

# Innovative gasification technologies

## supported by Gasunie New Energy in the Netherlands

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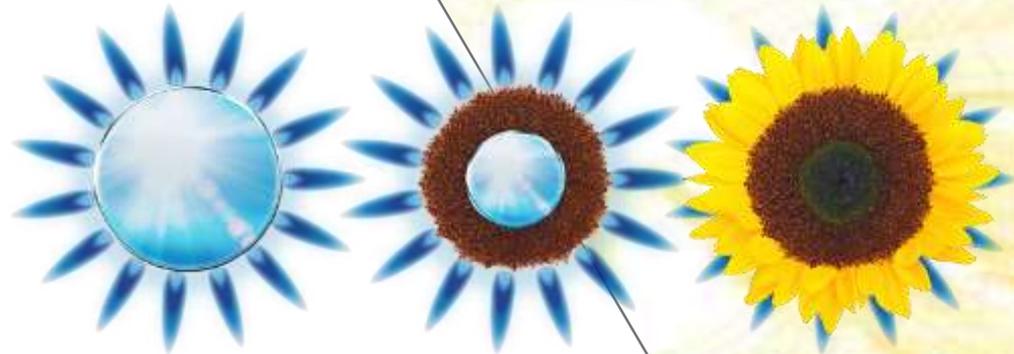
# More than 50 years ago: chapter 1 of the gas story begins...



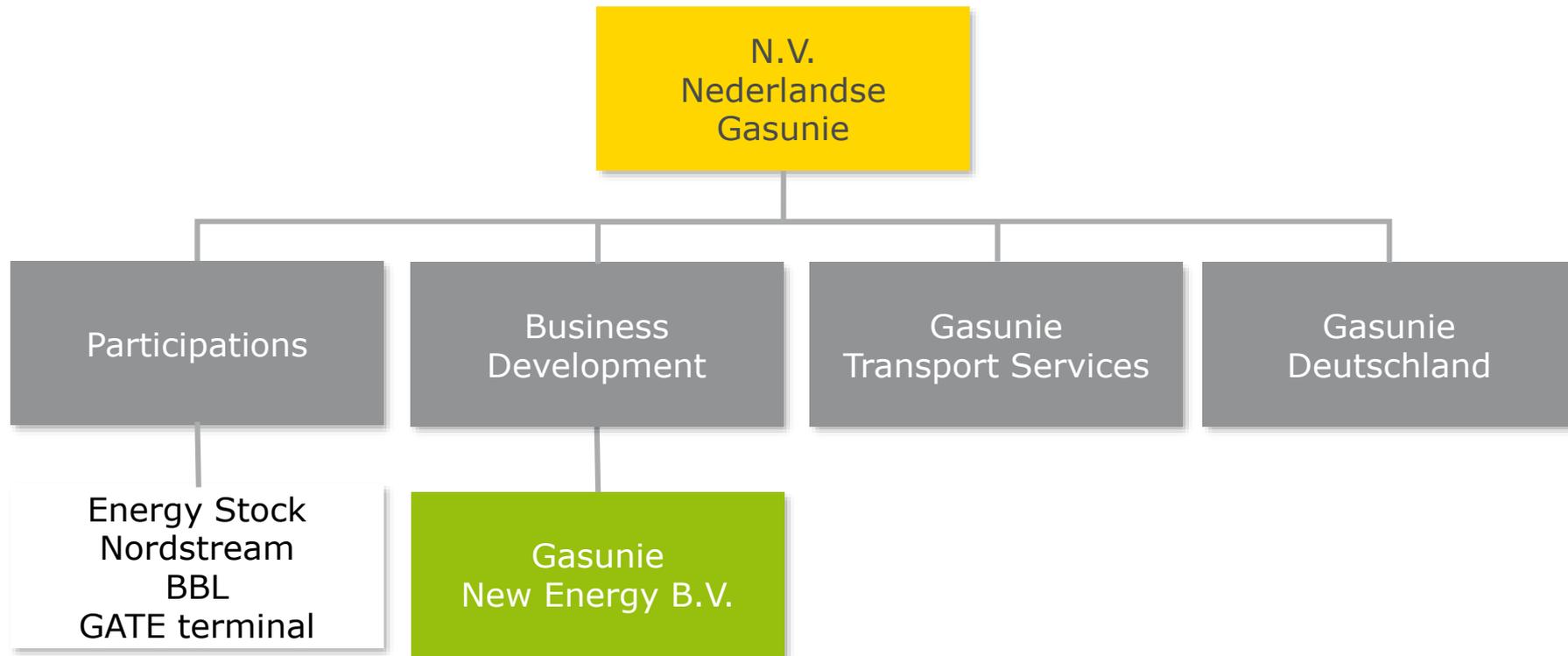
Now: the next chapter of the gas story begins...

gasunie  
new energy

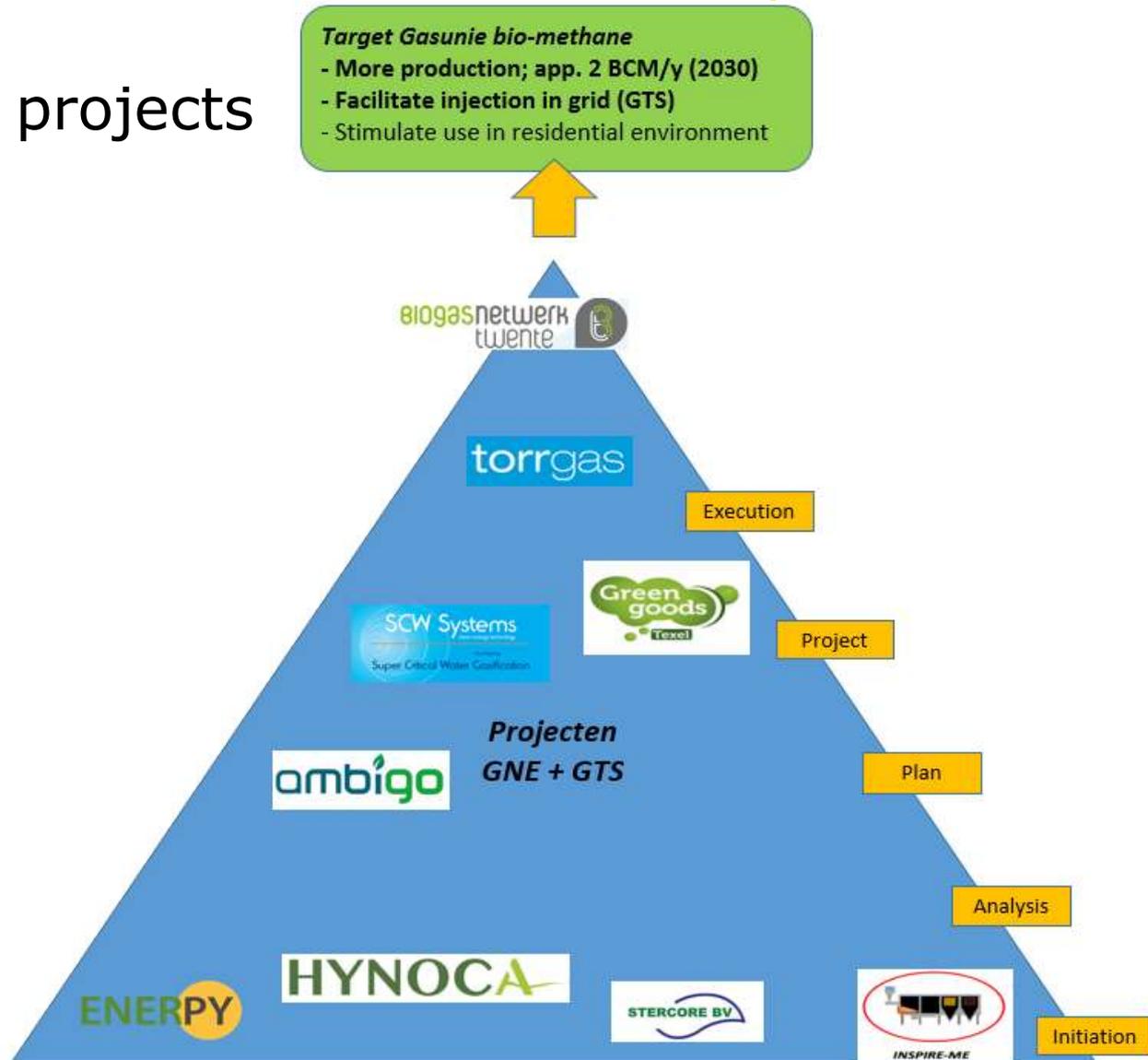
- In cooperation with partners we develop business opportunities in sustainable energy



# Organisation chart



# GNE projects



# Biogas Network Twente



**Development of a biogas network in the Twente area to unlock the potential of biogas & green gas production**



**Current Status:** In operation and exploring possible expansion with existing (obsolete) other networks in the area.



**Partners:** Cogas



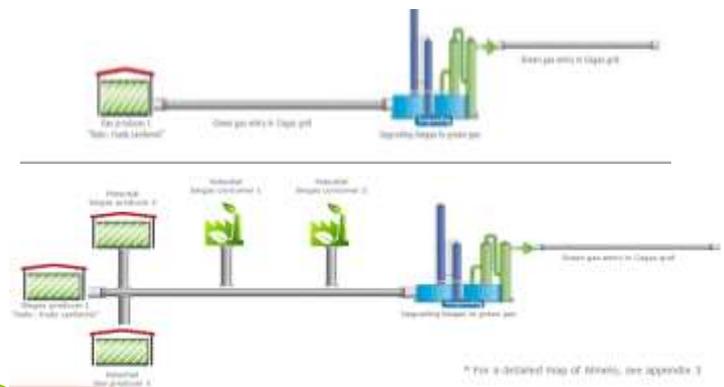
**Technology status:** Operational



**Role of Gasunie:** Developing biogas network concept, offering infrastructure and conversion facilities



**Potential:** current feed-in of about 6,5 mln m<sup>3</sup> green gas, scalable concept (potential 25 mln m<sup>3</sup>)



# Green Goods Texel



## Biogas production with dry feedstock



**Current status:** Permit application and SDE request final. FID expected for demo (2 MW sng) end 2019. Tendering in progress.



**Partners:** AB-Texel



**Technology status:** Pilot scale



**Role of Gasunie:** Developing circular protein and biogas concept and in future providing biogas upgrading



**Potential:** Demo facility for Green goods NL, scalable regional concept. Texel 2 mln m<sup>3</sup>, Green goods NL potential 100 mln gas



# Torrgas Gasification

torrgas



**Plant using torrefied feedstock and produces syngas (CO H<sub>2</sub>) and char**



**Current status:** Commissioning redesigned pilot plant (0,4MW) at DNV-GL and development of demo plant (13 MW SNG) at Delfzijl, FID planned in 2020



**Partners:** Torrgas, Groeifonds



**Technology status:** Pilot scale



**Role of Gasunie:** Participant in pilot and demo plant



**Potential:** Product syngas and char which form the basis for green gas and wide range of products for chemical industry in NL, EU and global



# Super Critical Water Gasification



**Gasification plant with wide range wet feedstock ability**



**Current status:** Under construction  
18MW, first gasification Q4 2017



**Partners:** SCW Systems



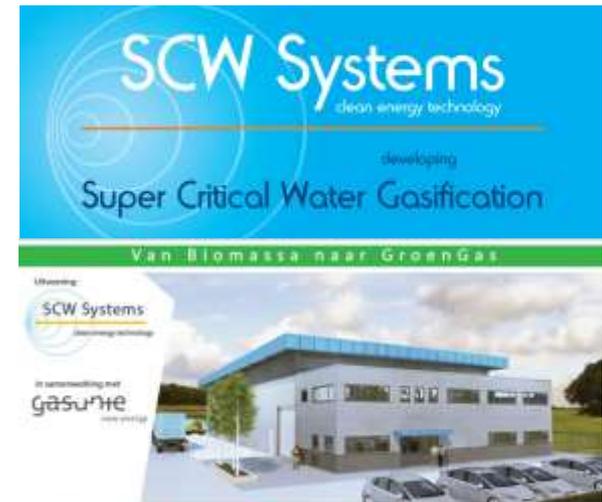
**Technology status:** Demonstration



**Role of Gasunie:** Participant in demo plant



**Potential:** wide range of feedstock (manure, sewage sludge) for production of green gas or syngas in NL, EU and global



# AMBIGO



## Gasification plant with wide range feedstock ability



**Current status:** New start of project with adjusted goals and adjusted scope for demo facility (2 MW sng) to prove the concepts of waste to gas.



**Partners:** DRT, ENGIE, TNO/ECN



**Technology status:** Pilot



**Role of Gasunie:** Participant in demo plant (2 MW SNG)



**Potential:** wide range of feedstock – including waste – for production of green gas or syngas in NL, EU and global, scalable concept. Demo 2 mln, potential 150 mln m<sup>3</sup> gas



# Projects in Analysis and Initiation phase



# Stercore



## Gasification of manure into bio-syngas (greengas) with carbon as fertilizer by-product



**Current status:** Greendeal signed and study started for detailed project specification



**Partners:** Stercore, Meilof/Recycling Westerveld, DNV-GL, GasTerra, EnTranCe, Energy Valley, Gasunie, Prov. Drenthe, Emmtec, Rendo, Solutions2Nature



**Technology status:** Lab scale



**Role of Gasunie:** Participant in study



**Potential:** Green gas or Green syngas and fertilizer from manure in NL, EU and global



# HyNoCa



**Gasification of "dry" biomass into H<sub>2</sub> and/or SHG with carbon as fertilizer by-product**



Current status

**Current status:** Beta prototype tested in Vitry-le-Francois, France.



**Partners:** INB, Haffner, GP-Groot, Sortiva, Investa



**Technology status:** Lab scale

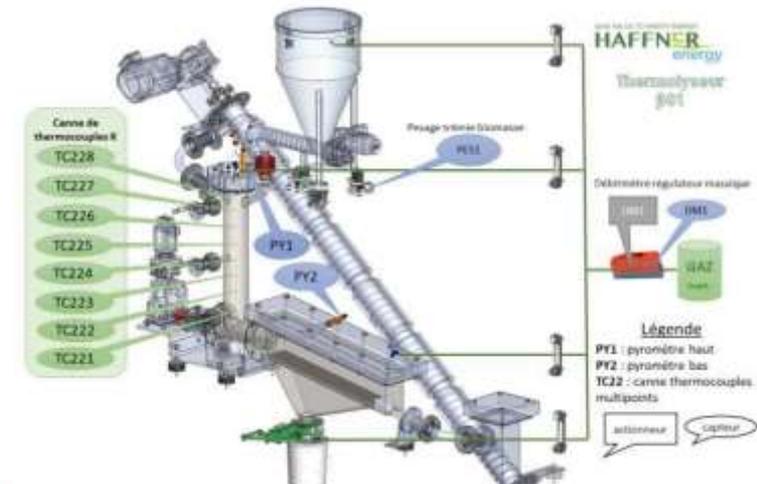


**Role of Gasunie:** Participant in demo

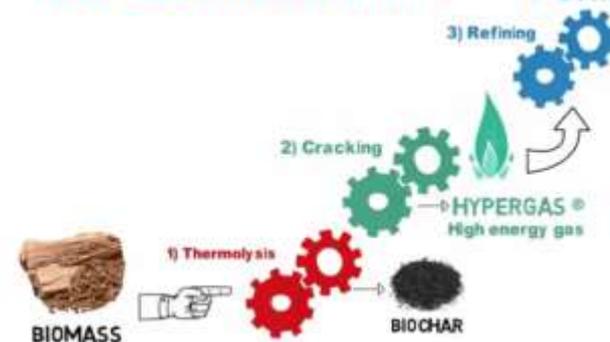


**Potential:** Green gas or Green hydrogen and fertilizer from biomass in NL and EU

# HYNOCA



**HOW DOES HYNOCA WORK ? PURIFIED H<sub>2</sub>**



# Energy



## Gasification of biomass or waste into multiple product



**Current status:** Prototype tested Paraguay and scaleup in the Netherlands.



**Partners:** Energy, Gasterra



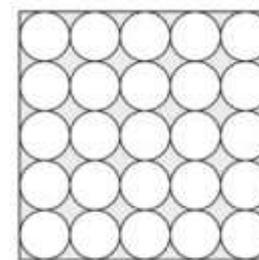
**Technology status:** pilot scale



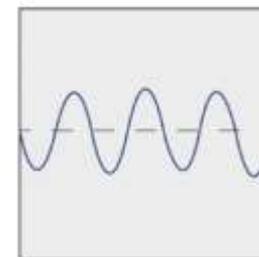
**Role of Gasunie:** Participant in 3 MWth demo in Delfzijl



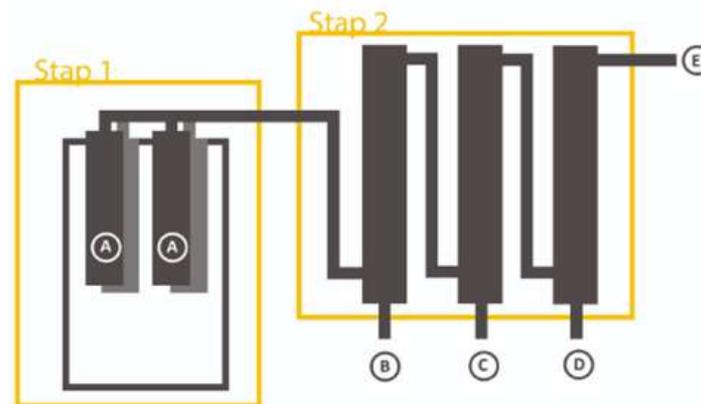
**Potential:** 30 MWth facilities for Greengas, Oil and Carbon Green hydrogen and fertilizer from biomass in NL and EU



Pyrolyse



Radiolyse



# Projects

DNV·GL

## Methanation Technologies – an overview

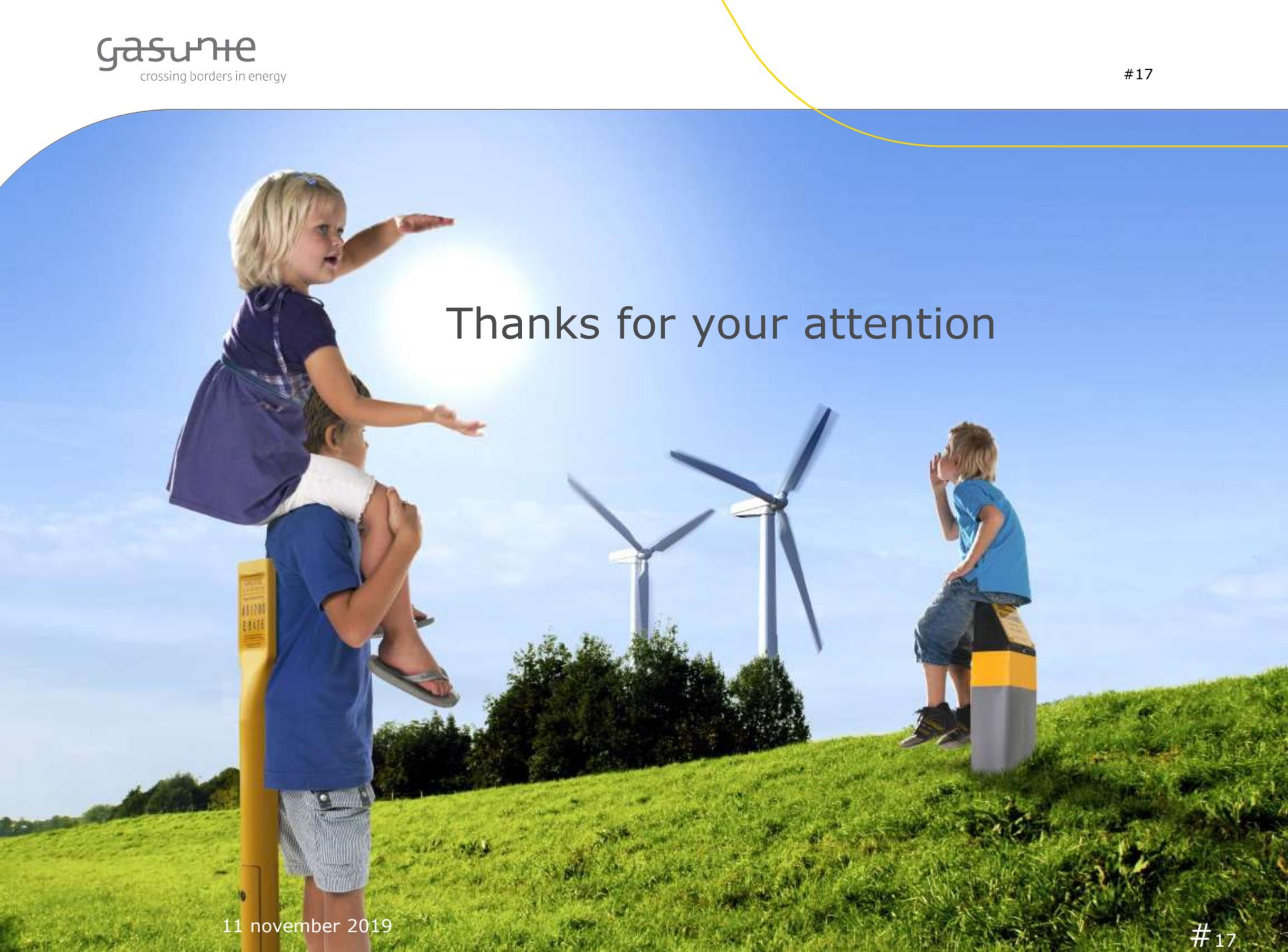
Gasterra B.V., Gasunie New Energy B.V.

Report No.: GCS.19.R. 10168441, Rev.  
Document No.:  
Date:



## Concluding remarks

- Gasification is necessary in a CO<sub>2</sub> neutral gas supply
- Scaling up/innovation is crucial but takes time
- Syngas upgrading is proven but takes custom engineering
- The Netherlands is preparing for the next chapter
- **Gasunie New Energy is ready to participate in the development of Gasification for SNG production**

A photograph of children playing on a grassy hill. In the foreground, a boy in a blue shirt and striped shorts stands on a yellow utility pole, holding a young girl in a purple dress on his shoulders. They are both looking towards the right. In the background, another boy in a blue shirt and denim shorts sits on a grey and yellow utility pole, looking towards the left. The background features a clear blue sky with a bright sun, several wind turbines, and a line of green trees. The overall scene is bright and sunny.

Thanks for your attention

## Gasunie New Energy - Contact information



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new energy