



# ROLE AND CHALLENGES OF HARITHA KARMA SENA: A STUDY IN ERNAKULAM DISTRICT

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**Abstract:** Waste management has become a major environmental challenge due to rapid urbanisation, population growth, and increasing waste generation. In Kerala, Haritha Karma Sena plays an important role in decentralised waste management through activities such as waste collection, segregation, recycling, and awareness creation. This study examines the role and challenges of Haritha Karma Sena in Ernakulam district with special focus on operational difficulties, waste-to-wealth initiatives, technological adoption, and the promotion of sustainable alternatives to plastic. The study is based on both primary and secondary data collected through structured questionnaires, research articles, journals, and government reports. The findings reveal that Haritha Karma Sena contributes significantly to environmental protection and sustainable waste management, but faces challenges such as low income, inadequate safety measures, heavy workload, limited infrastructure, and insufficient public cooperation. The study also highlights the importance of community participation, technological support, and eco-friendly practices in improving the effectiveness of decentralised waste management systems. The research provides useful suggestions for strengthening Haritha Karma Sena activities and promoting sustainable environmental practices in Ernakulam district.

**Keywords:** Haritha Karma Sena, Waste Management, Decentralised Waste Management, Waste-to-Wealth, Sustainable Development

## 1. INTRODUCTION

Waste management has emerged as a critical environmental challenge due to rapid urbanisation, population growth, industrialisation, and changing consumption patterns. Improper waste disposal leads to serious environmental and public health issues, including land and water pollution, air contamination, and the spread of diseases. In developing countries like India, effective municipal solid waste management remains a major concern because of increasing waste generation, inadequate infrastructure, and limited public awareness regarding proper waste disposal practices.

Kerala, one of the most densely populated states in India, faces significant challenges in solid waste management. To address these issues, the state has implemented decentralised waste management initiatives, among which Haritha Karma Sena (HKS) plays a vital role. Operating under local self-government institutions, Haritha Karma Sena is responsible for door-to-door waste collection, segregation, recycling, transportation of recyclable materials, and community awareness creation regarding sustainable waste management practices. The organisation also promotes waste-to-wealth initiatives such as composting and plastic recycling, contributing to environmental sustainability and livelihood generation.

Despite its important contribution, Haritha Karma Sena faces several operational and social challenges, including low income, inadequate safety measures, heavy workload, limited infrastructural support, and insufficient public cooperation. The efficiency of decentralised waste management systems largely depends on community participation and proper waste segregation at the household level. This study focuses on examining the role and challenges of



Haritha Karma Sena in Ernakulam district. It aims to analyse the difficulties faced by its members, evaluate waste-to-wealth initiatives, assess the adoption of innovative waste management practices, and explore sustainable alternatives to plastic usage.

## 2. SIGNIFICANCE OF THE STUDY

The significance of this study lies in understanding the important role played by Haritha Karma Sena in promoting sustainable waste management in Kerala. Through activities such as waste collection, segregation, recycling, and awareness creation, Haritha Karma Sena helps reduce environmental pollution and encourages proper waste disposal practices among households. The study also highlights how community-based waste management initiatives contribute to environmental protection, public health, and sustainable development.

This research is also significant because it identifies the major challenges faced by Haritha Karma Sena members, including low income, lack of safety equipment, limited infrastructure, and insufficient public cooperation. The findings of the study can help policymakers, local governments, and environmental organisations develop effective strategies to strengthen waste management practices and improve the functioning of Haritha Karma Sena in Ernakulam district.

## 3. STATEMENT OF THE PROBLEM

Waste management has become a major environmental challenge due to rapid urbanisation, population growth, and increasing waste generation. In Kerala, particularly in the Ernakulam district, improper waste disposal and inadequate waste management practices have created serious environmental and public health concerns. To address these issues, the government introduced decentralised waste management systems, among which Haritha Karma Sena plays an important role in waste collection, segregation, recycling, and public awareness creation.

Despite its significant contribution to environmental cleanliness and sustainable waste management, Haritha Karma Sena faces several operational and social challenges, such as low income, heavy workload, lack of safety equipment, inadequate infrastructure, health risks, and limited public cooperation. In addition, improper waste segregation at the household level and limited adoption of waste-to-wealth initiatives reduce the effectiveness of the system. Therefore, there is a need to study the role of Haritha Karma Sena and analyse the challenges faced by its members in order to identify measures for improving the efficiency and sustainability of waste management practices in Ernakulam district.

## 4. OBJECTIVES OF THE STUDY

- To identify and analyse the major challenges faced by Haritha Karma Sena and to suggest suitable measures for improving its efficiency and sustainability.
- To examine the concept of waste-to-wealth initiatives and evaluate their economic and social benefits in the context of Haritha Karma Sena activities.
- To study the role of innovative systems and technologies in efficient waste management and assess the contribution of Haritha Karma Sena in implementing such practices.
- To explore sustainable alternatives to plastic materials and analyse the role of Haritha Karma Sena in promoting eco-friendly practices and environmental awareness within the community.

## 5. METHODOLOGY OF THE STUDY

The study adopts a descriptive research design to examine the role, functioning, and challenges of Haritha Karma Sena in waste management activities in Ernakulam district, Kerala. Both primary and secondary data were used for the study. Primary data were collected directly from Haritha Karma Sena members through a structured questionnaire containing questions related to waste management practices, working conditions, safety measures, health risks, community cooperation, waste-to-wealth initiatives, innovative technologies, and the promotion of alternatives to plastic products. Secondary data were collected from research articles, academic journals, government reports, books, and online sources related to waste management and Haritha Karma Sena. The respondents were selected using the convenience sampling method from selected areas of Ernakulam district. The collected data were analysed using simple statistical tools such as percentage analysis and graphical representation to interpret the findings effectively and systematically.

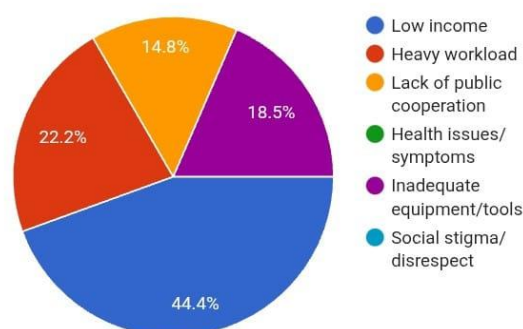
## 6. REVIEW OF LITERATURE



**Colon & Fawcett (2006):** Colon and Fawcett emphasised the importance of public and community participation in household solid waste management systems. Their study stated that operational efficiency and sustainability in waste management can be improved through public-private partnerships supported by proper incentives and subsidies. **Gupta and Kumar (2014):** Gupta and Kumar explained that different types of vehicles are used for municipal solid waste transportation depending on waste quantity, location, and distance. Their study highlighted that open-body trucks are commonly used in urban areas, while bullock carts, tractor-trailers, and tricycles are still widely used in smaller towns for economical waste transportation. **Sreeraj N R (2025):** Sreeraj N R studied the impact of Haritha Karma Sena on household waste management in Ernakulam district. The study found that Haritha Karma Sena volunteers play a significant role in improving waste management practices, reducing improper waste disposal, and enhancing environmental quality through community participation and awareness creation. **Niyati Mahajan (2015):** Niyati Mahajan compared waste management practices in India and Japan and highlighted the growing environmental challenges caused by increasing municipal solid waste. The study concluded that India can improve waste management by adopting advanced technologies, better recycling systems, and effective policies similar to those used in Japan. **Raghavan & Krishnan (2022):** Raghavan and Krishnan examined community-led waste management programs in Kerala and emphasised the importance of public participation in household waste segregation. Their study found that Haritha Karma Sena improved recycling rates, while volunteer training and awareness programs played a key role in sustaining public cooperation. **Sreekumar & Rajan (2021):** Sreekumar and Rajan studied waste-to-wealth initiatives such as compost production and plastic recycling in Kerala. Their findings showed that these activities generated additional income for workers, but unequal income distribution limited the economic benefits for many participants. **Kaur & Singh (2020):** Kaur and Singh compared waste management practices across Indian states and identified Kerala's Haritha Keralam Mission as an effective community-based initiative. The study emphasised the importance of local volunteers, decentralised collection systems, and awareness campaigns, while also noting challenges such as limited technology and inconsistent household cooperation. **Varghese & Joseph (2023):** Varghese and Joseph analysed the environmental impact of community-based waste management in Ernakulam district. Their study concluded that proper waste segregation and disposal by Haritha Karma Sena helped reduce pollution, improve sanitation, and minimise greenhouse gas emissions. **Anand & Mathew (2023):** Anand and Mathew examined the impact of waste-to-wealth initiatives such as composting, biogas production, and plastic recycling in Kerala. Their findings revealed that these initiatives contributed to environmental sustainability and supplementary income generation, but required better infrastructure and training support. **Krishna & Varghese (2022):** Krishna and Varghese analysed technological practices in urban waste management in Kerala. The study found that modern technologies such as automated segregation and digital tracking systems were underutilised due to a lack of technical knowledge and training among workers. **Ramesh & Balakrishnan (2023):** Ramesh and Balakrishnan focused on community participation and the promotion of plastic alternatives in Kerala. Their research showed that awareness campaigns encouraged the use of eco-friendly products such as cloth bags and reusable utensils, although adoption levels differed across communities. **Lekshmi & Suresh (2024):** Lekshmi and Suresh studied the socio-economic conditions of Haritha Karma Sena members in Ernakulam district. The study revealed that while workers gained social recognition, they also faced occupational health risks, heavy workload, and inadequate remuneration. **Prasad & Thomas (2025):** Prasad and Thomas compared decentralised and centralised waste management systems in Kerala. Their findings showed that decentralised initiatives like Haritha Karma Sena improved waste segregation, reduced landfill dependency, and increased community participation, while emphasising the need for technology integration and continuous training.

## 7. ANALYSIS AND INTERPRETATION

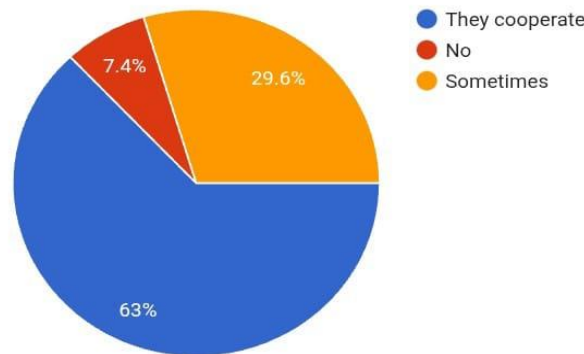
Figure 1: Challenges faced by the Haritha Karma Sena





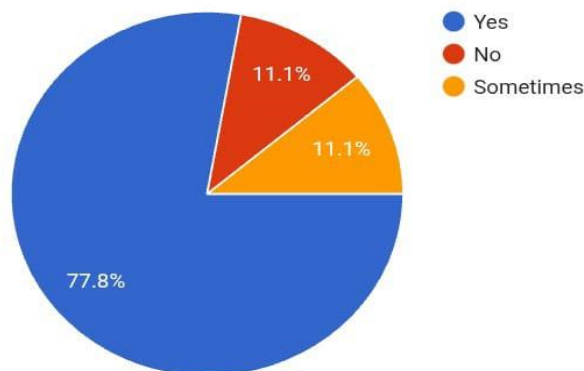
**INTERPRETATION:** From the data, it is clear that Low Income (44.4%) and Heavy Workload (22.2%) are the major serious problems faced by the Haritha Karma Sena Members. Lack of cooperation from the people and unavailability of adequate tools and equipment come further. These issues must be addressed effectively to improve working conditions and the efficiency of workers.

**Figure 2: Cooperation of Households in Waste Segregation**

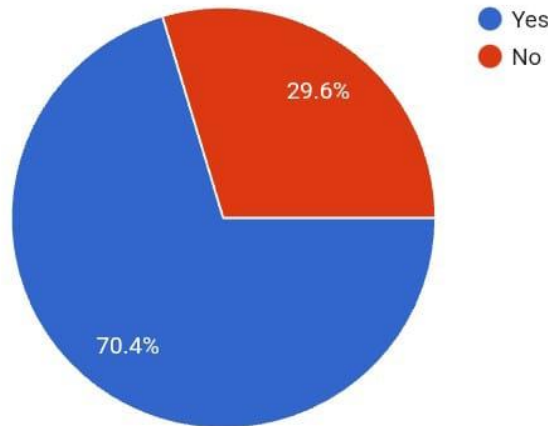


**INTERPRETATION:** This shows that although a majority of households (63%) cooperate with Haritha Karma Sena members, a considerable number of households (29.6%) still lack consistency in waste segregation practices. This inconsistency can create difficulties for workers during waste collection and sorting. Increasing public awareness and education programs can help improve community participation in waste management.

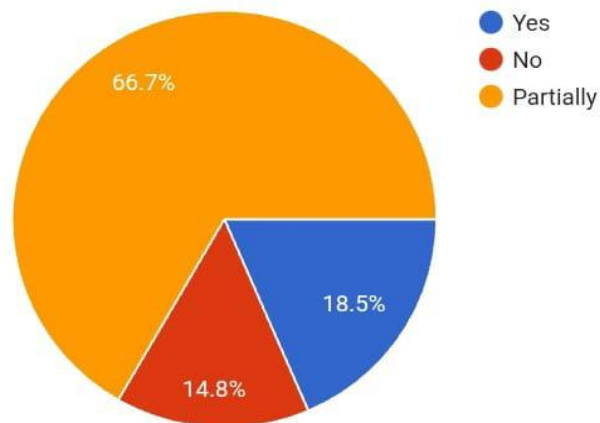
**Figure 3: Availability of Protective Equipment**



**INTERPRETATION:** Although most Haritha Karma Sena members receive protective equipment(77.8%), a portion of workers still lack consistent access to safety gear(11.1%). This can expose workers to health risks while handling waste. Ensuring the regular provision of protective equipment is important for safeguarding the health and safety of workers.

**Figure 4: Health Problems Due to Waste Handling**

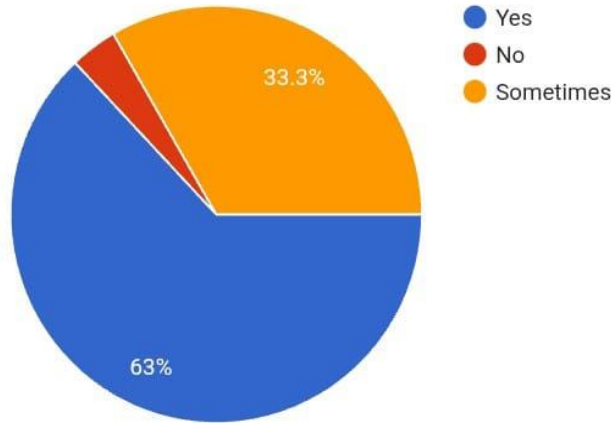
**INTERPRETATION:** The majority of Haritha Karma Sena members have experienced health problems (70.4%) related to their work. This suggests that waste handling involves significant occupational health risks. Improving safety measures, providing medical support, and ensuring the proper use of protective equipment are essential to protect workers' health.

**Figure 5: Adequacy of Income from Haritha Karma Sena**

**INTERPRETATION:** This indicates that the majority of Haritha Karma Sena members (66.7%) feel that their income is not fully adequate to meet their livelihood needs. The finding reinforces the earlier result that low income is a major challenge faced by workers. Improving wages and financial benefits could enhance job satisfaction and economic stability among the workers.

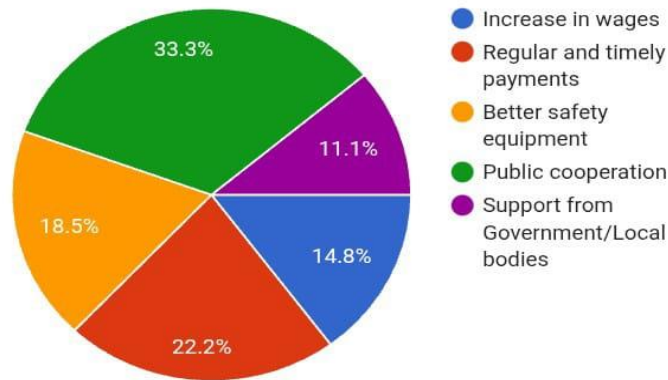


Figure 6: Participation in Training and Awareness Programs



**INTERPRETATION:** The majority of respondents have access to training programs (63%) that help improve their waste management skills. However, some workers still receive limited training opportunities (33.3%). Expanding training programs can enhance workers’ knowledge, improve operational efficiency, and promote better waste management practices.

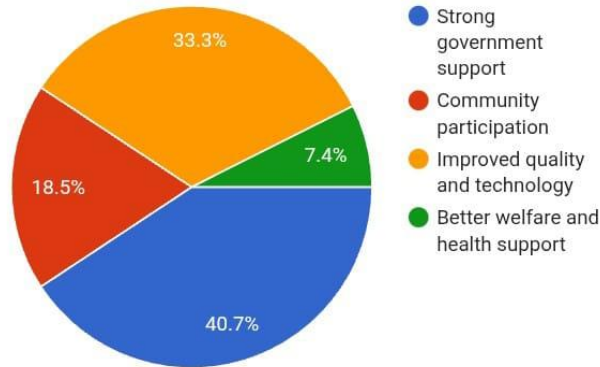
Figure 7: Effective Solutions to Overcome Challenges



**INTERPRETATION:** The findings suggest that improving public cooperation (33.3%) and ensuring timely payments (22.2%) are key factors for enhancing the working conditions of Haritha Karma Sena members. Providing better safety equipment (18.5%) and increasing wages can also improve worker satisfaction and performance.

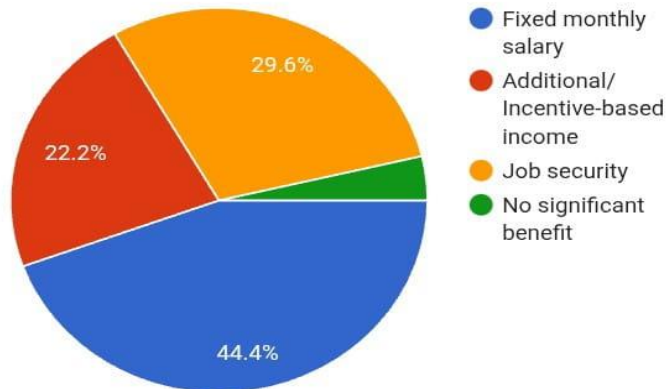


Figure 8: Improvements Needed in Working Conditions



**INTERPRETATION:** The findings indicate that institutional support (40.7%) and technological improvements (33.3%) are considered the most effective ways to address the challenges faced by Haritha Karma Sena members. Strong government policies, better infrastructure, and improved waste management technologies can significantly enhance the efficiency and sustainability of the system.

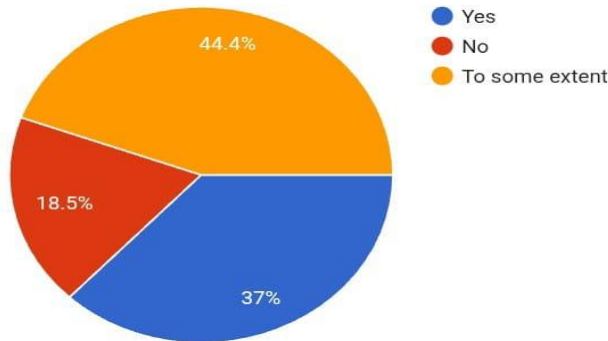
**Section 9: Economic benefits received**



**INTERPRETATION:** According to the data, a fixed monthly payment is the most economically beneficial to the Haritha Karma Sena members to perform these activities (44.4%). Job security is privileged by 29.6% members. Additional incentives are provided to only 22.2% of them, and a lesser proportion of them are not getting any of the significant benefits. This can also be solved with suitable government intervention.

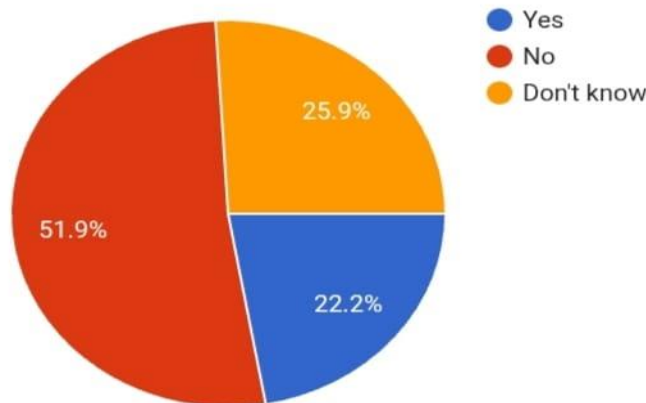


**Section 10: Improvement in the living standards**



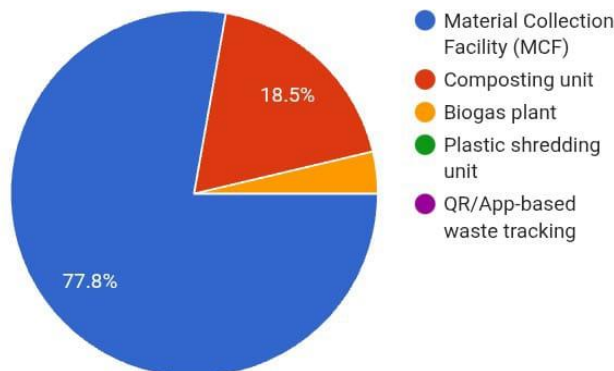
**INTERPRETATION:** From the analysis, we can understand that only 37% of the Haritha Karma Sena members could improve their living standards from the payment of these waste-to-wealth activities. A wide proportion could improve to a certain extent (44.4%), and a small proportion could not improve their life conditions anymore (18.5%). A solution to this is higher payments and incentives to the members for conducting waste transformation activities.

**Section 11: Use of Creative Waste Management Technologies**



**INTERPRETATION:** About 22.2% of the Haritha Karma Sena members say that suitable waste management techniques are used in their operating area. 25.9% of them are unaware of these technologies, and the majority argue that there is no use for any waste management techniques.

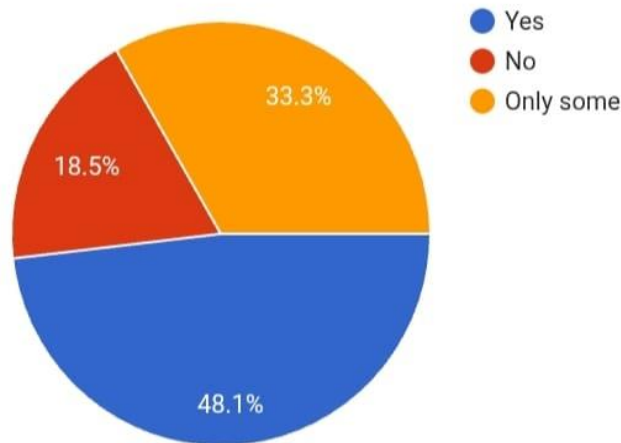
**Section 12: Current Waste Management Systems and Technologies in Use**





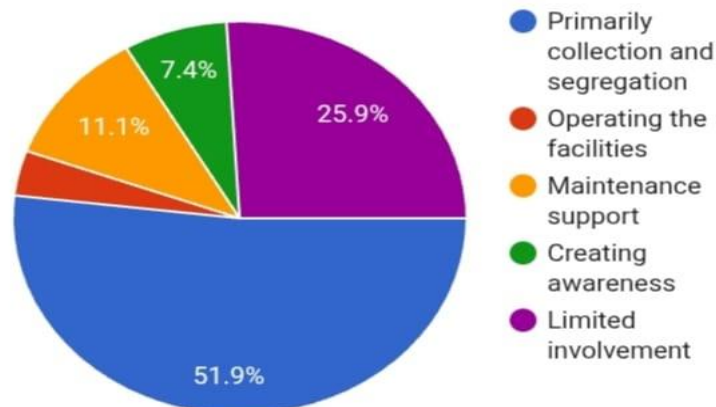
**INTERPRETATION:** The data show that 77.8% (21 respondents) report the use of Material Collection Facilities (MCF) in their area. 18.5% (5 respondents) use composting units, while only 3.7% (1 respondent) have access to a biogas plant. This indicates that material collection facilities are the most widely implemented technology, whereas advanced systems like biogas plants are rarely used.

### Section 13: Efficiency of Waste Management Technologies



**INTERPRETATION:** The majority of the Haritha Karma Sena members (48.1%) think the system and techniques increased the efficiency of waste collection and management. 33.3% says the improvement has reached only to a certain extent, and 18.5% of them argues no improvement in waste collection and processing due to technology.

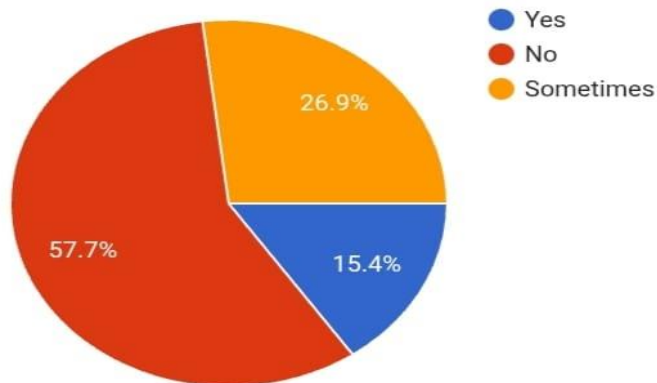
### Section 14: Role of Haritha Karma Sena Members in Operating Technological Systems



**INTERPRETATION:** The data shows that 51.9% (14 respondents) of Haritha Karma Sena members are mainly involved in collection and segregation activities. A smaller proportion, 25.9% (7 respondents), reported having limited involvement in operating the systems. Meanwhile, 11.1% (3 respondents) provide maintenance support, 7.4% (2 respondents) are engaged in creating awareness, and only 3.7% (1 respondent) is directly involved in operating the facility. This indicates that most members primarily participate in collection and segregation rather than in the technical operation of the systems.

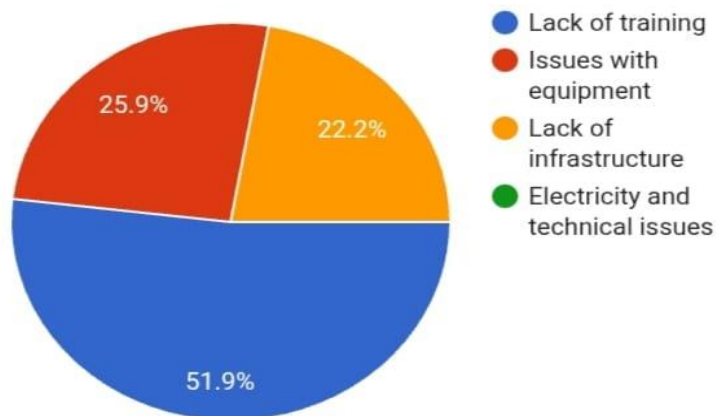


**Section 15: Training Received for Handling Modern Waste Management Systems**



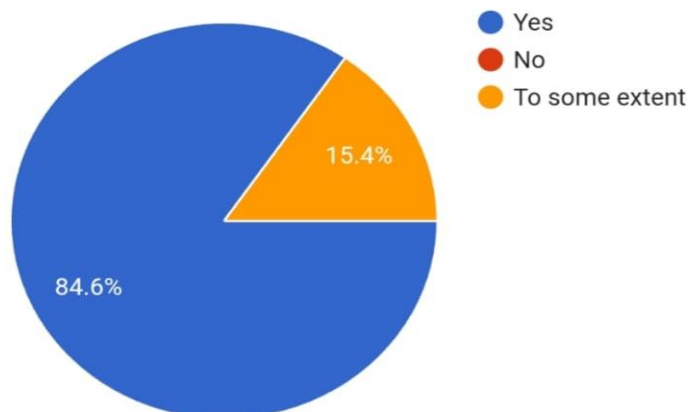
**INTERPRETATION:** From the analysis, it is clear that 57.7% of the Haritha Karma Sena members have not received any training to handle modern waste management systems. 26.9% of them sometimes receive training, and only 15.4% of them are truly admitted to such training programs.

**Section 16: Difficulties in Using Modern Waste Management Technologies**



**INTERPRETATION:** Most of them (51.9%) argue that the lack of training is the main problem in using the modern system and technologies for waste management. 25.9% of them argue the problems with tools and equipment, and 22.2% argue the issue of lack of infrastructure facilities. Electricity and other technical issues are also pointed out and should be overcome with an appropriate solution.

**Section.17: Haritha Karma Sena’s Role in Promoting Awareness on Plastic Reduction**





**INTERPRETATION:** The data shows that 84.6% (22 respondents) believe that Haritha Karma Sena is actively creating awareness to reduce plastic use and promote alternatives, while 15.4% (4 respondents) feel this is happening only to some extent. This indicates that the organisation is largely successful in raising community awareness about plastic reduction.

## 8. SUGGESTIONS OF THE STUDY

- Improve worker welfare: Increase wages, ensure timely payments, provide safety equipment, and offer health insurance and regular medical check-ups to improve the working conditions of Haritha Karma Sena members.
- Strengthen waste-to-wealth activities: Expand composting and recycling units, improve market linkages for waste products, and provide financial incentives and training to increase income generation opportunities.
- Enhance technology and infrastructure: Introduce modern waste management systems such as smart bins, material recovery facilities, and digital tracking systems along with proper training and technical support.
- Promote community participation and awareness: Conduct awareness campaigns on waste segregation and plastic reduction, encourage household cooperation, and promote eco-friendly alternatives like cloth and paper products.

## 9. Limitations of the Study

- The study was conducted with a small sample size, which may not fully represent all Haritha Karma Sena members in Ernakulam district.
- Limited time was available for conducting the research, restricting detailed data collection and analysis.
- The geographical area covered under the study was limited to selected regions of Ernakulam district only.
- Some respondents were unwilling to answer all the questions in the questionnaire, affecting the completeness of the data.
- Difficulty was faced in meeting Haritha Karma Sena members because of their busy work schedules and waste management activities.

## 10. CONCLUSION

Waste management has become one of the most important environmental challenges in modern societies. In Kerala, the Haritha Karma Sena initiative plays a crucial role in implementing decentralised waste management systems and promoting environmental sustainability. The findings of this study reveal that Haritha Karma Sena members make significant contributions to waste collection, waste segregation, recycling, and public awareness in Ernakulam district. Their activities help reduce environmental pollution, promote the use of plastic alternatives, and encourage sustainable waste management practices in the community. However, the study also identified several challenges faced by the workers, including low income, heavy workload, health risks, limited technological support, and inconsistent public cooperation. These issues affect the efficiency and sustainability of the system.

Despite these challenges, Haritha Karma Sena has played an important role in improving waste management practices and creating environmental awareness among the public. With stronger government support, better infrastructure, improved training, and greater community participation, the effectiveness of Haritha Karma Sena can be further enhanced. Overall, strengthening the Haritha Karma Sena system will contribute significantly to building a cleaner environment, sustainable waste management practices, and improved quality of life for communities in Ernakulam district.

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