

Lessons from Malaysia on Developing a Nationwide Strategic Plan for the Management of Lakes and Reservoirs

Shahrizaila Abdullah

1.0 Introduction

Lakes and reservoirs in Malaysia are natural or man-made. Common uses of these water bodies are for water supply for domestic, industrial and agricultural purposes; for hydroelectric power generation; for flood control; for navigation and for recreation. They are also home to diverse biological species and fisheries. Lakes and reservoirs are vital storage areas of the country's water resources.

2.0 Eutrophication Of Lakes Study

A preliminary assessment on the status of eutrophication of lakes in Malaysia undertaken jointly by the Academy of Sciences, Malaysia (ASM) and the National Hydraulic Institute of Malaysia (NAHRIM) in the year 2005 reported that about 62% of 90 lakes that were studied were nutrient-rich or eutrophic while the balance was considered mesotrophic. This deterioration of water quality is a matter of serious concern.

3.0 Colloquium On Lake And Reservoir Management

Following from the above study and as a first step towards dealing with the issues causing the degradation of this important "stock" of the country's water resources, ASM and NAHRIM (with support from the Ministry of Natural Resources and Environment (MoNRE), the Inter Academy Panel (IAP), and Japan Science and Technology Agency (JST)) organised a 2-day Colloquium on the Management of Lakes and Reservoirs in Malaysia held at MoNRE from 2nd to 3rd August 2007. The objectives of the colloquium were to:

- Create and foster greater awareness on the status and issues pertaining to lakes and reservoirs in Malaysia brought about by development in and around the lake environment.
- Share the findings of past and current research activities and taking stock of current lake management practices.
- Develop and set up a framework for sound lake management in Malaysia and for a continuing related research agenda.

The Colloquium was well attended, comprising some 120 participants made up of senior executives from the public and private sector, lake managers, Government officials, representatives from NGOs, researchers, and academics.

Eight case studies on specific lakes and reservoirs in Malaysia were presented by local managers and researchers while a keynote address and 3 other lead papers were delivered by foreign speakers from Japan (ILEC), Poland (ERCE), and Brazil (University of Sao Paolo)

Many useful findings and recommendations from the Colloquium provided the initial inputs for further action towards the formulation of a national integrated plan for sound and comprehensive lake management in the country.

4.0 Development Of A Strategic Plan For Lake And Reservoir Management

ASM and NAHRIM have since jointly established a Technical Committee on Lake Management with a view to follow-up on the recommendations arising out of the earlier Lake Colloquium held in August 2007 and with an express priority focus on the development of a Strategic Plan for Lake and Reservoir Management in Malaysia.

An action plan spread over a time frame spanning the year 2008 was allocated to develop and formulate such a Strategic Plan through a multi-stakeholder consultative process commencing with an initial Conceptual Framework Plan. This would be followed by preparation of more detailed Component Plans which would subsequently be synthesized and incorporated in order to further refine the earlier Conceptual Framework Plan. These collective inputs from the multi-stakeholder consultation process would form the basis for drafting the final Strategic Plan for Lake and Reservoir Development and Management for submission to Government for endorsement and subsequent implementation.

a) Conceptual Framework

The Conceptual Framework for Lake Management was developed following the first multi-sector workshop held at NAHRIM on 15th January 2008. The Logical Framework

Approach (LFA) was utilized as the management tool for conducting the workshop which provided a step-by-step analysis of the prevailing situation and propose measures to be undertaken. Some 38 participants representing stakeholders from the public and private sector, NGOs, research

and academia, working in 5 break-up groups, discussed six thematic aspects, namely Governance, Management, R&D. Capacity Building, Information Management, and Community stakeholder participation. Discussions were focused on issues prioritizing, objective setting, output

Issues	Objectives
Governance 1. Lack of national policy on lakes basin management and development 2. Lack of legislation, regulations and mandates on lakes basin management and development 3. Lack of enforcement 4. Leading to unclear agencies responsibilities (Overlap of power, Differences in approach)	a) Short Term 1. Set up special committee to incorporate lake management needs within existing water policy(ies) b) Long Term 1. To develop an integrated, proper and effective national policy on lakes basin development and management 2. To develop legislation and regulations on lake basin development 3. Identify a clear function each agency involve
Capacity Building 1. Lack Of knowledge in status of lakes , information and Insufficient transfer Of knowledge Technologies From international bodies to local government 2. Lack of awareness and commitments from political makers and public. 3. Current water/lakes management is too sectoral. - The identity and role of the Lakes managers not clear. 4. Lack of financial support for capacity building on lakes management. 5. Education system-curriculum does not include conservation of lakes.	1. Create database to increase knowledge and provide information. - Exchange the information between research institutions, private sectors, NGO, Local Government and international agencies. 2. Create awareness among civil society, water managers, decision makers and political master. 3. To identify and determine relevant lakes managers for every lakes basin. 4. Funding and allocation for capacity building on lakes management. 5. To incorporate water and lake management curriculum from primary to universities level.
Research Needs 1. Lack of will and awareness – uses and benefits of lake & reservoir in Malaysia 2. Lack of funding 3. No coordination in lake research 4. Lack of critical mass (Expertise) 5. Poor dissemination of finding (especially to decision makers) 6. Poor stakeholders participation in lake research	1. To enhance the awareness on the importance of lake research that benefits the public 2. To improve the funding mechanism and quantum for effective lake R & D 3. To enhance coordination for integrated lake research 4. To provide sufficient researcher/ expertise 5. To enhance the dissemination of research findings especially to policy makers 6. To enhance the awareness on the importance of lake research that benefits the public
Lake Management 1. No management plans and proper action plans 2. Guidelines in lake management are unavailable 3. Lack of Enforcement 4. Lack of Funding	1. Develop management plans by the custodian (It can be PERHILITAN, PBT, Local authority and etc) 2. Ministries involved to develop the guidelines 3. Proper Enforcement Laws & regulations in lakes management to be formulated 4. Proper source of funding
Information Management - Data Collection : 1. Centralization of Data 2. Outdated Data 3. Research Findings – publishing and sharing of research output 4. Lack of Information and Data 5. No Database to store information	1. To Assign one implementing agency to set up the data repository, To centralize data, To avoid and reduce redundancy in research work 2. To archive and update the data frequently by the main agency (month to month) 3. To encourage researchers from various institutions (e.g. NGOs, Universities and Government Agencies) publish their lake management research findings. 4. To promote more research input 5. To Create a database to store research finding, To Develop application to store research finding e.g; Repository
Stakeholder Participation 1. Complacency towards responsibilities 2. Lack of awareness and knowledge Profit oriented mentality 3. Stakeholder conflicts	1. Instill awareness through training, education, campaigns and various awareness activities 2. Effective empowerment for single society to look after their own backyard 3. To have conflict resolutions through forums

setting, activities setting, required inputs & estimated budget. Some of the main issues and objectives identified for the six themes as tabulated below were found to be cross-cutting. These have since been consolidated into main issues and objectives

A matrix framework was provided to guide participants in considering associated verifiable indicators, means of verification and associated risks and assumptions. A completed sample format containing outputs from the discussion group pertaining to one of the objectives under the Governance theme is reproduced below.

b) Component Plans

Following the successful development of an overall conceptual framework as described above, a fresh round of stakeholder consultations were held for each of the six themes in order to refine the earlier findings and formulate plans of action for each of the activities recommended. The target stakeholders invited for discussions this time around were those who are involved directly with or are associated with the respective themes.

At each theme component plan workshop session, a position paper on the topic that was commissioned earlier was presented followed by selected case studies of local experiences pertaining to the topic. This was followed by discussions in break-up groups again using the LFA format to address in detail the issues, objectives, outputs, activities complete with action plans.

The Component Plans developed at stakeholder consultation workshops held over the year 2008 are as follows:

- **Governance** - 19th August 2008 involved some 42 participants.
- **Management** - 8th July 2008 involved 67 participants
- **Research and Development** - 3rd June 2008 involved some 30 participants
- **Capacity Building** - 4th June 2008 involved some 27 participants
- **Information Management** - Component Plan workshop deemed not necessary since NAHRIM has already acted on a comprehensive lake management information system. This computer-based system was

introduced during the Management Component Plan Workshop with an appeal to all lake managers to assist in populating and updating the database for the respective lakes under their control.

- **Community Stakeholders** - 2nd December 2008 involved 31 participants

c) Strategic Plan for Lake and Reservoir Management

The reports of the Conceptual Framework Plan and six Component Plans have been compiled and a synthesis together with the drafting of a succinct Strategic Plan document for submission to Government is currently under preparation.

5.0 ASM/Nahrim/Ilec Collaboration

Following the holding of the Lake Colloquium in August 2007 and the participation of Prof. Dr. M. Nakamura of ILEC as the Keynote Speaker, cooperation and collaboration with ILEC has since flourished for mutual benefit.

Facilitated by Prof. Nakamura, two participants from Malaysia attended the 12th World Lake Conference held in Jaipur, India in October/November 2007, presented papers and participated in the roundtable discussions and site visit.

The Lake Management Component Plan workshop held in early July 2008 saw the participation of 3 SC members of ILEC since this event coincided with their own scheduled SC meeting held in Kuala Lumpur. The SC Team also made exploratory visits to a number of lake sites around the country as part of their efforts to select potential candidate lake sites from Malaysia for inclusion under the ILBM-G project. A follow-up fact finding visit by ILEC experts was later made to two of the selected sites in December 2008.

6.0 Conclusion

The Lake Management initiative started in 2005 by ASM in close collaboration with NAHRIM has now developed into clear programme to be pursued in an integrated manner and subscribing to ILBM principles and practices, which is in effect another sub-set of IWRM. The preparation of a Strategic Plan for Lake and Reservoir Management being currently undertaken through a multi-stakeholder consultation process would set the stage and direction for future concerted action by all stakeholders from both the private

Element	Verifiable Indicator	Means of Verification	Risks/Assumptions
1. Main Objectives a) To develop an integrated, proper and effective national policy on lakes basin development and management leading to formulation of legislation, regulations and mandates.	The policy document is formulated	Hard and softcopy document forwarded through high level government channels and adopted by the government	Accepted and adopted by the government.

and private sector to ensure the sustainable development and management of the country's vital "stock" of water resources. ILEC and other related resource centres worldwide have a complementary role to play especially in providing access to specialised knowledge, capacity building, and collaborative R&D activities.