Towards Water Security: Water Resource Management Praxis in Johor Land Administration

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Key words: land administration, land governance, water security

SUMMARY

Water resource management has become a global concern as stated in the Sustainable Development Goal (Goal 6: Clean Water and Sanitation). It is currently undergoing a major paradigm shift to ensure this natural resource can be sustained for the future mankind. Water resource management praxis has been developed and implemented by experts using technical system that can be predicted and controlled. Besides technical management praxis, land governance highlights the involvement and important role of Land Administrator in securing water resource management through land governance. This involvement is considered to be more appropriate for integrated and adaptive management system that needs to cope with the complexity of water resource management. However, the water resource management praxis is different for each state in Malaysia. Thus, this paper highlights the Land Administrator's functional capacity in water resource management praxis in the Johor State. In order to achieve the institutional objectives of State Government, Johor Land Administrator plays a major role in securing the availability of water resources through the legal implementation of National Land Code, 1965. The analysis provided by this paper is based on a conceptual insight, hence it can broaden the role of Johor Land Administrator in water resource management in the contexts of land alienation, land reservation, land acquisition, and land enforcement.

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1. INTRODUCTION

Water is the most basic yet essential resource in life. Providing enough clean water for a growing population and for the increasing industrial production is a critical issue in many countries. By the end of 2019, Malaysia has 32 million population and this is projected to grow linearly, reaching approximately 43 million population by the end of 2050 (UN DESA, 2019). The increasing number and density of the population in the urban areas poses various challenges and impacts to basic infrastructure e.g. inadequate drinking water resources and inefficient sewerage system. The population in Johor, a state in the southern part of Malaysia, is also expected to grow from 3.8 million in 2019 to 5.1 million in 2050. Johor Bahru, the capital city of Johor, is significant in the development of Iskandar Development Region which is expected to be completed in 2025. Since inception, the development has been significantly highly attractive to the economy especially in the migration and employment sectors. The population of Johor Bahru-Iskandar Malaysia increases by 4.1% annually and it is estimated to achieve 3 million residents by the year 2025. The increasing number of populations is challenging to the water supply because according to the Malaysia Water Resources Policy 2010-2050 report, the water demand in Johor is expected to increase from 1,713.64 million litres per day (MLD) in 2015 to 2,715.78 MLD in 2050. The water demand in Johor Bahru-Iskandar Malaysia is the highest with 947.45 MLD in 2015 and forecasted to increase 1,561.40 MLD by the end of 2050.

Water resources in Johor are mainly sourced from rivers to be supplied throughout the state and its neighbours particularly Malacca and Singapore with 208.20 MLD and 946.36 MLD respectively. Besides, Pengerang Integrated Petroleum Complex (PIPC) is a megaproject development in Pengerang planned to be a house of oil refineries, naphtha crackers, petrochemical plants, liquefied natural gas (LNG) import terminals, and regasification plant that require a huge amount of water supply around 230 MLD per day (PETRONAS, 2016).

However, water resources in Johor are facing insecurity due to the uncontrolled industrial development activities. The industrial activities have produced industrial waste that usually contain specific and readily identifiable chemical compounds. These contaminated water resources have to undergo multiple treatment stages for re-neutralization and purification before it can be utilized for domestic purposes (Siong et al., 2013). Other than that, the frequencies of natural phenomena e.g. flood and drought also contribute to the insecurity of water resources. Apparently, the extreme flooding resulted in thousands of people losing access to safe drinking water and exposure to floodwaters containing untreated wastewater. Drought is characterized by the reduction of lake storage, lower groundwater level, and decrease of streamflow that may occur over one year or over several consecutive years and often affects large areas (Smakhtin,

2001). Consequently, this will decrease the availability of water resources (Nosrati, 2011). Hence, the water resources must be managed properly to ensure water security in years to come since the water demand and supply in Johor is in an alarming state.

2. WATER RESOURCE MANAGEMENT FOR WATER SECURITY

World Bank defines water resource management as the process of planning, developing, and managing water resources, in terms of both water quantity and quality, across all water uses. It includes the institutions, infrastructure, incentives, and information system that support and guide the water management (Aquatech, 2019). Marshall (2013) stated that water resource management considers all disciplines of hydrology. Water supplies are allocated and diverted to a range of purposes e.g. agricultural, industrial, hydro electrical, and ecological needs (Marshall, 2013). Some of these water uses are consumptive, thus decrease water from the system e.g. crop irrigation. Other types of water used will return the water to a river, lake, or ground, but the water often requires treatment to restore it to its natural state but sometimes this is not possible e.g. industrial tailings pond.

One of the goals of water resource management is water security. It is not possible to predict and plan a single path to water security for rapidly growing and urbanizing global population due to climatic and non-climatic uncertainties (World Bank, 2017). In order to improve the water security, there is a need to build capacity, adaptability, and resilience for the future planning and management of water resources. Marshall (2013) opined that the balancing act involved in the water management includes a broad range of stakeholders, water policy, and legal experts. This is in essence of what water resource management is about; bringing together multiple organisations across different disciplines to plan for future water usage holistically to achieve water security in the context of growing water scarcity, greater unpredictability, degrading water quality and aquatic ecosystems, and more frequent droughts and floods. Thus, this requires a more integrated and long-term approach to water management.

3. THE FUNCTION OF LAND ADMINISTRATION IN WATER RESOURCE MANAGEMENT

United Nations Economic Commission of Europe or known as UNECE (1996) defined land administration as the process of determining, recording, and disseminating information about ownership, value and use of land, and its associated resources. These processes include the determination or adjudication of land rights and other attributes, surveying and describing these, their detailed documentation, and the provision of relevant information for supporting land markets. Land administration systems should ideally i) guarantee ownership and secure tenure, ii) support the land and property tax system, iii) constitute security for credit system, iv) develop and monitor land market, v) protect the State land, vi) reduce land disputes, vii) facilitate land reform, viii) improve urban planning and infrastructure development, ix) support land management based on consideration for the environment, and x) produce statistical data to develop a sustainable development for natural resources. The governance process of water resource management determines the decisions about water storage, types of water use, regulation of extraction from aquifers, regulation of discharges, and allocation between

competing uses which includes the allocation to maintain basic environmental services (World Bank, 2006). Therefore, land administration on water resource should be required by the setting of principles of good governance as a direction towards balancing social, economic, and environmental issues, so that the management on water resources can help to achieve the aspirations and meet the demand of the next century.

4. LAND ADMINISTRATION IN JOHOR, MALAYSIA

The organizational structure of land administration in Malaysia demarcates the power to manage land to the State Authority as land is a State matter pursuant to the Federal Constitution of Malaysia (Zulkifli et al., 2015). The Federal Constitution of Malaysia 1957, the supreme law of the country, prescribes two-tier governmental structure that is the Federal and State Government. Malaysia is a federation of states. In Peninsular Malaysia, states are responsible for their own land matters. These states operate a Torrens system, administered by the State District Land Office and coordinated by the State Land and Mines Office. Johor State Land and Mines Office which acts as the State Government in authorizing the State land matter of Johor holds the exclusive power on the State land to (i) alienate the State land pursuant of section 76 NLC, (ii) reserve the state land and to grant leases of reserved land, (iii) permit the occupation of State land, reserved land and mining land under Temporary Occupation of License; (iv) permit the extraction and removal of rock material from any land other from reserved forest; (v) to permit the use of air space on or above State land or reserved land; and (vi) to dispose the underground land below alienated land, State land, and reserved land. Through this section, State District Land Office and Johor State Land and Mines Office have the authority to enact laws and formulate policies on matters relating to land of Johor.

In the prospect of water security, Federal Constitution has provided the State Government with an almost exclusive right to act as the custodians of water for the people. To aid the State in this responsibility and for uniformity in the execution of the task, the Waters Act was passed as far back in 1920. For today's needs, however, the law falls far short of purpose, and seeing this, some States have proceeded to enact a replacement law, or the Waters Enactment, including Johor itself, known as Water Enactment of Johor 1921.

5. LOCAL LAND ADMINISTRATION FUNCTIONS IN WATER RESOURCE MANAGEMENT

The global approach to modern land administration system as shown in Figure 1 is concerned with the administration of land as a natural resource to ensure its sustainability. The four land administration functions i.e. land tenure, land value, land use, and land development are different in their professional focus. They are normally undertaken by a mix of professions, in which the State Government will be involved directly on the land use. Land use comprises several processes and involves related institutions to control the land use through (i) the adoption of planning policies and regulations at national, regional, and local levels, (ii) the

enforcement of land use regulations, and (iii) the management and adjudication of land use conflicts (Stig, 2009).

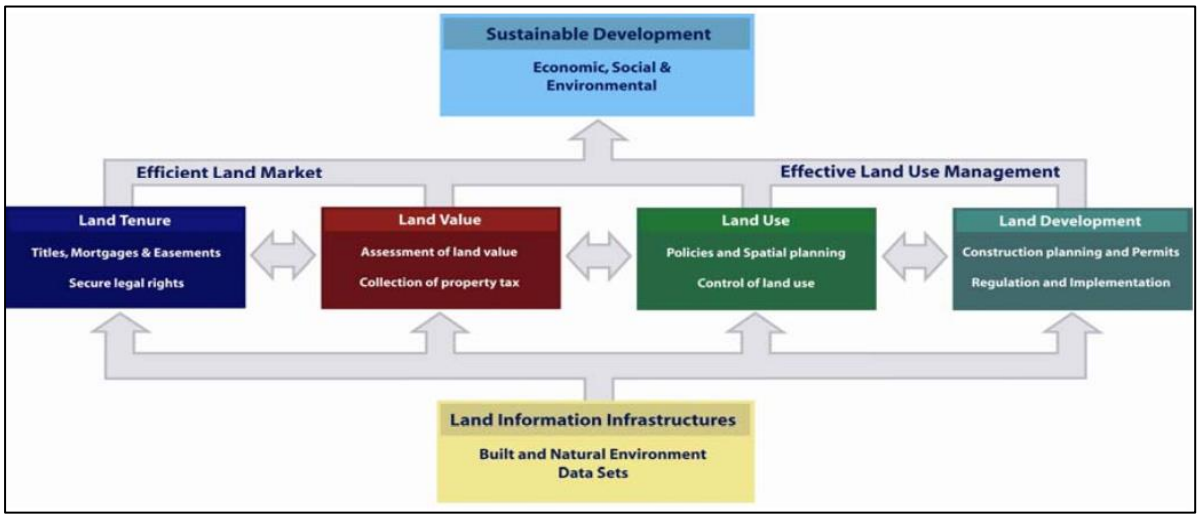

Figure 1 A global land administration perspective (Stig, 2009).

In water resource management, the role of Johor Land Administrator has been broadened in the contexts of land alienation, land reservation, land acquisition, and land enforcement.

5.1 Land Alienation

According to Section 41 and 42 NLC 1965, State Authority has the power to dispose the State land by alienation. Section 5 NLC defines alienation as disposal of State land in perpetuity or for a term of years, in consideration of the payment of rent and otherwise in accordance with the provisions of section 76 i.e. (i) for a term not exceeding ninety-nine years or in perpetuity, (ii) in consideration of the payment of an annual rent, (iii) in consideration of the payment of a premium, (iv) subject to a category of land use, and (v) subject to such conditions and restrictions in interest as may be imposed by the State Authority. Land alienation is among, if not the best, method of land disposal because the proprietor will get the land evidenced by title. Next, the period of ownership is longer than the other modes of disposal. If the land is later on acquired by the State Authority for public purposes, the proprietor will get an amount of compensation. Besides, the proprietors themselves can make dealings with regard to the land.

Water Asset Management Berhad or also known as PAAB is an agency of restructuring and managing the water services in Malaysia. It has applied four plots of Johor State land (20.633 hectares) to develop a system site of water supply located in Tiram River, Johor Bahru. On 27th August 2019, an approval letter has been issued by Johor State Land and Mines Office on areas purposed to be alienated to PAAB upon approval by Johor Government Meeting Council with the following conditions: (i) the land has to be use for system site of water supply only, (ii) all the rubbish and waste caused by the activities must be channelled to the places determined by the local authorities, (iii) all the policies and express conditions ruled and enforced by the local authorities shall be fulfilled, and (iv) the alienated land is non-transferable, leased, or charged

without the consent of the State Authority. The said alienated land is controlled by a group of water resource management agencies e.g. RANHILL SAJ, BAKAJ, SPAN, SAJSB, JSW, and PAAB itself to govern, control, manage, and monitor the activities on the land for the environmental well-being.

5.2 Land Acquisition

Land acquisition involves the compulsory taking of land. Land is acquired in Malaysia under the Land Acquisition Act 1960 (Act 486) (LAA) which is principally concerned with the rules governing the procedures to be followed in acquiring the land by compulsory means and with the awarding of compensation to the dispossessed land owner. In Peninsular Malaysia, the only right of property owner is governed by the Federal Constitution. Nevertheless, although all States in the Peninsular Malaysia adopt the law, the way of how it is implemented is different from one State to another (Samsudin et al., 2019). State Government often seeks to acquire land either for public purposes or on behalf of other parties (developers) whose private projects are beneficial for the public. The land acquisition may be seen as a force to acquire a land, causing many controversies among landowners and authorities. However, the Malaysia's law stated that any acquisition of land by State Government requires paying an adequate amount of compensation. Article 13 of the Malaysian Constitution (1957) stipulates that (i) no person may be deprived of property in accordance with law and (ii) no law may provide for compulsory acquisition or for the use of property without adequate compensation being made. Therefore, the proprietors or landowners should have known that the compulsory acquisition of land affect the constitutional rights of landowner and it is really important for the landowners to understand their rights so their rights are protected and adequately compensated (Alias & Nasir, 2015). The whole process of land acquisition is time-consuming and needs a huge amount of fund as it involves legal procedures done by many parties and authorities; a legal binding to own the land by the State.

Out of 17 dams in Johor, there are six land acquisition applications that have been approved for dam and water catchment area by the State Land and Mines Johor. They are:

(i) 217 plots for Bekok dam (Division of Chaah) in 1986 with 5 extra plots in 1990, 1992 and 1993;
(ii) 42 plots for Machap dam and water pond (10 plots in Division of Renggam and 32 plots in Division of Kluang) in 1978 with 12 extra lots in 1979;
(iii) 66 plots for Bekok dam (Division of Paloh) in 1998;
(iv) 2.145 hectares of extra lot for Bekok dam (Division of Paloh) in 2001;
(v) 3.642 hectares of Sembrong River's dam and water catchment area (Division of Tanjung Sembrong) in 2004; and
(vi) 548 plots or 2637.5653 hectares for PIPC water catchment area (166 plots in Division of Kota Tinggi, 76 plots in Division of Johor Lama, 146 plots in Division of Tanjung Surat, 47 plots in Division of Pengerang, 23 plots in Division of Pantai

Timur, 88 plots in Division of Ulu Sg Sedili Besar and 2 plots in Division of Sedili Kechil) in 2014.

The land acquisition for dam and water catchment purpose is essential for water resources in Johor as these dams mainly function as the supplier of clean water that need to be treated and purified before being utilized for domestic purposes. Furthermore, the dam helps to control the water resource irrigates to the agricultural areas, as a flood mitigation, and to block the sediment or silt from entering the water resource.

5.3 Land Enforcement

Land enforcement in Malaysia halts the land encroachments or any illegal activities that lead to the trespass on State land (Razali et al., 2018). In pursuant to Section 425(1) NLC 1965, land encroachment refers to any person, corporation, or party that is said to do the invasion of the government land when a person commits one or more of the following, without obtaining a valid authorization.

(i) Occupies or erects any building on in any government or state land, reserved land or mining land;
(ii) Clears, ploughs, digs, encloses or cultivates any such land or part thereof; or
(iii) Cuts or removes any timber or produce on or from such land.

This section highlights that any activities on State land without any permission or approval from the local authority is considered to be land encroachment. Therefore, the enforcement is crucial to ensure that the use of land complies with the legal requirement and in accordance with the environmental sustainability. Any person, corporation, or party referred as the trespasser, commits one or more activities as said in Section 425(1) NLC, may be subjected to a fine not exceeding RM10,000 or imprisonment for a term not exceeding one year, or to both (Section 425(1A) NLC).

Based on the Malaysian Human Rights Commission (SUHAKAM), there are many land encroachment issues in Malaysia as they are always advertised through the electronic and printed media. The activities do not always involve state land but the alienated land and reserved land. It also has the potential to be encroached by the trespassers. The dam area of Bekok in Batu Pahat, Johor which is 2745.411 hectares, has two ownership status, which are Johor State land and alienated land given by the Federal Government (since 9th January 1986). The dam area has been acquired and re-alienated to the Department of Irrigation and Drainage for dam and drainage purpose on 9 October 1986 (Government Gazette No.1059).

Previously, State Government had given the permission in the form of rent to the former owners to collect the oil palm production based on yearly contract with agreed conditions between both parties. Due to the water pollution at the dam area on the said land, the contract has been stopped by the state government. However, the former owners still collect the production of oil palm, re-cultivate the plantation, and cultivate other plants on the land. The lack of enforcement has caused the encroachment activities still occurring because any enforcement activities are mandatorily with reference to the Department of Director General of Lands & Mines Federal

and Department of Irrigation and Drainage, but there is no action taken to prevent the encroachment on the land. Therefore, the State land office, district land office, local authority, police and other authorities are joining hands to protect the land from encroachment and maintain the environment sustainability of water resource on the said land. A land reservation under Section 62 NLC for the Bekok dam area involving three territories of the district State land offices (Batu Pahat, Labis and Kluang) has been proposed so that the land shall be reserved as prohibited and restricted areas from any trespassers and encroachment activities.

5.4 Land Reservation

In NLC 1965, a State land which is reserved for public purpose is known as reserved land. Section 5 NLC defines reserved land as land for the time being reserved for a public purpose in accordance with the provisions of Section 62 or of any previous land law. The reservation of land may apply for the entire land or part thereof. The purpose of land reservation is mainly because of the insecurity of land use and the need to ensure the possession and custodian on the land. Under the Constitution, the governance and protection of the rivers as the main water resources is under the jurisdiction of the State Government. Hence, the rivers and drainages in Johor mostly have been reserved as reserved rivers. According to the Department of Irrigation and Drainage, issues like growing development near the river area, inconsideration of river's downstream ability in constructing bridge and pathway, constructions in rivers e.g. the abutment, pillars and other structures that interfere the river flow hence causing the trap of rubbish and sediment. Furthermore, the development of uncontrolled catchment areas has resulted the silt flowing to the river channels, thus eroding the edge and base rivers. This eventually leads to the malfunctions of river and drainage. Later, these issues have led to the need of reserving the river and drainage areas. Therefore, the pathway of land adjacent to the river should be maintained as State land, so that the functions of river and drainage are protected to secure the water resources. There are a total of 817 rivers and drainages reserved as rivers reserved in Johor as stated in Table 1.

Table 1 Total of Reserved Rivers and Drainages in Johor

District	Reserved Rivers & Drainages
Pontian	12
Kluang	20
Johor Bahru	101
Segamat	64
Batu Pahat	56
Kota Tinggi	169
Muar	355
Mersing	40
Total	**817**

Source: Gazettes of Johor State Government dated 27 Oct 2011 & 30 July 2009.

6.0 CONCLUSION

For decades the water scarcity has been one of the main challenges faced by humankind. Governments across the world have spent considerable amount of effort and resources to achieve the effectiveness of water resource management. In this case, the Johor State is also facing the problem of limited water supply. As the demand for clean water is increasing, the State Government plays an important role in land administration to govern, manage, and preserve the value of natural resources for future use to meet the Sustainable Development Goal 6 which is to ensure that everyone has an access to safe water by 2030 with the aims to protect the natural environment and reduce the pollution for future generations.

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BIOGRAPHICAL NOTES

Amirul Haffiz Ariff is Chief Deputy Director (Development) at Johor Land and Mines Office.

He received his undergraduate degree at the University of Malaya (UM) in the field of Shari'ah in 2003. He later went on to pursue a Master's degree at Universiti Teknologi Malaysia (UTM) in Land Administration and Development. He served as Johor State Administrative Officer for more than 10 years. His service in the machinery of the Johor State Administration has shaped his expertise in the field of Johor Land Administration. He was appointed as the Special Secretary of the Johor State Government from 2007 and 2011 and subsequently made the move with the Johor State Land and Mines Office until this day.

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