Future waste management

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INTRODUCTION

As the quantity of waste keeps increasing and our resources are at risk of running low or even to be lost permanently, it is necessary to review our waste management system. This project will focus on which technologies are available for treating certain fractions of waste: organic, plastic and metal, with two parameters in mind: material reuse and energy extraction. When technologies are identified, they will be compared from the following factors: purity of fraction, staffing needs, environmental gain, user-friendliness and involvement of citizens.

THEORY

In order to review the technologies available, terms like technology assessment and multi-criteria analysis will be taken into consideration. Furthermore, our assessment criteria are weighted individually and will, when combined with a score for each technology (1 – worst, 5 – best), give a basis for comparison of our five selected technologies: composting, biogasification, Material Recovery Facilities (plastic), incineration and EAF (iron and steel).

METHODS

A literature study of what the fractions consists of has been made, since there are many municipals in Denmark already separating organic, plastic and metal from household waste. Furthermore a study of technologies has been made. The analysis of the technologies along with a multi-criteria analysis will be the basis of our comparison.

RESULTS

The results of our analysis show, that a great deal of energy and CO_2-emissions can be saved or avoided, when sorting and recycling household waste. The multi-criteria analysis is shown in Table 1. Along with the report, a brochure designed to inform citizens of Copenhagen on the requirements of the technologies will be provided.

Parameter → / **Technology ↓**	**Purity (1,4)**	**Staffing needs (1,2)**	**Environmental gain (1,8)**			**User-friendliness (1,6)**	**Involvement of citizens (1,4)**	**Total score**	**Rank**
			CO_2	**Energy**	**Material**				
Compost	4	4,5	5	1	5	3,5	3,5	**28,1**	**3**
Biogasification	4,5	4	5	2	4,5	4	4	**30**	**2**
MRF	3	3,5	3,5	4,5	4	2	1,5	**20,9**	**5**
Incineration	5	2	1,5	3	1	4,5	5	**26,9**	**4**
EAF (metal)	5	4	4,5	5	4,5	4,5	4,5	**33,7**	**1**

Table 1. Multi-criteria analysis of waste management technologies.