Municipal solid waste – transforming waste to wealth in a sustainable manner

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In the urban areas of India, solid waste generated by human activities due to increasing urbanization and economic growth is a major concern as we aspire to become a 5 trillion economy by 2025. Millions of tonnes of solid waste is generated in various forms, with the most commonly used disposal methods are open dump, open-air incineration, land filling and disposal to water bodies. Irregular management of municipal solid waste leads to water and air pollution, land degradation and emission of gases like methane and carbon dioxide. The concepts of 5R, viz. reducing, reusing, recycling, recovering and residual management, are the main aspects that address this global issue. To meet these challenges, the Government of India must develop a regulatory framework to address the issue in a sustainable manner.

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growth. The Economic Survey of India 2022–2023 reveals that the agriculture and allied activities sector will contribute significantly to India's food security, development and overall growth. Due to the diversified geographical conditions and climatic zones, the consumption and waste practices of people living in India are different[11]. Inefficient management systems of waste are among the major challenges for urban societies and are therefore recognized as one of the sources of different pollutants such as carbon dioxide (CO_2) and methane (CH_4)[12]. The main obstacles concerning the effective management of MSW are lack of awareness, unavailability of technologies, financial constraints and lack of good governance[13,14]. Different stages are involved in managing MSW such as door-to-door collection, segregating at source, transport, storage at designated places, processing and safe disposal in a sustainable manner[15,16]. For effective sanit-