

# Torrefaction and gasification

Innovative and scalable technology that produces a sustainable synthetic gas

In addition to sustainable electricity, the energy transition also requires more and more renewable gas. The Torrgas process converts waste streams into synthetic gas (syngas), more sustainable and efficient than combustion. The resulting syngas is a good alternative for fossil fuels and feedstocks. Besides, it enables the sustainable synthesis of a wide range of base chemicals.

## Waste streams as feedstock



Scrap wood and wood processing residues



Grass, straw and agricultural residues

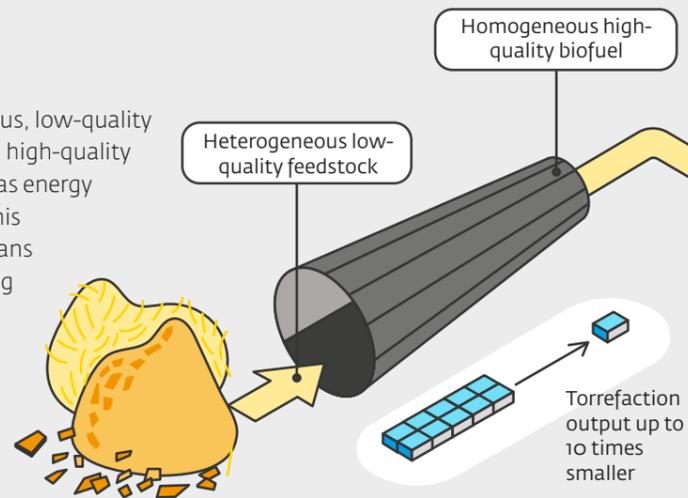


Wet waste streams such as manure and sewage sludge for wet torrefaction

Torrefaction processes use a wide range of waste streams that would otherwise be burned or left to perish. This greatly increases the amount of waste that can be reused.

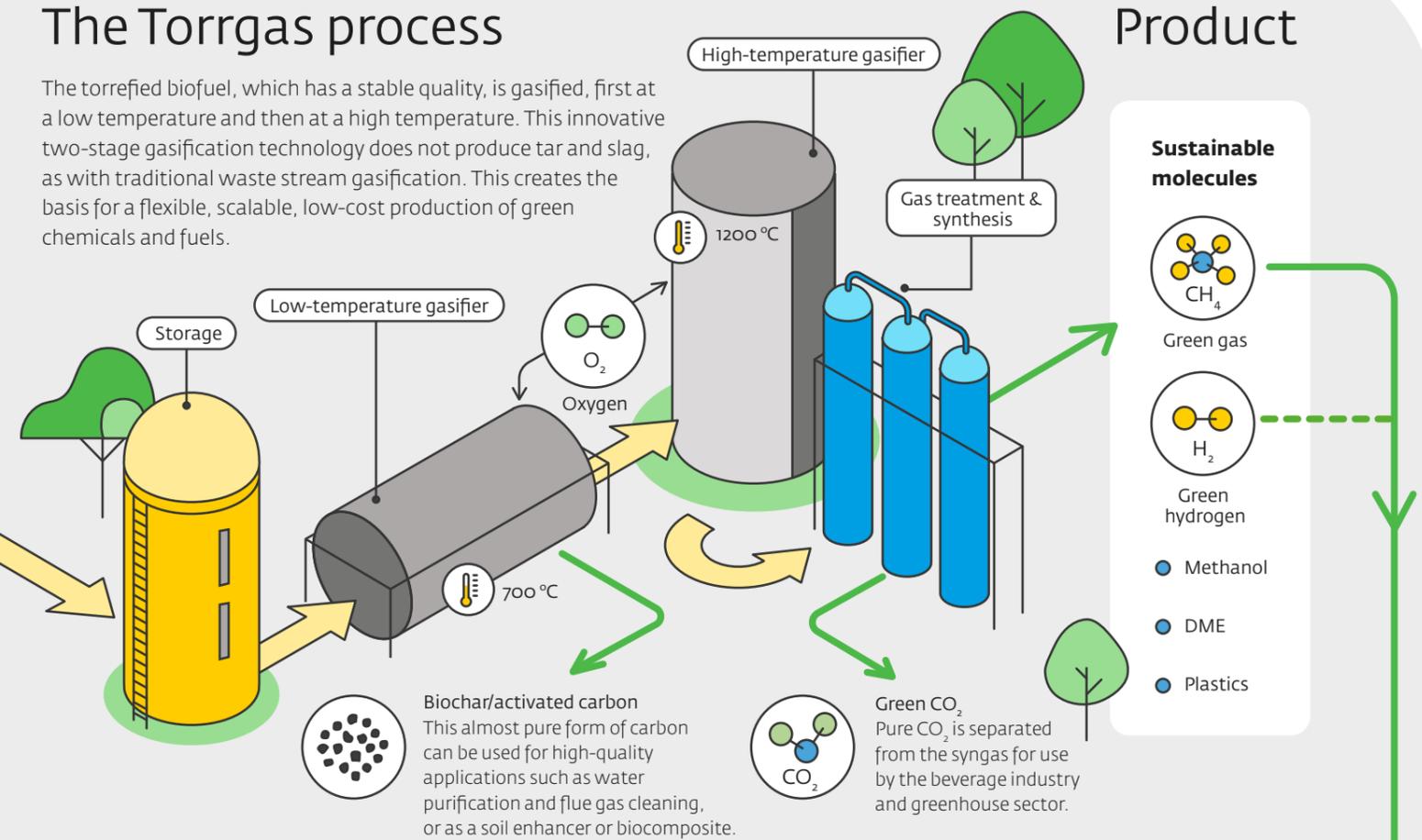
## Torrefaction

Torrefaction converts heterogeneous, low-quality waste streams into homogeneous, high-quality biofuels that are around ten times as energy dense as the original feedstocks. This enables efficient transport and means torrefaction is a vital link in enabling large-scale reuse of problematic waste streams.



## The Torrgas process

The torrefied biofuel, which has a stable quality, is gasified, first at a low temperature and then at a high temperature. This innovative two-stage gasification technology does not produce tar and slag, as with traditional waste stream gasification. This creates the basis for a flexible, scalable, low-cost production of green chemicals and fuels.



## Product

### Sustainable molecules



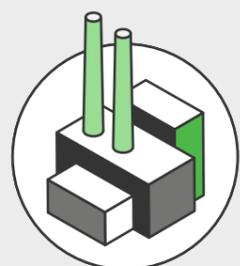
Methanol

DME

Plastics

## Uses of green gas

The Torrgas process produces green gas from syngas. This gas is transported through gas infrastructure to users in the industrial domain (for use as a feedstock and for process heating) and to the built environment.



Industry & chemistry



Built environment



Transport & mobility

## Benefits of the Torrgas process



### Scalable

A Torrgas plant can be scaled up to 100 MW.



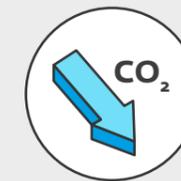
### Affordable

Activities such as the scaling up and marketing of biochar and green CO<sub>2</sub> make it increasingly cheaper to produce syngas. So much so, in fact, that it can even compete with fossil alternatives on price.



### Fully circular

Low-quality waste streams are fully converted into high-value molecules (syngas and green CO<sub>2</sub>) and products (biochar).



### CO<sub>2</sub> reduction

Waste streams are converted into usable products. This prevents combustion and carbon emissions, effectively removing CO<sub>2</sub> from the atmosphere.

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crossing borders in energy