

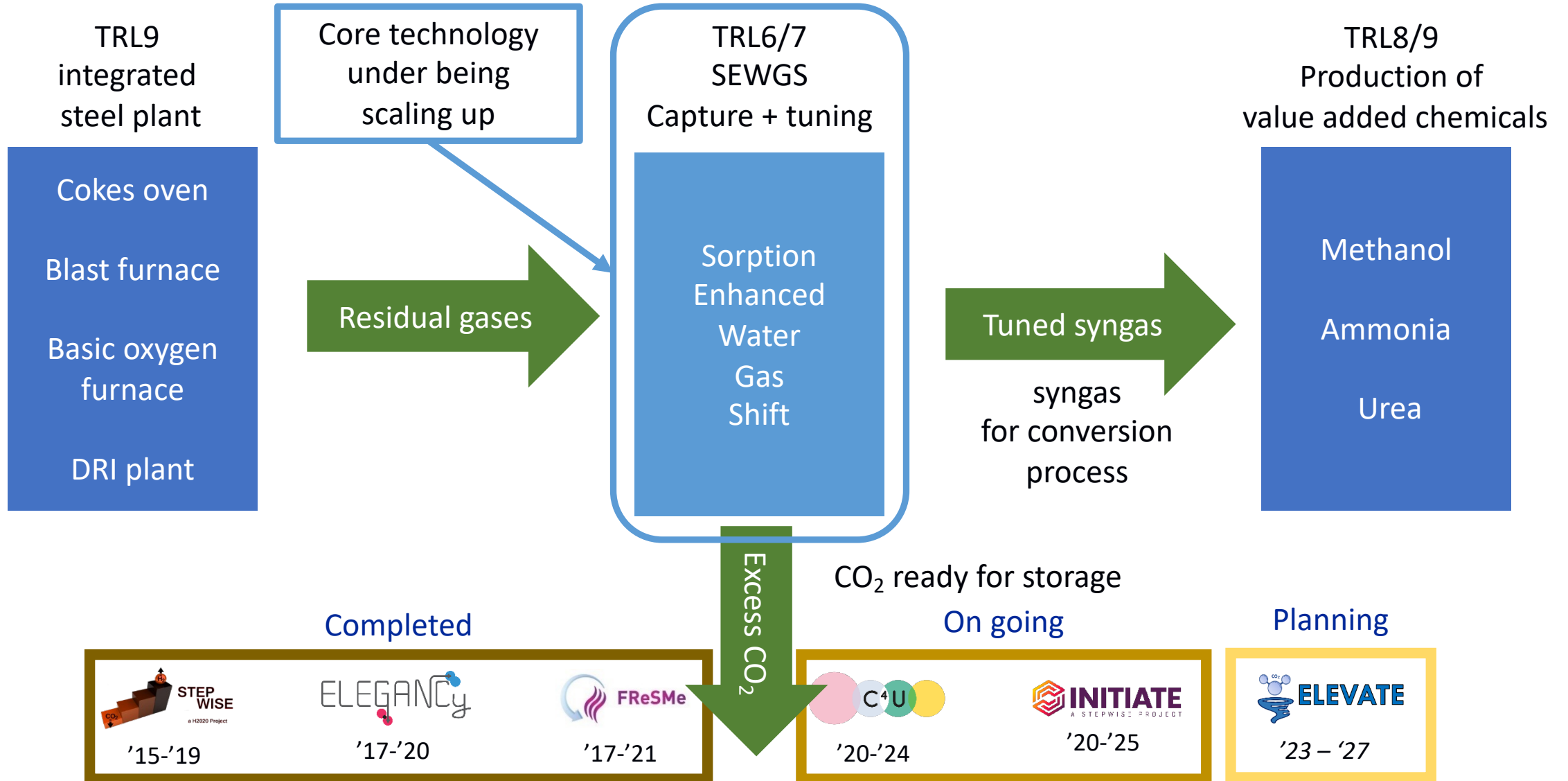
# ***Fresme & INITIATE***

*Eu Framework Programme for R&I - Innovation Fund  
Synergies Workshop*

08-Feb 2023

**JAAP VENTE**

# Overview & Background





# Status

- Results TRL6 (FReSMe)
  - 25 ton Methanol produced at TRL6
  - Methanol utilised in the Stena Germanica
  - Integrity of functional materials integrity
  - Stable performance for Blast Furnace Gas for >10 000 cycles
- **Ongoing TRL7 (INITIATE)**
  - 3 ton of NH<sub>3</sub> installation
  - Multicolumn capture equipment
  - Positive business case even without regulations
  - Basic Oxygen Furnace Gas to be used

# Towards commercial deployment

TRL9 phase

TRL8 phase

Current

Capture de-risking for  
CO<sub>2</sub> Storage

Added value route

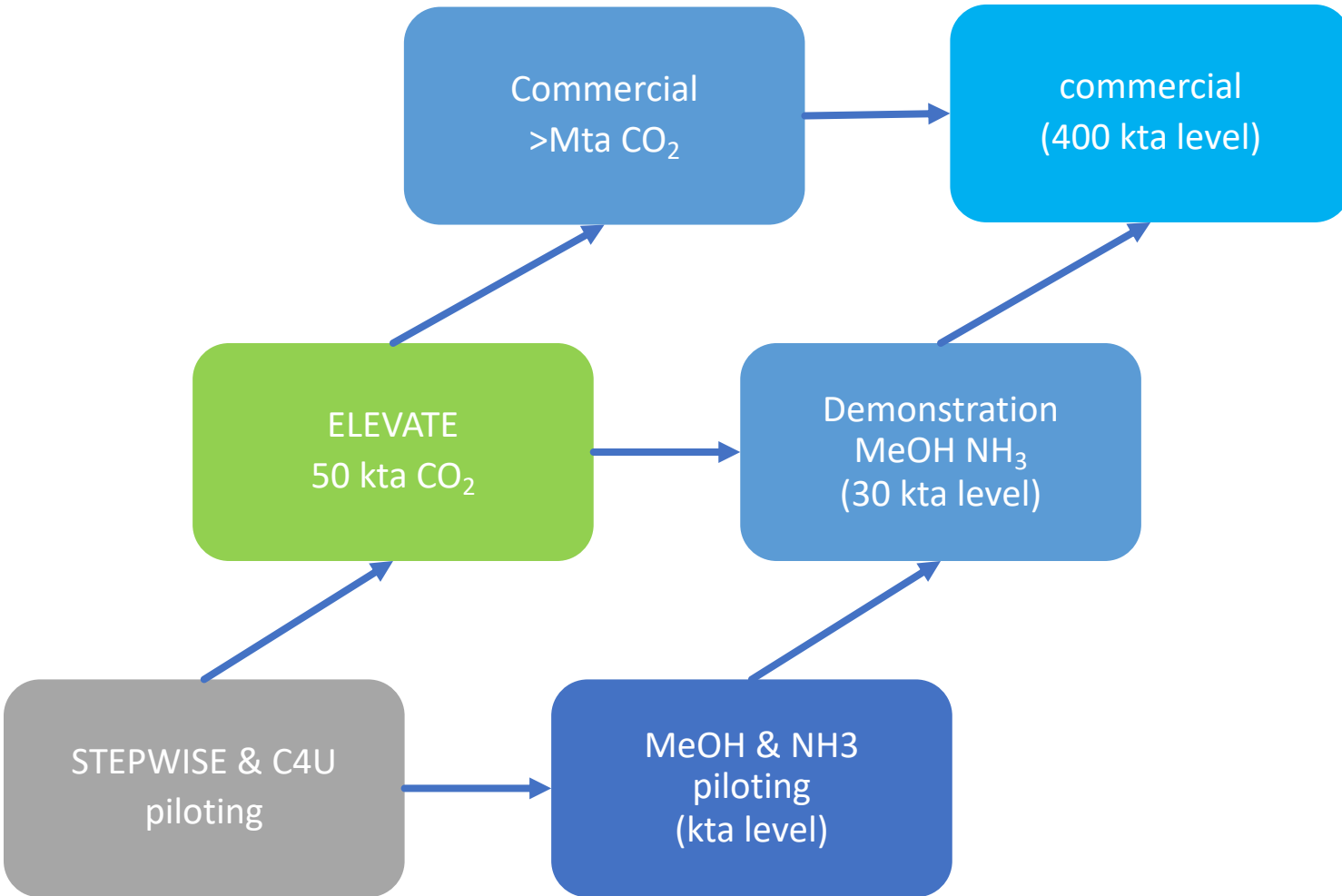


Photo by [Florian Weichert](#) on [Unsplash](#)





## Opportunities

- Broad committed consortium present with a willingness to invest
- TRL8 demonstration test site available
- Technological ready for 50 – 100 kta CO<sub>2</sub> capture
- Value chain fully aligned
- Cost reduction in the supply chain feasible with further scaling up to commercial level

## Challenges

- Significant scale up to be achieved
- TRL 8 step not cost effective yet: public support needed
- Subsidies not geared to TRL8 demonstrator
- Availability of
  - Renewable electricity and hydrogen
  - CO<sub>2</sub> storage opportunities

# Thank you

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**TNO** innovation  
for life



**FReSMe**

727504

LCE-25-2016

Utilisation of captured CO<sub>2</sub> as  
feedstock for the process industry



**INITIATE**  
A S T E P W I S E P R O J E C T

958318

CE-SPIRE-01-2020

Tapping into the potential of  
Industrial Symbiosis