

LEGISLATIONS ON SOLID WASTE MINIMIZATION: A COMPARISON BETWEEN MALAYSIA AND AUSTRALIA

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ABSTRACT

Sustainable solid waste management contributes to three important aspects of sustainable development, that is, the environment, and economic and social wellbeing. The contribution of solid waste management to the environment is characterized by the reduction of environmental impact and minimization of resource extraction. The indicator of this is the reduction and minimization in waste generation. In Malaysia, the increasing generation of solid waste in Malaysia shows that continuous reduction in waste generation in Malaysia has yet to be a total success. The increasing generation of solid waste may cause air, land and water pollutions. On the other hand, there is slight reduction of Australia's waste generation in recent years. This shows Australia's success in practising waste minimization, recycling and recovery of energy from waste. Based on library research method, this paper aims to compare legislations related with solid waste minimization in Malaysia and Australia. It is found that waste minimization is the main focus of solid waste management laws in Australia, whereas Malaysia's legislations still focus on basic solid waste management issues which include collection, disposal and infrastructure necessities.

Keywords: Solid Waste, Minimization, Malaysia, Australia

INTRODUCTION

The World Bank in 2012 discovers that municipal solid waste generation levels worldwide are more or less 1.3 billion tonnes per year and the increase of the generation levels are estimated around 2.2 billion tonnes by 2025 (World Bank, 2012). In Malaysia, solid waste generation is 37,011.195 tonnes per day in 2016 and 37,498.149 tonnes per day in 2017 as illustrated in the Table provided below. This shows the increase of waste generation in Malaysia from year to year.

Table 1 Solid waste generation

Year	Waste generation (tonnes / day)
2016	37,011.195
2017	37,498.149

Source: Solid Waste and Public Cleansing Management Corporation May 2018

In regard to solid waste disposal, around 29,590.82 tonnes of solid waste was disposed of in 2013 (Official Portal of Ministry of Urban Well-being, Housing and Local Government). The trend of an increasing solid waste generation in Malaysia may cause negative impacts on the environment if waste is not effectively managed.

Wastes should be managed according to sustainable development where the present and future generations will not be affected (Latifah Abdul Manaf et. al., 2009). Household solid waste in particular may cause environmental degradation in Malaysia it is not effectively managed because thousands of tonnes of household waste produced every day (Md. Abdul Jalil, 2010). Improper management of solid waste may result in environmental impacts such as; damage or loss of biodiversity, air, water, land and noise pollution, loss of recreational amenity, loss of aesthetics

landscape and scenery and explosion hazards (Behzad et. al., 2011). These impacts may give rise to public health hazards (Sinha et. al., 2014).

On the other hand, Australia generated around 64 million tonnes of waste in 2014-15 which was slightly reduced as compared to waste generation in 2006-07 (*Australian Government, Department of the Environment and Energy*). This shows Australia's success in practising recycling and recovery of energy from waste. It has been noted that one of the sources of energy is derived from waste (Ali El Hanandeh & Zein, 2009). It is further reported that there is significant change in Sydney in recent years in respect of waste management and energy generation as a result of new climate-statutory regulations (Ali El Hanandeh & Zein, 2009). Hence, this paper aims to compare legislations related with solid waste minimization in Malaysia and Australia.

SOLID WASTE MINIMIZATION

Solid waste management practices around the world vary although the basic ones are almost similar. Figure 1 illustrates common waste management practices of some developing countries.

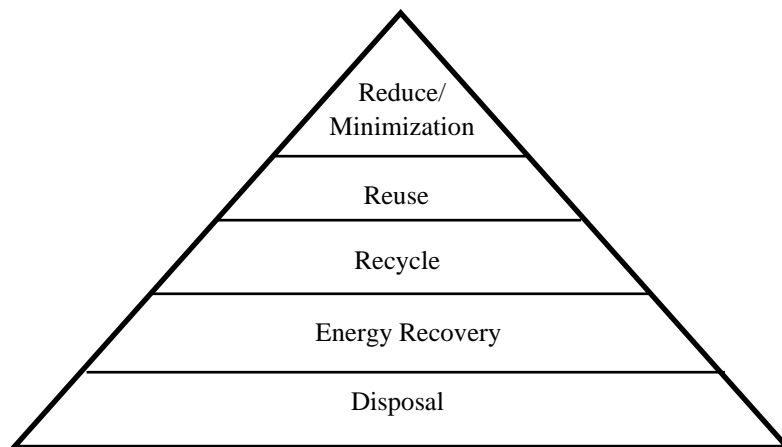


Figure 0 Common waste management practices of some developing countries
Source: Agamuthu, P. & Fauziah, S.H., 2014

The figure shows that there is a minimum implementation of energy recovery, recycling, reuse and reducing while waste disposal is widely implemented in many developing countries, including Malaysia. Waste disposal here generally refers to landfilling (Agamuthu, P. & Fauziah, S. H., 2014).

Since an effective solid waste management is crucial in order to evade negative effects on the environment and health (Behzad et. Al., 2011), the prevention and minimization of solid waste should be practised in Malaysia in order to mitigate and reduce the waste generation. The United Nations Human Settlements Programme (UN-Habitat) reveals that the global focus has now shifted from mere waste removal to waste minimization by reducing its environmental impact through the medium of innovative ways (United Nations Human Settlements Programme (UN-Habitat), 2010).

RELATED LEGISLATIONS IN MALAYSIA

Solid waste management falls under the term 'sanitation' as provided in item 7 of the Concurrent List (List III) of the Federal Constitution. In 2007, parliament passed the Solid Waste and Public

Cleansing Management Act 2007 (Act 672). Prior to that, solid waste management was the responsibility of local governments and state governments according to the Local Government Act 1976 (Act 171) (Solid Waste and Public Cleansing Management Corporation, 2016). With the enforcement of Act 672 in 2011, the federal government took over solid waste management with several state governments surrendering their executive power on solid waste management to it. The respective states are Perlis, Kedah, Pahang, Negeri Sembilan, Malacca, and Johore, and the Federal Territories of Kuala Lumpur and Putrajaya. Other states in the peninsula have yet to implement the Act. Therefore, the current legislations on solid waste management in Malaysia are as follows:

The Solid Waste and Public Cleansing Management Act 2007 (Act 672)

Act 672 was enacted to regulate the management of controlled solid waste and public cleansing for the purpose of maintaining proper sanitation and for related purpose (Preamble of Act 672 (Act 672)). Besides, it is the law for the proper control and regulation of matters relating to the management of controlled solid waste and public cleansing throughout Peninsular Malaysia and the Federal Territories of Putrajaya and Labuan and was enacted to ensure the uniformity of law and policy (Preamble of Act 672 (Act 672)).

Section 2 of Act 672 states that controlled solid waste means “any solid waste falling within any of the following categories: commercial solid waste; construction solid waste; household solid waste; industrial solid waste; institutional solid waste; imported solid waste; public solid waste; or solid waste which may be prescribed from time to time”.

As far as solid waste minimization is concerned, section 101 (1) (a) of Act 672 provides inter alia that the minister may require any solid waste generator to reduce the generation of controlled solid waste in any manner or method, by an order published in the gazette. Failure to comply with the order is regarded as an offence and on conviction; a person shall be liable to a fine not exceeding ten thousand ringgit or to imprisonment for a term not exceeding six months or to both (Section 101 (2) of Act 672). Reduction of solid waste in order to avoid resource depletion and promote equitable use of natural resources for present and future generation are in compliance with the principle of sustainable development.

The minister may also require the use of any method or manner for the purpose of reuse of the controlled solid waste by an order published in the gazette (Section 101 (1) (g) of Act 672). Similarly, a failure to comply with the order is an offence and a fine not exceeding ten thousand or imprisonment not exceeding six months may be imposed on a convicted person (Section 101 (2) of Act 672).

As far as recycling is concerned, it is the collection and separation of solid waste in order to produce products (Section 2 of Act 672). Recyclable waste is defined as “any household solid waste and solid waste similar to household solid waste which are separated for recycling...” (Regulation 2 of the Solid Waste and Public Cleansing Management (Scheme for Household Solid Waste and Solid Waste Similar to Household Solid Waste) Regulations 2011). Moreover, recycling is ranked third in the definition of waste hierarchy under Regulation 2 of the Solid Waste and Public Cleansing Management (Prescribed Solid Waste Management Facilities and Approval for the Construction, Alteration and Closure of Facilities) Regulations 2011.

The minister may require any person to use a specified amount of recycled materials for specified products, the implementation of coding and labeling systems for any product or material to promote recycling and the use of any method or manner for the purpose of recycling of the controlled solid waste (Section 101 (1) (c) (e) and (g) of Act 672). Failure to comply with the

order is an offence and on conviction, a fine not exceeding ten thousand ringgit or imprisonment for a term not exceeding six months or both, may be imposed (Section 101 (2) of Act 672).

In regard to recyclable waste, Regulation 14 of the Solid Waste and Public Cleansing Management (Scheme for Household Solid Waste and Solid Waste Similar to Household Solid Waste) Regulations 2011 provides ways to manage it by outlining the responsibility of the owner or occupier of landed premises which includes the responsibility to separate the recyclable wastes. Regulation 18 allows an owner or occupier of landed premises to request for the collection of waste outside the collection schedule. In addition, Regulation 21 lays down the duty of the management body of the common property to provide one or more collection points. Regulation 26 (2) further provides the duty of the licensee for collection services to deliver several types of wastes including recyclable wastes to the prescribed solid waste management facilities.

In sum, legislations on 3R must provide aim and strategy to uphold sustainable use of natural resources which requires balanced natural resources' use and its preservation for future generation towards sustainable solid waste management. Nevertheless, based on the above discussion, it is submitted that there are inadequacies of existing legal provisions on household solid waste in Malaysia particularly on solid waste minimization.

The Solid Waste and Public Cleansing Management Corporation Act 2007 (Act 673)

The next statute is the Solid Waste and Public Cleansing Management Corporation Act 2007 (Act 673). This Act provides for the establishment of the Solid Waste and Public Cleansing Management Corporation with powers to administer and enforce solid waste and public cleansing management laws and for related matters (Preamble of the Solid Waste and Public Cleansing Management Corporation Act 2007 (Act 673)). The Act was published in the Gazette on 30 August 2007 and came into force on 1 June 2008. The National Solid Waste Management Department Malaysia as provided under Act 673 has the function to coordinate various agencies including federal and state government agencies, state governments, local authorities, private agencies, and the public while SWCorp's role is to assist in the implementation of the policy (Moh, Y. C. & Latifah Abd Manaf, 2017). From the implementation side, only Act 672 and Act 673 are enforced apart from the relevant regulations under Act 672.

The Town and Country Planning Act 1976 (Act 172)

In pursuance of the enactment of Act 672, the Town and Country Planning Act 1976 (Act 172) was amended by the Town and Country Planning (Amendment) Act 2007 (A1313) and enforced from 1 September 2011 in the Federal Territory of Kuala Lumpur and Federal Territory of Putrajaya. The related provision is section 22(2) (bc) which provides, among others, that
in dealing with an application for planning permission, the local planning authority shall take into consideration such matters as are in its opinion expedient or necessary for planning and in particular the provisions of the Solid Waste and Public Cleansing Management Act 2007 (Act 672).

The above provision shows that the planning authority must take into account expedient and necessary matters and especially the provisions of Act 672 in dealing with an application for planning permission.

The Environmental Quality Act 1974 (Act 127)

The term 'waste' is defined under the Environmental Quality Act 1974 (Act 127) and it includes solid waste. Section 24 of Act 127 on the restrictions on pollution of the soil states, "(1) No person shall, unless licensed, pollute or cause or permit to be polluted any soil or surface of any

land in contravention of the acceptable conditions specified under section 21”. Section 21 of Act 127 provides,

The Minister, after consultation with the Council, may by regulations specify acceptable conditions for the emission, discharge, or deposit of environmentally hazardous substances, pollutants or wastes or the emission of noise into any area, segment or element of the environment and may set aside any area, segment or element of the environment within which the emission, discharge or deposit is prohibited or restricted.

This restriction may include the activity of illegally dumping solid waste on any soil or surface of any land. Section 29 of the act prohibits the discharge of wastes into Malaysian waters stating, “(1) no person shall, unless licensed, discharge environmentally hazardous substances, pollutants or wastes into Malaysian waters in contravention of the acceptable conditions specified under section 21”.

Section 51 of Act 127 among others empowers the minister to make regulations to prohibit the discharge, emission, or deposit into the environment of any matter, whether liquid, solid, or gaseous. In regard to solid waste transfer stations and landfills, the Minister of Natural Resources and Environment makes Environmental Quality (Control of Pollution from Solid Waste Transfer Station and Landfill) Regulations 2009 according to the powers conferred by sections 21, 24 and 51 of Act 127.

Amendments Affected by the Enactment of the Solid Waste and Public Cleansing Management Act 2007 (Act 672)

The enactment of Act 672 required amendments to the Street, Drainage and Building Act 1974 (Act 133) and the Local Government Act 1976 (Act 171) to avoid any conflict in the provisions.

a. The Street, Drainage and Building (Amendment) Act 2007 (Act A1312)

With the enactment of Act 672, the Street, Drainage and Building Act 1974 (Act 133) was amended by the Street, Drainage and Building (Amendment) Act 2007 (Act A1312) which came into force on 1 September 2011 in the federal territories of Kuala Lumpur and Putrajaya, and in Perlis, Kedah, Pahang, Negri Sembilan, Malacca, and Johore. Act A1312 deleted paragraphs (viii) and (xix) under section 133 of the Street, Drainage and Building Act 1974 (Act 133). Before the amendment, the section provided inter alia that the state authority has the power to make by-laws in respect of:

(viii) the construction, maintenance and repair of cess pools, privies, septic tanks, sewage purification plant and other matters relating to the reception or disposal of sewage and the maintenance and repair of ash pits, dust bins and like receptacles.

(xix) the provision of cess pools, privies, septic tanks, sewage purification plant and other matters relating to the reception or disposal of sewage and the provision of ash pits, dust bins and like receptacles.

Act A1312 also provides exceptions or savings which state that for the avoidance of doubt, it declared that notwithstanding anything contained in this Act, any law relating to the management of solid waste and public cleansing for the time being in force in any local authority area or non-local authority area shall continue to be in force unless and until this Act and the Solid Waste and Public Cleansing Management Act 2007 are brought into operation with respect to that area.

This shows that if Act 672 and Act A1312 of 2007 are not applied in any particular local authority area, existing laws on the matter continue to be in force. Thus, states that have yet to apply Act 672 continue to apply existing laws.

b. The Local Government (Amendment) Act 2007 (Act A1311)

In addition, another statute which was amended in pursuance to the enactment of Act 672 is the Local Government Act 1976 (Act 171) which was amended by the Local Government (Amendment) Act 2007 (Act A1311). The amended Act came into force on 1 September 2011 in the federal territories of Kuala Lumpur and Putrajaya, and in Perlis, Kedah, Pahang, Negeri Sembilan, Malacca, and Johore.

Following the amendment in 2007, section 72 (1) (a) of the Local Government Act 1976 (Act 171) provides that “a local authority shall have power to do all or any of the following things, namely: to establish, maintain and carry out such sanitary services for dealing with effluents...”

Paragraph (f) (ii) of section 72 was deleted. The amendment in 2007 also substituted section 73 (a) (i) and (ii) which now reads:

(1) A local authority may from time to time make, amend or revoke by-laws for the better carrying out of the provisions of this Act and in particular-

(i) to establish, maintain and compel the use of any service for dealing with effluent and to require the owners or occupiers of any premises to effect such dealing and to regulate and control the manner thereof;

(ii) to keep public places clean and free from liquid waste and to prohibit the throwing, dropping, depositing or discharging of flushing water or other liquid waste, into any stream, channel or other water-course, and prevent any such liquid from flowing into any such place, and to regulate or prohibit the bathing or washing of persons, animals or things in any such place.

Act A1311 of 2007 also deleted paragraph (d) (iii) of section 73 subsection (1) and provides a saving which is similar with Act A1312.

The 2007 amendment limited the local government’s power to particular cleansing activities to ensure there is no overlapping of authority between it and the institutional bodies established under the new Act 672 (Hansard of the Dewan Rakyat, DR5.7.2007).

Laws relating to Solid Waste Management Applicable in Other Peninsular Malaysia States, Federal Territory of Labuan, Sabah and Sarawak

At present, Terengganu, Kelantan, Selangor, Pulau Pinang, and Perak have yet to agree on the implementation of Act 672 and continue to apply laws existing prior to the coming into force of Act 672, that is, the Street, Drainage and Building Act 1974 (Act 133) and the Local Government Act 1976 (Act 171) as well as various by-laws.

There are only general provisions in the abovementioned statutes, that is provision on the construction, maintenance, repair and provision on dustbin and like receptacles in the Street, Drainage and Building Act 1974 (Act 133) and provision on the power of local authorities to establish, maintain and carry out sanitary services for dealing with all kinds of refuse. This clearly indicates the inadequacy of the two statutes to deal with solid waste minimization in comprehensive way. This is further affirmed that the above Acts are not exclusively for waste management which results in the lack of specific provisions addressing solid waste management issues such as waste recovery, recycling (Moh, Y. C. & Latifah Abd Manaf, 2014) including minimization.

Sabah and Sarawak have different sets of laws governing solid waste management as Act 672 covers only Peninsular Malaysia and the federal territories. The applicable laws in Sarawak are the Natural Resources and Environment Ordinance, the Local Authorities Ordinance 1996,

and the Protection of Public Health Ordinance 1999 while in Sabah they are the Local Government Ordinance 1961, the Public Health Ordinance 1960, and some By-Laws which include Uniform (Anti-Litter) By-laws 2010, Uniform (Beauty and Health Care Centre) By-laws 2014, Uniform (Compounding Offences) By-laws 2013, Uniform (Segregation and Disposal of Organic Waste) By-laws 2016 and Conservancy and Hygiene By-laws.

SOLID WASTE MINIMIZATION RELATED LAWS IN AUSTRALIA

Law-making powers in Australia are generally vested in a federal parliament and that of each state and territory (Bates, 2013). There are nine central governments in Australia which are Commonwealth, Australian Capital Territory, New South Wales, Northern Territory, Queensland, South Australia, Tasmania, Victoria, and Western Australia with law-making powers apart from local government and Australia's external territories (Bates, 2013). The law making body at the national level is the national federal (Commonwealth) parliament which has power to make laws under section 51 of the Commonwealth of Australia Constitution which provides that "the Parliament shall, subject to this Constitution, have power to make laws for the peace, order, and good government of the Commonwealth..." (Commonwealth of Australia Constitution).

In pursuance to that, there are numerous legislations enacted by State governments covering various environmental aspects and issues namely, biodiversity, biotechnology, chemicals, energy, environmental planning and assessment, heritage, native vegetation, natural resource management, pollution, waste and water (Lister et. al., 2012). Although specifics on environmental legislation in the various jurisdictions in Australia may differ, the concepts and principles forming the basis of the legislations are largely similar to each other (Bates, 2013). A significant concept which becomes the focus of environmental policies, legislations and decision-making processes is 'ecologically sustainable development' (Bates, 2013).

The aims of Australia's National Waste Policy are to, avoid the generation of waste, reduce the amount of waste (including hazardous waste) for disposal, manage waste as a resource, ensure that waste treatment, disposal, recovery and re-use is undertaken in a safe, scientific and environmentally sound manner, and contribute to the reduction in greenhouse gas emissions, energy conservation and production, water efficiency and the productivity of the land (Department of the Environment and Energy, Australia). In other words, Australian government policy is to regard waste as something that need not be created in the first place; or at least as a resource that can be recovered and reused or recycled rather than dumped onto land or emitted into air or water (Bates, 2013).

The above National Waste Policy comes with six key areas, namely taking responsibility, improving the market, pursuing sustainability, reducing hazard and risk, tailoring solutions and providing the evidence (Department of the Environment and Energy, Australia). Apart from that, there are also sixteen priority strategies which set together the role of relevant jurisdictions and include, "product stewardship framework legislation to allow the impacts of a product to be responsibly managed during and at end-of-life (Australian government); sustainable procurement principles and practices across and within government operations (individual jurisdictions); better packaging management (collaboration), national definition and classification system for wastes (including hazardous and clinical wastes) that aligns with international conventions and has provisions for items that have ceased to be classed as waste (collaboration) and national principles, specifications, best practice guidelines and standards to remove impediments to effective markets for potential wastes (collaboration)" (Department of the Environment and Energy, Australia). This indicates that there are some common and different role of each and every jurisdictions in regard to the priority strategies mentioned above.

Municipal solid waste in Australia comprises domestic wastes and council wastes which include wastes at beaches, parks, gardens, and street litter bins (Tanmoy Karak et. Al., 2012). One of the schemes which are used in Australia is recycling credit where the waste collection authority receives funds to be used as an incentive for recycling from a waste disposal authority which regards the payment as savings for the reduction of the waste disposal amount (Gatot Yudoko, 2000).

Australia has various statutes on waste management generally and solid waste management specifically. There are some laws which are directly related with waste and solid waste management while other laws are indirectly related with waste and solid waste management. In general, to develop policies and regulations, legislations in Australia call for consideration of resource management options according to the following order (Bates, 2013):

1. Avoidance of unnecessary resource consumption;
2. Resource recovery which includes reuse, reprocessing, recycling and energy recovery; and
3. Treatment, containment and disposal.

It is noted that in all jurisdictions in Australia, environment protection and waste legislation including regulations and policies made under that legislation emphasize waste reduction strategies, for example, the reuse and recycling of materials (Bates, 2013).

The relevant laws in Australian Capital Territory include the Environment Protection Act 1997, the Planning and Development Act 2007, the Waste Management and Resource Recovery Act 2016 and Litter Act 2004. The following are some of the relevant provisions in these Acts.

In regard to the Waste Management and Resource Recovery Act 2016 (Australian Capital Territory), the objects of the Act are stated in section 8, that is, “to manage waste according to the following hierarchy: minimize the generation of waste; maximize the recovery and re-use of resources; minimize the amount of waste that goes to landfill; and support innovation and investment in waste management; and promote responsibility for waste reduction; and promote best practice waste management”.

In New South Wales, the Protection of the Environment Operations Act 1997 statute aims among others to reduce negative impacts on human health and the environment by eliminating harmful waste besides support the fulfillment of the Waste Avoidance and Resource Recovery Act 2001. These objects are stated in section 3 of the Act, that is, among others,

To reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote...the elimination of harmful wastes;...and to assist in the achievement of the objectives of the Waste Avoidance and Resource Recovery Act 2001.

One of the directly related laws is the Waste Avoidance and Resource Recovery Act 2001 (NSW). Section 3 (b) of the Act states that the objects of this Act are as follows: to ensure that resource management options are considered against a hierarchy of the following order:

1. Avoidance of unnecessary resource consumption,
2. Resource recovery (including reuse, reprocessing, recycling and energy recovery), and
3. Disposal.

In *Liverpool City Council v Moorebank Recyclers Pty Limited; Benedict Industries Pty Ltd v Minister for Planning* (No 2) [2017] NSWLEC 53, the Court emphasized that numerous waste policies including NSW Waste Avoidance and Resource Recovery Strategy 2014-21 and legislation for instance Waste Avoidance and Resource Recovery Act 2001 (originally, the Waste

Minimisation and Management Act 1995 (NSW)) have enhanced awareness of waste management, and aim to encourage the avoidance of unnecessary resource consumption. In addition to that the Waste Avoidance and Resource Recovery Act 2001 (NSW) encourages the most efficient use of resources and the reduction of environmental harm in accordance with the principles of ecological sustainable development and among others, the minimization of the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste.

Another statute is the Waste Recycling and Processing Corporation Act 2001 which is “an Act to establish the Waste Recycling and Processing Corporation as a statutory State owned corporation to exercise certain functions in relation to waste”. The establishment of the Waste Recycling and Processing Corporation is provided in section 4 of the Act, that is, “there is constituted by this Act a corporation with the corporate name of Waste Recycling and Processing Corporation”. The principal objectives of the Corporation are stated in section 5 of the Act, which are among others,

...to protect the environment by conducting its operation in compliance with the principles of ecologically sustainable development contained in section 6 (2) of the Protection of the Environment Administration Act 1991,...to provide and manage efficient, safe and reliable waste facilities, secondary resource facilities, to be an efficient and responsible provider of waste management services, secondary resource recovery services and related services, to minimize any adverse health and environmental impacts of its activities and services relating to waste management and secondary resource recovery.

Apart from that, the Waste Recycling and Processing Corporation (Authorised Transaction) Act 2010 is an Act to provide for the transfer of the business of the Waste Recycling and Processing Corporation and for other purposes. Another statute is the Waste Minimisation and Management Act 1995 which is “an Act relating to the management, regulation and reduction of waste”. The principles of the Act are laid down in section 3 (1) of the Act, that is, “to achieve by the end of 2000 a 60% reduction in the amount of waste disposed of in New South Wales..., and to establish a waste management hierarchy of the following order: avoidance, reuse, recycling and reprocessing, disposal”. Section 3 (2) further provides the objects of the Act that is,

To ensure that local government, industry and community representatives are involved in the development of State wide waste policy, to minimize the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the re-use and recycling of waste, to ensure that industry shares with the community the responsibility for minimizing and managing waste, to establish a framework for the regulation of waste facilities and waste activities, to promote and ensure the efficient resourcing of waste, to achieve integrated waste planning and services on a regional basis, to promote and ensure environmentally responsible transporting, reprocessing and handling of waste, to provide appropriate sanctions for unlawful waste service planning and delivery, disposal in accordance with the principles of ecologically sustainable development contained in section 6 (2) of the Protection of the Environment Administration Act 1991.

It is submitted that the statutes are comprehensive in the sense that they range from the environment protection, waste avoidance, resource recovery, waste minimization to the extent that Waste Recycling and Processing Corporation is established to exercise certain functions in relation to waste.

The Environment Protection (Beverage Containers and Plastic Bags) Act 2011 and the Waste Management and Pollution Control Act are the relevant laws in Northern Territory. The

Environment Protection (Beverage Containers and Plastic Bags) Act 2011 is “an Act to establish a beverage container deposit scheme and to regulate the supply of plastic bags”. The objects of the Act as stated in section 3 include,

To minimise environmental pollution by establishing a container deposit scheme to reduce beverage container waste by providing communities throughout the whole of the Territory, as far as practicable, with access to facilities for the collection of empty containers and the payment of refund amounts; and increase resource recovery, reuse and recycling; and regulating the supply of single use, non-biodegradable plastic bags.

This indicates the main focus on this statute is on the establishment of beverage container deposit scheme and regulations on the supply of plastic bags.

In regard to the Waste Reduction and Recycling Act 2011 No. 31 (Queensland), section 15 (2) of the Act provides that “the strategy may include the following: waste avoidance, resource efficiency, resource recovery, product design, consumption, product stewardship, priority products or priority waste, standards, criteria and specifications for recycled materials and products containing recycled material, strategic waste management planning and data reporting”. The aims of the Act are listed in section 3 as follows,

To promote waste avoidance and reduction, and resource recovery and efficiency action; to reduce the consumption of natural resources and minimise the disposal of waste by encouraging waste avoidance and the recovery, reuse and recycling of waste; to minimise the overall impact of waste generation and disposal; to ensure a shared responsibility between government, business and industry and the community in waste management and resource recovery; and to support and implement national frameworks, objectives and priorities for waste management and resource recovery.

Based on the above, it is clear that the focused and directly related statute in Queensland is the Waste Reduction and Recycling Act 2011 No. 31 which provides detailed provisions on waste reduction, reuse and recycling and there is an emphasis on a shared responsibility between government, business and industry and the community on the aspects of waste management and resource recovery.

The related laws in South Australia include the Environment Protection Act 1993, the Waste Management Act (No 96 of 1987), the Zero Waste SA Act 2004, and the Plastic Shopping Bags (Waste Avoidance) Act 2008.

The Environment Protection Act 1993 is “an Act to provide for the protection of the environment; to establish the Environment Protection Authority and define its functions and powers; and for other purposes”. The objects of the Act are provided under section 10 of the Act, that is, among others

...to ensure that, as far as is reasonably practicable, the following measures are taken: to prevent, reduce, minimise and where practicable eliminate harm to the environment by programs to encourage and assist action by industry, public authorities and the community aimed at pollution prevention, clean production and technologies and resource recovery; and by programs to encourage and assist industry, public authorities and the community to apply the waste management hierarchy; and by regulating in an integrated, systematic and cost-effective manner activities, products, substances and services that, through pollution or production of waste, cause environmental harm; and the generation, storage, handling, treatment, transfer, transportation, receipt or disposal of waste and other pollutants; to promote the circulation of materials through the waste management process and to support a strong market for recovered resources.

Apart from that, the Waste Management Act (No 96 of 1987) is “an Act to provide for the management of waste and for the continuation of the South Australian Waste Management Commission”. The Commission is responsible for the administration and enforcement of this Act as provided in section 7 (1) of the Act. Section 7 (2) states the objectives of the Commission which include,

To promote effective, efficient, safe and appropriate waste management policies and practices; to promote the reduction of waste generation; to promote the conservation of resources by recycling and reuse of waste and resource recovery; to prevent or minimise impairment to the environment through inappropriate methods of waste management; to encourage the participation of local authorities and private enterprise in overcoming problems of waste management; to provide an equitable basis for defraying the costs of waste management; and to conduct or assist research relevant to any of the above objectives.

In regard to the Zero Waste SA Act 2004, it is “an Act to establish a statutory corporation, Zero Waste SA, with the function of reforming waste management in the State”. Section 5 (1) of the Act states that the primary objective of Zero Waste SA is to promote waste management practices that, as far as possible eliminate waste or its consignment to landfill; and advance the development of resource recovery and recycling; and are based on an integrated strategy for the State

The Waste Avoidance and Resource Recovery Act 2007 (No 36 of 2007) of Western Australia is “an Act to provide for waste avoidance and resource recovery; and establish waste authority; and provide for waste services by local governments; and provide for levies on waste; and repeal the Environmental Protection (Landfill) Levy Act 1998; and provide for related and consequential matters”. The objects of the Act are stated in section 5, that is “to contribute to sustainability and the protection of human health and the environment, in western Australia and the move towards a waste-free society by promoting the most efficient use of resources, including resource recovery and waste avoidance; and reducing environmental harm, including pollution through waste; and the consideration of resource management options against the following hierarchy- avoidance of unnecessary resource consumption; resource recovery (including reuse, reprocessing, recycling and energy recovery); and disposal”. This statute is a focused statute on waste avoidance and resource recovery in Western Australia.

Based on the above, it is clear that Australia has a variety of statutes on waste management in general and specifically on solid waste reduction and minimization. Hence, this indicates that Australia gives high priority to solid waste management related matters in the country due to its significance in relation to human health and environment.

CONCLUSION

Legislations on waste management in Australia focus on resource recovery, recycling, and waste reduction. On the other hand, Malaysia’s legislations still focus on basic solid waste management issues which include collection, disposal and infrastructure necessities. Besides, there are a variety of legislations and subsidiary legislations in Australia which cover various aspects of solid waste management. On the other hand, Malaysia only has one federal law which directly deals with solid waste management, that is, Act 672 while other States which do not accept the implementation of Act 672 only has general provisions concerning solid waste management in a number of statutes together with some by-laws. Therefore, the legislations on waste minimization in Malaysia are inadequate despite its significance for sustainable solid waste management. This constitutes a challenge in the implementation of sustainable solid waste management in Malaysia particularly the sustainability criteria which focuses on reducing the environmental impact and minimizing resource extraction. Lessons can be learned by Malaysia from the legislations in

Australia in resolving the issue of the inadequacies of waste minimization's related provisions in Act 672.

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