

# **Recent Institutional Changes to Reduce Waste Threatening Sustainable City in Malaysia**

**By**

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## **Abstract**

Along with Malaysia's enormous economic growth, its solid waste management institutions and recent institutional changes are crucial for a suitable solid waste management to achieve a sustained urban development. MSW management institutions and its recent changes show a positive impact on waste recycling in several sectors. Recycling activities that come from recent institutional changes are having two folded economic benefits such as it minimises wastes and acting as income generating agents for urban poverty groups as well. This paper focuses on Malaysia's recent changes in MSW management institution and its impact on waste recycling. Issues and policy implications are also explored.

**Keywords:** MSW management institution, recycling, part-time scavenging

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## **1.0 INTRODUCTION**

The management of municipal solid waste (MSW) is a growing environmental and financial problem all over the world. Despite significant efforts in recent decades to improve MSW management services, the majority of municipalities in developing countries still face major challenges in effective and efficient handling of the growing volume of wastes produced in their cities. On one hand, most of the municipalities of developing Asian countries are facing depleting resources such as experienced people, equipment, money and organisational problem for waste collection. On the other hand, final disposal of collected municipal waste is practically difficult due to the lack of getting new landfill sites, as most existing landfills are nearly exhausted. In 1990, out of 230 waste disposal sites available in Malaysia, 80% of them had a remaining operating lifetime of less than two years (Matsufuji. Y, 1990). Hence, final disposal of municipal waste is a crucial and serious problem. In the meantime, inadequacies in the handling of MSW threaten human health, cause natural resources to be degraded, dampen human spirits and the quality of life. In the long term, all these factors affect sustainable urban development. Therefore, Malaysia's solid waste management institutions and recent institutional changes are crucial for a suitable solid waste management to achieve a sustained urban development similar to that of a developed nation. As a result, waste recycling can be an alternative waste management process, which has already been proven in some selected areas in Malaysia. This paper focuses on the recent institutional changes in solid waste management and its effectiveness on waste recycling. Issues and policy implications are also suggested.

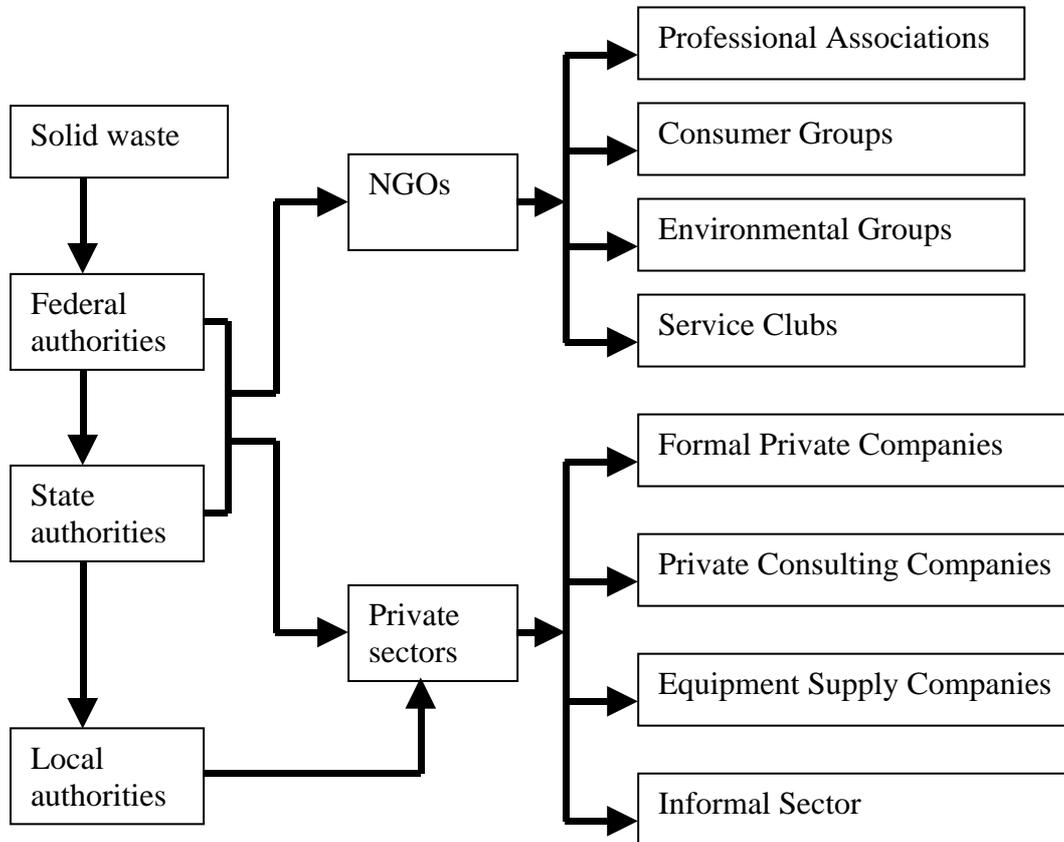
## **2.0 MSWM INSTITUTIONS AND RECENT INSTITUTIONAL CHANGES**

Malaysia is approaching the status of a developed country. Therefore, its solid waste management institutions and recent institutional changes are crucial for a suitable solid waste management to achieve a sustained urban development similar to that of a developed nation. MSW management institutions and its recent changes are summarised in the following sections.

### **2.1 MSW Management Institutions**

MSW management institutions are engaged in various activities, and all are involved in the handling of waste. As such, they are improving facilities for sustainable urban development. MSW management institutions are the public sector, formal private sector, informal private sector and community based non-governmental organisations (ABC 1988). The institutions and agencies in Malaysia involved in municipal solid waste management in Peninsular Malaysia can be seen in the Figure 1.

FIGURE 1: MSW Management Institutions in Peninsular Malaysia



Source: Adapted from ABC 1988

### 2.1.1 Recent Institutional Changes in MSW Management

To make solid waste management parallel with the massive economic development for reaching Vision 2020, some institutional changes in MSW management have already occurred in Malaysia. These changes are internationally accepted sustainable solid waste management strategies, which are as follows.

#### 2.1.1.1 Changes in public sector

The public sector is responsible for the overall MSW management system. Public sector's activities can be divided into two levels, which are the national and regional or local levels.

**National Levels.** At national level, public sector needs to ensure that – i) an appropriate legal and regulatory framework exists; ii) support services for increasingly effective and efficient inter-sectoral partnerships and integrated MSW management, and iii) the environmental health and sanitation services. Taking into consideration the points mentioned above, in the Government's Privatization Master Plan, solid waste management was earmarked as one of the areas of privatization. The government's aim to modernize and introduce environmental friendly solid waste management pursued the important step. At national level, in 1994, the government, through its Economic Planning Unit (EPU), adapted the privatization concept to reduce government involvement in economic activities so as to enable it to give more attention to administrative duties and responsibilities for the current national economic and development achievements.

Under the privatization project, the government awarded two consortiums namely Alam Flora and Southern Waste to take-over solid waste management in some selected areas.

**Local or regional levels.** Illustrative MSW issues that generally can be addressed more effectively at national than at regional or local levels which involve – i) market development and pricing policies for various recycled materials; ii) recycled material content, product durability, reparability, and component part interchangeability requirements in product manufacturing; iii) product packaging requirements; and iv) source reduction requirements. Considering these points, local government has launched programmes to support and supervise national government's privatization plan. As such, local authorities transferred all their staff related to solid waste, as well as all movable assets, to the appointed private consortia. In addition, local governments also create facilities and campaigns for improved recycling in communities, institutions, commercial places and related areas. The effectiveness of change in public sector (Local Authority = LA) on waste recycling can be seen in Table 1.

TABLE: 1 Waste Recycled by LA's in Peninsular Malaysia, 1993 - 1997

Year	Paper	Metal	Glass	Plastic
1993	446,713	79,169	55,803	48,584
1994	1,703,431	552,574	293,408	162,794
1995	338,699	78,389	1,865	18,771
1996	940,121	567,451	185,020	186,549
1997	260,130	13,600	0	4,010

Source: Ministry of Local Government and Housing, 1998.

#### 2.1.1.2 Changes in formal private sector

The formal private sector can be addressed as an officially registered or incorporated MSW institution, which has formal business licenses, organized labour forces, some

capital investment and generally advanced technology. There is a three fold purpose of such institutions, which are as follows: i) generate profit on investment; ii) increase efficiency and effectiveness of MSW services and decrease costs; and iii) improved recycling and source reduction. Following these three points, Alam Flora's and Southern Waste's solid waste management operations are elaborated as follows.

Alam Flora. Alam Flora started its operations on January 1<sup>st</sup>, 1997 in 23 local authorities (LA) including Kuala Lumpur, 11 LAs in Selangor (except Hulu Selangor) including Klang Valley and 11 LAs in Pahang.

In 2000, the company has a total manpower of 4,500 staff, fleet strength of 850 and 650 contractors carrying out daily operations. Alam Flora is also operating and managing 18 disposal sites taken over from the LAs. Total waste handled is 6,000 tonnes per day (Siraj 2000).

Southern Waste. In early 1998, Southern Waste took-over the responsibilities of solid waste management of Majlis Perbandaran Johor Baru, Majlis Daerah Johor Baru Tengah; and Majlis Perbandaran Melaka Bandar on 1<sup>st</sup> January, 1999. Southern Waste took-over the management of 989 workforce for 1,600 tons per day of solid waste of three LAs (Malik 2000).

Both Alam Flora and Southern Waste follow a sustained exercise to handle waste, which include: that waste must be stored, collected, transported, treated and disposed in the most environmentally friendly way. As such, this privatized waste management strategy is a useful tool to make a beautiful, healthy and clean Malaysia.

Alam Flora and Southern Waste's solid waste management plan priorities are based on the Hierarchy of Solid Waste Management, which is internationally accepted, and is being practiced in many countries throughout the world, especially in developed countries. This hierarchy of solid waste management begins with waste minimization, waste separation and recycling, waste processing such as incineration and composting and finally disposal at landfills. This integrated strategy requires participation at all levels, including government, industries, the public and the waste management concessionaires. This concept is used as guidance for the planning of the suitable solid waste management facilities and to ensure the efficiency of its services. The hierarchy, in terms of activities and the institutions involved, can be seen in Figure 2.

FIGURE 2. Hierarchy of Solid Waste Management



Source: Modified from Malik 2000

#### 2.1.1.2.1 The Effectiveness of Changes in formal private sector

##### *Alam Flora Sdn Bhd (AFSB) as Formal private Sector*

AFSB has a public relations and education programme that handles recycling. In general, there are three recycling programmes that are carried out by AFSB, which are:

1. **KitS School Programme** for primary and secondary school students.
2. Community Programmes and **Buy Back Centres** for the public.
3. **‘WasteWise’ Programme** for institutional, commercial and industrial wastes.

Buy Back Centre (BBC) that is managed by AFSB. There are two BBCs, which are located at Desa Pandan dan Cheras Modern Market. Both were set up in November 1999. Also, there are mobile BBCs located at Desa Tun Razak, Taman Beringin,

Taman Tun Dr. Ismail and Kajang. A few mobile BBCs are also expected to be opened in Seri Kembangan, Puchong dan Subang Jaya.

The Desa Pandan BBC is opened from 5 to 7 pm on Monday, Wednesday and Saturday. Meanwhile, the Cheras Modern Market is opened from 5 to 7 pm on Tuesday, Thursday and Sunday. People can bring their recyclable items to be weighed and cash is given according to the weight of the recyclables.

### **2.1.1.3 Changes in informal private sector**

The informal private sector is unorganised and generally considers illegal unhealthy casual activities in the dumping sites carried out by full-time scavengers. In reality, informal recycling activities are practised not only in the dumpsites by full-time scavengers, but it also in the institutions and commercial places by its cleaners, and within the municipal management organisation by its collection crews. A few studies have been conducted on different areas and scales of informal recycling activities. However, currently, dumpsite full-time scavenging is discouraged through regulations. On the other hand, institutions, commercial places and at community levels, informal recycling activities are encouraged more and more to recover resources in a cleaner and healthier manner.

#### **2.1.1.3.1 Effectiveness of Changes in informal private sector**

With respect to the scavenger statuses of the scavenger, Table 2 shows that full-time dumpsite, collection crew part-time, commercial place cleaner part-time and institutional cleaner part-time scavengers work 10.00, 1.50, 2.00 and 1.00 hours respectively daily for waste separation including resorting if required. The average yields of the full-time, collection crew part-time, commercial place cleaner part-time and institutional cleaner part-time scavengers are 10.76, 17.09, 17.08 and 16.71 kg per person per hour respectively (Table 2). The highest rate of yield is by collection crew part-time scavenger, followed by commercial place cleaner part-time and institutional cleaner part-time scavenger, and the lowest is the full-time scavenger. This is because the three statuses of part-time scavengers enjoy easier access to recycle waste compared to the full-time scavengers and their waste recycling is similar to their regular work and for recycling they just have to put a little more effort to their regular work. Moreover, the wastes that full-time scavengers separate have already been separated in several levels such as generation, communal bins and collection crew levels. The full-time scavengers earn RM650 per month, and the collection crew part-time, commercial place cleaner part-time and institutional cleaner part-time scavengers earn 22.07 percent, 28.35 percent and 31.43 percent respectively of their daily income.

Table 2 The Production of Recyclables of Various Statuses of Scavengers

Scavengers Status	Category of the Separated Recyclable (kg/week/person)							Total kg/w	DAHS	Total RM/w	Average Salary/w	% of salary
	Bottle	Paper	P. board	Plastic	Al. can	Metals	Others					
Full-time dumpsite	215 (0.20)	132 (0.20)	190 (0.15)	85 (0.20)	4.5 (2.70)	74 (0.30)	53 (0.25)	753.50 (10.76)*	10.00 2.5 <sup>+</sup>	162.50	-	-
Collection crews	25 (0.20)	19 (0.25)	85 (0.15)	36 (0.20)	3.5 (2.80)	30 (0.35)	0	179.45 (17.09)*	1.50	49.00	222.00	22.07
Commercial place cleaner	45 (0.20)	43 (0.20)	130 (0.15)	11 (0.20)	2.25 (2.70)	8 (0.30)	0	239.25 (17.08)*	2.00	47.77	168.5	28.35
Institutional cleaners	0	101 (0.40)	15 (0.10)	0	1 (2.50)	0	0	117.00 (16.71)*	1.00	44.40	141.25	31.43

Note: numbers in parenthesis indicate price of the recyclable (RM/kg); w = week; P. board = paper board; Al. cans = Aluminium Cans; (\*) = recyclable separation kg/hour/person; DAHS = daily average hours used for separation of recyclable, (+) = Supplementary working hours.

Source: Amzad and Chamhuri 2002.

#### 2.1.1.4 Changes in community based NGOs

Community based non-governmental organisations have become direct advocates or facilitators of particular improvements in MSW management. Such organisations are professional associations, consumer groups, environmental groups, and service groups such as Lions Club, Apex Club, and Rotary Club etc. They function as watch-dog bodies relating to cleanliness of the environment of which solid waste is one of the areas. Through their meetings, seminars, symposium and bulletins, they review the consciousness of the people and invoke appropriate action by the government. They often add credibility to the important role of manufacturers and the informal sector in waste recovery in the minds of officials in the public and formal private sectors. NGOs also take part in i) receiving and disbursing funds from donors for improved MSW management, ii) experimenting with alternative MSW materials recovery and collection services, and iii) mobilising overall local community resources for improved MSW management.

##### 2.1.1.4.1 Effectiveness on Changes in community based NGOs

As waste recycling is an effort towards achieving a sustainable urban development, therefore, several NGOs in Klang Valley are rapidly expanding their activities to increase waste recycling. As such, TrEEs (Treat Every Environment Special) and Pure Life Society Recycling Programme has been organising a community based recycling programme since 1996. There are two parts to this programme such as i) an in-house recycling programme where staff and children use special bins to recycle waste and ii) drop-off programme where the public can leave their recyclables into recycling bins. TrEES also conduct training workshops for companies and organisations as well as initiating in-house recycling programmes for them.

Petaling Jaya Community Centre Recycling centre's recycling programme is a participatory community group based recycling programme in Section 17 of Petaling Jaya since 1997. The public is encouraged to donate or sell recyclable items such as glass, aluminium cans, wearable cloths, paper, plastics and household items such as refrigerators, washing machines and furniture. These items are sold for a nominal price or donated.

In reality, the recyclable items accepted by Alam Flora, PJCC and TrEES do not vary much in terms of type and price. Table 3 shows the type and price (RM/kg) of each recyclable item.

Table 3: Type and Price (RM/kg) of Recyclable

	AFSB	PJCC	TrEES
1. Paper:		0.05	
Newspaper	0.12		0.08
Magazines/mixed	0.12		0.08
Computer paper	0.30		0.08
Paperboards	0.12		0.10
2. Glass	0.05	0.05	0.10
3. Aluminium cans	1.50	1.00	1.50
4. Metal cans/tins	0.05	0.02	0.05
5. Plastic:		0.10	-
PET	0.40		
Mixed	0.20		
6. Old clothes	-	0.15	0.30

Source: Norshamleeda and Chamhuri 1999

### **Recyclers' Network**

The Recycler's Network consists of various levels, such as the itinerant recyclable item buyer (usually called the old newspaperman), scavengers, middlemen, manufacturers and producers. Table 4 lists out the buyers/purchasers of recyclable items who make up the recyclers' network in the Klang Valley, Malaysia.

TABLE 4: Recyclers' Network in Klang Valley

Paper	Genting Sanyen Industrial Paper Sdn Bhd
	Malaysian Newsprint Industries Sdn Bhd
	Persis Hijau Sdn Bhd
Glass	Kuala Lumpur Glass Manufacturers Co Sdn Bhd
- Aluminium cans and - Metal tins/cans	Kian Joo Can Factory Sdn Bhd
Plastic	Malaysain Plastic Manufacturers Association
Old clothes	Charity and goodwill homes

Source: Norshamleeda and Chamhuri 1999

### 3.0 CONCLUSIONS AND POLICY RECOMMENDATIONS

As recent institutional changes in MSW management are important for the improvement of recycling practices and increased income. Therefore, considering the socio-economic structure, development stage, policy implications are suggested:

All stages of management institutions should encourage recycling in a more pragmatic way, concentrating on some specific tasks. These tasks consist of social or economic functions in order to meet the requirements of recycling. These social and economic functions should be fulfilled by the determination of economic and environmental importance of recyclable items, different sectoral recycler's needs, its community, marketing arrangements and processing capacity.

As recycling practices bring several benefits for the society, therefore, it has a great meaning with respect to the development of a sustainable waste management as whole. Thus, it needs to be supported by a great deal of dedication and commitment from the existing economic system and political leadership at local level.

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