

HyCARB

Hydrogen and green electrons for carbon-based chemistry

Start 2026

Subsidy € 35.313.861 **Private contribution** € 10.352.685

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16 Research organizations (9 universities, 5 HBOs and 2 research institutes)



Universities of applied science

22 Clean-tech industries



7 Industrial end users



Research Tasks



Thermochemical CO2 conversion

- From CO2 & H2 to syngas & SAF
- From CO2 & H2 to methanol via MTO, DME and olefins
- Structure-compositionperformance relationships



Electrochemical CO2 conversion

- HT/LT electrolysis to syngas
- LT electrolysis to ethylene
- LT electrolysis to oxalate& formaldehyde



Electric heating

- Resistive heating
- Impedance and inductive heating
- Plasma heating



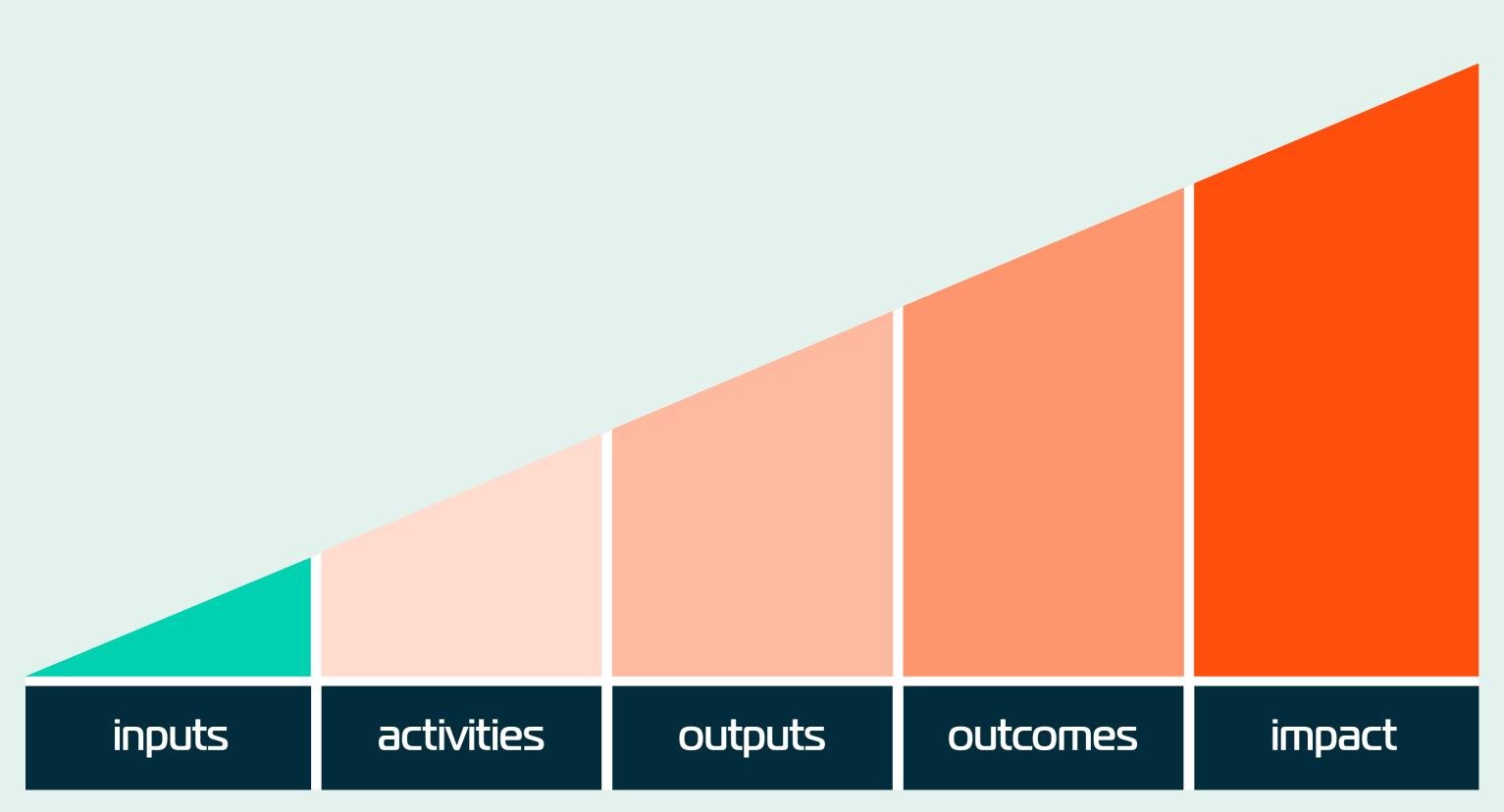
System integration

- Modular model tool
- Containerized pilot for intermittency
 - CO2 storage for intermittency



Coordination, strategy and dissemination





Acceleration

of carbon-

based use cases towards market implementation. **Reducing costs** by focusing on new promising techniques as well as catalysts, electrolyzers and adsorbents. **Innovative** ecosystem fostering collaboration between large and emerging businesses, various types of knowledge institutions and different stakeholders in energy, chemicals,

New talents raising and educating a highly skilled workforce and ensuring a robust structure for knowledge sharing.

and manufacturing

Robust, flexible and efficient CO2 conversion catalysts and processes demonstrated. Better materials, cells, stacks and components for electrochemical CO2 conversion. New electrified reactor types tested for DRM, DCI and rWGS processes. First-of-a-kind flexible industrial demonstrator of CO₂ conversion with intermittent H2 and e-supply. Strengthened analytical infrastructure for

future research in

CO2 conversion.

base and

Shared knowledge

strategy for future

implementation of

CO2 conversion.

10 key chemical products (Sustainable Aviation Fuels, Syncrude, Syngas, Methane, Methanol, Dimethylether, Propylene, Ethylene, Formaldehyde, and Oxalate) >12 tangible TRL4-6 outputs (new catalysts, adsorbents, prototypes, and pilot demonstrators).

Four technological research tasks;

1. Thermochemical CO2 conversion

2. Electrochemical CO2 conversion

3. Electric heating and 4. (transversal) system integration and one overarching;

5. Strategy,

coordination and

dissemination.

Experts & state of art laboratories, funded talented researchers & resources.



GroenvermogenNL ambitions

Acceleration	V
Scaling up	
Reducing costs	V
Innovative ecosystem	V
New talents	V

2026	2027	2028	2029	2030 and beyond
Signing consortium agreement				