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FROM LINEAR TO CIRCULAR: WASTE MANAGEMENT AS A DRIVER OF ENVIRONMENTAL SUSTAINABILITY

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Waste is unavoidable byproduct of human activities and industrialization, which gets discarded in our surroundings, accumulates and harms our Mother Earth. In earlier times, the waste generation was minimum and nature could manage it very efficiently. As a result of rise in the industrialization, today waste is not just a byproduct; it is more than a discarded material; it highlights the inefficiencies in how we design, produce, use and dispose of a particular resource. As economies and urbanisation grow vastly, managing waste in a sustainable manner is becoming a necessity to protect our environmental health, and to ensure long term development.

For a long time, waste management has been carried out in a linear economic method that built on the take-make-dispose principle. This approach is accessible and has delivered economic growth, but also created piles of growing waste, strained landfills and polluted air, land and water. Waste has been considered as the endpoint of the product's life cycle; in this system, the focus was just on the collection and disposal. As volume of waste continues to rise, it becomes clear that disposal alone cannot be the solution.

The disposal-focused approach has its limitations and considering today's scenario, waste must be understood and managed efficiently. Instead of that, the circular economy has it's own and different perspective. It questions, why is so much value lost when products reach the end of their usage? Circular system favours better waste management; these systems do not consider waste as a useless byproduct; they aim to keep material to use as long as possible. Products should be designed with repairability, recyclability and reusability concepts. Any form of waste should therefore be regarded as a useful resource that can be recovered, not disposed off to landfills or by incineration. It contributes to sustainable and effective waste management by decreasing the amount of trash.

Waste management plays an important role in turning circular ideas into real-world actions. When waste is properly segregated, and

collected, it can become productive after recycling, composting and recovery. Organic waste can be turned into compost and recyclables and can re-enter the manufacturing cycle. With the help of this approach, the amount of waste sent to landfills can reduce. This method has become not just a cleaning process but a system that supports sustainable resource conservation and environmental health.

San Francisco, a city in North America, has one of the most determined zero-waste management model. This city launched the first and the largest urban food scraps composting program in the United States, it covers both the residential and the commercial areas. They collected more than a million tons of organic waste, processed into compost which is distributed among the local farmers and also used in the wineries in Napa and Sonoma counties. In addition, they also banned Styrofoam and plastic bags, which diverted nearly 80% of the waste from reaching landfills in 2012 and still continues to implement innovative initiatives such as Zero Waste Climate Action Planning, Food Service Waste Reduction, Zero Waste Textile initiatives and many more. In India, the city Indore shows that how constant door-to-door collection, segregation at source and a strong public participation can transform the urban waste management system. Despite the differences in scale, governance and resources, both cities reach the same conclusion, that the circular waste management system can succeed with clear policies that are supported by infrastructure and active public participation.

Overall, these examples shows that the circular system is not just about protecting the environment, but it's also about how people perceive resources and human efforts. When we start treating waste as a resource rather than a problem, it can provide livelihood, support the local economy, improve working conditions and promote social inclusion. As we shift from linear to circular systems, waste management has the potential to turn today's challenges to long term opportunities, contributing to a less polluted, cleaner and more stable future.