



**Managing Institutional Boundaries of Collaborative Governance:
A Study on Selangor River Basin Management**

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South Asian Institute of Policy and Governance

North South University

December 2021



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on Selangor River Basin Management**

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Thesis submitted to the
South Asian Institute of Policy and Governance (SIPG)
in partial fulfillment for the award of
Master in Public Policy and Governance (MPPG)

December 2021

Dedicated to

Abah and Mama- for they are my whole universe

Declaration

I declare that the dissertation entitled Managing Institutional Boundaries of Collaborative Governance: A Study on Selangor River Basin Management submitted to the MPPG Program of North South University, Bangladesh for the Degree of Master in Public Policy and Governance (MPPG) is an original work of mine. No part of it, in any form, has been copied from other sources without acknowledgement or submitted to any other university or institute for any degree or diploma. Views and expressions of the thesis bear the responsibility of mine with the exclusion of PPG for any errors and omissions to it.

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Acknowledgement

Firstly, all praise to Allah the Almighty for giving me the strength and perseverance to complete this program. He tested the world with an epidemic during this period but turns out that it is indeed a blessing in disguise for me.

I am especially grateful to Dr. Salahuddin M. Aminuzzaman for his generous invaluable advice, continuous motivation and consistent guidance. He is the epitome of an impeccable scholar- knowledgeable, analytical yet humble. Most importantly he is always pushing my limits to make sure that I give my best.

I am forever indebted to other faculty members of SIPG, North South University whose doors are always open when I need inspiration, information and opinions. May Allah bless your kind souls for all that you have contributed and enriched me with.

I have also been inspired by the rest of my course mates who have been there with me through thick and thin, through tears and laughter. To Maeisha, my new-found sister for making the hard times easier and the easy times more fun.

And finally what would I do without the steadfast presence of my family here in Dhaka; my cheeky children Nadine, Ayman and Nina. My eternal Jannah- Amir, who to the core of his being does his best to provide me with all I need to make this possible.

The whole journey has been bittersweet for me but I wouldn't trade the experience with anything else in this world.

Abstract

This research examines the extent of effectiveness of the Integrated Water Resource Management (IWRM) system from the institutional perspective, a method used to manage the Selangor River Basin and about 170 other countries all over the world. The study entails a subscription to the collaborative governance model to examine the different factors that can be manipulated to achieve ideal water governance. As water contributes significantly in Malaysia's economic and social development, a weak water resource management poses the risk of negatively affecting different sectors of users; but that is only what is visible to the eyes. The fact of the matter is that the implication of a prolonged water crisis is far more damaging not only to people but also to the country as a whole.

The approach of IWRM has been accepted internationally as the way forward to achieving efficient, equitable and sustainable water management. It also aims to address the issue of both excessive and insufficient water supply, water pollution and climate change. IWRM has been the principal water resource management method adopted by Malaysia over thirty years ago. Albeit the incremental progress made until today, the achievement is not yet up to the international expectation according to the United Nations Environment Programme. The planning, development and implementation have gone through phases and still need to be improvised and improved. How deep the stakeholders of the Selangor River are embracing the concept of IWRM; remains a case study.

Throughout the research, views from relevant stakeholders of Selangor River management were obtained to gauge the extent of IWRM conceptualization, internalization and implementation. The flow and institutional framework of Selangor River Basin management were scrutinized and the result showed consistency with the model of collaborative governance. Overall, this research suggests findings that might hold true depending on contextual and country-based dimensions. This paper does not

intend to pretend that it is comprehensive but perhaps the findings and policy options could stimulate more feasible suggestions and solutions.

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Abbreviations and Acronyms

ABASS	<i>Syarikat Bekalan Air Selangor Sdn Bhd</i>
ADB	Asian Development Bank
ASM	Academy Sciences of Malaysia
DID	Drainage and Irrigation Department
DOE	Department of Environment
DOF	Department of Fisheries
DOFM	Department of Forestry
DOH	Department of Health
EC	European Commission
EPA	The United States Environmental Protection Agency
EPU	Economic Planning Unit
EU	European Union
FAO	Food and Agriculture Organization
FoRM	Friends of River Malaysia
GEC	Global Environment Centre
GWP	Global Water Partnership
IGES	Institute for Global Environmental Studies
IOR	Inter-organizational Relations
IRBM	Integrated River Basin Management
IWRM	Integrated Water Resource Management
KASA	<i>Kementerian Alam Sekitar dan Air</i>
KASB	<i>Konsortium Air Selangor Sdn Bhd</i>
LUAS	<i>Lembaga Urus Air Selangor</i>
MESTECC	Ministry of Energy, Science, Technology, Environment and Climate Change
MHA	Malaysian Highway Authority
MNRE	Ministry of National Resources and Environment
MOSTI	Ministry of Science, Technology and Innovation
MDBA	Murray- Darling Basin Authority
NAHRIM	National Hydraulic Research Institute of Malaysia
NFA	National Forestry Act
NFP	National Forestry Policy
NGO	Non-governmental organizations
NIWRP	National Integrated Water Resource Management Plan
NWRP	National Water Resource Policy
OECD	Organisation for Economic Co-operation and Development
PNSB	<i>Puncak Niaga Sdn Bhd</i>
PUB	Public Utility Board
PRF	Permanent Reserved Forests
RBO	River Basin Organization
ROI	Return of Investment
SIWI	Stockholm International Water Institute

SPAN	<i>Suruhanjaya Perkhidmatan Air Negara</i>
SPV	Shared Prosperity Vision
SWMA	Selangor Water Management Authority
UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
UNFCCC	The United Nations Framework Convention on Climate Change
UPEN	State Economic Planning Unit
WB	World Bank
WFD	The EU Water Frame Directive
WHO	World Health Organization

CHAPTER 1

1.1 Introduction

One of Malaysia's well-endowed natural resources is the river; providing water for humans, plants, animals and the whole ecological system since early civilization (Moorthy & Jeyabalan, 2012). Malaysia is blessed with aplenty of rainfalls, with an annual average rainfall of 2,420 mm for Peninsular Malaysia, 2,630 mm for Sabah and 3,830 mm for Sarawak (Huang et al., 2015). This rainfall contributes to providing water supply for the country; distributing it to other water resources including the rivers. Not only does the river provide water for domestic and socio-economic use but it is also a key element for Malaysia's development in various sectors including urbanization, industrial, energy, transportation, food security and agriculture.

Since its independence in 1957, the population Malaysia has continued to grow alongside rapid urbanization, intensive agriculture, diversified socio-economic and transformed infrastructure (Chin & Ng, 2015). With the massive use of land and water, the development process does not escape from its concomitant side effects on both natural resources. One of the major repercussions that warrant crucial attention is the decline of river water quality and environmental degradation. This matter is made worse by pollution that oftentimes is caused by industrial effluents, improper industrial waste management, rubbish dumping from recreational activities, sewage and wastewater, chemical contamination and wet markets, animal husbandry and urban wastewater (Chan et al., 2003).

In ensuring a holistic way to address this issue, a mechanism for managing water resources and controlling pollution in the Selangor River has been put in place which is the Integrated Water Malaysia Resource Management (IWRM). IWRM is an internationally-designed approach to manage water resources and is being adopted by many developed and developing countries. Malaysia is currently implementing the Integrated River Basin Management (IRBM), a subset under the IWRM. IRBM is a

management approach that follows the template of IWRM, with an emphasis on the coordination between water, land and related resources within a river basin or a catchment. The IRBM has been applied in three states which are the states of Selangor, Kedah and Sabah. The remaining fourteen states in Malaysia are still a work in progress.

The Selangor River covers seven river basins and provides water to locals and tributaries along the river, one of them being the Selangor River Basin. Even though the jurisdiction of water from Selangor River falls under the state of Selangor, the overall protection of the river involves at least ten other agencies and organizations¹. The involvement of many authorities mirrors the importance of having a well-coordinated and concerted effort from all relevant stakeholders in managing the Selangor River to protect its well-being.

1.2 Literature Review

1.2.1 Governance

The concept of governance is as old as time. Governance covers the manners in which authorities exercise their power to manage a group of people, society or system. The Governance Institute of Australia implies that “governance encompasses the system by which an organization is controlled and operates, and the mechanisms by which it, and its people, are held to account. Ethics, risk management, compliance and administration are all elements of governance” (The Governance Institute of Australia). Governing mechanism revolves around making important decisions that have repercussions when being implemented or not.

The UN categorized good governance by eight major characteristics which are “participatory, consensus- oriented, accountable, transparent, responsive, effective and

¹ The stakeholders of Selangor River include the Ministry of Environment and Water, Selangor Water Management Authority, Economic Planning Unit, Department of Environment, Malaysian Highway Authority, National Hydraulic Research Institute of Malaysia, Drainage and Irrigation Department, Department of Health, Department of Fisheries, Department of Forestry, Air Selangor Pte. Ltd, the local government, non-governmental organizations, and the public.

efficient, equitable and inclusive and follows the rule of law. It assures that corruption is minimized, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society” (UN, 2000).

One of the key elements to achieving good governance is to create an institutional network where stakeholders with different interests can come together on a common forum to peacefully discuss, formulate policies and put them into action. Easy as it may sound, it is often proved to be a mammoth task in reality.

1.2.2 Water Governance

Water governance is a term used to describe the administrative mechanism to manage water resources including from the political, social and economic aspects. It factors in the water resources equity and efficiency in order to balance its benefit between socio-economic activities and ecosystems (Neef et al., 2009).

“Governing water includes the formulation, establishment and implementation of water policies, legislation and institutions, and clarification of the roles and responsibilities of government, civil society and the private sector in relation water resources and services. The outcomes depend on how the stakeholders act in relation to the rules and roles that have been taken or assigned to them” (Kjellen et al., 2015)

Effective water governance is vital as it increases the likelihood of sustainable development of water resources and services. Mismanagement of water resources could be detrimental to the development of a nation. Access to clean water for some people might be a luxurious given-amenity but to some; is a matter of survival. Ensuring a sufficient clean water supply can break the cycle of poverty, allow children to go to school instead of having to fetch water located miles away from their homes, improve health and well-being, smoothen the daily task of businesses and many more.

The OECD (Rogers et al., 2003) enlisted 12 principles on water governance as a guideline for governments to design and put in action. These principles are meant for effective, efficient and inclusive water policies. The principles emphasize the overall dimensions of water-resources management. It urges to distinguish the roles and responsibilities of each player and take charge at every level of administration. There also needs to be a policy coherence to avoid conflicts and encourage fostering the same interest within cross-sectoral organizations; water and land.

Realizing the complexity of water challenges; the principle also urges stakeholders to increase their capacity building in ensuring their competencies are on par with what is expected out of organizations. Attentions are also required in providing timely and accurate information as it is vital to produce useful data for policy-makers. The principles call for governments to invest more and allocate sufficient funding for the betterment of water management.

Throughout this study, one will notice that the terms water governance and water management are used interchangeably; indicating the essentially- identical mechanism that both terms refer to.

1.2.3 Challenges in Water Management

Managing natural resources i.e., water and land have always been a daunting task for governments especially for the developing and the least developed countries (Sukereman, 2014). Faced with internal and external factors such as population growth, economic demand, climate change and public perception; it is incumbent upon the water managers to constantly make tough decisions on water allocation while bearing the responsibility to safeguard its supply and well-being. These managers; either from the government and/or private sectors, had realized that a holistic approach to water management is necessary to achieve these goals.

For many years, water scarcity in households was solely blamed on river pollution and the incompetency of the water concessionaires to provide clean water to

users. Society lacks awareness on how water abuse by households could also contribute to modifying the hydromorphology, quantity and quality of the water. Other factors of demographic changes, economic growth, climate change and growing population also impact water resources in many ways. The demand for consistent and constant monitoring of water resources is therefore obvious.

Other than that, urbanizations and the growing number of towns and cities along riverbanks and lakeshores indirectly force the alteration of water flows. Overused of fertilizers and pesticides from agriculture activities pollute the water and risk deterioration of biodiversity that affects the livelihood of surrounding communities. In 2019, WHO estimated 485,000 death-yearly caused by contaminated drinking water. Inadequate management of urban, industrial and agricultural wastewater means the drinking water of hundreds of millions of people is dangerously contaminated or chemically polluted.

There are also river basins that are shared between states due to their strategic topography. The interconnectedness exhibits an obligation for shared responsibility to manage the river and this presents particular challenges to the managers. Despite the growing opportunity for state cooperation, it has also increased the potential for conflicts between management. Mismanagement of water resources can therefore escalate to a longer-lasting negative effect and the impact will be on all things living.

1.2.4 Water Resource Management in Other Countries

Robust water resource management is the key agenda for almost all countries' national planning. Each nation has taken its own dynamic and pragmatic approach to water governance to ensure that it befits and benefit the economic and social need. The threat of climate change has resulted in more frequent and intense weather and led to droughts, major storms and floods. This has forced nations to relook at and strengthen their current water resource management.

IWRM are applied in majority of the Asian country (UN, 2018). However, the template for its implementation differs from one to another. China, India, Thailand and Vietnam restructured their water-related government agencies in order to facilitate the implementation of IWRM. The portfolio of the water sector however, is made a separate secretariat from the ministry for effective coordination. In countries like India and Bangladesh, a specifically dedicated ministry is established with the integration of all matters related to water (IGES, 2000). In Indonesia, river basins fall under the responsibility of the provincial governments, national government and public corporations based on their topography. RBOs are set up to manage water resources with IWRM as the guideline.

Meanwhile, the EU Water Frame Directive (WFD) has been adopted by some of the European countries since 2000. It is a policy manifestation of a combined approach between tackling the problem from the water source (quantity) and also from the receiving end in the form of quality objectives. As for Australia, water resources are managed collaboratively between the government and other related entities, supported by a water act and other legislation. Australia Water Act 2007 established the Murray-Darling Basin Authority (MDBA) intending to prepare the necessary planning for sustainable water management across the whole country.

1.2.5 Water Sector Transformation in Malaysia

According to the World Bank (2021), Malaysia has a promising potential to be a high-income nation between 2024 to 2028. It had been a long and rocky road for Malaysia which started as an agrarian nation and later on developed into an industrial and manufacturing country. Having gone through more than half a century of development models and public sector reforms, Malaysia has continued to acquire different sets of policies to improve the quality, inclusiveness and sustainability of economic growth in the future. One of the keys for managing development in Malaysia is the importance of good governance and this has been reflected in each national planning of five-year Malaysia Plans; which is on its 12th edition (2021-2025). Strategizing for Malaysia's

national development planning has seen Malaysia embarking on a journey to explore additional dynamic sectors for economic benefit, and has identified water to be one with high potential.

It was paramount that the stakeholders take note of the cost-benefit in developing the water sector. According to a study in China, in 1992 the industrial income lost due to water pollution amounted to USD1.7 billion (SIWI, 2005). The United Nations Environment Programme (2005) stressed that the additional water required to eliminate hunger and undernourishment of the world's population by 2025, is equivalent to all the water withdrawn and used today for agricultural, industrial and domestic purposes. The correlation between access to clean water, sanitation service, good water management and human productivity was obvious. This virtue prevails more in the least developed countries for example in the sub-Saharan Africa countries where water is crucial particularly in agriculture, mining and manufacturing sectors (Manase, 2009). Improving water supply and sanitation in tandem with good water governance can boost countries' economic growth and do wonders in eradicating poverty.

With the various stakes at the helm, the government must be willing to invest in making sure that the water sector is being managed properly. Its sustenance, maintenance needs to be prioritized to avoid water scarcity and risking its quality. The increased demand from multiple sectors for economic development and other social activities has compelled water managers to relook at revamping how the management of water resources is done in the country.

1.2.6 Integrated Water Resource Management and Integrated River Basin Management

The idea of an integrated approach to managing water and land resources is not a new concept and had been long-mooted by experts. However, it was not until the first Global Water Conference in 1977 that nations decide to materialize an put in on papers (Abdullah et al., 2019). After years of negotiation and discussion, the concept was finally

institutionalized in 1992 in Rio by the Global Water Partnership (GWP) and was called the Integrated Water Management Resources (IWRM). IWRM has been advocated under the United Nations Sustainable Development Goals 2030 under SDG 6 to “ensure availability and sustainable management of water and sanitation for all”. IWRM is a holistic approach to water governance that has been adopted by many countries. In 2020, 170 UN member states took part in reporting and monitoring of IWRM in respective countries which demonstrated that almost the whole world is committed to implementing IWRM.

IWRM manifests the crucial relations between land and water by putting a focus on good governance that enforces six essential pillars of policy, institutions, participation, information, technology and finance (Abdullah et al., 2019). IWRM strives to achieve a balance between “Water as a Resource” and “Water for livelihoods”. IWRM was formulated to be an ongoing process in stages and is customized to fit the respective development management of adopted countries. An ideal implementation of IWRM implies a framework that “provides the enabling environment with effective institutional arrangement supported by necessary management instruments” and budget allocation to invest in water infrastructure (Kamarudin et al., n.d.). IWRM proposes three stages as follows;

Stage 1: Identifying Challenges

The crux of this stage is to identify the core issues that need to be addressed in managing water resources. During this stage, all stakeholders are to come together and play respective roles to understand the status of water resources management in the country. This may include the federal government, local authorities, private sectors, academicians, NGOs, public, media and all relevant actors. Understanding the concept of IWRM is crucial at this point.

Stage 2: Developing Action Plans

All stakeholders hold the responsibility to define areas of opportunity when it comes to water resources management. The identified opportunities will highlight possible country-led investment projects to potentially prosper economic growth or social development. The government can amplify this effort by incorporating this action plan into the national agenda or other forms of development management. As there are various departments and agencies involved in the implementation phase, IWRM suggested that this plan be brokered by all stakeholders during the decision-making process, with accountability and apprehension on each responsibility and role.

Stage 3: Implementing Solutions

Once there is a blueprint, the action plan can be carried out with standard monitoring and evaluation system to ensure efficiency and effectiveness. Pro-active programmes, excellent coordination and deep commitment are important while innovation, creativity and technology may come in handy to smoothen this stage.

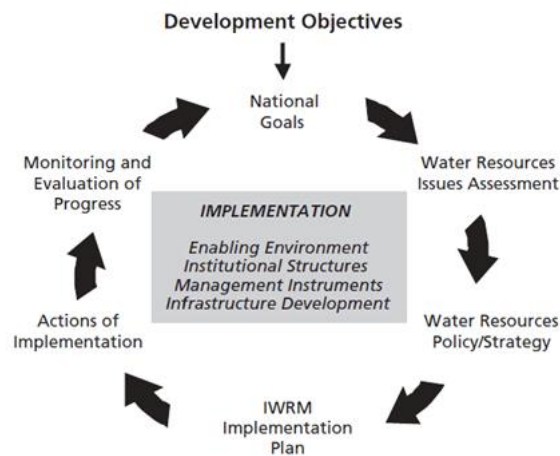


Figure 1: Planning and Implementation of IWRM (Source: ASM, 2017)

IRBM is one of the key areas under the overarching concept of IWRM. As defined by the GWP, IRBM provides a framework as a guideline to protect, manage and prosper natural resources (land and water) within a given basin. In order to do this, it is instrumental that each stakeholder plays their part to ensure that the result will benefit

all. The IRBM emphasizes four core areas of integrated policy implementation which are:

Policy 1: Ensure sufficient water

Policy 2: Ensure clean water

Policy 3: Protect against flood

Policy 4: Conserve the fireflies

With these policies in place, programs and action plans were implemented by various stakeholders who are involved in water resource management. The plan acts as the blueprint of the organization as a guide for all involved water managers.

1.2.7 Malaysia and Integrated Water Resources Malaysia (IWRM)

Malaysia was not to be left behind and had committed to implementing the Integrated Water Resource Management (IWRM) since late 1990s. However, only in 2012 did the IWRM be made official with the launching of the National Water Resource Policy (NWRP). Malaysia was committed to ensuring adequate and safe water supply in support of Vision 2020, a national agenda mooted in the early 1990s to develop Malaysia into a high-income nation by the year 2020 (Selangor DID, 2012). IRBM has been used as a basis to manage the Selangor River and it was made official during the 8th Malaysia Plan (2001-2005) and the Third Outline Perspective Plan (2001-2010). The chronological roadmap of water resource management in Malaysia is shown in Figure 2.



Figure 2: Roadmap of Status of IWRM Implementation in Malaysia (Source: ASM, 2017)

Albeit the official commitment to implement the IRBM in Selangor, the implementation has been slow-progressing. In 2018, UNEP produced a report on progress on IWRM implementation globally. The result has shown that more than 80 percent of countries are at the stage where solid foundations have begun. However, considering the adoption of IWRM happened 30 years ago, there is a need for the progress to be hastened. In the same report, Malaysia has scored “medium-low” overall; where “elements of IWRM are generally institutionalized, and implementation is underway”. The finding from this report validated the state that the water resource management Malaysia is in. The need to address this issue requires further examination of the underlying problem before suggestions for solutions can be taken into consideration. The report is shown in Table 1 (Integrated Water Resource Management Implementation Score for Southeast Asian Countries except Brunei and Laos).

Country	Final IWRM Score	Section 1	Section 2	Section 3	Section 4
		Average	Average	Average	Average
		Enabling Environment	Institution and Participation	Management Instrument	Financing
Singapore	100	100	100	100	100
Philippines	51	64	53	52	37
Indonesia	48	52	53	52	36
Cambodia	46	54	46	50	32
Malaysia	43	46	47	47	32
Vietnam	38	47	35	36	34
Myanmar	27	17	21	27	45

Table 1: IWRM Implementation Score for Southeast Asian Countries except Brunei and Laos (UNEP, 2018)

A study by Saimy & Yusof (2013) has shown that Malaysia needs to address the issue of fragmented administration, unclear legislation and lack of proper guidelines in water management. More involvement of relevant stakeholders is also needed. A separate study pointed out that the inability of IWRM to properly be implemented is due to the conflict of power segregation between the federal and the states on water matters (Khalid et al., 2012).

IWRM aims for well-coordinated management of water resources whilst balancing it with land use in a holistic manner. However, in Malaysia, there is a lack of useful indicators to assess the progress of IWRM. This missing tool hampers proper monitoring of IWRM implementation and poses as a challenge for the acceleration of progress (Sukereman & Suratman, 2014). Chan et al., (2003) are of the view that the responsibility to protect and rehabilitate rivers should not be shouldered by the government alone. Politicians, private sectors, local communities and NGOs should play bigger roles and be allowed to take part in protecting the rivers. The study however suggested that the involvement of these stakeholders is needed in river cleaning-related

programmes and believe that this initiative would lead to effective and sustainable water resources management.

There is also a possible lack of knowledge and misinformation on the characteristic of the rivers; enough to make IWRM works (Weng & Mokhtar, 2007). Unfortunately, when this is the case amongst the stakeholders who actually make decisions regarding the well-being of the rivers, it eventually leads to the mismanagement and ill-fated condition of the rivers.

The Shared Prosperity Vision 2030 (SPV 2030) was launched in 2019 by former Prime Minister Tun Dr. Mahathir Mohamed. It is a “commitment to make Malaysia a nation that achieves sustainable growth along with fair and equitable distribution, across income groups, ethnicities, regions and supply chains. The commitment is aimed at strengthening political stability, enhancing the nation's prosperity and ensuring that the rakyat (*people*) is united whilst celebrating ethnic and cultural diversity as the foundation of the nation-state”.

Part of the commitment as outlined in SPV 2030 document is the water sector; where the government aims to prioritize the water sector as a potential economic sector as compared to an enabler like how it had been. The water sector will be transformed to contribute significantly to the national growth economically, socially and environmentally. It aims to utilize the water sector to create more job opportunities whilst maximizing innovative technology sectors. It will also ensure fair and equitable treatment to all people regardless of income and region. The government targets to improve the living standard of the people by providing a clean and sufficient clean water supply. These plans are also reflected in the 12th Malaysia Plan where the Water Sector Transformation 2040 will focus on target areas and empower the people as the driver.

1.3 Problem Statement

In the year 2020, at least seven major water disruptions were reported in Selangor; a state in Malaysia (Choong, 2020). Water cut incidents that happened were

sometimes abrupt, while some were notified to residents in advance. The longest water cut that the residents had to endure was in September 2020, where it lasted for six days. Water pollution is usually detected when there is a foul odour in the water supplied to houses. Malaysia's Water Association had reported that 49.5% of all water supply issues in Malaysia were reported in Selangor in 2016 and increased to 62.4% in 2017 (Badd, 2020). It was a horrid ordeal for the 5 million residents that were affected by the water cut as they had to endure days without water (Kanyakumari, 2020). Upon investigation, the authorities have found that the majority of occurrences emanated from the contamination along the Selangor River; mainly from industrial effluents (Bunyan, 2020). This is just a pinch of the damage that derives from river pollution.

Not only shortages of water supply could create a nuisance, but excessive water supply is equally problematic. As Malaysia lies in the equatorial zone, its climate is heavily affected by the annual monsoon that occurs from November until March. The monsoon often brings heavy rains that cause extensive flooding on the east coast of Malaysia. Due to the frequency of flooding, management of water resources is vital to mitigate the flood as it can potentially damage home and harm lives.

Another cause of concern for mismanagement of water resources is the threat of climate change. The United Nations Framework Convention on Climate Change (UNFCCC) defined climate change as the effect of human activities on the composition of the global atmosphere over time. It refers to any long-term significant alteration to the temperature of a region in particular. Climate change has been a global issue attributed to the ill-treatment of the environment either directly or indirectly. This includes industrializing activities, power generation, cutting down of forest, open-burning, using transportation that is not environment- friendly and many more.

The consequences of climate change are often detrimental to human beings and the environment. For example, gas emissions trapped in the atmosphere will create a greenhouse effect and causing the temperature to rise (EPA). In Malaysia, climate

change impact has seen the annual rainfall increasing, increase in sea rise, prolonged drought season and flash flood in urban areas (Abdul Halim, 2009).

The Malaysia Constitution states that water falls under the jurisdiction of the respective state. However, matters pertaining to development, utilization and conflicts in management involve both the federal and state governments. On top of that, other stakeholders hold responsibility in managing rivers as they too have their interests and concerns. The intricate web of players not only complicates the management of rivers but is also fragmented and sectoral.

There is a need to affix roles and functions of each stakeholder, especially when a crisis arises. Overlapping roles is one of the causes of miscommunication in managing rivers in Malaysia. This problem surfaces when an unexpected crisis with no precedence occurs and does not have a clear guideline on its handling. In many cases when this happens there are either multiple agencies working in silos to address the issue or there are none doing anything at all. The confusion is exacerbated when agencies do not talk to each other (Elfithri et al., n.d.).

1.4 Research Objective

This research is designed to better understand the existing approach to manage the Selangor River Basin and to identify the institutional learning of water governance.

1.5 Research Questions

The research questions of this study are as follows:

- 1) Is the current mechanism of Selangor River Basin management institutionally effective in delivering water supply and services?
- 2) What are the institutional challenges in managing the Selangor River Basin?

1.6 Scope and Limitations

This study attempted to fulfil its objective by dedicating a case study on Selangor River Basin management. The scope of the study is based on the existing mechanism in the Selangor River Basin, which is the implementation of IWRM and IRBM. Throughout this paper, the term IWRM and IRBM will be used interchangeably. Recognizing that it is inevitable for the management to include various aspects including technical matters, this study is committed to emphasizing only the administration and governance-pertaining substance. The study will also be guided by the collaborative governance model.

The unprecedented situation of a pandemic that broke out in 2020 however, had postured a distance constraint during the convening of this study. There were limited movements that hamstrung the process from conducting face-to-face interviews with all the key informants who were located in Malaysia. The physical absence might or might not present as a hindrance from being able to gauge honest feedback from key informants. As a result, the written feedback received from key informants via emails appeared stoic and textbook-like. Responses from individuals from the same government body also appear to resemble the same template; with possible cause of bureaucracy or coming from the same source which is from the corporate division. The 'guarded' façade is a common defence mechanism for the Malaysian government.

The private sectors are one of the key stakeholders in managing the Selangor River and their input is considered vital in the study. Unfortunately, the water concessionaires vehemently declined to participate in the study when attempts to make contact were made; perhaps due to the sensitivity of the issue on top of the privacy and confidentiality policy of the company. Other targeted key informants such as the academicians, despite being cooperative in the beginning, did not submit replies for the questionnaires sent.

1.7 Research Methodology

This study uses a qualitative research approach; dissecting and exploring inputs obtained from both primary and secondary data. To better understand the issue and possible reasoning behind it, first-hand data are gathered from conducting individual interviews on key stakeholders from selected and relevant agencies both on the technical and professional levels. Since this study scrutinized water governance, senior executives- levels of policy-making were the targeted interviewee. The key informants interviewed are of different backgrounds, positions and expertise. To ensure neutrality on inputs, both management and working-level representatives were chosen from a specific ministry that oversees matters pertaining to water. This study also reached out to non-state actors like think tanks, the media and civil society groups to obtain their views on the matter. Attempts made to interview every possible stakeholder were futile as there was hesitation from the private sectors, the local government and municipality to participate in the questionnaire despite the assurance that the key informants will remain anonymous in the research. The researcher also didn't receive a positive response from the relevant international organization.

The questionnaire consists of questions that are both open and close-ended in nature; ranging from the general "what", "how" and "why", to questions that are specific and restricted. Two different sets of questions were created tailored to targeted key informants based on two categories; officials and non-officials. Even though the questions between the two are framed differently, the intended inquiries remain the same. Before the final questionnaires were distributed individually to each key informant, pilot questions were emailed as a trial for the feasibility of the research questions. Upon validation of the research question received from the trial recipient, questionnaires were then sent to key informants via emails and were followed up with multiple reminders before receiving feedback. Phone conversations were made when there were needs for further clarification or additional information on specific issues.

Online interviews were also conducted using Zoom, an online- video-teleconferencing application.

As for the secondary data, relevant arguments and observations have been drawn from various journal articles, reports, books, official websites and related documents. Literature reviews were derived from journal articles while reports from relevant websites and reports provided necessary data and statistics.

1.8 Significance of the Study

Malaysia does not escape from the dark side of globalization; climate change that threatens access to clean drinking water, drought, flood and declination of the ecosystem. Human activities have also exacerbated the quality of freshwater resources with pervasive pollution, exploitation of the environment and overuse of lands. Ensuring effective sustainable water management is important to all countries; regardless if its under-developed, developing or developed.

By addressing the challenges in water management, relevant stakeholders can hopefully make better decisions, bring more people to work together to protect the freshwater ecosystem and prolong the life of the future generation. Improved water governance could also means poverty reduction, protected mother nature, strengthened food security, a balanced eco-system and improved health of the people. By acknowledging that there is a cause of concern in water management, this research is also a testament that there are solutions to opt for.

1.9 Chapter Outline of the Study

The study is segregated into five chapters. The first chapter outlined the structure of this research; the target that it aims for, the scope and limitations and relevant backgrounds. Literature reviews were conducted to further support the facts and figures. This chapter also explains in detail the institutional framework of Selangor

River management, its source of power and the origins of how Integrated Water Resource Management came about.

The second chapter presents an analytical framework that is used as the basis to measure effective water governance for the chosen case study. An inference is drawn from the collaborative governance model to formulate independent and dependant variables for the study.

Chapter three offers an insight into the case study; a profile of the Selangor River, the authorities who are responsible for it, why managing rivers is an important element of national development and the challenges that come with it. This chapter will also go through the journey of water sector transformation in Malaysia.

Chapter four highlights data that are obtained from key informants. Quotes and verbatim are presented for empirical data.

Chapter five elaborates in detail the key findings of this research, as a result of analyzing the qualitative data. Several observations are presented based on the different information, data, arguments and facts examined through this study.

Chapter six attempts to provide answers to the research questions and relate the findings in line with the theoretical framework used. A discussion on the key finding will precede a summary to conclude the study. This chapter will also give some ideas of policy options for the consideration of policy-makers in Selangor River Basin management.

CHAPTER 2

2.1 Analytical Framework

A key component to the strategic management of inter-organizational relationships relates to the choice of governance mechanisms (Koehrich et al., 2020). Organizational governance according to the international standard on social responsibility (ISO 26000), is a structure where organizations collaborate to deliver a common objective, taking into account relevant stakeholders' interests.

There are a number of theories that are relevant to hypothesize the inter-organizational relations (IOR) in governing. Even though the fundamentals remain the same, IOR continues to evolve over the decade with development and modernization (Brosig, 2020). One of the arguments on inter-organizational relations is that to some degree the intricate relations between government, agencies and private sectors are largely dependent on its conducive environment. Other than sheer complexity, one of the issues arising from inter-organizational relations come from "specialization of functions, allocation of authority and formalization of rules" (Evan, 2017). However, to evaluate how effective these instruments are in managing the Selangor River in terms of pollution control, this research has chosen to refer to the Collaborative Governance model.

Collaborative Governance Model

The Collaborative Governance model by Ansell & Gash (2008) deduced that the mechanism of public management is well-performed when there is a consensus in the policy decision-making process and the implementation. The 'decision-making process is not to be mistaken for 'making- absolute decision'. In decision-making processes, respective groups are involved based on their expertise in contributing to making decisions. The interplay amongst all key stakeholders in public service delivery intensifies with "growth of knowledge and institutional capacity". The foundation of

working together amongst stakeholders lies in the genuine participation of each actor, indiscriminate to its status.

In this case, it is vital to include those considered troublesome and, in many instances, this refers to the non-state actors such the NGOs, private sectors, citizens, the indigenous, vulnerable groups, or the media. The collaborative governance model stressed the extent of partaking for stakeholders in each process of governance. It implies that partial inclusiveness of stakeholders where non-state actors are roped-in only as consultants and not part of the round-table during the decision-making process could lead to incompetence in governance. Different stakeholders have their own unique interest in public management hence representation in a common platform will increase the opportunity for collaboration and engagement.

Further enlisted by Ansell and Gash (2008) are six important principles as the key ingredients for successful collaborative governance:

- 1) a common forum is established by public agencies;
- 2) non-state stakeholders are involved in the forum;
- 3) all stakeholders are involved directly in decision-making;
- 4) the forum is formally organized and meets collectively;
- 5) decisions are made on consensus-based; and
- 6) the focus of the forum is on public management

Collaborative Governance in managing the Selangor River Basin

As this research focuses on the institutional framework of Selangor River Basin management, it adopts the institutional design as suggested by the collaborative governance model by Ansell and Gash (2008). The institutional design put forward four

factors which are participation, ground rules, forum exclusiveness and transparency. On this basis, these will be the independent variables that will be examined in this research.

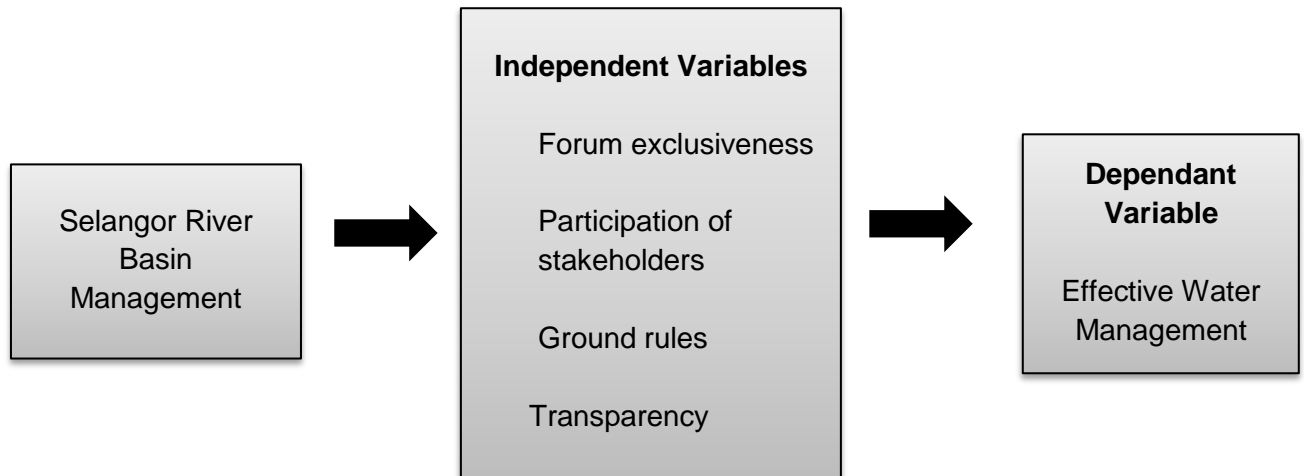


Figure 3: Analytical Framework for Selangor River Basin Management

With all these independent variables in place, this research investigated how each of the variables affected the dependent variable which is the 'effectiveness'; in this case referring to the water governance of the Selangor River Basin. The breakdown of the independent variables denotes the following definition as follows:

Independent Variables

1) Participation of Stakeholders

Stakeholder theory by Freeman (1984) defines the relationships between businesses, clients, workers, communities, management and others who have an interest in a particular issue. This interest represents a common value to all stakeholders- to which this theory emphasizes. Because all human activities have an impact on the environment, environmental management stakeholders comprise a diverse group of people ranging from policymakers, private sectors, civil servants, NGOs, academicians, scientists, landowners, environmental interest groups and many more.

Over the years, there have been new formal and informal organizations established either by the government or other beneficial parties in order to assist with the management. Because of this, stakeholders may expand or lessen with interest and time. It is however easy to unintentionally leave out at least one crucial player because the interdependency hangs between water and land resources. Underlying the two main sectors are highlights on the hydrological, social, economic and ecological aspects of it. Identifying stakeholders in a public management system may be tricky, although not impossible. As the collaborative governance model stressed, “broad participation is not simply tolerated but must be actively sought”.

Participation of the people in institutions and systems which govern their lives is a basic human right and also essential for the realignment of political power in favor of disadvantaged groups and for social and economic development. It is a channel for people to “ensure the effective influence on the decision- making process at all levels of social activity and social institutions...” (Geneletti, 1975).

2) Forum exclusiveness

Forum exclusiveness, according to the collaborative governance model, is utilizing a common platform as the main guideline in public management. Not only does the forum need to be a platform that encourages the active participation of private and public sectors, but it also has to offer exclusivity as the sole focal point for the collaboration.

3) Clear ground rules

For effective collaboration, the ground rules need to be formalized and clear so that everyone can understand the overall objectives of the cause. Stakeholders are also responsible to be aware of respective role and function. This would lay out the foundation to build trust and cooperation for a greater chance of success in public management. It also characterizes the integrated means to achieve coordination among all the stakeholders.

Ground rules are defined as guidelines that are created with full awareness to help individual players in a team to decide how to act to produce an effective outcome (Gupta, 2017). These guidelines are akin to the manual of a game. They establish a common misunderstanding to build respect, communication and cooperation amongst all players. The ground rules need to be clear and customized according to the need of public management and adopted by all stakeholders.

4) Transparency

In the simplest sense, transparency in public management promotes being open about collaboration agreements and processes to encourage stakeholders' participation and again to build trust. Water governance in this relation is characterized by transparent, inclusive and accountable decisions. This is vital in pushing the stakeholder's level of commitment to the collaboration. They need to be assured that there is no hidden agenda or conditions, and that the rules set are fair and reasonable. By being transparent, water managers would be able to re-align adversarial or conflicting interests and work around them.

Dependant Variable: Effectiveness of Integrated Water Resource Management

For the purpose of this study, the dependant variable which is the effectiveness is measured based on the UNEP Progress Report on Integrated Water Resources Management Global Indicator 6.5.1 Updates and Acceleration Needs. IWRM implementation is measured on a scale of zero to 100 in increments of 10, based on the degree of implementation using 33 questions in a self-assessed country questionnaire. The questionnaires are returned on a voluntary basis. The color-coded scoring range and its interpretation are depicted in Table 2. Each evaluation is scored within ranges of estimate tens or twenties, and each score is coloured differently with a general interpretation for the scores.

	Score Range	General Interpretation for overall IWRM Score	Baseline
Very High	91-100	Vast majority of IWRM elements are fully implemented, with objectives consistently achieved, and plans and programmes periodically assessed and revised	Countries that have fully implemented IWRM, with objectives consistently achieved, plans and programmes periodically assessed and revised
High	71-90	IWRM objectives of plans and programmes are generically met, and geographic coverage and stakeholder engagement is generally good	Countries that are generally achieving policy objectives for IWRM. Geographic coverage and stakeholder involvement generally good
Medium- high	51-70	Capacity to implement elements of IWRM is generally adequate, and elements are generally being implemented under long-term programmes	Implementing most elements of IWRM in long-term programmes
Medium- low	31-50	Elements of IWRM are generally institutionalized, and implementation is underway	Have institutionalized most elements of IWRM. Implementation is underway, but uptake of arrangements is not widespread
Low	11-30	Implementation of elements of IWRM has generally begun, but with limited uptake across the country, and potentially low engagement of stakeholder groups	Have started developing elements of IWRM. Limited uptake across the country and potentially low stakeholder participation
Very low	1-10	Development of elements of IWRM has generally not begun or has stalled	

Table 2: IWRM implementation scoring by the UNEP

Amongst the South East Asian countries, Singapore in the same report has scored the highest score which is 100. Even though the detailing of scoring is not provided in the UNEP report, previous studies on water management in Singapore have found a few success factors. Firstly, Singapore is equipped with a comprehensive planning regime of water management that incorporates land, water and environmental planning taking into account the function of various relevant agencies (Gordon, 2014). The planning outline strategies to tackle both the present and future water challenges

for a long-term development goal. Secondly, Singapore created a national water resource organization which is the Public Utilities Board (PUB) that oversees all matters regarding water resources. The establishment of PUB is vital as it serves as the main focal point to facilitate issues on water resources, with strong supports across agencies.

The third factor of Singapore's successful water resource management is contributed to its unique adaptability to anticipating water crises in the years to come. This was made possible with the advancement of technology and strong financial investment in the water sector. Finally, Singapore managed to implement IWRM in the country by having support from the public with extensive campaigning and educational awareness on water conservation (Jensen & Nair, 2019).

CHAPTER 3

3.1 Introduction: Selangor River

Selangor River is one of the major rivers in the state of Selangor; originating from the northeast region of the Selangor State and traverses for 110km up to the coast of Kuala Selangor. It covers three main basins and 10 sub-basins; contributing 60% of water sources for the residents in Selangor, Putrajaya and Kuala Lumpur. (Kusin et al., 2016). Selangor River is the third largest river basin in Selangor, preceded by Langat River and Bernam River. The State of Selangor is located on the lower west side on the peninsular Malaysia. The Selangor River is situated on the upper part of the state. It runs from Kuala Kubu Bharu in the east and empties into the Straits of Malacca at Kuala Selangor in the west. It does not share borders with other countries.

A river basin refers to the topography of which all the rainwater that falls within it. Other water resources for Selangor include groundwaters and lakes and ponds. Selangor River is blessed with natural and ecological systems that house numerous flora and fauna, and is also home to a world-renowned firefly colony at one of the districts. Other than contributing to the socio-economic development, it also provides recreational activities for locals. There are currently 6.79 million residents of Selangor who benefit from the water resources from the Selangor River.

Figure 4: Selangor River Basin (Source: SWMA, 2008)

3.2 The Inter-organizational Governance of Selangor River Management

Historically, the administration of Selangor River was centralized and controlled under the authority of the Federal Government. As there are 14 states in Malaysia, the centralized administration complicated coordination between the federal and the states, making it impractical for the central government to foresee all matters related to

water resources management. Fast forwarded to 2005, the Malaysian Parliament decided for a major change and approved an amendment to the Malaysian Constitution whereby; the authority relating to water was transferred to each state government in Malaysia (except Sabah and Sarawak). This amendment gives power to the state governments via the State Economic Planning Unit (UPEN) to declare and regulate water resources, water catchment areas and river basins.

Meanwhile, the Federal government retains its authority over water distribution and the appointment of water operators via licensing. This amendment was monumental for water resources management in Malaysia as all states were given the power to authorize water management in their own domain. Eventually, two more legislation were passed to better manage water which was the *Suruhanjaya Perkhidmatan Air Negara Act* (Act 654) (also known as SPAN Act) and the *Water Services Industry Act* (Act 655) or WSIA². On this background, the National Water Services Commission (SPAN) was established where it stipulates provisions over the protection of consumers' interest and at the same time regulates the economic, technical and social aspects of water in states. This was the beginning of the decentralization of power over water in States in Malaysia (Khalid et al., 2012).

3.2.1 Stakeholders of the Selangor River Basin

The management of Selangor River Basin includes many stakeholders with various interests. They have been either directly or indirectly involved in ensuring the well-being of the Selangor River Basin. The water resource management for the state of Selangor according to SWMA's official website is on Figure 5.

² SPAN Act 654 and SPAN Act 655 basically enable the SPAN to be existed through the SPAN Act and implementation by legislative to enable SPAN executes the responsibility towards monitoring and regulating the water service industry.

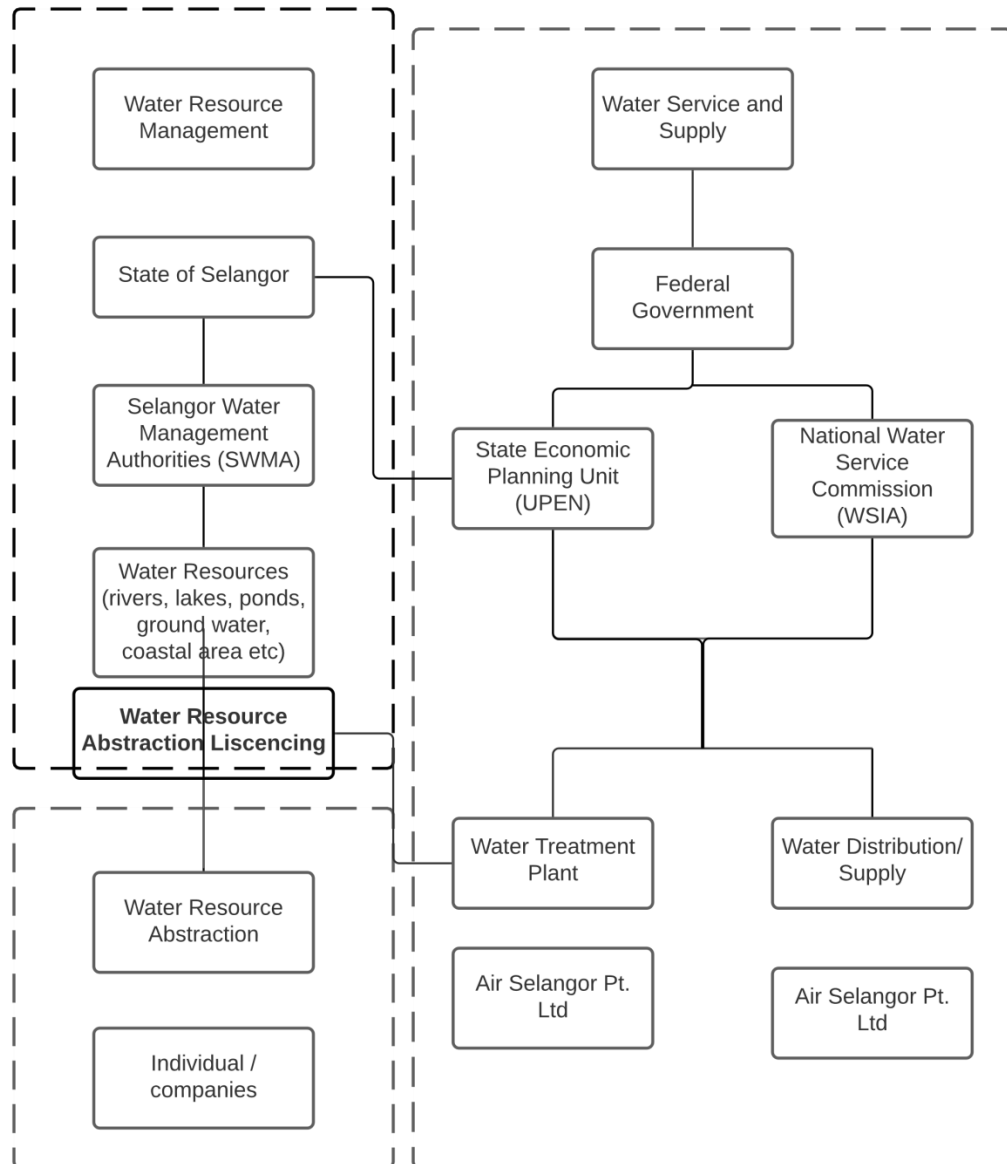


Figure 5: Selangor Water Resource Management (Source: SWMA, 2021)

In addition, the Selangor State Executive Council No 9/2020 on March 11th 2020 has approved and identified the integrated water resource pollution for Selangor Rivers to include SWMA, the DoE, the local government, land and district offices and SPAN. The roles and function of all the enlisted authorities are as such:

The Selangor Water Management Authority (SWMA)

SWMA came into being under the *Lembaga Urus Air Selangor* (LUAS) Enactments 1999 that calls for the establishment of a body to supervise and manage water resources in the Selangor State. It was in response to a request by the Malaysian Cabinet for a study to be conducted on the need to establish a local organization to manage the river and water resources in an integrated manner. In its website, SWMA has explained that Selangor River was to be the pioneer project, using Thames River in the United Kingdom as the model for its implementation. SWMA was then officially launched on 18 September 1999, and officially operated on 1 August 2000. SWMA functions to ensure sustainable water resources by promoting, nurturing and facilitating water resources for public purposes in the Selangor State. It was equipped with the necessary legal means to function, enforce and fully maximize its role effectively.

Central to managing all water resources in Selangor state, SWMA is considered as a river basin organization (RBO) that is organized at the basin level to serve as a forum to link various governance levels. Its function is considered critical as a primary mechanism for critical water management issues. The importance of an RBO is especially apparent in developing nations because of the image that it projected as a coordinator of water resource management (Mukhtarov & Gerlak, 2013). Other than facilitating the integration of water management, the existence of an RBO helps promote good water governance.

SWMA oversees matters pertaining to numerous water resources which include river basins, surface water, ponds, coastal, ex-mining ponds and mining pools. SWMA as the focal point has worked continuously to harmonize the management of water resources in Selangor. Many initiatives have been introduced and implemented. The IRBM for example, is outlined in its five-year Strategic Plan 2017-2021 as a guideline to achieve the targets and deliverables. The plan also encompasses all aspects that focus on strengthening pillars of each water resources element towards sustainable management.

The Department of Environment (DOE)

The DOE monitors and regulates activities related to waste discharges into the environment whilst protecting and preventing any pollution activities into the environment. The DOE is the custodian of the Environmental Quality Act 1974 where it gives power to the DOE on enforcement to river monitoring and its protection. DoE has the mandate to control effluent discharge into the rivers and watercourses to monitor the quality of water and the environment.

Due to its nature of work to promote, conserve and sustain environmental management, the DOE is also responsible to cultivate constructive ideas to the public to appreciate and protect the environment, and also to disseminate relevant information regarding caring for the environment. Other than regular and periodical monitoring, the DOE will also act upon receiving official complaints. The DOE has the authority to issue compound and fines to individuals and companies who are found to have committed offenses against protecting the environment based on the Environmental Quality Act 1974.

The Ministry of Environment and Water

In 2020 following a revamp of ministries, the Ministry of Environment and Water (KASA) was created. It was formerly known as the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC). Previously, MESTECC was established in 2018 as a result from merging three ministries which were the Ministry of Science, Technology and Innovation (MOSTI), the Ministry of Energy, Green Technology and Water and the Ministry of Natural Resources and Environment (NRE). After a political turmoil that happened in Malaysia in the same year, components of MESTECC were segregated into different ministries.

Albeit the multiple rebranding of the ministries, the role and function of the ministry related to water resources have remained the same. Since the Federal Constitution has given the state governments exclusive rights on water, that leaves

limited authority at the federal level which is the ministry. KASA is responsible to “formulate, manage and enforce policies, legislation and guidelines related to water resources care for the country (DID, 2011). KASA’s portfolio include to oversee the development of the service and supply water under its mandate.

According to the Federal Constitution Clause 11 in Article 74, the Federal’s authority over water is limited to resolving dispute that arise in the cases of shared rivers only and when the States meet deadlock in their negotiation. However, the power to legislate law on matters related to water is granted to both the Federal and State albeit at different degree of controls (Khalid et al., 2012).

Drainage and Irrigation Department (DID)

DID is accountable for providing technical advisory on matters that affect land and water developments including drainage and its works, flood mitigation, collecting hydrological data and conducting studies on matters relating to the above. It focuses on providing engineering and technical services on land and water to optimize its utilization and at the same time ensuring efficient management of water resources.

As for the Selangor River, both DID at the federal level with its headquarter situated in Kuala Lumpur, and at the state level coordinate with each other to oversee the development of the Selangor River. The duties encompass managing water resources and hydrology, river basin management and coastal zone, flood management, creating eco-friendly drainage and other related special projects.

State Economic Planning Unit (UPEN)

UPEN is a sub-unit under the Prime Minister’s Department, the Economic Planning Unit (EPU). Previously known as the Ministry of Economic Affairs, EPU is a federal agency responsible for strategizing and formulating policies for national socio-economic development towards inclusive growth. According to its website, EPU’s portfolio under the water supply management includes constructing new infrastructure,

improving existing systems whilst preserving water resources and finding new ways to increase water supply distribution efficiency. EPU is the agency lead agency for the Water Sector Transformation 2040, as stated in the 12th Malaysia Plan.

Malaysian Highway Authority (MHA)

The MHA was established in 1980 in accordance with Act 231 (Corporation 1980) to “supervise and execute the design, construction, regulation, operation and maintenance of inter-urban highways, to impose and collect tolls, to enter into contracts and to provide for matters connected there-with.” The MHA is responsible to plan, design and manage existing highway and also create more connecting roadways as to improve the infrastructure of Malaysia.

Creating green highways takes into consideration the side-effect of its construction. Along with the threat of global climate change, massive highway construction projects also contribute to the deteriorating condition of environment such as ecosystem disturbance, water pollution and depletion of coastal zone (Nusa et al., 2018).

To address this issue, the MHA has taken the initiative to build green highways towards achieving a balance between infrastructure development while preserving the nature and ecosystem. Green highway, according to the MHA is defined as initiatives to design roads and highways that incorporate advanced technology with clean fuels and environmental-friendly roadways. Building green highways involve making decisions with consultation from relevant agencies from different affected fields and this includes water resource management.

National Hydraulic Research Institute of Malaysia (NAHRIM)

NAHRIM is a national research institute that specializes in water sector such as water resources, climate change, river basins, coastal, oceanography, hydrogeology and water quality. It is also responsible for creating networks regionally and internationally

and participating in research-related forums. NAHRIM was established with the intention to be a national research focal point on the hydro-environment.

Department of Health (DOH)

The Selangor State Health Department provides healthcare facilities and services to the residents of Selangor. It is responsible to improve the health status and living quality of the communities while encouraging a healthy lifestyle towards productive and meaningful living. The quality of water supply and the well-being of water resources determines the health and livelihood of the surrounding communities hence the Selangor State Health Department plays an important role in the management of Selangor River water resource management.

Department of Fisheries (DOF)

According to the Food and Agriculture Organizations of the UN (2019), Malaysia produced fishery products totaling to 1.7 million tonnes in 2017. In addition, Malaysian imports of fish and fishery products were valued at USD 976.6 million and the exports is valued at USD 714.1 million in 2017.

As the fishery sector is one of the major national economic contributors, the government needs to practice sustainable water resource management to protect water resources that source products from the fishery industry. In this regard, the Department of Fisheries Malaysia was established under the Ministry of Agriculture and Industry to oversee the implementation of fisheries policies and also to develop the fishery industry in an efficient, innovative and sustainable way. One of the roles of the Department of Fisheries is to help manage the water resources by making sure that the fishing activities do not interfere with the ecosystem nor jeopardize the quality of water.

Department of Forestry (DOFM)

According to its website, the Forestry Department Peninsular Malaysia, under the Ministry of Energy and Natural Resources is “responsible for the management, planning, protection and development of the Permanent Reserved Forests (PRF) in accordance with the National Forestry Policy (NFP) 1992 and the National Forestry Act

(NFA) 1984". The Forest Department liaises closely with other related agencies when it comes to water resource management.

The Local Governments

The Selangor River Basin is under the monitoring of three local governments based on its topography which are the Kuala Selangor Municipal Council, the Sepang Municipal Council and the Hulu Selangor Municipal Council. Under the Local Government Act 1976, each municipal serves local government services and local administration. Amongst its responsibility is also on planning of the cities and town under its provision and establish strategic planning to reducing river pollution.

Air Selangor Ptd. Ltd

Dubbed as the largest water operator in Malaysia, Air Selangor Ptd Ltd. is a water concessionaire engaged by the Selangor state government in 2019. It holds a legitimate license to abstract, treats and distributes water to consumers in Selangor, Kuala Lumpur and Putrajaya. Air Selangor Ptd Ltd is a merger of five companies who were previously given the mandate to lead and consolidate the water industry which are the Puncak Niaga Sdn Bhd (PNSB Water), Syarikat Bekalan Air Selangor Sdn Bhd (Syabas), Konsortium ABASS Sdn Bhd (ABASS), Konsortium Air Selangor Sdn Bhd (KASB) and Syarikat Pengeluar Air Selangor Sdn Bhd. Upon a restructuring exercise in 2008, all the five companies combined for the greater benefit of achieving a more efficient and effective integrated water distribution and supply.

Academy of Sciences Malaysia (ASM)

The ASM was established under the Academy of Sciences Malaysia Act 1994 to pursue excellence in the fields of science, technology and engineering. It serves as a national think-tank institute to conduct studies in the related field, to analyze national problems from a scientific point of view, to foster technology innovation and promote creativity in pragmatic ideas for the socio-economic benefit of national growth. It also

strives to provide evidence-based scientific advice with its panel of experts and scientists.

In 2008, the ASM was tasked to conduct a study on the National Integrated Water Resource Management Plan (NIWRP) where the on-going project have been providing recommendation on strategic planning and the way forward for the water sector in Malaysia. The ASM Water Sector Studies has since continued to contribute inputs to the policy-makers in the government towards sustainable and improved integrated water resource management.

Friends of River Malaysia (FoRM)

On 25th January 2019, the Selangor State Executive Council approved the establishment of the Selangor River Rehabilitation Committee. One of the initiatives under this committee is the introduction of Friends of River Malaysia (FoRM) which is an association consisting of groups of nature lovers. Multiple groups are assigned to each river in Selangor. FoRM aims to increase public awareness in caring for the rivers and to educate people to be more responsible towards river protection. FoRM has been actively conducting community programs to beautify and clean the rivers. FoRM has also collaborated with government agencies, academic institutions, NGOs and research institutes in many projects including efforts to get more people to be on board in protecting the rivers.

The Global Environment Centre (GEC)

Registered as a non-profit organization, the GEC was established in 1998 with the objective to protect and conserve the environment. The GEC operates regionally and internationally to tackle global environmental issues. Projects that are undertaken by the GEC comprise educational programme to the public, river cleaning programme, trees- planting, conservation of peatland and mangroves and many more. The GEC has partnered with the government and other like-minded organizations internationally, to create awareness on environmental care.

Selangor River Pollution

The Environmental Quality Reports by the DOE in 2017 indicated that out of 473 rivers in Malaysia, 46% were analyzed to be clean, 43% were slightly polluted and 11% were categorized as polluted. In comparison with the previous years, there is a trajectory on the percentage of polluted rivers while there the percentage of clean rivers keeps on dropping as shown in Figure 6. Since 98% of total water use in Malaysia is sourced from the rivers and 70% are utilized in the agriculture industry (Huang et al., 2015), this trend of pollution is a source of concern. The bulk of the contamination is derived from urban activities, intensive farming, commercial activities, industrial and manufacturing wastage and residential sewage (Chowdury et al.,2018).

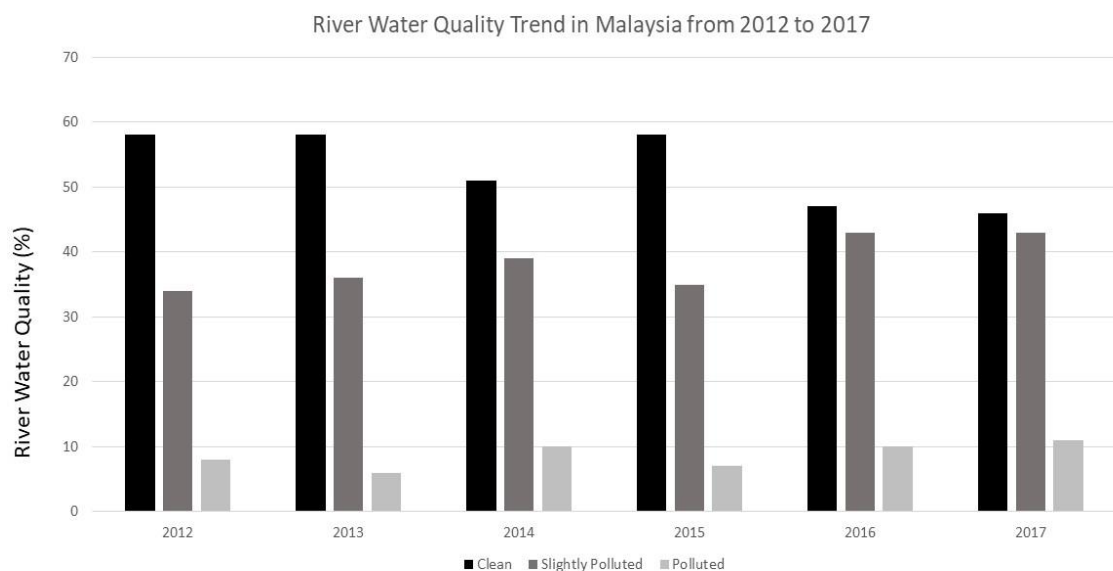


Figure 6: River Quality in Malaysia from 2012 to 2017 (Source: DOE)

River pollution can cause harm to its users in many ways. Health-wise, consumption of poor-quality water can lead to water-borne diseases like typhoid, leptospirosis, salmonella and E. coli (Afroz & Rahman, 2017). Heavy metals found in

water can also cause respiratory problems, skin diseases and other health complications. River pollution is also a source of nuisance to the public as it affects the quality of the water supply. Ad-hoc investigations on the cause of pollution would usually take days. Home residents, factories, restaurants and all water users who had to endure days without water are usually not forgiving.

Economic adverse effects are also prominent when the river water quality is jeopardized. For factories, restaurants, companies or individual businesses that rely on the water supply to generate income, even an hour of water disruption could already mean a big loss in revenue. If consumption of polluted water causes sickness to employees who have to call in sick, this will cause unproductiveness and inefficiency of the company. It will indirectly impact performance and credibility too. As for the government, a polluted river would also cause a financial problem as efforts to treat the water will have to be amplified and this, in turn, will cost more (Afroz et al., 2016).

In response to this problem, two institutional set-ups were established comprising various state agencies. Selangor River Basin Pollution Control Task Force was formed in 2008, and its main function is to regularly monitor and control pollution through reports and investigation.

Selangor River Basin Pollution Control Task Force	
Chairperson	Director of SWMA
Secretariat	SWMA
Committee members	WSIA, UPEN, DoE, government departments, district and land offices, local authorities, concessionaires and other technical agencies

Figure 7: Selangor River Basin Pollution Control Task Force (Source: SWMA, 2012)

The second set-up is the State Water Resources Pollution Emergency Committee of which the team acts as a front-liner for emergency and incident reports on river pollution. This task force is the vehicle for prompt clean-up of rivers in the Selangor State.

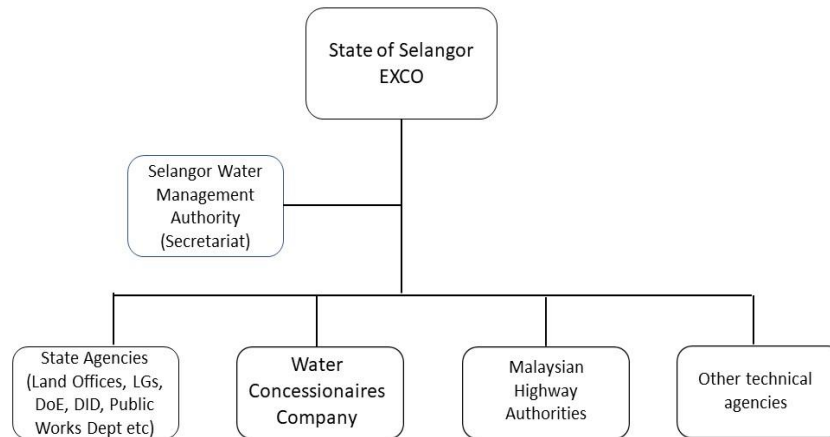


Figure 8: Selangor State Water Source Pollution Emergency Committee (Source: SWMA, 2012)

3.3 The Monitoring Mechanism of Selangor River Basin Management

According to the SWMA (2012) flowchart on the monitoring mechanism of Selangor River Basin management, when there is either an official complaint by the public or private sectors on a particular detection of a source of pollution, an official investigation will commence. Upon receiving a complaint, a team from SWMA will conduct a site visit to investigate the source of pollution. Following the visit, the Selangor River Basin Pollution Control Task Force will convene a meeting to discuss the course of action and produce a formal report on the case.

The formal report will be brought to the attention of the River Basin Committee Meeting, which will then segregate the task to the relevant agencies in an integrated manner. The case will then be reported and discussed in the Selangor State Executive Council Meeting.

Despite years of having built a foundation to manage the Selangor River Basin, isolated issues pertaining to water management still emerge now and then particularly

on pollution. According to the Academy Sciences of Malaysia (2017), the existing water management which comprises both government and private sectors were found to be fragmented and sectoral. Organizations and agencies that hold responsibilities regarding water management were guarding their own turfs and as a result, was affecting their services. Even though there are sturdy political intervention and strong will from water authorities, water management in the country keeps receiving negative criticism and strong repudiation from the public. This has in turn tainted the reputation of relevant agencies. After almost two decades of the IRBM implementation on Selangor River Basin, its current effectiveness is in question with the continued divisive administrative framework, exacerbated by conflicting interests over water resources (Sukereman & Suratman, 2014). Scholars have opined that other factors of river pollution in Malaysia include lack of enforcement, public's lackadaisical participation to preserve it, fragmented institutional framework and weak implementation of action plans (Khalid et al., 2012).

There are plenty researches which had been done previously by scholars, pertinent to the implementation of IWRM in Malaysia. According to the Academy of Sciences Malaysia (2016), Selangor is one of three states that have sufficient provision of legal and institutional framework to incorporate the core principles and methodology of IWRM to manage its water. However, to date its implementation has "yet to gain adequate traction on a national scale" (ASM, 2016). This has partially been blamed on governance-related issues where there is poor coordination at the national level; topped with a lack of inter-ministerial dialogue to strengthen Federal-State cooperation (Sukereman & Suratman, 2014).

The IWRM progress in Selangor River Basin is at a rudimentary stage and to overcome the stumbling block that hinders it from moving, it is crucial to identify the loopholes in Selangor water resource management in tandem with the IWRM implementation. In its report *Transforming the Water Sector: National Integrated Water Resources Management Plan: Strategies and Road Map* published in 2016, the Academy

of Sciences Malaysia laid out recommendations as a way forward where ASM envisioned an integrated, holistic manner in managing water resources in the future. The recommendations are based on the IWRM implementation framework which emphasizes the policy, legislation, regulation and financial elements.

CHAPTER 4

4.1 Empirical data

This research examines four aspects under the pretext of institutional design directed at collaborative governance. It posits participation, forum exclusiveness, clear ground rules and transparency as independent variables which form an analytical framework. Among the written and verbal questionnaires gauged are as follows:

1) Participation

This research examined the extent of stakeholders' involvement in the decision-making process of IWRM. Albeit acknowledging the vital role of non-government stakeholders to protect the environment, their involvement is limited. As to quote a government official, "*it is out of the question*" to even consider roping in representatives from non-government bodies in any decision-making process)". Another key informant who holds a high position in the ministry has mentioned that the NGO is an important support system in managing water resources, but is not included in formal meetings that involve policy-making.

An NGO representative reiterated his opinion that programs organized by the NGOs are indeed meant to support the government. "*It is never our intention to compete with the government when it comes to river protection initiatives. Rather, our involvement is to complement the efforts of the government. But often we are secluded in the policy-making stage on the basis that it is private and confidential*"

2) Clear ground rule

Each stakeholder reiterated their respective role in managing the Selangor River Basin. However, when asked about the IWRM, a government agency has mentioned that "*for a couple of years, the IRBM was a stagnant textbook study where the concept and study remained in the experimental laboratory while the responding agencies remain skeptical on its operation*". Another key informant was of the view that because

the structure of the management is sectoral, the agencies *“most time working in silos without understanding the challenges and the scope of work of other agencies.”*

“Each stakeholder carries out their role based on their respective jurisdiction/act/law that covers certain aspect in water resources/river management. We do occasionally have to deal with unprecedented crises that require attention from all sides”

3) Forum Exclusiveness

Except for the media, all the key informants who participated in this research acknowledged a particular government agency as the focal point for IRBM implementation on the Selangor River Basin.

“the policies, implementation and monitoring of IRBM falls under the purview of the state government through the state water authority.”

“SWMA/LUAS is the one and only agency in Selangor which manage the river and water resources in an integrated manner.”

“ The LUAS Enactment recommends the setting up of a River Basin Organisation for Sg Selangor and that of other river basins within Selangor.”

“Water resources (incl rivers, water bodies) governed and enforced by LUAS through LUAS Enactment 1999 as well as other acts and laws such as AKAS 1974 which enforced by JAS. Development of IRBM plan in Selangor is one of LUAS’s responsibilities based on Section 46(a), LUAS Enactment 1999.”

4) Transparency

“Engagements and outreach programmes are done continuously in various platforms to make sure every policy done at the ministry level is communicated through and understood by all stakeholders.”

“As part of the efforts at advocacy, creating greater awareness, and capacity building on IRBM and related sub-themes, many colloquia, workshops, and seminars have been held.”

5) Additional useful information

“if they (politicians) can’t see the return of investment (ROI), they cannot relate (with) the kind of ROI they can have when they focus on water sector”

“The awareness amongst the community about river protection was lacking; and it is more apparent in the cities and urban where rivers are not physically visible. Out of sight means out of mind”

To recapitulate, the interviews and questionnaire that were given out to key informants have presented with data that are useful to gauge the state of water governance in Selangor River Basin management. It could be seen that some responses polarized between those that come from the government and non-governments. Some of the information however emerges showing unification in response amongst the key informants.

CHAPTER 5

5.1 Key Findings and Discussion

The feedback received from the questionnaires and interviews was gathered, scrutinized and analyzed. Responses that bear similarities or contradictory were drawn in relation to the independent and dependent variables. Upon the data analysis, the following hypotheses were made.

Key finding 1: The process of IRBM is made transparent and accessible to everyone

Throughout this research, it was found that the government at both federal and state levels is active in respective outreach programs. Either through hosting or participating, many platforms are used to create awareness on environmental care including river protection and rehabilitation. These include seminars, webinars, conferences, training programs and symposiums held at local, national and international levels. The constant effort for these programs is not only limited to the conventional method but has also launched via social media platforms; where the reach targets users who are of various ages. These users could potentially impact the larger crowd to better educate the public about IRBM.

The advancement of technology has also made it possible for engagement with stakeholders situated at various locations, near and far. Creative collaborations based on online learning systems have the potential to attract more public to know more about the activities organized by the government and the local community. Such creative innovations are useful to educate the public on the importance of river protection. The government has also taken the opportunity to organize open forums for discussion and roundtables by having active engagement with other stakeholders.

Discussion:

Even though the research and planning of IRBM are done at a higher level, the majority of the stakeholders are on the same page in promoting the holistic approach as advocated by IRBM. The process of IRBM can also be accessed through the responsible ministry's strategic plans and roadmaps. In order to provide an institutional check and balance in its planning, the government needs to engage various sectors to assist in mapping the roadmap such as from academic institutes, think-tanks and consultation companies.

Key Finding 2: There is a lack of conceptualization and internalization of IWRM concept among stakeholders

Through the interviews done within the scope of this research, almost all official bodies acknowledged, and commended the role of SWMA in facilitating the programs and activities under the ambit of IRBM. Selangor is at advantage as compared to other rivers in other states, which have yet to institutionalize and implement the IRBM. This is because the establishment of the Selangor Water Management Authority as the river basin authority helps to smoothen the coordination of managing the river basin with legitimate support and law enforcement. SWMA is a dedicated water management authority that monitors and enforces control over the management of water resources in the state of Selangor.

In Malaysia, there are only several states which have established RBOs which are Selangor, Sabah and Kedah. The RBOs assisted respective states with the necessary legal and institutional framework to implement IRBM. The decentralization of authority provides a more practical communication and arrangement for other stakeholders who are mostly based locally. One of the key informants noted how SWMA has moved forward incrementally since its formation in 1999, by being self-sustainable and at its own liberty.

Nonetheless, further investigation into the situation has revealed that despite the validation from other stakeholders on SWMA, the same cannot be said about IRBM. The IRBM appears to remain theoretical to a certain extent. Principal studies and research on IRBM were also done by headquarters without including the state agencies. By the time the instructions were passed down to executing agencies, the understanding of the concept has diluted and this led to a lack of internalization for others. Because there are fine nuances between the role of each agency, they occasionally overlap and are poorly executed.

This setback may be contributed to the volatile relationship between the federal and the state. The approach of IRBM was adopted via a commitment by the federal government internationally at in the multilateral fora, and subsequently 'handed over to the state for further execution. With this commitment comes the obligation for annual reporting to the relevant international organization that regularly monitors the progress. This obligation overcomes the appreciation of the value of implementing IWM among water-related sectors and across government ministries, including those responsible for national planning and financing. As a result, a sense of ownership for the IRBM concept was missing amongst stakeholders which impact its progress.

Key Finding 3: The participation by stakeholders is selective in the decision-making process of the Selangor River Basin

The empirical data has suggested that the hierarchical system remains dominant in the Malaysian public administration. While there have been immense efforts and initiatives to include more non-actors in the Selangor River management, the scope is limited. The government tends to be guarded and wary about involving non-state actors in the decision-making process of IRBM. The perception is that non-state actors are the support system rather than having equal status and responsibility. Due to this mentality, the roles and functions of non-state stakeholders are restricted with full caution. Often the assistance of the non-state actors is sought as mere consultants as opposed to fellow decision-makers. This selective inclusion of the stakeholders sends a

conflicting message of trust between the government and other non-state key players in managing the Selangor River.

To point out an example; the members of the Integrated Selangor River Basin Monitoring Implementation Committee is are almost always selected amongst government officials. This raised the question of whether the decision-making process is indeed holistic when there is a deliberate exclusion of other stakeholders. A point to ponder is perhaps that other non-state stakeholders are not considered in the decision-making process because of its temporary status and change over time. For example, private sectors which are given contracts as water concessionaires or interested multiple NGOs.

Discussion: Other non-governmental stakeholders ought to be given active and meaningful roles in the decision-making process rather than included only when deemed convenient throughout the whole process. The traditional and conservative top-down approach might need to be relooked at and revised. As water is being used by practically every human being and living, it is about time that everyone takes charge of its management. This does not necessarily mean that every concern of the most vulnerable group should be taken into consideration when making decision, but it is more about giving the freedom of association and expression to all stakeholders. Other non-government stakeholders who have been sidelined need to also be considered in the decision-making process such as the private sectors, academicians and think-tanks.

Despite the cynicism on public involvement in decision-making process of IWRM, it is worthy for the Selangor River management to consider is an option as suggested by the collaborative governance model. Risky as it may be perceived, the benefit of an effective water resource management outweighs the consequences that might have traditionally arisen. The protected bubble in the decision-making process might hinder creativity, openness and transparency.

However, this study acknowledges that the policy option recommended on public participation in decision-making process might not be an option in a traditional bureaucratic country like Malaysia. Even though it is a democratic country, public administration in Malaysia still heavily practices top-down approach and the process of decision-making is limited only to government officials and people in power. Hence the inclusion of other stakeholders remains far-fetched perhaps even for the years to come; albeit not impossible over time. In the Southeast-Asia countries, genuine decentralization in governments saw more participation of the citizens and civil society to create more opportunities and spaces to revitalize democratic structures. While this has proven to empower the locals in balancing the power of authority, it also formalizes participation by having a say in public service delivery. However, public participation is limited to only what is allowed by the central power and as far as possible does not involve the policy-making stage. The intentional exclusion of selective stakeholders in the management uncovered dormant afflictions to producing a more proactive collaborative decision-making.

Key Finding 4: The roles and functions of stakeholders with authorities tend to overlap

Based on the interviews, it was found that some of the main issues with the Selangor River basin call for joint problem resolution because the issues require the actions of more than one department or agency. This is made complicated because the responsibilities for water resource administration are fragmented and sectoral, Undeniably, the job description for agencies and relevant departments are clearly defined in each portfolio. However, confusion arises when there are issues that fall in between the jurisdiction of multiple agencies. Such a quagmire demands intensive coordination but at the same time reveals the possible vulnerability of agencies that tends to guard their turf. As a result, there were incidents where more than one agency responded to an issue that arose causing redundancy and unnecessary financial implication, but there were also other times when a public complaint was not addressed when agencies assumed that it had already been taken care of by another agency.

Even though there are standards of procedures to be followed when initiating an investigation about an incident, responsible agencies sometimes react out of pressure from either the public, the media or politicians.

Discussion:

Especially in managing IRBM where many stakeholders are involved, having clear ground rules not only will avoid conflicts, but may also increase the effectiveness in Selangor River governance. It also serves as a basis for direction in executing the IRBM.

The decentralization of river management is beneficial in the sense that it creates a more efficient administration when there is space for independence and flexibility. The authority and power entrusted to the main agency provide a dynamic flow of work when laying the groundwork for river protection. However, the fragmented and sectoral can sometimes create problems when there is a breakdown in communication or unprecedented task that falls in the gray line of job scopes across organizations.

Key finding 5: Political participation might or might not expedite the progress of IWRM implementation

The empirical data of this study has also shown that there is a lack of political participation in the IWRM process. A key informant from this study is of the view that this because the benefit of a well-managed water sector is not apparent in terms of monetary.

The Integrated Selangor River Basin Monitoring Implementation Committee is spearheaded by the Director of SWMA who is a civil servant. The clear jurisdiction of Selangor River that falls under the state has created a territorial sense by the state agencies, and the federal concur with minimal interference.

Discussion:

Political influence is critical to advocate and promote IWRM in Malaysia. The political engagement in water governance will give the message to the public on the seriousness of governments on the approach. There should be more initiatives to educate and advocate the public on IWRM. Water governance refers to an amalgamation of multi-disciplines; ranging from political, economic, social and administrative context. While other sectors present a cycle of decision-making, discussion, implementation, enforcement and monitoring, political influence carries a constant in the equation to provide pressure to this process. In this regard, political influence would expedite the progress of IWRM implementation, by providing the support in terms of a push for financing and consistency of the work. This can be done through immense effort to advocate stakeholders from all sectors on the importance of IWRM implementation to address environmental concerns. As part of the UN, Malaysia is obliged to fulfill its responsibility towards achieving the SDG 2030, to which IWRM is part of.

Key finding 6: Community participation reinforces the effectiveness of IWRM

According to the key informants, back when IWRM was first initiated in the 1990s the public's awareness and participation in rehabilitation program of the rivers were low. This lackadaisical attitude is contributed to the mindset that the sole responsibility to care for the environment falls on the shoulder of the authority. As for interested and concerned citizens, they would have to start their own initiatives for environmental protection and it is normally minimal such as collecting trash on the sea coastal or river banks. However, all these have changed and the public has started to become more alert on environmental issues mainly due to the more common incidents of water pollution and water cut.

The recognition of NGOs such as the Global Environment Care and Friends of River Malaysia by the government has contributed to the increasing awareness on environment protection. Such empowerment encourages more collaboration between

the government and other stakeholders. This pro-active relation is key to expediting the implementation of IWRM.

Discussion:

Sustainable development and good governance include the active participation of the public in governance. Even though the public is not included in the decision-making process of IWRM, there have been efforts to involve them in educational programs on nature-preserving.

CHAPTER 6

6.1 Conclusion

This study commenced with an objective to explore the mechanism of Selangor River Basin management and identify the institutional learning of inter-organizational governance. In this relation, the foregoing analyses in this study support the relevance, appropriateness and impacts of having an integrated water resource management. Integrated management is a sound approach towards sustainable and good water governance for the Selangor River Basin. A conducive enabling environment will also create a proactive engagement between the public and private sectors. Clear ground rules and transparency in the management will also create a climate of trust between state and non-state actors.

Going back to the research question on the effectiveness of the current institutional mechanism of Selangor River Basin management, the research also suggests that as Selangor River Basin is already subscribing to the Integrated Water Resources Management (IWRM), it is already on an ambitious path to achieving effective water management. The collaborative approach undertaken is inherent with the term 'integration' in IWRM which is required in management that involves multiple stakeholders like the Selangor River Basin. The strength of Selangor River Basin management lies in the check and balance where each relevant government organization is empowered to implement the IWRM.

However, a deep delve into this study has indicated that there are still institutional boundaries that need to be highlighted. The first institutional boundary is the stringent safeguarding measures taken by the government towards the public and the private sectors. As a result, the non-government stakeholders are being marginalized in the decision-making process of IWRM.

It could also be adduced that the application of IWRM system in managing the Selangor River Basin is generally acknowledged, and accepted by the relevant stakeholders. To this effect, there exists a common understanding amongst stakeholders on the main focal point of Selangor River Basin management which is the Selangor Water Management Authority. This recognition is a validation of the importance of exclusivity of a forum to be a referral point in water governance. This finding is consistent with the analytical framework that put forward forum exclusiveness as a mean to achieve effective water governance.

Even though the responsibilities of stakeholders are stated under respective official capacities, the roles and functions sometimes overlapped in reality. There appear to be vague areas that need to be addressed, especially on the issue of water supply. This aspect is important to provide better clear guidelines to water consumers when there is a water disruption. In contradiction, the transparency of the IWRM process seems to be comprehensible. The transparency is made possible with the facilitation of the main organization that oversees the IWRM implementation on Selangor River and support from other agencies to promote and clarify the IWRM processes.

Over the years, Selangor River Basin management has shown incremental yet significant institutional development to improve public service delivery and to preserve water resources. Effective water resource management according to this research cannot be measured using the template that might apply to other countries that have scored highly in the UNEP Progress Indicator of IWRM Implementation. The definition of 'effective' water resource management however needs to be developed to suit local conditions and benefit the nation and society.

To recap, the institutional framework in water governance comprises strategies to ensure greater integration among water-related institutions. These strategies supplement and reinforce institutional structures at all hierarchical levels of management. Strong and effective collaboration amongst all stakeholders play a

substantive role in creating a synergy to harmonize coordination for more efficient management. On this argument, the Selangor River Basin management must strengthen its institutional framework to implement the IWRM effectively.

There also need to be amplified efforts to get the public to be involved in IWRM. It is worth noting that the extent of the public in the decision-making process of public administration varies across countries. Even though Malaysia is a democratically-mature country, governing remains in the power of authority. This policy option perhaps could be further considered in the future. Although the public and private enterprises might not be able to be included in the management itself, sustainable water management will require meaningful and effective participation of the public and other non-governmental entities. These could be done by awareness campaigns, training, seminars and nature-healing activities which could start from an early education in schools.

The government has already named the people as the drivers for the Water Sector Transformation 2040 as stated in the 12th Malaysia Plan. This idea would need to be turned into action and it requires support across agencies and the people themselves. The public would be more willing to volunteer in water management and protection when they are well-informed about the subject. While it might not be the panacea for effective water resource management, it may be a viable alternative to complement the ongoing effort from the government to protect water resources.

Another policy that the government might want to take into account is to strengthen the capacity of institutions in terms of their leadership. By placing a high-level figure to head the organization, it will put much weight on the seriousness of the project. The pivotal role of a high-level figure is important in especially a top-down administration like Malaysia. Even as just an authoritative figure, the profound political element in water governance could catalyze the implementation of IWRM at higher levels.

6.2 Implication for Future Research

As this study focuses only on the institutional design of a water governance mechanism, more could be done in the future to further scrutinize other enablers in water governance. In the case of IWRM, other possible areas of study are the enabling environment, the management instruments and also infrastructure development. It is also worth exploring the IWRM implementation at other river basins for a comparative study.

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ANNEXURE

Name of Student: Nordiana Zin Zawawi
Student ID: 202 9010 685
Master of Public Policy and Governance Programme
South Asian Institute of Policy and Governance
North South University

Questionnaire

Please tick where is appropriate (indication of post is for government officials. It might vary for others)

- Position : High level (54 and above or equivalent)
 Mid-Level (41 to 52 or equivalent)
 Others
- Designation: Administrative and Diplomatic Officer
 Engineer
 Others (please specify) _____
- Level : Federal Non-state
 State Others
 Agencies

There are 5 questions with 4 subsets on this questionnaire. Please answer the following:

- 1) **Q1:** In the Malaysian National Water Resources Policy (NWRP), it stresses the need to have a comprehensive guide to managing water

resources whilst ensuring a uniformity from various aspects through effective and efficient measures and mechanism. Is there a specific mechanism currently practiced to govern/manage the Selangor River? How has it worked so far?

2)

A1:

m

A2:

w

ater resources, multiple stakeholders are involved with different interests which causes decision-making process to sometimes get complicated. International approach has thus been adopted such as the Integrated River Basin Management (IRBM), a subset of the Integrated Water Resource Management (IWRM). With various Enactment, Acts (LUAS, JAS, PBT, PDT, SPAN), legislations, regulations and jurisdiction, where does the IRBM fit in?

- 3) **Q3:** According to Lembaga Urus Air Selangor (LUAS), fragmented laws and institutions and the lack of well-defined jurisdiction has become a definite obstacle to sustainable resource development and management. In this regard efforts towards this end have already been initiated by the S

A3:

e of Selangor with the passing of a contemporary water law, which applies IRBM concepts for the management of rivers. What are the complex challenges to implement IRBM in terms of planning, managing, protecting and rehabilitating Selangor River as it involves many stakeholders?

- 4) In an ideal collaborative governance, full cooperation and coordination from all the organizations (state and non-state actors) involved are vital to achieve efficiency. The collaborative governance model by scholars suggests 4 tools to strengthen the institutional framework which are participatory inclusiveness, forum inclusiveness, clear ground rules and process transparency. On this basis, to what extent are these tools being utilized when it comes to Selangor River Basin management:

Q4(i): Participatory inclusiveness: To what extent are relevant stakeholders coordinating and getting involved in decision-making of policies, implementation and monitoring of IRBM of the Selangor River Basin?

A4(i) :

Forum inclusiveness: Does your institution organize forums/webinars or similar programmes on managing water resources?

A4(ii):

A4(iii):

ar ground rules: Is there a clear and defined role and jurisdiction for each stakeholder at the management level in managing Selangor River Basin?

Q4(iv): Process transparency: For each agenda or policies launched by the relevant ministries, are there outreach programmes initiated to ensure it is being understood and internationalized by other stakeholders?

A4(iii) :

- 5) **Q5:** According to a study by the United Nations Environment Programme (UNEP) in 2018, Malaysia is amongst the 80% countries (out of 172) that have laid the foundations for IWRM. However, there implementation is still at the foundation stage. The Ministry of Environment and Water (KASA) has also reported in its Environment Sustainability in Malaysia Roadmap 2020-2030 that as of 2020, only 18% of IRBM studies are completed. KASA targets to reach 100% completion by 2030. Do you think this target

is achievable? What can we do to make it happen or perhaps even

SIPG



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A4(iii) :

i
te it?

End of questionnaire

Questionnaire

- 5) What more could be done by the government to ensure that all parties take part in protecting our river?

End of questionnaire