

# Green Methanol Corridor

CLIMATE PROTECTION  
ECONOMIC DEVELOPMENT  
ENERGY SECURITY

**Broad-Based Approach  
on Municipal/SEZ-level  
with circular architecture**



German Project Consortium



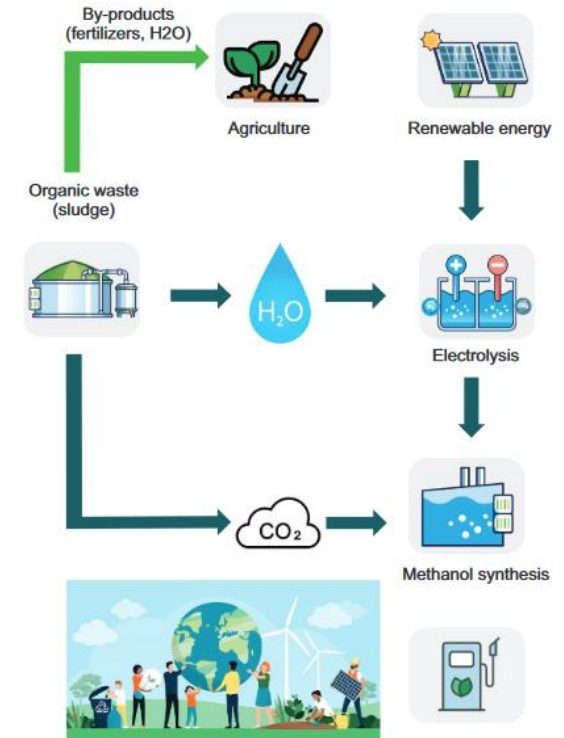
**GeFP**  
Holdings  
Green eFuels Producers



**Green H2/Methanol Industry Development in South Africa**

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Including buy-in of key stakeholders
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- **GP – KZN Green Methanol Corridor**  
Focus on broad-based economic development opportunities



# Strong Bi-lateral Partnerships

## Including buy-in of key stakeholders



SA Project Developer



German Project Consortium



Project Companies

Green Methanol Production (SPVs)

EXPORT & LOCAL PTX

H2-Academy Skill Development

**OUTPUTS**  
 Green Methanol  
 Green Energy  
 Energy Security  
 By-Products  
 AGRI-Produce  
 Jobs / SME Dev

### Off-take/s:

**Global Shipping Bunkering, Export**

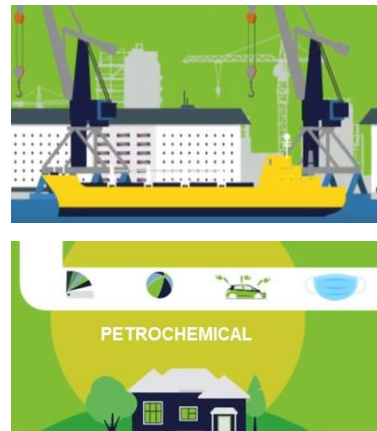
SEZ "Energy" / SEZ Tenants

Municipalities / Industries

Petrochemical Customers

By-Products (e.g. Fertiliser, Oxygen,..)

AGRICULTURE – Wholesale / Export



# The Green Methanol Case

Making existing grey value chains green

METHANOL: POWERING A CLEAN AND SUSTAINABLE FUTURE

Current Market  
120 Mt grey (with 1Mt green)

Demand Forecast  
250 Mt in 2035  
385 Mt in 2050 (source: IRENA)

MARKET STREAMS

PETROCHEMICAL FEEDSTOCK AND FUEL

PETROCHEMICAL

WWTW & Municipal Waste

Agricultural Waste

CO2 CAPTURE

METHANOL PLANT

RENEWABLE ENERGY

Circular Economy

PROMOTE SUSTAINABILITY  
BY CREATING VALUE FROM WASTE  
AND DIVERSIFYING

SUSTAINABLE, NET CARBON-NEUTRAL FUEL

Priority Feedstock:  
biogenic waste sources  
1. Wastewater/Sludge

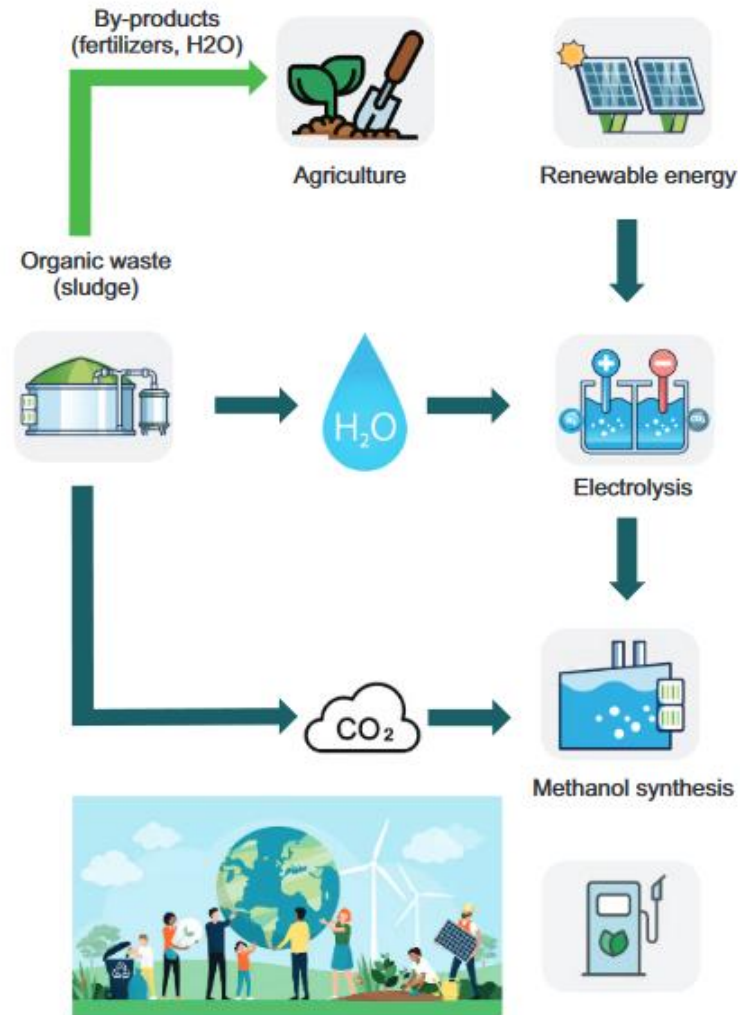
- by-products:
- water for irrigation / agriculture
  - phosphate / fertilizer
  - oxygen

INTERNATIONAL  
MARITIME  
ORGANIZATION'S  
GOAL

# Enabling Circular Economy

## Sustainable resource efficiencies

Factories = Re-industrialisation

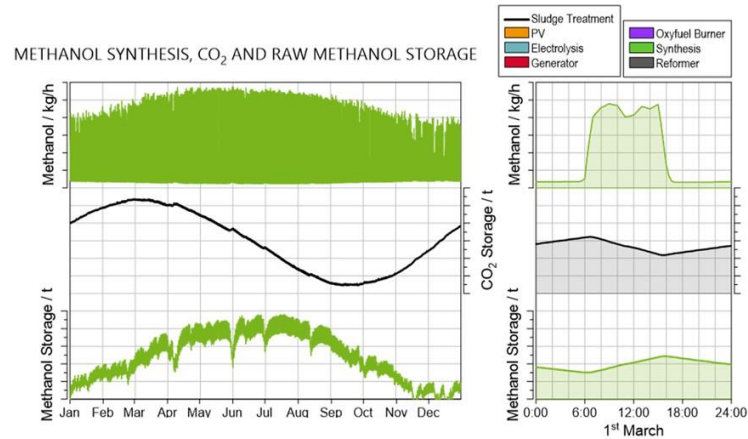


# Sound Modular Technology Approach

## De-risking and multiplication of opportunities/projects

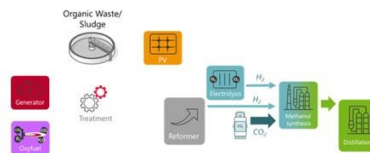
### Final Methanol Synthesis and Distillation Balancing CO<sub>2</sub> Demand for Current Hydrogen Production with Integrated CO<sub>2</sub> Storage

DECOUPLING OF METHANOL SYNTHESIS FROM CO<sub>2</sub> PRODUCTION VIA CO<sub>2</sub> STORAGE TANK



#### SYNTHESIS AND STORAGE

- Methanol synthesis based on current hydrogen production.
- Resulting CO<sub>2</sub> demand not necessarily matching current CO<sub>2</sub> production → Storage tank can decouple demand and supply.
- **Daily and seasonal fluctuation** in both CO<sub>2</sub>- and raw methanol storage.



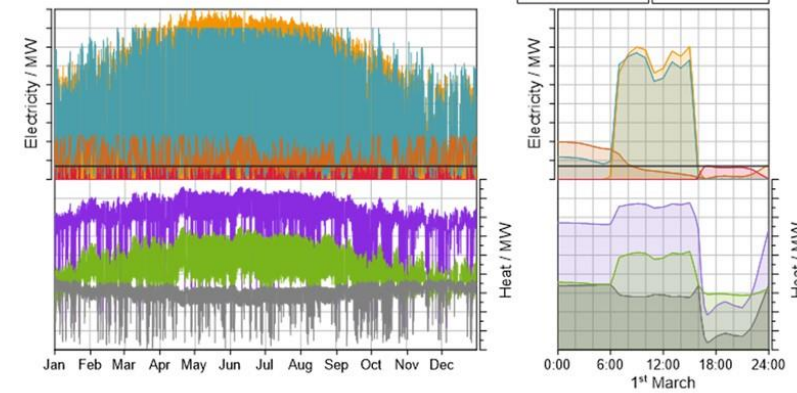
**Based on proven components !**

### Wind Electricity During the Night allows for Significant Less Usage of Generator

HEAT DEMAND CAN STAY HIGH DURING THE NIGHT AS MOST HYDROCARBONS ARE STILL AVAILABLE



#### ELECTRICITY AND HEAT PRODUCTION/CONSUMPTION



#### ELECTRICITY AND HEAT

- By adding wind power to the electricity profile, night operation depends much less on generator.
- Hydrocarbons previously used for generator can now be reformed to more CO<sub>2</sub> and H<sub>2</sub>.
- Heat demand during the night rises and both reformer and distillation run at higher load.



## Methanol Factory – DIGITAL TWIN (qualification process arrived from automotive industry)

Software model of the operational components and operation cycles dependent on local environment/input parameters (24/7 and seasonal impacts)

# GP – KZN Green Methanol Corridor

Focus on broad-based economic development opportunities



blueprint project

already identified production sites

point of sales and bunkering

# Main Benefits

- **Competitive Green Methanol Production**  
leading sustainable infrastructure/industry with circular economy in South Africa
- **Multiple-applications today (Petrochemical & Green Fuel)**  
substituting of >100 Mt grey methanol now and supplying multiplying markets tomorrow
- **Everybody is onboard => Governments & Finance**  
South African & German support including socio-economic development
- **Scalability with opportunities for local partnerships**  
infrastructure development with inclusive and broad-based approach

“If you want to go fast, go alone, if you want to go far, go together”



# Green Methanol Corridor Productions



Important Members of the  
Green Hydrogen Industry Ramp-up

German Project Consortium



Conference (Sandton)

30<sup>th</sup> November 2023