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Use of Adaptation Pathways for Urban Food Waste Management

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Abstract

Food waste is a growing problem of the 21st century. In recent time, food waste has received considerable attention in literature due to its environmental, economic, and social impact. Rapid urbanization and increased amount of food waste generation are uncertain conditions that require a new model for management planning. The model helps decision makers develop strategic short term committed plans over a period to direct future actions. To this end, this study developed series of short-term actions aimed at proper food waste management and increasing the life span of new landfills in India. To achieve this goal, the landfill threshold was determined by estimating future food waste generation per capita using the country's population and uncertain income growth. Furthermore, varied time frames were considered while choosing a sequence of actions meant to prevent food waste from ending up in landfills. An adaptive strategy for the projection of food waste management for a dynamic and uncertain future was developed using the chosen actions. The different actions were sorted from experts and studied in the literature. It was further determined what each chosen action was capable of. Actions with the most significant impacts on landfills were selected. Food banks, source segregation of food waste, increased awareness, municipal composting, upgrade of existing vermicomposting and biomethanation facilities are some of the actions considered. Selected actions were hence used to create an adaptation pathway for the proper management of food waste and that which reaches the landfill. The pathways developed can serve as a guideline for decision makers for an effective and encompassing food waste management plan. The results show that the actions proposed in the Adaptation Pathways, whilst implemented progressively have a significant impact on food waste reduction in India and increasing the tolerance of the landfills by a reduced amount of food waste that reaches the landfills. This study shows that proper food waste management can be executed through the use of an effective waste management strategy that adapts to an ever changing future circumstance. Adaptation pathways as a concept can help planners and decision makers in India significantly to significantly reduce food waste and improve the ability of food waste managers to deal with both existing and incoming food waste in India.

Keywords: food waste, management, adaptation pathways, food waste reduction, landfills, India