

Bio-waste valorisation decision tool

Developed by the City of Apeldoorn

Short Introduction

The City of Apeldoorn seeks to develop and pilot valorisation options for bio-waste from public spaces such as leaves, grass, and prunings and involve key stakeholders in this process. In preparation of pilot demonstration actions for the innovative reuse of bio-waste from public spaces, the City of Apeldoorn developed a decision tool that connects the bio-waste from public spaces with the possible users in the circular biobased economy.

This decision tool enables Apeldoorn to decide on how to select, collect, store and treat bio-waste to be able to deliver optimal bio-waste to different users (e.g. producers of bokashi, fibre or chemical industry). Main emphasis is on the possibilities of supplying bio-waste for upcycling, applications that are beyond biogas production. By connecting the desired properties from industry with the bio-waste handling of Apeldoorn, the influence of different decisions becomes clear.

The tool can also be used by industries that want to use biomass. This decision tree enables interested industries to discuss with Apeldoorn the optimal steps to obtain bio-waste fit for their application (e.g. bio-waste without impurities, with higher fibre strength). Currently the use of bio-waste in industry is mostly limited to composting or biogas production. Understanding the relation between handling of bio-waste and desired properties may result in opening up new opportunities for upcycling

Target groups

- Local Governments (public space maintenance, waste management, circularity management)
- Businesses using bio-waste as raw material

Keywords

- #Guidance
- #Recover
- #Recycle
- Upcycling
- Connecting Apeldoorn to Industry

Format

- Decision tree with report



Deployment

The decision tree will be used to select the optimal bio-waste collection, storing and pre-treatment for application in the different demonstration activities: the production of bokashi from leaves, the production of biochar, fibres and 3D printed composites from bio-waste. In each case the requirements of the (industrial) stakeholders will be considered and optimal bio-waste supply will be designed.

Replication

The transition towards a circular, biobased economy requires a large input of biomass. Besides wood and non-food crops other sources of biomass will be needed to replace fossil oil based materials. Without proper care in collection, storing and pre-treatment alternative biomass sources as bio-waste are not suited for most industrial applications. This decision tree will connect the knowledge of owners of bio-waste with the knowledge of biobased industries. Any city that would like to increase the value of the bio-waste could use this decision tree to start the discussion with industry.

Methods

Several experts in collection and treating of bio-waste and in industrial applications of bio-waste within Wageningen Research and the City of Apeldoorn were contacted to generate a decision tree. Labscale tests were performed to obtain the composition and technical properties of bio-waste from public spaces in Apeldoorn. During the demonstration activities the decision tree will be further refined using the results from the production trials on larger scale.

Barriers:

The ideas of using bio-waste in industry are scattered between very large scale applications and small scale initiatives from starting entrepreneurs. The decision tool focusses mainly on added technical value of bio-waste, however upcycling of bio-waste may also be achieved based on positive acceptance of biobased products by the general public without added technical value

Additional Information

For example:

- *Contact points*
- *Next steps*
- *References*





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