PRIME MINISTER'S DEPARTMENT
ECONOMIC PLANNING UNIT

AKADEMI SAINS MALAYSIA

COMMUNITY MODULE

ADVOCACY, AWARENESS & CAPACITY BUILDING

WATER SECTOR TRANSFORMATION 2040

COMMUNITY MODULE

Advocacy, Awareness & Capacity Building

WATER SECTOR TRANSFORMATION 2040

WATER SECTOR TRANSFORMATION 2040 (WST2040)
COMMUNITY MODULE: ADVOCACY, AWARENESS & CAPACITY BUILDING

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Preface

The Economic Planning Unit (EPU) has prepared a Strategy Paper on the National Agenda for Malaysia's Water Sector Transformation (WST2040) to be undertaken in 4 phases over 20 years, from the 12th MP (2021 - 2025) to the 15th MP (2036 – 2040). The WST2040 aims to accelerate the implementation of Integrated Water Resources Management (IWRM) and transform the water sector from an economic enabler towards becoming a dynamic growth sector.

There are 5 strategies under the WST2040:

1. Empowering People to Transform the Water Sector
2. Strengthening Governance at All Levels
3. Enhancing Capacity in Data-Driven Decision-Making
4. Strengthening Financing Capacity
5. Developing Sustainable Infrastructure Cost-Effective Technology

Rapid urbanisation, development, industrialisation, and population growth have increased the water demand and supply in Malaysia. Simultaneously, this development has severely impacted water conditions in terms of water quality and water quantity. Thus, there is a crucial need for a water sector transformation. The EPU has engaged the Academy of Sciences Malaysia (ASM) to prepare a complete National Agenda Roadmap on the Transformation of the National Water Sector 2040 (Roadmap WST 2040) consisting of the following 8 task forces:

1. Advocacy, Awareness, Capacity Building and Public Participatory Platforms (AACB);
2. Integrated Water Sector Data Centre (IWSDC);
3. IR 4.0 in the Various Water Sub-sectors (IR4.0 WS);
4. Water-Food-Energy Nexus (WFE);
5. Virtual Water and Water Footprint (VW&WF);
6. Climate Change Impact and Adaptation (CCIA);
7. Alternative Water Financing (AWF); and
8. Water as an Economic Sector (WES)

Tremendous efforts have been made towards water sector transformation in the last decade. Malaysia launched the National Water Resources Policy in 2012 in the effort to transform the paradigm of the water sector. Moving forward, Malaysia, intent on enhancing its efforts on water sector transformation, adopted IWRM which has also been embodied in the National Water Resources Policy. The adoption of IWRM demonstrates a strong move from past fragmented and sectoral management practices. However, water resource management in Malaysia has been sectoral and fragmented for decades. Although there have been immense efforts to carry out numerous programmes, the inadequate understanding and awareness especially among

public participatory platforms on water sector transformation has hindered the meaningful implementation of IWRM in Malaysia.

This has resulted in the slow movement towards water sector transformation. The concepts of "water is essential in our life" and "water is part of our life" have yet to be embodied by the Malaysian public. Thus, to make progress, it is necessary to rationalise the individual sectorial policies. Doing this will help Malaysia strategise the planning to achieve its goals and identify any gaps in the implementation of IWRM (ASM 2021b).

Thus, the WST2040 emphasises on **Advocacy, Awareness and Capacity Building (AACB)** through training and education programmes, module and material development, communication, and delivery systems, to improve the current water management system and practices in Malaysia (ASM 2021b).

Advocacy

- To support and empower people to effectively participate in WST2040. It is a platform for the public to play their role in IWRM

Awareness

- To change public perceptions of the value of water and to change their behaviour to becomes responsible water user and water champion.

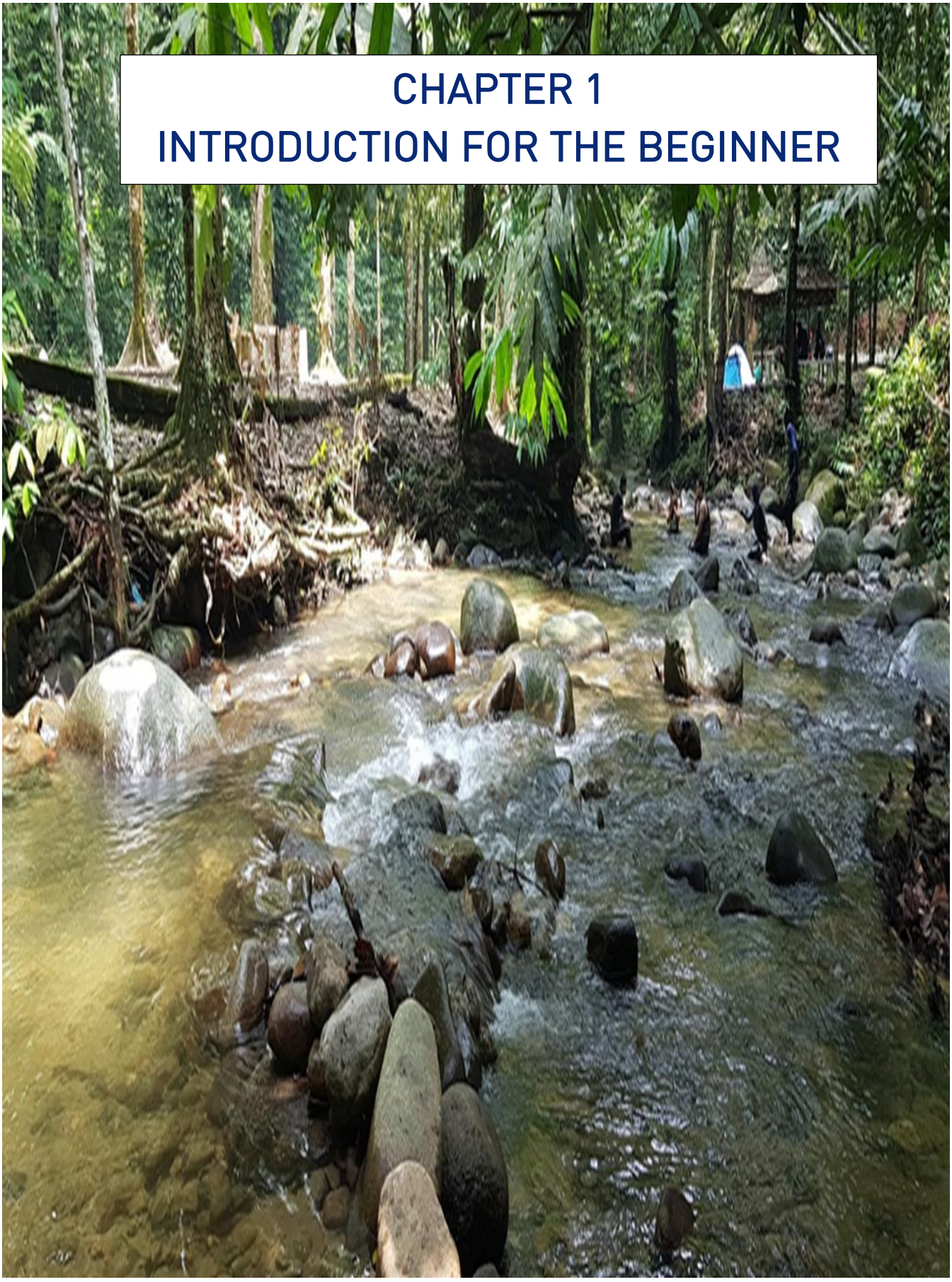
Capacity building

- To improve and enhance all stakeholders' knowledge, experience, and expertise in the water sector.

The AACB Task Force was established under EPU-ASM WST2040 to:

1) Recommend a management plan to the government to better implement IWRM.
2) Educate industry on their water impact and solutions.
3) Raise water awareness among the community to translate their water aspirations into policy.
4) Incorporate academic knowledge to support sustainable water resource management.

Based on these objectives, the AACB task force has established 4 clusters based on the quadruple helix and prepared four modules according to these clusters, namely, the Government Cluster module, the Business Cluster module, the Community Cluster module, and the Academia Cluster module. The AACB community modules will guide the community to understand their role in the management of their river basin in the midst of rapid development. With sufficient knowledge, they will be able to prepare themselves for the impact of climate change and reduce the risk of water-related disasters. This English module is suitable for community members, including student in the primary and tertiary levels, in an urban setting.



CHAPTER 1
INTRODUCTION FOR THE BEGINNER

1.1 Water and the Community

All living creatures need water; without which we will die. In Malaysia, 97% of water that we get from the tap is extracted from our rivers. We used to fish and bathe in the river. We used to take care of the river together. We used to *'gotong royong'* and clean the river together. But when we did not use and see the river as much as we used to, since we started getting clean water from the tap, became busy with work, and live far away from the river, we started to fail to take care of it. We throw rubbish everywhere and that ends up in the river. Some even dump their rubbish straight into the river. Little do they realize that the water they drink from the tap comes from that very river.

"Did you know...
We are using the same water that was on Earth since the Earth was formed, and yes, dinosaurs consumed the very same water!"

The prevailing top-down approach in water governance in Malaysia has led the community to think that it is the government's duty to clean the nation's dirty rivers. Since failing to take care of our rivers, we have also failed to consider the needs of our river basins. Thus, we are facing flood, drought, and water supply disruption due to river pollution. Clean water can only be obtained upstream, at waterfalls that Malaysians love to picnic nearby. As the water flows midstream and downstream, it becomes murky due to sedimentation and accumulation of wastewater from residential areas, wet markets, hawkers, industries, animal farming, aquaculture, and mining.

Taking stock of water related problems faced by the community including flood, drought and pollution, the community cluster proposed two overarching strategies:

Strategy 1: Increasing community awareness and instill ownership towards rivers.

- Many NGOs which have conducted activities with the community such as Friends of River, Trash Hero, GEC and WWF-Malaysia. They aim act transforming the community to care for their rivers and their efforts are extremely commendable. However, most of these efforts are difficult to sustain due to weaknesses in the enabling environment.

- The community leaders and religious leaders can influence the community, but they are either not equipped with the necessary knowledge, or they are uninterested and feel that the 'government' will take care of their rivers.

- This module will accelerate community participation and water stewardship. Strategic partnerships between the NGOs and the community will be enhanced to increase the community awareness and to instill a sense of ownership for their rivers.

Strategy 2: Empower community to effectively participate in IRBM to adapt to climate change and reduce the risk of disaster risk.

- A sense of ownership will increase the other community interest on what are happening in their river basin in terms of development.

- Realizing that they have a responsibility, they will be more responsible to participate in the development process. They will be more willing to go through the state structure plan or their local authority's local plan to ensure that the proposal will have little impact on the river basin and less water related problems.

The AACB modules will guide the community to understand about their river basin, the development process, and identify the risk before disaster occurs. With sufficient knowledge, they will be able to prepare themselves towards climate change impacts and to reduce the risk of water related disaster.

ACTIVITY

TOPIC: WATER ISSUES IN MALAYSIA

INSTRUCTIONS:

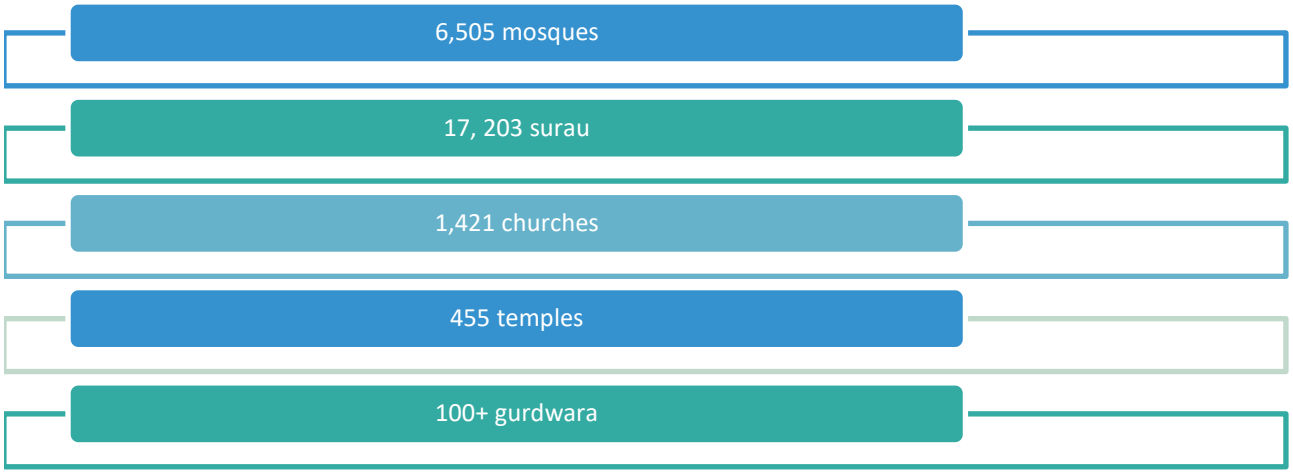
1. PARTICIPANTS WILL LIST DOWN ANY WATER ISSUES THAT THEY ARE AWARE OF IN THE COUNTRY. (30 MINUTES)
2. THE TRAINER WILL DISPLAY A LIST OF WATER-RELATED PROBLEMS AND ISSUES IN MALAYSIA. (60 MINUTES)
3. EACH PARTICIPANT WILL DISCUSS THEIR EXPERIENCE IN DEALING WITH WATER PROBLEMS IN THEIR COMMUNITY. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WILL LEARN ABOUT ISSUES IN THE WATER SECTOR.
2. PARTICIPANTS WILL UNDERSTAND THE WST2040 INITIATIVES.
3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES ABOUT WATER-RELATED PROBLEMS TO THEIR COMMUNITY.

1.2 Community Leaders as Water Advocators

With water-related disasters occurring more often around the country, what can community and religious leaders do to overcome and prevent water-related disasters in their areas? To date, there are 15,434 *Jawatankuasa Pembangunan dan Keselamatan Kampung* (JPKK) and around 25,000 religious leaders based on the updated number of religious centres as follows:



Community and religious leaders have a great influence over the community. They can create community coalitions for managing and monitoring their river basins. They can also form collaborative partnerships with government agencies, academia, and industries in their river basin. This reflects the quadruple helix model that emphasises on the cooperation of all stakeholders for IRBM. In addition, it is important to ensure that the community benefits from this partnership.

Each community has their own history and stories about their rivers. The stories explain the demography of the community and the development of their localities. The Kedah River Basin once ago was famous for the Wan Mat Saman Aqueduct. This marked the initial systematic agricultural irrigation and drainage system in Malaysia and made Kedah the 'Rice Bowl of Malaysia'. However, the younger generation are not aware of this magnificent history since the aqueduct is now a long, big drain filled with solid waste and wastewater.

Before

Now

Terusan Wan Mat Saman then and now

The fact that these stories are not being told to the community, especially the younger generation, has reduced their sense of ownership towards rivers. They do not care about their rivers, and they even treat them as dumping sites for their households. It is thus the right time to revive these stories so that the community will appreciate their rivers more.

It is important that the 15,434 JPKK and around 25,000 religious leaders play their role as IRBM advocators. There are many modules that have been developed to empower them to do more for their community and instill a sense of ownership to care for their rivers. Simple stories and photos about the history of the rivers can be put up in community centres and social media to increase awareness on river conservation.

Essentially, IWRM and IRBM aims at bringing back the community to the river. IWRM and IRBM aim to share the duty to take care of the river with all stakeholders, be that the government, the industry, the academia, or the community, each of which are water users at their own homes. IWRM and IRBM also aims to achieve participatory water resources management in river preservation, conservation, and restoration. Many NGOs have conducted activities with the community to promote taking care for their rivers. However, most are one-off event will little lasting impact on the community. Thus, new strategies are needed to ensure these activities are conducted in a consistent manner that will later enhance community awareness and instill a sense of ownership among the community for their rivers.

The Soap Movement and Lake Biwa Day

Lake Biwa is the largest freshwater lake in Shiga Prefecture, Kyoto. In 1977, Lake Biwa was threatened by the Freshwater Red Tides that changed its colour and smell.

The housewives at Shiga Prefecture initiated the Soap Movement to promote the use of natural soap instead of chemical-based soap to protect the lake water quality.

The Lake Biwa Comprehensive Preservation Liaison Coordination Council encourages community involvement and promotes environmentally friendly lifestyles. A Lake Biwa conservation network was established to advocate eco-consciousness through:

1. Implementation of a community-led action plan in the seven sub-basins in the Shiga Prefecture.
2. Collaboration between the community and government agencies to promote afforestation along the former riverbed of the Yasu River.
3. Development of the Mizusumashi Plan to promote the environmental preservation of Lake Biwa and eco-friendly agriculture.
4. Consideration of residents' opinions in the formation of the River Improvement Plan.

Following the declaration of the Lake Biwa Ordinance in 1980, the community of Lake Biwa celebrate Lake Biwa Day annually. On this day, the community gathers to clean up the lake. Lake Biwa Day also is a symbol of protection and preservation of the lake.

ACTIVITY

TOPIC: STORY OF MY RIVER

INSTRUCTIONS:

1. PARTICIPANTS WILL FIND INFORMATION ON THE HISTORY OF THEIR RIVERS. THEY CAN SEARCH ONLINE OR CALL RELATIVES OR FRIENDS. (30 MINUTES)

2. PARTICIPANTS WILL SHARE THE HISTORY OF THEIR RIVERS WITH THE OTHER PARTICIPANTS AND EXPLAIN THE REASONS FOR THE CHANGES MADE TO THEIR RIVERS. (90 MINUTES)

OUTCOMES:

1. EVEN IF THE PARTICIPANTS DO NOT OBTAIN MUCH INFORMATION ABOUT THEIR RIVERS, THEY WILL APPRECIATE THE IMPORTANCE OF DOCUMENTING HISTORY AND ENSURING THAT THE HISTORY IS SHARED WITH THE COMMUNITY.

2. IF THE PARTICIPANTS ARE ABLE TO OBTAIN A LOT OF INFORMATION, THEY WILL APPRECIATE THE HISTORY AND WILL WANT TO SHARE THE STORIES THEY HAVE FOUND WITH THEIR COMMUNITY TO ENCOURAGE THEM TO PROTECT THEIR RIVERS AND THEIR RIVER BASINS FOR FUTURE GENERATIONS TO ENJOY.

1.3 State of Your River

There are several community modules developed by the NGOs and academia on river conservation and environmental protection. Participants will go through a selection of these modules and pick one that is suited to the needs of their community. At the end of the session, participants will share what they felt were the strengths and weaknesses of the module in terms of raising awareness and instilling a sense of ownership towards rivers.

1.3.1. River Care Module (Global Environment Centre (GEC)

CHAPTER	EXTRACTED CONCEPTS	ACTIVITIES
Module 1: Human, Water and River	Community trainer will explain and identify: i. The importance of water to the community ii. The basic water cycles. iii. The water issues in the community river basin iv. The water resources in Malaysia	<u>River Monitoring and Reporting</u> i. Physical Monitoring ii. Chemical Monitoring iii. Biological Monitoring <u>Environmental Education Programme</u> • Smart Ranger • River Ranger • Island Ranger • DrH2o • Establish Environmental • Proactive Community Group • Youth Programme • Corporate Social Responsibility (CSR)
Module 2: River Basins: Problems and Issues	Community trainer will explain and identify: i. The river basin concept ii. The characteristic of the river iii. Rivers in Malaysia: Issues and Challenges	
Module 3: Integrated River Basin Management (IRBM)	Community trainer will explain and identify: i. Introduction to IWRM ii. Malaysia and IWRM iii. Integrated River Basin Management (IRBM)	

Expected outcome: Members of the community will understand the basic knowledge of water resources, the concept of river basin, IWRM & IRBM in Malaysia.

RIVER OF LIFE PUBLIC OUTREACH PROGRAMME

RIVER IS OUR MAIN SOURCE OF POTABLE WATER AND MALAYSIA HAS 189 MAIN RIVER BASINS.

DO YOU KNOW YOUR RIVER ADDRESS?

Your river basin is one part of your ecological address. A river basin is all of the land that rain water flows across or under on its way to a river. Everyone lives within a river basin, although away from a river. The land that we live on eventually drains to a river, estuary or lake, where our actions on that land affect the water quality and quantity far downstream into the ocean.

ROLPOP PHASE 5

DO YOU KNOW WHERE IS YOUR RIVER BASIN?

STEP 1: Locate your house in the map given. Find the drain located within your housing area.

STEP 2: Can you identify the nearest river? **List down the name.**

STEP 3: Does the river leads into a 2nd river? **List down the name.**

STEP 4: Follow the river flow until it reaches the sea. **List down any connecting rivers on the way.**

DO YOU KNOW WHERE YOUR DRINKING / TAP WATER COMES FROM?

Find the nearest water treatment plant. **List down the location / name.**

FIND OUT WHERE YOUR WASTEWATER GOES TO

Find the nearest wastewater treatment plant. **List down the location / name.**

ONCE YOU HAVE FOUND ALL 3 PARTS OF THE RIVER ADDRESSES, YOU WILL RECEIVE A '**SPECIAL TOKEN**' FROM US.

CONGRATULATIONS!

1.3.2. Ecosystem Discovery Journey (Edj®): Universiti Kebangsaan Malaysia (UKM)

EDJ is a series of five modules (Energy, Waste Management, Water, Soil and Forest) developed to inform the concept, role, and management of ecosystems in human-environment interactions. The modules' main objective is to encourage and develop sustainable consumption of natural resources while shaping the development of a self-relationship with nature and the environment. Two of the modules - the Water and Waste Management modules - are very much related to river basin activities.

- Water Module

Activities	Introductory journey towards water and the water cycle. Topics include the importance of water for humans and current issues/problems in the water sector. Interactive group discussions and presentations on watershed management and river water quality assessment using bioindicator and chemical kits.
Learning outcome	Participants will learn about water, river, and watershed concepts, the importance of water, and the importance of integrated water management in solving water issues.

- Waste Management Modules

Activities	In-class introduction on waste management and the effects of poor waste management on other animals, the water ecosystem and human health. Outdoor group activities on the 3R concept such as hands-on learning on recyclable and non-recyclable materials and composting.
Learning Outcome	Participants will learn about and appreciate the 3R concept and will also be able to perform waste management practices such as recycling and composting.

Expected outcome: Members of the community will understand that their behavior on one ecosystem will have impact on another in the river basin.

ACTIVITY

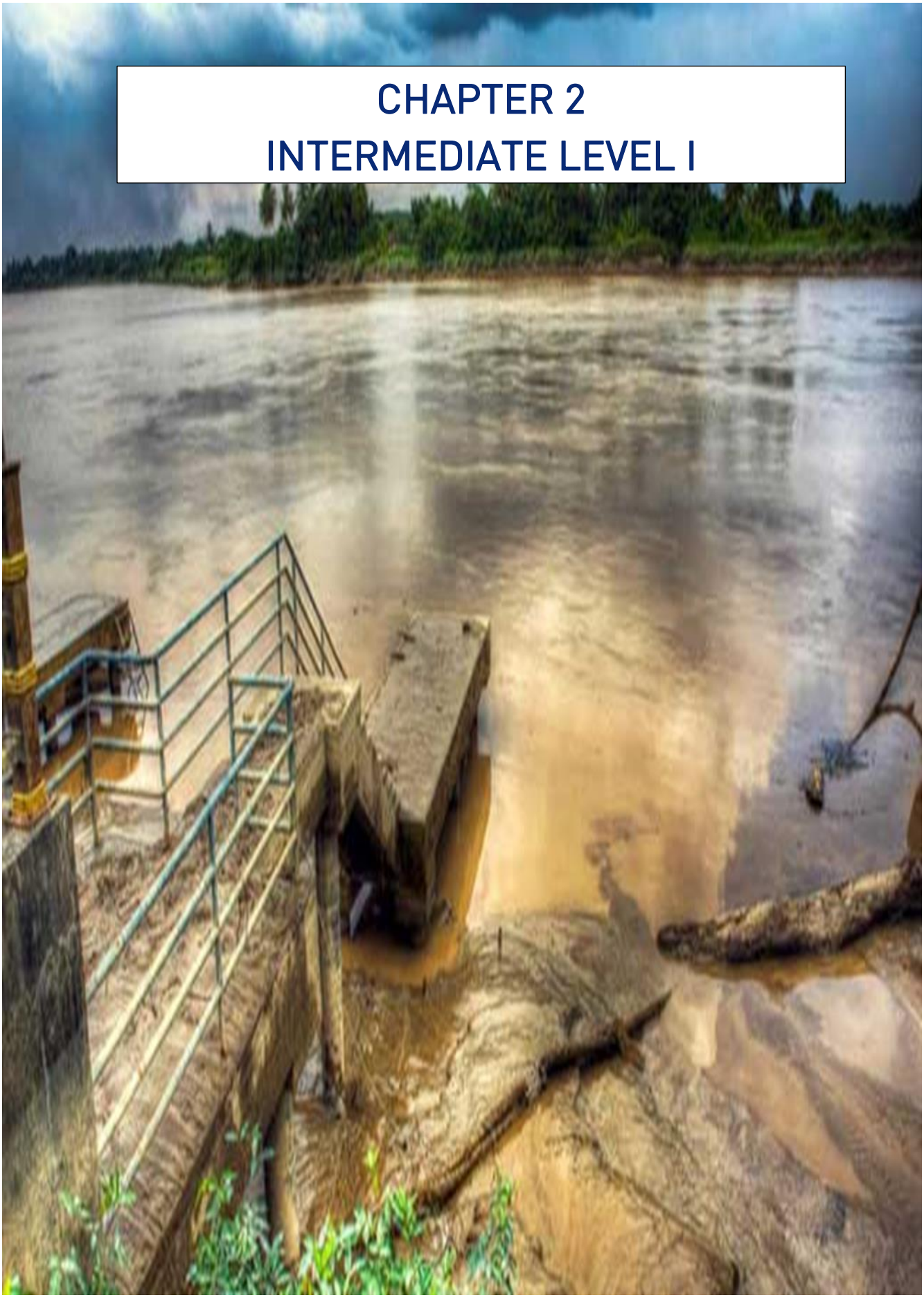
TOPIC: RIVER CRUISE!

INSTRUCTIONS:

1. PARTICIPANTS WILL CRUISE THE RIVER SELECTED BY THE ORGANISER.
2. THE TRAINER WILL TEACH PARTICIPANTS A SIMPLE BIOLOGICAL TEST TO DETERMINE WATER QUALITY.
3. PARTICIPANTS WILL SHARE THEIR EXPERIENCE OF LEARNING ABOUT THE STATUS OF THEIR RIVERS.

OUTCOMES:

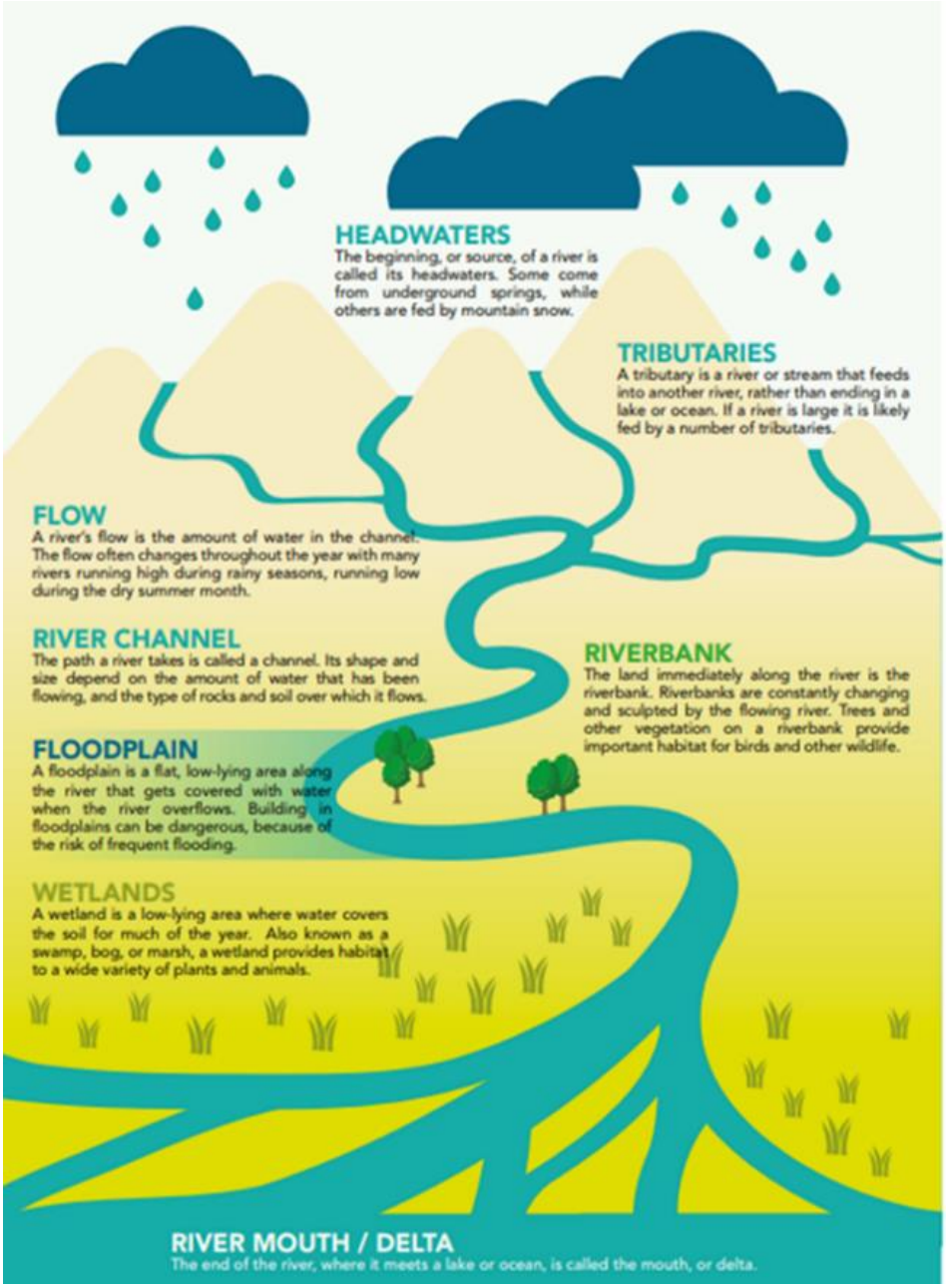
1. PARTICIPANTS WILL KNOW THE STATUS OF THEIR RIVERS.
2. PARTICIPANTS WILL BE AWARE OF THE ROLE OF THE COMMUNITY IN RIVER PROTECTION.
3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THEIR COMMUNITY ON THEIR ROLE TO PROTECT THE RIVERS.



CHAPTER 2
INTERMEDIATE LEVEL I

2.1 IWRM & River Basin Management

Water managers and engineers have introduced several concepts to achieve water sustainability. The Global Water Partnership (GWP) and the Malaysian Water Partnership (MyWP) have been focusing on the new concept of Integrated Water Resources Management (IWRM). This process promotes the coordinated development and management of water, land, and related resources, to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of the entire ecosystem (Clausen, 2004). The main aim of IWRM is to transform the sectoral approach in the planning and management of water resources to a more integrative and holistic approach involving all stakeholders.



Map of a River Basin

One subset of IWRM is Integrated River Basin Management (IRBM). IRBM is the sustainable management of land and water based on natural geographical boundaries, rather than administrative units. Besides IRBM, large countries such as India have ventured into a new concept called Integrated Urban Water Management (IUWM) which aims to manage freshwater, wastewater, and storm water as components of a basin-wide plan in an urban setting. This approach is being used in the city state of Singapore.

While IRBM requires local participation in river basin management both in rural and urban areas, IUWM calls for good governance and local government empowerment in growing and congested urban areas. Malaysia and other coastal countries have also been working towards implementing Integrated Coastal Management (ICM) while countries with large lakes like Japan have embarked on implementing Integrated Lake Catchment Management (ILCM). Within river basins, forests also play an important role as catchment areas, hence Integrated Forest Management (IFM) is also needed to ensure sustainable river flow. These approaches aim to achieve water sustainability and can be done through holistic and integrated management with all stakeholders including the community.

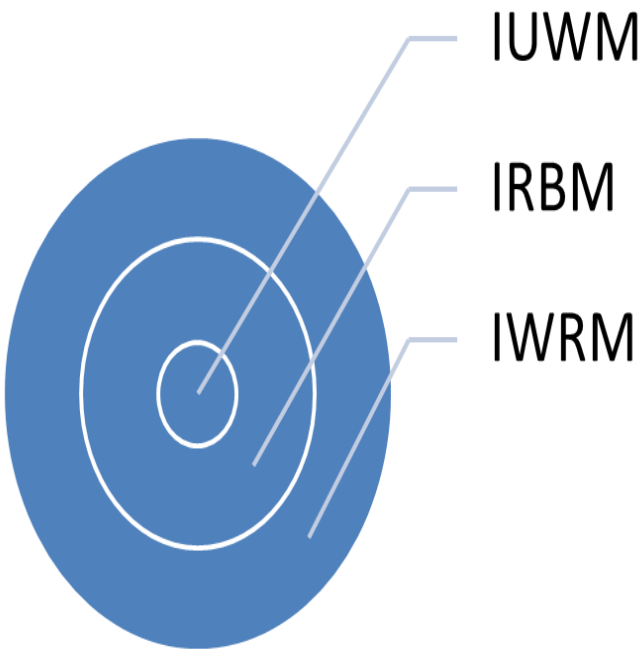


Figure 3 Concepts of Water Resources Management

As a community, we are living in a river basin that catch rainwater in the headwater which later forms river tributaries that lead to river channels. A river basin may consist of a district, several districts or even states. The Langat River basin for instance, consists of the Hulu Selangor district in the upstream, the Kuala Selangor district downstream, the whole of Putrajaya in the middle of the basin, a small part Negeri Sembilan in Labu and Nilai, and a tiny spot in the capital of Kuala Lumpur. On the other hand, the Muar River basin consists of several districts in the states of Johor, Melaka, Negeri Sembilan and Pahang. Up north, the Ulu Muda Forest

forms the headwater for the Muda River basin and supplies raw water to water users in Kedah as well as the neighbouring states of Perlis and Penang.

Category	Number of basins	Size (km2)
River basin within a state	2.958	263, 498.756
River basin shared with several states.	22	56,840.494
River basin shared with other country.	6	7,557.762
TOTAL	2986	327,897.012

Table 1 Categories of River Basin in Malaysia

The sustainability of a river basin will depend on the development processes within it that are often motivated by profit and economic performance. As a result, many developments fail to consider the health of the river basin and result in environmental degradation and other related problems. The high number of polluted and slightly polluted rivers in Malaysia also reflects the non-integration of river basin management between the water-related agencies within a single state, and the water-related agencies of different states.

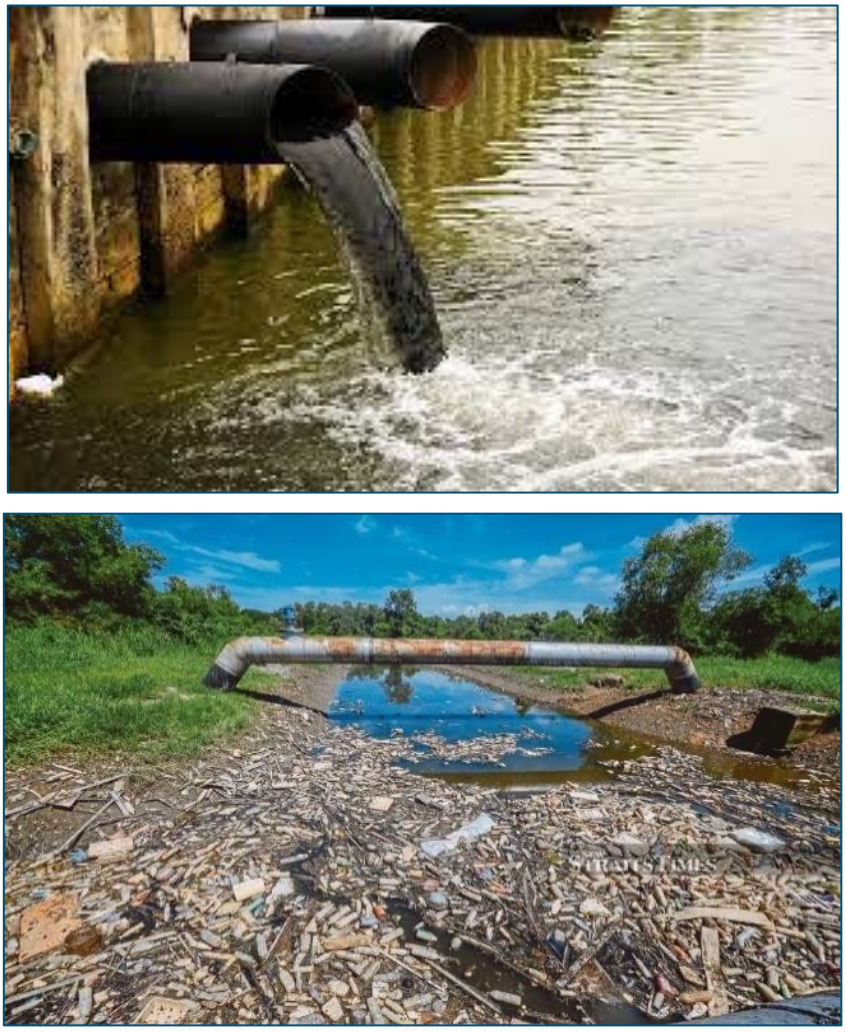


Figure 4 River Pollution in Malaysia

ACTIVITY

TOPIC: KNOW YOUR RIVER BASIN

INSTRUCTIONS:

1. PARTICIPANTS WILL LIST DOWN THE NAMES OF RIVERS AND RIVER BASINS IN THEIR LOCALITY AND THEIR STATE. (30 MINUTES)

2. THE TRAINER WILL DISPLAY THE LIST OF RIVERS AND RIVER BASINS IN THEIR LOCALITY AND THEIR STATE. (60 MINUTES)

3. EACH PARTICIPANT WILL DISCUSS ABOUT THE ACTIVITIES AND DEVELOPMENTS THAT THEY ARE AWARE OF IN THEIR LOCALITY AND THEIR STATE. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WILL BE AWARE OF THE RIVERS AND RIVER BASINS AROUND THEM.

2. PARTICIPANTS WILL BE AWARE OF THE ACTIVITIES THAT HAVE IMPACTS ON THEIR RIVERS AND RIVER BASINS.

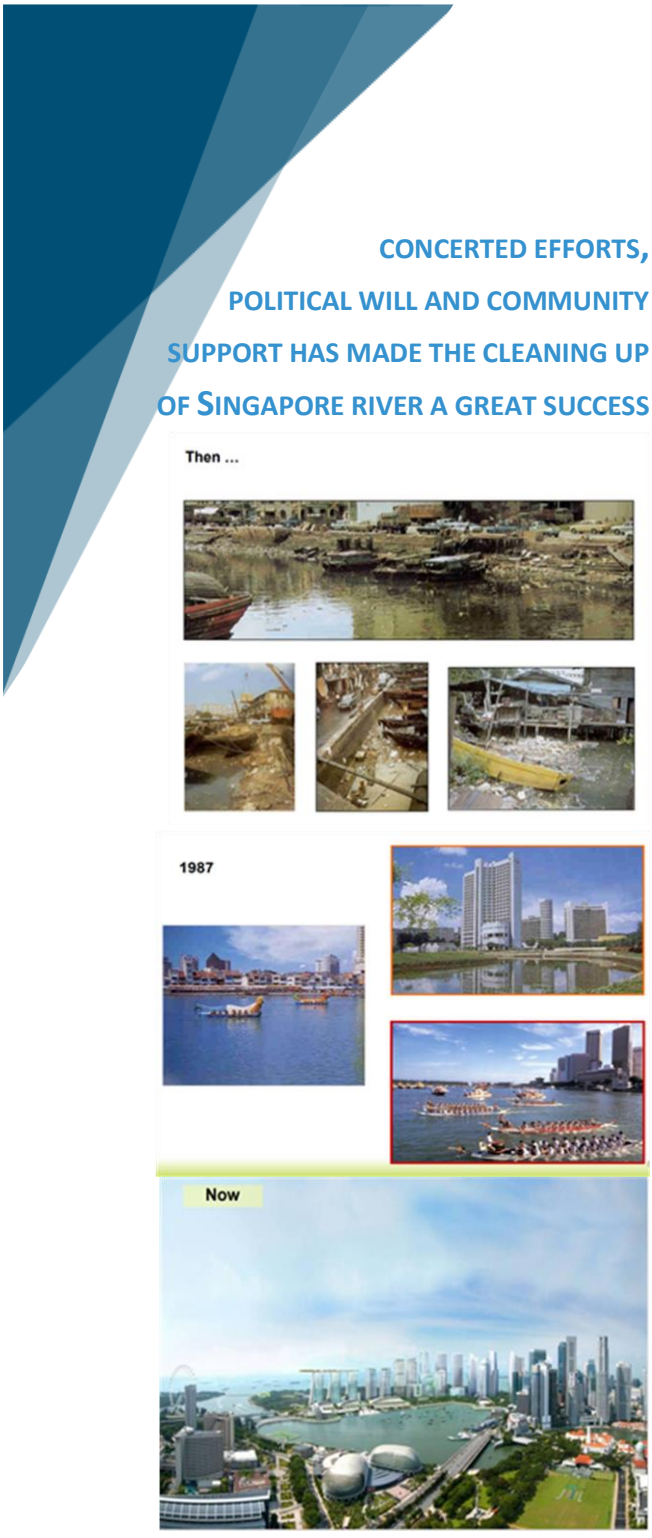
3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THEIR COMMUNITY ABOUT THEIR RIVER BASINS.

2.2 The Role of Community in IRBM

In Malaysia, many programmes have been organised between the government, NGOs, and the community on river conservation. The famous ones include the River of Life Public Outreach Program (RoLPoP) and the Sg Penchala River Restoration Project.

2.2.1. River of Life Public Outreach Program (RoLPoP)

In 2011, RoLPoP project was introduced with the objective of transforming Klang River into a vibrant and liveable waterfront with high economic value. The ROL project focused on three components: 1) River Cleaning (led by the Department of Irrigation & Drainage (DID) Malaysia), 2) River Beautification (led by Kuala Lumpur City Hall (DBKL)) and 3) Commercialisation and Tourism (led by the Ministry of Federal Territory (KWP). Under the ROL project, the river cleaning component focused on cleaning and improving the 110km stretch along the Klang River basin from current Class III-V to Class IIB by 2020. Under the River Cleaning Component, a Public Outreach Programme (POP) was initiated in 2012 to foster partnerships and improve attitudes and behaviours of target groups to reduce pollution.




COMMUNITIES' ACTIVITIES
RIVER OF LIFE
WETLANDS PLANTING
CHEMICAL MONITORING
RIVER HYDROLOGY
BIO-MONITORING
LAUNCH RIVER CARE EDUCATION CENTRE (RCEC)
INSTALL WARNING SIGNBOARDS
WATER QUALITY TEST
COMMUNITY RIVER TRAINERS
FISH SAMPLING + IDENTIFICATION
COMMUNITY EXHIBITION + DEMONSTRATION
GOTONG-ROYONG
RECYCLING CORNER
SET-UP RECYCLING & GARBAGE BINS
WASTE TO WEALTH
ALIEN FISH IDENTIFICATION
ECO Greater Melawati
PERSATUAN PENDUDUK REKREASI KG.TAMAN WARISAN HULU KELANG SELANGOR (P.P.R.K.T.W)
WANGSA MELAWATI GREEN COMMUNITY
CENTRALISED COMMUNITY RIVER MONITORING PROGRAMME
RECYCLED ART & CRAFT WORKSHOP
PROPOSAL WRITING & PROJECT REPORTING WORKSHOP
ORGANISED BY:
Global Environment Centre
SRC
KOMUNITI SIERRA UKAY (SEGORA)
PERSATUAN REKREASI
TAMAN AU3 KUALA LUMPUR
SMART RANGER CLUB LAUNCH
LANDSKAP MSIA VISITING AU3 LINEAR PARK TEST-PATCH SITE
RIVER RESOURCE CENTRE VISIT
COMMUNITY + NGO PROTEST AGAINST HILLSIDE DEVELOPMENT
RECYCLING CORNER
COOKING COMPETITION
GOTONG-ROYONG
SMART RANGER TRAINING
COLOURING COMPETITION
MONTHLY COMMUNITY PROGRAMME
ESTABLISH HERB GARDENS
SRC STORE & COLOURING COMPETITION EXHIBIT
RIVER MONITORING

2.2.1 Sg Penchala Restoration Programme

Sg Penchala is one of many badly polluted rivers located within Petaling Jaya Township. The source of the river is Bukit Kiara and the river flows for approximately 12 km before it joints Sg Klang near Puchong. The total catchment area is 28 km2 with 31.4 km of trunk drains. It flows through 2 states: Federal Territory (23%) and Selangor (77%).

Originating from the top of the Kiara Hill, the source of Penchala River is the only urban river in the heart of Kuala Lumpur where the water is still Class 1 quality and can be consumed without any treatment. Unfortunately, the condition of the source of Penchala River has deteriorated over the years and threatens the important and valuable ecosystem components of the river. Some of the major issues identified were riverbank erosion, excessive sedimentation and obstructions to the river flow. As such, the source of Penchala River was in dire need of restoration in order to sustain its natural physical conditions and biodiversity.

The goal of this activity by GEC & DID Selangor & Willayah Persekutuan Kuala Lumpur was to restore the source of Penchala River and its biodiversity and to maintain the integrity of the river's environment and ensure that the source of Penchala River remains a pristine water resource. Besides that, the rehabilitation work been carried out at middle and downstream.

Stakeholders Engaged under the Sg Penchala Restoration Programme:

1. Local authorities: Dewan Bandaraya Kuala Lumpur (DBKL)& Majlis Perbandaran Petaling Jaya (MPPJ).
2. Government agencies: JPS Selangor, Daerah Petaling, and Wilayah Persekutuan, Jabatan Alam Sekitar Selangor, and Wilayah Persekutuan
3. Community based organizations; Friends of Bukit Kiara, Friends of Bukit Gasing and Friends of Taman Aman.
4. Private sector: Indah Water Konsortium (IWK), Alam Flora Sdn Bhd (AFSB), Federation of Malaysian Manufacturers (FMM), KL Golf and Country Club (KLGCC), Pengurusan Pasar Moden TTDI,
5. NGOs: Centre for Environmental Technologies (CETEC), Yayasan Anak Warisan Alam (YAWA) and ATHMA
6. Resident groups: Persatuan Penduduk Taman Tun Dr Ismail, Jawatankuasa Penduduk Perumahan Awam Panjang Bukit Kiara, Persatuan Penduduk Kiara Condominium, Persatuan Penduduk Section 17, 19 dan SS2, Flat Petaling Utara and Flat PKNS

Activities under the Sg Penchala restoration were focused on improving the quality of polluted water entering the river, removal of solid waste, improve habitats for aquatic animals and improve access to the riverbank. Some of the activities untaken include:

1. The use of wetland plants to treat wastewater - the establishment of a wetland cell to treat sewage from the Perumahan Awam Bukit Kiara in 2004
2. Restoring riverbanks – clearing and planting trees along riverbanks and creating fish habitats in the stream with pebbles and rocks in Taman Rimba Kiara in 2004
3. Establishment of a volunteer programme to support Sg Penchala Clean-up activities – the first activity was carried out in September 05
4. Community awareness and education programme - river mapping exercise, talks to the public, establishing Friends of rivers programme, monitor water quality to community groups and school students, site visit to learn more on river ecosystem and integrated waste management - recycling and composting, develop school education programmes; SMART and RIVER Ranger programme.

Stabilising the banks with rocks

Removing excess sand

Bank stabilization using fallen trees

Bank stabilization using fallen trees

ACTIVITY

TOPIC: WHO'S WHO DOING WHAT (PART I)

INSTRUCTIONS:

1. **PARTICIPANTS WILL LIST DOWN THE WATER-RELATED AGENCIES THAT THEY THINK ARE RESPONSIBLE FOR CONTROLLING THE ACTIVITIES THAT THEY SEE DURING THE CRUISE. (30 MINUTES)**

2. **THE TRAINER WILL DISPLAY THE LIST OF AUTHORITIES AND THEIR RIGHTS AND DUTIES UNDER THE LAW. (40 MINUTES)**

3. **EACH PARTICIPANT WILL SHARE THEIR EXPERIENCE OF DEALING WITH THE AGENCIES AND THEIR AWARENESS ABOUT THE RIGHTS AND DUTIES OF AGENCIES TO THE GROUP. (50 MINUTES)**

OUTCOMES:

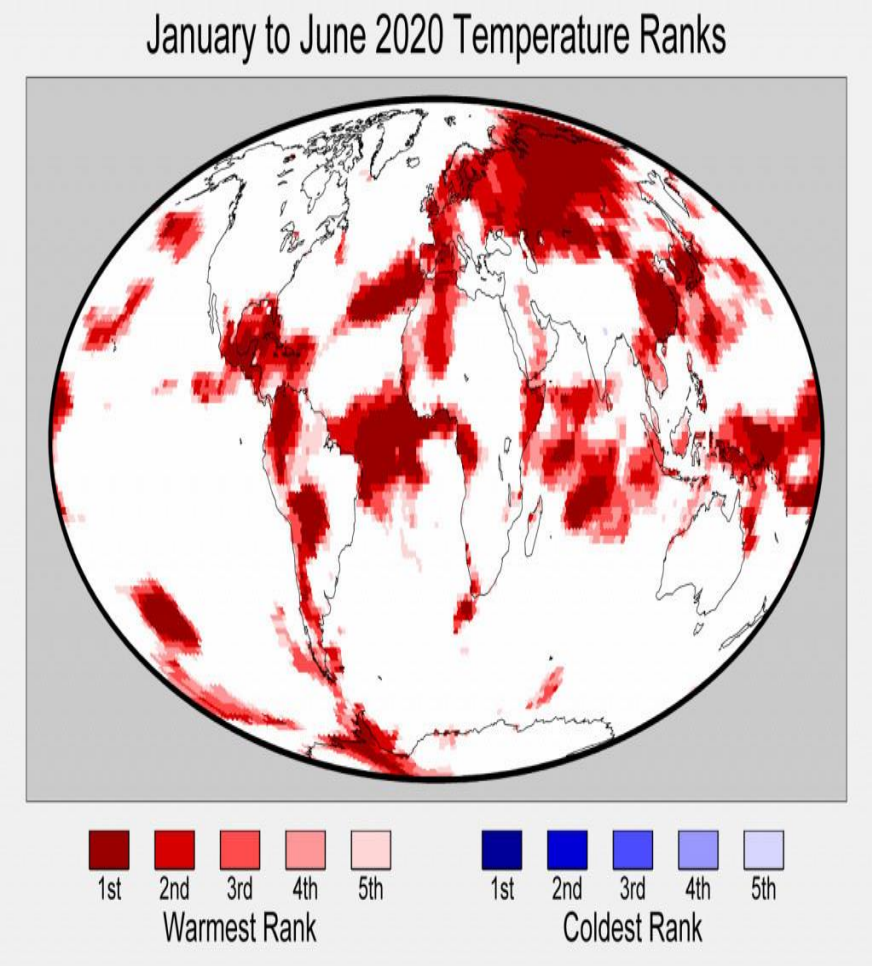
1. **PARTICIPANTS WILL UNDERSTAND WHICH ACTIVITIES ARE LICENSED AND UNLICENSED IN THEIR RIVER BASIN.**

2. **THE PARTICIPANTS WILL BE AWARE OF THE ROLE OF THE AGENCIES IN PROTECTING THE RIVER BASIN.**

3. **THE PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THE RIGHT AGENCIES WHEN DEALING WITH WATER-RELATED PROBLEMS FACED BY THE COMMUNITY.**

2.3 Community & Water Related Disaster

The flow of a river basin, if disturbed by unsustainable development, large scale urbanization or deforestation, will lead to water related problems like flood, erosion, landslide, and pollution. To make things worse, climate change leads to sea temperature rise, expediate the hydrological cycle, and causing more rain in the wetter areas.



Source: World Economic Forum (2020)

Below are the 10 major flood incidents faced by the Malaysian community thus far.

INCIDENT S OF MAJOR FLOOD	DESCRIPTION
January 2007: **Johor-Pahang region**	Killed 17 people, affected 137,533 people, and caused the economic loss of about $605 million.
December 2007: **Kelantan, Pahang, Johor**	More than 4,000 people were sent to relief centres.
October 2010: **Perlis, Terengganu, Kelantan**	The worst flood in 30 years.
January 2011: **Segamat, Batu Pahat, Kluang, Muar**	More than 24,000 were forced to seek refuge in 71 relief centres, with five casualties.

December 2014: **East Coast and West Coast of Peninsular Malaysia**	21 casualties, a quarter of a million people were evacuated.
December 2016: **Kelantan and Terengganu**	Approximately 25,000 people evacuated and blocked access to many villages.
January 2017: **Johor, Kelantan, Pahang, Perak, Selangor, and Sabah**	The floods have temporarily displaced about 12,000 families across the country.
November 2017: **Penang**	At least seven people dies. 80% of Penang was hit by typhoon-like winds and heavy rains. More than 3,500 evacuated.
February 2018: **Sarawak**	Almost 5,000 people were evacuated.
November 2020: **Pahang**	Continuous downpour had caused landslides and cut off access to areas affected by the floods.

Worst Flood in Malaysia.

Malaysia also faces occasional drought season that dried up water in the dams especially in the highly populated and developed cities. The worst drought took place in early 2014 when most of the water level of the dams went below the critical level of 49 percent because of continuous dry spells. The Selangor River dam for instance reached 40.53 percent in March compared to 53.38 percent in February (LUAS, 2014). The pictures below illustrate the conditions of the dam before and after the drought.

Before

After

Selangor River Dam before and after Drought in 2014
Source: BNBBC News (2014)

INCIDENTS OF MAJOR DROUGHT	DESCRIPTION
1998: KL & Selangor	The severe drought in 1998, affected 1.8 million residents in southern Kuala Lumpur City, Bangi and Kajang, bringing in its wake some periods of disruption water supply.
2014: Malaysia	Approximately 2.2 million people in Malaysia were affected by the drought which lasted 2 months.
2016: Kelantan	More than 100 rubber tappers in Kampung Pulai, Gua Musang, Kelantan had their income affected when they had to stop tapping rubber due to the prolonged drought season.
2019: Kelantan	Kelah fish farmers in Gua Musang lost RM36,000.
2019: Kedah	Langkawi is the area most affected by the El Nino phenomenon after not receiving rainfall for the past 27 days.
2019: Kedah	A total of 5,894 snakes were caught by the Civil Defense Force (APM) from January to mid -February 2018 throughout the state of Kedah due to hot weather in a long drought season.
2019: Kelantan	Kota Belud Integrated Agricultural Development Area Director Salmah Labulla estimated 19,300 farmers were affected.
2020: Kedah	Pokok Sena paddy farmers incur RM1 Million loses due to drought.
2020: Sabah	Drought affecting water supply in 18 Tuaran villages.
2021: Kedah	Drought leaves 3,000 taps dry in Kedah.

Worst Drought in Malaysia.

Climate change has brought not only more flood and drought in the country, but also increasing landslide incidents. The Work Ministry has identified 21,000 landslide prone areas nationwide and asked the public to look out for early warning signs during rainy monsoon season. The urbanites of the Klang Valley in particular faces more fear of landslide as there has been increasing development on or by the hill slope which fail to consider the slope history and the risks of landslides due to heavy rain.

INCIDENTS OF MAJOR LANDSLIDES	DESCRIPTION
1993: Highland Tower, Ulu Klang, Selangor	48 deaths and 2 injuries. One building collapsed
1995: Kuala Lumpur-Karak Highway	20 deaths, 22 injuries, and ten cars damaged
1996: Pos Dipang, Kampar, Perak	44 people were killed
1999: North-South Expressway, Kuang, Selangor	Thousands of vehicles stranded due to road closure
2008: Kuala Kubu Bharu, Batang Kali, Selangor	Two sisters were buried alive when a landslide hit a bungalow
2011: Puncak Setiawangsa, Kuala Lumpur	88 residents of bungalows, shop houses, and double-storey terrace houses ordered to move out
2016: Karak Highway	Blocked all lanes in both directions on the highway and four vehicles were trapped in the landslide
2017: Tanjung Bungah, Penang Island	Killed 11 construction workers
2020: Taman Kelab Ukay, Bukit Antarabangsa	40 residents were ordered to leave their homes
2021: Kota Kinabalu	10 landslides were reported in seven villages, involving four districts, namely, Kota Kinabalu, Kota Marudu, Pitas, and Kudat.

Worst Landslides in Malaysia.

Landslides at Bukit Antarabangsa (2010), Setiawangsa (2012) and Mahameru Highway (2014)
Source: MyMetro (2014)

INCIDENTS OF POLLUTION	DESCRIPTION
1990-2010: Sungai Pinang, Penang	Ongoing dumping of waste from a pig abattoir has resulted in bad odour, rendered the river black, and killed aquatic life.
April 2016: Sungai Mas, Penang	Illegal commercial units dumped sewages and rendered Sungai Mas black and smelly, irked holiday makers, hoteliers, and fishermen near Batu Ferringhi.
October 2016: Sungai Semenyih, Selangor	Sungai Semenyih water treatment plant had to be shut due to pollution from the Lalang River near Semenyih Hitech
October 2017: Sungai Johor, Johor	Illegal poultry farm released ammonia pollution in Sungai Johor that led shut down of three water treatment plants.
March 2019: Sungai Kim-Kim, Johor	Residents near the river, including students, suffered breathing difficulties, nausea and fainting due to the pollution. 111 schools were ordered to be closed.
September 2020: Sungai Gong, Selangor	Air Selangor stopped the operations at its Sungai Selangor Water Treatment Plant (WTP) Phases 1, 2, and 3 and the Rantau Panjang WTP due to industrial effluent pollution. 1.2 million users affected.
October 2020 Sungai Selangor, Selangor	Solvent caused odour pollution in Sungai Selangor that resulted in water supply disruption to 1.2 million account holders.
October 2020 Sungai Semenyih, Selangor	Waste and organic compounds in Nilai polluted Sungai Semenyih upstream and affected operations at two water treatment plants and disrupted water supply to 300,000 users.
March 2021: Sungai Kim-Kim, Johor	After 2 year, Sungai Kim-Kim polluted again, and fishermen complained that the fish have disappeared.
April 2021: Sungai Skudai, Johor	Pollution caused by industrial effluents and sewage has affected the Sultan Ismail Water Treatment Plant (LRA) and disrupted water supply to residents in Johor Bharu.

Worst River Pollution in Malaysia.


Chemical pollution at Sungai Kim-Kim
Source: The Star (2019)

The latest incident of headwater phenomenon from Gunung Jerai that caused massive mud flood in Yan Kedah is another unfortunate instance of climate change impact. The continuous downpour for days and the stagnant seawater due to hightide has accumulated the sluggish mud flood in Yan. More landslides are predicted in the area, and the only way to overcome this is to develop a resilient community towards climate change impact.

Headwater Phenomenon at Gunung Jerai Kedah
Source: Astro Awani (2021)

ACTIVITY

TOPIC: STOP THE DISASTER!

INSTRUCTION:

1. THE PARTICIPANTS WILL LIST DOWN THE WATER RELATED PROBLEMS FACED BY THEIR COMMUNITY (30 MINUTES)

2. THE TRAINER WILL DISPLAY THE LIST OF AUTHORITIES AND THEIR RIGHTS AND DUTIES UNDER THE LAW TO PREVENT THE WATER RELATED DISASTER (40 MINUTES)

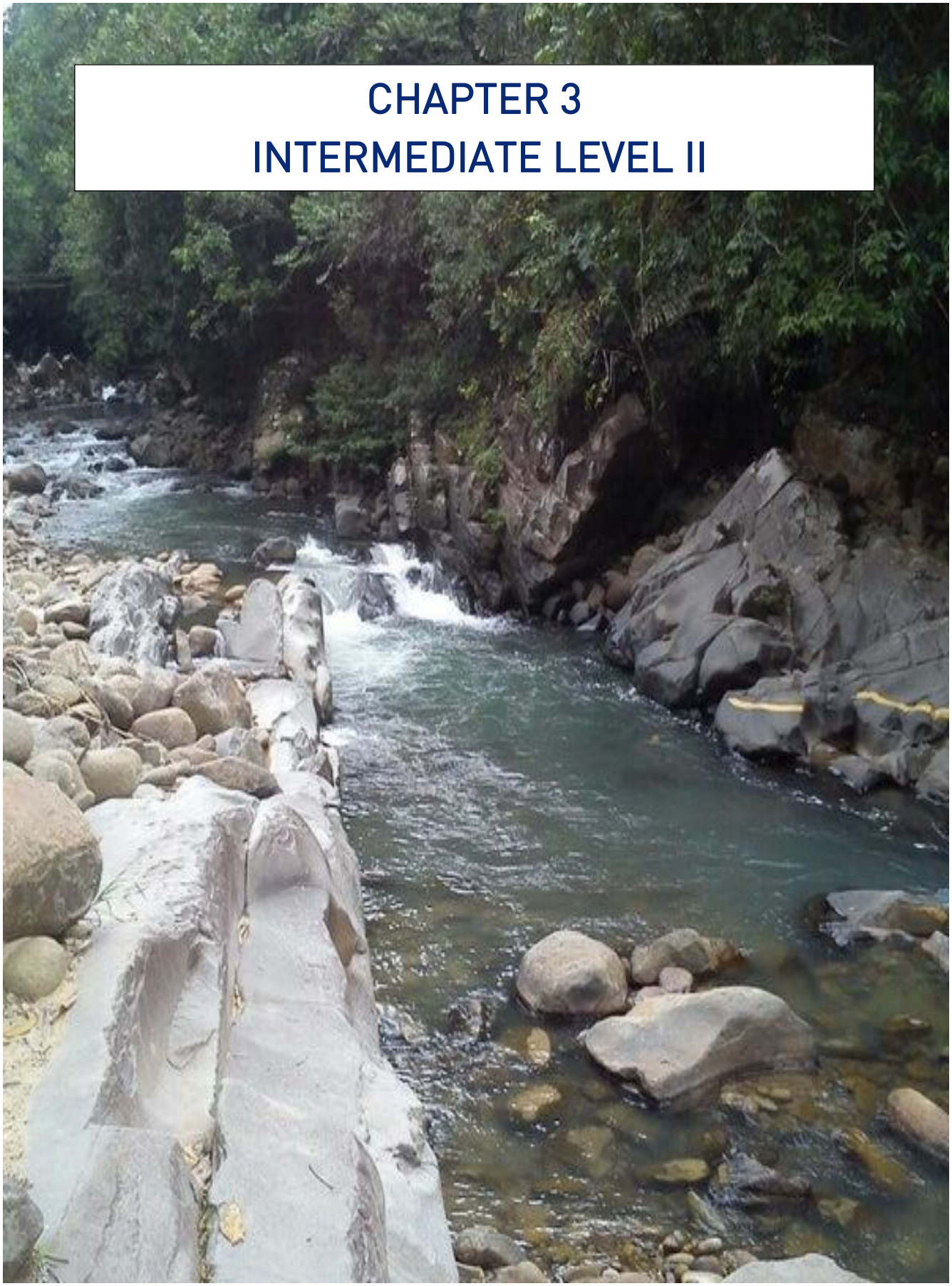
3. EACH PARTICIPANTS WILL DISCUSS ABOUT THEIR EXPERIENCE DEALING WITH WATER RELATED PROBLEMS IN THE COMMUNITY AND THE RESPONSES GIVEN BY THE RELEVANT AGENCIES (50 MINUTES)

OBJECTIVE:

1. THE PARTICIPANTS WILL BE ABLE TO IDENTIFY THE RIGHT AGENCIES WHEN WATER PROBLEM OCCURS.

2. THE PARTICIPANTS WILL BE AWARE ABOUT THEIR COMMUNITY ROLE IN PREVENTING DISASTER IN THEIR RIVER BASIN.

3. THE PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THE RIGHT AGENCIES WHEN NO ACTION TAKEN TO PREVENT THE DISASTER.



CHAPTER 3
INTERMEDIATE LEVEL II

3.1 Let's Prevent Water Related Disaster

Community and religious leaders play an important role in educating their community members on the importance of protecting their river basin to prevent water-related disasters. These are examples of community activities that will increase awareness on the importance of taking care of their river basin and disaster prevention.

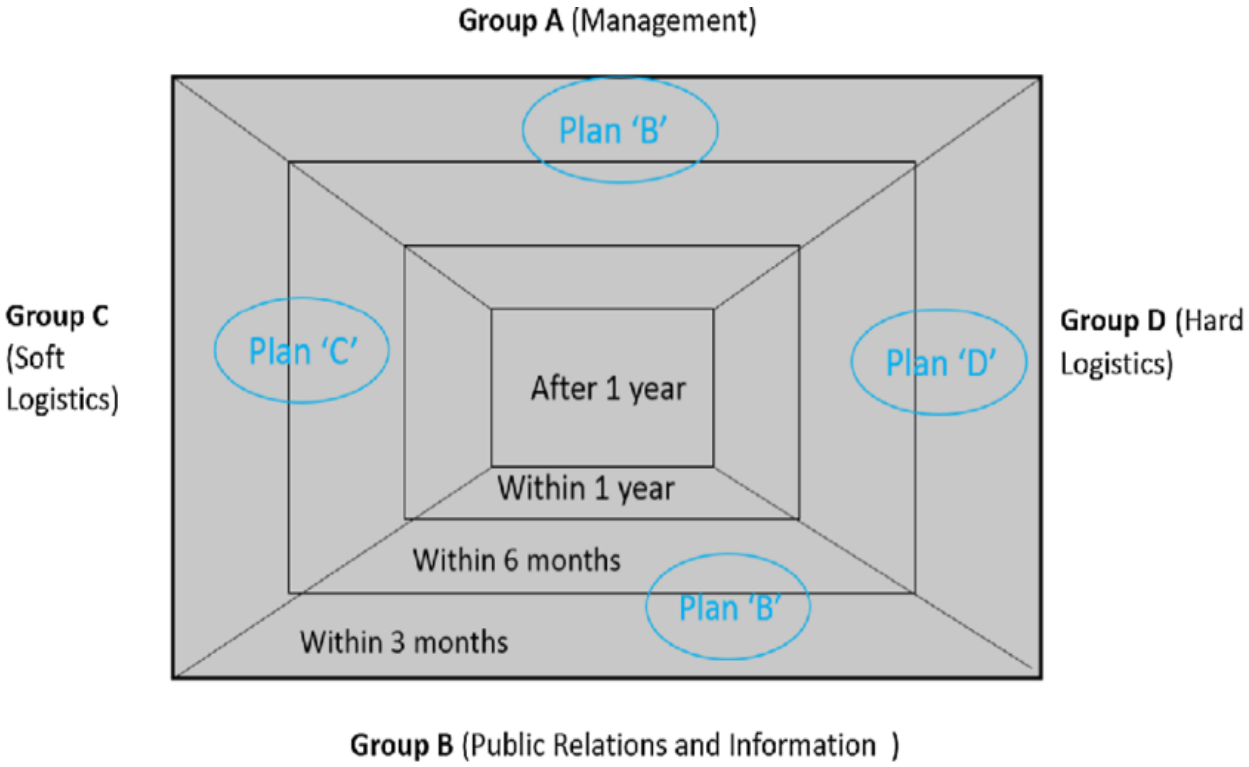
3.1.1 The Yonmenkaigi System Method (YSM)

The YSM was developed by Norio Okado and has been used successfully by stakeholders in Japan including local leaders, academia, and government officials. Participants will engage in a participatory method that supports group decision-making through four steps:

1. Conducting a SWOT Analysis

The SWOT analysis will reflect a top-down approach and views from the community.

2. Completing the Yonmenkaigi Chart.



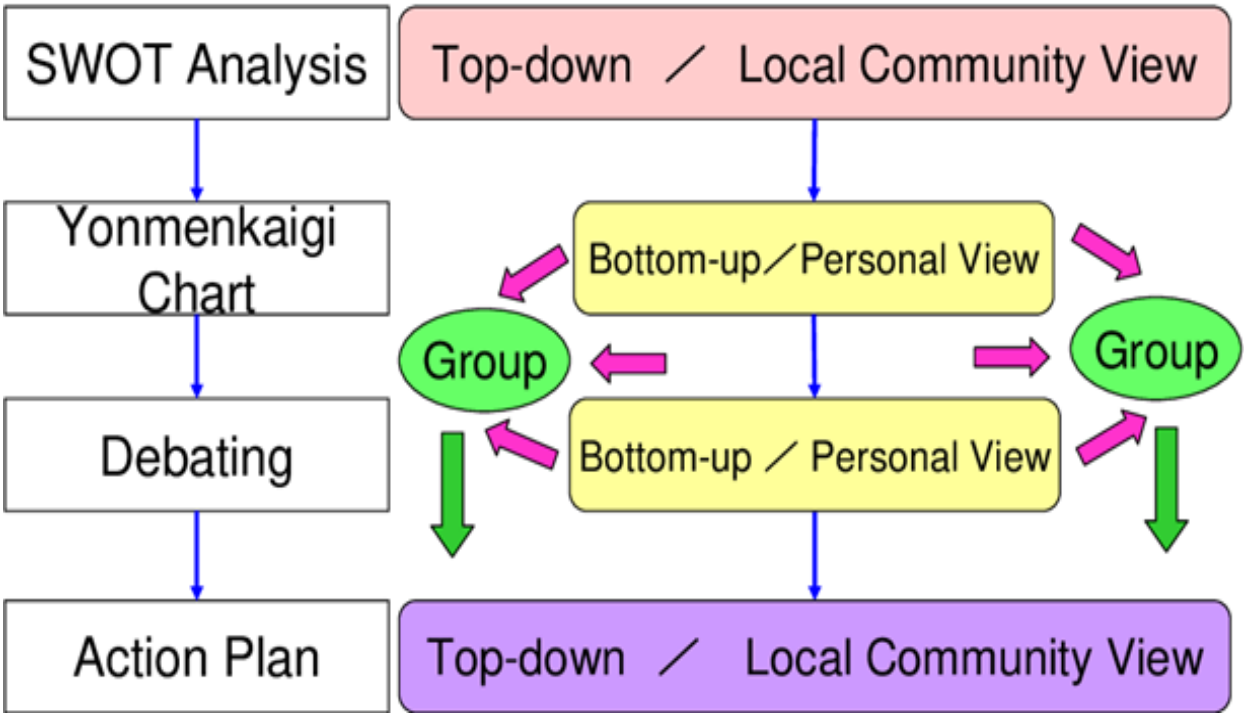
All participants take part in a role play and have their own role to plan according to a timeline.

3. Debate

Based on the SWOT Analysis and the Yonmenkaigi Chart, the participants will debate on their findings. At this stage, the bottom-down approach and personal views will be included.

4. Presenting the Group's Action Plan

Lastly, the participants will make an action plan for disaster risk management where both the top-down and bottom-up approaches are included in the action plan steps.



Expected outcome: Members of the community who come from different backgrounds and knowledge levels can share their viewpoints on the water resources in Malaysia and propose an action plan that best suits the need of the community at their river basins.

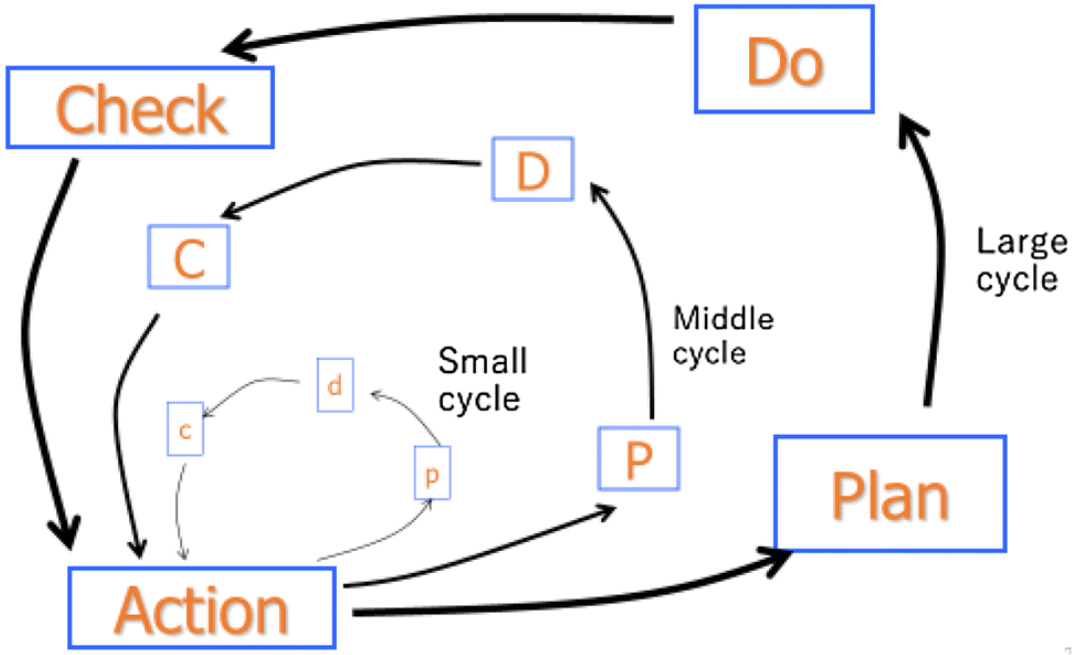
3.1.2 The Crossroad Method

This is a game invented by Naomi Hama the Director of Kobe Crossroads Society. The game stimulates the community's imagination by putting them in an imaginary disaster situation where they must make decisions based on the situation. This method is used to communicate disaster experiences through a game and to ensure community preparedness when facing disasters by exposing potential situations in a disaster and stories from people who have experienced a disaster.

With an odd number of players, the game starts with a problem card. Given the situation in the problem card, the players will need to show "Yes" or "No" cards and justify their decisions. Those that show a card like the majority will get a blue cushion while those in the minority will get a gold cushion. This is to encourage an open discussion despite having different opinions.

Expected outcome: Members of the community will broaden their knowledge through discussions during the game.

3.1.3 Plan-Do-Check-Action Process



The Plan-Do-Check-Action is a cyclic structure in disaster risk management. Every layer of the cycle is "analogous to the methodological approach of adaptive management" (Okada, 2018). The first step is to plan and choose the best method to apply according to the situation. The second step is to apply the plan on the ground and then check the effectiveness of the plan. Lastly, based on the analysis of the chosen application method, an action plan should be formed to improve the method's efficiency in reducing the risk of disasters. These steps need to be done continuously to ensure that the action plan is up to date and suitable for the situation and time.

Expected outcome: Members of the community will understand that every action plan made for disaster risk management needs to be monitored and adapted from time to time.

ACTIVITY

TOPIC: SWOT!

INSTRUCTIONS:

1. PARTICIPANTS WILL DO A SWOT ANALYSIS AND FOLLOW THE STEPS IN THE YONMENKAIGI SYSTEM METHOD. (60 MINUTES)

2. PARTICIPANTS WILL EXPLAIN THEIR SWOT ANALYSIS. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WHO COME FROM DIFFERENT BACKGROUND AND KNOWLEDGE LEVELS CAN SHARE THEIR VIEWPOINTS ON THE DIFFERENT NEEDS OF THE COMMUNITY.

2. PARTICIPANTS WILL BE ABLE TO IDENTIFY STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS IN THE RIVER BASIN FOR THE COMMUNITY.

3. PARTICIPANTS WILL BE ABLE TO IDENTIFY AGENTS OF CHANGE IN THE COMMUNITY.

3.2 Disaster Risk Assessment

Climate change will affect communities at some point of time. This could be either through floods or drought. Unsustainable development and unregulated activities in the river basin contribute to increased pollution of rivers. Communities need to assess the potential of these problems occurring in their area and prepare for such unforeseen events.

This assessment is adopted from the Training Curriculum: Community Based Disaster Risk Management of the Department of Disaster Management, Ministry of Home and Cultural Affairs, Bhutan and revised according to the AACB-IWRM objectives.

		OBJECTIVES	OUTPUTS
Risk Assessment	Step 1	Describe Hazards in the Community	List the nature of hazards
	Step 2	Conduct Hazard Mapping	Community hazards map, community resource map, digitized map
	Step 3	Vulnerabilities and Capacities Assessment	Capacities, Vulnerabilities Analysis (CVA)
	Step 4	Determine Disaster Risks	Comprehensive list of risk faced by the communities
	Step 5	Rank Disaster Risks	Prioritized list of risks
	Step 6	Decide Acceptable level of Risk.	Agreed level of risks for family and community security
	Step 7	Decide on strategies to deal with identified risks	Agreed strategies

Disaster Risk Assessment Design

KEY AREA OF INQUIRY	KEY QUESTIONS	METHOD	RESPONDENT
A. PERCEPTION			
Disaster	Describe a water disaster that happened at your river basin for the last ten years. Why do it is considered as a disaster?	• Transect walk • Ranking	• Community Leaders • ENGOs
Disaster risk	What is the biggest impact loss in the community? The environment, community, economy & health. What are the common problems encountered by the community to reduce the disaster risk?	• Transect walk • Seasonal calendar • Ranking	• Community Leaders
Gender	What is the woman/man defined roles in the family in creating water management awareness?		• Community Leaders
B. PHYSICAL / MATERIAL			
River Basin	What is your opinion on your river basin? What is the main cause for an unhealthy river basin? What do you have in mind to improve your own river basin? Do you know that your activity at the river basin will affect the upstream/ downstream of the basin?	• Transect walk	• Community Leaders
Demographic profile	What is the total population of the community? In the map, locate the most affected area if a disaster occurs.	• Focus group	• Community Leaders
C. MOTIVATIONAL / ATTITUDINAL			
Sense of ability to bring about change and plan effectively	Are the NGOs and CBOs contributed in increasing the IWRM awareness in the community? What do you think NGOs and CBOs can contribute to increase the IWRM awareness in the community?	• Group interview and individual interview	• Community Leaders
DRR Planning and the sense of ownership	What is the community's plan to reduce disaster risks and impact and what have been done? What is the best way to instill the sense of the ownership of the community towards their river basins?	• Questionnaires and discussion	• Community Leaders

Expected outcome: Members of the community will have a clearer view in the risk awareness of their own river basin and can plan and strategies accordingly.

ACTIVITY

TOPIC: STOP THE DISASTER!

INSTRUCTIONS:

1. PARTICIPANTS WILL ASSESS THE LEVEL OF POLLUTION AND THE POTENTIAL OF FLOODING IN THEIR RIVER BASIN. (30 MINUTES)

2. THE TRAINER WILL DISPLAY THE LIST OF AUTHORITIES AND THEIR RIGHTS AND DUTIES UNDER THE LAW TO PREVENT WATER-RELATED DISASTERS. (40 MINUTES)

3. PARTICIPANTS WILL DEVELOP A SUITABLE COMMUNITY INTERVENTION BASED ON BEST PRACTICES BY COMMUNITIES IN OTHER RIVER BASINS. (50 MINUTES)

OUTCOMES:

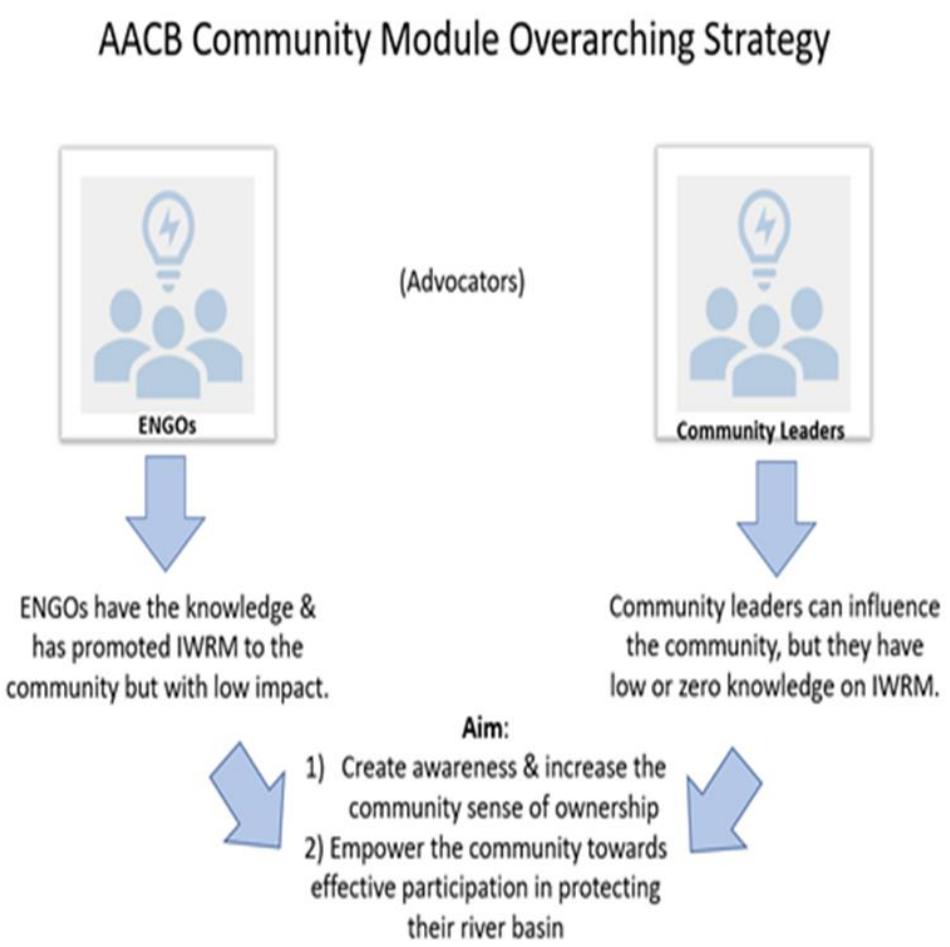
1. PARTICIPANTS WILL BE ABLE TO IDENTIFY THE RIGHT AGENCIES TO CONTACT WHEN A WATER PROBLEM OCCURS.

2. PARTICIPANTS WILL BE AWARE OF THEIR COMMUNITY ROLE IN PREVENTING DISASTERS IN THEIR RIVER BASIN.

3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THE RIGHT AGENCIES WHEN NO ACTION IS TAKEN TO PREVENT A DISASTER.

3.3 Link up with the ENGOs

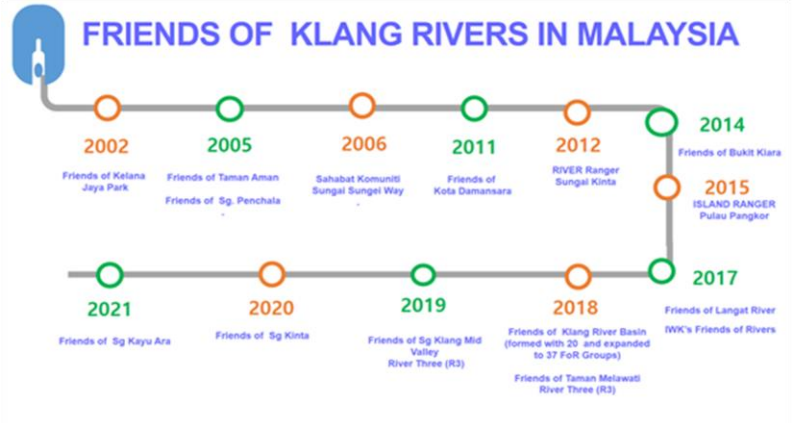
There are many environmental NGOs (ENGOs) around the country. Some of which have developed their own community modules. However, many of the existing programmes are one- off and has not sustain or increase community awareness on IWRM and IRBM.



As advocators, ENGOs can play their part to train community leaders to change their communities' attitudes towards river preservation or conservation. This can be done through effective advocacy tactics that depend on the situation and aspiration of the community. ENGOs can later help community leaders to evaluate this initiative and determine individuals amongst the community who are keen to continue with the projects. These individuals may have the potential to be trained as future advocator to support and maintain behavior changes amongst the community.

Friends of Klang River Basin (FokRB) by GEC

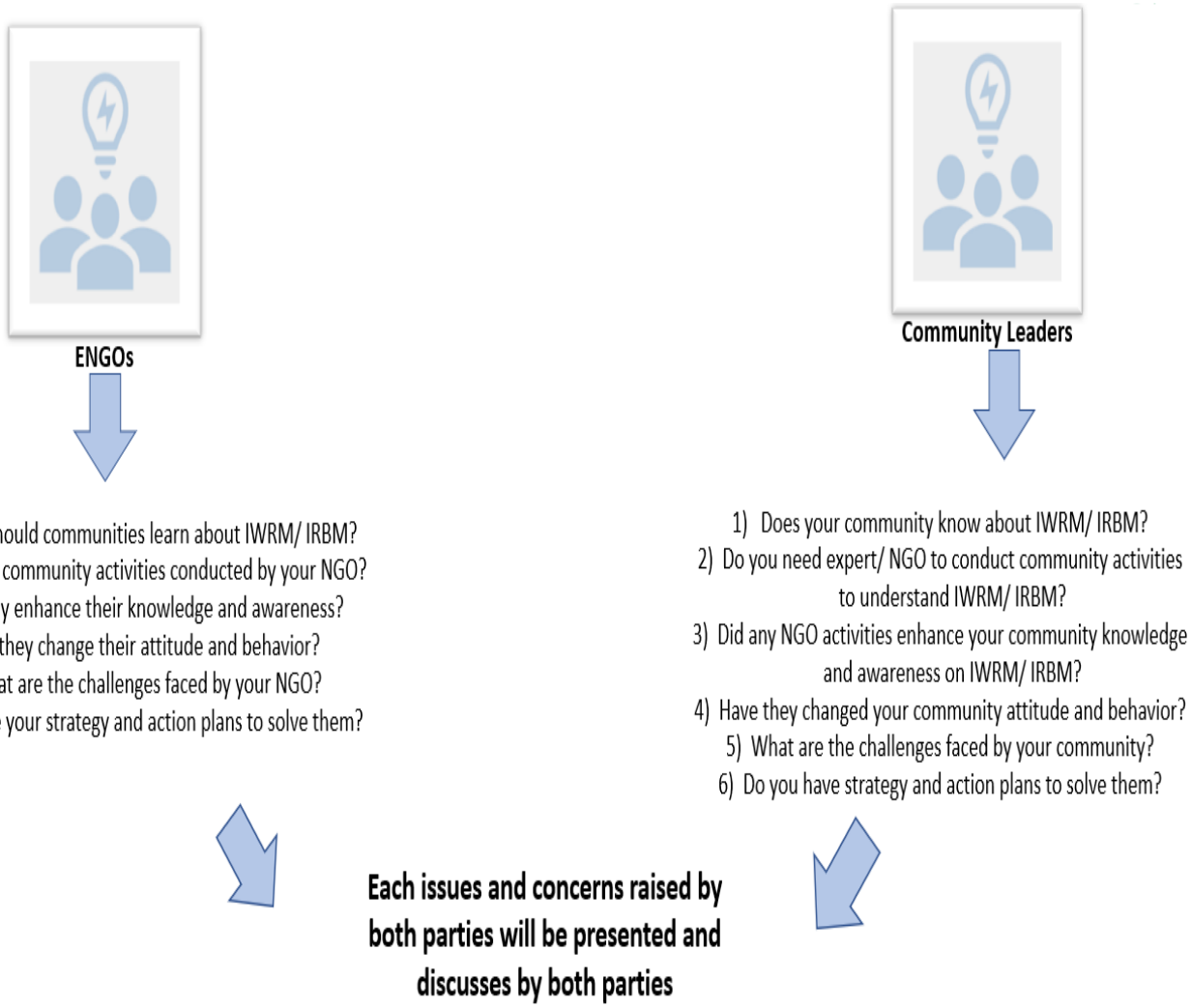
The FoKRB is an entity that serves as a medium that connects parties or groups that are active and interested in integrated management of river basins and river ecology. The FoKRB is a registered entity under the global Environment Centre established to nurture the local communities to be the custodian of the Klang River. It forms a network of information sharing, initiative, cooperation and mediation in forming smart and network partnerships between local communities and related government agencies, private or non-governmental organizations. Furthermore, it acts as a platform, which promotes urban river concepts that incorporate natural care, zero waste and promote back to nature and nature based solution approach.



Successfully launched on the 23rd of September 2018 in conjunction with World Rivers Day, FKRB gathers and currently consist of 68 members from 40 groups and 19 Friends of River i.e. communities from the upstream to downstream of Klang River.

On the 23rd of May 2019, FOKRB has formally registered under the Registry of Societies functioning as the umbrella of communities, agencies, like-minded individuals, organizations and associations' network relevant to river basin including drain, lake, pond and wetland protection within the basin.

Merging Issues and Concerns



With better motivation and changes in behavior, the ENGO can elevate their relationship with the community leaders and their community to another level. They can work together to identify the potential economic activity that can take place when the river is clean. This can be a river cruise, a historic trail walks, fishing, water sports and other recreational activities. The ENGO can teach the community on social marketing to sustain their economic activity and their 'love your river' campaign.

For some ENGO, they can teach the community on how to apply grants available for community programs. This can be done from filling up the proposal, preparing reasonable budget, pitching the proposal, and communicating with the potential funders. Any grants will be a bonus to sustain their initiative and to plan for the future.

ACTIVITY

TOPIC: ROLE PLAY (PART I)

INSTRUCTIONS:

1. PARTICIPANTS WILL CHOOSE A MODULE FOR THEIR ROLE PLAY. (60 MINUTES)

2. PARTICIPANTS WILL SHARE THEIR EXPERIENCES IN DEALING WITH AGENCIES OR NGOs. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WILL BE ABLE TO ACT OUT AND SHARE THEIR OPINION BASED ON THE SITUATION GIVEN TO OR FACED BY THEM.

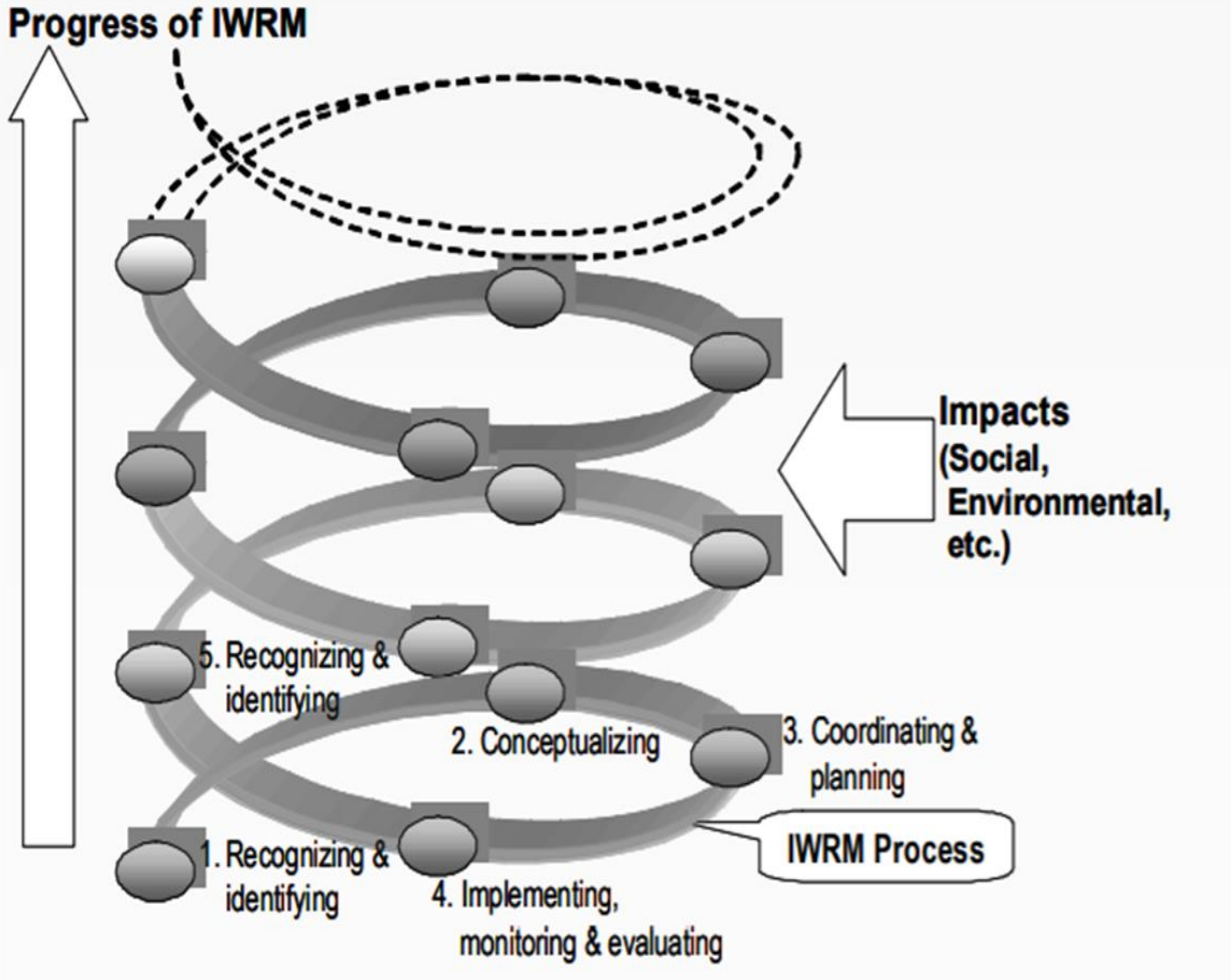
2. PARTICIPANTS WILL BE AWARE OF THEIR COMMUNITY ROLE IN PROTECTING THEIR RIVER BASIN.

3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THE RIGHT AGENCIES WHEN NO ACTION IS TAKEN TO PROTECT THEIR RIVER BASIN.

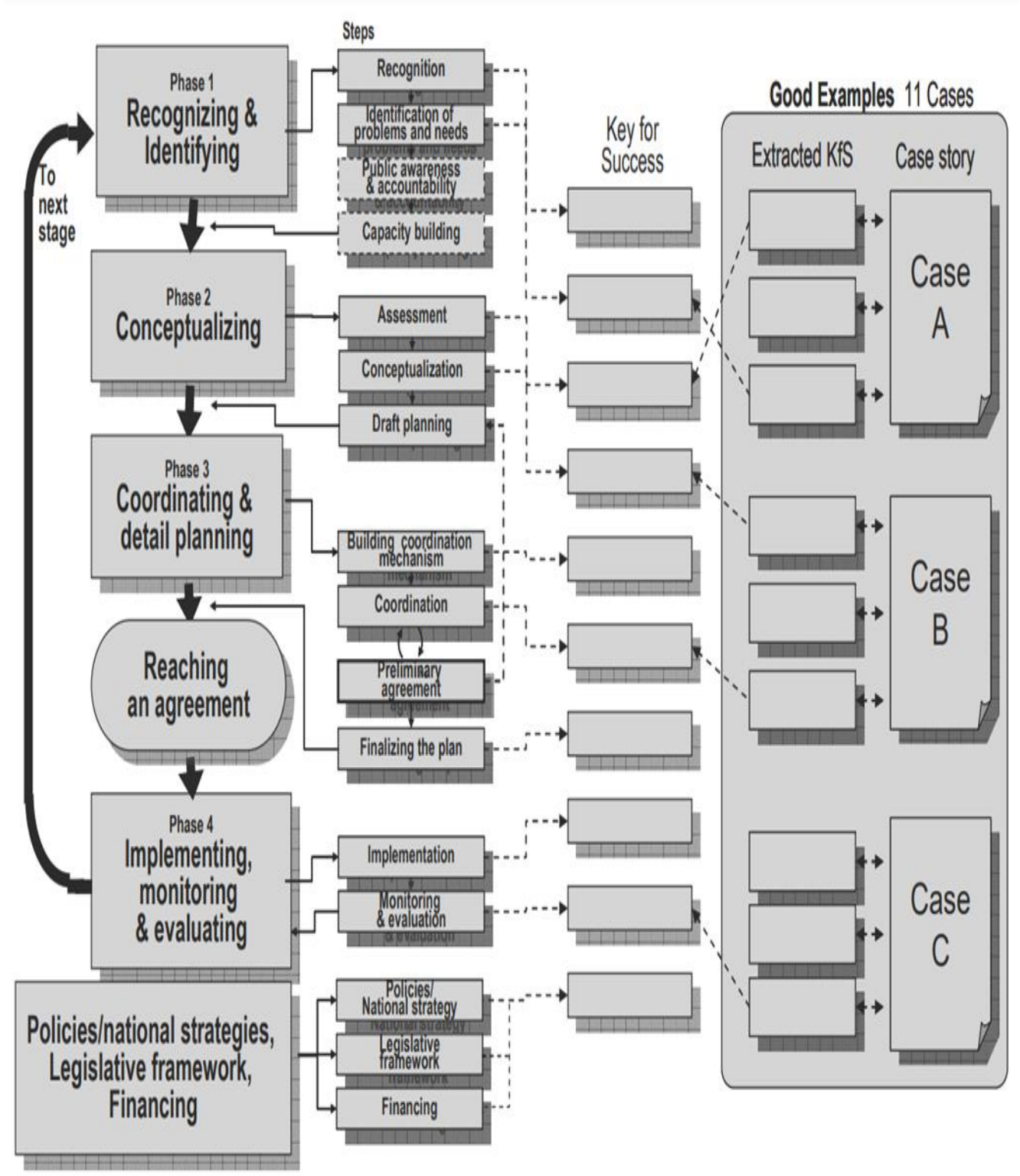
CHAPTER 4
ADVANCED LEVEL I

4.1 The IWRM Spiral

These issues identified will be the first stage of the Community Spiral for Effective IWRM Implementation as shown below.



The IWRM spiral model reflects progressive positive changes in water resources development and management in a macro or micro scale. It is flexible as it may start at any point of the evolutionary process and builds capacity over time. The spiral requires close cooperation and integration among stakeholders to go up the spiral. It also allows better solutions that adapt to changing circumstances, while facilitate consensus building and stakeholder ownership at each "turn of the spiral".


Steps
Phase 1
Recognizing & Identifying
Recognition
Identification of problems and needs
Public awareness & accountability
Capacity building
To next stage
Phase 2
Conceptualizing
Assessment
Conceptualization
Draft planning
Phase 3
Coordinating & detail planning
Building coordination mechanism
Coordination
Preliminary agreement
Finalizing the plan
Reaching an agreement
Phase 4
Implementing, monitoring & evaluating
Implementation
Monitoring & evaluation
Policies/national strategies, Legislative framework, Financing
Policies/ National strategy
Legislative framework
Financing
Key for Success
Good Examples 11 Cases
Extracted KfS
Case story
Case A
Case B
Case C

Water Warrior University of Malaya (UM)

Water Warriors is an environmental project in the campus for the protection and conservation of water bodies in UM. Aimed at bringing back a sense of ownership among the community, the programme does not only focus on monitoring, but also includes community involvement in *'gotong-royong'* and public reporting on water leakages in campus. Water Warriors are also deeply passionate about documenting flora and fauna, especially freshwater habitat such as aquatic insects, waterfowl, and wetland plants.

The project started off as an outreach programme to build public awareness and involvement in protecting water resources around the campus by engaging the community to conduct basic monitoring, through an approach known as 'citizen science'. Community driven data from citizen science programmes such as river waste audits and water quality monitoring can also contribute to baseline scientific studies. Communities can be trained to collect data and analyse the data to solve local environmental issues.

Clean-up activities in rivers can help to reduce the waste that goes into the ocean. It also brings people together and brings them closer to the river. At the same time, awareness and education can be imparted to the community. The outdoors can be used as a living lab. Hands-on activities are more meaningful and make the community more aware of the issues surrounding their areas that may impact their rivers.

ACTIVITY

TOPIC: ROLE PLAY (PART II)

INSTRUCTIONS:

1. PARTICIPANTS WILL DISCUSS ON MATTERS REQUIRED FOR THE IWRM SPIRAL. (60 MINUTES)

2. PARTICIPANTS WILL SHARE THEIR FINDINGS AND EXPERIENCES IN IDENTIFYING, CONCEPTUALISING, COORDINATING, AND IMPLEMENTING THE MATTERS REQUIRED FOR THE IWRM SPIRAL. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WILL BE ABLE TO ACT OUT AND SHARE THEIR OPINIONS BASED ON THE SITUATION GIVEN TO OR FACED BY THEM.

2. PARTICIPANTS WILL BE AWARE OF THEIR COMMUNITY ROLE IN PROTECTING THEIR RIVER BASIN.

3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THE RIGHT AGENCIES WHEN NO ACTION IS TAKEN TO PROTECT THEIR RIVER BASIN.

4.2 Plan Your Program

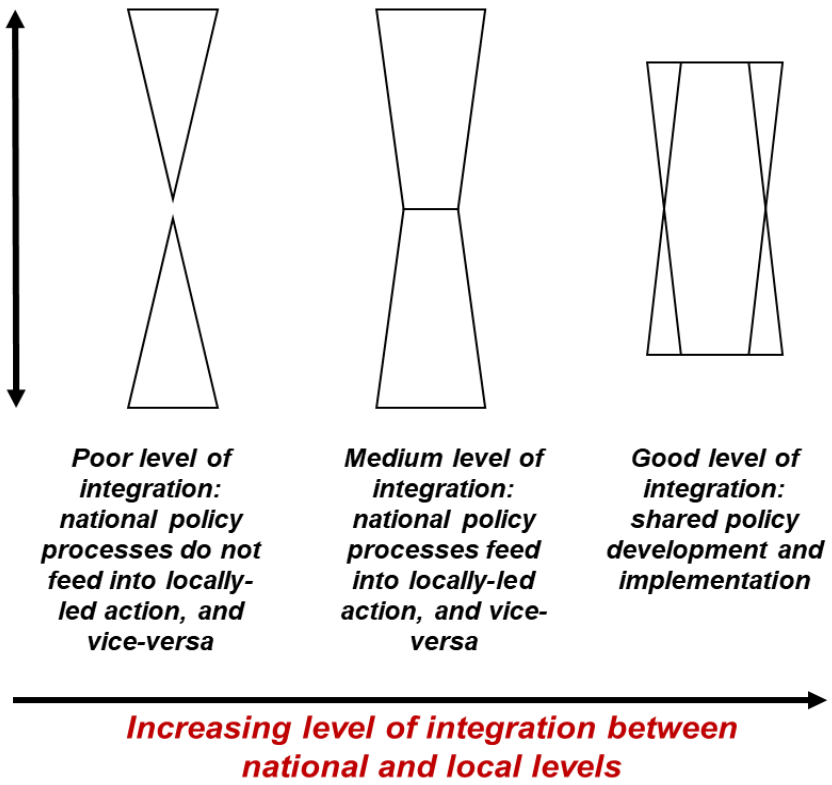
After recognizing and identifying the problems and the needs of the community relating to rivers, the community leaders can start planning program with the community. Each program should include the following components:

4.3 Empower Your Community!

Malaysia citizens have the right to live in a clean and healthy environment. It is part and parcel of the right to life under Article 5(1) of the Federal Constitution. Malaysia also embraces the notion of sustainable development which refers to development that serves the needs of the present generation, but without compromising the resources available to meet the needs of the future generation. As such, development must be balanced towards achieving economic prosperity, social development, and a healthy and clean environment.

Nevertheless, unsustainable development has resulted in much pollution and environmental degradation of rivers. Irresponsible waste disposal has also contributed to pollution and flooding due to clogged drains. The COVID-19 pandemic and the movement control order (MCO) however, has temporarily healed the pain suffered by the environment and brought back life to previously polluted rivers.

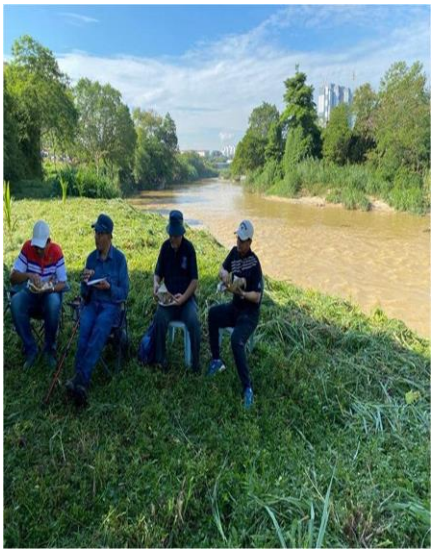
Communities need to play their part in protecting their river basin from pollution. They must be the eyes and ears of the government to ensure that every economic activity in the river basin is legally licensed and properly regulated. The combination of bottom-up and top-down governance for river basins is needed. A good level of integration between the government and the people, together with academia and industries, will ensure sustainable development for the country.



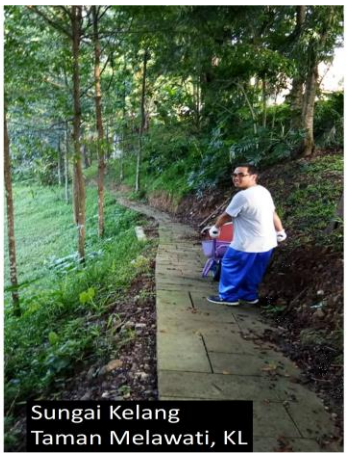
Source: Spray & Rouillard (2012)

Denai Sungai Kebangsaan (DSK)

The National River Trail Programme (DSK) launched through the Ministry of Environment and Water is a river pollution and flood risk control mechanism. The existence of trails along rivers or bodies of water will encourage environmentally based activities, such as picnicking, fishing and cycling among the local communities. This would prevent irresponsible parties from turning rivers into landfills that ultimately result in pollution.



Through the DSK concept, trail construction will be developed using the Nature-Based Solutions (NBS) approach, which aims to address socio-environmental challenges through sustainable environmental management and the cooperation of various parties, including local authorities, non-governmental bodies (NGOs), corporate bodies, local communities, students, and others which will take up their own roles and responsibilities accordingly.



ACTIVITY

TOPIC: WHAT IS SUSTAINABLE DEVELOPMENT?

INSTRUCTIONS:

1. PARTICIPANTS WILL DETERMINE WHAT SUSTAINABLE DEVELOPMENT MEANS TO THEIR COMMUNITY. (60 MINUTES)

2. PARTICIPANTS WILL DISCUSS THEIR VIEWS ON SUSTAINABLE DEVELOPMENT. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WILL BE ABLE TO ACT OUT AND SHARE THEIR OPINIONS BASED ON THE SITUATION GIVEN TO OR FACED BY THEM.

2. PARTICIPANTS WILL BE AWARE OF THEIR COMMUNITY ROLE IN PROTECTING THEIR RIVER BASIN.

3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES ON SUSTAINABLE DEVELOPMENT TO THEIR COMMUNITY.

4.4 Speak up for Your River Basin!

When you feel that the river basin is yours, you will speak on its behalf. There are several channels for public participatory platform to voice up your concerns on any proposed development which will affect your river basin. This is because development will not only bring more jobs for the community. It will only also bring more industries and urbanization, which if not carefully planned and managed, will cause water problems.

i. Draft State Structure Plan

Under section 8 of the Town and Country Planning Act 1976, the Director of the State PLANMalaysia shall prepare a draft structure plan for the State. It is a proposal for the development and use of land in that State, including measures for the improvement of the physical living environment, the improvement of communications, the management of traffic, the improvement of socio-economic well-being and the promotion of economic growth, and for facilitating sustainable development in the State. The public is allowed under section 9 to make objection to the draft structure plan if the proposed development affect interstate river basin and affect the community at the lower basin.

i. Draft Local Plan

Under section 12(2) of the Town and Country Planning Act 1976, the local planning authority, where a structure plan for the State has come into effect, shall prepare a draft local plan for the whole of its area. It shall consist of its proposals for development, use of land, improvement of the physical environment, preservation of tree and natural topography, landscape, open spaces, and management of traffic in the local area. Under section 13, the draft local plan must be made public, and objection can be made if the public does not agree with the development proposal, particularly in highly sensitive areas like a water catchment in the upper river basin.

The community should be able to express their views in the development process. They should be able to have the general idea of the policy development documents and discuss with the community. They should understand the public agenda set in the document and conducting research to influence policy development in their basin. This assist in assuring accountability and enforcement of existing policies and laws pertaining to the development process.

i. Appeal Board under Environmental Quality 1974

Community members have the right to speak out against developments that clearly give negative impact to their communities. Under Section 35 & 36, Part 5 of the Environmental Quality Act 1974, they can appeal to the Appeal Board against development that will affect the lives of community members.

Recently, a group of fishermen in Penang has appealed to the Appeal Board against a reclamation project that will affect aquatic life there. The project has undergone Environmental Impact Assessment (EIA) and has been approved by the Department of Environment (DOE).

EIA is a method to identify and predict the negative and positive impacts of a development project on the environment, human health, social and economic. On 8 September 2021, the Appeal Board has decided to approve the fishermen's appeal as the reclamation project will affect the fishermen. The Appeal Board has waived the EIA's approval and ruled it invalid.

ACTIVITY

TOPIC: WHAT'S YOUR VIEW?

INSTRUCTIONS:

1. PARTICIPANTS WILL GO THROUGH SAMPLES OF STATE STRUCTURE PLANS AND LOCAL PLANS IN THEIR RIVER BASIN. (60 MINUTES)

2. PARTICIPANTS WILL EXPLAIN THEIR VIEWS ON EXISTING AND FUTURE DEVELOPMENT IN THEIR AREA. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WILL BE ABLE TO ACT OUT AND SHARE THEIR OPINIONS BASED ON THE SITUATION GIVEN TO OR FACED BY THEM.

2. PARTICIPANTS WILL BE AWARE OF THEIR COMMUNITY ROLE IN PROTECTING THEIR RIVER BASIN.

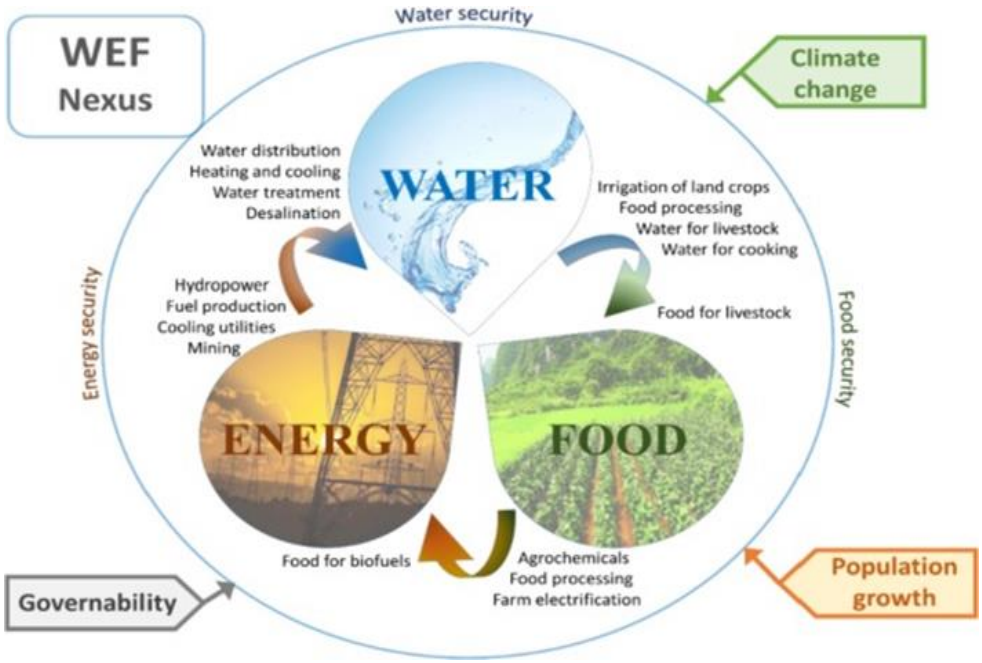
3. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THE RIGHT AGENCIES WHEN NO ACTION IS TAKEN TO PROTECT THEIR RIVER BASIN.

CHAPTER 5
ADVANCED LEVEL II

5.1 What's New in the Water Sector

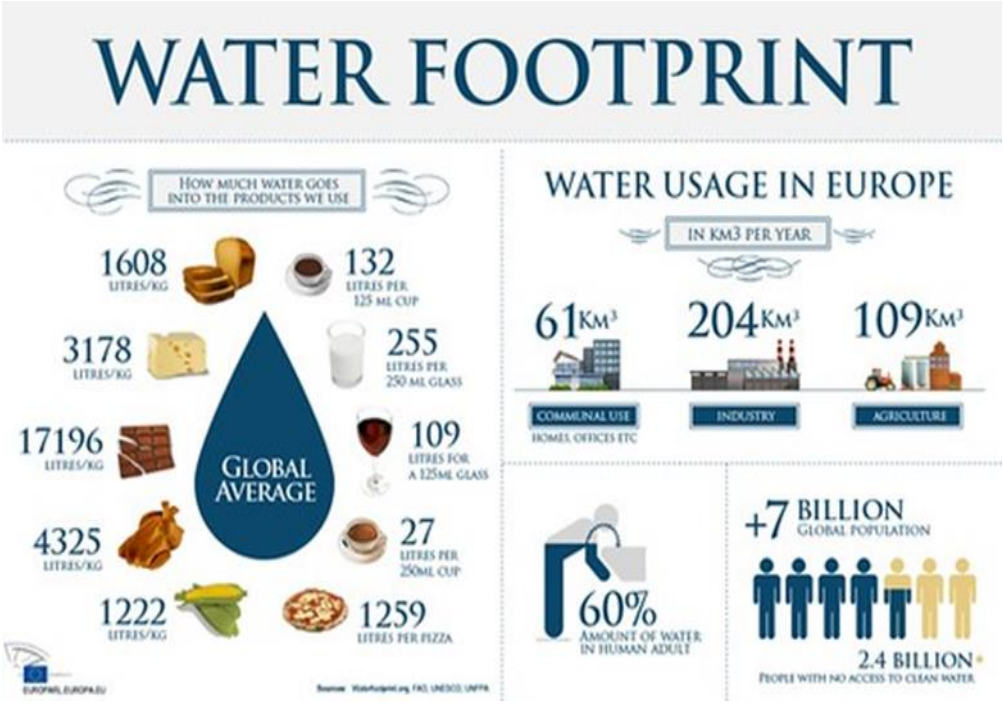
There are many exciting developments in the water sector, such as the water-energy-food-nexus, water footprint, Water 8is, and Water in the Circular Economy. Enhancing your water-related knowledge will enhance your capacity as a water advocator.

i. Water-Energy-Food-Nexus



Water-Energy-Food-Nexus shows that the water-energy-food sector is an interconnected sector. For example, water insufficiency will affect the food manufacturing process as well as the production of electricity.

ii. **Water Footprint**

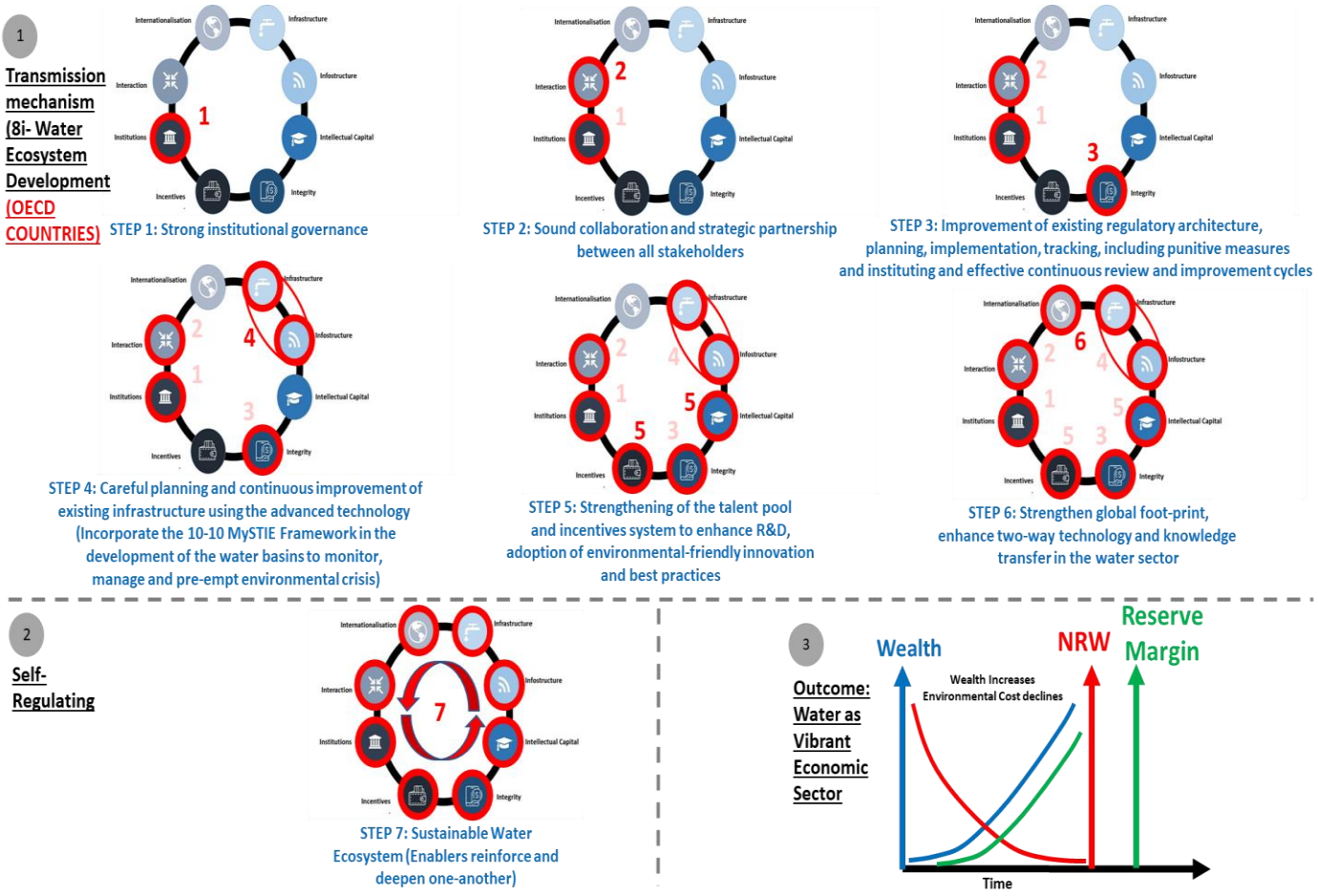


The water footprint describes water as an indicator of water used by individuals, communities, industry, commercial, and agriculture by measuring the amount of water that has been used to produce each good and service. Besides detecting the water used, the water trail also shows contaminated water to produce a product and service. The concept of water footprint is significant for the sustainability of quality and adequate water resources for the future.

iii. **Water as Circular Economy**

Water as a Circular Economy explains that environmental elements such as water and electricity sources can be reused, and this cycle can help the economy. Examples of strategies used for this effort are promoting 3R (Reduce, Reuse, Recycle), waste segregation and waste generation by encouraging the manufacture of products from recycled materials *(upcycling)* and promoting recycling practices through rewarding or incentive methods. In the water sector, water that has been used can be reused for agriculture and provision.

iv. 8is Ecosystem Analysis



Academy of Sciences Malaysia introduced 8is Ecosystem Analysis as a guideline to deepen and address future water issues. This is because the water sector at the global level is very advanced, but Malaysia is still facing severe water pollution problems. The 8is means:

1. **Infrastructure**: Physical and natural infrastructure such as – roads, ports, transport systems, energy systems, smart buildings, public service centers, natural habitats, etc.

2. **Infostructure**: Digital infrastructure such as ICT, big data usage, integration of various digital systems, and data analysis in the ecosystem.

3. **Intellectual Capacity**: Skills and knowledge of industry players – including general, specialized, technical, entrepreneurial, and leadership.

4. **Incentives**: Fiscal and non-fiscal incentives to encourage the adoption of new technologies, innovations, and systems to enhance ecosystem competitiveness.

5. **Internationalization**: Participation in the development, formulation, and compliance of international laws, agreements, and engagements that ensure the management and safety of resources is sustainable in the ecosystem.

6. **Integrity**: A governance system that efficiently manages ecosystem resources and enhances Return of Value for all stakeholders.

7. **Institutions**: Quality governance institutions (federal, state, and local councils), including regulatory frameworks that ensure transparency and accountability, and industry associations, community organizations, learning institutions, and research institutes.

8. **Interaction**: Collaboration and partnership among all stakeholders in the ecosystem.

ACTIVITY

TOPIC: WHAT'S NEW?

INSTRUCTIONS:

1. TRAINERS WILL EXPLAIN THE LATEST DEVELOPMENTS IN THE WATER SECTOR. (60 MINUTES)

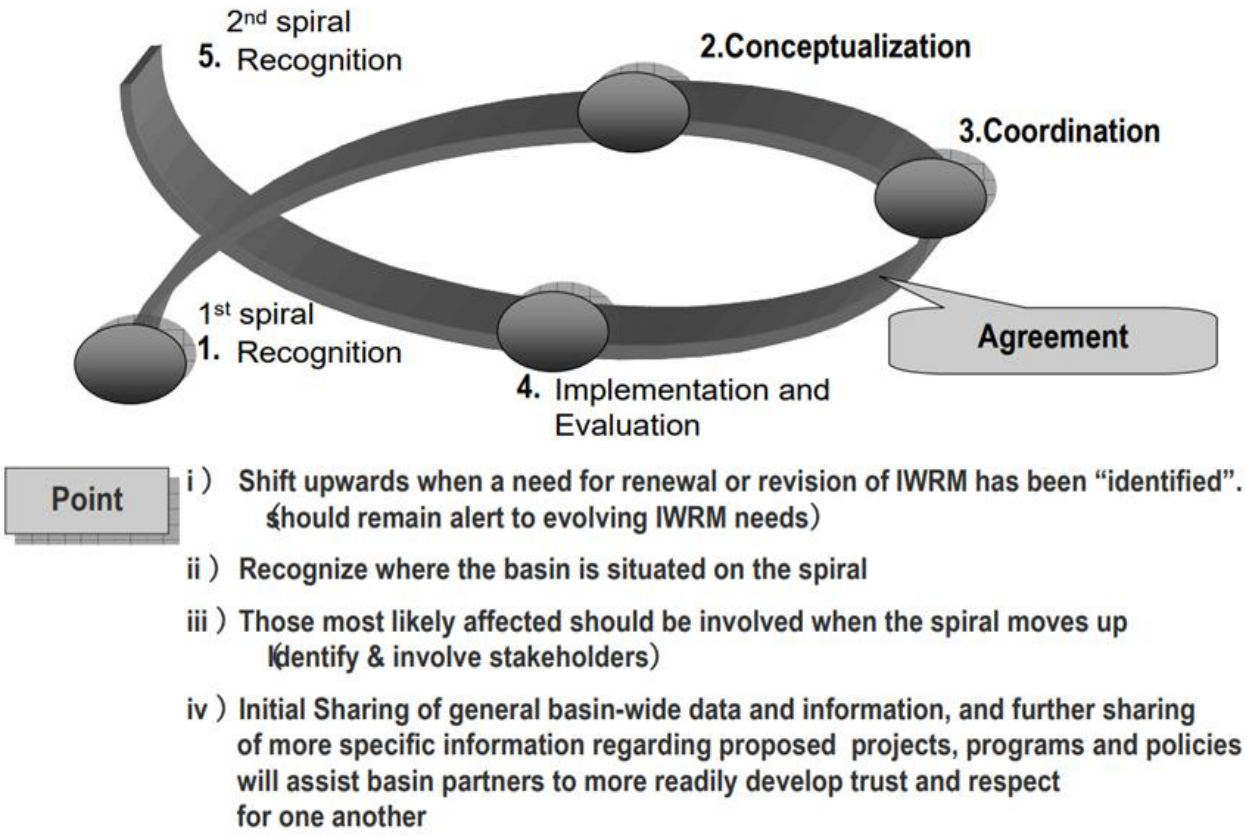
2. PARTICIPANTS WILL DISCUSS THEIR VIEWS ON RECENT AGENDA IN THE WATER SECTOR. (60 MINUTES)

OUTCOMES:

1. PARTICIPANTS WILL BE ABLE TO ACT OUT AND SHARE THEIR OPINIONS BASED ON THE SITUATION GIVEN TO OR FACED BY THEM.

2. PARTICIPANTS WILL BE ABLE TO CONVEY THE RIGHT MESSAGES TO THEIR COMMUNITY ON THE NEW AGENDA.

5.2 Moving up the IWRM Spiral

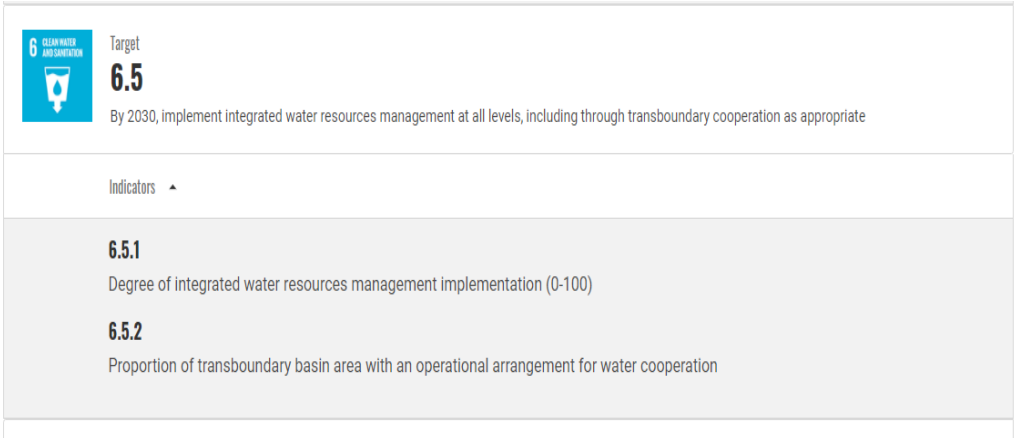


After completing the first cycle of the IWRM Spiral, the community leaders involved will move up to the next cycle of the spiral. Here, they should be able to review and build consensus on any action plan decided in the first cycle. They should be able to use any of these action plans to enhance community participation in their river basin and build new leaders among their communities. The community leaders need to be smart advocators to be able to guide their community and stakeholders towards:

1) Ownership – by reconnecting with nature and knowing the state of their rivers
2) Conservation - by protecting and restoring the river ecosystem and biodiversity
3) Rehabilitation – by improving water quality and surrounding ecosystems
4) Pollution Reduction – by recycling and upcycling
5) River Health- by monitoring and reporting

5.3 Get Noticed & Recognised as Water Heroes

The Sustainable Development Goals are an international blueprint that aims for peace and prosperity for people and planet Earth. There are 17 Sustainable Development Goals (SDGs) which all countries aim to achieve by the year 2030. Under SDG 6 on clean water and sanitation, it is targeted that IWRM will be implemented at all levels in the country. This requires a good level of integration between top-down and bottom-up governance by the community. Indeed, community participation in IWRM and IRBM will improve the level of integration and assist the government to successfully achieve SDG target 6.5.1 on IWRM implementation.



All community activities that are part of IWRM and IRBM are important in ensuring successful IWRM and IRBM implementation in Malaysia. However, most activities are only known by the communities and stakeholders involved in them. It is time that a special platform be established so that these programmes, whether small or a large scale, can be shared by these communities with the public. These activities can inspire and mobilise other communities to play their part in river conservation and restoration.

The AACB should have an updated inventory of organisations and individuals with areas of expertise in various areas of water management related capacity building (rather than a section in the module), whereby they can be easily contacted and roped in when developing programmes/talks/field visits related to the module - based on their area of specialisation and resource capacity. This can also include experienced leaders or practitioners of community level water-related movements, in addition to the usual government, university and NGO-based expertise. Such efforts can ensure that ASM will be able to tap into existing knowledge and expertise to enhance the delivery of the module However, if this section is to be included in the module, perhaps a link/QR code can be included where it will direct the reader to some kind of web-based listing of the expertise and also a button to allow them to fill in additional information of "expertise" (i.e. the Water Heroes) that has not been included in the list as yet. Can also provide tips on how they can use social media to get noticed and how to network engage with more people and organisations in this area of activism.

5.4 Get Funded & Awarded

There are several ways that community can get funded. In fact, many communities have been recognized and awarded. Consistent grant cycles for the community are one of the important factors that can ensure the sustainability of environmental programs to be run and maintained for a long period of time. Proper and clear guidelines for grant application should be given to the community. The process of applying for grants and funds should also be simple and community-friendly. It also needs to be advertised interestingly and disseminated through the mobile app. The use of funds should not be too strict in terms of expenses and financial control. However, community members need to do report on the program. Some of the small grant programs available are by Global Environment Facility (GEF) and Small-Scale Grants Program under United Nations Environment Program (UNEP).

The awarding system is one of the ways to enhance and motivate the community to continue participating in the environmental sustainability program. Environmental NGOs in Malaysia such as GEC and WWF have also held awards days such as the Rivercare Award and Eco Champion annually to motivate the community. Government agencies also celebrate water and environmental heroes through awards such as the Langkawi Award by the Ministry of Environment and Water. Besides, several agencies such as Kuala Lumpur City Hall (Dewan Bandaraya Kuala Lumpur) Department of Environment and Department of Irrigation and Drainage work with NGOs such as Eco Knights to appreciate water and environmental heroes through the Green Award.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NATIONAL RIVERCAREFUND
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3
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RM1,000*
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www.nationalrivercarefund.org.my
*NOTE: 80% OF THE AWARD MONEY MUST BE CHANNELED TO RUN RIVER CARE ACTIVITY.


Global Environment Centre
NATIONAL RIVERCAREFUND
MAJLIS PENYAMPAIAN
RIVERCARE AWARD 2021
Mengiktiraf Tokoh Komuniti Penjagaan Sungai
PEMENANG-PEMENANG KATEGORI UTAMA:
KOMUNITI TEMPATAN
WAKIL:
EN. HJ MOHAMAD HALIM HJ MOHAMAD SAID
Juara
RM5,000
JUARA
KATEGORI UTAMA: KOMUNITI TEMPATAN
KELAB KEBUN RUMAH PANGSA AU2
WAKIL:
EN. KENNEDY MICHAEL
Naib Juara
RM3,000
NAIB JUARA
KATEGORI UTAMA: KOMUNITI TEMPATAN
FRIENDS OF SG. KLANG TAMAN MELAWATI RIVER TEAM

If you're a community leader, here's what you can do:

The AACB community training module will guide the community to understand their river basins, know the development process taking place there and identify the risks present before disaster, natural or otherwise, occurs. With sufficient knowledge, they will be able to prepare themselves not just to changes to the environment brought on by development and urbanisation but also by the impacts of climate change, thus increasing their chances of averting disasters.

The Community Leader Cluster Module has a two-pronged strategy:

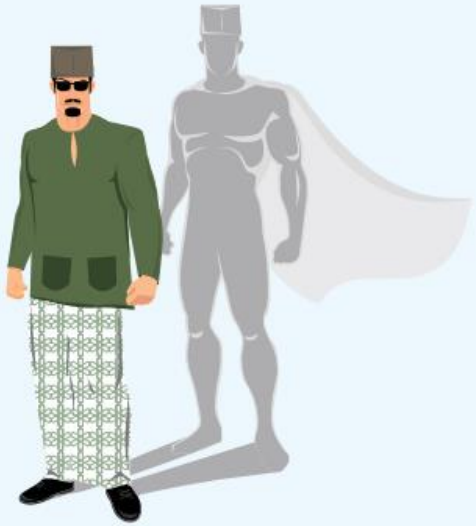
Strategy 1:
Increasing community awareness and instil ownership towards rivers and other water sources in their river basin.

Strategy 2:
Empower the community to effectively participate in IRBM, be aware and able to adapt to climate change and reduce the risk of disaster.

When the community have a sense of ownership towards their rivers, they will realise that their activities in the upper or lower basin will affect the other communities in the river basin. They will be more interested to know the happenings in their river basin in terms of development.

Strategic partnerships between NGOs and the community will be organised to tackle issues faced by them effectively, to increase the community awareness and to instil a sense of ownership towards their rivers.

BE A WATER HERO



Beginner Level
- Aware of the rivers and river basins around them.
- Understand the issues present in the water sector.
- Aware of the activities that have impacts on their rivers and their river basins.
- Know the status of their rivers.
- Aware about the duty of the community in river protection.
- Appreciate the importance of their rivers' history, documenting and sharing it with the community.
- Appreciate the history and values of their rivers by sharing them with the community to inculcate sense of belonging and the need to protect the rivers for future generations.

Intermediate Level
- Be vigilant of the activities taking place at their river basins and able to identify whether the activities were licensed or unlicensed.
- Recognise the level of pollution and the potential of floods in their river basins.
- Able to convey the right messages and inputs to the right agencies when dealing with water-related problems faced by the community.
- Can share their viewpoints on the water resources in Malaysia and proposed the best action plans that suit the needs of the community at their river basins.
- Understand that every action plan made for disaster risk management needs to be monitored and fine-tuned from time to time.
- Able to identify the strengths, weaknesses, opportunities, and threats to their community's growth in the river basin.
- Have a clearer view in the risk awareness of their own river basins and can plan and strategised accordingly.
- Aware about their community's role in preventing disaster and protecting their river basins.

Advanced Level
- Understand the concept of levelling up in IWRM Spiral in terms of identifying, conceptualising, coordinating, and implementing all that are required by the IWRM Spiral.
- Understand the meaning of sustainable development for their community, and share or discuss their views on sustainable development
- Be aware about their community's role in protecting their river basins.
- Can speak up for their river basins and express their views on the development process taking place at their river basins through proper channels.
- Have the general idea of policy development documents and be able to discuss them with the community.
- Understand the public agenda set in the documents and able to conduct research to influence policy development in their river basins.
- Recognise the latest development in the water sector such as water footprint, water-energy-food-nexus, water 8is, and water in the circular economy.
- Be able to organise awareness programs for their community
- Be able to get funded, awarded or recognised as water heroes.

Directory

AUTHORITIES TO GET HELP FOR EMERGENCIES

Malaysia Emergency Response Services (MERS)
- Royal Malaysian Police (RMP)
- Fire and Rescue Department of Malaysia (FRDM)
- Ministry of Health Malaysia (MOH)
- Malaysian Maritime Enforcement Agency
- (MMEA) and Department of Civil Defence (DCD)

999

WATER-RELATED AUTHORITIES

Kementerian Alam Sekitar dan Air
+603-8091 7000
pro@kasa.gov.my

Department of Environment
+603-8889 1972 (Complaint Line)
1-800-88-2727
aduan_k@doe.gov.my
https://www.doe.gov.my/portalv1/en/

Department of Irrigation & Drainage
013-756 2983
pro@water.gov.my
web@water.gov.my
https://www.water.gov.my/

Suruhanjaya Perkhidmatan Air Negara (SPAN)
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Institut Penyelidikan Air Kebangsaan Malaysia (NAHRIM)
+603-894 76400
http://www.nahrim.gov.my/

STATE WATER AUTHORITIES AND WATER SUPPLY OPERATORS

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https://www.johor.gov.my/bakaj

Ranhill SAJ Sdn Bhd
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1-800-88-6982
aduan@sainswater.com
https://www.sainswater.com/index.php/ms-MY/#

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+606-333 3333 ext. 7674 / 7686
https://www.melaka.gov.my/ms/jkmm/bahagian-unit/timbalan-setiausaha-kerajaan-pembangunan-1/badan-kawal-selia-air-bksa

Syarikat Air Melaka Berhad
15800 (Message)
+6013-751 5800
aduan@samb.com.my
https://samb.com.my/en/

Perbadanan Bekalan Air Pahang
+609-573 9999
aduan@paip.com.my
https://www.paip.com.my/

Perbadanan Bekalan Air Pulau Pinang (PBAPP)
+604-200 6600
customer@pba.com.my
https://pba.com.my/

Lembaga Air Perak
1-800-88-7788
1-800-88-15353
admin@lap.com.my
https://mylapapps.lap.com.my/

Jabatan Air Negeri Sabah (JANS)
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https://water.sabah.gov.my/?q=ms/webform/borang-aduan / https://water.sabah.gov.my/?q=home

Lembaga Air Kuching
+6082-222 333
+6019 886 6650 (SMS)
kwb@kwb.gov.my
https://www.kwb.gov.my/modules/web/index.php

Lembaga Urus Air Selangor LUAS
+603-5511 1800
+6019-264 7904
aduan@luas.gov.my
https://www.luas.gov.my/v3/my/

Lembaga Sumber Air Terengganu (LAUT)
+609-627 4242
laut@laut.gov.my
http://jba.terengganu.gov.my/

Syarikat Air Terengganu Sdn Bhd (SATU)
1-300-88-2111 (Careline)
1-300-88-5511 (Careline)
helpdesk@satuwater.com.my
http://www.satuwater.com.my/index.php/ms/

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+6013-856 0755
https://www.facebook.com/JBAWPL/

Syarikat Air Perlis Sdn Bhd
+604-977 9300
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aduan@airperlis.com.my
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NON-GOVERNMENTAL ORGANISATIONS (NGOs) TO PARTNER WITH

Kuala Lumpur

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Negeri Sembilan & Melaka

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