Community Participation and Waste Management

Natasha Kalra

Abstract In contemporary times, a lot of endeavors have been made to find and efficient and effective solution to the waste problem globally. One of the significant factors, which is been emphasized today, is the role of community in waste management. Several success stories of community participation across developed and developing countries have strengthened the view of government and local bodies that they cannot work in isolation and require active participation of all the stakeholders to manage waste. People attitude toward waste and the understanding toward the consequences if it is left unattended play a significant role in encouraging their participation in waste management. This study is a brief overview of the significance of community participation in waste management. The study derives its theoretical framework from two theories: social capital and integrated waste management model. Both theories discuss the significance of community participation and cohesion to deliver effective and efficient public service. This is followed by a discussion on success stories across developed countries, developing countries, and underdeveloped countries. These success stories have been studied in alignment to community participation from countries like Singapore, Japan, Netherlands, Uganda, Philippine, Thailand, and India. A small section of the paper is focused on multiple cities of India. The study is entirely based on secondary data. Different journals and documents were referred. The major finding of this study is that the cooperation and cohesion between government and the community plays a crucial role in the success of waste management. This study is subject to limitations like only two theories were used to set the backdrop also only few success stories have been discussed.

N. Kalra (✉)
Institute for Social and Economic Change, Dr. V.K.R.V Rao Road, Nagarbhavi, Bengaluru 560072, Karnataka, India
e-mail: natashakalra@isec.ac.in

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1 Introduction

One of the pressing issues, which the world is facing today with urbanization, is waste generation and its scientific disposal. According to a World Bank (2012) report, about 1.3 billion ton of waste is globally generated every year and it is expected to increase to 2.2 billion ton per year by 2025. Waste generated in South Asia (which includes India) and East Asia is 33% of the world's total quantity. The annual waste generation in East Asia is 270 million with China contributing 70% of it. While waste generation in Sub-Saharan Africa is approximately 62 million ton per year, about 93 million ton per year of waste is generated in Eastern and Central Asia. The OCED countries generate around 572 million ton of solid waste per year thus making up almost half of the world's waste. Apart from health and aesthetic issues, the waste crisis has also lead to environmental liabilities (Coelho et al. 2012) and ecological imbalance. Landfill disposal, which is the most common form of disposal (El-Fadel et al. 1997), results in methane gas and leachate generation, pollute soil, air, and groundwater (Das et al. 2016), and hence, today countries are looking for sustainable ways to manage waste. Traditionally, local authorities were responsible for the waste management of the city. However in contemporary times, the change in population levels, lifestyle, change in disposable income, labor migration to cities have altogether change the city dynamics by putting immense pressure on the resources and services provided by the municipal authorities. Waste management has emerged as a burden on municipality not only in terms of financial aspects but also as the lack of understanding of the diversity and multifaceted approach required to deal with it (Guerrero et al. 2012). In contemporary times, the municipalities cannot work in isolation for waste management and hence need support of other institutions, associations, and citizens. Sometimes municipalities are found to be playing a very positive role in encouraging communities to engage in waste management. In such engagements, the municipalities can provide citizens with necessary facilities, infrastructure, financial resources, infrastructure, equipment's, composting sites, etc. (Anschütz 1996), and in turn, the citizens can offer a wide network of volunteers.

Waste management has multiple aspects to it: economic, social, political, legal, environmental, and social. The social aspects of MSWM mainly include the patterns of various kinds of materials used by the society, the amount of waste generated and the various ways by which that waste is disposed, their interest in waste reduction and minimization and the degree to which they segregate different kinds of waste. People's attitude influences the extent and type of waste collection and disposal techniques undertaken by the concerned authorities. Focus should be laid on the involvement of people along with the initiatives of concerned governmental authorities by linking community-based collection systems to the municipal system. Also broadly conceived awareness building programs dealing with general public health and environmental issues can create a lot of awareness among the people (Schübeler 1996). Some of the stakeholders who play a key role in waste management apart from the civic authorities are households, community-based organizations, micro- and small enterprises, waste pickers, itinerant waste buyers, and NGOs (Muller and

Hoffman 2001). In order to channelize resources to an effective integrated waste management, the local authorities have to ensure that there is a sense of understanding among citizens over the consequences of waste mismanagement and they are ready to cooperate. Community participation in waste management has its own set of challenges: lack of willingness or sense of responsibility toward waste, NIMBY syndrome, lack of financial incentives for community, low willingness to keep public places clean (Zurbrugg and Ahmed 1999). A common assumption which is one of the significant challenges is the assumption that solid waste management is the sole responsibility of the municipal authority (Zvikaramba 2008).

However, a study by Zurbrugg and Ahmed (1999) indicated that engagement of key stakeholder like women can significantly help alleviate the waste problem, as they are first affected by waste mismanagement. Encouraging participation from stakeholders results in sustainable partnerships with civic authorities (Muller and Hoffman 2001). Community participation can be encouraged in a variety of ways: at segregation level through residents willingly doing it at source, or rag pickers doing it at dumpsites or segregation through waste dealers as volunteers helping urban local bodies (ULBs), as entrepreneurs by recycling or upcycling waste, as mediators between citizens and local government, etc. Besides the formal institutional structure, the presence of informal sector of waste collectors, rag pickers and scrap dealers, itinerant buyers, wholesale dealers, etc., is a crucial link in solid waste management as waste is a major means of survival for some of these (Garg and Rani 2012). A study by Women in Informal Employment Globalising and Organizing (WIEGO), 2011, discusses that informal workers in solid waste sector represent a significant and growing stakeholder group in developing countries with their contribution ranging from 50 to 100% of all waste-related activities.

The significance of community participation in waste management and the success stories indicating the same globally was the main motivation to undertake this study. This paper is a modest attempt to study the role of community participation in waste management in India as well as globally. The paper has been structured as follows. The next section discusses the theoretical framework for community participation through various theories.

2 Theoretical Framework

Any public institution in isolation cannot achieve an effective and efficient waste management. Contribution from all stakeholders is inevitable. This study has been done with a backdrop of social capital theory and integrated solid waste model.

2.1 Social Capital

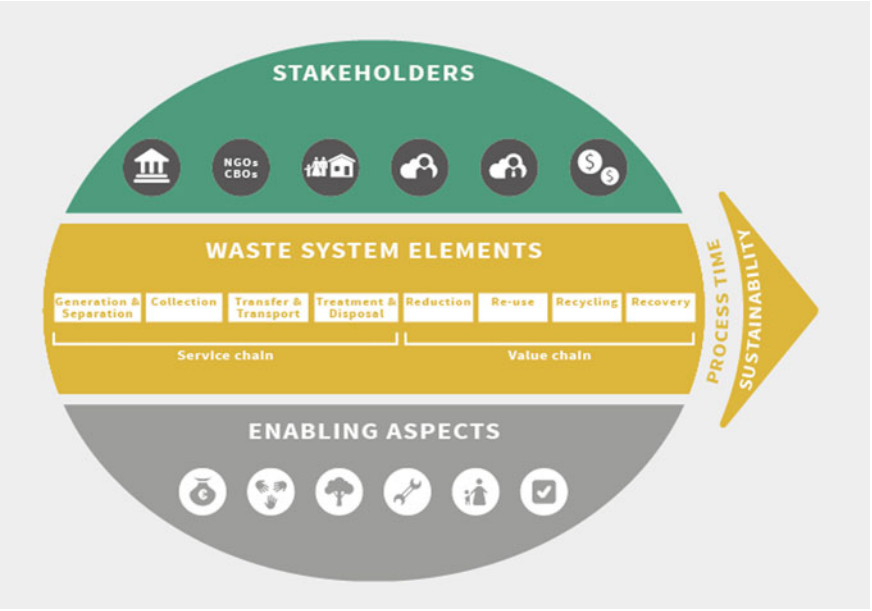
The term 'social capital' was coined by James Coleman in the 1970s. According to Coleman, social capital drives from social theory and that social relationships help people act efficiently. Since then social capital has received much attention from political scientists, sociologists, and economists (Arrow 2000), however, there is no consensus on its definition (Dasgupta 2000).

Social capital has been defined in a variety of ways. Putnam (1993) cited in Pargal et al. (1999) defines it as "Social capital here refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions". Strong social networks help reduce transaction cost and improve information flow as the community shares homogeneous interests. Putnam views social capital as horizontal association among people for their mutual benefit [Putnam cited in Feldman and Assaf (1999)]. However, Coleman puts a broader view of social capital. According to him, it includes both horizontal and vertical associations and the behavior of other hierarchical organizations. Another view on social capital is that it also includes the government, the courts, the rule of law and political system. A successful implementation of this theory can be seen when author tried to study the impact of this theory in waste collection in Bangladesh, where community cooperation leads to establishment of voluntary solid waste management in Dhaka. The study also discussed that the existence of social capital in the community leads to successful public–private partnerships. Social capital also affects economic returns hence increasing the likelihood of cooperative behavior in the management of public goods (Baland and Plattteau 1997; Grootaert 1998). According to Evans (1995), the developmental state is defined by its relations with the society.

The main idea behind the social capital is that communication helps people build communities, which share a common interest (Zvikaramba 2008). A study by Pargal et al. (1999) also indicates that community participation in waste management can be a success if they share a common interest. Social capital is also associated with sustainability as it is appealing to the public and they tend to show interest for continuity. For a successful social network, the focus should be on the attitude, knowledge, and feelings of community and also about the problems they face rather than on contemporary methods (Thomas-Hope 1998). However to maintain cohesiveness in a heterogeneous group, there should be a centralized network to sustain it (Marwell et al. 1989).

2.2 Integrated Solid Waste Management Model

This model is built upon three dimensions: the stakeholders participation, the stages through which the waste management occurs, and the different aspects like environmental, social, economic, technical, institutional, policy framework, legal, and political.



Source Waste (2004)

This model studies multiple dimension of waste management in an integrated way.

This study is set within the framework of social capital and integrated solid waste management model. The theory of 'social capital' focuses on building social networks among various institutions involved in waste management. In contemporary times, there is a wide acceptance over the significance of social capital in development (Woolock and Narayan 2000). The integrated solid waste management model is wider in its scope and includes the stakeholders, the process of waste management, and different aspects of waste management to ensure sustainability.

3 Community Participation in Waste Management: Success Stories

Community involvement can help mobilize efforts from different sections of the community like non-governmental organizations (NGOs), community-based organizations (CBOs), private players, local government, etc., to channelize resources and yield positive results (Henry et al. 2005).

Municipal policy-makers in the city of Yala, Thailand realized the significant role of community participation in delivering waste service and decided to give official status to them. Also communities are encouraged to put forward problems, budget proposals, needs and feedback directly to the concerned authority. Relevant training was given to the residents, community leaders on integrated solid waste management

(Mongkolnchaiarunya 2005). The municipality of Quito, Ecuador in 1993 initiated a project to extend the waste collection to lower and middle neighborhood. To ensure cooperation from the neighborhood community's residents were encouraged to form micro-enterprise, which worked along with neighborhood community-based organizations to help segregate waste at household level. The revenue from the recyclable waste collected was used for neighborhood development. The neighborhood associations played the key role in motivating people to participate and make the initiative successful though it faced strategy at institutional level. A similar association between the local authority, media, Non-Governmental Organizations, micro-and small enterprise, local women and community leaders to encourage waste management and urban sanitation has been adopted in Bali, Indonesia as well (Muller and Hoffman 2001).

In Philippines, the main regulatory act for solid waste management supports community-based approaches and tries to channelize waste into recycling and composting. The national strategic plan for waste also emphasises on the integration of social, economic, political and technological aspect of waste (Lapid 2007).

A study by Mukama et al. (2016) in two urban slums in Uganda demonstrates that respondents showed interest in active participation in waste management. They indicated understanding toward their role in waste management and they were concerned about the diseases due to improper waste management.

Singapore and Japan have one of the most efficient systems for waste management. In Singapore, emphasis is laid on long-term partnership between public and private sectors to handle waste. Japan learned the significance of community and government participation in waste management when it faced serious conflicts over location of waste management facilities. Since then it has laid emphasis on three key principles: understanding, cooperation and participation (Ministry of Environment, Japan 2005). In Netherlands, about 75% of the cardboard and packaging industry use recycled paper, which is collected in neighborhood through cooperation among residents (UN Habitat 1989).

In Nepal, the Kathmandu Metropolis established special cell to encourage and educate students to participate in different environmental activities and to minimize the waste. Necessary training and technological assistance were also given to the community to get actively involved in environmental issues. The national waste management policy was also formed to promote engagement of the NGOs, privatization of different steps of waste management process and to strengthen the local government (Gotame 2012).

At all India level, many cities have set success stories in different aspects of waste management, like Surat initiated institutional changes and adopted decentralization and stakeholders inclusivity to have an efficient waste management system after the outbreak of plague in 1994 (PEARL 2015). Pune Municipal Corporation (PMC) adopted the PPP model and recognized the work of the waste pickers, and as a result, 80–85% of the waste is recycled in the city. City of Warangal undertook a massive awareness campaign which involved various stakeholders like NGOs, religious leaders, teachers group, nursing staff, self-help group (SHGs) women, students, apartment associations and the city became the first ULB in the country to have

100% door-to-door collection and 70% source segregation. The Municipal Corporation of Greater Mumbai (MCGM) involved citizens, community-based organizations (CBOs), NGOs, etc., in its waste management program. The city also made waste pickers as a part of formal waste management system. The Parisar Vikas Programme (PVP) initiated by an NGO in association with MCGM has helped various housing societies and office campuses achieve a zero waste status. Srinagar (Jammu and Kashmir) successfully converted its waste-dumping site into a sanitary landfill with help of financial and technical assistance from Asian Development Bank and J&K Economic Reconstruction Agency (ERA). Ahmedabad Municipal Corporation (AMC) developed a master plan for SWM and has also started a mobile court to deal with violations of SWM (Ahmedabad Municipal Association 2016). The city conducted extensive awareness drive on waste management across various stakeholders, institutional arrangements and capital investment plans (PEARL 2015). The city is now also the first Indian city which is signatory to the United Nations 'Zero City Waste Declaration' which has helped it get international expertise (Mohan et al. 2016). Cities like Hyderabad and Chennai adopted extensively promoted community waste movement (CWM) through door-to-door collection of waste, neighborhood involvement and by recognizing social status to informal waste collectors (Colona and Fawcettb 2006). A study done by Chakrabarti et al. (2009) in the northwest part of Kolkata indicates the sample households indicated their willingness to share the cost of waste management to improve public services. The study also discusses how different stakeholders can be integrated in different phases of the entire process of waste management. Namakkal Municipality in Tamil Nadu became zero garbage town since 2003 through integration of all the stakeholders including waste pickers, self-help groups, industrial associations, local municipalities. Also the entire process of SWM was privatized (Swachh Survekshan 2017, MoUD).

4 Conclusion

Community participation has proved to be a major milestone in waste management as evident from the case studies discussed above. Community stakeholders can be engaged in formulating action plan as this will help frame plans which will be close to the ground situation and will be able to meet the needs of the service users. The action plan needs to consider the financial, institutional, legal, social, environmental, and governance-related aspects of waste management to give the requisite impetus to efficient and effective waste management. An effective waste management requires cohesion among various stakeholders like NGOs, local government, citizens, waste entrepreneurs, rag pickers, community-based organizations, etc. And to build this cohesion extensive awareness campaigns and education is required. Several examples indicate that local authorities worldwide have realized the significance of community participation and are emphasizing their active participation in policy-making and implementation. Certain countries have given official status community participation and are also making requisite changes in laws to support such institution.

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