Ocean Country Partnership Programme

Bangladesh

Achievement Report

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Programme:

The Ocean Country Partnership Programme (OCPP) is a 5 year (2021-2026) technical assistance and capacity building programme that provides tailored support to countries to manage the marine environment more sustainably, including by strengthening marine science expertise, developing science-based policy, management tools and creating educational resources for coastal communities. The OCPP delivers work under three thematic areas: biodiversity, marine pollution, and sustainable seafood. OCPP was delivered by three British Government Arm's Length Bodies (ALBs): the Centre for the Environment, Fisheries and Aquaculture Science (Cefas), the Joint Nature Conservation Committee (JNCC), and the Marine Management Organisation (MMO). Other components of OCPP were delivered by the Global Ocean Accounts Partnership (GOAP) and the Friends of Ocean Action (FOA) and those elements are not covered in this report. More information on OCPP can be found at: DevTracker Programme GB-GOV-7-BPFOCPP Documents

Document Purpose:

This Achievement Report presents a summary of the activities undertaken and the achievements obtained as a result of cooperation between countries for this partnership. This document does not cover the multilateral components of the programme and this report only covers achievements by the end of the programme. A range of further achievements are expected as recommendations from the OCPP are adopted by partner countries in the preceding period post-programme closure.

All OCPP Achievement Reports have been authored by the ALBs and therefore key achievements and impacts of collaboration reflects individuals own perspectives. Independent evaluation by the OCPP MEL provider verifies outputs and outcomes against the programme logframe, the findings of which can be viewed in the programme's annual reviews and closure report on Dev Tracker.

Funding Acknowledgement:

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Contents

Acronyms

ALBs – Arm's Length Bodies
ANB – Aquaculture Network of Bangladesh
ATR-FT-IR – Attenuated Total Reflectance Fourier-Transform Infrared (spectroscopy)
BAU – Bangladesh Agricultural University
BCCSAP – Bangladesh Climate Change Strategy and Action Plan
BFDC – Bangladesh Fisheries Development Corporation
BFRI – Bangladesh Fisheries Research Institute
BMU – Bangladesh Maritime University
BORI – Bangladesh Oceanographic Research Institute
BPF – Blue Planet Fund
BBSRC – Biotechnology and Biological Sciences Research Council
BSF – Black Soldier Fly
Cefas – Centre for Environment, Fisheries and Aquaculture Science
DCC – Climate Change Directorate
Defra / DEFRA – Department for Environment, Food and Rural Affairs (UK)
DESNZ – Department for Energy Security and Net Zero (UK)
DoF – Department of Fisheries (Bangladesh)
eDNA – Environmental DNA
EEZ – Exclusive Economic Zone
ERC – Evolved Research and Consulting Ltd
FAO – Food and Agriculture Organization of the United Nations
FAORC – FAO Reference Centre for Bivalve Mollusc Sanitation
FCDO – Foreign, Commonwealth and Development Office (UK)
GEDSI – Gender Equality, Disability and Social Inclusion
GHG – Greenhouse Gas
GIS – Geographic Information System
GIZ – Deutsche Gesellschaft für Internationale Zusammenarbeit
HPV – Hepatopancreatic Parvovirus (shrimp pathogen)
IATI – International Aid Transparency Initiative
ITOPF – International Tanker Owners Pollution Federation
IUCN – International Union for the Conservation of Nature
JNCC – Joint Nature Conservation Committee
KIIs – Key Informant Interviews
LGBTQI+ – Lesbian, Gay, Bisexual, Transgender, Queer/Questioning, Intersex and others
MBV – Monodon Baculovirus
MEP – MacAlister Elliott and Partners
MMO – Marine Management Organisation
MP – Microplastics
NAPA – National Adaptation Programme of Action
NGO – Non-Governmental Organisation
QC (QC Labs) – Quality Control (Laboratories)
RCP – Regional Contingency Plan
SACEP – South Asia Co-operative Environment Programme
SDDirect – Social Development Direct
SEAH – Sexual Exploitation, Abuse and Harassment
SOPs – Standard Operating Procedures
SPS – Sanitary and Phytosanitary (measures)
SREDA – Sustainable and Renewable Energy Development Authority
UNESCO – United Nations Educational, Scientific and Cultural Organization
VAC – Violence Against Children
YHV – Yellow Head Virus

Executive Summary

The Ocean Country Partnership Programme (OCPP) worked closely with Bangladesh's national institutions to support sustainable seafood systems and tackle marine pollution between 2022 and 2026. OCPP built on existing partnerships to deliver science-led, demand-driven support that enhanced governance, improved technical capability, and supported livelihoods in a highly climate-vulnerable coastal context.

OCPP achieved clear and lasting results, including the development of national aquaculture policy recommendations, strengthened sanitary and phytosanitary systems for future bivalve exports, and enhanced shrimp health surveillance to improve biosecurity and sector resilience. The establishment of Bangladesh's first dedicated microplastics laboratory, alongside training and international networking, significantly strengthened the national evidence base on marine pollution. Through inclusive livelihood initiatives, MSc scholarships, and the systematic integration of Gender Equality, Disability and Social Inclusion (GEDSI), the programme has built skills, empowered communities, and created a durable legacy for sustainable, inclusive growth in Bangladesh's marine and aquaculture sectors.

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Context

Bangladesh's ecological importance is shaped by its position at the confluence of the Ganges, Brahmaputra and Meghna rivers, forming the world's largest active delta and a highly dynamic land–sea interface. Monsoon flows, tidal processes and sediment deposition support diverse and interconnected ecosystems, including wetlands, estuaries, mangroves and nearshore marine waters. Despite its small size, Bangladesh lies on the edge of the Indo-Burma biodiversity hotspot, with the Sundarbans mangrove forest providing critical services such as coastal protection, carbon storage and fisheries nursery habitats. This close integration of riverine, coastal and marine systems drives high productivity while also increasing vulnerability to climate change, making Bangladesh a globally significant case for studying delta resilience. Whilst work under OCPP started in 2022, institution collaboration began in 2016 through a partnership with Bangladesh Agricultural University, establishing strong foundations for sustained cooperation with government bodies and NGOs and enabling effective, context-specific environmental partnerships.

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Coastal and Marine Pressures

Sustainable exploitation of living aquatic resources is essential for securing long-term food security at both local and global levels, while also addressing and managing impacts on related ecosystems and biodiversity. In Bangladesh, the coastal and marine ecosystem forms part of the Bay of Bengal, recognised as one of the world's 64 large marine ecosystems. The **Bay of Bengal holds significant economic importance**, supporting the livelihoods and income of millions of people (Islam and Shamsuddoha, 2018).

The coastal population of Bangladesh has grown substantially since the 1980s, now surpassing 16 million residents (Fernandes et al., 2016). This region contends with challenges such as illegal fishing by foreign vessels and piracy perpetrated by local criminal groups (Islam & Hasan, 2024). As a **densely populated developing nation** with an emerging economy, Bangladesh's coastal and marine ecosystems are confronted by numerous concerns, including unplanned coastal development (such as construction, urbanisation, tourism, and aquaculture), pollution and environmental degradation, gradual depletion of fish stocks, ongoing loss of biodiversity and habitat, and the disruption of ecological processes (Islam and Shamsuddoha, 2018).

Approx. 270,000 households are directly and indirectly dependent on marine fisheries for their livelihoods

Coastal fisheries are mostly over-exploited thus reduction of catch per unit fishing effort by **overfishing by destructive and illegal gears.** Other challenges include a lack of:

- Monitoring, control and surveillance, leading to widespread non-compliance.
- Resources for the implementing agencies
- Clear regulation for the coastal fishery, including delegated responsibilities

The impacts of **climate change** are likely to reduce the potential fish production in the Bangladesh Exclusive Economic Zone (EEZ) by 10%. **Ocean acidification** is another global problem that can affect the coastal and marine living resources in Bangladesh (Fernandes et al., 2016).

Aquaculture Scale-Up

Aquaculture plays a significant role for **trade and wealth** of the community, as it comprises a 4 million metric tonnes industry, and it **supports more than 18 million people**. Bangladesh has extensive water resources such as ponds, natural depressions, lakes, canals, rivers and estuaries covering an area of 4.56 million ha. There is a **high diversity of fish and shellfish** (about 795 native species and 12 exotic species) in the fresh and marine environment of Bangladesh, with many being commercially important. As the population rises and dependencies on

the marine environment increase there is more pressure than ever on these resources (Department of Fisheries, 2023).

Aquaculture is predicted to supply the majority of aquatic dietary protein by 2050. For aquaculture to deliver significantly enhanced volumes of food in a sustainable manner, appropriate account needs to be taken of its impacts on environmental integrity, farmed organism health and welfare, and human health (FAO, 2024). Therefore, to ensure sustainable delivery of increased volumes, we can assess a country's aquaculture system against several success metrics detailed by Stentiford et al. (Stentiford et al., 2020). This approach really builds on the one health approach itself which aims to optimise environmental, organism and human health associated with a given scenario.

Marine Pollution

Marine pollution poses significant risks to both ecosystem integrity and public health, impacting a broad range of sectors that depend on a healthy marine environment, including tourism, fisheries, aquaculture, and coastal protection (Alam *et al.*, 2021). Furthermore, investments aimed at safeguarding marine ecosystems may be undermined if marine pollution is not addressed proactively and consistently throughout project planning and implementation (Islam and Shamsuddoha, 2018). In Bangladesh, **municipal waste from major coastal cities, oil contamination, and pollutants originating from ship-breaking** activities in Chittagong are key contributors to marine environmental degradation (Kudrat-e-Khuda & Barsha, 2021).

While the aquaculture industry grows, so does the plastic production for packaging of aquaculture, adding to the plastic issues already present in the marine environment. There is a potential **health risk of this plastic pollution on the harvested product**, impacting on human and environmental health, and the economic returns (Alam et al., 2021). Currently, Bangladesh does not monitor microplastic (MP) in aquaculture ponds and is not able to quantify the extent of this problem (or issues to mitigate them) (Bhuyan et al., 2025).

Poverty, Development and Climate Change

Poverty in Bangladesh is intricately linked to development patterns and the escalating impacts of climate change, which together reinforce cycles of vulnerability and inequality (World Bank, 2024). As one of the world's most climate-sensitive nations, **Bangladesh experiences frequent hazards such as floods, cyclones, riverbank erosion, droughts, rising sea levels, and increased salinity** that directly undermine livelihoods and diminish communities' capacity to recover, particularly among poorer and marginalised groups (Uddin et al., 2025).

Over 30 million people continue to live below the poverty line, with many residing in disaster prone areas. All the poorest upazilas face moderate to high climate risk, illustrating how environmental threats and poverty are intertwined geographically and socially. Structural inequalities, including those related to gender, social exclusion, and governance, further exacerbate these outcomes: women, informal workers, and disadvantaged populations shoulder heightened risks and have fewer resources for adaptation (InM & CIDD,2024). **Climate change has spurred internal migration, forcing millions from rural and coastal areas into urban settings**, where they often settle in informal neighbourhoods, thus contributing to rising urban poverty (Amjad, K. 2025).

The situation of fisher communities exemplifies the convergence of environmental decline and socio-economic hardship. They confront severe challenges due to **deforestation, urban expansion, industrialisation, and persistent poverty, which fuel pollution, biodiversity loss, and an increase in natural disasters.** These overlapping factors strain marine resources and weaken regulatory enforcement, pushing many fishers deeper into poverty or even toward illegal activities and migration. **Marginalised groups** such as women, children, and people with disabilities face compounded barriers to support and adaptation, including exploitation and gender-based violence, highlighting the broad socio-economic repercussions of environmental degradation (OCPP GEDSI Analysis: Bangladesh). National strategies like NAPA and BCCSAP have been launched to promote climate-resilient development, while partnerships and programmes, including OCPP, support inclusive, poverty-aware adaptation and livelihood resilience. Overall, the complex interplay between **climate, poverty, and growth calls for integrated action** that addresses both environmental and social vulnerabilities across Bangladesh.

OCPP Contribution to Identified Challenges

Bangladesh faces several key challenges in sustainably managing its marine resources. These include limited investment and government funds, restrictions on seafood trade due to disease and safety concerns, and increasing risks from unsustainable use and pollution. Government departments often lack the capacity to monitor and regulate the marine environment, hindering efforts to address pollution and develop aquaculture. Decision-making processes are frequently inequitable, excluding local communities.

Additionally, there is a significant lack of knowledge and data on ocean management, affecting the ability to tackle food security and pollution.

This highlights several key requirements that influenced the country-level design of OCPP in Bangladesh:

Promoting sustainable fisheries and aquaculture livelihoods by strengthening scientific, regulatory, and operational skills for aquatic animal health, developing surveillance systems, and improving value chain governance. This approach also lays the groundwork for future community-level initiatives through enhanced analytical and institutional capacity.

Enhancing pollution management and water quality monitoring by clarifying institutional responsibilities, implementing practical monitoring procedures, building capacity to produce scientific data that identifies gaps to inform national policies, and strengthening coordination across government agencies.

Embedding GEDSI and safeguarding across all workstreams, ensuring equitable access to opportunities, strengthening inclusive and community informed decision making, and integrating national expertise into the design and implementation of activities.

The programme's focus on Sustainable Seafood and Marine Pollution within the OCPP pillars was driven by these needs, alongside a commitment to building capacity, improving governance, developing data systems, and encouraging inclusive engagement. These efforts ensured that scientific evidence led to long-lasting policy and management improvements. OCPP conducted scoping work for its third thematic area, biodiversity, however due to timelines and demand across the partnerships it was decided the Bangladesh partnership would on the sutainable seafood and pollution thematic areas.

The OCPP began its engagement with Bangladesh in September 2022. However, several stakeholders had already been identified and involved as a result of the BBSRC-Newton Fund project in 2016.

Stakeholders

Bangladesh possesses a complex and diverse array of stakeholders, including government agencies, non-governmental organizations, and academic institutions actively involved in aquaculture, pollution control, fisheries management, and the advancement of the Blue Economy. Early on, collaboration was carefully organised to prevent overlapping efforts and to keep activities aligned with existing programmes, an approach that proved essential given the diversity of partners.

The Ministry of Fisheries and Livestock primarily led the government's involvement in these partnerships, with the **Department of Fisheries (DoF)** and **Bangladesh Fisheries Research Institute (BFRI)** playing central

roles in jointly designing initiatives, confirming priorities, and securing official support via technical working groups.

Effective project delivery benefited from robust teamwork and the establishment of the **Aquaculture Network of Bangladesh**, which brought together NGOs, academia, and private sector participants. These stakeholders contributed to capacity building, and sustainable fisheries practices. Notably, collaboration with **Bangladesh Agricultural University** was vital, enabling research training, coastal ecosystem studies, and the adoption of new analytical techniques in educational programmes.

By working closely with the government, NGOs and academic institutions, the programme has laid a stronger, more cohesive technical foundation for the advancement of sustainable seafood and broader Blue Economy aims.

A full stakeholder list can be found in annex 1.

OCPP has also been supported by the **British High Commission**, Dhaka throughout the programme.

Impact

OCPP delivered a set of complementary interventions that strengthened Bangladesh's aquaculture governance, biosecurity, livelihoods and preparedness for marine risks. A comprehensive review of aquaculture legislation and policy identified long standing gaps, including the absence of updates since the 1990s, and directly informed new national aquaculture policy recommendations developed through the Aquaculture Network of Bangladesh and submitted to the Ministry of Fisheries and Livestock and the Department of Fisheries. Capacity building in sanitary and phytosanitary (SPS) controls supported ambitions to develop commercial bivalve production, equipping official laboratories with EU compliant E. coli testing capability and strengthening risk based decision making for potential shellfish growing areas. Black Soldier Fly larvae farming training created sustainable livelihood opportunities, particularly for women, increasing household incomes while supporting circular, low impact agricultural practices. Shrimp health surveillance across aquaculture zones enhanced early disease detection, built national expertise in molecular diagnostics, and established a robust framework to inform biosecurity policy and farm level practices. Although emergency response was not baselined nationally, Bangladesh's active participation in SACEP led regional workshops strengthened institutional knowledge exchange and improved future preparedness for marine pollution incidents.

New Aquaculture Policy Recommendation

A comprehensive and rigorous assessment of Bangladesh's legislative, regulatory, and policy frameworks, revealed critical gaps and catalysed meaningful stakeholder engagement. Notably, the core aquaculture policy has remained untouched since the 1990s, underscoring the urgent need for reform. These findings have directly shaped robust, forward-thinking national aquaculture policy recommendations, formally developed by the ANB and presented to the Ministry of Fisheries and Livestock and the DoF. These recommendations mark a pivotal step towards transformative change, with the potential to be integrated into revitalised national aquaculture guidelines that will drive sector-wide progress.

Sanitary and Phytosanitary Control Training

The DoF expressed interest in developing commercial bivalve mollusc production in Bangladesh. Their goals include expanding the fishery and aquaculture sectors, boosting revenue through international exports, and enhancing and diversifying incomes for rural coastal communities. The bivalve programme training delivered to DoF staff is an important step in the unlocking of new trading markets across Asia and Europe. This initiative could lead to significant changes in export policies and bivalve hygiene standards, fostering international trade and ensuring the highest quality of aquatic products. Whilst this is a long-term outcome outside the immediate scope of the current project, the Official Laboratories now possess the advanced capability to perform the E.coli testing method essential for the enforcement of Sanitary and Phytosanitary (SPS) controls, meeting stringent EU trade requirements and aligning with Codex Alimentarius Standards for Live or Raw Bivalve Molluscs. Furthermore, officials have demonstrated the ability to make informed decisions, confidently evaluating the suitability of potential shellfish growing areas through rigorous risk profiling and microbial hazard analysis.

Black Soldier Fly Larvae Farming

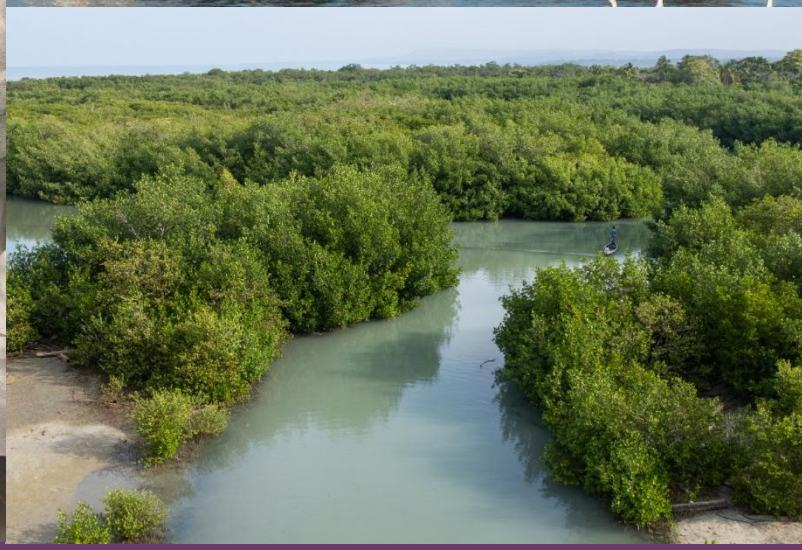
The training program on Black Soldier Fly (BSF) larvae rearing in Borodanga, Dumuria, Khulna, has made a significant positive impact on the local community. As a direct result of the program, participants, most notably women, have embraced BSF larvae rearing, leading to increased income opportunities and greater economic independence. Thanks to focused training, financial assistance, and the provision of key materials, participants have been able to successfully rear BSF larvae and apply their skills in practical ways, such as feeding livestock, supporting aquaculture, and using the larvae as fishing bait. These achievements have not only improved household earnings but have also promoted sustainable agricultural practices. Although some participants initially encountered obstacles, the steady progress and strong performances, particularly among several standout farmers, demonstrate the transformative effect of the training. Ongoing support and monitoring will be crucial to maintaining and expanding these positive outcomes, ensuring long-term sustainability and improved livelihoods throughout the region.

Shrimp Farm Surveillance

Ongoing monitoring of shrimp health through this project has delivered invaluable insights into the pathogen landscape across Bangladesh's aquaculture zones, demonstrating the vital role of surveillance in early detection and management of emerging diseases. The regular sampling and analysis have not only identified key viral and bacterial threats, such as MBV, YHV, HPV, *Vibrio* spp., and *Aeromonas* spp., but have also enabled the development of local expertise in molecular diagnostics and sample processing. This proactive approach has laid a robust foundation for regionally tailored biosecurity measures and has strengthened the capacity of local institutions to respond swiftly to disease challenges. Looking ahead, the surveillance framework established at BAU promises to inform both policy and on-farm practices, supporting the resilience of the aquaculture sector amidst evolving environmental and climatic pressures, and paving the way for a sustainable and adaptive shrimp industry in Bangladesh.

Emergency Response

Although the Emergency Response initiative in Bangladesh was not baselined, Bangladesh actively participated through its membership in the South Asia Co-operative Environment Programme (SACEP) at workshops held in both Sri Lanka and the UK. These events provided valuable opportunities for knowledge exchange and enabled Bangladeshi competent authorities to enhance the country's capacity to respond effectively to potential marine pollution incidents in the future.



Workstreams

Since 2022, OCPP Bangladesh has delivered targeted capacity building and evidence generation aligned with national priorities across sustainable seafood, marine pollution, emergency response and aquaculture biosecurity through 6 workstreams. The programme strengthened fisheries and aquaculture governance through technical training, policy-relevant analysis and institutional support, including work to improve sanitary and phytosanitary systems, aquatic animal health, and shrimp disease surveillance. Training delivered both in-country and in the UK helped build long-term technical capability, professional networks and leadership within key national institutions.

OCPP placed strong emphasis on marine pollution and environmental risk, reflecting Bangladesh's exposure to climate change, coastal degradation and industrial pressures. A major achievement was the establishment of Bangladesh's first dedicated microplastics laboratory, alongside laboratory training and international collaboration to strengthen the national evidence base on marine pollution. Emergency response capacity was further supported through regional oil spill preparedness engagement and training, helping national agencies improve readiness for pollution incidents in a complex deltaic and coastal environment.

OCPP Bangladesh Timeline

2022
- Launch of OCPP partnership through Bangladesh delegation visit.
- Scoping of Technical Assistance opportunities with Bangladesh Government.
- Bivalve Mollusc Familiarisation workshop in Dhaka

2023
- Histopathology, *in situ* hybridisation workshop delivered at Cefas for BAU and BFRI.
- OCPP concept notes shared with Ministers and key stakeholders..
- Direct award between BAU and OCPP signed.
- Molecular Biology training delivered at Cefas
- Pollution theme workshop delivered at Cefas

2024
- SACEP workshop (Bangladeshi officials attended) delivered in Sri Lanka
- The Aquaculture Network of Bangladesh is established
- Molecular Biology capacity building delivered in country
- *E.coli* and biotoxin testing and proficiency testing training delivered at Cefas

2025
- Emergency Response capacity building delivered at Cefas
- Best aquaculture practice workshops delivered in country
- Nursery pond training for women only farmers delivered in country
- Civil unrest-initiated delay in capacity building and of Microplastic laboratory set up and training

2026
- New Bangladesh Government and Ministers appointed.
- Aquaculture policy recommendation complete and to be sent to the Ministry of Fishery and Livestock
- Transition of OCPP partnership.

Bivalve Programme

OCPP has been assisting the DoF, Bangladesh in the development of bivalve mollusc production. Initially, Cefas held a Bivalve Mollusc Familiarisation workshop in Dhaka, Bangladesh in September 2022, during which the DoF confirmed their interest in developing commercial bivalve mollusc production in Bangladesh to broaden the fishery/aquaculture industries increase revenue generation via international export, with particular emphasis on increasing/diversifying incomes in rural coastal communities. They identified the European Union (EU) as their target export market, aiming to export live, chilled, or raw frozen oysters. With this in mind, a series of recommendations were drawn up and a Framework Document agreed by Cefas and DoF in November 2022, outlining project objectives.

The primary objective was to undertake a growing area risk profile for at least one area identified for the production of bivalve molluscs, along with targeted capacity and capability building in the Official Laboratories (Quality Control Laboratories - QC Labs). Additional support included guidance for biotoxin testing methods, to help the competent authority evaluate whether marine biotoxins are present in local bivalves and understand their potential impact. These outputs aimed to support the Competent Authority (DoF) in making informed decisions on the feasibility of bivalve mollusc production at a given site and allow national labs to carry out testing methods for the implementation of SPS controls, which are required for trade with the EU.

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In 2024, the FAO Reference Centre for Bivalve Mollusc Sanitation (FAORC) staff at Cefas, UK, held a technical workshop to train participants in sample collection, and *E.coli* and biotoxin testing. The workshop also covered the public health risks associated with bivalve shellfish, depuration, quality assurance and accreditation and introduced growing area risk profiling and assessment. Equipment, consumables and protocols were provided to the QC Labs, and participants joined the proficiency testing scheme operated by the FAORC. Post-workshop results showed improved capacity in all three labs for *E.coli* testing compared to pre-workshop performance.

A training module from the FAO eLearning Academy was complemented by a series of meetings designed to guide DoF and QC Lab staff through the completion of a Growing Area Risk Profile, covering topics such as industry overview, legal framework, hazard identification, and capacity assessment. The process of risk profiling, together with microbiological analysis, enabled the DoF to make well-informed decisions regarding the suitability of selected sites for bivalve mollusc production.
The provision of technical advice will continue through the FAORC and includes open access to web based resources hosted at FAO Fisheries & Aquaculture Division, signposted via the Cefas website or available directly as bivalve resources within FAO Reference Centre for Bivalve Mollusc Sanitation - Cefas (Centre for Environment, Fisheries and Aquaculture Science).

BAU Collaboration

OCPP collaborated with the Bangladesh Agriculture University (BAU) on different activities focused on addressing critical environmental and aquaculture challenges along the coastal belt of Bangladesh through an integrated approach encompassing shrimp health surveillance, environmental plastic pollution assessment, and the introduction of sustainable livelihood alternatives. The multifaceted nature of the work reflects the evolving dynamics of coastal ecosystems under increasing anthropogenic pressures and climate-induced vulnerabilities.

The project focused on building the technical capacity of Bangladeshi researchers through specialized training in both the UK and Bangladesh, covering laboratory and climate-related research skills. Core activities included molecular surveillance of shrimp health across 35 farms, monitoring viral and bacterial threats and highlighting the need for integrated disease management. The project also conducted pioneering greenhouse gas emissions measurements from prawn farming, investigated antimicrobial resistance in shrimp farms, and assessed climate-related risks in coastal tilapia farming, revealing vulnerabilities and the need for expanded farmer education and climate-smart practices.

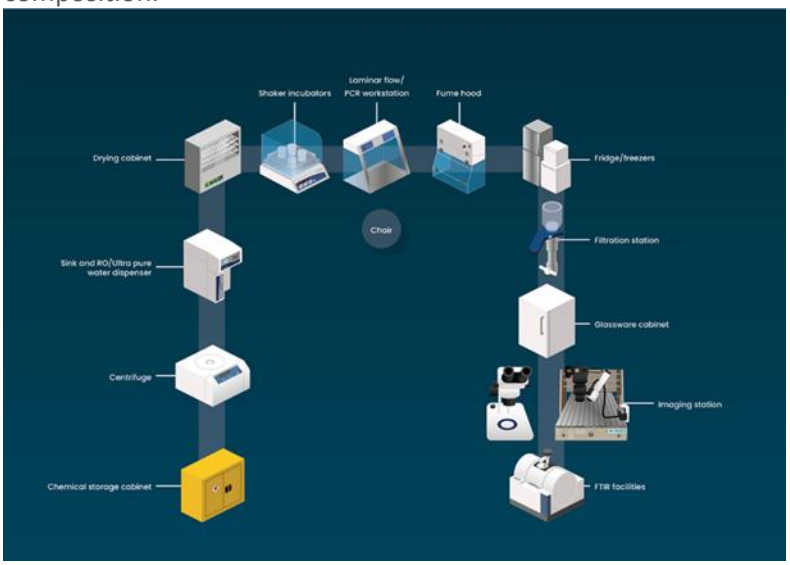
Sustainable livelihood alternatives promoted through Black Soldier Fly (BSF) larvae farming, had strong uptake among women, improving

rural income and waste reduction. Environmental monitoring initiatives included marine plastic pollution surveys, beach litter assessments, eco-bin installations, and microplastic sampling in the Sundarbans. These efforts established baseline data and improved coastal stewardship.

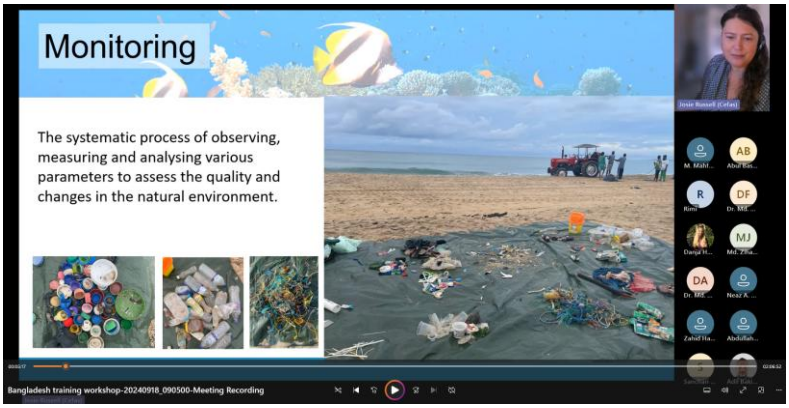
Overall, the project integrated aquatic animal health, environmental sustainability, and community empowerment, producing scientific evidence and actionable recommendations. Key future directions are scaling diagnostics, expanding digital training, broadening BSF adoption, and developing a unified framework for microplastic monitoring in sensitive ecosystems.

Microplastics Laboratory and Training

OCPP funded one microplastic laboratory which has been installed at the BAU in Bangladesh. The facilities will be used to produce scientific evidence on the occurrence, abundance and distribution of microplastics in the marine environment. A key piece of analytical equipment, an Attenuated Total Reflectance Fourier-Transform Infrared spectrometer (ATR-FT-IR) was provided for the analysis of plastic particles down to ~300 μm and to determine material composition.



On-line training was provided covering water quality measurements, microplastic sampling and marine litter identification.



Scientific evidence will contribute towards addressing the gap on baseline data for microplastics prior to any national or regional policy actions (e.g. Global Plastic Treaty). The newly created laboratory was also added to an OCPP International Laboratory Network online platform to ensure connectivity of the facilites to the wider network. The on-line platform is also being used to retain training materials from field sampling, including GIS training to laboratory processes and the identification of funding streams to ensure long-term financial sustainability.

Aquaculture Network

As part of the OCPP, Cefas have funded the establishment of an aquaculture network, with a view to enhancing connectivity across the sector and delivering long-term benefits in Bangladesh and a legacy for OCPP beyond the lifetime of the funding. Evolved Research and Consulting Ltd (ERC) were contracted to facilitate the establishment of the Aquaculture Network in Bangladesh (ANB).

The primary objectives of this project were to foster collaborations among relevant organisations and institutions in Bangladesh and to conduct a comprehensive situation analysis of brackish water and marine crustacean and finfish aquaculture in the country to identify priority action for ANB to address. ERC drew together a range of organisations reflecting academic and research (Bangladesh Maritime University, Khulna University, Bangladesh Fisheries Research Forum, Bangladesh Shrimp and Fish Foundation); NGOs (Shushilan and Jagorani Chakra Foundation) and the private sector (Fishbyte), as well as an international team including Macalister Elliott and Partners (MEP). The analysis included an overview of the current situation of the aquaculture sectors in Bangladesh, highlighting gaps within the sector.

Additionally, the project aimed to identify key areas for capacity building and education, offering recommendations for enhanced and diversified market access. Dissemination of knowledge, training, and guidance to aquaculture farmers, including women, youth, and wider communities, was also a central focus (see case study). Finally, the initiative sought to pinpoint research opportunities to address existing data and information gaps within the sector. Drawing on these

identified gaps, a specific aquaculture policy recommendation was subsequently developed to be sent to the relevant government bodies (Ministry of Fisheries and livestock, DOF and BFRI), together with Standard Operating Procedures (SOPs) to help capacity building delivery for farmers in remote areas of Bangladesh.

Emergency Response

Bangladesh, a member of the South Asia Co-operative Environmental Programme (SACEP), participated in an OCPP-funded symposium in November 2024 focused on improving regional marine pollution response.

Representatives from five SACEP countries, including agencies such as the Bangladesh Navy, Port Authority, Coastguard, and Department of Environment, shared updates on challenges like limited resources and training, and explored opportunities for collaborative response efforts. International experts, such as ITOPF, presented global best practices on topics including regional agreements, leadership, readiness, and lessons from incidents like the X-Press Pearl spill. Technical sessions addressed dispersant use, liability, and waste management.
A gap analysis of the Regional Contingency Plan (RCP) highlighted needs for improved training, shared resources, and sustainable funding. Participants developed a roadmap to strengthen preparedness.

The week concluded with a practical exercise at Dikkowita Fisheries Harbour, reinforcing the importance of coordinated regional response and future collaboration Bangladesh will continue its collaboration with SACEP, and with the support of the OCPP-funded portal, the sharing of information and knowledge will not only become easier but will also establish a strong foundation for long-term regional cooperation. This platform will help ensure that the lessons, data, and best practices developed through this partnership are preserved, accessible and sustainable, creating a lasting legacy that supports future environmental governance and continued joint action across the region.

Case Study – Aquaculture Network & GEDSI

•**GEDSI at the Heart of Aquaculture:** Through the Aquaculture Network of Bangladesh (ANB), Cefas and partners made gender equality and social inclusion (GEDSI) central to every capacity building, policy dialogue, and network activity.

•**Dedicated Oversight:** A specialised GEDSI working group ensured women, youth, and marginalised groups were always front and centre in aquaculture planning and decisions.

•**Active Integration:** GEDSI principles were integrated from the start – they shaped workshops, technical sessions, and policy discussions, making inclusion a core part of strengthening Bangladesh's aquaculture sector.

Empowering Women Farmers in the Sundarbans

•**Targeted Training:** ANB's GEDSI group launched a hands-on nursery pond management programme for women, boosting confidence and technical skills in shrimp farming.

•**Practical Gains:** Participants mastered pond prep, stocking, water quality, and disease detection, raising standards and operational capability.

•**Economic Impact:** Improved expertise means more income and financial independence for women, giving them a stronger voice at home and in the community.

•**Nutritional Benefits:** Enhanced shrimp production could improve family diets and make nursery ponds a genuine livelihood option.

•**Breaking Barriers:** The programme tackles gender and disability challenges, paving the way for women's leadership and broader participation.

•**Strengthening Networks:** Growing membership in aquaculture groups, digital knowledge sharing, and rising social status mean women are taking their place at the centre of change.

Dr Maria Zaman (BMU)

As a woman working in my sector, in my office, and in my country, before working on the ANB project, I was not aware of how to implement GEDSI. However, after working on this ANB project and with the GEDSI team, I have become aware of the need to include women in various roles. For example, I am now conscious of taking at least 25% women in my office, including employees in administration and education. I am also aware that in classrooms, laboratory classes, training sessions, and regional workshops, there should be at least 50% women participation. I try to include women as laboratory assistants and library assistants, ensuring gender balance. I also make an effort to include marginalized women from different sectors in my office. These are the changes I am making after working on GEDSI.

Education

Sixteen OCPP scholarships were awarded for study towards MSc Aquaculture degrees at Bangladesh Agricultural University. The thesis submission dates for the fourteen scholars who commenced in April 2024 were pushed back to November 2025 following the closure of the Campus in September 2025 due to student protests. The campus re-opened in early October 2025.

Further delays due to local and global political unrest further impacted timelines, however eight of the sixteen scholars completed in October 2025 by submitting and defending their research titles, with the remaining scholars expected to complete in May 2026.

Topics selected by the student for their research areas included:

- Climate Change Impacts on Aquaculture & Fisheries
- Biodiversity Assessment & Species Identification
- Pollution & Environmental Contaminants
- Aquaculture Health, Pathogens & Food Safety
- Sustainable Aquaculture Systems, Microbiomes & Circular Solutions

For a full list of scholar titles, please see annex 2.

Feedback from OCPP scholar studying at Bangladesh Agricultural University

I'm excited to share that my studies are progressing well, and I'm diving deeper into the modelling of climate change impacts on aquaculture in Bangladesh. It's an important topic, and I'm motivated by the potential for positive environmental impact through this research.

Challenges:
In my research journey, there are some challenges which I have faced—particularly with fine-tuning the climate models to accurately predict future scenarios. However, I'm approaching these challenges as opportunities to learn and innovate. I'm confident that with persistence and the right support, I'll overcome them.

Gender Equality, Disability and Social Inclusion Assessment

Social Development Direct were contracted by Cefas to conduct a national level Gender Equality, Disability and Social Inclusion (GEDSI) analysis for the seafood sector in Bangladesh. A GEDSI analysis helps to understand how power relations, social norms, attitudes and beliefs shape and impact the opportunities, rights, services, and resources available to different social groups, as well as their experiences of discrimination and poverty (SDDirect, 2025). This is critical in being able to assess inequalities and social exclusion, tackle rather than perpetuate inequalities, remove barriers and leave no-one behind (FCDO, DESNZ, DEFRA, 2025). This GEDSI analysis was conducted through a literature review and seven Key Informant Interviews. The report identifies who the most marginalised and vulnerable groups are within the seafood sector in Bangladesh and the challenges that women and girls, persons with disabilities, the LGBTQI+ community, people living with HIV, children and young people and migrants face. The analysis also explores how these groups are at risk from future environmental degradation. The analysis provided a series of recommendations for OCPP to take forward and consider through programme delivery to ensure a robust GEDSI approach. As a result of this and the particular GEDSI issues within the aquaculture sector in Bangladesh, a dedicated working group on GEDSI was established for the development of Aquaculture Network Bangladesh.

OCPP in Bangladesh demonstrated that the work **was GEDSI Sensitive** in 2025, particularly through their work delivered for the Aquaculture Network Bangladesh (see case study above for more information).

OCPP has developed a toolkit to support mainstreaming Gender Equality, Disability and Social Inclusion (GEDSI) to support all those working in the blue economy, including marine biodiversity, sustainable seafood and marine pollution to mainstream and monitor GEDSI within their work. The toolkit is in two parts including practical guidance and tools and templates. This has been translated into Bengali.

Safeguarding

GEDSI and safeguarding are interconnected, and the GEDSI analysis has identified issues related to sexual exploitation, abuse, and sexual harassment (SEAH) that OCPP should be aware of in Bangladesh. The seafood sector in Bangladesh experiences significant and widespread SEAH, Gender-Based Violence (GBV), Violence Against Children (VAC), child labour, and forced labour, particularly impacting women and children. These challenges are exacerbated by factors such as poverty, displacement, inadequate legal enforcement, and prevailing social norms, and they are frequently underreported due to fear and lack of trust in available systems. The informal nature of the sector and insufficient regulation further contribute to elevated risks. OCPP collaborated with a range of partners, many of whom lacked established safeguarding procedures, thereby creating potential vulnerabilities in programme implementation. Additionally, the analysis identified OCPP-funded activities with an increased risk of SEAH and other safeguarding-related misconduct.

Annex 1 – full stakeholder list

Stakeholder type	Organisation
Government	Department of Fisheries, Ministry of Fisheries and Livestock
Government	Ministry of Environment, Forest and Climate Change
Government	Ministry of Agriculture
Government	Bangladesh Oceanographic Research Institute (BORI)
Government	Ministry of Food
Government	Sustainable and Renewable Energy Development Authority (SREDA),
Government	Bangladesh Fisheries Research Institute (BFRI)
Government	Bangladesh Fisheries Development Corporation (BFDC)
Research institute/ University	Bangladesh Agricultural University
Research institute/University	Bangabandhu Sheikh Mujibur Rahman Science and Technology University
Research institute/ University	Khulna Agriculture University
Research institute/ University	Patuakhali Science and Technology University
Research institute/ University	Bangladesh Maritime University
Research institute/ University	Khulna University
Research institute/ University	Climate Change Directorate (DCC)
Research institute/ University	Bangladesh Fisheries Research Forum
Regional NGO	World Fish
Regional NGO	Shushilan
Regional NGO	Jagorani Chakra Foundation
Regional NGO	Bangladesh Shrimp and Fish Foundation
Industry	GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit
Industry	FISHBYTE

Annex 2 – full OCPP scholarship research project

1. Assessing the Diversity of Aquatic Organisms, with a Focus on Fish in the Sundarbans Using Environmental DNA (eDNA) Analysis Technique
2. Microplastics Pollution in Coastal Aquaculture: Analysis Bio-accumulation and Identifying the Sources of Microplastics.
3. Assessing Microbiome Population and Their Role in Greenhouse Gas Emissions in Coastal Aquaculture Ponds.
4. Spatial Analysis of Climate Change Impacts on Aquaculture: A Comparative Study of Dumuria and Paikgacha, Southwest Coastal Bangladesh, Using GIS and Remote Sensing
5. Nutritional Profiling and Microbial Risk Assessment of Bivalves from the Coastal Regions of Bangladesh.
6. Enhancing Captive Breeding of Native Fly (Musca domestica) with Diverse Substrates for Feeding Prawn in Khulna Region.
7. Evaluating Black Soldier Fly Larvae as Sustainable Prawn Feed in Southwest Khulna: A Citizen Science Approach.
8. Title: The Effects of Climate Change on Tilapia Health in the Southwest Regions of the Bangladesh.
9. Microplastics Contamination in Important Fish and Shellfish Species in Sundarbans Mangroves.
10. Morphological and Molecular Identification of Bivalve Molluscs in Coastal Areas of Bangladesh
11. Histopathological and Molecular Investigation of Bacterial Infections in Cultured Shrimp (Penaeus monodon) of Bangladesh.
12. Microplastic Contamination in Shrimp, Shrimp feed and Feed Ingredients.
13. Microplastics Distribution in the Sundarbans Mangrove Ecosystem: Measuring and Monitoring Contamination Levels.
14. Impacts of Climate Change on Health of Farmed Tilapia in the Coastal Region of Bangladesh.
15. Profiling Microbial Communities Related to Greenhouse Gas (GHG) Emissions in Coastal Aquaculture Ponds.