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WorldFish CGIAR

Asia–Africa BlueTech Superhighway

Leveraging South–South collaboration to deliver a triple win for nature, people and climate

Mozambique

The challenge

Mozambique's 2,414 km coastline is the fourth largest in Africa and more than 2.4 million Mozambicans depend on aquatic food systems for their livelihoods (FAO, n.d.-a). The coastline contains high economic value products, such as coral reefs, mangroves and seagrass beds, as well as migratory fish species such as tuna—however, while Mozambique fisheries are active, the country has not utilized the significant potential of aquaculture, with no marine aquaculture production in 2021 (FAO, 2024).

Mozambique is one of the most vulnerable countries to the impacts of climate change, which threatens key fisheries habitats and the 50% of the population who live along the coast (Germanwatch, 2021). Evidence of this is already clear to see; Mozambique is currently in a severe drought crisis (FAO,2023), exacerbated by the 2023–2024 El Niño phenomenon—one of the strongest on record—worsening already high levels of food insecurity and malnutrition. Artisanal fishing accounts for 90% of the total annual catch and women make up 53.3% of subsistence fish workers (FAO, n.d.). With limited access to large markets and equipment to transport fish, much of the selling takes place at the catch site, reducing profit margins and income for women. Ensuring that aquatic habitats and resources are sustainably managed is essential to improving women's livelihoods and nutrition security for Mozambicans, especially those who reside in rural, coastal areas.

Asia–Africa BlueTech Superhighway (AABS)

- A seven-year initiative, from 2023 to 2030, to transform aquatic food systems in Asia and Africa by leveraging South–South collaboration
- AABS is implemented by WorldFish in collaboration with a host of partners
- It aims to improve food and nutrition security, create increased employment and income opportunities and sustainably manage marine and coastal resources to mitigate and adapt to climate change

Phase 1: 2023–2027 in Bangladesh, Kenya, Mozambique, Nigeria and Tanzania

Overall project benefits by 2030

- An increase in aquatic food production of up to 500,000 metric tons in target countries, sustainably increasing incomes of 300,000 people by 2030
- At least 150,000 women and youth benefiting from increased income by 2030
- Up to 1.4 million hectares of the coastal zone brought under sustainable management

Donor: UK International Development, under the UK's Climate and Ocean Adaptation and Sustainable Transition (COAST) program of The Blue Planet Fund

Asia–Africa BlueTech Superhighway in Mozambique

In Mozambique, AABS will help to address fisheries and aquaculture challenges by leveraging South–South collaboration to improve sustainability, resilience and prosperity in coastal communities. Through evidence-based models and partnerships, AABS will enhance the adaptive capacities of small-scale fish workers and farmers, mitigating the effects of climate change and increasing the sustainability of fish production. By focusing on Mozambique's vulnerable coastal regions, the initiative will not only support the government's goals but also ensure that the livelihoods of these communities are more secure and equitable.

AABS will implement three work packages in Mozambique:

- **Digital Coasts**—co-creating and scaling out contextualized digital information systems for small-scale fisheries.
- **Climate-Smart Technologies for Reducing Aquatic Food Loss and Waste**—scaling affordable, accessible climate-smart food preservation, processing and storage technologies to reduce aquatic food loss and waste.
- **Incentives for Coastal Conservation and Fisheries Management**—assessing, strengthening and scaling more effective and equitable incentives for coastal conservation and fisheries management.

Digital Coasts

Co-creating and scaling contextualized digital information systems for small-scale fisheries

Filling data gaps is critical to better understand the various aspects of small-scale fisheries to promote transformative change in the sector. Digital monitoring systems for small-scale fisheries can equip and empower all fisheries stakeholders with real-time data to make informed decisions that are nature-positive and can ensure sustainable management of fisheries.

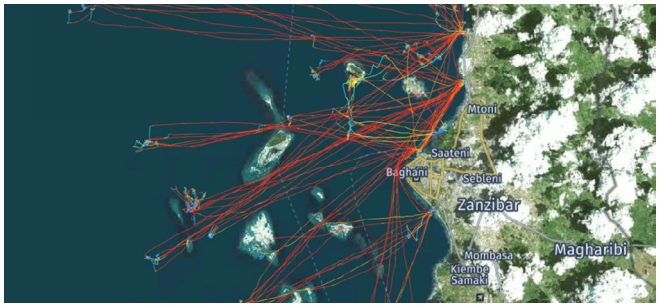
Objectives

- Harmonize and enhance existing coastal fisheries data systems.
- Implement co-designed, context-specific data technologies.
- Use oceanographic and fisheries models to gauge sustainable yields at the community level.
- Use cybernetics to adapt predictive models in response to outcomes.
- Enable effective and sustainable data-driven management through capacity building and vertical communication systems.

In Mozambique, the government developed its PESCART database system using Microsoft Access in 1997. However the software is outdated, so the system no longer works efficiently. WorldFish first designed, evaluated and scaled Peskas in Timor-Leste. Now Mozambique, as well as Kenya and Tanzania, are looking to Timor-Leste's expertise in developing and implementing digital monitoring of small-scale fisheries to help transform their local systems.

Strategy

- AABS will **convene sharing and collaborative workshops** between stakeholders and government departments to identify fisheries data sources. Peskas increases timely and adaptive management based on real-time data and is co-designed to ensure local legitimacy, comprehension and ownership. Peskas is an excellent opportunity to drive improved collaboration between sectors of government and fish workers as the key resource users.
- AABS will **create diagnostic analysis and baseline survey** for Mozambique. Then **co-design and develop contextualized data workflows** with stakeholders to promote ownership and build on existing data architectures in Mozambique. Existing data systems and capacities will be enhanced through training and counterpart mentorship.
- AABS will **develop novel oceanographic and fisheries models** for Mozambique's coastal regions.
- Overall, AABS will **improve policy and investment decisions** on the sustainable management of fisheries based on evidence provided by Peskas.



Climate-Smart Technologies for Reducing Aquatic Food Loss and Waste

Scaling affordable and accessible climate-smart food preservation, processing and storage technologies to reduce aquatic food loss and waste

From catching to consumption, there is a need to ensure that aquatic food remains fresh and safe to eat, and that waste is minimized postharvest. Harnessing climate-smart technologies will increase the availability of nutritious food, improve the economic well-being of coastal communities by maximizing the value of their catch and help mitigate the environmental impact of aquatic food production by reducing the need for overfishing and promoting sustainable resource use.

Objectives

- Increase food safety and quality while minimizing postharvest food loss and waste.
- Work with multidisciplinary and cross-sector partners to co-design and accelerate the use of innovative postharvest technologies.
- Create and expand technologies that are either climate-neutral or climate-beneficial.
- Engage with stakeholders to increase awareness of loss and waste in aquatic food systems while influencing behaviors and investments toward eliminating loss and waste through innovative solutions.

Strategy

- AABS will assess **the scale and drivers of fish loss and waste in Mozambique** to determine the scope of the problem, the sectors and stakeholders involved, and potential partners needed to scale solutions that reduce fish loss and waste.
- AABS will use the results of these assessments and gather more ideas through networking with stakeholders, in particular women's groups in rural coastal areas, to **identify opportunities for the innovation of new technologies** or adapt current technologies and processes for the local context in Mozambique.
- AABS will pilot innovations that enhance livelihoods and address local challenges to food safety, loss and waste to support national programs in Mozambique by **scaling successful tools, techniques and innovations**.

Incentives for Coastal Conservation and Fisheries Management

Assessing, strengthening and scaling incentives for more effective and equitable coastal conservation and fisheries management

Incentives are increasingly promoted as a means to strengthen individual or collective motivations to engage in behaviors that support marine conservation and resource management objectives, by mitigating short- to medium-term costs for coastal communities. They can be provided through various ways including social protection, subsidies, property rights and market-based tools. Examples include rewards for compliance with closed fishing seasons, eco-credit schemes offering conditional loans as well as policies and programs that strengthen and diversify coastal livelihoods or develop sustainable markets for marine resources.

However, key challenges for incentive-based approaches include 1) limited evidence linking incentives to behavior change or ecological outcomes, particularly in marine environments; 2) lack of equitable governance that undermines the effectiveness of incentives and 3) limited investment and innovative financing strategies for conservation and fisheries management. In Mozambique, AABS will address these challenges through the following objectives and strategy.

Objectives

- Build knowledge on opportunities and challenges for incentives in coastal and marine conservation and fisheries management, and build capacity for their design, implementation and evaluation.
- Strengthen institutional and policy environments for incentive-based approaches to coastal and marine conservation and fisheries management.
- Strengthen incentives for the conservation and management of selected coastal areas.
- Ensure financial sustainability of incentive-based approaches.

Strategy

- AABS will **map and assess past and current use of incentives** in conservation and fisheries management in Mozambique, building knowledge on opportunities, challenges and best practices.
- AABS will work with government and other partners to **identify needs and support the strengthening of institutional, legal and policy frameworks** on incentives for coastal conservation and fisheries management.
- AABS will also work with the government and other partners to **develop financing strategies** to ensure the sustainability of incentives in conservation and fisheries management
- AABS will **assess and strengthen incentive-based approaches at selected coastal sites**, including through impact evaluation and improvements in governance and equity of conservation and fisheries management.

Partnerships

- International Institute for Environment and Development (IIED)
- Norwegian Food Research Institute (Nofima)
- Norwegian University of Science and Technology (NTNU)
- Simply Solar Technology Consulting
- University of Pretoria
- Wildlife Conservation Society (WCS)
- World Resources Institute (WRI)

"From this South–South interaction, I expect that we get closer to reducing the diversity of legislation and moving toward a common way of tackling this climate challenge that we have."

– Mateus Tempe, Chief Operating Officer for Pro Azul Mozambique at the AABS inception workshop, Penang, Malaysia

Find out more

Blog: 'We Have Similar Challenges': Reflections from South-South Knowledge Exchange on Small-Scale Fisheries Monitoring

Blog: How Timor-Leste is Sparking New Ideas for African Digital Fisheries Monitoring

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Scan for more information

Why invest in aquatic foods in Mozambique?

Aquatic food systems have a large and distinct sphere of impact

Provides **food, nutrition and livelihoods**

13.5 kg
Annual fish consumption per capita (FAO, n.d.-b)

2.4 million
Mozambicans dependent on aquatic food systems for their livelihoods (FAO, n.d.-a)

1.19%
Share of national GDP from fisheries and aquaculture (FAO, n.d.-a)

90%
Share of annual catch made by artisanal fishers (FAO, n.d.-a)

Is an engine for **economic growth**

1,585%
Increase in Mozambique's aquatic food production since international standards for fisheries were set in 1995 (FAO, n.d.-c)

94%
Potential projected increase in Mozambique's aquaculture sector by 2030 (FAO, 2022)

Reduces **carbon footprint** and **environmental stress**

Around the world, aquatic food systems produce nutrient-dense foods with lower emissions than land-produced livestock (Nordhagen, 2020).

Small fish and bivalve aquaculture stresses the environment less than chicken, the most efficient major terrestrial animal-source food (Oceana, 2023).

About WorldFish

WorldFish is a leading international research organization working to transform aquatic food systems to reduce hunger, malnutrition and poverty. Collaborating with global, regional and national partners, WorldFish delivers scientific innovations, evidence to inform policy, and knowledge to enable equitable and sustainable impact for millions who depend on fish for their livelihoods. As a member of CGIAR, WorldFish contributes to building a food- and nutrition-secure future and restoring natural resources. Headquartered in Penang, Malaysia, with country offices across Africa, Asia and the Pacific, WorldFish strives to create resilient and inclusive food systems for shared prosperity.

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