure, including road networks, water supply, sanitation systems, and electricity connections. Green infrastructure elements such as bioswales, permeable pavements, and retention basins would be integrated to support environmental sustainability.
Housing and Residential Development	This phase involves the construction of residential units, low-rise structures to align with local morphological context and reduce structural load on reclaimed land.
Commercial and Market Hub Construction	Development of the market square and commercial hub occurs in this phase, establishing the site's role as a new urban centre. The design should be completed alongside detailed operational frameworks to ensure accessibility, safety, and maintenance standards are upheld from inception.
Mixed-Use Tourism Hub Development	Construction of the mixed-use tourism hub near the lagoon edge, potentially through public-private partnerships. It should align with ecological guidelines to minimize waterfront degradation and integrate cultural programming spaces to reinforce place identity.
Cultural Programming and Community Activation	Final implementation includes public realm enhancements, cultural installations, and programming such as festivals, art exhibitions, and craft markets to activate spaces and instill a sense of ownership among residents and visitors.
Regulatory Consolidation and Ownership Transfer	This concluding phase focuses on establishing management bodies, regulatory frameworks, and legal constructs for housing allocation and market operation. Only after successful consolidation should gradual transfer of residential unit ownership to individuals be considered, ensuring structural and infrastructural integrity is maintained.

Tab. 3 Implementation Phases
Based on author's design hypothesis

Conclusion

This thesis serves as a detailed exploration of urban waterfronts, using Lagos Lagoon in Nigeria and the Yangtze River in Nanjing, China, as comparative case studies to understand the relation between memory, identity, and urban morphology. These waterfronts, shaped by distinct historical, cultural, and socio-economic trajectories, reveal the complexities of urbanization in a globalized world. The research sought to answer fundamental questions about how cities negotiate the preservation of cultural memory with the imperatives of modernization, particularly in the context of informal settlements and their socio-spatial dynamics. By revisiting the key objectives of the research, this conclusion synthesizes the findings, and has explored the possibility of creating an urban village model as an alternative approach to waterfront urban renewal in Lagos. Using Oworonshoki as a case study, the study demonstrated how contextually grounded design strategies can address the spatial, ecological, and socio-economic challenges niche to informal settlements subjected to reclamation and redevelopment pressures within these waterfronts.

The design proposal intentionally rejected a homogenised, top-down urbanism in favour of an approach rooted in site-specific realities, community histories, and ecological systems. By integrating housing for displaced residents with multi-functional spaces, ecological rehabilitation, and culturally resonant public realms, the proposed urban village seeks to achieve spatial justice, environmental resilience, and cultural continuity. Furthermore, the project foregrounded government-led implementation and regulatory stewardship as critical conditions for sustaining the integrity of public housing and urban spaces.

The proposal advocates that urban revitalisation must balance infrastructural ambition with considerations for memory and identity such a space has curated for itself, and its meaning to occupants to avoid reproducing displacement, marginalisation, and environmental degradation.

Key Findings

The comparative analysis of Lagos Lagoon and the Yangtze River waterfront revealed critical insights into the socio-spatial dynamics of urban waterfronts: The Lagos Lagoon's surrounding urban areas are illustrative of the tensions between legacy of space and formal governance. Settlements like Makoko, though often excluded from official urban planning narratives, embody socio-spatial ingenuity and adaptability. Their organic evolution reflects deep-seated cultural practices and community resilience in the face of socio-economic adversity. However, the neglect of these settlements by urban authorities has exacerbated environmental degradation and socio-economic inequality, creating a fragmented urban landscape. The systemic marginalization of these distinct settlements highlights the need for urban governance that embraces inclusivity and engages with informal communities as critical stakeholders in the urbanization process. This perspective reveals the potential for these settlements to contribute to the broader urban narrative of Lagos if adequately supported by infrastructure and policy interventions. By contrast, the Yangtze River waterfront in Nanjing showcases a state-led approach to urban development. Here, deliberate governance strategies have sought to harmonize heritage preservation with

styles within contemporary urban frameworks highlights a cohesive narrative of cultural continuity. This approach demonstrates how state-led policies can effectively preserve collective memory while meeting the demands of modern urban life. Nanjing's focus on integrating historical landmarks and cultural heritage into its urban planning serves as an instructive model. Memory and legacy emerged as pivotal forces in shaping urban identity in both cases. In Lagos, the informal settlements on the lagoon shores—with their stilt houses and organic spatial arrangements—act as repositories of collective memory, preserving indigenous knowledge systems despite socio-economic marginalization.

In Nanjing, the careful curation of historical landmarks along the Yangtze River shows the importance of memory in sustaining a city's cultural identity. These findings reaffirm the role of urban memory not only as a record of the past and a resource for envisioning a sustainable and inclusive future. The juxtaposition of Lagos's grassroots cultural resilience with Nanjing's top-down heritage management reveals different pathways to achieving this integration. The role of governance was another critical finding. Lagos illustrates the consequences of unregulated urbanization and the exclusion of marginalized communities from formal planning processes. The absence of proactive policy measures has deepened socio-economic disparities, resulting in the proliferation of informal settlements without adequate infrastructure or access to resources. In contrast, Nanjing exemplifies how proactive governance can balance historical preservation with economic development. The city's robust planning frameworks integrate cultural narratives into urban growth strategies, ensuring that modernization does not erase its historical and cultural fabric. These divergent governance strategies underscore the importance of inclusive policy frameworks that address the needs of all urban residents. Architectural typologies also reflect the socio-economic and cultural histories of these waterfronts.

In Lagos, the juxtaposition of colonial-era structures, indigenous forms, and contemporary informal settlements creates a dynamic but fragmented urban aesthetic. The architectural landscape reveals a narrative of constant adaptation, reflecting how communities have responded to systemic neglect by creating their own spatial solutions. Nanjing's waterfront, by contrast, presents a

more unified architectural narrative, integrating traditional Chinese styles with modern infrastructure to reflect a harmonious urban identity. This cohesion reflects deliberate efforts to preserve and celebrate the city's cultural legacy while accommodating modern urban demands.

Implications for Theory, Practice, Research, and Policy

The findings of this thesis have significant theoretical, practical, and policy implications. Theoretically, this research advances the understanding of urban memory as a driver of morphological evolution. It emphasizes the role of informal settlements as dynamic spaces of cultural continuity and socio-spatial adaptation, challenging conventional notions of urban development as a purely formal process. By framing informal settlements as spaces of innovation and resilience, the study contributes to broader debates about the role of marginalized communities in shaping urban futures. Practically, the findings highlight the importance of context-sensitive urban design. For Lagos, the proposed urban village model demonstrates how adaptive planning can address housing deficits while preserving cultural identity. This approach advocates for the integration of informal settlements into formal planning frameworks, recognizing their socio-cultural and economic contributions. The model emphasizes co-creation with communities, ensuring that development initiatives align with local needs and values. Nanjing's heritage-driven development provides a replicable model for cities seeking to balance modernization with historical preservation.

The city's approach demonstrates how strategic planning can create urban spaces that honor memory while fostering innovation. Policy implications include the urgent need for governments to adopt inclusive planning practices that address the needs of marginalized communities. Lagos's challenges highlight the necessity of policies that prioritize equitable development, environmental sustainability, and infrastructural investment in informal settlements. Urban planning frameworks must move beyond displacement-oriented strategies and instead embrace approaches that integrate informal settlements into the broader urban fabric. Nanjing's success illustrates the potential of strategic governance to harmonize cultural preservation with urban growth. Policymakers can utilize such strategies to create inclusive and sustainable cities.

Limitations of the Research

While this study provides a comprehensive analysis of Lagos and Nanjing's waterfronts, it is not without limitations. The reliance on secondary data and remote site analysis constrained the ability to capture real-time socio-spatial dynamics. Future research incorporating primary fieldwork and ethnographic methods could provide a more nuanced understanding of the lived experiences of waterfront communities. Additionally, the focus on two case studies limits the generalizability of the findings to other global contexts. Expanding the scope of comparative studies to include waterfronts in diverse regions could offer broader insights into the relationship between memory, identity, and urban morphology.

Recommendations for Future Research

Building on the findings of this thesis, several avenues for future research emerge. First, further investigation into the integration of informal settlements into formal urban planning is needed. This includes exploring scalable models that preserve the socio-cultural fabric of these communities while addressing their infrastructural needs. Collaborative design approaches that involve residents in the planning process could yield innovative solutions that are both sustainable and culturally resonant. Second, comparative studies of waterfront development across diverse cultural and geographical contexts could enrich the understanding of how memory and identity shape urban morphology. Such studies could examine the interplay of global and local forces in shaping urban development trajectories.

Third, the intersection of climate resilience and cultural preservation in waterfront development warrants greater attention, particularly as rising sea levels and environmental degradation threaten these areas. Research into adaptive infrastructure that integrates historical preservation with climate resilience could provide valuable insights for policymakers and urban designers. The complexities of urbanization more effectively. Finally, exploring the role of digital tools and GIS in enhancing the documentation and planning of waterfront morphologies could yield innovative urban strategies.

These technologies can facilitate more precise and participatory planning processes, enabling cities to navigate

Significance and Final Reflections

The social significance of this research lies in its emphasis on the importance of waterfronts as living archives of cultural memory and identity. For Lagos, embracing the resilience and ingenuity of informal settlements like Makoko offers a pathway to more inclusive and sustainable urban development. These settlements, often dismissed as chaotic, are repositories of generational knowledge and socio-spatial innovation. Recognizing their value is essential to creating urban landscapes that are both equitable and vibrant. For Nanjing, the careful integration of historical preservation into modern urban frameworks serves as a model for other cities grappling with the pressures of modernization. The city's approach demonstrates how urban development can honor the urban artifacts that reflect with the users while embracing progress. Returning to the narrative thread introduced in the introduction, the intersections of history, culture, and modernization that define Lagos Lagoon and the Yangtze River reaffirm the importance of preserving these narratives amidst rapid urbanization.

Waterfronts, as crucibles of collective memory and identity, are critical to the social and cultural fabric of cities. As stakeholders move forward, collaborative efforts among policymakers, urban designers, and communities are essential to ensure that these spaces remain vibrant, inclusive, and livable for its residents. In conclusion, this thesis emphasizes the need for a paradigm shift in urban planning—one that values memory and identity as central to the development process. By drawing on the insights of this research, future urban initiatives can aspire to create spaces that are not only functional but also reflective of the histories and aspirations of residents. Lagos and Nanjing offer valuable guidance for navigating the complexities of urbanization in a way that reveals the past while embracing the future. These insights can serve as a foundation for creating cities that are inclusive, and connected to the diverse narratives that shape them.

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