Recommendations

1. Research institutions should move beyond taxonomic research and prioritise studies on fish ecology, habitats, and population dynamics.
2. A community-driven river management and monitoring in more river stretches within the same jurisdiction by the district (Chandel) administration.
3. Community programmes should strengthen sustainable fishing practices while highlighting the impacts of unsustainable methods.
4. Citizen Science – especially via school children, youth and women - for i.e. documenting traditional knowledge and monitoring the river health is a promising success-factor and can be taken up at scale.
5. Robust policies need to be developed and enforced to combat over-exploitation and destructive fishing practices.

The Indo-German bilateral cooperation Project 'Protection and Sustainable Management of Aquatic Resources in the North-Eastern Himalayan Region of India (NERAQ) was implemented by 'Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH jointly with the Indian Ministry of Environment, Forest and Climate Change (MoEFCC). This project is funded by the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) under the International Climate Initiative (IKI).

Key documents are downloadable via the following QR code:

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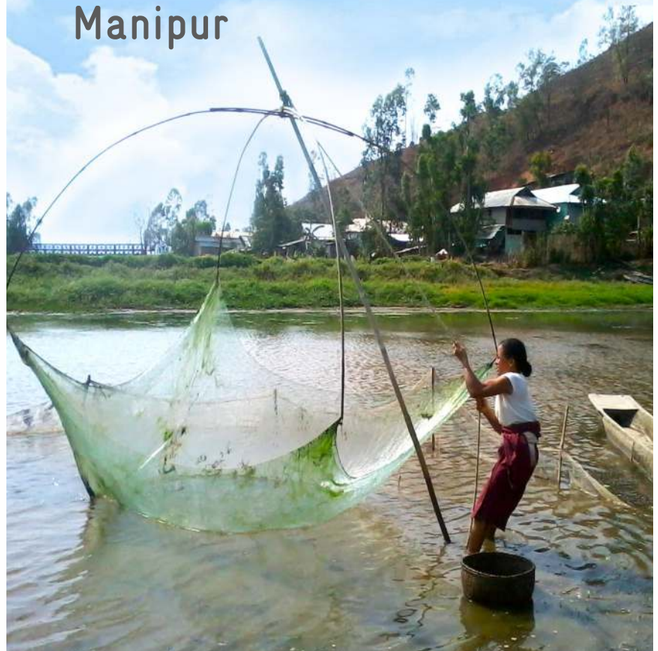
Protection and Sustainable Management of Aquatic Resources in the North-Eastern Himalayan Region of India (NERAQ)

Manipur



Introduction

Manipur, a key state in Northeast India, lies within two significant global biodiversity hotspots: the Himalayan and Indo-Burma regions. Its rich biodiversity sustains millions of people and is characterised by an extensive network of aquatic ecosystems, encompassing 63,616 hectares of water bodies, including natural lakes and rivers. Notably, the Manipur River Basin faces severe threats to its freshwater fish population, with 8 of the 15 endangered fish species from the Eastern Himalayas found in this state. Human activities and climate change have increasingly jeopardised these aquatic habitats, leading to over-exploitation and harmful fishing practices that undermine biodiversity. Despite existing regulations, the decline in aquatic ecosystems persists, necessitating a concerted effort to strengthen their conservation. Fostering community stewardship through capacity-building in Participatory River Management, along with integrating citizen science and traditional knowledge, can enhance conservation efforts.

Key (thematic) focus areas: Research and assessments, identification of Important Fish Areas, conservation of spawning grounds, local livelihood generation, capacity building, policy.

Approach: Building research capacities, implementing participatory pilot model, informing policy, awareness generation.

KEY HIGHLIGHTS OF PROJECT ACTIVITIES

Research

- Taxonomic research by the Zoological Survey of India (ZSI) helped advance biodiversity knowledge in Manipur by documenting aquatic flora and fauna in underexplored areas, filling knowledge gaps, and establishing conservation baselines. Geo-referenced biodiversity maps have been able to inform sustainable resource planning. In collaboration with the Institute of Inland Fisheries in Potsdam (IfB), Germany, a fish sampling handbook was developed, enhancing research methodology, building local capacities, and strengthening international research efforts.
- **Climate Risk Assessment:** District-level climate change vulnerability for Manipur has been projected using CMIP6-GCMs models, under SSP2-4.5 and SSP5-8.5 scenarios, highlighting increased exposure to extreme events and the need for adaptive measures.
- **Species-Level Vulnerability:** Twenty researchers from the Northeast Region have been capacitated in assessing the climate vulnerability of three fish species like Snow Trout *(Schizothorax richardsonii),* Golden Mahseer *(Tor putitora)*, and Zig-Zag Eel *(Mastacembelus armatus)* by IfB and ZSI. Recommendations were shared with policymakers for adaptive strategies.

- **IUCN Red Listing (Regional):** Thirty researchers were trained to apply regional IUCN Red List criteria to assess fish species, identified conservation priorities and classify species as Endangered, Vulnerable, Near Threatened and Data Deficient. Key Biodiversity Areas (KBAs)/ Important Fish Areas (IFAs) were mapped.
- **Small Indigenous Fish Species (SIFS):** Seventy SIFS were identified at key sites (Iril River, Pumlen Lake, Ikop Lake, Thoubal, and Chakpi River) during a comprehensive survey conducted by Manipur University. Of these, 42 were valued for food, 49 for ornamental use, and 15 for cultural significance. A total of 19 fish species were identified as alien, with 8 of these being invasive. Additionally, data on 48 alien species in the state were compiled from existing literature. Manipur University developed a Recirculating Aquaculture System (RAS) hatchery for the breeding and rearing of two key species of interest.

Pilot

The Chakpi in Chandel District, Manipur, is a significant river approximately 70 km south-east of Imphal. This district, which is part of NITI Aayog's Aspirational Districts Programme, is characterised by a predominantly Scheduled Tribe and Scheduled Caste population, constituting about 92 percent of its residents. Originating from the Laimaton Hills with a catchment area of 660 km², the river ultimately drains into the Manipur River before merging with the Chindwin River, a tributary of the Irrawaddy. Notably, the Chakpi River is home to over 87 fish species, including 7 newly identified species. However, the river basin faces significant threats, particularly to its freshwater fish population, highlighting the urgent need for conservation efforts. As part of the pilot project, an 8 km stretch of the Chakpi River, which passes through 4 villages—Lambung, Monsang Pantha, Mantri Pantha, and Japhou—was selected as a pilot site for implementing sustainable freshwater resource management using participatory approaches.

Key outcomes

About **14** hectares of the aquatic ecosystem is being sustainably managed and has been designated as a **'No Fishing' Zone**. Additionally, people in an 8 km stretch of river, where approximately 4,100 individuals manage 630 hectares of land, have adopted improved sustainable practices for aquatic resource management.

A total of **20** local stakeholders are now monitoring and assessing the river health through the development of a Monitoring Handbook on a monthly basis.

A **Community Information Centre (CIC)** has been established with local support to provide monthly river health data, preserve traditional ecological knowledge, and raise long-term awareness through displayed monitoring registers and village-level river regulation policies.

About **300** students have documented the **traditional knowledge (TK)** of their grandparents related to aquatic resources and have become conservation champions themselves. Key insights of the documentation were illustrated into a children's book and integrated into the local action plan.

A diverse set of livelihood enhancement measures such as weaving, piggery, and poultry farming have been implemented to reduce dependence on riverine ecosystems, resulting in an income **increase of INR 1,000–3,000** per month among **154** households, predominantly poor fishers.

Policy

Insights from adaptive research and pilot initiatives have guided the formulation of Policies and Action plans to facilitate the development of effective management strategies at both local and state levels:

- A local **Chakpi River Action Plan** has been developed with the participation of 4 villages. The plan outlines practical, actionable steps ensuring continuous implementation by the local stakeholders.
- The **Manipur State Biodiversity Strategy and Action Plan** (2002) has been revised, aligning it with the updated NBSAP and international Global Biodiversity Framework (GBF). It includes key learnings from the project to further guide conservation and sustainable management practices for aquatic resources.
- Six Master Trainers for **Biodiversity Management Committees (BMCs)** have been trained to build local capacity on how to document, manage and monitor aquatic resources.
- A Module on **Gender and Aquatic Resource Management & River Monitoring Manual** have been developed and gender-sensitive capacity development measures have been implemented.

Testimonials

This is just the beginning. We need to expand our efforts to conserve a larger area of our aquatic ecosystem till Bolidam region, ensuring its preservation for future generations. We, the communities of these four villages, must take inspiration and lead the way from the valuable lessons learned during this pilot initiative.

– Vincent Monsang
Village Chief
Monsang pantha village