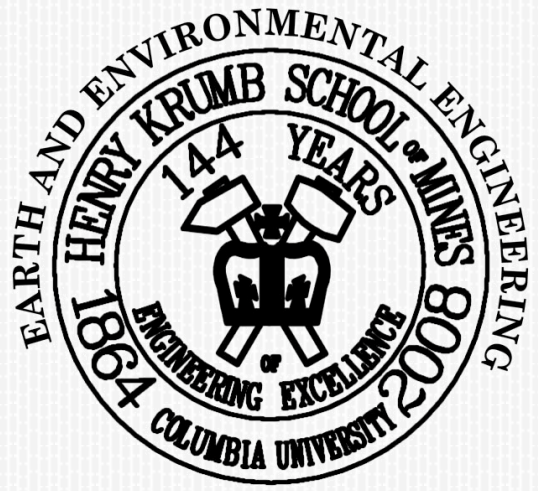




Identification of the Best Available Technology for Aerobic and Anaerobic Composting of Green Waste for U.S. Application

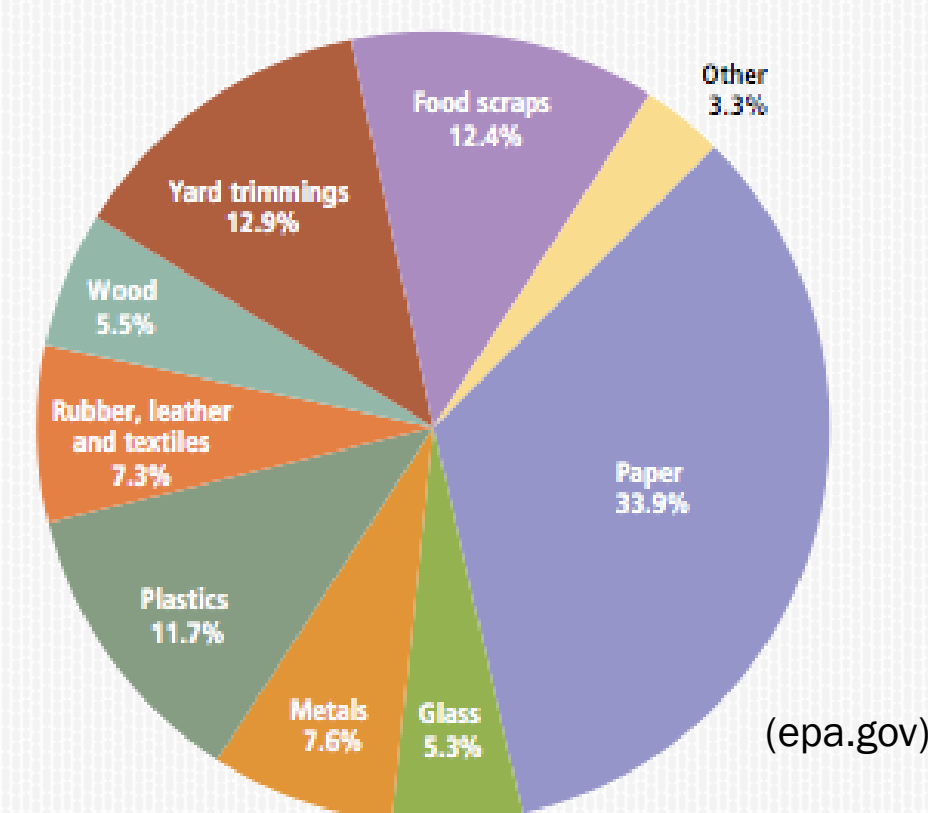
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Supervisor: Themelis, N.J.



Problem

Around 25.3% of all produced municipal solid waste consists of yard trimmings and food waste. A big part of it is being disposed of by dumping it on a landfill. However, in the last decades there have been more and more new technologies that take care of this waste in a more environmentally friendly and cost advantageous ways. The main goal of this research is to determine which of these technologies is best, ranked on contextual effects and financial assessment.



Green waste processing technologies

Alternatives that will be assessed in the MCA are:

- Aerobic Composting in windrows
- Anaerobic Digestion with mechanical mixing
- Use of green waste (non-food) as Alternative Daily Covering (ADC) in landfills.

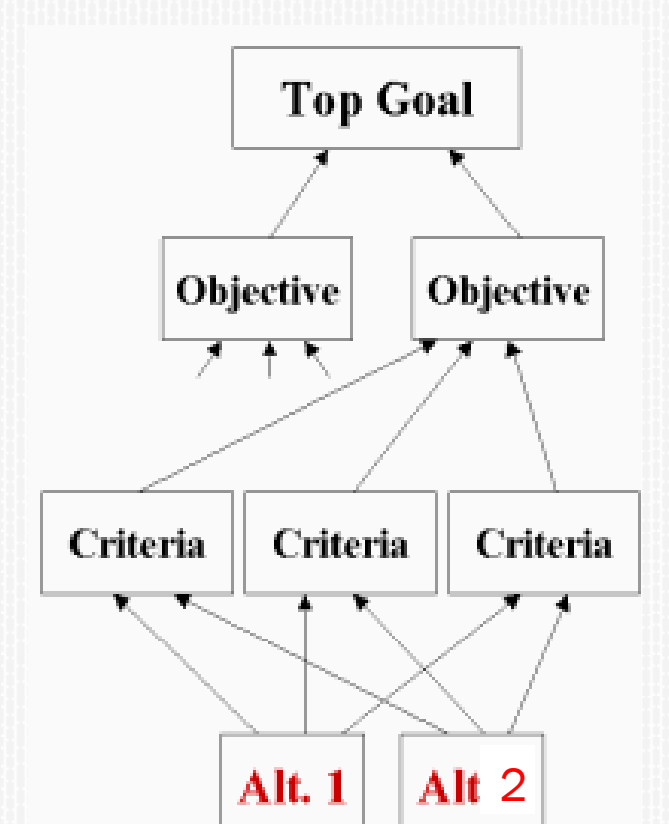
A Life-Cycle Analysis will form the backbone of the environmental impact calculation. SimaPRO is the software program that will be used to perform these analyses. The LCA for the alternative daily covering will be done in collaboration with L. Arsova, under supervision of S. Kaufman.

Methodology

This research is conducted through a Multi-Criteria Analysis (MCA). MCA is a method that combines both qualitative and quantitative evaluation data into one analysis. It is often used in exploring solutions for complex problems, because it structures the main goal in a linear hierarchy. Various alternatives will be scored on the following criteria:

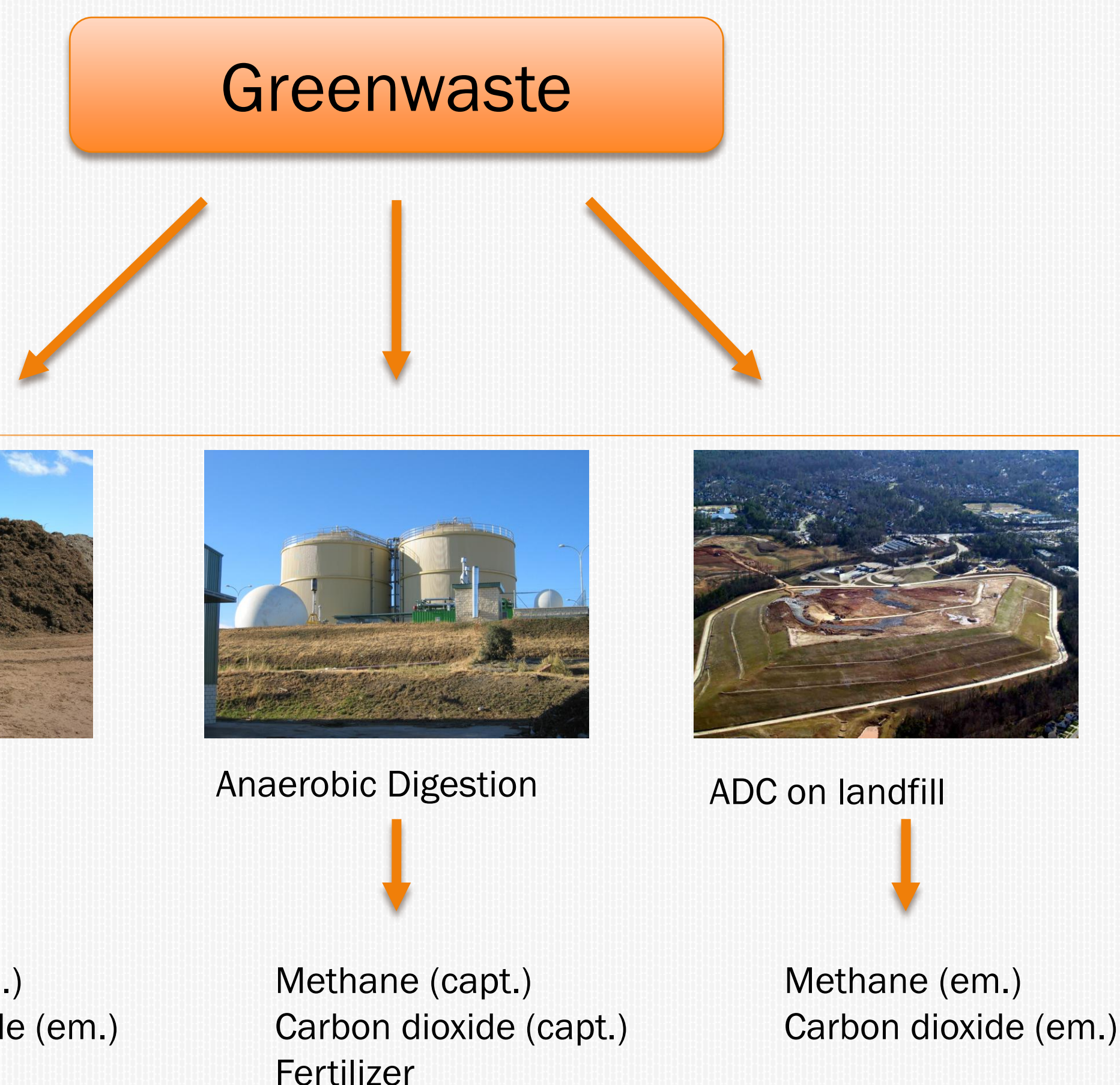
Criteria	Method	Info from
Environmental Impact	LCA	Emission reports
Costs and land usage	Est. \$/ton waste	Financial analysis
Ability to cope with variability of input waste	-	Reports/literature
Output component usability	Part of LCA	Reports
Contextual effects (odors etc.)		Current up-and-running projects

After the evaluation matrix is formed, a weighing factor will be calculated for each of the quantitative and qualitative criteria and the results will eventually make up a ranking of technologies for processing waste.



A sensitivity analysis will justify the chosen variables and weighing factors.

The goal of this research, to make a decision making tool, will be highly dependent on the variables and the weighing factors. Since waste management companies will be using this tool, their input is of great importance. Any information on the total green waste life cycle is more than welcome.



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