Studie Waste-to-Chemicals Rotterdam

Publieke samenvatting / Public summary

Aanleiding

The Netherlands targets a 49% reduction in greenhouse gas emissions by 2030 (vs 1990) as well as a sustainable, fully circular economy by 2050 and 50% less use of primary feedstocks by 2030. The current situation in the Netherlands and the EU is that we still see vast volumes of materials being incinerated or landfilled, shown as leakage in the figure below. At the same time, large volumes of (predominantly plastic) waste are not being disposed of properly with valuable secondary resources lost either to atmosphere (as GHG emissions) or land and sea. To solve this problem, and to become less dependent on finite fossil resources, we need to deploy a range of measures that increase recycling rates and retain secondary resources in a more sustainable production cycle. One obstacle in the broader application of current recycling techniques is the fact that waste streams are typically heterogeneous, comprise of composite materials and are frequently contaminated. The nature of these materials often makes it impossible or unprofitable to effectively separate waste streams into valuable (re)usable components using current mechanical approaches.

Doelstelling

The end goal is to demonstrate a chemical recycling technology which enables the conversion of nonrecyclable waste into chemical feedstock, thereby avoiding the greenhouse gas emissions associated with waste incineration and displacing virgin feedstocks from petrochemical production. This addresses two of the major challenges that society is currently facing, namely waste generation

Projectinformatie / Project information

Projectnummer / Project number
TESN119006
Subsidiebedrag / Grant amount
€ 307.365,00

Algemene informatie / General information

Penvoerder / Secretariat
Fitzroy C.V.

Publicaties en materialen / Publications and attachments

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and climate change. R&D and initial project development have already been completed, resulting in a plant design and heads of terms on key contracts. However, several design choices still need to be made before an investment decision can be taken. This project covers essential environmental studies which are key to optimise and finalise the set-up of the planned demonstration facility. The aim of the demo facility is to be the first in Europe to make chemicals and biofuels out of waste materials. We plan to demonstrate that the latest generation of Enerkem's technology can be used in a European context, with regional waste streams, in accordance with local environmental requirements, and in a highly integrated structure, forming a cornerstone of a new sustainable chemical cluster in Rotterdam.

Korte omschrijving

A number of environmental studies are foreseen which together form an essential part of a package which is the basis for the investment decision of the waste-to-chemicals demo facility. These studies include the following topics: - Sulphur removal options - High value applications of waste-derived materials - Plant design options to deliver even greater environmental benefits and energy savings - Life cycle analysis - Local synergies including waste heat supply - Residue application possibilities - CO2 valorisation options - Environmental benefit valorisation - Feedstock options - Risk mitigation
The project's activities will be carried out by lead applicant Fitzroy CV, by co-applicants Nouryon, Port of Rotterdam and Shell, by project partner Air Liquide, and by several subcontractors including technology developer Enerkem and other third-party experts. Fitzroy CV has been founded with the purpose to establish a waste-to-chemicals demo facility in Rotterdam. The co-applicants are the key stake- and shareholders in the project and intend to be (some of) the main suppliers and customers of Fitzroy CV, covering the most important parts of the value chain.

Resultaat

The results of the project will include a number of

environmental studies which form an essential part of a package that will be the basis for an investment decision. Upon a positive outcome of the studies, the intention is to erect a demo facility in Rotterdam able to annually convert up to 360,000 tonnes of waste into up to 220,000 tonnes of methanol, which is expected to result in 215,000 tonnes of CO2 saving per year, equivalent to the annual consumption of 500,000 barrels of oil or the energy use of 26,000 households. Furthermore, this facility should demonstrate the viability of the technology and should result in the further development of new sustainable product pathways (other chemicals) and additional plants. Eventually, numerous product pathways and facilities are foreseen, resulting in significantly less waste being incinerated (or landfilled), a decreased dependency on (imported) fossil fuels, and significant CO2 reduction.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.
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