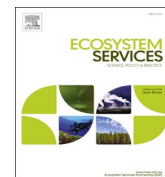




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Legal framing for achieving ‘good ecological status’ for Malaysian rivers: Are there lessons to be learned from the EU Water Framework Directive?

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ABSTRACT

River degradation and loss of ecosystem services due to pollution and deforestation poses a great challenge for a holistic and sustainable river basin management. In Malaysia, about two third of its rivers are categorized as slightly polluted or polluted and this has led to the loss of ecosystem services in many of its river basins, notably in the rapidly developed Langat River Basin. The general historic legal responses to pollution control like water quality standards and gazettal of protected areas seems to rectify the problem as it occurs but is unsustainable. In other parts of the world, there has been a rise in alternative framings of river basin management like the Ecosystem Services Approach (ESA), integrated river basin management (IRBM), catchment based and stakeholder led river management; and these are seen as one way forward for sustainable basin management. The aim of this paper is to explore whether such framings can be implemented in Malaysia based on the current legal and federalism framework. It identifies the major causes and drivers of the polluted and poor state of Langat River and its tributaries and how might an alternative approach improve the situation. Towards this end, a comparative analysis is made with the EU Water Framework Directive (WFD) and its implementation in the Tweed UNESCO HELP basin. Particularly, it explores the application of the subsidiarity principle that allows decision making to be made by agencies closest to the problem within the basin. It concludes that redefining the role of levels of government in IRBM and stakeholder engagement can speed up the process of reframing the Langat IRBM to reduce river pollution and enhance the ecosystem services of the basin.

1. Introduction

Rivers provides various ecosystem services to both living and non-living things through, for example climate regulation, air and water purifying and nutrient cycling (DEFRA, 2007). Other water bodies like oceans, wetlands and lakes support river ecosystem in various ways. Oceans, which represent 97% of the world water bodies, provide important food production functions and regulate climate temperatures, while wetlands maintain natural cycles and provide food, shade and shelter for a wide range of species useful for provision of genetic resources and habitat regeneration of the river basin (Cech, 2005). As rivers have been utilized for social and economic development, little attention has been given to the needs of a river ecosystem, leading to loss and degradation of their ecosystem services (Corvalan et al., 2005). The rapidly developed Langat basin, which is located next to the Malaysian capital of Kuala Lumpur, has a population of over 1.7 million people and falls under the jurisdiction of four states or federal

territories comprising of seven local councils. The relocation of the administrative capital from Kuala Lumpur to Putrajaya and the development of Kuala Lumpur International Airport, all within the Langat River Basin, have witnessed the influx of housing, institutional and industries within the basin and has contributed to more waste and polluted river (Mokhtar et al., 2010). These, together with illegal industries along the riverbanks and uncontrolled discharge of effluents and domestic sewage, have increased the pollution index level and led to the rise in coliform bacteria which created ecosystem dysfunction (Lee et al., 2006). Rivers can be conserved to their best ecological status when all levels of government and stakeholders cooperate to rehabilitate them to their original flow (Spray and Blackstock, 2013). This is not being achieved in the Langat basin as water agencies are not working in an integrated manner and stakeholders do not participate in the decision making process (Khalid et al., 2013). This paper analyses the challenges of a holistic and sustainable river basin management in Langat. Particularly, it explores the application of the subsidiarity

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principle that allows decision making to be made by agencies closest to the problem within the basin. This paper presents a novel analysis of possible application of an alternative legal framing from the EU Water Framework Directives through the subsidiarity principle as applied in the Tweed River Basin in Scotland to the Langat River Basin in Malaysia. In the following, the background of the study is presented, followed by research method, results and discussion.

1.1. Sustainable river basin management

Sustainable river basin management aims at ensuring a holistic and integrated management of a river basin which will improve the delivery of ecosystem services in the basin. Due to jurisdictional issues in any particular river basin, it must be supported by a legal framework which is adaptive to changes, trans-discipline and trans-governmental networks. The following discussion highlights the historic responses and alternative framings for sustainable river basin management.

1.1.1. Historic legal response

Legal responses towards river pollution and degradation in Malaysia have been mostly done in a piecemeal approach, i.e. by empowering relevant agencies to set and impose water quality standards or pollution control provisions. In most cases, the Department of Environment (DoE) sets the National Water Quality Standards while the Department of Health (DoH) sets the National Standards for Drinking Water Quality. Water samples are collected at the water quality monitoring stations and the findings are published in the yearly report (Zainudin, 2010).

In most instances, if a river reaches the polluted river status, the water treatment operator will be required to increase the treatment process to meet the relevant drinking water standard. When the river is badly polluted, the operator may need to shut down the treatment plant until actions are taken by enforcement agencies to stop the pollution or until the pollution is diluted by rain. The recent foul smell pollution in the Semenyih River, a tributary of the Langat River, caused the water treatment plant to shut down six times leading to a series of water disruptions affecting 1.6 million users (The Sun Daily, 2016).

Although quality standards have been set, the traditional response in pollution and environmental degradation cases are incident based and are unsustainable. It does not consider the impact on ecosystems, nor the services they provide. In addition, gazettal of forest and catchment areas may help but the areas can be de-gazetted by the state authority as and when needed. This cannot be sustained and new approaches that enhance ecosystem protection must be used as alternative methods for sustainable river basin management.

1.1.2. The rise of alternative framing toward sustainable river basin management

In 2001, the United Nations Environmental Programme (UNEP) initiated the Millennium Ecosystem Assessment (MEA) to assess the consequences of ecosystem change on human well-being. It found that 60% of 24 ecosystem services, including provisions of clean water, food, forest products, flood control and provisions of other resources have been degraded to nearly two-third due, primarily to economic and social development (MEA, 2005). The report suggested that management interventions are needed to reverse ecosystem degradation; but knowing when and how to intervene requires substantial understanding of ecological, economic and social needs (MEA, 2005) as well as improved governance.

Ecologists have proposed 12 Principles of Ecosystem Services Approach (ESA) which recognizes that resource management is a matter of societal choice and should be decentralised to the lowest appropriate level. It requires ecosystem to be managed within the limits of their functioning based on both scientific and local knowledge, innovations and practices (Secretariat of the CBD, 1999). In Malaysia, ESA has not been highlighted nor mainstreamed in the environmental

related policies. As such, stakeholders fail to appreciate the unique relationship between healthy rivers and surrounding ecosystems, This is particularly true for forested watersheds where logging has created unprotected slopes leading to landslides and mud flows, disrupting healthy waterways (Hashim, 2015).

In another forum, the Global Water Partnership (GWP) introduced new concepts like Integrated Water Resources Management (IWRM) and Integrated River Basin Management (IRBM) to promote coordinated management and development of water, land and related resources to maximise the economic and social benefits and restore freshwater ecosystems (GWP, 2000). The GWP requires state governments to prepare IWRM and IRBM plans to ensure strategies and better implementation. Unfortunately due to the federalism structure of Malaysia, the IWRM plan was never implemented in Malaysia. This is because the federal agency, the Department of Irrigation and Drainage, which is championing IWRM is merely a technical agency and has no jurisdiction in water resource management (Khalid et al., 2013).

Cook and Spray (2012) argued that both IWRM and ESA have similar challenges in the gap between conceptualization and implementation. They recognize that both IWRM and ESA have progressed into similar concepts but give different importance to environmental health. Both, however, face serious implementation gaps as policy-makers look to jump from one concept to another. Instead, they should stick to a concept and confront the challenges that arise with implementation, having a clear goal-setting agenda, and promoting participation to reduce conflict between society and ecology (Cook and Spray, 2012).

Elements of ESA has been incorporated in several river rehabilitation projects (Gilvear et al., 2013; Arthington et al., 2010; Palmer et al., 2005). Nevertheless the physical success of each project depends upon accurate modelling of relationships between hydrological patterns, fluvial disturbance and ecological responses in rivers and flood plains (Arthington et al., 2010). Good understanding of river science may help explain how a river network is degraded, the position of ecosystem services if no alteration has been made and how rehabilitation enhances ecosystem services (Gilvear et al., 2013). This can help identify ecosystem services providers and beneficiaries; and assist development of an accepted methodology for comparing benefits and trade-offs between ecosystem services (Spray et al., 2013).

2. Methodology

This is a qualitative study which involves content analysis of legal materials related to IRBM in the Langat River Basin in Malaysia and the Tweed River Basin in Scotland. In addition, semi-structured interviews were conducted with the local councils in the Langat River Basin to understand the problem faced by them in implementing IRBM. The findings were transcribed, coded and analysed through the Atlas.ti data management software. The four interviewees are selected from all four local councils in the state of Selangor as listed in Table 1. The study excluded council outside Selangor because they are not governed by the Selangor water laws and regulations. Interviewees

Table 1
Administrative territories in Langat River Basin.
Source: modified from LUAS (2015).

State	Local Government	Area (km ²)
Selangor (80%)	Kajang City Council	809.34
	Kuala Langat District Council	706.93
	Sepang City Council	333.25
	Klang City Council	71.87
Negeri Sembilan (18.3%)	Nilai City Council	445.12
FT Putrajaya (1.6%)	Putrajaya Corporation	39.21
FT Kuala Lumpur (0.1%)	Kuala Lumpur City Hall	3.67
	TOTAL AREA	2409.39

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