WAGENINGEN UR
For quality of life

Environmental impact of disposable cups

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Environmental System Analysis

Introduction

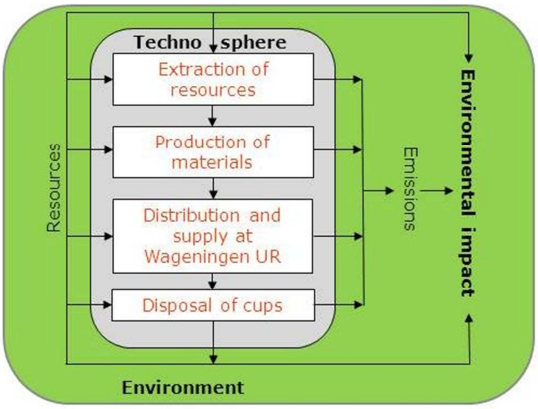
Plastic disposable cups are often associated with wasting resources. Therefore, Wageningen UR wants to replace the current petro plastic cups in the coffee machines with bio-plastic or bio-paper cups, while at the same time converting to a possibly more environmental friendly waste disposal option. The environmental impacts of the different cups has been investigated before, but resulted in conflicting results due to differences in input data, choices and assumptions for raw materials, end of life options, etc. This reduces the credibility of these results.

Foto: Guy Ackermans

Method

LCA or Life Cycle Assessment is a method that calculates the environmental impact of a product for the whole life cycle (see figure below). For all life cycle stages data is collected on the use of (raw) materials and energy, the produced products and wastes, and emissions to the environment. Next these data are translated into their contribution to several environmental impact categories (e.g. climate change, acidification, eutrophication, resource depletion, toxicity or land use).
This research will perform an LCA that – where possible and feasible – considers different data sets, choices and assumptions for:

- material production
- data on emissions
- raw material selection
- transportation
- end of life options.



Aim

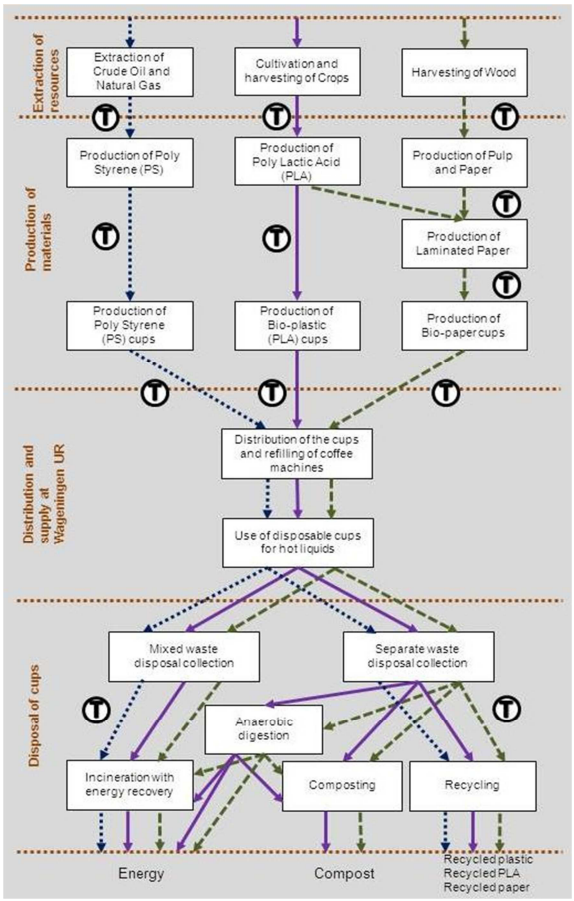
The aim of this research is to robustly establish the environmental impacts of the three cups (from poly styrene, bio-plastic and bio-paper) by purposely using different data sets, choices and assumptions.

Expected results

The production, use and disposal of the cups will result in an environmental impact that is quantified by using several data sets, choices and assumptions. The introduced variations in the model give insight in the relevance of the related uncertainties in the outcome. This facilitates decision makers to make better informed decisions based on robust environmental impact results.

Life Cycle of disposable cups

Poly Styrene (PS) route *Bio-plastic (PLA) route* *Bio-paper route*



T *is transportation*

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