

# A Case Study On Strategies Of Citizen Involvement In Waste Management

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## **Abstract**

*The purpose of this study is to understand citizen engagement strategies and waste management issues in Varamballi Gram Panchayat of Brahmavara Taluk, which falls under Udupi district. It was observed that citizens in the chosen area face several problems, including a lack of awareness, inadequate Panchayat administration, unscientific and unlawful waste disposal, and a lack of proper tools for waste management. These problems are mainly caused by population growth and accelerated development activities such as real estate, small-scale industries, and the expansion of business activities like garments, hotels, bars, and restaurants. Qualitative methods were used to collect information from respondents in the Panchayat area. A total of 10 respondents, both male and female, aged 18 and above, were included in the in-depth study through arranged unstructured interviews. Interpretive phenomenological analysis (IPA) was performed on the collected data.*

**Key words:** *Strategies; Waste Management; Involvement of Citizen; Awareness.*

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Date of Submission: 21-07-2023

Date of Acceptance: 31-07-2023

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## **I. INTRODUCTION**

Waste management is a global challenge, affecting both urban and rural areas. The generation of waste from various human activities, industrialization, urbanisation, and infrastructure development can lead to health hazards and have a negative impact on the socio-ecological system. Developing an appropriate waste management system requires an understanding of waste management issues and the involvement of the public in a particular society (APO 2007, Advance Planning and Optimisation). In many developing countries, waste management is given low priority, resulting in limited citizen involvement and government funds for waste management (UNEP 2012). Public participation in waste management is crucial for effective waste management systems. It empowers the public and promotes democratic governance. Establishing ongoing participatory processes can enhance collective intelligence and inclusiveness, challenging centralised hierarchies and promoting the concept that "more heads are better than one." Public participation is recognised as a human right in various legal frameworks and environmental sustainability mechanisms, and human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature. (Rio Declaration, 1992).

Solid waste management (SWM) systems in low- and middle-income countries are often unreliable and unstandardized. These systems do not consider the opinions of the public regarding proposed solid waste projects. This study aims to identify the key factors influencing SWM practises in a low-middle-income nation, taking into account the public's perceived knowledge, attitudes, structural impediments, and willingness to pay for various services. Communities with diverse socioeconomic characteristics and SWM adoption were selected for this study.

In recent years, public participation has become essential to addressing environmental problems and achieving sustainable development. Relying solely on technocratic bureaucratic decision-making is seen as limiting, and public participation allows governments to adopt policies that are relevant to communities and meet their needs. Social perception, health and hygiene, environmental concern, economic position, and lifestyle are key social determinants influencing public attitudes towards waste management. While waste is commonly

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seen as unwanted or useless garbage, from a scientific perspective, almost all components of solid waste have potential if treated or converted in a scientific manner. We can define public participation in waste management as the involvement of citizens in the systematic and organised collection, separation, and delivery of waste to garbage collectors for socio-environmental protection. The generation of waste is inevitable in every habitation, regardless of its size. Since the dawn of civilization, humanity has gradually moved away from nature. Today, there has been a drastic change in the lifestyle of human society, and this change is directly reflected in the nature and quantity of garbage generated by a community. By involving people in waste management, we can dispose of or reuse waste and protect the human environment.

## II. REVIEW OF LITERATURE

Peter White, Marina Franke, and Peter Hindle (1994) worked on inventory waste management as a sustainable way to manage solid waste. Forbes, R.M. Dougall, analyzed discarded material resulting from industrial, commercial, agricultural, and community activity and concluded that waste disposal should be handled and minimized using innovative technology. Claus Christ (1999) argued that Ecology and economy are like houses, or, to put it another way, "keeping up with society's housekeeping and the housekeeping of nature." However, redesigning and reusing leftovers results in the reduction and avoidance of pollutants. William C. Blackman Jr., 2001, reported that the public's need for a clean, safe environment develops, so they desire protection against the health risks and environmental horrors associated with hazardous waste management. William C. Clark (2003) explained that Public participation produces experience and creates effective environmental policy debates and science and technology for the pursuit of sustainable development.

Depoe (2004) described how participation formats and processes can be improved to maximize the value and input of public input in environmental decision-making. Upadya and Kumar (2013) stressed that public participation and awareness are essential for the river basin. However, public participation in water management requires a strong understanding of their climate, land, and natural resources. Hird J. Myra, Scott Loughed, R. Kerry Rowe, and Cassandra Kuyvenhoven (2014) discussed how the government needs to define and frame waste management and set up waste management technologies. Today, waste management is a political issue, and public participation is important in order to significantly reduce waste. Jutta Gutberlet (2016) reported that a prerequisite for technological solutions is a transformation in societal values, norms, and behaviour to achieve zero waste in society.

## OBJECTIVES

1. To understand waste management strategies.
2. To examine citizen involvement and problems of waste management.

## III. METHODOLOGY

This study utilised a qualitative research design, employing semi-structured and unstructured interview schedules and the Interpretative Phenomenological Approach (IPA). IPA is a qualitative approach that aims to provide a detailed examination and exploration of personal lived experiences in the social world. The primary data collection method involved in-depth interviews with interviewees and empirical evidence. Additionally, respondent profiles related to their socioeconomic background were investigated.

## IV. IMPORTANCE OF THE STUDY

This study raises significant human and ecological concerns. A healthy society must actively engage its people in sustainable waste management practises. This paper explores issues related to public involvement in waste management, citizen awareness, waste management strategies, the importance of rising public awareness, the utilisation of cutting-edge technology, and the empowerment of local governing bodies (panchayats). It also emphasises the need for effective waste management infrastructure and a shift in community and panchayat system behaviour.

## V. PROFILE OF THE RESPONDENTS

*Table-1*

<i>Sl.no</i>	<i>Respondents</i>	<i>Age</i>	<i>Gender</i>	<i>Education</i>	<i>Occupation</i>	<i>Category</i>
1	Respondent 1	65	Male	Degree	Retied Bank Manager	APL
2	Respondent 2	40	Male	Degree	Shop Keeper	APL
3	Respondent 3	35	Female	Matriculate	House wife	BPL
4	Respondent 4	39	Female	Matriculate	Self-employee	BPL
5	Respondent 5	70	Male	Matriculate	Daily wage	BPL

6	Respondent 6	32	Male	Degree	Private employee	APL
7	Respondent 7	30	Male	Degree	Private employee	BPL
8	Respondent 8	34	Female	Matriculate	Panchayat Member	BPL
9	Respondent 9	70	Male	Degree	Retired Govt. Employee	APL
10	Respondent10	67	Female	Illiterate	House wife	BPL

## VI. HISTORICAL BACKGROUND OF THE STUDY AREA

The study area is located on the river bank of Sita, 13 kilometres north at 13.42 degrees' latitude and 74.78 degrees' longitude in the Brahmavar Taluk of the Udupi District of Karnataka State, India. The NH 66 passes through the village, which holds a special place in the historical and cultural annals of Lord Brahma's Vara, or Ajapura. It is an ancient cultural centre of the region, adjacent to Barkur, which was the capital town of Tuluvanadu (694–1325 AD). The village is sandwiched between the majestic and serene rivers Sita and Suvarna, which originate from the Western Ghats.

The Varamballi Village Panchayat has been functioning since 1993–1994. According to official Panchayat records, the population was 6,809 as of the 2011 Census, 8,979 as of 2022, and there are 2,143 households. The 18 Gram Panchayat members are divided into 5 wards. Waste management in the area is regulated by Section 58 of the "Waste Prevention and Management Act of Karnataka" in 2016. The Panchayat has had a single Solid and Liquid Resource Management (SLRM) unit operating under the Tip Session institution since 2017. Currently, the Gram Panchayat is experiencing advancements in activities such as the hotel industry, apartments, service sectors, tourism, fishing, and various businesses.

## VII. ANALYSIS AND DISCUSSION

### *Strategies for waste management*

The biggest challenge in waste management is its impact on people's physical, mental, and social health. This study has found that waste management problems at the household level have worsened. The inefficient waste disposal system is mainly due to a lack of public awareness and inadequate technology at the Panchayat level. Lack of cooperation from the public, the Solid Liquid Resource Management (SLRM) unit, and improper waste management practises have been identified as issues in the research area. Many residents admit that waste management faces unknown challenges. It is frustrating for residents to witness locals dumping garbage in ditches, rivers, drains, roadsides, and deserted areas during odd hours when no one is around. This leads to Dengue fever, mosquito breeding, stray dog bites, water and air pollution, and general inconvenience. One respondent mentioned, "I won't give the waste I've collected to the collection service; instead, I'll burn it outside my house because the garbage collector doesn't accept all the garbage. I will then feed the leftover food to dogs and cats" (R-5). The foul smell emanating from his house confirms this. On the other hand, citizens do not hand over garbage to waste collectors because they have to pay a maintenance fee of 50 rupees imposed by the Panchayat. Due to the rapid depletion of natural resources and the health risks associated with the massive amount of garbage generated, it is now necessary to focus on recovery and reuse. New techniques for garbage recycling and reclamation must be developed, (A Nag and K Vijayakumar, 2005).

The plans and methods used by citizens to manage waste are extremely limited. Those who have enough space directly use plants, animals, and waste grains, vegetables, and fruits. People are not interested in composting their waste using biodegradable methods. Furthermore, waste segregation by citizens is only enforced by the Panchayat for solid waste because they have no interest in doing it themselves. One respondent stated, "Waste segregation is not our responsibility; the Panchayat should do it. We can only put all the garbage we generate in one bag" (R-1). People are completely dependent on the waste collection system provided by the Panchayat. If the collectors do not come for two days, they will throw all the accumulated waste into drains or set it on fire. Another respondent mentioned, "We will simply throw all waste into the drainage because we have no other plans for waste management. Involvement in waste segregation is not required; the Panchayat should take the lead and enforce strict regulations for everyone who is littering" (R-3).

### *Participation of citizens in waste management*

Citizens' participation in waste management is relatively limited. People living in apartments, regular citizens, and local poor people often throw trash on the side of the road or in vacant spaces. However, permanent residents, educated families, and official families participate in separating waste into different categories before giving it to garbage collectors, although they may struggle with separating sanitary items. One interviewee expressed concern about the aggressive response they might receive when trying to educate people about their role in waste management. Additionally, community friend groups occasionally participate in street cleaning. The need for public participation in creating a clean and safe environment is crucial, as is the desire for

protection against health risks and environmental hazards associated with hazardous waste management. Citizens' involvement in sustainable development, environmental protection from hazardous chemicals, and the legal system of government should all be important goals. Citizens are facing several fundamental issues in waste management, including a lack of equipment, knowledge, SLRM (Solid Liquid Resource Management) workers, and technological tools. This study identifies both internal and external barriers within the system.

More than 75% of people have built their homes for less than two cents, which makes it difficult for them to store waste properly. One respondent stated, "In the evening, the toilet in the flat flushes water down the drain. The foul stench is affecting my breathing. No official can oversee or oppose these actions. It is impossible for anyone to live here" (R-2). Residents lack knowledge about waste segregation, resulting in solid, liquid, and wet waste being kept together in one bag and commonly thrown in drainage, dumped in vacant areas, or set on fire. One respondent argues, "The best way to dispose of waste is to burn it" (R-7). Issues with animals and insects such as dogs, mice, and ants biting into accumulated garbage and spreading it everywhere.

The public is unaware of the inadequate scheduling of waste collectors, as they only arrive once a week or a few days at a time. According to responder -10, "It is hard to work in the SLRM unit due to the nasty rotten smell. Elderly workers labour from 8 a.m. to 5 p.m. every day without any safety equipment for their health. Due to these factors, trash collectors are unable to collect all types of waste from homes." People insist on cement or plastic boxes being erected at every street corner, but the local government administration has neglected to install them.

It is challenging to involve residents in waste disposal because the SLRM waste collectors only collect dry waste. One participant had some recommendations about garbage management and citizen involvement.

- i) The Panchayat installs dry and wet waste boxes at each street corner.
- ii) The Panchayat should seek timely feedback from the community and discuss it in meetings while formulating solutions to challenges.
- iii) The Panchayat should organise local communities to raise awareness about the importance of waste management, (R-9).

The residential area lacks an open or UGD (underground drainage) system, resulting in the flow of unclean water in front of each dwelling. However, individuals are unable to leave their location for drainage work. Residents are facing oxygen problems caused by pads and sanitary products left lying around. One respondent mentioned symptoms such as "faintness, headaches, children refusing meals, and an increase in houseflies, mosquitoes, and dengue fever occurrences", (R-8). The World Health Organisation (WHO) addresses the fundamental concern of inadequate waste management in the healthcare industry. Patients, trash workers, healthcare professionals, and the general public can all be exposed to dangerous diseases due to improper waste management (WHO, 2005). Another participant mentions that garbage collectors only collect waste from the commercial sector and do not frequently visit residential areas. "The Panchayat attempted to purchase land for waste dumping, but the locals rejected the offer to sell the land", (R-6). Waste management requires collaboration, coordination, and cooperation between the public, the Panchayat, and the SLRM unit.

## **VIII. SUGGESTIONS**

1. The local administration and Panchayat members should take the lead in waste collection, recycling, and segregation. The SLRM Unit workers should collect waste from the public more frequently.
2. The Panchayat administration should carefully monitor SLRM operations and enforce strict regulations as needed. The Panchayat should regularly solicit feedback from the populace. Cement or plastic drums should be set up at every street corner.
3. The local administration needs to educate the populace about the risks of waste fires. All streets must have properly functioning drainage systems. The Panchayat should suggest that the government expand the number of highly technological SLRM units.
4. Every month, the Panchayat should undertake a programme to educate the public about environmentally friendly garbage management. The Panchayat should recognise and give credit for effective household garbage management.
5. The Panchayat Raj and Rural Development Department needs to allocate sufficient funding for garbage management. NGOs, social activists, stakeholders, and the government should work at the grassroots level to help citizens understand the importance of waste management.

## **IX. CONCLUSION**

Effective waste management and citizen involvement are crucial for sustainable waste management. It is important for the local administration, Panchayat members, SLRM units, and NGOs to work together to find solutions. The study region faces challenges such as a lack of public involvement, funding sources, and adequate manpower and technology for waste management. These issues have led to various problems, including dengue fever, pollution, and the spread of dangerous diseases. It is essential for the general population to take

responsibility and participate in environmentally friendly waste management practices. This can be achieved through systematic segregation, citizen involvement, recycling, and reuse. Stakeholders at all levels, including the government, NGOs, and local authorities, should prioritize increasing citizen participation in waste management. Additionally, the Panchayat Raj and Rural Development Departments should allocate sufficient funding for garbage management. Education and awareness programs should be conducted regularly to educate the public about proper waste management practices. Recognizing and giving credit to households with effective garbage management can also incentivize citizen participation. Ultimately, it is the collective effort of all public organizations that will lead to a cleaner and healthier environment.

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