

III. Physical Sciences

Article 13

Is waste a blessing or a curse?

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Burying, neglecting, throwing, or burning—that was the fate of waste throughout the ages until the world began to develop its environmental approach and its economic and health vision alike. Health damage, serious diseases, germs, and pollution have all severely impacted human life due to deep-rooted ignorance, nearly ending all aspects of life and exhausting the planet's natural resources (Zaman, 2015; Pichtel, 2005).

Concepts were upended, and the scales were adjusted, leading to a global shift in thinking and management. It became apparent that the waste produced daily was akin to gold, eagerly sought after in the mines and depths of the earth (Mazzanti & Zoboli, 2008). As a result, humanity began to abandon old, harmful habits, embracing new terms like organic waste, inorganic waste, recycling, reuse, sorting plants, sanitary landfills, treatment, alternative energy, and proper waste management. These concepts have become widespread, indicating a global change in the environmental and economic vision (Gharfalkar, Court, Campbell, Ali, & Hillier, 2015; Zaman, 2014).

The results of these endeavors vary significantly from country to country, depending on achievements influenced by material, technical, institutional, and legislative factors. The successful implementation of environmental projects and international agreements depends on the combination of all these elements (Karak, Bhagat, & Bhattacharyya, 2012).

Developed countries have started to view waste as a resource, turning it into national wealth that supports the local economy. For instance, Sweden has not only succeeded in managing its waste but has also begun importing waste from other countries to fuel its waste-to-energy projects (Johansson & Krook, 2021; Hultman & Corvellec, 2012). In Japan, the town of Kamikatsu launched the “Zero Waste” project in 2003, which has transformed the town into a model of waste management (Zhang & Watanabe, 2013).

The work of scientist Veena Sahajwalla in Australia, who has pioneered methods to convert waste materials like glass and textiles into building materials, exemplifies the innovative approaches being developed around the world (Sahajwalla & Gaikwad, 2018). Turkey is also making strides with projects like “Zero Waste,” which generates energy from 1,500 tons of waste daily, significantly reducing carbon emissions (Cay, 2018). These global success stories highlight the potential for modifying human behavior and

advancing environmental strategies, yet many countries still lag behind. The pressing question remains: what are these governments and institutions waiting for to develop and implement strategic plans and projects that ensure an intellectual, economic, and environmental shift in line with international standards (Kaza, Yao, Bhada-Tata, & Van Woerden, 2018)?

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