

## **ASEAN IWRM Country Strategy Guidelines**

### **- IWRM Monitoring Status Guidelines for ASEAN Countries**

#### **1. Background**

The ASEAN Working Group on Water Resources Management (AWGWRM) has developed an ASEAN Strategic Plan of Action on Water Resources Management with the support from the Australian Government in 2005. To support the implementation of the Plan, ten project concept proposals were formulated and included in the Appendix of the Strategic Plan Report. One of the ten project concepts: Project Concept 2 is on the development of an “ASEAN IWRM Country Strategy Guidelines”. DID Malaysia was requested by the AWGWRM to organize and conduct a workshop to develop the details of the “ASEAN IWRM Country Strategy Guidelines”.

The workshop participants agreed that the generic ASEAN/IWRM framework will be structured on the following 6 major water management issues in ASEAN:

- Water Supply
- Irrigation
- Stormwater Management
- Floods Management
- Water Pollution Management
- Sanitation Management

Arising from the workshop the following outputs have been prepared for use by ASEAN countries to assist them in preparing and reporting on their respective countries' IWRM action plans and strategies to address the above 6 thematic issues.

- (a) A set of specific IWRM goals for the above 6 key water-related issues in the region.
- (b) For each set of thematic goals a set of IWRM objectives to achieve the goals have also been identified, categorized under the 3 categories of GWP IWRM tools, i.e. Enabling environment, Institutional environment and Management tools.
- (c) Also indicators for measuring the progress in achieving the objectives associated with each of the thematic goals have been developed. They can be used for measuring regional performance and progress towards meeting the IWRM goals for the 6 key water related issues in the region.

#### **2. The ASEAN IWRM Monitoring Status Guidelines**

The Workshop participants in Malaysia have agreed to develop monitoring guidelines for six key water management issues that are considered important in ASEAN countries. They are as follows:

- (a) Water Supply Management
- (b) Irrigation Management
- (c) Stormwater Management

- (d) Flood Management
- (e) Water Pollution Management
- (f) Sanitation Management

The following are the monitoring guidelines for the above 6 key water management issues.

<b>IWRM Issue 5 – Water Pollution Management (18 indicators)</b>			
<b>Indicator Types</b>	<b>Indicators</b>	<b>Progress</b>	<b>Description</b>
<b>Outcome Indicators</b>	1. Percentage of monitored water bodies' ambient water quality meeting designated uses (agriculture, water supply, fisheries, industries, etc.)	74%	<b>See Note 1</b>
	2. Percentage of industrial/ domestic effluent discharge complying with the country's effluent discharge standard	See description	<b>See Note 2</b>
<b>EE Indicators</b>	1. Any "Policy" on water pollution control	Yes (8)	<b>See Note 1</b>
	2. Any "Legislation/Regulations" for water pollution control (i.e. for the management of water quality and wastewater quality)	Yes (8)	<b>See Note 2</b>
	3. Any "Financial framework and Financial plans" for water pollution control	Yes (8)	<b>See Note 3</b>
<b>IS Indicators</b>	1. Any "Agency/ Department" responsible for water pollution control	Yes (8)	<b>See Note 1</b>
	2. Any "Steering Committee" on river water quality and environmental issues (e.g inter-agency committee)	Yes (8)	<b>See Note 2</b>
	3. Any "Formal institutional arrangements" among related agencies to manage water pollution	Yes (8)	<b>See Note 3</b>
	4. Any "Private/ public partnership and participant" in managing water pollution	Yes (8)	<b>See Note 4</b>
<b>MT Indicators</b>	1. Any river water quality master plan at national and local levels	Yes (8)	<b>See Note 1</b>
	2. Any relocation plans for highly polluting industries in a river basin	NA	<b>See Note 2</b>
	3. Any effluent discharge standards	Yes (8)	<b>See Note 3</b>



	4. Any river water quality monitoring program	Yes (8)	<b>See Note 4</b>
	5. Any river water quality information system/ database	Yes (8)	<b>See Note 5</b>
	6. Any program to disseminate to the public regulator report on river water quality status	Yes (8)	<b>See Note 6</b>
	7. Any groundwater quality monitoring programs and systems	Yes (8)	<b>See Note 7</b>
	8. Any computer simulation models used to predict river water quality	No (7)	<b>See Note 8</b>
	9. Any public awareness program on water pollution prevention	Yes (8)	<b>See Note 9</b>

## **OUTCOME INDICATORS**

### **Note 1**

In 2022, the quality of river water was also assessed based on a total of 8,136 samples, taken from 1,353 manual monitoring stations, covering 672 rivers.

Out of the 1,353 stations, 35 stations were categorized as stations of River of Life (ROL) Project.

Water quality was also assessed from 30 continuous water quality monitoring stations in 2022.

Out of the 672 rivers monitored, 495 (74%) showed clean WQI, 148 (22%) were slightly polluted, while 29 (4%) were polluted.

### **Note 2**

In 2022, DOE conducted 6,672 inspections on prescribed and non-prescribed premises were subjected to the Environmental Quality Act 1974 that discharged effluent.

Prescribed premise is defined as licensed premises as prescribed by the Minister under Section 18, EQA 1974. Such prescribed premises include crude natural rubber factory, crude palm oil mills and factories or facilities for the treatment or disposal of scheduled waste as stated under the Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Order 1978, Environmental Quality (Prescribed Premises) (Crude Palm Oil) Order 1977 or the Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Order 1989. The operation of these premises is subject to the requirements of Section 18, EQA 1974 whereby the owner of the premises is required to obtain license from the Department of Environment (DOE) to occupy and / or use those premises.

Non prescribed premises refers to premises other than those licensed under Section 18, EQA 1974, which are those other than raw natural rubber factories, crude palm oil mills and

facilities for the treatment and disposal of scheduled waste. These include factories from various manufacturing industries, sewage treatment system, solid waste landfills and etc.

The overall compliance for industrial effluent discharge for year 2022 are as follows:

Category of premise	Related Legislation	Percentage of compliance
Prescribed premise: Raw natural rubber factories	Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978	98%
Prescribed premise: Crude palm oil mills	Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations	96%
Prescribed premise: Scheduled Wastes Treatment and Disposal Facilities	Environmental Quality (Industrial Effluent) Regulations 2009	91%
Non prescribed premises: Manufacturing industries (other than above)	Environmental Quality (Industrial Effluents) Regulations 2009	99%

The management of domestic wastewater discharge is outside the purview of the Environmental Quality Act 1974 enforced by the Department of Environment Malaysia.

## **ENABLING ENVIRONMENT (EE) INDICATORS**

### **Note 1**

National Water Resources Policy (NWRP) (Dasar Sumber Air Negara) was approved by the cabinet in 2012. NWRP provides clear directions and strategies in water resources management to ensure water security and sustainability. The NWRP also serves as a platform in the streamlining of practices and approaches for the preparation of water resources conservation plans involving all the states of Malaysia.

### **Note 2**

The role of the DOE is to enforce the Environmental Quality Act 1974 and the Regulations under it, whereby related Section under the Act is Section 25, Restrictions on pollution of inland waters.

The regulations related to the effluent standard under the Environmental Quality Act 1974 are as follows:

- (i) Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulation 1977
- (ii) Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulation 1978
- (iii) Environmental Quality (Industrial Effluent) Regulation 2009
- (iv) Environmental Quality (Sewage) Regulation 2009,



- (v) Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulation 2009

### **Note 3**

The DOE implements an Environmental Quality Monitoring Programme (EQMP) including River Water Quality Monitoring (Manual and Continuous Station Monitoring) and is supported financially. The initiative is a concession programme funded by the government and involving the public and private sectors.

## **INSTITUTIONAL SET-UP (IS) INDICATORS**

### **Note 1**

DOE is one of the agencies in Malaysia involved in water pollution control through the enforcement of Environmental Quality Act (EQA) 1974. DOE task to enforce point source that subjected to EQA 1974 such as industries.

There are other agencies involved in water quality control in Malaysia such as Ministry of Health (MOH), Department of Irrigation and Drainage (DID), National Water Services Commission (SPAN), Mineral and Geoscience Department and Local Authority Council. Among other DOE's roles in water pollution control is providing a Standard reference for Water Quality.

DOE's also plays role in monitoring river water quality through the Environmental Quality Monitoring Programme (EQMP) and compliance with the water quality standards that have been developed.

### **Note 2**

National Water Resources Council (NWRC) was set up in 1998 to pursue a more effective water management, including the implementation of inter-state water transfers. To ensure sustainable water resources and efficient water supply services, the Federal Government is moving towards greater involvement in the management of water resources and water supply services, and the implementation of integrated water resources management. Various ministries are involved.

Apart from that, the Federal Government through the Department of Environment organizes a Meeting of Ministers of the Environment and Members of the Council of State Governments Responsible for the Environment (MEXCOE) annually to discuss issues related to the environment including water pollution control.

### **Note 3**

There are various of institutional involved in managing water pollution such as National Water Resources Council (NWRC), various ministries such as Ministry of Natural Resources and Environmental Sustainability, Ministry of Energy Transition and Water Transformation, Ministry of Housing and Local Government and Ministry of Agriculture and Food Security.

There are also federal agencies such as Department of Environment that control pollution from point sources subjected to Environmental Quality Act 1974, National Water Services Commission that focus on sewerage and water services, Department of Mineral and Geoscience focus on mining and quarrying, and National Solid Waste Management and Public Cleansing Department focus on landfill upgrading and safe closure, and local authorities.

#### **Note 4**

The initiative of Environmental Quality Monitoring Programme (EQMP) including river water monitoring is carried out through the concessions collaboration of public and private sector.

### **MANAGEMENT TOOLS (MT) INDICATORS**

#### **Note 1**

Malaysia has been formulated a National Water Resources Policy (NWRP)/ (*Dasar Sumber Air Negara*) as an important resolution in outlining the strategies and action plans to address the issues and challenges managing water resource. Malaysia through the Department of Environment also implements the Environmental Quality Monitoring Programme (EQMP) for rivers in a guided and planned manner.

DOE has also developed a standard for determining river water quality status known as National Water Quality Standards (NWQS) and Water Quality Index (WQI). This is parallel with 'Strategy 7: Develop National Water Resources Related Standards' under the NWRP.

#### **Note 2**

Any development of town and industrial planning is based on the Local Government Act 1976 (*Akta Kerajaan Tempatan* 1976), Town and Country Planning Act 1976 (Act 172) and Local Government Plans by Local Authorities and State Governments. DOE is also involved in providing input for the development of town and industrial planning. Any industrial identified as causing environmental pollution and not complying with the Environmental Quality Act 1974 will be subject to legal action. Relocation for highly polluting industries is under state jurisdiction.

#### **Note 3**

The effluent discharge standards and the Regulations under Environmental Quality Act 1974 that related to water pollution control are as follows:

<b>Related Legislation</b>	<b>Standards in the Regulation</b>
Environmental Quality (Prescribed Premises) (Crude Palm Oil) Regulations 1977	Second Schedule, Regulation 12
Environmental Quality (Prescribed Premises) (Raw Natural Rubber) Regulations 1978	Latex: Third Schedule, Regulation 12



	Standard Malaysian Rubber: Fourth Schedule, Regulation 14
Environmental Quality (Industrial Effluent) Regulations 2009	Fifth Schedule, Regulation 11 Seventh Schedule, Regulation 12 Eight Schedule, Regulation 13
Environmental Quality (Sewage) Regulations 2009	Second Schedule, Regulation 7
Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009	Second Schedule, Regulation 13

#### **Note 4**

The Department of Environment (DOE) conducted the river water quality monitoring programme which is done to determine the status of river water quality and to detect changes in river water quality. Water samples were collected from designated stations for in-situ measurement and sent to the laboratory as well, for analysis aimed at determining the criteria based on the sciences of physic-chemical and biological. The Water Quality Index (WQI) is used to indicate the level of pollution and the corresponding suitability in terms of water use according to the National Water Quality Standards for Malaysia (NWQS).

In 2022, the river water quality was assessed based on samples taken from a total of 1,353 manual monitoring stations covering 672 rivers in Malaysia. The measured of six (6) parameters are pH, Dissolved Oxygen (DO), Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Ammoniacal Nitrogen (AN) and Total Suspended Solid (TSS).

Continuous river water quality monitoring was also made on-line through 30 continuous monitoring stations (CWQM). These stations are selectively and strategically located. The measured parameters from these automatic stations are limited to pH, Dissolved Oxygen, Temperature, Turbidity and Ammonium.

#### **Note 5**

Water quality monitoring data under the Environmental Quality Monitoring Programme (EQMP) are stored in a database system known as the EQMP Database System. The data is monitored at the Environmental Data Centre (EDC), DOE.

#### **Note 6**

The status of river water quality under the Environmental Quality Monitoring Programme is officially reported in the Malaysia Environmental Quality Report (EQR) annually based on the requirements under Section 3(1)(i) of the Environmental Quality Act 1974.

#### **Note 7**

Groundwater Water Quality Monitoring was established in 1997. The sites were selected based on specific land use such as agriculture, industrial, golf course, solid waste, landfill,

animal burial, municipal water supply, ex- mining (gold mine) and urban/ suburban. There are total of 120 groundwater quality monitoring stations (wells) nationwide,

The samples of groundwater were analysed for several group of parameters such as volatile organic compounds (VOCs), pesticides, heavy metals, anions, bacteria (coliform), phenolic compounds, total hardness, total dissolved solids (TDS), pH, temperature, conductivity and dissolved oxygen (DO).

The Malaysia Groundwater Quality Index (GWQI) is used as a benchmark to determine the groundwater quality status and its category. GWQI was developed based on seven (7) parameters which are pH, Iron, Total Dissolved Solids, Nitrate, E. Coli, Phenol and Sulphate. GWQI with a scale quality ranging from 0 to 100 will identify the quality of the groundwater from the range of excellent to very poor.

#### **Note 8**

The use of river water quality modelling applications under the Environmental Quality Monitoring Programme (EQMP) is in the last stage of development by DOE and the modelling aspect in river water quality monitoring will be used when the system has been complete developed.

#### **Note 9**

In order to increase public awareness on water pollution prevention, DOE has conducted various environmental awareness programmes and activities throughout the year. The dissemination of information is carried out via seminar, exhibition, official website, social media accounts and etc. These programmes/ activities also have been held in conjunction with National Environment Day, World Water Day, World Environment Day and Earth Day celebrations. Additionally, DOE conduct the Friends of the Environment (Rakan Alam Sekitar) programme to encourage public participation in various activities, in order to in still their responsibilities towards environmental protection and conservation.