



SOLID WASTE MANAGEMENT (A Study in KBK Region of Odisha)

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ABSTRACT:-

The presented research paper is based on "Solid Waste Management: A Study in Odisha's KBK Region." Odisha has 114 urban local bodies classified as municipal corporations (05), municipalities (48), and notified area councils (61). Odisha's KBK region is made up of 12 municipalities and 14 NACs. Because the KBK region lacks a municipal corporation, the researcher chose two NACs (Khariar Road and Nuapada) and one municipal (Bhawanipatana) for a detailed study of solid waste management. The study area is primarily impacted by social and industrial activities. Municipal solid waste is defined as any non-liquid waste generated by an individual, household, small business, or institution. MSW, also known as trash or garbage, includes product packaging, grass clippings, furniture, clothing and bottles, food, scraps, newspaper, appliances, paint, and batteries. Finally, the system's primary goal should be to improve collection efficiency. The findings will be based on a survey of stakeholders in the selected areas, as well as employees, civic officials, officers and field workers from solid waste management, and government officials.

KEYWORDS: - Municipal Waste, Collection, SWM, Scenorio, composit Waste, Inert Waste, Hazardous Waste, Plastic.

INTRODUCTION: -

The management of solid waste is a difficult issue for emerging nations like India where the rate of urbanisation is very high. Municipal entities provide services for managing solid waste. Although it pertains to critical services, it does not receive the adequate priority that it merits, and the services are quite subpar. Additionally, the environment is currently suffering enormous difficulties managing solid waste as a result of urbanisation. As technology has advanced in domestic, social, and industrial activities, we as humans have become less concerned about solid waste in an effort to improve our level of living. We are well aware that population increase contributes to the current environment's rising solid waste levels. Waste has always been produced by human society and always will be. The term "solid waste management" (SWM) refers to a broad range of practises and actions used to identify undesirable byproducts of any given culture. Each city's environmental management programme must include solid waste management. In the case of India, population growth in 2001 was around 50% more than it was in 1947. According to research conducted in India in 2019–20, the composition of solid waste produced by Indian cities is generally made up of 40.15 percent vegetables and twigs, 3.8% glass, 0.8% paper, 0.62 percent plastic, 0.44 percent ceramics, 0.64 percent metals, 41.81 percent sand and grit, and 11.73 percent other materials.

In the Odisha municipalities of Puri and Rourkela, respectively, 0.5 kg and 0.3 to 0.5 kg of solid trash are produced daily per person. Land filling is the most typical method of handling solid waste in Odisha. Additionally, a ~~number of institutions, government agencies, and non-governmental groups are attempting~~ to increase public knowledge of solid waste management.

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Six functional elements can be used to categorise the actions involved in managing municipal solid waste from the point of generation to final disposal: -

1. Waste Generation,
2. Storage,
3. Collection,
4. Transportation,
5. Segregation & Processing, and
6. Disposal.

In order to collect solid trash as part of decentralisation, the entire city is split into the following five zones: -

1. Weekly Market
2. All Hospital of Municipal Corporation and Municipalities.
3. Factory
4. Koraput Bus Stop
5. Industrial Area in many Places.

Municipal solid waste comes in a wide range of forms, including garbage, trash, commercial, institutional, street sweeping, construction, and sanitation waste. It contains harmful recyclable materials (paper, plastic, glass, etc.). Composable organic materials (fruit and vegetable peels, food waste), substances (paints, insecticides, used batteries, pharmaceuticals, etc.), and dirty waste (Sanitary and Napkins, etc.).

Types of waste:-

1. Biodegradable garbage, including paper, green waste, and food and kitchen waste (can be recycled).
2. Paper, glass, demolition scraps, rocks, and rubbish are examples of recyclable materials.
3. Composite garbage, which includes used plastic toys, tetra packs, and waste closures
4. Destructive hazardous and toxic waste, including prescription pharmaceuticals, E-waste, paints, chemicals, lightbulbs or fluorescent tubes, spray cans, fertiliser and pesticides, along with their packaging, batteries, and ingredients for shoe polish, etc.

Introduction of Study Area

An impoverished and backward state like Odisha, with a sizable depressed population (nearly 40% SC and ST population) and a backward subsistence-oriented agricultural sector, has long experienced the development gaps between people and space at the inter-district level. Up until 1992, there were 13 districts in the State. A consideration of the state's current economic development condition reveals that just four of the 13 historically significant and undivided districts—Cuttack, Puri, Baleswar, and Ganjam—as well as two highland districts—Sundargarh and Sambalpur—can be categorised as developed or advanced. The historical, undivided districts of Kalahandi, Bolangir, Koraput, and Phulbani are noted to be extremely underdeveloped and persistently backward in the highland region. Kalahandi, Bolangir, and Koraput, three historically unbroken and impoverished districts in southwest Odisha, have recently become more subject to periodic droughts and famine-like circumstances, which cause the poor to flee in despair during non-agricultural seasons. They are among the most impoverished regions in the country and are also known as KBK districts. In a poor and underdeveloped state like Odisha, it goes without saying that the KBK region is the most affluent and underdeveloped belt. The economic development of the State cannot go to the take-off stage without special consideration from planners and policymakers in the form of sector-specific investments and family-centered poverty intervention initiatives. As a result, we make a token attempt in the sections that follow to provide a brief socioeconomic overview of the KBK regions as well as an assessment of the current economic growth process that has been touched by the state's politics and society's inherent reducing characteristics. It should be noted that the KBK region currently consists of eight districts, with undivided Kalahandi made up of Nuapada and Kalahandi, undivided Bolangir made up of Sonepur, and undivided Koraput made up of Malkangiri, Nabarangpur, and Rayagada.

Legacy Waste/Dumping Remediation Action Plan

S. N.	District	Name of the ULB	Detailed Description of Dumpsite				Approximate Calculation	
			Location	Age (in Yrs.)	Area (in Acer)	Height (in Mtr)	Estimated Volume (M3)	Estimated Quantity When Density = 0.5T/m3 (MT)
1.	Balangir	Balangir (M)	Bijakhama Ward No.18	10	11	01	44515	22258
2.	Koraput	Koraput (M)	Akashguda	10	04	03	24281	12141
3.	Malkangir	Malkangir (M)	MV02188 346763	03	0.5	04	8094	4047
4.	Nabarangpur	Nabarangpur (M)	RTO Office Back Side	03	3.5	01	14164	7082
5.	Subarnapur	Tarbha (NAC) Binika (NAC)	Telnadi Briolge Chowk	20	02	02	16187	8094
6.	Rajagada	Gudari (NAC)	Birsa Road	03	02	01	8094	4047
7.	Kalahandi	Kesinga (NAC)	Tuliapada Dumerimunda	03 03	05 2.9	0.5 03	10117 35208	5059 17604
8.	Nuapada	Nuapada (NAC)	Ward No.-2 Godtor, Nuapada	05	2.5	01	10117	5059
Total				60	33.4	14.5	170777	85391

Researchers discovered that municipal governments are incapable of developing new advanced technologies. Under drainage systems in some cities have been found to be polluted as a result of leachate infiltration. People are having problems as a result of per dumping, which causes air pollution, a bad appearance, and various diseases that affect both humans and the environment. Physical and chemical testing revealed that more than half of waste is biodegradable and should not be mixed with other waste.

Objectives of the Study:

This study seeks a novel approach to involving people from various social, ethnic, gardening, and religious groups in the reconstruction of a local waste management system, resulting in typical win-win situations.

1. Investigates the level of community participation in solid waste management policy formulation, implementation, and evaluation.
2. Evaluates capacity-building programmes that strengthen society's ability to solve waste management issues and identify appropriate technology options.
3. Determine the resource potential of waste streams and the extent to which waste is used as a resource.
4. A viable solution for involving the local community in the effective implementation of solid waste management practises.

Review of Literature:-

Buenrostro et.al; (2001)¹ "Municipal solid waste can be divided into three categories: urban, industrial, and rural." According to sources, the urban division is divided into two subdivisions: -

- (i) Residential (Duellings)
- (ii) Non-residential (Commercial, Institutional, Constructions and Special)

The industrial division includes all facilities that are part of a single industrial class."

Zheng, et.al; (2013)² "Global municipal solid waste (MSW) production reached 1.3 billion tonnes per year in 2010, with a projected increase to 2.2 billion tonnes per year by 2025."

Sharholly et.al; (2007)³ "Most urban areas have a significant lack of MSW storage at the source." The bins are used for both decomposable and non-decomposable waste (no waste segregation is performed), and the waste is disposed of at a communal disposal facility."

Mohanty, C. R. et.al; (2014)⁴ "In addition, literature on solid waste management is divided into the following sections—present MSWM status." Following a thorough review of the relevant literature. It can be seen that municipal solid waste management in various cities is highly inadequate."

Methodology:-

The basis for this paper has been studied as 'Qualitative research design.' In this study, the KBK of Orissa state is used. Orissa's division (Kalahandi-Balangir-Koraput) has four municipal corporations, four municipalities, and 61 notified areas. The prospective sampling method was used to select 250 people between the ages of 18 and 60 to respond to the waste management processes in these locations.

Sources of Data:-

The survey method will be used in the research to collect the data needed for the study. For this study, the researcher will collect data using both primary and secondary sources: -

1. Primary Data - The research will gather the necessary information from respective officer's employees and educated people in the KBK's selected regions. Primary data will be gathered through discussion, interviews, observation, and any necessary fieldwork.
2. Secondary Data - For secondary data, the researcher will collect important information from the following sources: Research Thesis (work), Magazines, Internet, Newspaper, Articles, and Government and Non-Governmental Data.

The researcher collected primary data in the present paper, in which the researcher made direct contact with 250 respondents and attempted to study the means of collecting solid waste and the waste generated every day, which is as follows -1.1 Waste Materials to be collected Every Week (in kg).

Table No.-1.1
Waste Materials to be collected in Every Week (in kg)

S.N.	Waste Received in Week	Frequency	Percent
1.	2-4 Kg	26	10.4
2.	5-8 Kg	71	28.4
3.	9-12 Kg	89	35.6
4.	13-15 Kg	64	25.6
Total		250	100

According to the information provided by the respondents, the emissions of waste materials per week from the respondents' households ranged from 9 to 12 kg per week in 35.6 percent of the households, five to eight kg in 28.4 percent of the households, 13-15 kg in 25.6 percent of the households, and 2-4 kg in 10.4 percent of the households.



Table No.-1.2
Wet/Dry Waste Segregation

S. N.	Wet/Dry Waste Segregation	Frequency	Percent
1.	Yes	188	75.2
2.	No	37	14.8
3.	Sometimes	25	10
Total		250	100

According to the survey results, 75.2 percent of respondents separate their wet and dry waste. 14.8 percent do not keep waste separated, and 10% occasionally separate wet and dry waste.

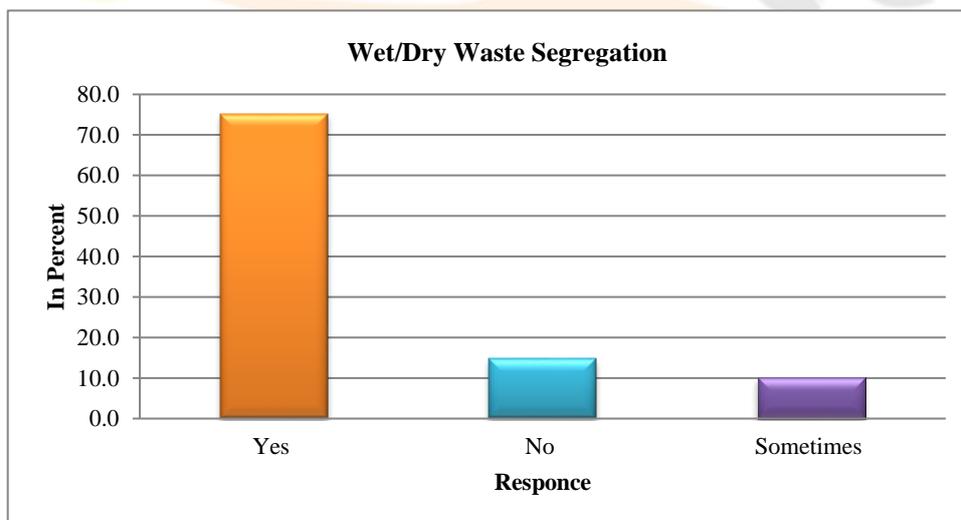
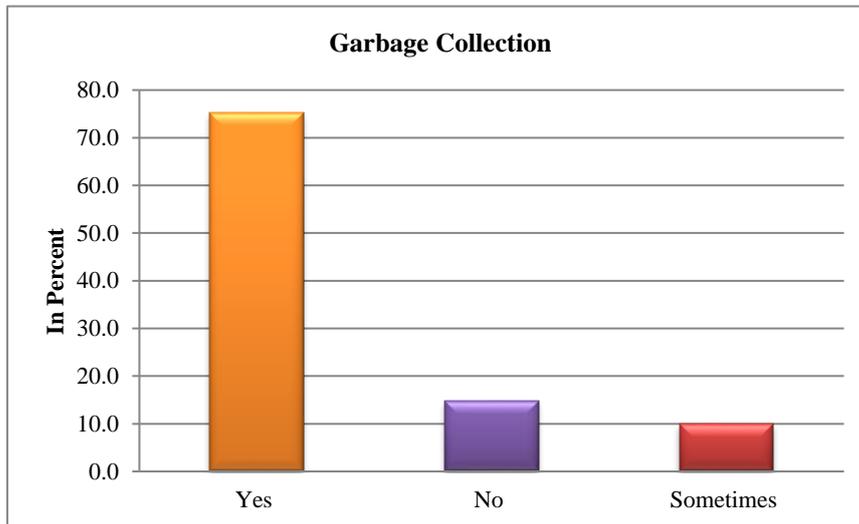


Table No.-1.3
Garbage Collection

S.N.	Garbage Collection	Frequency	Percent
1.	Daily	178	71.2
2.	Every Third Day	27	10.8
3.	In Week	45	18.0
Total		250	100

According to the information provided by respondents, waste materials are collected daily by 71.2 percent of respondents, once a week by 18.0 percent of respondents, and every third day by 10.8 percent of respondents.



Conclusion:-

Waste mismanagement not only causes serious environmental problems, but also poses a risk to public health. In many places, the focus has shifted away from traditional solid waste management options and toward more integrated solid waste management approaches. The findings will be based on a survey of stakeholders in the selected areas, as well as employees, civic officials, officers and field workers from the solid waste management department, and government officials.

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