

## Toward Community-Based Waste Management: Tehran as a Case Example

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**Abstract:** This paper analyses the community-based waste management (CBWM) process in region one municipality of Tehran, Iran and reports the roles and actions of the community level stakeholders in this process and their relationship with the city authorities. This study also describes reasons that justify the need for a CBWM approach and explains the rationale for community participation. Based on semi structured interviews and direct observation conducted on the field in region one municipality of Tehran, it was found that, despite efforts to improve community participation in waste management, there is a lack of comprehension in the participation of community level stakeholders such as NGOs/CBOs, neighbourhood council, private sector (formal and informal), that must be included simultaneously to improve the planning, implementation and evaluation of municipal solid waste management.

**Key words:** Community-based solid-waste management (CBWM) • Municipal solid waste management (MSWM) • Tehran

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### INTRODUCTION

Urbanization is now a global phenomenon. The world's urban population reached 2.9 billion in 2000 and is expected to rise to five billion by 2030. A great rural-to-urban demographic shift that is taking place throughout the world is fuelling this urban growth. As a result, the proportion between urban and rural population is steadily tilting towards urban. Only 29% of the world's population lived in urban areas in 1950; this proportion increased to 47% by 2000. By 2030, urban dwellers are projected to account for 61% of the world's population [1].

This rapid urban population growth aggravates the continuous increase in the volume of solid waste generated per day from urban areas [2].

SWM therefore emerged as an essential, specialised urban management service sector for keeping cities healthy and liveable. It is therefore important that research and development be directed at improvements in SWM which is aimed at urban sustainability.

It is clear that SWM in the future will expand in scope and complexity. It will also consume a considerable proportion of city budgets. The SWM sector, therefore, deserves careful attention for striking a balance between quality of service and cost effectiveness [3].

SWM needs more sophisticated principles and approaches for it to be efficient and effective. In relation to this, stakeholder participation in SWM is identified as an important principle as it is widely claimed that participatory approaches in planning, action and research can be a solution to the pressing social, economic and environmental predicaments of our cities today [4].

Indeed, the United Nations has called for a greater adoption of partnerships in development policy through the Global Compact, Millennium Development Goals and Type 2 partnerships proposed at the World Summit on Sustainable Development in Johannesburg in 2002. As a result of these trends, public-private partnerships are increasingly not just short-term instrumental agreements between states and private contractors, but are new

political arenas involving various actors where norms of environmental and developmental policy are formulated and replicated [5].

The importance of involvement of stakeholders and cooperation is stated in the ISWM model, the ISWM planning process is a stakeholder based and participatory process.

**The Community-based Waste Management:** Stakeholder participation is becoming an essential part of SWM [6].

Collaborative relationships between municipalities and all other stakeholders are essential for such authorities to deliver SWM service appropriately [7].

Generally, the burden of collecting and disposing of solid waste is placed on the municipal governments. However the weight of the responsibility is beyond the ability of most local governments. Many municipalities have failed to comply with solid waste management rules and regulations due to several reasons such as limited financial resources, lack of political will, lack of technical knowledge about recent technologies and lack of cooperation and participation of the community.

This leads to the conclusion that governments cannot solve solid waste management problems alone. However neither can the private sector nor the NGOs, nor the community can solve solid waste problems on their own either. The most successful strategies have surfaced when there is the involvement of different sectors of society such as the public and private sectors and the community. However, participation by these sectors is not in itself a prior goal of solid waste policy but rather a means to achieve an improved waste management system in developing countries [8]. Recognizing and enhancing the role of these sectors can lessen the burden of the government as these sectors have not only been mere recipients of the laws but can also be potential partners in carrying out solid waste management programmes in the municipality [2].

The role of stakeholder groups has transformed over time from being merely recipients of impacts to playing an important function in the design, implementation and promotion of MSW management systems. Nowadays environmental problems in cities can be addressed in large part by the interaction of several stakeholder groups.

The World Bank recognized the lack of community participation as a reason for failure of many community development attempts in developing countries [9].

The CBWM approach is based upon the cooperative concept with the common goal of making the changes in the communal solid waste management, in terms of source

segregation, recovery of recyclable materials and storage prior to collection [10]. Based on this approach, a community project can create the sense of belonging together with the citizen roles of members to solve the common environmental problems in a community. The successful projects were reported such as the community-based composting projects from slums in Bangladesh; the community composting and recycling schemes in Borommatrilokanat 21 community in Phisanulok province Thailand; and the “garbage for eggs” project in Klong Toey slum in Bangkok [10].

In this context, the participatory management approach, where roles and responsibilities regarding SWM are shared among the municipality and citizens, is one of the most frequently suggested methods and its merits and problems are well-documented [11].

In this article, we have chosen community level for understanding how participation among stakeholders operationalised in waste management within case study area.

In this article for examining CBWM situation in case study area, we focused on to identify stakeholders and their role and responsibilities, also how are stakeholders linked to each other to determine potential for CBWM - for case study research-Tehran in general and for region one municipality specifically.

**Case Study Area:** Tehran is the most densely populated province in Iran with more than 7 million people.

Tehran has 22 regions, each of which is administered by their own regional mayors who report to the mayor of metropolitan Tehran. Regional municipality carry out administrative work in their areas. The head is the regional mayor and all sub regions are supervised by the Mayor.

Tehran Region one Municipality is located in the south of Alborz mountain and is referred to the semi-mountainous area in north of Tehran, this area are within 66 km of urban area and the space is 150 square kilometres.

## **MATERIALS AND METHODS**

This research employs qualitative research methods to provide a rich description of the experiences of the case study; a combination of the following data collection methods is used to obtain information about stakeholders and their attributes: project documents, informal and semi-structured interviews, direct observation and triangulation techniques.

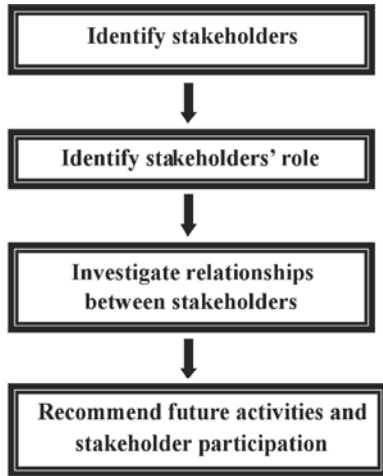


Fig. 1: Applied Methodology

Key informants, comprising with the municipal executives and officials and the representatives of the community organizations were interviewed.

Through an examination of solid waste management, the roles performed by the community level stakeholders and the nature of the relations between them examined to reached the barriers hindered from CBWM in case study area.

The applied methodology to assess stakeholders in case study area is synthesized in Fig. 1. The three main steps utilised to:

**Step 1:** Identify community level stakeholders in case study area.

**Step 2:** For each of the stakeholders identified, the respective role should be identified.

**Steps 3:** Examine relationship among stakeholders with focus on Regional Municipality as a main actor.

**Identify Stakeholders and Their Role in Case Study Area:** The identification and inclusion of stakeholders are important aspects of the implementation of an integrated approach to waste management [12].

One of the key dimensions of the ISWM is broadening the stakeholder participation at all levels and enabling them to participate better. It is thus necessary to define stakeholders and describe their expected role in MSWM.

Identifying key stakeholders in the community level that are point of this paper are crucial for the successful implementation of waste management.

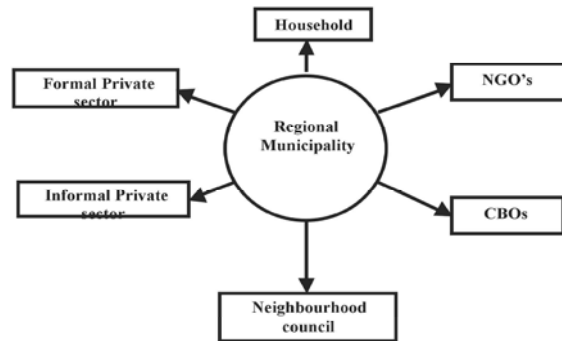


Fig. 2: Overview of Identified Stakeholders in MSWM in Case Study Area

Figure. 2 shows overview of identified stakeholders in MSWM in case study area that will explain in following part.

A number of key stakeholders are listed in Figure 2. The municipalities, with its general responsibility for urban cleanliness and the citizens or households who use the system, are (almost) always stakeholders in waste management. But other stakeholders differ in each city, so they need to be identified in the local context and often also grouped according to their interests.

Stakeholders by definition have different roles and interests in relation to waste management; the challenge of the ISWM process is to get them to agree to co-operate for a common purpose, that of improving the waste system. In addition, the stakeholders in a particular city or region share a common social and geographic context and may be bound together by other systems in addition to solid waste. [13].

Views of different stakeholders - local beneficiaries, neighbourhood councillors and government officials are gained to analyse stakeholders' role and relationship in community level, the results represented in the following part of this paper.

The following section examines different kinds of roles that can be played by key stakeholders and relationship in community level among them.

**Waste Institutional in Tehran Municipality:** Tehran municipality is responsible for SWM. This consists of: daily SW collection from households, hospitals and healthcare centres, offices, shops and hotels; transporting the MSW to landfill sites and recycling or composting centres; and cleaning the city [14].

There are various stakeholders involved in the waste management of Tehran city. Tehran Municipality is considered a public institution and falls under the

administrative system of the city council which is a democratically elected body. The Tehran's Mayor is appointed by this council and is therefore considered indirectly elected. While this role carries a powerful executive authority within a limited jurisdiction of Tehran's metropolitan region, the government does on occasions exert influence on planning and policy making when conflicting political positioning occur [15].

Currently the Municipality of Tehran has a fully functional system for SWM that handles all types of solid wastes (household, commercial, demolition, hospital, industrial, etc.) generated within the municipal boundaries.

Tehran's MSW operates under the jurisdiction of the Deputy of Urban Services of Tehran Municipality, which is responsible for the main task of identification of urban needs of Tehran in terms of urban services, preparing the procedure, strategies and policies of Tehran Municipality in mentioned domain in accordance with the principle of decentralization, economical advantage of municipality, environmental protection and principle of sustainable development. The overall solid waste management system is operated by several administrative units within the municipality, including, Tehran Solid Waste Management Organization (TSWMO) previously named OWRC (Organization of Waste Recycling and Composting) and the regional municipality which is working closely with area offices. On the sublevel of Tehran municipality there are 22 regional municipalities, each of which is administered by their own mayors who report to the mayor of Tehran.

**Administrative of MSWM in Region One Municipality:**

Regional municipality is directly involved in the MSWM process in the case study area for street cleaning, collection and recycling of MSW based on mandate programs of TWMO within their Areas of Jurisdiction (regional jurisdiction), in collaboration with private sector contractors and should provide monthly report for TWMO.

Public Awareness is another duty of regional municipality, a series of activities were undertaken to raise awareness on solid waste management.

In regional municipality under the supervision of urban services deputy, there are two offices that undertake the management of MSW. Figure. 3 represents waste administration in Region one municipality.

Urban services office is responsible for waste collection, also as part of its duty to maintain cleanliness of the city and doing street cleaning.

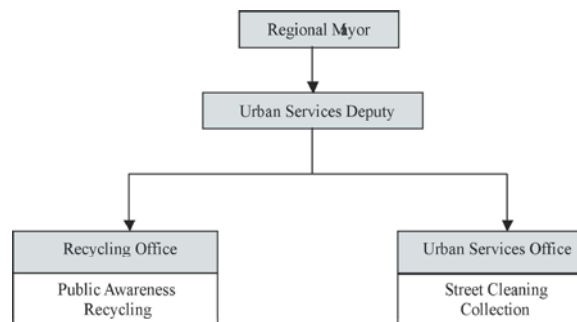


Fig. 3: Waste Administration in Region One Municipality

Recycling office is another office, responsible for direct supervision of recycling contractor, recycling kiosk and other recycling related activities.

With an increased area of coverage the capacity of the regional municipality to manage of all waste was overstrained and hired contractors to cover the new areas. So further divided work into 10 sub region (zone), each sub region cover a few neighbourhoods (ward) and regional municipality appointed a recycling officer and urban service officer in each sub region municipality.

**Neighbourhood Councils:** The existence of Islamic councils in all cities has provided a good opportunity for community-based activities [16]. Moreover, a number of Islamic city councils in Iran, like the Tehran city councils, have established neighbourhoods' councils for city wards to deepen citizen participation [17].

Neighbourhood Councils are groups who are elected for each neighbourhood in the cities, to facilitate communication between people and city Islamic councils. Considering these councils and council assistants as entry points to the communities Seems to be a reasonable choice for community based initiatives [16].

The councillors have no defined direct organisational relationship with municipalities; their relationship with regional municipality is through the sub regional mayor's work with the neighbourhood councils to identify issues of their neighbourhood.

Increasing citizens' participation and linking people to city managers are underlying assumption of neighbourhood council's essence, but in reality dose not happened.

However in practice, the scope of issues that local councils and neighbourhood councils have authority over is restricted to supervision and reporting local problems and rarely consultation.

**NGOs Participation:** Active NGOs in the waste management can be distinct between those primarily motivated by humanitarian and those whose main motivation is environmental, Originating as a channel of communication between society and authorities.

There are a few experiences in the municipality of Tehran about cooperation with NGOs and most of them are in training and cultural issues [18].

During the past few years, in waste management domain a few cooperation arrangements between municipality and NGOs provided. these activity limited to recycling training also initiating mountain clean-up that annually held in international mountain day in Tehran [19], the second type are socially-orientated, socially sensitive NGOs that working about street children labourers.

Exposure to accidents because of lack of safety measures and environmental hazards such as polluting practices are perceived as major concerns of the active social NGOs.

Although socially-orientated NGOs cooperate in child labour and scavenging but this efforts are much less than expected.

**CBOs Participation:** Unlike other developing countries that CBOs or Local groups have responsibility for management of neighbourhood services, CBOs in Iran have not special role in MSWM and they just received partially training from regional municipality regarding waste issue especially recycling.

CBOs concerned with religion including Religious Corps, Basij Resistance Group, Mosque's Board of Trustees and Clergy could work on awareness raising.

**Private Sector Participation:** The Municipality of Tehran is moving toward privatisation, to deliver all forms of SWM services. The actual scope of services is for the management of the collection, transportation, recycling transfer stations, transfer services, the landfill and the compost plant. At present the support to increase private sector participation and investment in SWM mentioned in both national waste law and Tehran municipality integrated waste management plan as one of the main priorities.

**Informal Sector Participation:** In Iran, like any other developing country, different informal groups are active in MSWM. The informal sector involved in solid waste management service in Tehran comprises unregistered and unregulated individual door-to-door buyers and scavengers from wheelie bins and streets.

In recent years, Tehran municipality has in principle prevented informal scavenging, also known to "waste thieves" by introducing partnerships with private contractors (selected through tenders and bidding) who in turn are expected to employ collectors either through casual labour arrangements or contractual agreements based on commissions. Officially, any collector found not engaged in a formal arrangement is considered to be conducting illegal trading and could face disciplinary action. Numerous sources confirmed that low levels of collection at curb-side and street levels has led to recycling stations resorting to accepting collected items from informal scavengers, paying them by weight [15].

## DISCUSSION

Case study area face a number of issues in expanding CBWM, in particular, there are no considerations for participation of community level stakeholders in the beginning of the planning process, implementing process and the evaluation process.

Based on the UN HABITAT (2010) the best-functioning solid waste systems involve all the stakeholders in planning, implementing and monitoring the changes [20].

There are few linkages between municipality officials and formal private sector, informal private sector, NGOs/CBOs and neighbourhood council. Usually the only formal linkage that exists is between formal private sector and municipalities via contracts. Because of this shortage of relations, there is little coordination between the various stakeholders involved in SWM.

This is further compounded by the absence of MSWM platforms and forums within the institutional set-up for MSWM which allow participation of citizens, NGO/CBOs and private sector (formal and informal).

In overall, the current MSWM in case study area does not consider stakeholder participation seriously.

## CONCLUSION

This article discussed stakeholder roles and relationship among them for MSWM in community level. Result revealed despite efforts to improve community participation, still opportunities for participation of the local community in the MSWM are limited; municipality took a main role and had not provided opportunity for participation of other stakeholders.

Adding a process of designation for CBWM at neighbourhood level is recommended.

Also critical point to achieve CBWM in case study area, municipality should shift from command and control and be an equal partner.

Relations of regional municipality with other stakeholders in MSWM like as NGOs/CBOs, the formal/informal sector, citizens and neighbourhood council need to be developed to improve the planning, implementation and evaluation of MSWM.

Community awareness raising, mobilization and sensitization in MSWM are the leading feature which could improve CBWM.

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