Integrated Lake Basin Management (ILBM) initiatives towards transforming the Malaysian Water Sector

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The first studies on lakes in Malaysia completed in 2005 identified 90 major lakes in the country. More than 60% of these lakes were identified as eutrophic. The earlier study was the first step by Malaysia to stocktaking and classifying lakes. In 2019, we have collated information and data of more than 1,500 water bodies covering the bunded storage, reservoirs, and detention ponds. The classification has been completed for water bodies with a surface area of more than one hectare. In terms of values, the most important functions of lakes are as a source of water supply. We have about 62 reservoirs created specifically to contribute 98% of total national water use. About 10 reservoirs use for irrigation purposes and 16 reservoirs contributing 5% of the national electricity demand. Sixteen (16) large reservoirs are being managed by the Drainage and Irrigation Department of Malaysia to reduce the flooding risks, and more than 1,500 ponds are managed by local authorities as flood detention systems. Other important values are recreational fishing in large and deep reservoirs; these man-made lakes are also allowed to be used for freshwater aquaculture under the licensing arrangements in addition to their intended primary purposes. Lakes in the urban areas are important sites for recreational activities by the community therefore many lake authorities are converting ponds into lake gardens.

Malaysian lakes are facing many challenges. Lakes are deteriorating due to eutrophication, sedimentation, and pollution from point sources as well as non-point sources. Unplanned or unsustainable catchment development is still the most pervasive issue facing Malaysian lakes. We have fragmentation of the governance mechanism between the states and federal government. Most lakes do not have a central management authority with jurisdiction extending throughout the whole lake basin.

One important ILBM initiative in Malaysia is the development of a strategic plan for sustainable lake and reservoir development and management. This strategic plan was completed in 2009 and approved by the National Water Resources Council in 2012. The strategies are identified by top-down approaches focusing on empowering a lead Ministry.

Another important initiative is the development of "Blueprint for Lake and Reservoir Research and Development in Malaysia" which was completed in 2014. The idea of the blueprint is for Malaysia to conduct integrated research and to develop a conservation and development plan for lakes. Another initiative is the development of National Lake Water Quality Criteria and Standards which was completed in 2015. The standards are used specifically for lakes with the aim to monitor the water quality parameters that contribute to eutrophication and sedimentation. National Hydraulic Research Institute of Malaysia (NAHRIM), now is known as National Water Research Institute of Malaysia, has also completed preparing a guideline for developing lake basin management plans, that can be used as a guide for lake managers and lake operators to develop a management plan. We conduct integrated research and use the information from the lake brief to develop the ILBM plan. So far ILBM lake briefs have been prepared by various agencies for 38 lakes in Malaysia. To date, three ILBM plans have been completed and four plans are

currently under development.

There is a connection between the ILBM and IWRM plans in Malaysia, with ILBM plans being embedded in the larger IWRM plans. The state government is recommended to developing IWRM plans linking the ILBM plan and the IRBM plan. ILBM also has been accepted as one of the approaches for managing water resources. At present, the National Integrated Water Resource Management Plan, developed by the Academy of Sciences Malaysia, provides a strategic roadmap, and the ILBM plan is also one of the main components in this document.