

Overview of Integrated Lake Basin Management (ILBM) Approach for Sustainability of Lakes and Wetlands in Nepal

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Nepal is a country of highlands including Mount Everest, the highest peak in the world. The lakes and wetlands of Nepal are very important because they are originated from the glacial melts of the High Himalayas. Therefore, the lakes and wetlands of Nepal are also regarded as Himalayan Lakes. Nepal holds 5,358 lakes, 2,323 glacial lakes, >2,700 oxbow lakes >480 tectonic lakes, >2,300 ponds, 163 wetlands in Terai, 6,000 rivers, >10 reservoirs along with marshy lands and paddy fields. Almost all the lakes hold 3% of the available water of Nepal.

All the lakes and wetlands of Nepal are important and play a significant role in balancing the ecosystem. Lakes and wetlands are important as they are designated to many Ramsar sites that possess global significance, transboundary nature, and has many religious and cultural values. Moreover, they have many socio-economic uses, ranging from the provision of food to medicines. In addition, it is also the major source of the economic development of Nepal. 22 communities from lowlands to the high Himalayas are directly dependent on lakes and wetlands. They have high-value biodiversity as they are the habitat for a diverse array of flora and fauna. These areas hold 5% flowering plants, 4.8% of total plants, 10% of nationally threatened flora, 7% critically endangered species of mammals, 22.5% of Birds, 4 species of fishes, 9 endemic species of herpetofauna, and >12% of butterflies. Due to the complexity of the changing process of nature, there may have other flora and faunal species that need to be explored. Furthermore, the lakes and wetlands of Nepal have religious and cultural values according to their communities, caste, and ethnicity. However, the lakes and wetlands of Nepal are deteriorating day by day with major threats being due to anthropogenic factors, natural processes as well as changing environments such as climate change, global warming. Siltation and sedimentation due to landslide and erosion, watershed dried out are some natural factors whereas encroachment, uncontrolled spreading of invasive species, pollution, and unplanned land use are some major anthropogenic factors that cause the lakes and wetlands degradation which in turn disrupt the entire lake wetland ecosystem.

Wetlands are the most productive but threatened ecosystem on earth. Wetlands provide many benefits such as environmental, economic, and social, yet there is limited attention in the national and international accounts.

Given the importance of wetlands for people and biodiversity, Nepal declares Ramsar sites that have put the country on the global map of conservation significance effort to conserve then need to be strengthened than ever before. Currently, Nepal has 10 sites designated as Wetlands of International Importance from 1987 to 2016 with a surface area of 60,561 hectares. The present governing constitution of Nepal 2015 includes the system for governance for lakes and conservation issues and their wise use. Moreover, Nepal has adopted different national policies and acts for lake and wetlands conservation and their wise use. Besides, Nepal has assigned various Multilateral Environmental agreements in the form of convention, treaties, strategy from the beginning of the Ramsar convention to recently Aichi targets, Paris Agreement, Sustainable Goals for the lakes and wetlands conservation.

Wetlands and Lake Conservation are the cross-cutting areas for biodiversity conservation, watershed protection, tourism promotion, irrigation freshwater, hydropower production, and sustainable economic prosperity. Therefore, Nepal has various institutions responsible for lakes and wetlands conservation. According to the newly structured federal construction of Nepal, there is a three-level organization at Federal: Ministry of Forests and Environment, Department of Forests and Soil Conservation, Department of National Park and Wildlife Services, National Lake Conservation Development Committee at Provincial: Provincial Ministry, and Provincial Lake Authority and at local Level: DDC, rural municipalities/municipalities and Local Lake Conservation Users groups. At all levels there are various partner organizations, NGOs, CBOS to support the activities of these responsible organizations.

Admiring the facts of Lakes and wetlands values placed in different parts of the country Government of Nepal has formed National Lake Conservation Development Committee (NLCDC) in 2007. Since then, NLCDC has been working as the key institution for the conservation of lake and wetland resources in Nepal. After the establishment of NLCDC, the ILBM approach has been started in Nepal.

The adoption of ILBM approach was started with the coordination of ILEC. Basically, NLCDC has been working on three spheres. First Works on policy level by reviewing and consolidating policies from different sectors to recommend the Government for its effective implementation Second Conducts different programs, such as preparation of national lake conservation strategy, lake inventory preparation. Third, different Actions for the lakes and wetlands conservations such as support to the restoration of Lakes habitat at a community level, establish linkage and build partnership, Gather Lake Information and Update, Identification of Lakes and wetlands for Global significance for Ramsar listing, Establishing Lake Conservation Demonstration sites, etc. NLCDC has been implanting ILBM from the development of a strategic framework of lake conservation to lake inventory and execution. NLCDC has prepared National Lake Inventory with the review of secondary sources based on 700 topographic map surveys, it has spotted 5,358 Lakes in Nepal. In addition, it has prepared Field-based Lake Inventory within 3000m above sea level complied work from NLCDC (62 districts) and the Department of Forest (13 districts). NLCDC has

prepared lake management plans for Gaidahawa Lake in Rupendehi district based on ILBM approach and handover to the local government for its effective implementation. From the initiation of scientific research done by NLCDC it is possible to declare 9 lakes of Pokhara valley as Pokhara Valley new Ramsar site in 2016. Then, the Ministry of Forests and Environment, Government of Nepal has prepared Pokhara Valley ILBM management plan for its effective and sustainable conservation.. To broaden the knowledge about the lake conservation and ILBM approach, NLCDC organized an International lake conference in 2018 which had more than 250 participants from more than six countries. With support from the government of Nepal, NLCDC has been continuously contributing financial support to the Ramsar sites to maintain their integrity. Moreover, to strengthen the local governance in the lake basins, NLCDC has been supporting local lake community user groups. Annually NLCDC supports more than 45 lakes in 30 to 40 districts of the country to implement ILBM at the community level. Additionally, NLCDC regularly conducts lake conservation awareness programs to local communities for strengthening the ILBM approach in Nepal.

Several lessons have been learned during the implementation of ILBM by the NLCDC. One lesson is that integration in ILBM needs a lot of time to deliver its impacts. Secondly, learning of participatory conservation of forests and water resources are effective to contribute to ILBM in Nepal. Third ILBM demonstration at a higher scale is required to deliver its impacts. Finally, the integration of ILBM with IWRM is a very important and necessary task.

There are several challenges to implementing ILBM such as lacking lake information above 4000m above sea level and other glacier lakes weak technical capability and lack of human resources, financial constraints, sectoral overlapping, a lack of awareness about the importance of Lake conservation among the people living in the lake region and the lack of demarcation in the lakes and wetlands basin area.

To overcome these challenges, we are making efforts for further effective implementation of the ILBM approach by planning to prepare a collective lake inventory. We are prioritizing our work to revise the national lake strategy plan and trying to establish a wetland academy and demonstration sites in various places of Nepal to demonstrate the ILBM approach. We are continuously supporting, conducting, networking, coordinating, and participating in international fora for exchanging knowledge and sharing our experiences globally for the effective implementation of ILBM in Nepal.