

# Smart Waste Management

Why and how is it important in today's society?





# 2,120,000,000

Every year, 2.12 billion tons of waste is dumped on our planet.





## **Downsides of Traditional WMS**

# Downsides of Traditional WMS



## Manual Intervention

Leads to the accumulation of waste in streets and public places, causing hygiene and environmental issues.



## Environmental Hazard

Limited recycling infrastructure, which has detrimental effects on the environment and seepage of hazardous waste into the soil



# Downsides of Traditional WMS



Overreliance on landfill disposal as a primary method of waste disposal leads to a lack of space and generates harmful greenhouse gases. Also, seepage of hazardous waste into the soil can damage vegetation and harm animals

The environmental impact of traditional waste management is startling and has resulted in water, soil, and air pollution, causing severe health hazards for living beings.



# Smart Waste Management System

To deal with the escalating issue of proper waste management, countries worldwide are turning to innovative solutions and one of which happens to be the implementation of Smart Waste Management System (SWMS).



# Working of SWMS



To counter these challenges of traditional waste management, Smart Waste Management Systems incorporate modern technologies such as the Internet of Things (IoT), artificial intelligence (AI), data analytics, and radio-frequency identification (RFID).

Smart waste management systems consist of various components that make them efficient and sustainable. The most crucial component of SWMS is the use of sensors and devices for smart waste collection.



# Working of SWMS



. IoT sensors and devices are integrated into waste collection containers to transmit real-time data on waste levels, optimize the routing of waste collection trucks, and reduce the risk of overflowing bins.

These sensors, mainly installed in the waste bins and trucks, can measure the waste levels and send real-time data to the main system. Data is managed and analyzed centrally using advanced analytics and machine learning techniques.





# Benefits of SWMS



The benefits of deploying Smart Waste Management Systems are vast. Firstly, the real-time measurement of waste levels helps optimize routes, which reduces collection time and fuel costs resulting in efficient waste collection and disposal.

SWMS decreases waste management costs, as these systems are automated and require minimal human intervention leading to reduced labor costs.



# Benefits of SWMS

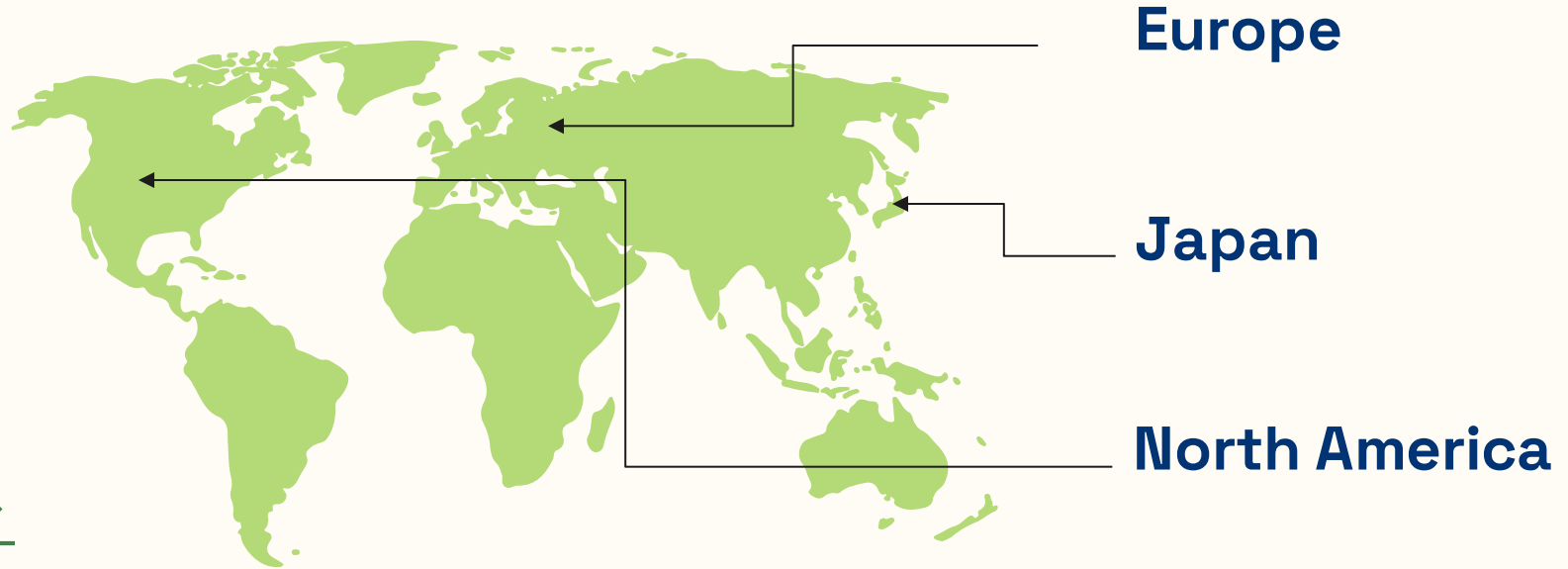


SWMS enhance environmental sustainability by preventing landfill overreliance, reducing GHG emissions, and fostering proper recycling.

Smart Waste Management Systems can improve public health and hygiene by reducing pollution and preventing waste accumulation in public places.



# Success Stories



# Success Stories



As per the reports, the European Union, with the support of advanced technology and public awareness, has gradually transitioned towards a circular economy involving sustainable waste management concepts. This includes resource efficiency and industrial symbiosis.

North America has also seen successful implementation of Smart Waste Management Systems, especially in cities such as Seattle, Washington, and New York City where proper waste separation and handling have led to positive economic and environmental outcomes.





# Importance of Public Awareness

# Public Awareness



Public awareness refers to the knowledge and understanding that people have of the problems caused by waste management and the benefits of adopting SWMS.

Without proper public apprehension, even the most advanced waste management solutions may fail to achieve their intended goals. It is important to educate the public about the benefits of waste management.



# SWMS in Smart Cities

Smart cities are starting to develop in countries all around the world. As the demand for smart cities starts to peak high, SWMS will also be a necessary factor for the success of such cities.



# SWMS in Smart Cities



The implementation of smart waste management system can have broad effects, particularly in the development of smart cities, factories, and industries that generate significant amounts of waste.

The sensors in waste collection units accurately identify the different types of waste, such as plastic, paper, glass, and organic waste. This information enables the waste collectors to efficiently route their collection vehicles to the designated recycling or disposal facilities.





# Downsides of SWMS



Challenges with Smart Waste Management Systems include high initial installation and maintenance costs that pose a challenge for many governments and municipalities, particularly those in developing countries.

Limited access to technology is another hurdle that could hinder the adoption of SWMS in certain areas.



# Downsides of SWMS



Data security concerns, including the methods of collection, communication, and data storage, also pose a risk to the implementation of these systems.

Lastly, to ensure the sustainability and long-term effectiveness of these systems, continued innovation and improvements will be necessary moving forward.





## Future with SWMS

Smart waste management systems are beneficial for a sustainable future as they reduce waste generation by encouraging the separation of waste at the source, maximizing recycling, and promoting efficient resource use.



# Conclusion

In conclusion, Smart Waste Management Systems are an innovative and sustainable solution for managing waste and represent a paradigm shift in waste management, providing solutions that tackle the challenges of traditional waste management.





# Thank You!

