



Solid Waste Management in Rural Areas of Karnataka

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Abstract:

Solid waste management in rural areas of Karnataka presents significant challenges due to limited resources, infrastructure, and awareness. This paper proposes effective strategies to enhance waste management practices in these settings. Key approaches include community awareness and education to promote proper waste segregation, recycling, and composting. Source segregation initiatives empower households to separate biodegradable and non-biodegradable waste at the point of origin, facilitating efficient processing. Household-level composting contributes to organic waste management and agricultural sustainability. Biogas production from community plants offers an alternative energy source while managing organic waste. Community engagement through local committees fosters participation and ownership. Infrastructure development, such as waste collection centers and treatment facilities, aims to improve operational efficiency. Promoting recycling through designated collection points and supporting local enterprises enhances waste diversion efforts. Regulatory enforcement ensures compliance with waste management laws to discourage improper disposal practices. These strategies aim to achieve sustainable solid waste management in rural Karnataka, fostering cleaner and healthier communities.

Keywords: Solid waste management, Local area Cooperation, recyclable materials.

Introduction

Solid waste management is a major problem universally, and its viable management is especially moving in country regions because of restricted assets, foundation, and mindfulness. Karnataka, a state in southern India, is no

exemption for this test. With a huge piece of its populace living in rural regions, the management of Solid waste in these districts is basic for ecological supportability, general wellbeing, and by and large prosperity. Rural regions in

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Karnataka face special conditions that request custom fitted answers for Solid waste administration. Factors like scattered populaces, lacking framework, and conventional garbage removal rehearses worsen the test. Moreover, fast urbanization and changing utilization designs add to the rising volume and intricacy of Solid waste created in provincial settings. This paper expects to investigate the complexities of Solid waste management in country areas of Karnataka and propose procedures and mediations to really address these difficulties. By understanding the financial, social, and ecological settings intended for country Karnataka, we can foster complete and maintainable ways to deal with Solid waste management that address the issues of nearby networks. The accompanying areas will dig into different parts of Solid waste management in country Karnataka, including local area commitment; squander isolation, fertilizing the soil drives, foundation improvement, administrative measures, mechanical mediations, and cooperative organizations. By looking at every one of these parts exhaustively, we can figure out an all encompassing structure for Solid waste management that incorporates nearby information, best practices, and imaginative arrangements. At last, the objective is to advance ecologically sound and socially comprehensive waste management rehearses in provincial Karnataka, guaranteeing the prosperity of both current and people in the future. Through deliberate endeavors and aggregate activity, we can beat the difficulties presented by Solid waste and make ready for cleaner, better, and more manageable country networks in Karnataka. Reconciliation with

Horticulture Investigating ways of coordinating waste management with farming practices, like involving treated wastewater for water system. Innovation Reception embracing innovation arrangements like waste-to-energy transformation and portable applications for squander assortment observing. Public-Private artnerships (PPP) Teaming up with privately owned businesses and NGOs to use assets and skill. Checking and Assessment Laying out a framework for observing system viability and leading occasional assessments for ceaseless improvement. By carrying out these procedures thoroughly and connecting with partners at different levels, country areas of Karnataka can address Solid waste management challenges and accomplish cleaner and better conditions for their occupants.

Objectives

- Raise awareness and educate rural communities in Karnataka on effective solid waste management practices, including segregation, recycling, and composting.
- Implement source segregation initiatives to empower households and institutions in rural areas to manage waste at the point of generation.
- Promote decentralized composting to locally manage organic waste and produce compost for agricultural use.
- Establish and enhance infrastructure for waste collection, treatment, and recycling in rural Karnataka to improve overall efficiency and sustainability.

Solid Waste Management in Rural Karnataka

Solid waste management in rural areas of Karnataka presents unique challenges due to limited resources, infrastructure, and awareness, a common issue in many parts of the world. To address these challenges effectively, a comprehensive strategy involving various approaches can be implemented:

Firstly, awareness and education initiatives are essential to educate local communities about the importance of proper waste management practices, including segregation, recycling, and composting. These initiatives can be conducted through local meetings, workshops, and educational programs in schools. Secondly, promoting segregation at the source is crucial to simplify waste processing and reduce costs. Encouraging households to separate biodegradable (organic) and non-biodegradable (plastic, glass, metal) waste at the point of generation can significantly improve efficiency.

Additionally, advancing composting at the household level by distributing compost bins and providing training on composting techniques can convert organic waste into valuable compost for local farms, promoting sustainability. Exploring the establishment of community biogas plants that convert organic waste into biogas for cooking and energy generation not only manages waste effectively but also provides an alternative energy source. Involving local communities in decision-making through village-level committees ensures community participation and ownership.

Furthermore, investing in essential infrastructure such as waste collection

centers, material recovery facilities, and treatment plants is crucial to improve waste management efficiency. Promoting recycling by setting up collection points for recyclable materials and enforcing regulations on waste management practices are vital steps in reducing environmental pollution. Integrating waste management with agricultural practices and adopting technological solutions like waste-to-energy technologies and mobile applications for monitoring further enhances operational efficiency. Finally, fostering public-private partnerships to leverage expertise and resources in implementing solid waste management initiatives ensures sustainable development in rural Karnataka.

Solid and Liquid Waste Management in Rural Areas

Water, disinfection, and cleanliness (WASH) straightforwardly influence human wellbeing and have broad outcomes when disregarded. India is quite possibly of the quickest creating economy, yet with regards to WASH markers, it keeps on falling behind. With a populace of over 1.2 billion, there is a mounting and critical need to address sterilization. Solid and Fluid Waste Management¹ (SLWM) is one of the critical parts of Swachh Bharat Mission (SBM) (G), sent off with the target of acquiring improvement tidiness, cleanliness and the overall personal satisfaction in country regions. This report presents a fundamental, speedy prologue to Solid Fluid Waste Management (SLWM) in rural regions. The record is equipped, especially for locale directors to help center around SLWM alongside Open Poop Free (ODF) exercises.

Solid Waste:

In country regions, instances of Solid waste incorporate squanders from kitchens, gardens, steers sheds, horticulture, and materials like metal, paper, plastic, fabric, etc. They are natural and inorganic materials with no excess monetary worth to the proprietor created by homes, business and modern foundations. Most family squander in country regions is natural, with minimal inorganic material, and is non-harmful. In view of its current circumstance benevolence, fertilizing the soil is an exceptionally reasonable technique for squander the board in country regions.

Liquid Waste

At the point when water is utilized once and is not generally fit for human utilization or some other use, being fluid waste is thought of. Wastewater can be subcategorized as modern and homegrown: Modern wastewater is produced by assembling processes and is difficult to treat. Homegrown wastewater incorporates water released from homes, commercial edifices, inns, and instructive foundations. SBM centers around creating mindfulness and giving local area oversight frameworks. To execute SLWM drives financially and productively, possession at grass root level and local area inclusion at all stages is basic. Data, Schooling, and Correspondence (IEC) intercessions ought to zero in on SLWM to provoke an interest for a feasible framework. This should prompt setting up frameworks for garbage removal so that it substantially affects the populace. The people group/Gram Panchayat (GP) must be urged to approach and request such a framework, which they can hence work

and keep up with. Mindfulness and training efforts ought to hold back nothing, chose delegates, schools, nongovernmental associations (NGOs) working in towns, retailers, families, and overall population.

Solid Waste Management

1. Solid waste from Jalandhar city's water treatment plant is repurposed for nursery preparation, with plants distributed freely to neighboring towns, transforming Sultanpur Lodhi's environment into a green belt area.
2. The Karnataka Government adheres to constitutional values (Articles 39, 48A, and 51A(g)) in ensuring environmentally sustainable, socially equitable, and economically viable development through its policies, programs, and plans. It promotes principles like sustainable development, intergenerational equity, and the Polluter Pays Principle.
3. Karnataka pioneers participatory and planned development through legislative frameworks like the Karnataka Town and Country Planning Act, 1961, and the Karnataka Municipalities Act, 1976 (amended per the 74th Constitutional Amendment Act, 1992). However, rapid urbanization and inefficiencies in cities and towns pose challenges to effective solid waste management.
4. Urbanization and commercialization have led to complex challenges in

solid waste management in Karnataka, with a significant increase in non-biodegradable waste and improper disposal practices causing environmental and public health concerns. Dumping sites contaminate surface and groundwater, contribute to air pollution through burning, and become breeding grounds for disease-carrying vectors.

5. Karnataka safeguards the rights and dignity of personnel involved in waste management, including Pourakarmikas, ensuring fair treatment and abolishing degrading practices like carrying night soil. The state has implemented measures to protect the environment and public health while promoting dignified work conditions for waste handlers.

Karnataka State Rural Sanitation Strategy

State Rural Disinfection Methodology and Karnataka State Country Sterilization Strategy since they are represented by various guidelines and managed by specialists that don't fall inside the Provincial Turn of events and Panchayath Raj Division. In the occasion the management of such kinds of waste falls inside the domain of the Gram Panchayats because of changes in relevant regulations, this Karnataka State Provincial Disinfection Methodology will be extended to incorporate the above squander streams.

Processing and Disposal of Solid Waste

The Gram Panchayat will, either independently or as a Bunch, conform to the accompanying arrangements regarding

handling and removal of Solid Waste: (i) The Gram Panchayat will distinguish reasonable site(s) for capacity and handling of various floods of Solid Waste in the span of one year from the date of coming into power of these Bye-regulations. (ii) The Gram Panchayat will develop, work and keep up with Solid waste handling offices and related framework all alone or through an Office. (iii) The Gram Panchayat will use reasonable innovation according to the rules gave by Karnataka Provincial Drinking Water and Sterilization Division, KSPCB, CPCB and additionally some other suitable power, to limit the utilization of Clean Landfills. (iv) The offices will have satisfactory utilities to guarantee clean and sterile circumstances including arrangement of water and latrines, for the aversion of antagonistic wellbeing and ecological circumstances. All handling offices will agree with any extra norms, determinations and rules advised by KSPCB, CPCB, Karnataka Rural Drinking Water and Sterilization Division as well as pertinent power or recommended by any regulation for the time being in force.

Waste Management In Karnataka: Realities And Opportunities:

Solid Waste (SW) age in an unavoidable outcome of fast urbanization, populace blast, changing way of life and modernization. Solid Waste Management(SWM) is productive assortment, transportation, handling, reusing and removal and checking of waste and its effect on climate. SWM is one of the significant difficulties all around the world and in India. Around 72 million Tons of SW is produced in the country, of which 43 million Tons are

gathered and just 12 million Tons of waste is logically treated. Balance amount of 31 million Tons is unloaded in landfills with no treatment. Informal Land-filling of Civil Solid Waste (MSW) creates gigantic amount of leachate, which sullies water. A large portion of the Metropolitan Nearby Bodies (ULBs) embrace land-filling as the choice for removal of SW, which is connected to water pollution, age of ozone harming substances beside odour irritation.

Strategies for effective Solid Waste Management:

- Coordinated MSW the executives to guarantee safe and naturally sound removal of waste.
- Empower decentralized assortment places as commanded by MSW Rules 2016, Segment 3(15) to handle dry waste to stay away from tainting by wet waste and limit transportation.
- Set up cutting edge wet waste handling units for fertilizing the soil and bio-methanation.
- Sharpen overall population about successful SWM strategies and make mindfulness in regards to the outcomes of unfortunate waste administration.
- Lay out source isolation of MSW through execution based motivating force conspire.
- Limit the hole in age and handling of MSW by stressing 5 R's of waste hierarchy.e. 'lessen, re-use, reuse and recuperate and removal' as commanded by MSW Rules 2016
- Take on ecologically sound advancements like treating the soil,

bio-methanation, RDF and waste to energy drives.

- Help the salaries of ULBs through income from successful MSW handling like reusing, treating the soil, and RDF.
- Set up zone-wise isolation and handling offices to guarantee 100% processing of MSW and limit land-filling
- Lessen transportation of MSW to limit the reliance on petroleum products and effect on air quality.

Discussion and Conclusion:

Solid waste management in rural areas of Karnataka presents multifaceted challenges due to limited resources, infrastructure constraints, and varying levels of community awareness. Effective strategies must encompass a collaborative approach involving community engagement, infrastructure development, technological advancements, and regulatory enforcement.

Community engagement through awareness campaigns and participatory decision-making processes is crucial to instill the importance of proper waste management practices like segregation, composting, and recycling. Empowering rural households to segregate waste at the source and promoting decentralized composting can significantly reduce organic waste sent to landfills, mitigate environmental pollution, and foster agricultural sustainability through the use of composted materials. Additionally, exploring community-based biogas plants for energy production from organic waste offers a dual benefit of waste management and renewable energy generation, thereby

enhancing local resilience and reducing dependency on traditional fuel sources.

Infrastructure development, including the establishment of waste collection points, treatment facilities, and adoption of appropriate technologies, is essential to improve waste processing efficiency and environmental outcomes. Regulatory frameworks need strengthening to enforce waste management regulations effectively, ensuring compliance and responsible waste disposal practices. Integrating solid waste management with agricultural activities by utilizing compost and treated wastewater can further enhance soil fertility, reduce chemical fertilizer use, and promote sustainable farming practices in rural Karnataka. Public-private partnerships play a pivotal role in mobilizing resources and expertise, facilitating innovative solutions, and enhancing the sustainability of waste management initiatives. Regular monitoring and evaluation are crucial for tracking progress, identifying challenges, and refining strategies to achieve cleaner and more resilient rural communities in Karnataka.

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