

## Recommendations

1. Use the identification and community-driven protection of spawning grounds as the essential key for effective fish conservation and fish stock increase.
2. Promote interdisciplinary collaboration among faculties for innovative and applied research curricula.
3. Prioritize protection of endemic aquatic species in conservation initiatives.
4. Promote coordinated conservation efforts across stream/riverscape.
5. Document traditional knowledge practices and integrate them into management.
6. Organise bio-festivals for knowledge sharing and exposure.
7. Support skill development and livelihood initiatives to increase community engagement.

**Main Implementing Partner(s):** Department of Environment, Forest, and Climate Change, Government of Nagaland and GIZ.


**Other partner(s):** Kohima Science College, Jotsoma and Nagaland State Biodiversity Board.

**Duration:** 2020 - 2024

**Stakeholders:** Biodiversity Management Committees and Indigenous People and Local Communities.

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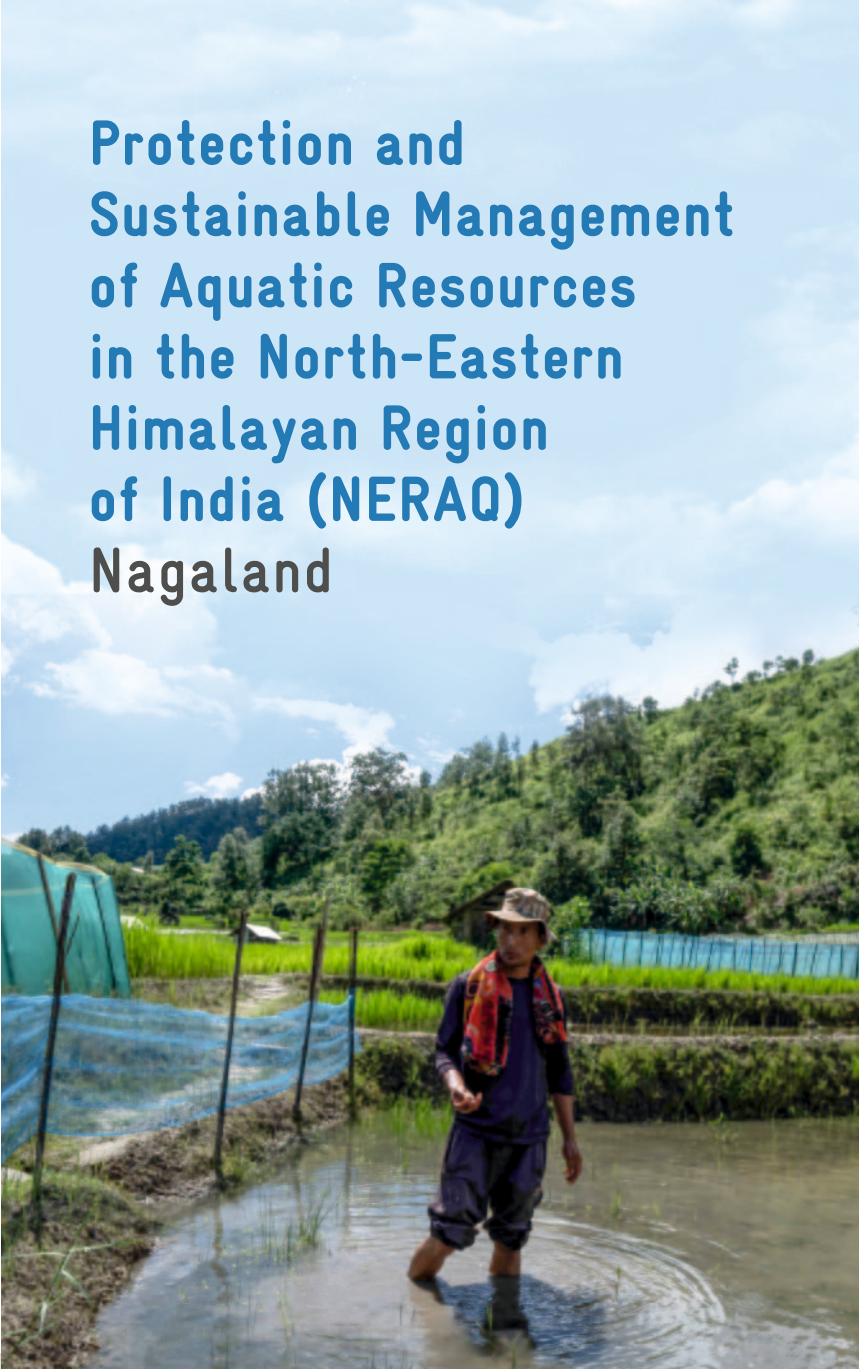


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IKI INTERNATIONAL CLIMATE INITIATIVE

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



## Introduction

Nagaland, located in Northeast India, is part of two biodiversity hotspots within the Indo-Burma Region and Eastern Himalayan range. The state's diverse flora and fauna are supported by various climatic conditions and elevations featuring a unique and diverse freshwater world – providing livelihoods to a large number of riparian communities. Even little is yet discovered about the aquatic life of Nagaland, aquatic habitats and the livelihoods of the local communities dependent on it are threatened by climate change impacts like changes in rain pattern and intensity, dam constructions, pollution and destructive fishing methods. Especially the state of Nagaland has been the most unexplored state in the Northeast due to the political instability until around the millennium. Limited data on aquatic species makes informed decision making and management strategies for conservation and sustainable management difficult. To safeguard Nagaland's rich aquatic biodiversity, the NERAQ project joined hands with the State Department of Environment, Forest, and Climate Change and the Kohima Science College to improve the management and knowledge capacities of researchers, local communities and policy makers.



**Key (thematic) focus areas:** Research, Traditional Knowledge (TK) documentation, conservation of spawning grounds, local livelihood generation, capacity building.

**Approach** Building research capacities, implementing participatory pilot model, informing policy, Awareness generation.



# KEY HIGHLIGHTS OF PROJECT ACTIVITIES



## Research

Documenting aquatic biodiversity presents unique challenges, requiring significant time and specialised equipment compared to terrestrial biodiversity. As a result, efforts to record aquatic species and their associated traditional practices have been limited. The NERAQ project aimed to bridge this gap by integrating scientific research with the traditional knowledge of local communities. Through collaborative efforts among researchers from various international, national, and state institutions, the NERAQ project has achieved notable outcomes that highlight the importance of this innovative approach.

### Key outcomes

- The IUCN Red List for more than 200 fish species of Nagaland has been updated and four Important Fish Areas (IFAs) have been identified.
- The 11-Steps Methods Manual on how to document Traditional Knowledge (TK) was developed and field tested in Poilwa village.
- Over 70 students enrolled in the 2024 launched multidisciplinary course “*Traditional Knowledge – Heritage for the Future*”! Three departments of Botany, Zoology and Anthropology of the Kohima Science College, Jotsoma joined hands and developed this course with the support of the University of Kent, UK.
- Two new fish species (*Exostoma sentiynonae*, *Psilorhynchus kosyigini*) and four aquatic insects were newly discovered by Kohima Science College, Jotsoma and the Zoological Survey of India (ZSI) during the intensive inventorization exercise of aquatic species in four hotspot areas of Nagaland.



**Training on traditional knowledge at KSC**  
A group of students and faculty members from Kohima Science College, Jotsoma, participated in a training session on traditional knowledge systems. The session was led by experts from the University of Kent, UK, and focused on documenting traditional knowledge for the purpose of conservation and sustainable management. The training covered various aspects of traditional knowledge, including its importance, how to document it, and how to use it for conservation and sustainable management. The session was held outdoors, and the participants were engaged in various activities, including group discussions and practical exercises.

KSC launch pioneering multi disciplinary course on traditional knowledge systems | MorungExpress | morungexpress.com

- The Climate Risk of Aquatic Resources for Nagaland was assessed at district level using a multi-model ensemble of 13 GCMs model's climate data and 21 climate extremes indices for 4 time slices and two climate scenarios.
- Through the climate vulnerability assessment for the three species Golden Mahseer (*Tor putitora*), Snow Trout (*Schizothorax* sp.), and Zig-Zag Eel (*Mastacembulus armatus*), leading researchers of Nagaland University in cooperation with the Institute of Inland Fishery, Potsdam (IFB) have gained a new research method which enables them to conduct further assessments and guide conservation decisions for their state.



## Pilot

### Pilot Project Overview: Tepuiki River, Poilwa Village

The pilot project is focused on the Tepuiki River in Poilwa village, Peren District, Nagaland. Poilwa village, with a population of over 380 households, is primarily inhabited by people of the Zeliang tribe. Life and livelihood in the village center on their natural resources, with agriculture being the mainstay and aquatic resources making up a small but significant portion of income, cuisine and lifestyle. The pristine Tepuiki river, largely free from mining and dam activities, is increasingly threatened by climate change, which causes water volume reduction and flash floods. Additionally, unsustainable fishing practices pose risks to aquatic biodiversity.

This initiative endeavored to demonstrate the vital role of community conservation efforts in preserving this unique aquatic habitat. Implemented by Kohima Science College (A), Jotsoma, the pilot project encompassed surveys of spawning grounds, assessment of river ecology and species, awareness programmes, and sustainable livelihood activities, including snail-cum-paddy and paddy-cum-fish cultivation, alongside the documentation of aquatic resources and traditional knowledge.

### Key outcomes



Community driven banning of non-traditional, destructive fishing methods.



Spawning areas for fishes identified and conserved.



Over 70 women and youth capacitated on different aspects of aquatic resources, their conservation and livelihood measures.



The Traditional Knowledge of Poilwa village on Aquatic Resources has been documented.



About 100 families benefitted from the livelihood improvement activities.



Average household income increased by approx. INR 6,000/year from initial estimates.



Uptake of indigenous/endemic snails over introduced species which is found to be invasive.



## Policy

### Turning strategy into action – the NSBSAP on ground

The Nagaland State Biodiversity Strategy and Action Plan (NSBSAP), revised under the IKI-Biodiv project, was launched by the Nagaland State Biodiversity Board (NSBB) in 2022. In response to the German Embassy's interest in its implementation, NERAQ committed to piloting the plan within four Biodiversity Management Committees (BMCs): Khonoma, Kezoma, Sendenyu, and Sukhai. Each BMC selected capacity-building and livelihood enhancement activities tailored to their village needs like poultry, pisciculture, beekeeping, awareness and capacity building for youth on biodiversity, traditional knowledge and nature based eco-tourism.

### The “aquatic edition” of People’s Biodiversity Register

In what may be considered as a first-of-a-kind venture, the aquatic fauna and flora and their associated traditional knowledge and good practices were documented in 12 villages settled at the foothills of the Japfü Range, in the Southern Angami Region located South of Kohima, the capital of Nagaland. The study recorded a total of 567 aquatic sites which include rivers/streams, springs, ponds and man-made water storage structures, a total of 65 faunal species and 48 floral species. The exercise received national recognition as a pioneering effort in the country.



### Key outcomes

- About 650 households benefited from livelihood intervention activities.
- Over 100 villagers capacitated on frog ecosystem and its importance.
- Over 50 villagers oriented on nature based eco-tourism.
- Twelve PBRs on aquatic resources developed and are being upscaled by the State Government.

The Toolkit on “How to document, manage and monitor aquatic ecosystems” was developed with various experts with experience on ground for the training of master trainers.

## Testimonials

*We have totally banned the modern techniques of fishing and have resolved only to practice the traditional style of fishing in Poilwa Village.*

– Rangsan Nlang, Chairman Poilwa Village Council

