

**IMPACT OF POOR WASTE MANAGEMENT ON THE ENVIRONMENT
A CASE STUDY OF MOMBASA COUNTY, KENYA**

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Teach Through Expounding of Themes

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SUMMARY

The issue of waste management is of great concern globally, and particularly in low-income regions where infrastructure and resources are limited. Mombasa County in Kenya, is one area where the management of waste has become a pressing issue due to the negative impact it has on the local environment. The region's increased population has led to a rise in waste generation, which combined with inadequate waste management infrastructure, has resulted in the accumulation of waste in undesignated areas, such as streets and waterways. The improper disposal of waste, particularly plastics, has been associated with severe health risks and environmental hazards, including the release of greenhouse gases, degradation of soil quality, and pollution of water sources.

This research project aims to explore the current status of waste management in Mombasa County, Kenya, and its impact on the local environment. The research project will also explore various methods of waste management, including recycling, reduction, and reuse. Through analysis of existing policies and regulations, waste management practices, and socio-economic factors contributing to poor waste management, this study seeks to provide a comprehensive understanding of the challenges facing waste management in the region. The findings of this research project will contribute to the development of effective strategies and interventions to address the issue of waste management in Mombasa County, Kenya and other parts of the world.

Key words: *waste management, climate change, environmental hazards*

RESEARCH QUESTIONS

1. What is the current status of waste management in Mombasa County, Kenya?
2. How does improper disposal of waste impact the local environment in Mombasa County?
3. What are the existing waste management policies and regulations in Mombasa County?

INTRODUCTION

Literature Review

Mass waste management has been an issue of global concern. Many countries in the world today have been unable to fully address this issue hence posing a great threat to the environment. According to Singh et al. (2014), the increase in population in towns has been one of the contributing factor to improper waste management. This increase of different types of waste has cumulatively resulted to major effects to the environment. Mombasa County, located in coastal Kenya, is equally facing significant challenges in waste management. The current status of waste management in Mombasa County is a matter of concern as improper disposal practices are having negative effects on the local environment. This research project aims to explore the impact of poor waste management on the local environment specifically within the context of Mombasa County.

Improper disposal of waste in Mombasa County has severe consequences for the local environment. The accumulation of waste in open spaces, streets, and water bodies leads to pollution and contamination. Misra and Pandey (2005), argue that the release of harmful chemicals and toxins from the waste negatively affects the air, soil, and water quality. This pollution disrupts the delicate balance of environment and risks the health and well-being of the local population. In order to address these challenges, it is essential to understand the existing waste management policies and regulations in Mombasa County. By examining the policies in place, we can determine the extent to which they are being implemented and the effectiveness of their enforcement. This research will highlight on the gaps and areas for improvement in waste management practices. According to Scheutz et al. (2009), the improper handling of waste leads to the emission of greenhouse gases such as carbon dioxide. These gases contribute to the greenhouse effect, trapping heat in the atmosphere and causing global warming.

Current Status of Waste Management in Mombasa County

According to Wekisa and Majale (2020), the rapid urbanization and population growth in Mombasa has led to increase in the amount of waste generated in recent years. However, the waste management infrastructure and systems have not been able to keep pace with this growth, resulting in inadequate waste management practices. One of the major challenges faced by Mombasa County is the lack of proper waste segregation and recycling facilities. As a result, a significant

portion of the waste that could be recycled or treated ends up being dumped in the landfills, further worsening the waste management problem. There is a need for investment in recycling plants and the promotion of recycling practices among the residents to minimize the reliance on landfills and create a more sustainable waste management system.

Another critical issue that needs to be addressed is the lack of awareness and education about proper waste disposal and management practices among the public as proposed by Desa et al. (2012). Many residents are not aware of the potential harm caused by improper waste disposal or the benefits of recycling. Public education campaigns and initiatives should be implemented to raise awareness and promote responsible waste management practices. Furthermore, the involvement of the private sector and community-based organizations can play a significant role in improving waste management in the county. Public-private partnerships can be established to invest in waste management infrastructure and technologies, while community-based organizations can contribute by organizing clean-up drives, recycling initiatives, and advocating for better waste management policies.

To tackle the current status of waste management in Mombasa County effectively, it is crucial for the local government to prioritize this issue and allocate sufficient resources for its improvement. This includes not only financial investments but also capacity building for waste management personnel, regular monitoring and enforcement of waste management regulations, and collaborative efforts with stakeholders to find sustainable solutions.

Impacts of Improper Disposal of Waste

Improper disposal of waste has severe consequences for the local environment in Mombasa County. One of the major issues is the contamination of soil and water bodies due to the leaching of toxic substances from landfill sites. This contamination poses a threat to public health and can have long-term negative effects on the ecosystem. In addition to soil and water pollution, improper waste disposal also contributes to air pollution. Majale-Liyala (2013) argues that, when waste is burned or left to decompose in open areas, it releases harmful gases and particulate matter into the atmosphere. These pollutants can cause respiratory problems, allergies, and other serious health issues, particularly for vulnerable populations such as children and the elderly. Furthermore, the accumulation of solid waste in open areas and water channels leads to blocked drainage systems. During heavy rains, the blocked drainage can result in flooding, causing damage to infrastructure,

homes, and even loss of life. The stagnant water also becomes a breeding ground for disease-carrying mosquitoes, increasing the risk of malaria and other vector-borne diseases.

The environmental effects of improper waste disposal are not limited to land and water. Marine life in the coastal areas of Mombasa County is particularly affected by the dumping of waste into the ocean. Plastic waste, in particular, poses a significant threat to marine ecosystems. Marine animals such as turtles, dolphins, and seabirds often mistake plastic debris for food, leading to injury and death. According to Li et al. (2016), the presence of plastic waste also contributes to the formation of floating islands of garbage that disrupt marine habitats and degrade the overall health of the ocean ecosystem. To address the issue of improper waste disposal it requires a number of actions including, raising awareness about the importance of proper waste management and recycling. Municipalities can implement educational campaigns to educate the public on the impact of their actions and provide guidelines on waste sorting and disposal. Investing in waste treatment infrastructure is necessary to ensure the safe handling and disposal of waste. This includes the establishment of well-managed landfill sites, as well as the implementation of recycling facilities and composting programs. By diverting waste from landfills through recycling and composting, the amount of waste that ends up polluting the environment can be significantly reduced.

Enforcing strict regulations and penalties for improper waste disposal is essential. This will deter individuals and businesses from engaging in harmful practices and encourage compliance with proper waste management guidelines. By addressing the impacts of improper waste disposal in Mombasa County, we can protect the environment, safeguard public health, and ensure the sustainable development of the region for future generations.

Waste Management Policies and Regulations in Mombasa County

Mombasa County has implemented several waste management policies and regulations to address the growing waste management challenge. The county government has established waste management departments and agencies to oversee and regulate waste management activities. These policies include guidelines for waste segregation, recycling, and proper disposal methods. However, in the proposal by Haregu et al. (2017), there are still gaps in the enforcement and compliance of these regulations despite these efforts.

Description of the Problem

This research project focuses on investigating the impact of poor waste management on the environment. The study focuses on Mombasa County, Kenya, where waste management is a significant challenge due to the increasing population, economic activities and urbanization. The research aims to assess the current status of waste management in the county, which is critical in identifying the gaps and opportunities for improvement. The improper disposal of waste, including open burning, dumping, and littering, negatively affects the local environment, leading to pollution, degradation, and health hazards. The research will also provide insights on the specific environmental issues related to poor waste management, examines the existing waste management policies and regulations, which are essential in guiding the development and implementation of effective waste management systems in Mombasa County. The research will further highlighting the need to adopt sustainable waste management methods that reduce greenhouse gas emissions and promote a balanced economy. The study aims to provide evidence-based recommendations for improving waste management practices in Mombasa County to mitigate the negative effects of poor waste management on the environment.

Impact of Proper waste management practices to the community

This research project will have a great impact to the population in Mombasa County. Effective waste management will offer economic benefits to the community. The recycling and upcycling of waste materials help create job opportunities and strengthen the local economy. By implementing sustainable waste management practices, Mombasa can minimize waste generation, conserve natural resources, and reduce dependence on expensive imported materials. This, in turn will contribute to local employment and foster a more sustainable and resilient economy. By prioritizing effective waste handling methods, the community will preserve the environment, safeguard public health, enhance its aesthetic appeal, and promote economic growth.

When the stakeholders, residents, and local authorities to collaborate and invest in sustainable waste management practices it will create a cleaner, healthier, and more prosperous Mombasa for future generations.

METHODS

Materials and Equipment

1. Cameras
2. Thermometers
3. Google Earth Pro
4. Internet-enable laptop/tablet
5. Gloves

Procedure

Field Study

We carried out field trips around Mombasa to examine the current status of waste management and find out the waste management practices used by the larger population.



Survey of the waste management practices in Mombasa

Survey of waste management policies

We also visited the county offices in Mombasa to explore the waste management policies and regulations put in place by the county government to reduce improper waste management practices.



Study of waste management policies in Mombasa County office

Observation of waste management Practices

We made observation of the status of waste management practices in Mombasa. The picture show ongoing burning of waste at Mwakirunge Dumpsite.



Mwakirunge dumpsite

RESULTS

The study finds that the current status of waste management in Mombasa County is poor, with a lack of proper infrastructure and resources for waste collection, disposal, and treatment.



Survey of the waste management practices in Mombasa

As seen in the pictures, waste management is a problem in Mombasa. Due to lack of proper implementation of the policies, people end up throwing litter everywhere, raw sewage is allowed to flow in the ocean, and some of the drainage sewages are clogged and at the waste collection point burning of waste is taking place which increases the release of aerosols in the air.

The research reveals that there are existing waste management policies and regulations in Mombasa County, such as the Waste Management Act (2008), Sustainable Waste Management Act of 2022 and the National Environment Management Authority (NEMA) regulations.

However, the implementation and enforcement of these policies have been inadequate, leading to persistent waste management challenges.

DISCUSSION

The research project explored the impact of poor waste management on the environment, examined the current status of waste management in Mombasa County, Kenya, and analyzed the impact of improper waste disposal on the local environment. The research study found that the status of waste management in Mombasa County is currently inadequate with limited infrastructure and resources available. The study further highlights that improper waste disposal has severe consequences on the local environment in Mombasa County, including land and water pollution, air quality degradation, and the spread of diseases.

The research project also analyzed the existing waste management policies and regulations in Mombasa County, revealing that enforcement of these policies is currently inadequate. According to the study, waste management practices in Mombasa County have a significant impact on the environment leading to greenhouse gas emissions from landfills and plastic waste accumulation in the oceans. The report suggests a need for urgent action by stakeholders to mitigate these impacts.

CONCLUSION

Our research project has shed light on the impact of poor waste management on climate in Mombasa County, Kenya. The current status of waste management in the county reveals a lack of adequate infrastructure and limited resources. Improper disposal of waste has severe consequences on the local environment, including water and soil pollution, air quality degradation, and the spread of diseases. We found that there are existing waste management policies and regulations in place, but their enforcement is inadequate.

RECOMMENDATIONS

From our research findings on the impact of poor waste management on the environment in Mombasa County, we would like to make the following recommendations to help improve waste management:

1. Mombasa County Government should invest in adequate waste management infrastructure, including more landfills, litter bins, and recycling facilities.
2. Stakeholders in Mombasa County should increase awareness among residents about the environmental and health impacts of poor waste management. This can be done through mass media campaigns, community events, and educational programs.
3. Mombasa County Government should enforce existing waste management policies and regulations to ensure that the laws are followed by all waste management parties.
4. Stakeholders in Mombasa County should consider the adoption of sustainable waste management practices like composting, waste reduction, and waste-to-energy generation.

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BADGE DESCRIPTIONS

I AM A PROBLEM SOLVER

This research project demonstrates our ability to apply problem-solving skills to real-world challenges and their commitment to making a positive impact.

I AM A COLLABORATOR

The project explores the existing waste management policies and regulations in Mombasa County in collaboration with relevant government authorities, stakeholders such as community organizations, waste management companies' local community gather information and insights.

I MAKE AN IMPACT

The research acknowledges the problem of poor waste management and its impact the environment. This demonstrates the students' awareness of significant global challenges and their desire to make an impact by addressing them.

I AM A DATA SCIENTIST

The research project involves collecting and analyzing data related to waste management practices in Mombasa County. This involves data collection methods such as surveys, and observations, which are fundamental to the data scientist's toolkit.