

Strategic Waste Management in Chr. Hansen

Eleonora Tu

DTU Environment, Technical University of Denmark

BACKGROUND

In today's society, waste management plays a crucial role as current levels of waste generation are unsustainable long-term and represent a risk for the ecosystem and the society. This issue was addressed on European level through specific legislation, and also on national and local level. Research has also contributed with tools and approaches that can be applied to improve and monitor waste management strategies. Despite many private companies being committed to sustainable practices, it is often hard for them to apply those tools in practical situations, as waste is seldom the focus of a business.

THE PROJECT

This project focuses on the application of Life Cycle Thinking (LCT) to advise on strategic waste management in the Danish company Chr. Hansen, and specifically its facility in Avedøre (Copenhagen). Chr. Hansen A/S is an international bioscience company that develops and produces a range of natural ingredients that are used in the food, nutritional, pharmaceutical and agricultural industry. Chr. Hansen's waste management challenges concern the characterization of the waste fractions, the handling methods and methods of disposal.

Non-organic solid waste management in Avedøre was addressed by employing the Life Cycle Assessment (LCA) methodology to highlight opportunities in the solid waste stream. It was found that some fractions hold greater environmental benefits compared to others when diverted from incineration. A priority list of the waste fractions was suggested and considerations on costs and ease to address these fractions were also included. Based on the difficulties encountered, especially in acquiring data, it was also recommended to integrate a more consistent tracking of waste in the system.

Constraints on waste handling and sorting exist, and it was found that some fractions would require a disproportionate and costly effort or a radical redesign of the process to be separated from the waste stream. These fractions therefore cannot be tackled for the moment, for example organic waste product. This is also a key aspect when considering approaches such as the circular economy.

METHODS

After reviewing the current waste management ambitions in the European and Danish legislation, sustainability approaches and tools specific to waste management were also reviewed, including the concept of LCA, LCT, circular economy and industrial ecology. The activities taking place in Chr. Hansen Avedøre were studied to understand the processes and the waste produced.

Data regarding the composition of waste currently sent to incineration was collected on site and through estimation based on mass flow. It was possible to characterize only about 40% of the total waste. The waste contractor provided information regarding the disposal of the fractions.

Based on the data collected, different scenarios were modeled with the dedicated waste-LCA software EASETECH in order to evaluate the potential of different fractions.