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Burj Rashid: a tale of two tides – rising waters and changing traditions

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Abstract

Purpose – This paper delves into the traditional ecological knowledge (TEK) and practices of Burj Rashid, an ancient historical city on Egypt's northern coast, which stands at the meeting point of the Nile's western branch and the Mediterranean Sea. Burj Rashid boasts a strategic location and rich natural resources and has a long history of relationships between land, people, river, sea and climate change, serving as a model for residents' adaptation to their ever-changing surroundings.

Design/methodology/approach – Climate studies have exposed the village's vulnerability to climate and topographical hazards such as rising temperatures, shifting weather patterns, decreasing precipitation, encroaching seas due to sea level rise, coastal erosion and high soil salinization. These factors pose a high risk of water scarcity, crop failure in the medium term, potential famine in the long term and declining fish populations, threatening fishing communities. To address these challenges, the *Net Zero: Heritage for Climate Action* project - launched by the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) and the *First Aid and Resilience for Culture in Times of Crisis* program, funded by Swedish Postcode - proposes a research and development methodology through a platform that weaves together heritage knowledge and climate science. The Egyptian Heritage Rescue Foundation has implemented a platform in Burj Rashid as an innovative site to study risks, vulnerabilities and capacities.

Findings – The project will explore root causes, identify risk scenarios and establish a stakeholder map to guide the development of mitigation strategies and resilience-building measures.

Originality/value – By harnessing the wisdom of TEK and integrating it with scientific knowledge, the project paves the way for innovative climate change adaptation strategies that ensure the long-term sustainability of Burj Rashid's unique cultural heritage.

Keywords Rashid-Rosetta, Climate change, Tangible heritage, Intangible heritage, Resilience, Risk, Mitigation, Sycamore, Early warning, Fishing, Agriculture, Nile delta

Paper type Research paper

Introduction

Rashid (Rosetta), also known as Markaz Rashid, is situated in the northeastern corner of Egypt's Beheira Governorate in the province of Alexandria. It occupies a strategic position at the Nile's mouth, where it seamlessly merges with the Mediterranean. This dynamic region has low-lying lands (sometimes dipping below sea level), intricate distributaries, prominent headlands and lagoons and a network of irrigation canals that reshape the drainage patterns (Woodward *et al.*, 2007; Youssef, 2021).

The rich alluvial soil deposited by the Nile is very fertile with high agricultural potential. This has allowed a large green landscape to flourish along the Nile banks (Doyle, 1803;

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Sonnini, 1789; Abdel-Messih, 1892). Palm trees are the dominant feature of the cultivated landscape of the city, but, in addition, until the end of the 19th century (CE), the sycamore was one of the most important plantation trees (Azam and Egyptian House for Architecture and Planning, 2008). The sycamore tree was vital to this area in several ways: its wood was economically important, its fruit was eaten and its leaves and plants were used in medicines. Also important was its large canopy, which provided shade in public places where the local community gathered. In recent years, the number of sycamore trees have declined, partly due to a misinterpretation of heritage stories, which has led to a belief that planting a sycamore tree can bring misfortune. One of the aims of the current project is to restore the sycamore and rewrite this narrative. As well as the qualities historically prized, the sycamore tree also has deep roots, which will be particularly advantageous in combatting the adverse impacts of climate change, such as soil erosion and retaining moisture.

As will be elaborated below, the area is uniquely tested by several contemporaneous environmental challenges related to recent development but exacerbated by increased storm activity and rising sea levels as a result of climate change (UNDP, 2018). By addressing these challenges holistically and collaboratively, Burj Rashid can transition to a more sustainable and resilient future, preserving its unique heritage and securing the well-being of its inhabitants. Crucial to the success of the plan is widespread support across the community. Potential conflicts of interest will need to be resolved not only through legislation but also with measures such a peace reconciliation council formed from the trusted members of the community. The authors are members of the Egyptian Heritage Rescue Foundation working on this project.

A legacy at risk – the fight for survival

This area faces significant challenges as regards water regulation structures. Currently, the total amount of cultivated land is 359 hectares, equal to 3.591 km^2, and 70% of the population (about 7,000 people) are farmers (Muhammad and Aly, 2013; World Bank, n.d.; Environics organization, n.d.). Climate studies by the Intergovernmental Panel on Climate Change (IPCC) and the Integrated Coastal Zone Management (ICZM) in the Northern Coast of Egypt project predict that temperatures are likely to rise from 14.6 C° to 21 C° between 2020 CE and 2040 CE. In the dry season, precipitation will decrease from 2.4 mm to −3.00 mm between 2010 CE and 2040 CE, and in the wet season, it will decrease from 41.5 mm to 0 mm between 2030 CE and 2040 CE. This will lead to hydrological drought, which means that the river and lakes will have reduced levels owing to a lack of rain. This will affect everyone who relies on that water, both in the cities and on farms. Shallow groundwater, high temperatures and increased evaporation will suck the moisture out of the soil, damaging crops. In addition to a sea level rise of 0.4 meters, there will be land erosion and salinization damage. 25% of the total land cultivated with high-quality dates will be inundated or suffering from soil salinization. This will be in addition to 20% of other agricultural land that will experience a high risk of crop failure in the medium term and the risk of famine in the long term.

Since 1861, barrages like the Delta, Aswan Low Dam and the High Dam have been constructed. While these structures have served agricultural purposes, they also unintentionally disrupted the natural sediment flux (El-Gamal *et al.*, 2020; Abd-El Monsef *et al.*, 2015; Environics organization, n.d.). The High Dam alone traps 98% of sediment in Lake Nasser, starving downstream areas like Burj Rashid. This lack of sediment has led to alarming coastal erosion, with the Rashid promontory shoreline retreating by nearly 10 km between 1900 and 2003. Erosion rates have reached a staggering 50 meters per year in some areas (Mohamed, 2019; Fouda, 2001). The consequences for fishing are dire. With shrinking coastal zones and disrupted fish habitats, fish populations have dwindled, threatening the livelihoods and cultural traditions of fishing communities, as traditional fishing knowledge

and practices are deeply affected. Sediment starvation leads to severe coastal erosion, reducing fishing grounds and impacting fish populations. This threatens the cultural heritage and economic well-being of fishing communities (https://climateknowledgeportal.worldbank.org/country/Egypt/climate-data-historical).

There has been a high increase in population in the area, which has necessitated building a new urban area known as new Rashid city. Two new petroleum plants have been constructed, and consequently, the Nile and the Mediterranean Sea receive a heavy load of wastewater from the factories and the petroleum plants located in addition to agricultural and domestic waste. These factors are responsible for health problems, especially dysentery and hepatitis infections, which are common diseases in the delta area, as well as an aquatic ecosystem disorder (Taia *et al.*, 2019; UNDP, 2018; https://environics.org/projects/integrated-coastal-zone-management-iczm-in-egypt-a-scoping-study/).

Potential benefits of the sycamore tree

The majestic sycamore tree, once a cherished symbol of life and abundance in ancient Egypt, has declined in recent years. Our project's workshops with farmers aim to reconnect them with the true heritage of the sycamore: its ability to combat aridity and salinization, its eightfold fruit production and its significance as a family gathering place dating from ancient times. This historical understanding, coupled with the tangible benefits, can dispel unfounded fears and encourage replanting. Planting the first sycamore ourselves serves as a powerful symbol. It demonstrates our team's dedication and encourages others to follow suit. By strategically planting 45 trees across Burj Rashid, we can begin to reintroduce this asset, which is valuable to the land in several ways:

Environmental benefits: The sycamore's deep roots help retain moisture and reduce soil erosion, combating desertification and protecting the land from salinization. Its leaves provide shade, further minimizing evaporation.

Economic benefits: The fruit offers a reliable source of food and income, strengthening the local economy. Additionally, sycamore wood can be used for sustainable construction and craftwork.

Cultural benefits: Reconnecting with the sycamore's heritage fosters a sense of community and cultural pride. Its reintroduction honors ancestral traditions and creates a beautiful, life-sustaining element in the landscape.

Assessing the vulnerability and capacity of the Rashid community

To comprehensively assess the vulnerability and the capacity of the Rashid community to instigate this project, a two-level approach was implemented. Level 1 consisted of community-driven insight sessions using the Insight game tool developed by ICCROM. Through these interactive workshops, we identified key concerns to the local population such as a lack of infrastructure and the potential impact of the offshore gas project on fish populations. Level 2 focused on bridging the gap between the community and decision-makers and key leaders. This two-pronged approach not only identified vulnerabilities through the participation of over 80 fishermen and farmers but also created a platform for solutions by directly involving community members, decision-makers and potential partners.

To further empower the Rashid community and address identified challenges, we proposed an environmental micro-project focusing on supporting local women skilled in palm basketry. By combining local expertise with resources and support, we can create a sustainable and impactful initiative that empowers women, promotes environmental responsibility and strengthens the Rashid community.

Burj Rashid's silent threat: early warning needed for 5,000 lives at risk problem
Climate studies predict an increase in storms due to warmer sea temperatures and erratic weather patterns, yet 1,500 fishermen and 3,500 farmers in Burj Rashid currently lack early warning systems for extreme weather events. This results in 25 deaths and more than 350 injuries annually, pushing families into poverty. Injured fishermen lose their livelihood, forcing women to work on palm tree farms for significantly lower wages.

Practical solutions to tackle the risks include:

(1) Collecting data on weather temperature, wave heights, sea level rise and storm surges in order to develop a local early warning system for the Rosetta fishermen syndicate.

(2) Co-create illustrated guidebooks with the community, using icons and graphics for both literate and illiterate audiences.

(3) Relate the information collected to the Coptic calendar in order to make it more understandable and more acceptable to the local population.

This initiative has the potential to save lives and reduce injuries among fishermen and farmers. Protecting livelihoods will also stop families from falling into poverty. In the long term, ensuring that the community is knowledgeable about climate change and empowering them to act will bring about greater community participation and build resilience to future climate change impacts.

Conclusion

The initial phases of the project have highlighted the need to develop an early warning system to alert the local community of impending extreme weather events and raise awareness in the local community concerning their vulnerability to the impacts of climate change. Integrating local knowledge into scientific analysis and using traditional calendars will significantly increase the effectiveness of these measures and gain greater acceptance. Using historic precedents, such as, for example, encouraging the planting of sycamore trees, is a potentially effective way to make longer term changes to the environment that will help mitigate the effects of climate change and, at the same time, can be seen as acceptable to the local community.

The project emphasizes the importance of studying and analyzing the history of culture, risk and climate in close connection to people's activities and livelihoods over time. By examining the interplay between these factors, we can identify gaps in our understanding and reconnect the present with the past through traditional knowledge, new tools and scientific data. Combining desk-based research and community-based fieldwork is crucial and effective for developing and implementing new mitigation strategies. This approach helps avoid misunderstandings regarding culture and knowledge, allows for monitoring potential impacts and prevents secondary hazards. It also facilitates parallel recovery efforts in both human and environmental sectors. The project in Burj Rashid village highlights the need to integrate traditional heritage with new technologies when planning mitigation and resilience strategies for climate-vulnerable sites, particularly historical ones.

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