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# Sudan's climate-culture story: a project with HEART – Heritage Empowered Action for Risk in Tuti

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## Abstract

**Purpose** – Located at the confluence of the White and Blue Niles, in the core of Sudan's capital, the small island of Tuti has been affected by flooding events throughout its history. To protect it, the Tuti people (Tawatas) developed the Taya, a traditional early warning, community-based flood management system. However, several challenges, including climate change impacts, demographic variations, a fluctuating economy and, more recently, an ongoing armed conflict, are increasing the risks associated with the annual flooding, threatening this traditional knowledge and other local community practices.

**Design/methodology/approach** – In the framework of International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)'s Net Zero: Heritage for Climate Action project Tuti Island was presented as an innovation site, aiming to deepen on Tuti's traditional knowledge as an efficient heritage-based adaptation strategy to reduce the impacts of climate change. Unfortunately, the implementation of the project faced more challenges and constraints than initially foreseen when the conflict broke out in the capital of Sudan in April 2023. The project activities, methodology and approach had to be redesigned in light of the new situation.

**Findings** – The Taya traditional system plays a key role in reducing vulnerabilities and enhancing the community's capacity to address the impacts of climate change, as well as to cope with other crises, including armed conflict, due to its deep connection with the Tawata's identity.

**Originality/value** – The project, which was originally planned to focus on climate action through heritage, became a representative case of the disaster–conflict nexus, reminding us that overlapping crises may occur in



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the same area, putting additional pressure on the population, their cultural heritage and the measures to tackle specific issues.

**Keywords** Sudan, Traditional knowledge, Community resilience, Early warning system, Floods, Climate change, Conflict

**Paper type** Case study

## The island at the heart of the two Niles: the story of the Taya

Tuti Island was formed at the confluence of the Blue and White Niles, at the core of Sudan's capital, Khartoum, where the two rivers merge into the main Nile. Throughout the years, the island's population increased, embracing different ethnic groups. In the 1980s, Sudan faced "the four horsemen of the Apocalypse — Pestilence, War, Famine and Death" (Collins, 2008), which contributed to a high rate of rural-urban immigration from the affected areas to places like the island (Mudawi, 1989). However, all these did not change the status of Tuti as the "rural eye of the Capital" (Davies, 1994), until more recently, when the rapid urbanisation process came at the expenses of its fertile agriculture lands (Bahreldin and Eisa, 2016).

Climate change has altered the seasonal flooding cycle of the Nile, causing remarkable flood disasters such as those recorded in 1878, 1924, 1946 1964, 1977 and 1988 (Davies, 1994). Likewise, as presented by Ahmed and Abd Alla (2019), from 1972 to 2018, Tuti Island witnessed several environmental changes and shifts due to climate change and human impact, including desertification and flood-related disasters. There is, indeed, a clear change in the climate patterns visible on the island, where the local communities are already experiencing extreme weather conditions, such as severe droughts and increased floods (Tambal *et al.*, 2024).

## The Taya system

As the location of Tuti made it susceptible to floods, in the mid-1940s, the community utilised their traditional knowledge to develop their own flood management system, named *al-Taya*. Tuti residents erected tents in selected locations around the island (Tayas) and stayed in them for three weeks to monitor the flood and alert the residents using drums and barrels when the situation got serious.

Afterwards, these lookout points and the Taya system became a fixed mechanism for early warning during the flood season, with some alterations, such as replacing drums with mobile phones, to alert the people, and relocating some of the lookout points according to changes in the Island shape throughout the years. Throughout decades, *Tawatas* have "accumulated their own indigenous knowledge and skills, developing early warning systems based on different tones of drums, horns and whistles that alerted the community of an upcoming flooding" (UNDRR, 2015). The Taya system has proved to be very efficient and effective over time. During the floods in 2020 that affected around 875,000 people in Sudan and caused damage and loss estimated at USD 4.4bn (Government of Sudan, 2021), there were no casualties in the island of Tuti, and only few houses were affected. This traditional knowledge and practice are therefore increasing its relevance and international interest in the face of climate change.

## The HEART project: Heritage Empowered Action for Risk in Tuti

The original field-project idea had envisioned activities in the field to strengthen the Taya system, to identify and develop physical measures to reduce the impacts of future floods and other climate-related impacts and to carry out further climate change risk assessments and projections to increase climate-related data. Unfortunately, the armed conflict that broke out in Sudan in April 2023 forced the team to reconsider the whole plan, objective and strategy.

The redesigned field-project was titled *HEART – Heritage Empowered Action for Resilience in Tuti: Strengthening heritage-based and community-led climate resilience during conflict through joint action*. The initial action plan shifted towards a community-focused strategy,

aiming to first understand how the current situation on the ground was evolving and particularly how it was affecting the local community and the Taya system. This specifically concerned the capacity to respond to the upcoming flood season. The main project objectives focused on (1) strengthening social cohesion in the face of both the ongoing conflict and the seasonal floods and (2) gathering information and documenting the Tuti community's knowledge of the Taya system in a pedagogic format to pass on to future generations.

## Analysis and knowledge development

All the information gathered through the initial research and the social and community engagement allowed the team to develop the analysis of the Taya System following three phases:

*Phase One – Preparedness:* Enhancing flood preparedness is one of the key steps to mitigate the effects of the seasonal floods for Tuti residents. The Tuti flood mitigation committee organised strengthening the embankments and mobilising volunteers. *Tawatas* have accumulated knowledge about the island's terrain throughout the years, and this allows them to identify areas of vulnerability, prepare an action plan and organise fundraising.

*Phase Two – Response: Al-Tayas* are erected during each annual flood season and managed by a group of eight members from the closest neighbourhood. The early warning response starts when the watchmen of a *Taya* alert the principal flood mitigation committee about a breach of flood water in an area connected to their Taya. The flood committee contacts the nearest mosque to announce and launch the flood alert. During a flood emergency, erecting new embankments can take too much time, and, in order to respond faster, the *Tawatas* often use their own bodies to barricade and break the water force until reinforcements arrive. This act of bravery has been practised by the youth of Tuti in many major flood events such as the floods of 1946 and the flood of 2020 and has been commemorated in many poems and folklore songs.

One of the first actions for early recovery is to conduct a survey of the affected areas to evaluate the extent of the damage caused by the floods. Based on this evaluation, the committees decide on the appropriate strategy and the necessary resources required to assist the evacuated people and the actions to allow moving them back to their homes.

*Phase three – Recovery:* One of the earliest indications that the island is entering the recovery phase is seeing farmers prepare for the upcoming agricultural season. As the flood season ends, the flood committee surveys the affected areas to evaluate the damage caused by the floods. Based on this evaluation, the committee decides on the appropriate strategy and allocates the necessary resources to support recovery efforts. Priority is given to assisting evacuated individuals in returning to their homes, repairing power and water supply lines, reopening and repairing affected roads, cleaning debris and spraying pesticides to control waterborne diseases. The extent of damage is calculated by recording the loss for all residents, businesses and livelihoods affected by the floods, and this is then converted into currency for an accurate evaluation.

The recovery actions are not only limited to rebuilding, but it also serves to mitigate and prevent future risk and enhance better preparedness, following the *build back better* principle. *Tawatas* have earned a reputation for their fierce independence and strong self-reliance over the years.

## Project results and lessons learned

This analysis is being used to develop the *Lessons from Tayas–Guidelines on Community-led Flood Mitigation Model* (currently under finalisation for publication), a guide which aims to reflect the Taya traditional knowledge and practices, to be applied in multi-crisis environment. Its main purpose is to help the Taya members train further future members and share this

learning with other communities who are in similar situations. In addition to these guidelines, the HEART team has connected with a filmmaker from Tuti Island to develop a video to feature the story of Tuti and the Taya system. Finally, the HEART team organised and delivered an online international webinar to present the challenges and progress of their project.

Among the projects' outcomes, the highlight was the interactions with the local community in Tuti, which has helped to consolidate the sense of network between the participants of the online activities. They committed to share details about any current community initiatives taking place on the island. They were also motivated to expand this initial group in the future by integrating other members, particularly youth groups, to transfer the knowledge and build capacity to prepare and respond to floods using their traditional practices adapted to the potential climate change impacts. The project had a very positive impact in the community, increasing their awareness and preparedness to protect themselves and their heritage in the context of compounding risks.

This community-heritage-based practice aims to serve as a basis to strengthen further collaboration with Tuti community members, both inside and outside the island. Since the current conflict situation is causing displacements, this can lead to loss of knowledge and cultural heritage. Additionally, the previously mentioned climate change impacts and desertification might contribute to further population displacements. A virtual community may help to keep their members connected even if located in different countries. Likewise, this initiative has ambitions to reach the younger generations from Tuti and even to be expanded to a broader audience from other communities that could benefit from a Taya-based model in building resilience and adapting to climate change.

## Conclusion: looking into an uncertain future

The current situation in Sudan unfortunately represents a clear example of overlapping crises. Recurrent natural hazards, such as floods, have an intensified negative impact due to climate change; at the same time, its effects are aggravated by an armed conflict, severely affecting the lives and the livelihoods of the local community. The damage caused by the conflict may reduce the capacity of the community to prepare and respond to other threats. Since disasters and violent conflicts often happen at the same time, enhancing our understanding of how they are related may contribute to efforts to strengthen social cohesion and conflict resolution mechanisms in these areas, particularly considering climate change and the increasing prevalence of disasters linked to it (Caso *et al.*, 2023).

The Taya system holds a heritage value that comes from a history of resilience and continues to strengthen Tuti Island's capacity for flood monitoring, preparedness and response. This knowledge could be of great help and benefit if applied in other areas of Sudan. Therefore, its preservation and transfer to new generations is critical for the local community and beyond.

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