

PAPER • OPEN ACCESS

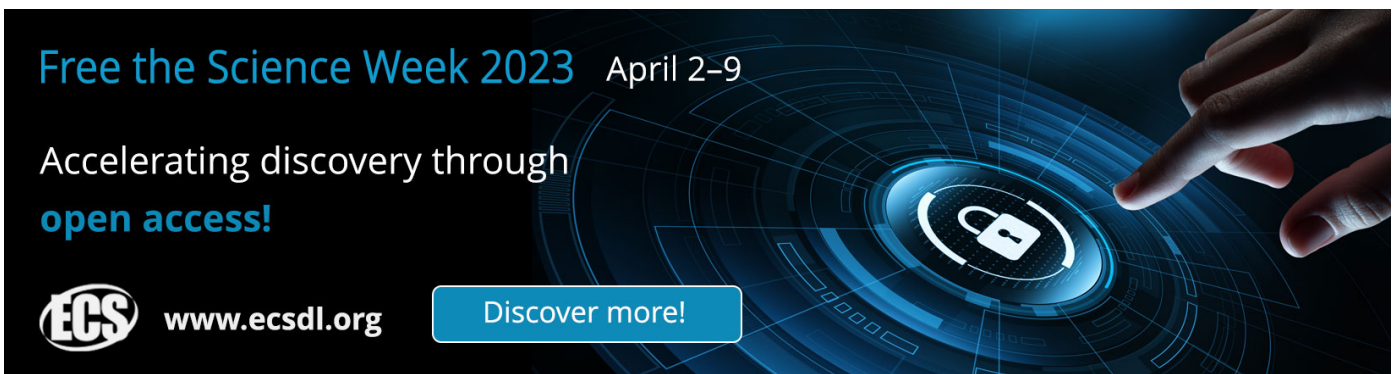
## Public Perception on Involvement in Solid Waste Management Process and Practices: A Case Study of Johor Bharu, Malaysia

To cite this article: Mohammad Syahir Aiman Abd Khair *et al* 2022 *IOP Conf. Ser.: Earth Environ. Sci.* **1067** 012032

View the [article online](#) for updates and enhancements.


You may also like

- [Spatial Characterization of Green Space Landscape Structure in Kota Bharu for Sustainable Tourism Planning](#)  
A N M Nor, S Z Fakuruddin, H A Aziz *et al.*
- [Safety and health practice among laboratory staff in Malaysian education sector](#)  
Nurul Husna Che Hassan, Ahmad Rasdan Ismail, Nor Kamilah Makhtar *et al.*
- [The preliminary study on the historical governing law of the frozen estates in Kampong Bharu, Malaysia](#)  
R M Salleh, N A A Malek, R M Yusoff *et al.*



Free the Science Week 2023 April 2–9

Accelerating discovery through  
**open access!**

 [www.ecsdl.org](http://www.ecsdl.org) [Discover more!](#)

The banner features a dark blue background with a futuristic, glowing blue circular interface. A hand is shown pointing at the interface, which includes a central padlock icon. The text is in white and light blue, with the ECS logo and website URL in white.

# Public Perception on Involvement in Solid Waste Management Process and Practices: A Case Study of Johor Bharu, Malaysia

Mohammad Syahir Aiman Abd Khair<sup>1</sup>, Puziah bt Ahmad<sup>2</sup>, Marlyana Azyyati Marzukhi<sup>3</sup>

<sup>1</sup>Department of Postgraduate Studies, Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA(UiTM), 40450 Shah Alam, Selangor, Malaysia

<sup>2</sup>Dr., Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA(UiTM), 40450 Shah Alam, Selangor, Malaysia

<sup>3</sup>Tpr. Dr., Faculty of Architecture, Planning and Surveying, Universiti Teknologi MARA(UiTM), 40450 Shah Alam, Selangor, Malaysia

E-mail: [mohammadabdkhair@gmail.com](mailto:mohammadabdkhair@gmail.com)

**Abstract.** Effective and efficient service delivery of urban service is paramount, especially in the ever-growing urban population. A high number of populations residing in urban areas has increased waste generation. Around the world, municipalities, especially in developing countries have to increase their waste management budget and various initiatives to deal with the generated waste. One of the preferable initiatives for developing countries in dealing with waste management issues is through the involvement of the public in the process and practices. Therefore, the purpose of this paper is to evaluate the perception of the public involvement in the process and practices of solid waste management in Johor Bharu, Johor, Malaysia. A total of 260 respondents in a mixed density residential housing scheme participated in the questionnaires survey. Therefore, several recommendations are put forward to enhance the cooperation of the public and municipalities in the solid waste management process and practices.

**Keywords:** Municipalities; Service Delivery; Good Governance; Public Participation; Perception; Solid Waste Management; Johor Malaysia

## 1. Introduction

Traditionally, solid waste management services are the core business of the municipalities. However, most municipalities especially in developing countries are swamped with issues of ineffectiveness and inefficiency of service delivery performance (Ismail, 2015). The deterioration of the solid waste management situation resulting from poor management has grown further due to the increase in population size (Izzati, Khoiry, Rahim, & Ahmad, 2020; Mohd, Bahardin, Alias, & Abdullah, 2019). Therefore, through the introduction of the Solid Waste and Public Cleansing Management Act of 2007 (Act 672) and the Solid Waste and Public Cleansing Management Corporation Act of 2007 (Act 673), as a new management approach, the Federal government of Malaysia strives to have efficient and effective public service delivery and achieve developed nation status.

As one of the three-tier stakeholders' categories involved in solid waste management, the local



communities placed at the lowest-tiered, are subject to the compliances of the outlined policies (Abas & Wee, 2015; Abd Khair & Ahmad, 2021; Ismail, 2015). Although placed at the lowest- tier, however, local communities are proved to be people who are very concerned about the well- being of their locality (Mohd et al., 2019). In that regard, Community-based solid waste management (CBSWM) is the initiative that is concerned with the active participation of the public in the environmental management of their neighbourhood (Sinthumule & Mkumbuzi, 2019). However, the misconceptions on municipalities as the sole responsible entity in waste management has threatened the initiative. Although municipalities are legally responsible for the provision of services towards the people they served, other means of activities and entities can contribute to an efficient and effective solid waste management system (Rodić & Wilson, 2017).

Theoretically, good governance practices are put forward as the solution for efficient and effective policy implementation of the public service delivery system (Abas & Wee, 2015; Ismail, 2015). The concept of good governance requires full cooperation and commitment from the involved stakeholders wherein practices, participation, transparency, accountability, effectiveness and efficiency and rule of law are the core principles that each of the involved stakeholders should possess.

Effectiveness is defined as achieving the desired result in accordance with goals while efficiency is associated with the utilisation of limited resources to achieve higher quality outcomes (Osman, Bachok, Bakri, & Harun, 2020). Effectiveness and efficiency of service delivery performance are crucial in ensuring the municipalities can fulfil the needs of the people they served. In the discussion of public service delivery, the quality public sector workforces determined the efficiency and effectiveness of services provided (Osman et al., 2020).

According to Bhuiyan (2010), public-private partnerships have a significant impact on the effectiveness of solid waste management as well as the promotion of good urban governance. For this reason, it is important to gauge the public perceptions as well as the public understanding of involvement in waste management services and practices.

## 2. Methodology

The research project has chosen the Capital City of Johor Bahru, Johor and selected three different neighbourhood areas within the city that consist of mixed residential housing schemes. Through the enforcement of Act 672 and Act 673 in 2011, solid waste and public cleansing management services for the State of Johor shifted under the responsibility of Solid Waste and Public Cleansing Management Corporation (SWCorp) and Southern Waste Management Environment Sdn. Bhd as the operational arm. The Johor Bharu City Council (MBJB) role on the other hand is to ensure that service deliveries are in accordance with the prescribed scope of works.

### *Sampling:*

In execution of the planned research design through purposive sampling, the respondents are selected based on several criteria such as person either over 18 years of age or head of families, wives or those responsible for the family economic decision. Respondents are further stratified according to gender, ethnicity, age group, level of education, types of housing as well as years of residing. In this research, a total of 260 sets of questionnaires were distributed to the households in selected neighbourhood areas. The respondents' demographic characteristics are presented in **Table**

1. The majority of respondents (56.2%) are Male and Malays (93.1%). 51.9% of respondents are married and most are coming from the age groups of 20 - 29 years old (56.2%) and having higher educations (64.6%). 73.4% of respondents are found living in terrace types housing and around 55.8% of them are reside more than 16 years at their current houses.

Table 1: Respondents Demographic Characteristic

	Variables	Frequency	%
Gender	Male	146	56.2
	Female	114	43.8
Ethnicity	Malay	242	93.1
	Chinese	12	4.6
	Indian	6	2.3
Age Group	< 20 years	6	2.3
	20-29 years	146	56.2
	30-39 years	41	15.8
	40-49 years	34	13.1
	50-59 years	29	11.2
	≥ 60 years	4	1.5
Marital Status	Married	135	51.9
	Not Married	125	48.1
Level of Educations	No Formal Educations	4	1.5
	Secondary School (SRP/PMR)	16	6.2
	Secondary School (MCE/SPM)	64	24.6
	Higher Educations	168	64.6
	Others	8	3.1
Housing Types	Low-Cost Terrace	51	19.6
	Medium Cost Terrace	140	53.8
	Low-Cost Flat	19	7.3
	Medium Cost Flat	24	9.2
	Low-Cost Apartment	21	8.1
	Medium Cost Apartment	5	1.9
Years of Reside	1 - 5 years	61	23.5
	6 - 10 years	38	14.6
	11 - 15 years	16	6.2
	16 - 20 years	55	21.2
	21 - 25 years	45	17.3
	26 - 30 years	45	17.3

***Instrumentation:***

This research used the structured questionnaires method through the application of a five-point Likert rating scale, i.e. (1) strongly disagree, (2) disagree, (3) Neutral, (4) agree, and (5) strongly agree. The questions were structured to gauge and determine the perception of the public on the involvement in the solid waste and public cleansing management services in Taman Daya, Taman Molek and Taman Mount Austin in Johor Bahru, Johor.

***Data Analysis:***

In quantitative methods, data gathered from the questionnaires survey were analysed through the Statistical Software for Social Sciences (SPSS) in which descriptive analysis was used to explain the result.

**3. Result and Findings**

There are two types of solid waste and public cleansing management structures practices in Peninsular Malaysia through, the Federal Concessionnaires and the State's linkage Company. The State of Johor has ratified Act 672 and therefore the solid waste management services are under the purview of the Southern Waste Management Environment (SWM-E, one of the Federal Concessionnaires Company) (Puppim de Oliveira, 2019). There is a total of 10 variables used in the research and divided into three (3) categories.

***Perception on Cooperation:***

**Table 2** shows the descriptive statistic for the items that fall under the cooperation categories. Based on the mean values recorded, the highest mean score was 4.03 for involvement in the communal program

organised by the local authority, while easy to deal with local authority was the lowest score (3.63).

Table 2: Descriptive Statistic on Cooperation

Variables	N Statistic	Mean		Std. Dev. Statistic
		Statistic	Std. Error	
Easy to deal with Local Authority	260	3.63	.051	.820
Engagement with Residents on waste management services	260	3.90	.049	.783
Involvement in the communal program organised by Local Authority	260	4.03	.046	.742
Resident's ideas and opinions considered in the implementation process	260	3.89	.052	.831
Average		3.86	.049	.794

**Table 2** also shows the respondents overall perceptions on the cooperation of municipalities in solid waste management services. Based on the result produced, the average means value of respondent's perception of cooperation is 3.86 which translated into a good scale and therefore the result shows that the perception of the municipalities' cooperation among respondents was positive with standard deviation values ranging from 0.74 to 0.83.

#### *Perception on Organisation Roles:*

The second analysis focuses on the organisation roles in solid waste management services in accordance with respondents' perceptions. The organisation roles were analysed based on three (3) variables namely resident's role in waste management is important, the organisation's role is needed in waste management services and the local authority's role is important in waste management. Based on **Table 3**, the result shows that the lowest mean score (4.03) for residents' role in waste management is important. Meanwhile, the highest mean score among variables recorded is for local authority's role is important in waste management (4.15). With an average mean score of respondent's perception at the value of 4.08 (good scale) and therefore it represented the positive perceptions of respondents on organisations' roles in waste management services.

Table 3: Descriptive Statistic on Organisation Roles

Variables	N Statistic	Mean		Std. Dev. Statistic
		Statistic	Std. Error	
Resident's role in waste management is important	260	4.03	.048	.549
Organization's role is needed in waste management services	260	4.08	.045	.518
The local authority's role is important in waste management	260	4.15	.046	.548
Average		4.08	.046	.538

**Perception on Organisation Importance:**

**Table 4** shows the result of descriptive analysis on the organisation’s importance that consists of three (3) variables. According to the recorded result, each of the variables has a mean value score of > 4.00, with an average of 4.13. The relatively small value of standard error and standard deviation shows a little deviation in respondents answers pattern. Therefore, the organisation importance in waste management services has positive perceptions from the respondents. The involvements of various stakeholders from decision-makers (primary - highest tier) towards the community (tertiary - lowest tier) are the crown jewel for effective policy implementation (Abas & Wee, 2015).

Table 4: Descriptive Statistic in Organisation Importance

Variables	N	Mean		Std. Dev. Statistic
		Statistic	Std. Error	
Community organisation important in waste management	260	4.12	.045	.725
Government, community and individual roles are important in waste management	260	4.13	.047	.752
Community members determine the achievement of waste management	260	4.13	.046	.737
<b>Average</b>		<b>4.13</b>	<b>.046</b>	<b>.738</b>

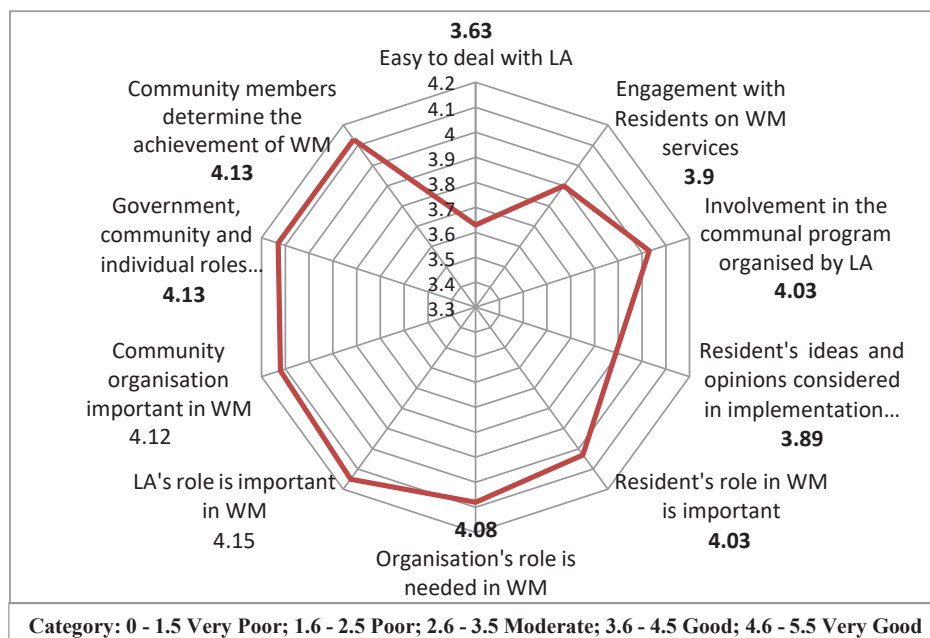


Figure 3.1: The Spider diagram model of Public Perception on Involvement in Solid Waste Management Process and Practices in Johor Bahru, Johor

#### 4. Conclusion

The result from this research has presented a situation on respondents' perception regarding involvement in waste management services, especially in their neighbourhood areas. Based on the spider diagram in **Figure 1**, it can be concluded that the perception of respondents on the public involvement in waste management process and practices is skewing towards positive as respondents felt that their cooperation and involvement in solid waste management service would enhance the effectiveness and efficiency of service delivery. According to Sukholthaman et al., (2017), cooperation between public-private-community is crucial in ensuring the effectiveness and efficiency of the solid waste management system and the finding of this research has strengthened the arguments. As argued by Abas & Wee, (2015), strong relationships between municipalities (primary) and public (tertiary) are crucial in achieving an effective policy implementation process. The cooperation and full commitment from stakeholders such as the government, community and individuals are important in the implementation of policies that would ensure the effectiveness and efficiency of public service deliveries.

The research concluded based on the findings, it is clear that the public especially neighbourhood residents cared about their surrounding areas. Lu & Sidortsov, (2019) reported that people are willing to take responsibility in public services such as waste management through waste reduction and sorting activities. Even though, not in my backyard (NIMBY) attitude and perception exist in the society, however, there is awareness among the public on the need to be involved in waste management services whether in an individual or organizational capacity. The research suggested that government, private sector, community or individual should cooperate and have a constant engagement through the government-citizen model as suggested by Lim et al. (2017) in which sharing responsibility and accountability would contribute to public consensus thus efficient policy implementation process are possible.

#### REFERENCES

- [1] Abas, M. A., & Wee, S. T. (2015). Good Governance Practices in National Solid Waste Management Policy Implementation : A Pilot Study on Solid Waste Corporation ' s Staff in Batu Pahat , Malaysia. *Australian Journal of Basic and Applied Sciences*, 9(SEPTEMBER), 445–451.
- [2] Abd Khair, M. S. A., & Ahmad, P. (2021). A pilot study on waste management services for Mixed Density Housing A pilot study on waste management services for Mixed Density Housing Scheme . Case study : Section 7 , Shah Alam , Selangor, Malaysia. *IOP Conference Series: Earth and Environmental Science*, 1–8. <https://doi.org/10.1088/1755-1315/685/1/012001>
- [3] Bhuiyan, S. H. (2010). A crisis in governance: Urban solid waste management in Bangladesh. *Habitat International*, 34(1), 125–133. <https://doi.org/10.1016/j.habitatint.2009.08.002>
- [4] Ismail, H. (2015). Good Governance in Malaysia ' s Integrated Solid Waste Management- Challengesin Policy Implementation towards the Public, (MAY). <https://doi.org/10.13140/RG.2.1.3015.8244>
- [5] Izzati, A. R. N., Khoiry, M. A., Rahim, S., & Ahmad, B. N. E. (2020). Review on Current Municipal Solid Waste Management in Malaysia. *International Journal of Disaster Recovery and Business Continuity*, 11(1), 2230–2242.
- [6] Lim, S., Malek, J. A., & Tahir, Z. (2017). Understanding Local Authority Performance Through Role Theory. *Journal of the Malaysian Institute of Planners*, 15(4), 127–138.
- [7] Lu, H., & Sidortsov, R. (2019). Sorting out a problem: A co-production approach to household wastemanagement in Shanghai, China. *Waste Management*, 95, 271–277. <https://doi.org/10.1016/j.wasman.2019.06.020>
- [8] Mohd, T., Bahardin, I., Alias, Z., & Abdullah, M. (2019). A Systematic Review of the Issues Affecting Local Government in Malaysia, 1(1), 33–40.
- [9] Osman, M. M., Bachok, S., Bakri, N. I. M., & Harun, N. Z. (2020). Government Delivery System : Effectiveness of local authorities in Perak , Malaysia. *Procedia - Social and Behavioral Sciences*, 153, 452–462. <https://doi.org/10.1016/j.sbspro.2014.10.079>
- [10] Puppim de Oliveira, J. A. (2019). Intergovernmental relations for environmental governance: Cases of solid waste management and climate change in two Malaysian States. *Journal of Environmental Management*, 233(January 2018), 481–488.

- <https://doi.org/10.1016/j.jenvman.2018.11.097>
- [11] Rodić, L., & Wilson, D. C. (2017). Resolving governance issues to achieve priority sustainable development goals related to solid waste management in developing countries. *Sustainability (Switzerland)*, 9(3). <https://doi.org/10.3390/su9030404>
- [12] Sinthumule, N. I., & Mkumbuzi, S. H. (2019). Participation in community-based solid wastemanagement in Nkulumane Suburb, Bulawayo, Zimbabwe. *Resources*, 8(1). <https://doi.org/10.3390/resources8010030>
- [13] Sukholthaman, P., Shirahada, K., & Sharp, A. (2017). Toward effective multi-sector partnership: A case of municipal solid waste management service provision in Bangkok, Thailand. *Kasetsart Journal of Social Sciences*, 38(3), 324–330. <https://doi.org/10.1016/j.kjss.2017.05.004>
- [14] Enshassi, A., Kochendoerfer, B., & Al Ghoul, H. (2016). Factors Affecting Sustainable Performance of Construction Projects during Project Life Cycle Phases. *International Journal of Sustainable Construction Engineering & Technology*, 7(1), 2180–3242. <http://penerbit.uthm.edu.my/50>
- [15] Harris. (2012). A guide to energy hedging. [http://www.kisfutures.com/GuideEnergyHedging\\_NYMEX.pdf](http://www.kisfutures.com/GuideEnergyHedging_NYMEX.pdf)
- [16] Jamaludin, R., Nawi, M. N. M., Bahaudin, A. Y., Mohtar, S., & Tahir, M. Z. (2019). Energy efficiency of chancellery building at Universiti Utara Malaysia. *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences*, 58(2), 144–152.
- [17] Junaid, M. (2020). Potential Barriers to Implementing Energy Management System in Pakistan : A Case of Wet Processing in the Textile Sector. 10(1), 36–46.
- [18] Klufallah, M., Ibrahim, I. S., & Moayedi, F. (2019). Sustainable practices barriers towards green projects in Malaysia. *IOP Conference Series: Earth and Environmental Science*, 220(1). <https://doi.org/10.1088/1755-1315/220/1/012053>
- [19] Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement*, 30(3), 607-610.
- [20] Milosavljevi, P., Raji, M. N., & Maksimovi, R. M. (2019). Energy Management System Application for Sustainable Development in Wood Industry Enterprises.
- [21] Pandey, P., & Pandey, M. M. (2015). research methodology
- [22] Plessis, C. Du. (2002). Agenda 21 for sustainable construction in developing countries.
- [23] Rahman, K. A., Hariri, A., Leman, A. M., & Yusof, M. Z. M. (2017). Energy Consumption in Residential Building : The Effect of Appliances and Human Behaviour. 020018. <https://doi.org/10.1063/1.4981159>
- [24] Serpa, S., & Ferreira, C. M. (2019). Society 5.0 and sustainability digital innovations: A social process. *Journal of Organizational Culture, Communications, and Conflict*, 23(2), 1-14.
- [25] Suparta, W., & Yatim, A. N. M. (2019). characterization of heatwaves: a case study for peninsular Malaysia. 11(2), 39–50. <https://doi.org/10.21163/GT>
- [26] Zabihi, H., Habib, F., & Mirsaedie, L. (2014). Sustainability in Building and Construction : Revising Definitions and Concepts Sustainability in Building and Construction : Revising Definitions and Concepts. December 2012.
- [27] Zainordin, N. (2016). Construction ' S Player Perception Towards an Implementation of Construction ' S Player Perception Towards an. November.