

CLIMATE-RESILIENT WATER MANAGEMENT IN MALAYSIA

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Introduction

As a tropical country, Malaysia is particularly vulnerable to climate change's effects, including floods, droughts, and severe weather events. It has seen warming and unusual rainfall patterns, especially in the previous two decades, drawing a lot of interest in the study of climate trends and their implications (Tang, 2019).

Malaysia faces considerable rainfall fluctuation due to its tropical position, and climate change makes this variability even greater. As a result, there will be more frequent and severe droughts and floods, which will alter how much water is available for households, businesses, and agriculture, as well as its quality.



(An aerial view of houses and plantations submerged in floodwaters in Malaysia in 2017, one of the worst flooding in decades, forcing more than 100,000 people to flee. Photo: AFP)

There is a lack of integration and a holistic strategy, as well as limited involvement from stakeholders in the management of water resources especially in developing countries (Medema et al., 2008), resulting from the existing governance structure. For instance, in Malaysia, under the Federal Constitution, the federal and state governments share legislative and judicial authority over all matters relating to water.

Federal Lists

Hydropower, navigation, maritime fisheries, estuarine fisheries (Pen. Malaysia), factories, federal works, power (including water supplies, rivers, and canals)

State Lists

Rivers, public nuisances, riverine fisheries, Water

Despite this, to enhance climate resilience in water management, Malaysia needs to adopt a comprehensive approach that addresses the challenges facing the sector.

Problem Statement

Top-down planning and decision-making continue to dominate water management (Weng, 2004 and Lai et.al, 2017). In Malaysia's river management, there has been a long-standing historical conflict between the federal government and state governments, and it becomes more complex with the proliferation of federal, state, and local government entities involved in the decision-making process, resulting in a **fragmented and multi-tiered** approach to river management (Weng, 2005).

Meanwhile, in developed countries such as the United Kingdom (UK), stakeholders' involvement in water management has been encouraging over the years with active participation by grass-root NGOs. Besides, with the **privatization** of water services such as in the UK, the responsibility to protect and conserve water resources has been shared between the government and water companies, and people are charged appropriately for the services they enjoyed. However, in Malaysia, despite the privatization of water services, the responsibility to protect and conserve water resources remains under the government's responsibilities and water charges continue to be among the lowest in the world (Abdul Rahman, 2021).

Important Water Management Strategies

The "Institutional Strategy"

Dedicated organization or body responsible for advocating and implementing strategies to protect and manage water resources

The "Bottom-Up Strategy"

- Active engagement and involvement of the public can lead to better decision-making, increased awareness of water-related issues, and more sustainable management practices.
- Recognizes that individuals and communities have valuable local knowledge, perspectives, and needs

The "Supply Strategy"

- Water services have been privatized to ensure water services efficiency and improve water quality and security

Research Aim, Objectives and Methods

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AIM	This research aims to develop a climate-resilient water management framework for Malaysia, drawing insights from experiences of the implementation of institutional, bottom-up, and privatizations of water supply services in the United Kingdom.		
OBJECTIVES	1. To examine the effectiveness and opportunities of the institutional strategy used by the NRA, UK, drawing insights from its connection with grassroots NGOs	3. To examine the implications of the privatization of water supply services in the UK in guaranteeing the future delivery of water quality and quantity	5. To develop a climate-resilient water management framework drawing insights from institutional and bottom-up strategies and experiences in the privatization of water supply services
METHODS	2. To analyse if the strategy used by NRA, UK with grassroots NGOs can be adopted in the Malaysian context	4. To analyse if the privatization of water supply services in the UK can be adopted in the Malaysian context	
	<ul style="list-style-type: none"> Gap Analysis Comparative Study Survey 	<ul style="list-style-type: none"> Gap Analysis Comparative Study Survey Interview/ Focus Group Discussion 	<ul style="list-style-type: none"> Data Synthesis

Research Progress

Desktop Study

Both selected case studies; The Rivers Trust, UK, and Friends of River Malaysia are **appointed** members of several working committees within government agencies.

There is **no similar body** such as National Rivers Authority (NRA) within the Malaysian water management context despite the multi-tiered management approach.

The Malaysian Water Sector Transformation 2040 aims to improve water governance by establishing a clear **regulatory framework** for the water sector and promoting greater public participation in water management.

Planned Research Output

Proposes the concept of climate resilient water management in Malaysia, focusing on its importance, challenges, and opportunities

Provides an overview of the current state of water management in Malaysia, discusses the impact of climate change on water resources, and explores three (3) strategies to enhance climate resilience in water management.

Concludes with recommendations for policymakers and practitioners to improve climate-resilient water management in Malaysia by integrating the three strategies