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Cost Decision-Making for a Decentralized Composting Analysis Model

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Introduction

One of the biggest environmental challenges is the management of municipal solid waste. Even though organic waste, particularly food waste, typically makes up over 50% of municipal solid waste, it is typically the material that is least recovered. By creating a closed-loop system for composting domestic, communal and commercial organic waste in urban settings, decentralised composting aims to create a new framework for waste management. Decentralized composting isn't always environmentally or economically viable, though. Even when it is feasible, there are frequently a number of obstacles and difficulties that must be overcome. In the literature, various models discuss various facets of managing organic waste, including energy recovery, site selection, environmental impact and technology for treating food waste. The objective of this study is to provide guidelines and a methodological framework to quantify economic, social, operational, environmental and regulatory aspects, in order to examine the viability and feasibility of decentralized composting projects at any given location. The decentralized composting analysis model proposed in this study has been developed with an innovative approach to decentralized composting project planning and design, an approach that is both holistic and very practical. The innovative model incorporates various aspects to examine the viability of decentralized composting projects based on benefit/cost criteria.

Description

In this respect, a result obtained through another model that examines a specific aspect of decentralized composting can be used as input for the model presented here. The decentralized composting analysis model provides a powerful tool for decision makers, based on the quantification of the decentralized composting project characteristics and a benefit/cost index that takes into account the various impact variables. The decentralized composting analysis model allows examining the viability of the decentralized composting project in different scenarios, locations and options and can help indicate the most viable alternative. In this paper, we describe the decentralized composting analysis model and its methodological framework, along with numerical examples to demonstrate its implementation [1].

Municipal solid waste management has been regarded as one of the main environmental challenges over the past few decades The most significant portion of municipal solid waste is typically organic waste particularly food waste and reducing has been ranked third among 100 solutions to slowing global warming It is the least recovered material, though, in the majority of nations Around 17% of the municipal waste in the countries was composted in according to Eurostat .Composting is also less common than other forms of treatment and disposal in Organization for Economic Co-operation and Development nations. Displays the municipal waste by-treatment processes used in nations. In nations along the Mediterranean and in Europe [2].

Decentralized composting aims to build a closed-loop system of valorisation, integrate decentralised home, community and commercial composting systems and create a new framework for waste management addition, has the potential to lower the volume of waste dumped in landfills, save money on collection, transportation and treatment expenses and cut back on both traditional emissions and greenhouse gases, particularly methane Additionally, management in the community is crucial for environmental protection and education, particularly if the end products are used by the neighbourhood, such as to grow edible plants that are native to the area. Composting of organic waste is represented schematically [3].

The decentralised composting analysis model, a model created to assess the viability of serves as the foundation for the methodology The is based on quantifying various project characteristics and conducting a cost-benefit analysis to evaluate the impact of these projects in terms of numbers. When the quantitative analysis is clear-cut, a qualitative analysis is used as an additional tool to support decision-making. The purpose of the paper is to present a model for evaluating the viability of such projects rather than to recommend or compare any particular technology. By calculating the indices for the various scenarios for a particular project, the suggested methodological framework can be used to address the short- and/or long-term viability of project [4].

Economic, social, operational, environmental and regulatory aspects should all be taken into account when analysing OW management solutions. The offers a distinct and cutting-edge methodological framework along with thorough instructions for assessing the viability of projects while taking these factors into consideration. In order to support decision-making, the model offers methodological tools for both quantitative and qualitative analyses that produce indices. The index methodology enables comparison of various options and scenarios. The index allows comparison across nations, regions, time periods and other factors because it is based on universal values monetary costs and the tonnes of waste produced. A specific questionnaire and templates were created to make it easier for different parties, like regulators and local authorities, to use the model. Performing the analyses, is essential to the success of projects Therefore, it is advised to carry out a satisfaction survey as a first step prior to the project implementation. To avoid bias, it is advised that the satisfaction survey be carried out by an outside party or consultant. This is because there is occasionally a discrepancy between the authority's perception of the residents' trust and the actual situation [5].

Conclusion

Decentralized composting is a popular method for treating organic waste despite its importance; the majority of the various project-related aspects are not covered by the existing research. Given that it involves financial investment and fostering public trust, evaluating viability is essential. Through quantitative and qualitative analyses, the enables the feasibility analysis of projects. The model considers operational, environmental, social, economic and legal factors. The methodology is general and provides tools based on universal principles, allowing comparison between various nations, regions, local governments, epochs and scenarios. As a result, this special and cutting-

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edge model gives decision makers a strong tool to pre-evaluate projects rather than making a comparison based on only different scenarios, or evaluate them after they have been put into practise. The amount of organic waste treated served as the study's definition of the benefit. Future studies may broaden this definition to incorporate composting, urban farming, a decrease in greenhouse gas emissions and other practises.

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