

# Threats to biodiversity and local livelihoods in the Chindwin River Basin in Myanmar: Insights and policy recommendations

## Key findings

- Primary threats to biodiversity and livelihoods in the Chindwin River Basin include open-pit mining, climate change, deforestation as well as agricultural expansion and other land use changes. All these contribute significantly to habitat loss and depletion of natural resources.
- Five key biodiversity areas in the basin are highly affected: the Upper Chindwin River, the Uyu River, Thaungdut, Mahamyaing, and Pauk Inn wetlands. Pauk Inn is most vulnerable, facing multiple threats from land use changes such as agriculture, city expansion, and over-fishing. Threats to the Uyu River zone are mainly due to mining and deforestation. Forest reserves in Mahamyaing are facing threats from road construction and illegal logging.
- The key challenges to addressing biodiversity impacts include the lack of financial and infrastructure resources, limited data, access to protected areas, scarce human resources, and the lack of public participation in environmental planning.
- Multiple stakeholders from government, universities and civil society play different roles in addressing threats to the Chindwin. The Environmental Conservation Department, Forest Department and the Chindwin River Basin Committee were identified as important entities with high interest and influence to act upon addressing impacts and underpinning threats to biodiversity.

## Challenges in the Key Biodiversity Areas

Key Biodiversity Areas (KBAs) are sites contributing significantly to the persistent levels of global biodiversity. They are part of the system of protected areas set up by the government to serve as habitats for critically endangered and vulnerable species, or areas holding significant proportions of a species' global populations at any stage of its lifecycle. Myanmar has 132 KBAs and 14 of those are in the Chindwin River Basin (CRB). The watershed area is the largest tributary to the Ayeyarwady River (**Fig.1**).

Given Myanmar's rapid economic development in recent years, the Chindwin Basin faces unplanned and unmanaged changes occurring at accelerated, and unprecedented rates. This haphazard development delivers unforeseen consequences to biodiversity and to the communities that depend on the Chindwin's ecosystems for their livelihoods. Economic development in the CRB has resulted in the expansion of urban areas, agriculture and mining, leading to an increase in deforestation. Water quality is deteriorating due to contamination by unregulated and environmentally unsound mining operations along the length of the river.

Climate change is another key factor affecting CRB biodiversity. In the short term, the frequency and intensity of extreme weather events such as cyclones, droughts, floods and heat waves is increasing. Myanmar ranks as one of the most vulnerable countries in Asia to the effects of climate change. Species and their habitats, both within and outside nationally protected areas, are at risk due to ongoing physical overexploitation. The protected area system in Myanmar needs a comprehensive review and strengthening to ensure habitat conservation and biodiversity protection.

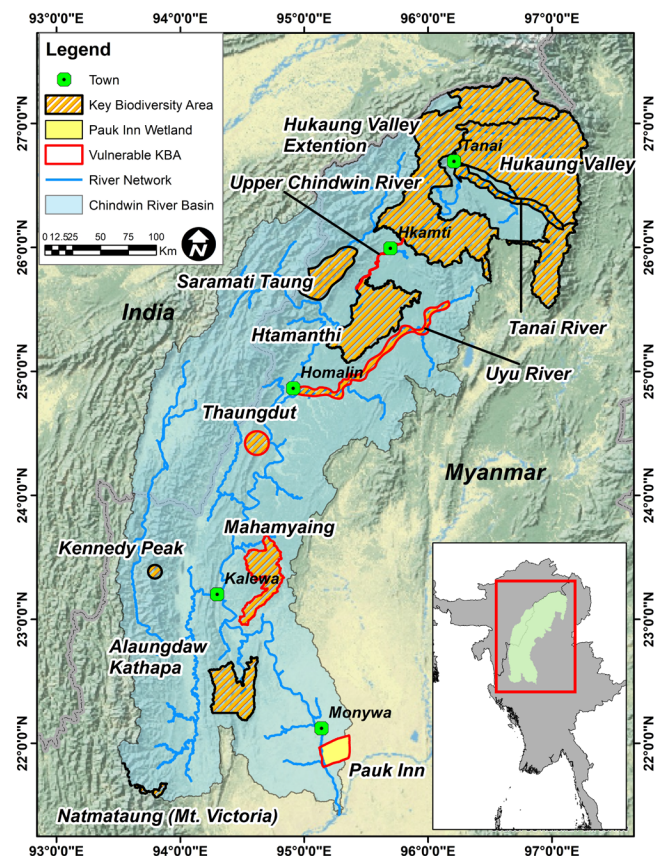


Fig. 1 Location Map with Key Biodiversity Areas

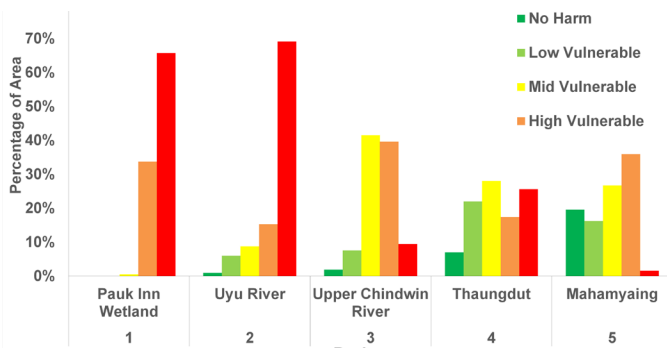


Fig. 2: (a) percentage of total vulnerable areas in the top five vulnerable KBAs

## The Chindwin Biodiversity Ecosystem Services: Undertaking biodiversity assessments

The Chindwin Biodiversity Ecosystem Services project team led by the Stockholm Environment Institute (SEI) and the Myanmar Environment Institute (MEI) in close cooperation with the Sagaing Regional Government, and the central government's Directorate of Water Resources and Improvement of River System (DWIR) are addressing the livelihood threats arising from biodiversity loss and decline in ecosystem services in the Chindwin River Basin. The team has been engaging with a wide range of experts and stakeholders to identify the linkages between key drivers of change in biodiversity and ecosystem services and the consequent challenges to local livelihoods. The stakeholders consider mining, climate change, and deforestation as the most serious threats: Pauk Inn wetlands was found to be most vulnerable followed by the Uyu River, the Upper Chindwin River, as well as Thaungdut and Mahamyaying Townships (Fig.2a).

### Glossary

#### Biodiversity...

Biological diversity means the variability among living organisms from all sources including, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (see: <https://www.cbd.int/convention/articles/default.shtml?a=cbd-02>).

#### Ecosystem Services...

Ecosystem services are the direct and indirect contributions of ecosystems to human well-being. They support directly or indirectly our survival and quality of life (see: <https://biodiversity.europa.eu/topics/ecosystem-services>).

#### Livelihoods...

A livelihood is a means of making a living. It encompasses people's capabilities, assets, income and activities required to secure the necessities of life (see: <http://www.ifrc.org/en/what-we-do/disaster-management/from-crisis-to-recovery/what-is-a-livelihood/>).

## Policy recommendations

- Upon identifying the threats and challenges, as well as the vulnerable areas, the next step is for the Chindwin River Basin Committee (CRBC) - a multi-stakeholder body for natural resources management - to design realistic pilot activities that develop concrete solutions to reverse biodiversity loss in the Chindwin Basin.
- CRBC could act as a multi-stakeholder body for integrated water resources management (IWRM) in the CRB and provide advice and support on IWRM to local administration as well as the private sector partners in the basin.
- To build further awareness of biodiversity issues in the public sector, the CRBC should seek support from donors and experts to provide to build capacity of government agencies on the legal foundations, ecological benefits, and livelihood implications of biodiversity conservation. Targeted capacity building of agencies tasked with conservation could be on technical aspects, such as biodiversity impact assessment and ecosystem services valuation.
- Given the insufficient institutional coordination, the Sagaing regional government needs to prioritize its conservation agenda and consolidate conservation activities in a single department, such as the Department of Environmental Conservation. All projects with international donors and NGOs need to be coordinated under this agency. Such a centralized agency needs to advise on implementation of relevant national policies, to develop and to mainstream biodiversity assessments and ecosystem services valuation into regional planning and policies.
- International donors and national environmental initiatives need to strengthen the capacity of local media in using various communication channels and enhancing their knowledge on biodiversity issues to improve their ability to raise public awareness.
- The CRBC could also work to raise public awareness through building capacity to monitor and evaluate biodiversity and ecosystem services and share this information with a range of stakeholders, especially youth, on the importance of, and threats to, biodiversity and ecosystem services.
- Based on stakeholder information and technical assessments gathered in this project, Pauk Inn wetlands displays high levels of biodiversity. Pauk Inn is not yet a KBA. International and national research efforts lead by the Myanmar Forest Department could go into assessing Pauk Inn as to whether it fulfils the criteria making it eligible to qualify as a KBA.

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