Youth-led mangrove ecosystem resilience and climate adaptation actions in coastal urban communities

Region	**Sub-Saharan Africa**
Award Scheme	**Shanghai Manual**
Themes	**Climate Change** **Environmental Resilience** **Risk & Resilience** **Youth & Livelihoods**
Sustainable Development Goals	**Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable** **Goal 13 - Take urgent action to combat climate change and its impacts**

Summary

In Mombasa, coastal communities face growing threats from mangrove degradation, urban expansion, and climate change. Despite their critical role in protecting shorelines and storing vast amounts of carbon, mangroves in Tudor Creek have suffered from overexploitation, pollution, and deforestation.

Background and Objective

Mangroves are critical tools in the fight against climate change, capable of storing up to ten times more carbon per hectare than terrestrial forests. They also provide a natural defence against storm surges, erosion, and rising sea levels. However, in Tudor Creek, these ecosystems have been in sharp decline, largely due to illegal logging, expanding infrastructure, and poor waste management. The consequences have been devastating, particularly for low-income residents whose livelihoods depend on fishing, tourism, and natural resource use. Although the Kenyan government banned the use of mangrove wood for construction in 1997, enforcement has faced challenges and many residents, lacking viable employment alternatives, continue to deforest for fuel and charcoal. This ongoing exploitation has locked communities into a negative cycle in which environmental degradation facilitates economic instability. Big Ship was founded to address this by combining conservation with community empowerment. The organization’s primary focus has been restoring degraded mangrove forests, creating sustainable employment opportunities, raising awareness on conservation, and using technologies such as GIS mapping and drones to improve restoration efforts. By integrating environmental sustainability with economic development, Big Ship aims to build long-term resilience for coastal communities.

Actions and Implementation

Over the past decade, Big Ship has developed a community-driven approach to mangrove restoration that blends ecological science with grassroots engagement. One of its key initiatives, Adopt A Site, brings

together public and private sector partners to invest in mangrove restoration while also fostering local economic growth. The programme follows a structured process, starting with GIS mapping and drone surveys to identify degraded areas that need urgent restoration. Once a site has been selected, the organization works closely with community members to raise awareness and foster local ownership of the conservation effort. Through workshops, public campaigns, and hands-on training sessions, Big Ship ensures that residents understand the importance of mangroves and feel empowered to participate in their restoration. Once the groundwork is laid, community members take the lead in growing, planting, and monitoring mangrove seedlings, with a strong emphasis on selecting resilient species and maintaining high survival rates. Economic sustainability is a key component of Big Ship's work. By integrating livelihood opportunities into its restoration efforts, the organization has created lasting benefits for local residents. Initiatives such as ecotourism, beekeeping, and mangrove-based enterprises provide alternative sources of income, reducing reliance on unsustainable resource use. One particularly innovative initiative involves using recycled plastic yogurt containers for propagating mangrove seedlings instead of disposable polyethylene bags. This simple but effective solution reduces plastic waste while also improving the survival rate of young trees.

Outcomes and Impacts

Big Ship's work has produced tangible environmental and socioeconomic benefits. The restoration of 200 hectares of mangroves has strengthened coastal ecosystems, reduced erosion, and supported biodiversity. At the same time, the organization's training programmes have helped hundreds of people develop new skills in conservation, entrepreneurship, and sustainable resource management. Partnerships with NGOs, academic institutions, and local businesses have played a key role in expanding the reach and impact of the project. In addition to mangrove restoration, Big Ship's work has promoted broader community engagement, encouraging local residents to take an active role in environmental protection and climate resilience actions.

Sustainability and Scalability

One of the most significant aspects of Big Ship's approach is its emphasis on long-term sustainability. By integrating conservation with economic incentives, the organization has developed a model that not only restores ecosystems but also provides a stable source of income for community members. The Adopt A Site initiative is a prime example, as it ensures ongoing investment in mangrove restoration while also generating economic opportunities. This model has the potential to be replicated in other coastal urban areas facing similar environmental and social challenges. The use of GIS technology, community-led restoration, and market-driven conservation strategies makes it adaptable to different ecological and economic contexts, providing a blueprint for scaling up climate adaptation efforts.

Gender and Social Inclusivity

Big Ship recognizes that effective conservation requires the full participation of all community members. Women, who are often disproportionately affected by climate change, are central to the organization's efforts, playing key roles in mangrove planting, training programmes, and sustainable business development. The initiative also prioritizes marginalized youth, offering them opportunities to gain skills in environmental management, financial literacy, and leadership. By fostering inclusivity, Big Ship ensures that its projects are not only effective but also equitable, allowing all community members to share in the benefits of conservation.

Innovative Initiative

The Big Ship organization has incorporated GIS mapping and drone technology to monitor mangrove deforestation and track restoration progress with precision. Via a waste recovery initiative, which repurposes plastic waste into materials for seedling propagation, it demonstrates the potential for circular economy solutions in conservation, whereby via the continuation of exploration across new technologies and partnerships, Big Ship serves as a leader in youth-led climate action.

Resources devoted to delivery

The success of Big Ship's initiatives has been made possible through a combination of financial support, technical expertise, and community involvement. Funding has come from a mix of government programmes, private sector partners, and nonprofit organizations. The organization has also tapped into volunteer networks and internship programmes, helping to build local capacity while expanding its reach.

Conclusion

Big Ship's work in Mombasa is a successful example of catalysing change through youth-led environmental action. By combining scientific research, community engagement, and sustainable development, the organization has restored degraded mangrove forests while also improving local livelihoods. This initiative serves as a compelling case study for how grassroots conservation efforts can drive climate adaptation and resilience. As climate change accelerates, the work of organizations such as Big Ship highlights the critical role of nature-based solutions in protecting vulnerable communities. Their success underscores the importance of investing in conservation and supporting young leaders who are driving innovative, community-centred climate action.