Analysing the sustainability of Solid Waste Policy in Malaysia using the Ecological Modernization theory

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Abstract

The theory of Ecological Modernisation (EMT) has become one of the dominant sociological theories which attempts to understand and interpret how modern societies are dealing with environmental crises. This paper aims to examine the sustainability of Malaysia's Solid Waste Management (SWM) programmes from this EMT perspective. It was found that while the EMT requires a national approach in order to effect a more sustainable Solid Waste Management system the current institutional arrangement, managerial process and policy formulation of the SWM in Malaysia has not delivered a cohesive and sustainable national SWM policy. This was caused by factors ranging from the lack of institutional arrangements, policy gaps, and inadequate financial support, to failures in the privatisation process, insufficient manpower and poor understanding of environmental concerns dealing with the whole social complexity of solid waste management . Given such yet-to-be-rectified flaws the application of the EMT to Malaysia's SWM may be difficult to achieve for now.

Keywords: environmental crises, institutional arrangements, national SWM policy, privatization of SWM, Solid Waste Management (SWM), Theory of Ecological Modernisation (EMT)

Introduction

One of the main objectives policy making process in almost developing countries regarding to solid waste management (SWM) is to have a sustainable and efficient managerial. Governments are increasingly implementing policies that are intended to impact on waste management practice, and many new initiatives have been taken in countries around the world over the last few years. A common problem has emerged in countries that have embarked on policies promoting greater sustainability in waste management. Policy makers aim to use sustainability indicators in order to measure sustainable of solid waste management (SWM). Therefore, sustainability is seen as a key element towards sustainable solid waste management for long term achievement. The concept of Ecological Modernisation (EM) provides a theoretical underpinning for SD policies. The ideas of EM have been used to describe the ways in which environmental problems come to be framed as issues that are politically, economically and technologically solvable within the context of existing institutions and power structures and continued economic growth (Murphy & Gouldson, 2000). Ecological modernization theories are centrally concerned with the relationship between environment and economy and with social capacities to recognize and respond to existing and emergent environmental problems (Gouldson et al., 2008, Mol et al, 2009). EM theories have helped to describe the ways in which environmental problems come to be framed as issues that are politically, economically and technologically solvable within the context of existing institutions and power structure and continued economic growth (Murphy & Gouldson, 2000). Ecological modernization theory suggests the need of national policy of solid waste management and

efficient solid waste system for sustainability solid waste management in Malaysia. However, this has not occurred in Malaysia due lack of institutional arrangements, policy gaps, privatization failure process, behavioural unresponsiveness and poor understanding dealing with sustainability of solid waste management. For these reason this paper will focus the institutional dimension of ecological modernization theory to examine the National policy of solid waste management in Malaysia for analysing sustainability of solid waste management.

The concept of Ecological Modernisation

Ecological Modernisation refers to a series of institutional, operational, economic, governance, social and political shifts that are set in motion by environmental drivers. These drivers push new social arrangements, new discourses, new scientific and technical developments, and a shift in responsibilities and interests between public and private sectors, between governments and their citizens, between civil society and other economic actors, and between the formal and informal sectors and arrangements within a wide range of disciplines. Although political institutions have contributed to poor environmental outcomes in the past, EMT argue that they can be readily reformed to better address ecological issues (Mol, 2000; Mol & Sonnenfeld, 2000). Proponents hope that, through marginal shifts in focus, political actors could be responsible for building new and different coalitions to make environmental protection politically feasible. Thus, EM research has examined the institutional changes that accompany a shift from government to environment governance. For example, EM argues for a more substantial transformation towards decentralized, consensual forms of governance, and a focus on new forms of political intervention. Advocates consider the role of the nation-state to be central to achieving more sustainable societies. There is a focus on "open, democratic decision-making, maximising participatory opportunities for broader social interests" (Berger et al., 2001). These opportunities will only occur alongside increasing activism by non-governmental organisations, economic agents and changes to the institutional structure of society.

Ecological Modernisation has a good chance of influencing decision makers since it frames the debate in non-threating terms by supporting industrial development, the market and liberal-democracy. EM argues that economic growth can be decoupled from environmental harm through institutional transformations. In essence EM supports the existing institutional of power and modest initial reforms and also prepares the groundwork for substantial transformations later. EMT suggests that the market will play a central role in the transmission of ecological ideas and practices, with producers, financial institutions and consumers all playing their parts. The government can provide such an incentive by applying the polluter pays principle, notably through the use of market-based instruments such as eco-taxes and tradable permits which penalize environmentally damaging activities.

Ecological Modernisation also advocates greater public disclosure and community participation in decision making. Devotees argue that globalization and new international market dynamics have shifted the away from traditional top-down influences of supranational bodies towards greater emphasis on the sub-national level. This regional and local focus is in line with increasing prominence of local initiatives such as *Local Agenda 21* programs. In EM, the government takes the role of 'contextual steering' and policy-making changes from 'curative and reactive to preventative'. While international agreements can set the broad policy goal of SD, it is regional planning and changes to management systems in local businesses that translate these goals into real changes on the ground.

Ultimately Ecological Modernisation treats all environmental issues, solid waste included, as a challenge to eliminate inefficiency via better design. It promotes the use of more eco-efficient technology as well as the redesign of economic and political institutions to create incentives that will effectively decouple economic growth from raw material use, waste and environmental damage (Berger, 2001; Dryzek, 2005; Howes, 2005). Waste is seen as an indicator of inefficiency. Businesses use their desire to cut costs by innovating to find new ways of reducing their raw material and energy use, cutting pollution in the process. Governments correct markets failures that encourage environment damage and create

incentives to innovate by penalizing damaging behavior and rewarding eco-efficient improvements. They also act as a clearing house for information about the state of the environment and support the research, development and deployment of better technologies. The actions of the market and the state together work in partnership to develop a cleaner, low cost future that is good for both business and the environment.

Solid waste management issues and the institutional context

Malaysia, with an area of 329 750 sq Km, had a population of approximately 24.8 million in 2007, with a per-capita GDP of $ 14 400. Malaysia is facing serious environmental challenges in terms of managing solid, hazardous, and toxic waste, water pollution, and air pollution. The World Bank (1999) reported that solid waste management was considered as a one of the major problems in developing countries and particularly in Malaysia. The daily generation of waste in Malaysia escalated from 13 000 tonnes in 1996 to 19 100 tonnes in 2006. Generation of municipal solid waste (MSW) in Malaysia has increased more than 91% over the past 10 years, due in particular, to the rapid development of urban areas, rural-urban migration, increase in per-capita income, and the change in consumption patterns brought about by development. The urban population, which constitutes more than 65% of the total population, is the main generator.

The changes in lifestyle in Malaysia, particularly in the urban areas, have led to more acute waste problems. Packaging of convenient household goods is free flowing, and carefree or rather couldn't careless attitude of the affluence society result in huge quantities of waste, as indicated by discarded wrappers from supermarkets and mushrooming fast food outlets. Plastics, which are not degradable constitutes the higher proportion of modern day wastes (Noor Zalina, 2000). On the composition of solid waste, the 9th Malaysia Plan (2005-2010) estimated about 47% of the waste is made up of food waste, 24% of plastic, 7% is paper, 6% of iron and glass and others made of the rest (Table 1). It seems that Malaysian are approaching unsustainable consumption pattern by buying more food that we need and unnecessarily generate more waste than we are supposed to have (Nadzri Yahya, 2007).

Table 1. General composition of waste in Malaysia

Materials	% by weight
Organic	47.0
Paper	7.0
Plastics	24.0
Wood, garden waste	4.0
Metal	7.0
Glass	3.0
Textiles	3.0
Other	5.0

Source: National Waste Recycling Program, Ministry of Housing and Local Government 2007

The theory of ecological modernization emphasizes the importance of consumers actively demanding green product and technologies as a main driver for more sustainable everyday life in households (Mol, 2000). Change in consumer behaviour in Malaysia resulting in reduction in waste generation (MHLG, 2003) However it must be remembered that the choices for the consumer product industries and consumer behaviour may be the most critical factor in tackling solid waste management. This is because treating solid waste after being generated will only partially solve the problem, especially when solid waste generation keeps on increasing due to packaging and consumer behaviour. This result in solid waste being treated but still does not solve the problem of solid waste generation or the need for society to make changes in its behaviour.

In Malaysia, the current level of waste generation and existing waste management practices are wasting valuable resources, failing to take advantage of economics of scale and technologies advances,

causing harm to the environment and threatening human health (MHLG, 2005). It is unfortunately true that increasing wealth results in an increase in the demand for consumer goods and that these goods come wrapped in ever greater amounts of packaging to appeal to the senses of the consumer. Increase in personal wealth is demonstrated to others through acquisition of goods and the frequented replacement of existing goods with the latest model. In such a society, there is stigma attached to the re-use of products as demonstrating an inability to afford better. Consumers have also developed wasteful food habits, with much unwanted food thrown away. Thus, there is a growing use of materials and resources in "status" products and packaging, which are quickly discarded. This is not sustainable. Cultural changes are needed to protect precious natural resources and the environment. A structured plan is required for the country in order to achieve a common standard and economics of scale. Solid waste must be properly managed to avoid the potential for harm to human health.

Institutional framework of Solid Waste Management in Malaysia

Institutionally, Solid Waste Management (SWM) has been the responsibility of local government in terms of operations, with the Federal Government providing policy direction and funding, and setting technical standards and guidelines. Other agencies related to solid waste management were Department of Environmental and Economic Planning Unit (EPU) (Noor Zalina, 2000). Although the responsibility for SWM lies with local governments, they generally lack the financial and technical capacity to manage this complex task. Even though several agencies, such as the State Department of the Environment and Municipal Council are involved in waste management, they often have no clear functions in relation to waste management and there is no single agency designated to coordinate their projects and activities. The lack of coordination among the relevant agencies often results in duplication of efforts in waste management, under utilization of resources, and un-sustainability of overall waste management programs and policies. On the management side, lack of skilled manpower, irregular collection services, inadequate legal provisions, and resources constrains are the key factors challenging the waste management in the country today.

Municipal solid waste management in Malaysia is under the responsibility of the public sector, although the government has contracted out part of the municipal solid waste management services to private contractors under the privatization program (MHLG, 2005). The municipal solid waste management (MSWM) services account for a high percentage of the municipal budgets as waste management and planning under municipal responsibility. On average, 50 percent of the municipal operating budget is spent on MSWM and of this, 70 percent is spent on the collection of waste (Juzhar, 2003). There are three sources of funds for the municipal solid waste operation, namely, municipal taxes, fees charged for services and subsidies from municipal revenues received from government sources. Cities and towns rely heavily upon municipal taxes for their communities as the fees charged for collection and transfer services are not covering the costs of these operations. Moreover, there is no standardized procedure for setting fees and debates about this issue are ongoing (Nassir et al., 2000). To some degree an integrating function is provided by the Economic Planning Unit (EPU) of the Prime Minister's Department through its overseeing financial role. The EPU produces medium and long- term development policies and budget allocations for the national five-year plans and ensures that developments conform to the current outline perspectives plan (Malaysia EPU, 2006). However, financial support is one of the problems faced by the government in managing urban solid waste management (Nadzri Yahya, 2007).

Solid Waste Management monitoring and reporting are also rather weak as there is no systematic procedure for reporting to such authorities as the Ministry of Housing and Local Government and therefore no basis for planning beyond the local level. Limited types of information are therefore obtained from commissioned studies or from concession firms. The governance and regulations for homogeneous waste are clear as this is the responsibility of the Department of the Environment and the waste is generated by an identifiable sector. However, the issues become somewhat confused when the stream is

mixed, as in the municipal waste sector, where responsibilities fall between the Department of the Environment, the Ministry of Housing and Local Government, and the local authorities themselves. Lacking an integrated framework and appeal body, agencies plan and deliver services according to their own objectives and mandates, and the lack of coordination results in an inability to resolve issues beyond their immediate jurisdiction. Handling and disposal of household hazardous waste in the municipal solid waste stream is a notable example. Solid Waste Management in Malaysia seems to be lacking both institutionally and managerially as a problem area in ecological modernization. The existing policy framework dealing with complexity issues of solid waste management also seem fragmented

A transformation in the role of the state is one of the core elements addressed in Ecological modernization theory. Dryzek (2005) argues that Ecological Modernization implies a partnership in which governments, business, moderate environmentalists, and scientist cooperate in the restructuring of the capitalist political economy along more environmentally defensible lines. Transformations in the role of state and market can also be in the form of higher level of participation of the private and public actors in policy formulation, decision-making and implementation. The involvement of representatives from relevant government agencies and the industry in the development of environmental policies signifies the increasing opportunities and importance of the involvement of the private sectors in the traditional administrative, regulatory, managerial, corporate and mediating functions of the state (Mol & Sonnenfeld, 2000). This carries the implication that industry does not merely attempt to influence government policy but is a part of the decision making and implementation process. In case of Malaysia, different types of governance are needed; more open, flexible, and oriented towards learning and experimenting. The role of government and state also important to integrate and cooperate with all stakeholders to reform National policy of solid waste management more effective to achieve sustainability of solid waste management in Malaysia.

Solid Waste Management in Malaysia and the Ecological Modernization theory

In the fifteen years since the 1992 World Summit in Rio Janeiro there has been a greater understanding of the position and function of solid waste management in the ecological, economic and social framework within countries. Preventing and managing waste is at the heart of sustainable development. Waste means unnecessary depletion of natural resources, unnecessary costs, and environmental damage. Sustainable waste management is about using resources more efficiently (OECD, 2000). Ecological Modernization is often used as a synonym for strategic in environmental management in industrial ecology, eco-restructuring, and so on (see Hawken, 1993; Ayres et al., 1998). Theory has also been developed as a way of analyzing emergent policy discourses (Hajer, 1995) and as the theoretical basis from which various policy prescriptions can be brought forward to encourage a shift toward more environmentally benign modes of industrial development (Mol, 1995; Gouldson & Murphy, 1996). In each case, ecological modernization is centrally concerned with the relationship between industrial development and the environment and with social capacities to recognize and respond to existing and emergent environmental problems.

The theory of ecological modernization suggests need the national policy of solid waste management and effective system for sustainability solid waste management. The EM theory may be thought of in terms of clusters or themes of social and institutional transformations and practices the key of which is implementing a form of environmental governance that enables capacity building. This refers to the ability of a society to identify and solve environmental problems through of governance as well as cognitive, politico-institutional and economic-technology strengths (Janicke, 1990; Weidner, 2002). However, the national policy and solid waste system in Malaysia has failed to deliver sustainabile solid waste management. There is lack of institutional arrangements, policy gaps, inadequate of financial support, privatisation process failures, insufficient man power and poor understanding of environmental concerns dealing with social complexity of solid waste management in Malaysia. Thus, the concept of ecological modernization theory in terms of SWM may be difficult to achieve in Malaysia.

A solid waste management program in Malaysia has developed in phases and was quite primitive until the late 1970s. The local district health offices cleaned only the streets and hauled away household wastes to municipal disposal sites assigned as authorized dumping ground. However, with the rapid increased in MSW generation, the collection frequency improved slightly to prevent detrimental health impacts to the community. At this phase, the waste management system was still unsatisfactory. In order to increase efficiency further, the government delegated waste management to four private consortia (MHLG, 2005).

The privatization of urban solid waste management in Malaysia was initiated in 1996 with the objective of providing an integrated, effective, efficient, and technologically advanced solid waste management system. The thrust of the systems is on waste reduction and the use of technology to recover resources from waste (recycling, composting, incineration etc), thereby minimizing the need for final disposal, which is expected to become burdensome in the future (MHLG, 2003). It was also expected to resolve the problems of solid waste management faced by Local authorities (LAs) such as finance, lack of expertise, illegal dumping, open dumping, open burning, and lack of proper solid waste disposal sites. However, privatization did not really solve the issues, but only transferred the problems from LAs to the private companies.

In essence, the privatization exercise is aimed at reorganizing the existing solid waste management system used by most local authorities into a system that is prepared to undertake disposal of wastes from expanding urban localities, incorporating recycling and safe environmental management measures. In conjunction with that goal, laws and regulations will be streamlined at the federal, State and Local government levels to ensure proper disposal, including mandatory separation of recyclable waste by households. Efforts in solid waste management will be given high priority, considering the adverse effect of environmental degradation from waste that is left unattended, especially in the cities. Taking into account the related problems such as finance, lack of expertise and the myriad functions that need to be carried out by the local authorities, the government felt that the job of managing solid waste would be best handled by the private sector. However, problems such as the increasing occurrences of indiscriminate dumping of waste, open burning at dumping sites, and the difficulty in identifying suitable disposal sites still happened in Malaysia. Thus, the privatization process of solid waste management is not successfully implemented in Malaysia.

Summary and conclusion

Ecological Modernisation represents institutional transformations in government to overcome environmental crises the key of which is implementing a form of environmental governance that enables capacity building . This refers to the ability of a society to identify and solve environmental problems through governance as well as cognitive, politico-institutional and economic-technology strengths. As such the EMT not only provides a way for environmental sociologists to more directly conceptualize environmental improvement but also a fresh perspective on the role of environmental movements by avoiding romanticization and by appreciating the particularly fundamental roles that sciences, technology, capital, and state might play in the processes of environmental improvement. To achieve a national SWM policy that is sustainable the EMT envisages changes in the traditionally central role played by the government and the nation-state in environmental reforms in the form of more decentralized, flexible and consensual styles of national environmental governance with less top-down, hierarchic command-and-control regulation.

In examining the EMT *vis-a-vis* the current Malaysian situation this study found a host of factors that signifies that the country is still far off from reaching a national sustainable SWM policy. There is the lack of contribution and cooperation from the relevant private sector and NGOs. Virtually no strong social network exists between the public and private sectors in national planning and management pertaining to SWM as manifested in the relative failure of the SWM privatisation process. It needs little convincing that the way forward is for the Malaysian government and local authorities not only to jointly introduce truly integrated policies but also to enhance the engagement and collaboration between all

stakeholders – the public sector, civil society, market and state - in order to achieve effective and sustainable SWM for the country.

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