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**URBAN WATER MANAGEMENT IN MALAYSIA:
A REVIEW OF LEGISLATIVE FRAMEWORK**

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ABSTRACT

The presence of urban rivers poses significant challenges for local authorities in their efforts to create sustainable and habitable urban river environments. This situation has led to various repercussions for the health of urban river ecosystems. To mitigate these issues, it is imperative that development projects' environmental impacts are effectively managed by the relevant authorities, ensuring the sustainability of urban development and urbanization. It is worth emphasizing that in environmentally sensitive areas, particularly when planning large projects, the consideration of environmental factors should be a top priority. As such, this discussion will focus on how local planning authorities in the country devise strategies to address the challenges associated with urban river development projects.

Keywords: Urban river, urbanization, sustainability, environmental impact.

INTRODUCTION

Significant challenges in urban water management included water scarcity, water pollution, urban flooding, degradation of riverine environments, and a lack of readily available water for emergencies. At that time, authorities began implementing more robust measures to address each of these issues individually. Today, the efficient achievement of urban water management necessitates a coordinated approach known as Integrated Urban Water Management, which involves adjusting and combining various measures. Rivers serve three main functions: river water control, water utilization, and environmental enhancement. In terms of river water control, mitigating flood damage to people and their property, as well as diversifying the use of river water, has long been recognized as important, especially given the increasing social and economic activities. In recent years, the environmental role of urban rivers has gained recognition. For instance, river water pollution has worsened in tandem with economic growth and urbanization, and the rivers themselves have become overwhelmed by their self-purification capacity.

Legislation related to urban development has been established to regulate balanced development in the public interest. Its primary objective is to facilitate orderly urban development by providing guidance for appropriate development activities (Abdullah, 1988). This legislation must encompass provisions for housing, employment, infrastructure, and recreational needs while also safeguarding the natural and built environment. In order for the legislative framework for planning and development control to be effective, efficient, and straightforward in both concept and operation, it is essential (Hall, 1974). Development control mandates that all types of development, including construction, engineering projects, mining activities, and any significant alterations in land use, must receive approval from the local authorities. In conclusion, this paper will offer suggestions on how local authorities can effectively monitor land development while also encouraging and supporting development in a responsible and community-friendly manner.

Therefore, this paper, using Malaysia as a case study, delves into the development of urban rivers and the efforts undertaken by relevant authorities to promote and regulate integrated urban river management in the nation. Urbanization, driven by various factors,

leads to increased population density and the expansion of urban areas, resulting in higher building density. This transformation significantly influences hydrological processes. The population growth resulting from urbanization also amplifies the demand for water resources, presenting the first major hydrological challenge. Moreover, the heightened population and building density contribute to an increased volume of waterborne waste, leading to the deterioration of stormwater quality. In Malaysia, flood disasters are attributable to multiple factors, including: i) A rise in disasters occurring in urban areas such as Kuala Lumpur and Penang. ii) An increase in inundation caused by inadequate drainage capacity. iii) An escalation in flood damage density due to the concentration of people and property.

PLANNING FRAMEWORK OF RIVER DEVELOPMENT

Development plans play a role in enhancing the planning efforts upstream by offering essential physical development strategies that translate the socio-economic development policies into specific spatial terms. To gain a deeper insight into the functioning of development plans within the Structure Planning system, it becomes valuable to explore the two distinct plan categories within this system, namely, Structure Plans and Local Plans (see Claydon, 1998).

Under the Town and Country Planning Act of 1976, the Structure Plan establishes the overall conceptual framework by outlining the primary development policies for the designated area. The key emphasis in the Structure Plan lies in the written statement and the rational justification of long-term policies and development proposals for the study area. It's essential to highlight that the Structure Plan does not concern itself with short-term site definitions and land allocations. In simpler terms, property owners and developers cannot ascertain the precise scope of their development projects solely from the Structure Plan. On the other hand, a Local Plan translates the broader land use policies outlined in the Structure Plan into detailed development proposals. It serves as a guide for property owners and developers, offering insights into development controls and facilitating the coordination of both public and private investments in development and redevelopment. The Development Planning System established by the 1976 Town and Country Planning Act is distinguished by its comprehensiveness within the Structure Plan and its coherence

through the Local Plan. In essence, this system places a central focus on both the positive aspects of promotion and the negative aspects of control in urban development.

By referring to Loughlin (1975), the positive impact of the Planning System, encompassing both its Structure and Local Plans, can be clearly illustrated as follows:

- i. **Clearly Defined Responsibility:** The planning system aims to establish two levels of responsibility in plan-making, namely the central responsibility of the state for policy, strategic decisions, and environmental planning. This arrangement helps to alleviate the prevalent antagonistic situations that often arise between Local Authorities and State Governments
- ii. **Broader Plan Coverage:** One of the most notable aspects of this planning system is its comprehensive formulation of strategic development policy proposals, covering a wider area that includes an entire local authority area or a group of adjoining local authorities.
- iii. **Integration of Land Use and Infrastructure:** Another noteworthy feature of this planning system is the integration of land use and infrastructure provisions, particularly when these matters fall under the jurisdiction of different government agencies.
- iv. **Promotion of Urban Growth and Containment:** A common theme in this planning system is the emphasis on promoting urban growth while containing urban sprawl. Such emphasis contributes significantly to achieving orderly and systematic urban development in the country.
- v. **Stimulation of Economic Growth:** The preparation of “town plans” within this planning system plays a role in stimulating economic growth by encouraging the exploration and consideration of broader economic issues. It advocates for policy changes and initiatives beyond narrow land-use zoning controls.
- vi. **Plan Implementation:** The Structure Plan is designed to be realistic and based on the available resources for implementation. It assesses the implementing authority’s existing capabilities and suggests institutional reforms. The plan establishes performance standards for both the public and private sectors, including infrastructure provision and environmental considerations, while detailing the policies of the State Governments in this regard.

LEGISLATIVE MEASURES IN RIVER DEVELOPMENT

The Planning Department is responsible for processing applications and making recommendations to the planning committee regarding approval, rejection, or conditional approval of the application. However, due to differences in size and character among different authorities, decision-making patterns are not uniform. Approvals for building construction or land subdivision can be time-consuming because various departments, both within and outside the local authority, are involved in the approval process (Salleh, 1999). Development control is a requirement, stipulating that all forms of development, including building construction, engineering projects, mining activities, or any significant changes in land use, must receive approval from the local authority. When a Planning Application, as mandated by Acts 172 of 1976, is submitted to the local authority, it assesses whether the proposal aligns with the Local Plan, if one exists. In cases where there is no Local Plan for the area, decisions are made on an ad-hoc basis (Sendut, 1965).

The legislation governing planning and development control activities in the country can be summarized as follows:

- i. National Land Code 1976: This primary legislation governs all land-related matters in Peninsular Malaysia. It includes provisions requiring land subdivision plans to adhere to specific requirements and be approved by a town planning authority.
- ii. Town and Country Planning Act 1976: This Act grants Local Authorities three key statutory powers: the preparation of Structure and Local Plans, control over all land development, and the ability to levy development charges for permissions granted under various circumstances.
- iii. The Environmental Quality Act 1974: Under this Act, developers are obligated to submit Environmental Impact Assessment (EIA) reports for housing projects exceeding 50 hectares.
- iv. Street Drainage and Building Act 1974: This Act empowers local authorities to oversee building construction and the management of sewerage and drainage systems.
- v. Land Conservation Act, 1960: Administered by the Land Office, this Act aims to regulate development on hilly land with slopes exceeding 10 percent.

RIVER BASIN DEVELOPMENT IN MALAYSIA

The challenges arising from the execution of development projects often manifest as a shortage of clean water, water body pollution, urban flooding disasters, and the degradation of environments surrounding rivers, particularly within catchment areas. Failure to adequately consider environmental well-being, whether in the planning of large projects, industrial initiatives, infrastructure development, or urban and rural expansion, has led to a multitude of environmental problems and a decline in overall environmental quality. In response to these issues, various measures and strategies have been implemented by relevant authorities to address each problem and provide guidance for urban development planning in the country. One such authority is the Local Planning Authority, established under the provisions of Act 172, The Town and Country Planning Act of 1976. The primary objective of this legislation, utilized by all local authorities in the country, is to ensure that development activities do not harm the environment.

There are three primary functions of rivers: flood mitigation, water utilization, and environmental aspects. Flood mitigation serves the fundamental purpose of safeguarding and preventing flood disasters in specific areas and protecting the inhabitants. It represents a crucial role that rivers play. Water utilization involves effectively utilizing river water, encompassing not only its use as a water supply and for irrigation but also extending to water transportation and fisheries.

The environmental function of rivers encompasses a wide range of aspects, including creating spaces for recreation, sports activities, and walkways, improving microclimate conditions, and providing habitats for aquatic fauna and flora. Rivers are influenced by topographic and climatic conditions, and historically, floods have frequently occurred in areas where towns and settlements were established. Given these circumstances, flood mitigation has always been viewed as a societal necessity. The landscaping of rivers is a result of human motivation driven by a shared social appreciation for rivers and consensus on their value. This idea materializes into the actual design of river landscapes. The river's function is a more abstract concept, allowing for flexibility in design. Therefore, river landscaping should be closely coordinated with surrounding environmental elements, urban conditions, and the characteristics of social demand and activities to be accommodated.

The establishment of a recreational, educational, and interpretive program that emphasizes the significance of scenic resources

and highlights the necessity for both the Municipality and state government to formulate suitable policies and guidelines for regulating undesirable private development. This entails the creation of overlay zoning and a site review mechanism to curtail encroachments by private development in areas known for their high-quality views. Furthermore, the development of design guidelines can be instrumental in addressing challenging land use and development activities.

DEVELOPMENT PLANS AND RIVER IMPROVEMENT

The primary objective of river improvement is to efficiently control floods. Historically, these efforts often resulted in the creation of straight and lined river channels, which lacked aesthetic appeal. Simultaneously, a growing public concern emerged, urging the utilization of public water bodies for recreational purposes. In response, a novel river development concept known as ‘Development Facing River’ has gained widespread acceptance among most local planning authorities in the country. This concept includes the expansion of green spaces and the beautification of urban rivers.

Furthermore, the need for urban water management strategies integration has arisen in response to urban water requirements. Over the past decade, environmental concerns raised by the public have led to calls for the restoration of rivers to their natural appearance. In this context, river beautification programs have been extended to encompass the entire length of the river. These projects prioritize the preservation and enhancement of rivers in any large-scale development proposals related to projects in the country. Several significant urban river management measures have been implemented in the last decade, including the Water Pollution Control Law, Comprehensive Flood Control Measures Plan, River-Friendly Projects, and more. These measures have evolved towards the integrated planning and management of urban development with a focus on managing both flood control and the regular flow of rivers.

The study of river landscapes in many local authorities is conducted in conjunction with the assessment of environmental factors during the preparation of development plans, such as the Structure Plan and Local Plan. This study forms an integral part of the comprehensive development plans, which encompass environmental considerations and incorporate them into a river landscaping program.

The primary objectives of urban river landscaping are as follows:

- i. Evaluation of existing river landscape conditions, including schemes and aesthetics, while integrating flood mitigation, drainage, master planning, and feasibility studies.
- ii. Undertaking a general study to conceptualize landscape improvements related to river channels and retention ponds, along with implementing measures to enhance the aesthetic appeal of the surrounding areas.

Urban river systems typically consist of numerous short-range small rivers, some of which originate from hill ranges and their foothills. In terms of the riverside area's landscape condition, urbanized areas often suffer from a lack of aesthetic appeal due to issues such as water pollution, solid waste, and overgrown vegetation along the banks. River reserve areas frequently exhibit inadequate appearances, with instances of illegal developments and squatter settlements.

The development plan establishes policies for the river, emphasizing the realization of amenity potential within the river and its surrounding corridor. These policies are notably focused on:

- i. Enhancing the environmental quality of the river and its corridor.
- ii. Improving access to and circulation within the river and its corridor.
- iii. Exploiting the recreational and amenity potential of the river and its corridor.

TOWARDS INTEGRATED URBAN RIVER MANAGEMENT

In conjunction with the development of future riverside park areas, the river reserve spaces have become valuable open spaces that serve as recreational hubs with pedestrian walkways. This series of spaces along the river can create a harmonious environment, effectively serving as an attractive façade for the urban area. These spaces offer functional services such as pedestrian walkways, rest areas, and landscaped plazas, significantly enhancing the environmental quality of the riverside areas. These improvements in riverside development work are expected to transform the existing landscape into a more appealing environment.

Regarding the enhancement of river systems through riverside improvement schemes, the following guidelines are recommended for river corridor landscaping:

- i. Enhancing the river reserve and establishing recreational open space for river reserve utilization.
- ii. Qualitatively improving river revetments to enhance the riverside landscape.
- iii. Maintaining cleanliness in the river reserve.
- iv. Providing attractive observation points, plazas, and core resting areas at strategic riverside locations.
- v. Preserving valuable natural vegetation in environmentally sensitive areas.
- vi. Establishing a continuous system of walkways along the riverside and creating aesthetically pleasing spaces at each bridge location.
- vii. Efficiently coordinating the improvement of riverside walkways with nearby commercial and business developments.

The essential principles for effective river environment management should be integrated by the responsible agencies in charge of river management, responsible for both water control and water utilization. Management of the river environment is closely linked to two other functions:

- i. Integrated Control by River Management Agency: This involves integrating flood control and water utilization policies.
- ii. Management Suited to Individual River Basin: Taking into account the natural environment, human habitation, industry, economy, social and cultural conditions within each river basin.
- iii. Long-term and Comprehensive Management: Considering the needs of both present and future generations within the river basin.
- iv. Regulation and Utilization: Leveraging rivers for disaster prevention in urban areas and utilizing them as natural recreational zones and valuable urban open spaces.
- v. Promotion of River Environment Projects: Initiating river environment improvement projects, such as water quality enhancement and recreational development, to address various environmental demands related to rivers.

CONCLUSION

For a systematic preservation and restoration of the urban river environment, the primary responsibility lies with the agencies overseeing river management. These agencies should take a central role in formulating a comprehensive plan for river environment management. Several critical aspects need to be incorporated into the development of sound policies for river environment management, including:

- i. River Management Agency's Policies.
- ii. Efficient and comprehensive management of water quantity.
- iii. Promotion of water environment improvement projects.
- iv. Promotion of the preservation and utilization of river space.
- v. Promotion of river space improvement projects.
- vi. Coordination with other policies related to river environment.
- vii. Special consideration for lakes and minor rivers in urban areas.
- viii. Other policies related to river environment management.

In today's globalized world, urban areas have become significant points of connection with the outside world. They attract economic activities and investments, making cities focal points of political and economic power, as well as hubs for commercial, institutional, and international activities. In general, our aim is to develop our cities into more modern and dynamic metropolitan centers. Through effective planning and efficient urban management, we aspire to realize our vision of making our future cities genuinely environmentally friendly.

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