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Adapting in Situ: Observational Insights from a Field Workshop on a Continuously Inhabited Nubian Island, Aswan

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Abstract:

Heisa Island is a small Nubian settlement in the Nile near Aswan that, unlike most of Nubia, was never relocated when the Aswan High Dams reshaped the river. Rather than being displaced, its community adapted in place — moving to higher ground and reorganizing settlement, livelihood, and daily life around a heavily regulated river. This paper draws on a one-day observation-first field workshop held on the island as part of the River Cities Network (RCN) "Rivers in Transition" meeting. Working across three thematic lenses — living heritage and local economy, the Nile edge and ecology, and everyday spatial systems and access — an international group of researchers documented how resilience on Heisa emerges through incremental, community-driven adaptation rather than formal planning. The findings position Heisa as a case of vertical adaptation in situ and argue that long-term socio-cultural adaptation to river change is frequently invisible to conventional planning frameworks. We conclude with transferable insights for other river cities confronting living heritage, governance gaps, and regenerative futures.

Keywords: Rivers in Transition, Nubian heritage, in-situ adaptation, Heisa Island, Community Resilience, Participatory Observation, Aswan.

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1. Introduction

Rivers worldwide are undergoing rapid transitions driven by human interventions and intensifying climate change. These transitions are not only hydrological and ecological; they are also deeply social and cultural, reshaping how communities live with the water that sustains them. The River Cities Network (RCN), established at the International Institute for Asian Studies (IIAS), Leiden University, advances ecologically and socially inclusive regeneration of rivers and the neighborhoods that co-exist with them. Its second face-to-face meeting, "Rivers in Transition," was convened in Aswan in 2026 with the Arab Academy for Science, Technology and Maritime Transport (AASTMT) as local partner.

This paper reports on one component of that meeting: A field workshop on Heisa Island. Heisa offers a rare and instructive case. The transformation of Nubia unfolded across successive stages of river engineering. The Aswan Low Dam, first built between 1898 and 1902 and later raised in 1912 and again in 1933, progressively submerged cultivable Nubian land and, over that thirty-five-year period, displaced fifteen villages upstream. Decades later, the Aswan High Dam, completed in the 1960s, submerged much of the remaining Nubian heartland. The reservoir created by the High Dam required the relocation of at least 100,000 Nubians, with 48,000 Egyptian Nubians resettled between October 1963 and June 1964 (T. Scudder 2016). The staged submergence of Nubia is documented in detail (Abubakr 2021). The residents of Heisa remained, adjusting their settlement upward and inward rather than abandoning it. The island, therefore, allows us to observe what river transition looks like when a community stays, adapts, and persists over generations. Our central question is simple: what does Heisa teach us about long-term adaptation to river change that formal planning often misses?

2. Heisa Island: Location and context

Heisa is a small Nubian island roughly two kilometers long, lying in the Nile between the Philae Temple complex and the Aswan Dam in the Aswan Governorate of southern Egypt. It is home to a Nubian community of approximately 2,000 residents and is one of the very few Nubian settlements that remained continuously inhabited through twentieth-century river engineering (Soto 2026).

While large areas of Nubia were submerged and entire communities relocated, the residents of Heisa chose to adapt *in situ* by moving to higher ground on the island. This decision preserved a continuous relationship with their land, river, and cultural practices, making Heisa a rare example of vertical adaptation rather than displacement within a heavily regulated river system (Bakry 2015). Vertical adaptation, here, refers to the process through which communities modify the vertical organization of buildings and everyday activities to accommodate changing environmental conditions—particularly fluctuating water levels and flood risk—allowing continued occupation while reducing exposure to hazards. Such adaptations may include raising floor levels, constructing additional upper floors, relocating key domestic functions to higher elevations, or altering the relationship between buildings and the ground (Atmodiwirjo et al. 2025).

2.1. River transition and historical change

River management has historically been dominated by technical and engineering-based approaches, with river restoration and flood management projects tending to prioritize hard infrastructure and hydrological control over social and cultural dimensions of river-community relationships (Cook and Spray 2012; Rahaman and Varis 2005).

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Table 1: Selected case studies of displacement and adaptation in river management contexts.

Case	Context	Key Finding
Tokwe-Mukosi flood resettlement, Zimbabwe	Forced resettlement following the 2014 dam-related flooding	State power exercised through local government and security institutions shaped resettlement outcomes, often furthering political and economic agendas over community welfare (Mucherera and Spiegel 2022)
Char (riverine island) communities, Bangladesh	Communities repeatedly displaced by riverbank erosion and flooding	Displaced households face severe livelihood disruption (food shortage, unemployment, housing loss); local adaptation strategies are constrained by lack of land tenure and financial resources (Hossain et al. 2022)
Vanuatu at-risk coastal households	Community preferences regarding climate-related relocation vs. adaptation	The majority of households prefer in-situ adaptation, viewing resettlement that preserves cultural and livelihood practices (Perumal 2018)
Tisza River Basin, Hungary	Flood management and participatory governance	Demonstrates application of adaptive management and participatory modeling to bridge science, policy, and local community knowledge in river governance (Halbe et al. 2013)

The case studies summarized in Table 1 largely reinforce this displacement-centered emphasis: much of the empirical record documents communities that were relocated, or that cycle repeatedly between displacement and return, rather than ones that adapt continuously in place. The Vanuatu case is a partial exception, showing a documented preference for in-situ adaptation, but even their resettlement remains the analytical endpoint against which adaptation is measured.

The transformation of Heisa is inseparable from the broader hydrological and territorial restructuring of the Nile. Dam construction altered water levels, sediment flows, agricultural productivity, and mobility (Abd-El Monsef et al. 2015). Productive farmland was lost, traditional river-based livelihoods were disrupted, and the island's ecological balance shifted permanently (Abd-El Monsef et al. 2015; Fahīm 2013). Unlike the communities relocated to planned resettlement villages, Heisa remained inhabited within the Nile system. Over time, residents adapted their homes, settlement patterns, and everyday practices in response to environmental change and limited land availability. These adaptations appear to have been largely incremental, drawing on local knowledge, kinship networks, and community initiative rather than comprehensive formal planning (Fahmy 2004; T. Scudder 2016).

2.2. Living heritage and social fabric

Heisa retains a strong Nubian cultural identity reflected in its vernacular architecture, decorative traditions, language, and enduring social practices. As in many Nubian communities, built forms and public spaces continue to support kinship-based social interaction and the expression of cultural identity (Bayoumi 2018; Y. Shedid and I. Hassan 2019). Houses are often vividly painted, and social life remains tied to extended family networks and collective practice.

In recent decades, this heritage has itself increasingly become a source of livelihood. Many households have adapted parts of their homes for guest accommodation or offer river-based and cultural tourism experiences (field observations, 2026). While tourism has diversified local incomes, it has also increased dependence on a highly seasonal and externally sensitive sector, raising questions about cultural commodification, infrastructure capacity, and the long-term sustainability of heritage-based development (Ma et al. 2021; Zhang et al. 2024).

3. The field workshop: Approach and method

The Heisa workshop was deliberately designed around an observation-first approach rather than intervention or prescription. Participants, an international group of RCN researchers and practitioners, were asked to read the island as a living river landscape: to notice how space is used, how the river helps or harms daily life, and how residents adapt informally. Ethical engagement guidelines framed the day, emphasizing respect for a resident community that is not a museum exhibit but a home.

The program moved from collective observation to focused analysis. After a short boat arrival and an opening briefing, all participants walked one

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zone of the island together, observing paths, public spaces, and river edges. A period of individual reflection followed, in which participants marked observations on base maps and formulated key questions. Participants then split into three thematic groups, each producing a short brief and a mapping workshop board, before presenting to the plenary and reflecting collectively on transferable lessons.

Each group observed, focused, and analyzed the island through one thematic lens, organized around a single guiding question. Group 1 (Living Heritage, Livelihoods & Local Economy) asked how Nubian cultural practices and local livelihoods co-evolve to sustain identity and economic survival under river transition. Group 2 (Nile Edge, Ecology & Environmental Resilience) examined how the relationship between community and river is being reshaped, and how ecological resilience might be strengthened. Group 3 (Everyday Spatial Systems & Access) explored how spatial conditions and mobility shape daily life, access to services, and social interaction.



Figure 1: Photos of the groups while working on the boards at the Aro Kato Nubian Guest House.



Figure 2: Plenary presentation at the Aro Kato Nubian Guest House: a thematic group shares its annotated findings during the closing session of the Heisa workshop.

4. Findings: Reading the island

Across the three lenses, a consistent picture emerged of a community adapting continuously and resourcefully, often filling gaps left by formal systems. The observations below synthesize the groups' field notes and outputs.

4.1. Living heritage and local economy

The first lens found culture and economy tightly interwoven. Houses are adapted to the landscape, and tourism has produced a new building type (the guest-house dwelling) alongside modified internal layouts. Crucially, the local people are themselves the investors: regeneration on Heisa is largely self-financed and self-directed rather than externally imposed. Heritage here is mostly lived rather than performed, although the line between authentic daily practice and cultural product is increasingly negotiated as tourism grows. Artisan women sellers and small-scale hospitality were identified as emerging economic actors, while traditional livelihoods such as agriculture and fishing appear more fragile.

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The group flagged a central tension: the same heritage that sustains identity is becoming an economic resource, raising questions of commodification and of whose aspirations, especially among youth, will shape the island's future.

In Figure 3, the participants made this collaborative workshop board, which explores the concept of living heritage by identifying cultural practices that are adapting, disappearing, or remaining stable within the community. Participants organized ideas using color-coded sticky notes, highlighting themes such as traditional building techniques, natural crafts, language preservation, tourism, resilience, and sustainable livelihoods. The board also outlines future research questions, emphasizing the relationship between heritage conservation, local development, and community resilience.



Figure 3: Participants collaboratively mapped elements of living heritage, identifying cultural practices that are adapting, disappearing, or remaining stable (Enhanced and edited by authors).

4.2. Nile edge, ecology and environmental resilience

The second lens reads the interface between land and water. Observers noted considerable greening along the riverbanks but limited green space within the settlement, and a microclimate shaped by intense heat; thick-walled houses, open roofs, and a daily rhythm in which activity drops during the hottest hours. The island functions, in places, almost like the margin of a lake rather than a flowing river, a direct legacy of upstream regulation.

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Waste management surfaced repeatedly as the dominant environmental constraint: plastic waste is visible, sanitation infrastructure is limited, and collection depends largely on boats and tuk-tuks. Yet residents also demonstrate environmental care; controlled waste practices in many areas, improvised protection of young plants and small farms, a strong cultural connection to the palm tree, and even the practice of welcoming migrating birds with food. The group concluded that ecological resilience on Heisa is real but informal, low-tech, and unevenly distributed.

In Figure 4, the participants made this workshop board, which presents a participatory mapping focused on the High Dam, river ecosystems, and surrounding communities. Using drawings and multilingual sticky notes (English and Arabic), participants identified environmental concerns, agricultural practices, endemic plant species, tourism opportunities, waste management, and water-level changes. The visual map illustrates the interconnected nature of ecological, cultural, and economic systems while encouraging community-driven solutions for sustainable river management.



Figure 4: A participatory mapping by group 2, illustrating community perspectives on the High Dam and river environment (Enhanced and edited by authors).

4.3. Everyday spatial systems and access

The third group mapped movement and access. Space use is differentiated: men are associated with boats and the river, women and less-mobile residents with the immediate domestic and semi-public realm, and children with the journey to school. Movement and social life overlap at specific nodes: the docking point, weddings, and the playground-soccer field-community center.

The group identified clear bottlenecks: unpaved pathways, the absence of a secondary school on the island, and a lack of shading devices along routes. Mobility is hard for the elderly across the island's hilly, scattered fabric, and dependence on river transport links every trip off the island to weather and boat availability. The informal solutions already in place are revealing: the tuk-tuk has become the key internal mobility technology, ferry shelters mark gradual infrastructure improvement, and donkeys, boats, and walking remain in everyday use. The board also captured the social ecosystem that sustains the island; the interdependence of government, tourism, service provision, and community, and the visible role of artisan women sellers.

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In Figure 5, the participants made this participatory workshop board that examines mobility, public space, and community life through the lens of tuk-tuk transportation. Participants explored different spaces, where social interactions occur, and the barriers affecting accessibility, including unpaved pathways, limited facilities, and inadequate infrastructure. The accompanying hand-drawn map highlights key community landmarks, transport routes, and potential interventions such as improving tuk-tuk safety, supporting local artisans, and fostering collaboration between government, tourism, and local communities.

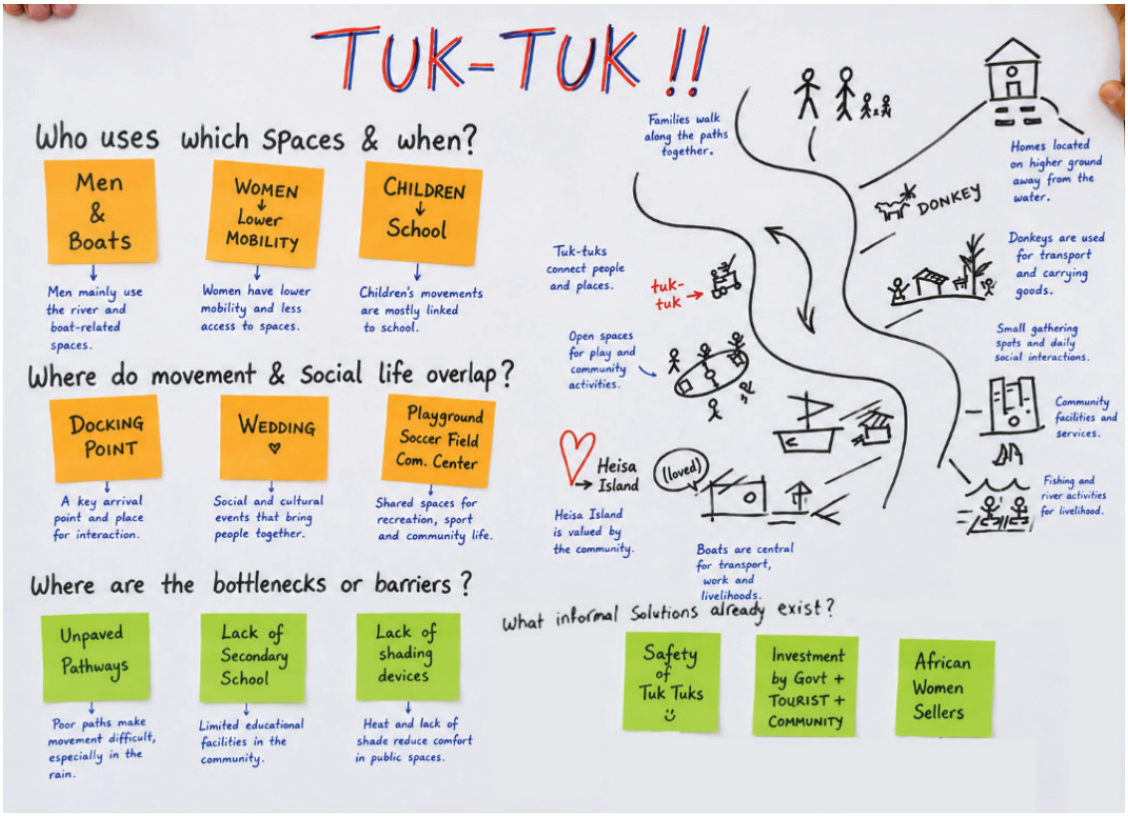

Figure 5: Output board from Group 3 (Everyday Spatial Systems & Access), titled "Tuk-Tuk!!" The annotated map and sticky-note analysis record who uses which spaces, where movement and social life overlap, the main bottlenecks (unpaved pathways, lack of secondary), and are enhanced and edited by the authors.

5. Discussion: What formal planning misses

Read together, the three lenses make a single argument. Heisa's resilience is the product of everyday adaptation; a continuous, distributed, largely undocumented practice of adjusting houses, routes, livelihoods, and ecological relationships to a regulated river. This is precisely the kind of resilience that conventional planning, oriented toward formal infrastructure and master-planned intervention, tends not to see or credit. The workshop's value lies partly in making that resilience legible, but its significance sharpens when Heisa is read against the wider literature on dam-induced displacement, participatory planning, and heritage tourism, which allows a single-site observation to be tested against documented patterns elsewhere.

- **Adaptation in situ, read against the displacement record:**
  The first and most consequential finding; that Heisa adapted vertically and in place rather than relocating, aligns with a growing body of literature showing that communities facing submergence or increasing climate risk generally prefer in-situ adaptation, with planned resettlement regarded as a measure of last resort, feasible only when cultural identity, social networks, and livelihood systems can be maintained (Bower and Piggott-McKellar 2026; IPCC 2022; Jamero et al. 2019). The comparative displacement literature explains why this preference is so strong: even where

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relocation delivers improved housing or economic compensation, these benefits rarely substitute for attachment to ancestral landscapes, cultural identity, and established livelihood systems. Consequently, communities affected by dam construction or environmental change frequently seek to maintain social and cultural ties with their former homelands, even after relocation (Bower and Piggott-McKellar 2026; Cernea 2000; IPCC 2022; Jamero et al. 2019; T. T. Scudder 2012). Nubia is itself a textbook case of this rupture; the reservoirs of the Low and High Dams displaced well over 100,000 people and severed communities from ancestral land (Abubakr 2021; T. Scudder 2016). Against that backdrop, a recent comparative study is particularly telling, where resettled Nubians had to rebuild livelihoods through tourism, government employment, and overseas labor amid the erosion of their social ties. The residents of Heisa Island, instead, drew on intact social cohesion and cultural tourism to sustain both economic stability and identity. Against this backdrop, a recent comparative study provides particularly compelling evidence. Comparing households resettled in Nasr El Nuba with residents of Heisa Island, the study found that displaced Nubians reconstructed their livelihoods through tourism, public-sector employment, and overseas labor following the loss of agricultural land and fishing rights. However, these adaptations were accompanied by weakened social networks and increasing dependence on external income sources. In contrast, Heisa residents relied on strong social cohesion, cultural continuity, and community-based tourism to sustain both economic stability and cultural identity, demonstrating the resilience afforded by remaining in place (Abdelaziz et al. 2025). Heisa, in other words, is not an anecdote but a demonstration case for a proposition the resettlement literature has long implied: cultural continuity is itself a form of resilience, and staying can preserve what relocation dismantles.

- **The community as investor and planner:** Our second finding — that regeneration on Heisa is largely self-financed and self-directed — reinforces a well-established critique of technocratic, top-down planning. Research on informal settlements and riverine communities consistently demonstrates that planning approaches centered on land use, zoning, and physical infrastructure often overlook the social relations, informal institutions, cultural practices, and everyday mobilities through which these places function (Padawangi 2018; Watson 2009). Consequently, analyses based solely on remotely sensed data or spatial mapping are insufficient to capture the complexity of lived experiences and local adaptive practices without incorporating community knowledge and participatory approaches (Corburn 2003; Dunn 2007). The lesson drawn across this literature is consistent: where communities are already organizing their own upgrading, external actors are most effective as enablers rather than directors, while context-sensitive participatory approaches that integrate local knowledge produce more sustainable, resilient, and better-maintained outcomes than conventional top-down interventions (Ono and Adrien 2024; Terdoo 2024; Wainaina and Truffer 2024). Whereas Mamsha Ahl Misr in Cairo delivered a designed riverfront through centralized, state-led investment (Abdel-Moneim 2025), Heisa shows regeneration emerging without a master plan or external capital — two contrasting models of Nile riverfront transition. Heisa extends this argument to a setting rarely studied in these terms — a continuously inhabited Nubian island — and confirms that the community's own agency is the primary planning resource, not a supplement to it.

- **Modest, low-tech gaps rather than master plans:** The third finding follows the island's most pressing needs directly: a secondary school, shaded and paved circulation, dependable waste collection, and reliable river access. These are modest, low-tech, and identifiable through observation. They do not call for a master plan so much as targeted, community-compatible support. This is consistent with evidence from participatory planning showing that co-produced maps and improved spatial literacy enable residents to identify and communicate socially significant needs more effectively than remote technical surveys alone (Corburn 2010; Healey 2006; Innes and Booher 2010). It also reframes the planner's role from designing wholesale transformation to facilitating locally identified priorities and closing a small number of well-understood gaps. This interpretation is consistent with policy perspectives that view planning as a collaborative process in which government facilitates stakeholder cooperation and enables locally identified priorities rather than imposing predetermined solutions (El-Faramawy 2025).

- **Local knowledge as planning expertise:** Perhaps the most significant methodological contribution of the workshop is its treatment of local knowledge as a form of planning expertise rather than raw input to be processed by professionals. Residents hold detailed understandings of seasonal environmental change, cultural value, movement patterns, and community priorities that are difficult to obtain through remote analysis or technical surveys. Participatory mapping made this knowledge visible and, in doing so, repositioned community members from consultees to active contributors. This reflects a growing body of participatory planning research that recognizes local communities as co-producers of planning knowledge rather than passive recipients of expert decisions (Brown et al. 2018; Corburn 2010). The participatory mapping literature frames this as the integration of two distinct knowledge types: the cognitive-technical knowledge of experts and the experiential knowledge of residents, with the strongest decisions emerging where the two are combined (Abdel-Moneim 2025; Abdel-Moneim and El Seddawy 2021; Özesmi and Özesmi 2004)"source":"DOI.org (Crossref. Heisa's hand-drawn boards—a river sketched with its docking points, tuk-tuk routes, and social nodes—are a concrete instance of experiential knowledge being rendered in a form that planning can use.

- **Heritage as lived practice versus heritage as product:** Finally, Heisa exposes a tension common to river settlements in transition: the same cultural heritage that sustains community identity is increasingly becoming an economic resource, making tourism both a source of livelihood and a potential threat. This dynamic is not unique to Heisa but has been documented across Nubian settlements in Aswan. Research on Nubian cultural tourism demonstrates that, once heritage is interpreted for visitors, cultural narratives and practices may become selectively presented—partially celebrated, partially simplified, and partially omitted—to meet tourists' expectations (Elcheikh 2015). Likewise, studies of Gharb Soheil show that while tourism has created important economic opportunities, it has also generated concerns about the commercialization of Nubian culture and the gradual erosion of authenticity, highlighting the need to balance economic development with cultural preservation (Elcheikh 2018) on which they developed several outstanding civilizations, going back 5000 years (Emberling 2011: 6. Heisa currently occupies an earlier stage of this trajectory than the heavily visited West Bank villages. Its cultural heritage continues to function primarily as a lived social practice rather than a staged tourism product, making it a valuable example of regenerative development rooted in community life. Preserving this balance will require regeneration strategies that strengthen community-led enterprises, including artisan production, locally managed hospitality, and everyday cultural practice, while ensuring that tourism supports, rather than commodifies, the community's cultural identity.

Taken together, these comparisons reposition the single-day workshop within a broader evidentiary field. The Heisa observations do not stand alone; they corroborate, and are corroborated by, documented patterns in displacement studies, participatory planning, and heritage-tourism research. What Heisa adds is a rare, continuously inhabited counter-case to the Nubian displacement narrative; evidence that where a community is able to stay, adapt, and remain the author of its own transition, resilience emerges through everyday practice rather than planned intervention.

6. Conclusion & Transferable insights

Heisa Island offers a powerful case for understanding rivers in transition as long-term socio-cultural processes, not only environmental or infrastructural transformations. It shows how communities negotiate identity, livelihood, and place under sustained river regulation, and how resilience can emerge through everyday adaptation rather than planned intervention.

For the wider River Cities Network and for other river cities, several insights transfer:

- **Observe before intervening:** Much of what sustains a river community is informal and invisible to standard surveys; observation-first methods surface it.

- **Recognize in-situ adaptation:** Staying and adapting can preserve heritage that relocation destroys; planning should value continuity, not only relocation or renewal.

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- **Support the community agency:** Where residents are already the investors and stewards, the role of external partners is to enable, not to author.
- **Target modest, low-tech gaps:** Shaded paths, a local school, dependable waste collection, and reliable transport can matter more than large infrastructure.
- **Hold heritage and economy in balance:** Tourism can sustain or erode living heritage; the difference lies in protecting lived practice from commodification.

Placed alongside other RCN sites, from Bang Krachao in Bangkok to the Danube, the Kapuas, the Mekong, and the Ngong, Heisa contributes a distinctive Nile perspective: that of a community which met profound river transition not by leaving, but by staying, rising, and adapting in place.

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