POLICY AND STRATEGIES TOWARDS SUSTAINABLE WASTE MANAGEMENT IN MALAYSIA

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ABSTRACT. This paper is aimed to analyze the trend in waste management policies and system over the past 50 years and to examine the effectiveness of these policies in improving waste management in the country. Since 1970s, the absence of designated regulations to deliberate on waste management by the local authorities began to show detrimental impacts to the environment. As a result, privatization was implemented to shift the responsibility to private entities. The interim period lasted till 2007 with only two consortia out of the four survived. Thus, the Solid Waste and Public Cleansing Management Act, 2007 and Solid Waste and Public Cleansing Management Corporation Act, 2007 were passed to expedite the improvement in the management system. This includes the enhancement of recycling rate in the country via the participation of public and private sectors. With the current developments, Malaysian waste management is expected to be more sustainable in the future.

Keywords: Solid Waste and Public Cleansing Management Act 2007, Recycling, Privatization.

Introduction

Improper waste management has been reported to be one of three contributors of environmental pollution in Asia [1]. It is generally due to the rapid increase (2.3%) in waste generation in many developing nations in Asia, resulting from the expansion of population, urbanization and improved standard of living [1-3]. The detrimental impacts are more evident in developing countries with lower capacity to invest in sustainable waste management system. The waste management can be a challenging issue in these countries particularly when the nation lacks of appropriate policies to regulate the matter[1].

Waste management in Malaysia shows different pace of development over the years. To date, Malaysia generates approximately 30,000 tonnes of waste per day and the generation is reported to increase at 3% annually [3]. Consequently, the government has taken several steps in stipulating a more comprehensive policy regarding waste management since 2007. This paper is aimed to analyze the trend in the establishment of waste management policies over the past 50 years and to examine the effectiveness of these policies in improving the waste management system in the country. Also, the paper is targeted to deliberate the current scenario in waste management in the country by incorporating strategies identified by the authorities in order to build a strong and sustainable waste management system.

Municipal Solid Waste Management in the Past

In the 1970s, Malaysian waste management system was rather straightforward involving the hauling of waste from communal bins to designated disposal areas owned by local authorities while most households dealt their solid waste via burning or burying within their compound. Nevertheless, with rapid expansion of residential housing scheme, particularly in urban areas, the need for a proper system became eminent. Thus, 1970s saw the earliest regulations being imposed including the Street, Drainage and Building Act 1974, Town and Country Planning Act 1976, and Local Government Act 1976. Though no designated regulation was directed towards the management of waste per say, clauses within the three Acts was sufficient to manage the waste until 1980s [3].

Rapid population growth called for a more dedicated policy in the waste management sector. Thus, waste management policies in Malaysia evolved from simple informal policies to the Action Plan for a Beautiful and Clean Malaysia (ABC) in 1988. The proposed national policy by ABC was formulated with the aim to produce a national uniform municipal solid waste system that was productive, environmentally sound and socially acceptable in Malaysia by the year 2010 [3]. As the standard of living improved while the consumption patterns among Malaysian changed, the management of waste become more complicated. Demands for improved waste management services and disposal facilities grew into a huge challenge for the local authorities. Many small authorities failed in this aspect that improper waste management begun to pose serious environmental problem. The cost for waste collection alone had utilized more than 70% of the
local authorities funds [2,4]. Due to the lack of appropriate technology and serious financial constrain, the local authorities failed to progress accordingly. As a result, privatization was implemented in order to shift the responsibility to private entities.

**Privatisation of Waste Management in Malaysia**

During the privatisation, four consortia were awarded to cater waste management in Peninsular Malaysia, according to the designated regions, namely Northern region (Perlis, Kedah, Perak and Penang), Central region (Kuala Lumpur, Selangor and Pahang), Southern region (Negeri Sembilan, Malacca and Johor) and Eastern region (Kelantan and Terengganu). This enabled some improvement in the system particular in waste collection since the consortia were able to provide more efficient services. Under full privatization or the concession period, concessionaires were mandated to implement the best management practice and try to improve the waste management system in the country. However, over the years, the development of waste disposal sites indicated unsatisfactory progress. This is due to the fact that the consortia fail to collect revenue from their services making them incapable to invest in new equipment and machineries. The issues become more serious over the years towards the completion of the first interim. Consequently, interim period that lasted till 2007 saw only two consortia out of the four survived.

The National Strategic Plan for Solid Waste Management (NSP) was launched in 2005 while the Master Plan on National Waste Minimization (MWM) and, the National Solid Waste Management Policy were introduced in 2006. However, these Plans failed to deliver much improvement to the existing waste management. In fact, 2007 saw a huge public uproar when the water catchment area in Klang Valley was contaminated with landfill leachate [5]. This called for drastic respond from the government where the Solid Waste and Public Cleansing Management Act (SWMA) 2007 was passed.

**Solid Waste and Public Cleansing Management Act, 2007**

The passing of SWMA enables significant improvement in the waste management system and it was further strengthened with the Tenth Malaysian Plan in 2010. This has articulated the Malaysian government’s commitment towards sustainable waste management. Thus, the National Strategic Plan for Solid Waste Management (2000–2020) was introduced with a focus on waste minimization targeting 22% recycling by 2020.

The SWMA 2007 was gazetted on 30th August 2007 and has been implemented in September 2011 with two years grace period. The time gap between the passing and the enforcement of the Act was due to a lack of supporting regulations. Currently, there are eight regulations which have been enacted under the SWM Act though more are still in the draft stage and as such are still confidential. The eight existing regulations are as follows [4,6]:

1. Solid Waste and Public Cleansing Management (Manner of Appeal) Regulations 2011,
3. Solid Waste and Public Cleansing Management (Compounding of Offences) Regulations 2011
5. Solid Waste and Public Cleansing Management (Licensing) (Undertaking or Provision of Collection Services for Household Solid Waste, Public Solid Waste, Public Institutional Solid Waste and Solid Waste Similar to Household Solid Waste) Regulations 2011
6. Solid Waste and Public Cleansing Management (Licensing) (Undertaking or Provision of Transportation Services by Long Haulage) Regulations 2011
7. Solid Waste and Public Cleansing Management (Licensing) (Undertaking or Provision of Public Cleansing Management Services) Regulations 2011
8. Solid Waste and Public Cleansing Management (Scheme for Household Solid Waste and Solid Waste Similar to Household Solid Waste) Regulations 2011
Current MSW Treatment Technologies

Daily generation of MSW in Peninsular Malaysia had exceeded 30,000 tonnes where at least 60% consisted of retrievable materials including organic matter, paper, plastic, metal and glass. However, the main bulk of the generated waste (95%) was sent to landfill for disposal. Approximately 14% paper, 15% plastic, 3% metal and 3% glass composed together with at least 25% organics were not tapped that all of these resources ended unutilized in the landfills. Figure 1 illustrates the composition of Malaysian MSW.

![Diagram of MSW Composition in Malaysia](image)

**Figure 1**: Typical municipal solid waste composition in Malaysia [3].

The dependency of waste disposal on landfill is contributed heavily by the lack of integrated waste management system in Malaysia. As a result, waste cells in landfills exhaust rapidly and more new areas are required to site new disposal facilities. To date more than 190 landfills are operating in Malaysia [4]. Yet, less than 10% are sanitary landfills that risk of environmental contamination namely to water and soil is very high [3]. Improving the current waste management system in Malaysia is not an easy task. This is mainly due to the fact that various challenges need to be overcome. Among the most significant challenges are the financial constraints in improving waste management facilities and indifferent attitudes of the people.

Challenges in MSW Management in Malaysia

The enforcement of SWPCM Act 2007 in September 2011 sees many improvements in waste management services particularly the collection system and commitment from the waste concessionaires. Yet, due to the lack of comprehensive and reliable data, proposed improvements can be very challenging. This is proven when many programs including recycling campaigns and installation of incineration failed to achieve the targets. Nevertheless, with the implementation of SWMPCM Act 2007, it is hoped that these challenges can be solved to a certain extent.

Improvement on landflling siting and management

The Act imposes that only sanitary landfills are permitted to treat and dispose MSW in the country. As a result, more sanitary landfills with appropriate liners and amenities are being built while existing non-sanitary landfills are being upgraded to a Class IV of Malaysian non-sanitary landfills standard. Even though the construction of sanitary landfills promotes safe confinement for MSW, it is very costly. Financial aspect of the planning, constructing and managing sanitary landfills can be very challenging particularly to concessionaires without strong financial capability. From a different aspect, siting of new landfill has become a huge problem to many waste managers. Not-in-my-back-yard (NIMBY) syndrome and the increase in price of land are among the major contributing factors that create dilemma and challenges to waste managers. Therefore under the provision of the SWPCM Act 2007 the National Department of Solid Waste (NDSW) has initiated various strategic plans in improving the current waste management system. Among the most crucial target is the reduction of 40% MSW from landfilling. The strategies are committed via the strengthening of the SWPCM Act 2007 from various aspects including licensing provision, charges for waste management services and research and development in MSW management in the country.

Promotion of 3R activities

Various campaigns have been organized since 2000 to promote 3R activities among Malaysian. However, the recycling rate in particular has been very low and was not able to significantly reduce the volume of
waste sent to landfills for disposal. Nevertheless, unofficial recycling was found to be more than 15% of the total waste generated. Yet, the refusal of the unregistered recyclers to participate in the data collection has disabled the NDSW to capture the actual recycling rate in the country. Thus, extensive campaigns have been launched since September 2011 to promote proper recycling activities. This campaign involved various mass media including advertisement in television, radio and websites.

Additionally, a range of incentives have been introduced to encourage the public to participate in the 3R activities. Promotions of these activities were carried out in schools and learning institutions, in government offices and residential areas, and in public places such as hypermarkets and shopping complexes. The promotion of the 3R activities also involves the participation of voluntary bodies including the non-governmental agencies (NGOs) and residential associations. Apart from recycling and the 3R activities, the NDSW also strategized the possibility of converting waste to value added products.

Waste to Value Options

Among the options taken into consideration by the NDSW to divert the MSW by 2015 are biological treatments of organic waste and thermal treatments. Composting and anaerobic digestion are found feasible due to the fact that the technologies are rather simple and the resources are available. As for the capital investment, though composting plants incur smaller capital than anaerobic digestion plant, the latter has bigger market potential. This is so as biogas is more marketable in Malaysia than MSW compost. This is due to the recent government policy that promote the generation of renewable energy including energy from waste. Yet, both options were thoroughly analyzed and the implementation of these technologies would be dependent on its suitability to the regions.

Conclusion

The current challenges of waste management system in Malaysia need to be analyzed prior to any recommendation of improvement. Once identified, these challenges can be the foundation for the government to find appropriate mitigation measures to overcome the possible obstacles. With the implementation of the SWPCM Act 2007, various strategies have been proposed by the government in improving the waste management system in the country. SWPCM will enable the successful implementation of the strategies planned to tackle at least 40% MSW from the landfill stream thus promote more sustainable waste management in Malaysia.

References