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WorldFish CGIAR

Asia–Africa BlueTech Superhighway

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

The challenge

Aquatic food systems are essential to providing a growing global population with sustainable and climate-resilient sources of food, nutrition and livelihoods. Aquatic foods supply nutrition to over 3.2 billion people and support the livelihoods of over 600 million people, the majority of whom work in small-scale systems. However, the coastal communities and habitats at the heart of these food systems are under serious threat. Climate change is undermining the productivity and sustainability of aquatic food systems in various ways, including ocean warming and acidification, rising sea levels and saline incursion. The ocean is also under assault from over exploitation and pollution, causing a loss in marine biodiversity. Amid these challenges, countries are keen to unlock their blue economy as a rapid growth path. Enabling the development of sustainable and resilient aquatic food systems is, therefore, critical to ensure a food- and nutrition-secure future for coastal communities and to equitably improve livelihoods, while restoring our marine resources.

Project overview

Asia–Africa BlueTech Superhighway (AABS) harnesses South–South collaboration to assess, adapt and scale evidence-based innovations and models for delivering nature-positive impact through aquatic food systems. Implemented by WorldFish in collaboration with a host of partners, AABS aims to transform the livelihoods of coastal communities across Asian and African countries, particularly for women and youth, and help restore marine and coastal ecosystems by developing sustainable and resilient aquatic food systems. Funded by UK International Development under the Blue Planet Fund, AABS is being implemented in two phases over seven years (2023–2030). Phase 1 will be implemented over four years in Bangladesh, Kenya, Mozambique, Nigeria and Tanzania, aiming to reach over 300,000 primary beneficiaries, at least 50% of them women and youth, and over 400,000 secondary beneficiaries.

Project aims:

The overall goal of AABS is to test innovations, generate evidence and scale technologies, tools and approaches to:

- Improve food and nutrition security
- Create increased employment and income opportunities using nature-based solutions
- Restore and sustainably manage marine and coastal resources to mitigate and help coastal communities adapt to climate change

Expected outcomes 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

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

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

AABS is framed around four synergistic Work Packages (WPs).

- Digital Coasts.
- Integrated Multi-Trophic Aquaculture.
- Climate-Smart Technologies for Reducing Aquatic Food Loss and Waste.
- Incentives for Coastal Conservation and Fisheries Management.

South–South collaboration on the four work packages is underpinned by a country-to-country knowledge exchange network — a forum to convene experts, implementers, and decision-makers from across the target countries to share challenges and solutions and learn from each other in an interactive and participatory way. The exchange among countries will provide stakeholders access to practical 'how-to' knowledge. of implementing technologies, offering a unique space to connect with peers in other countries. It will also enable the co-creation of actionable knowledge products and spawn new ideas and innovations in a country-led environment, which can transcend beyond the project scope for greater cross-cutting returns.

Work packages overview

WP1: Digital Coasts

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

Countries: Kenya, Mozambique and Tanzania

Lead: Alexander Tilley, WorldFish

Vision: All fisheries stakeholders have access to and the capacity to use data to make informed, nature-positive decisions for a sustainable, resilient and equitable future.

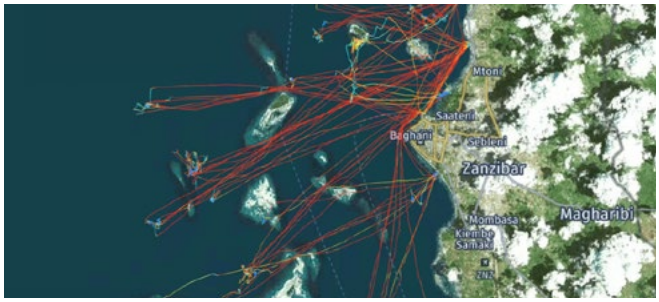
Objectives:

- Improve aquatic food systems management of at least 20% of the coastal zone across Kenya, Tanzania and Mozambique.
- Strengthen institutional frameworks and regulatory mechanisms of marine resources through data-driven fisheries management policies developed at local, county and national levels.
- Create evidence on the impact of data and digital services on behavior change in fisheries management and marine conservation.
- Co-create new knowledge on the utility of oceanographic modelling and artificial intelligence in marine resource management.
- Mainstream small-scale fisheries data from local to national databases for policymaking to unleash the full potential of aquatic foods for sustainable oceans, food and nutrition security.

Strategy:
To establish sustainable and inclusive digital fisheries information systems for small-scale fisheries in focal countries, the project will initiate a series of participatory workshops with fishing community representatives, government stakeholders and others, to co-design digital solutions that address specific needs and challenges, while building on existing knowledge systems and processes. Leveraging novel data science approaches, customized oceanographic models and machine learning, the project will create a platform that visualizes fisheries trends and provides near real-time decision-making guidance that adapts to outcomes over time. In the co-development of systems and research, Digital Coasts will build local capacity for data-driven management toward sustainable fishing practices and maximizing the well-being of coastal communities. Throughout the project, continuous feedback will be sought through planning committees and community consultations to ensure the platform remains responsive to the evolving needs of small-scale fishing communities and fisheries managers.

Partnerships:

- Wildlife Conservation Society
- Kenya Marine and Fisheries Research Institute
- Western Indian Ocean Marine Science Association
- Zanzibar Fisheries and Marine Resources Research Institute
- The Norwegian Technical University
- National Fisheries Administration, Mozambique



WP2: Integrated Multi-Trophic Aquaculture

Adapting and implementing Integrated Multi-Trophic Aquaculture (IMTA) tailored to local contexts in Asia and Africa

Countries: Kenya, Nigeria and Bangladesh

Lead: Leila Basti, WorldFish

Vision: All coastal and marine resources are used sustainably with improved food and nutrition security facilitated by the development and scaling of IMTA systems.

Objectives:

- Demonstrate context-specific profitable and sustainable IMTA systems fit for scaling.
- Empower local institutions through partnerships and co-leadership of project activities.
- Strengthen capacities of national staff, farmers groups and market aggregators for scaling IMTA.

Strategy:
To support the implementation of IMTA systems, the work package will conduct a comprehensive situation analysis, examining technical, environmental, climate, social, economic, institutional and market factors. Additionally, the project will validate context-specific business models for the sustainable production of aquatic foods through IMTA. Finally, it will disseminate innovations in IMTA within and beyond the target countries through communications and demonstrations to encourage greater adoption.

Partnerships:

- Kenya Marine and Fisheries Research Institute
- Lagos State University
- Fisheries and Marine Resource Technology at Khulna University
- Bangladesh Fisheries Research Institute
- Chattogram Veterinary and Animal Science University
- Department of Fisheries (Nigeria, Kenya, Bangladesh)

WP3: 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

Countries: Kenya, Mozambique and Tanzania

Lead: Aditya Parmar, WorldFish

Vision: Improved livelihoods and food security through novel technologies in aquatic food distribution systems.

Objectives:

- Reduce post-harvest loss and waste by 50% in selected value chains.
- Increase income by 30% for small-scale, resource-poor, fish workers and processors.
- Improve and ensure quality and safety of post-harvest fish.
- Strengthen the policy and institutional environment for post-harvest fish loss and waste reduction.

Strategy:
This project will tackle aquatic food loss and waste by fostering partnerships with a range of stakeholders, including governmental and non-governmental organizations, to leverage expertise and resources. It focuses on conducting comprehensive assessments to understand and address the drivers of fish loss and waste, piloting innovative, climate-smart technologies in processing, storage and preservation, and building local capacity through workshops and training. Climate-Smart Technologies for Reducing Aquatic Food Loss and Waste emphasizes sustainability and scalability, with rigorous monitoring and evaluation to inform strategies and share learnings in key regions in the target countries.

Partnerships:

- Coastal and Marine Resource Development
- Kenya Marine and Fisheries Research Institute
- Norwegian Food Research Institute
- Pwani University
- Simply Solar Technology Consulting Gbr
- Tanzania Fisheries Research Institute
- University of Dar es Salaam
- University of Pretoria
- World Resources Institute

WP4: Incentives for Coastal Conservation and Fisheries Management

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

Countries: Bangladesh, Mozambique and Tanzania

Lead: Jessica Fuller, WorldFish

Vision: To enable more effective and equitable coastal conservation and fisheries management through locally appropriate incentives that support better outcomes for people, nature and climate.

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:
The project will begin by mapping and assessing past and current use of incentives in conservation and fisheries management across the target countries, building knowledge on opportunities, challenges and best practices. It will also work with government and other partners to identify needs and support the strengthening of institutional, legal and policy frameworks on incentives for conservation and fisheries management, and to develop financing strategies. In parallel, the project will assess and strengthen incentive-based approaches at a site level, including through impact evaluation and improvements in governance and equity of conservation and fisheries management. It will also design and test incentives where appropriate.

Partnership:
International Institute for Environment and Development

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Scan for more information

Why invest in aquatic foods

Aquatic food systems have a large and distinct sphere of impact

Provides **food, nutrition and livelihoods**

3.3 billion people receiving their micronutrients from aquatic foods globally (FAO, 2020a)

600 million people dependent on fisheries and aquaculture for their livelihoods (World Bank, 2024)

90% of small-scale fish workers living in low- and middle-income countries (FAO, 2020b)

1 in every 2 workers being a woman in fisheries and the aquaculture sector (FAO, 2020a)

Is an engine for **economic growth**

200% increase in production trade value since international standards for fisheries, set in 1995 (FAO, 2022)

22% estimated increase in aquaculture production by 2030, from 2020 levels (FAO, 2024)

Lowers carbon footprint for producing healthy, nutrient-dense foods compared to land-produced crops and livestock (Nordhagen et al. 2020)

Lower environmental stressors from small fish and bivalve aquaculture 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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