

# Zero & Negative Carbon Desalination

## Grimes Carbon Tech (GCT)

A net negative green technology company changing the world

October 2024



### **CAPER (Caustic, Aqueous-Phase, Electrochemical Reforming)**

Distributed CAPER systems using low-grade waste heat to produce hydrogen on-site & on-demand with a zero or negative carbon footprint



### **CCR (Carbon Capture & Reuse Technology)**

CCR technology that converts captured carbon into Sustainable Aviation Fuel (SAF) at the cost of conventional, fossil-derived, Jet A fuel

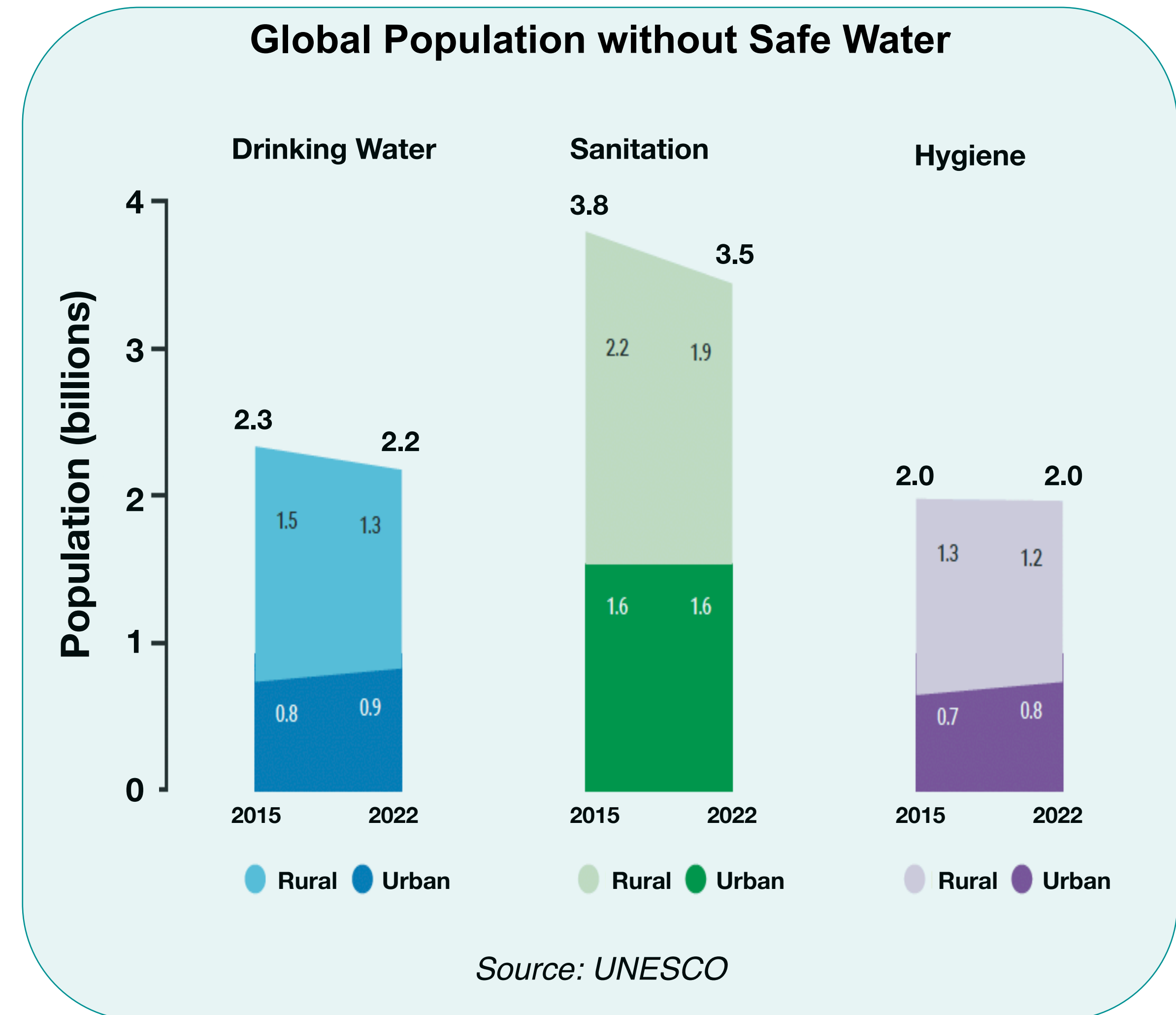


# Roughly half of the world's population suffers water scarcity

Access to water is the key to prosperity and peace - UNESCO

**None of the Sustainable Development Goal #6 targets seem to be on track**

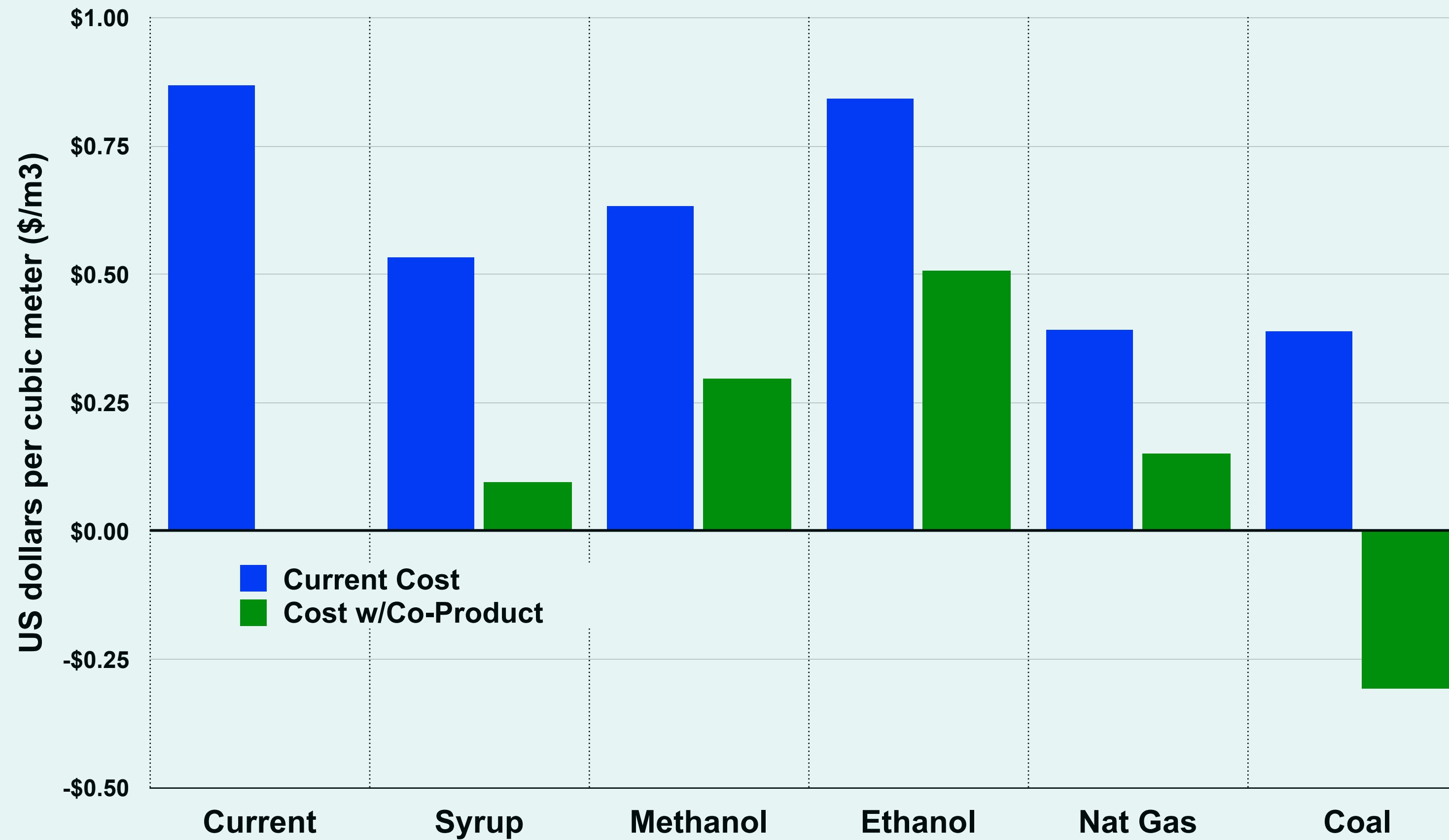
- Climate change is increasing ALL water problems (hydration, cooling, agriculture, et al)
- Water scarcity and stress limit economic growth
- One quarter of the world's population in 25 countries face “extremely high” levels of water stress
- In low income countries 80% of jobs are water dependent
- Food security is dependent on water security
- Sea level rise increases seawater intrusion into critical aquifers
- Cities like Cape Town and Mexico City already experience water shortages & others are at risk



# GCT can make affordable green H2 electricity without subsidies

Electricity is ~80% of the operating cost of water

Comparison of Costs of Desalinating Seawater



## GCT CAPER & CCR processes:

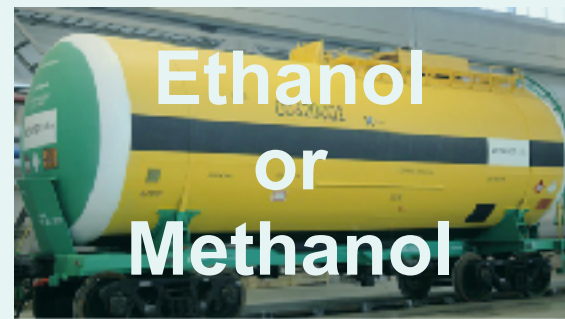
- Can use sugar juice directly & all waste by converting it to methanol & then Green H2 & electricity .
- Can operate on low-cost, raw ethanol.
- Long-term feedstock contracts offer price stability.
- Can produce low-cost green electricity on site
- Onsite, modular systems can be added as needed & offers unparalleled system reliability.
- GCT,s hydrogen costs will make Green Water economically viable without the need for subsidy.
- GCT's CCR process creates salable co-products(s) and reduce the CO2 emissions by 1.9 tons per m3



# GCT enables affordable clean water at any scale from multiple feedstocks

Can reduce CO2 emissions from ~1.8 kg/m<sup>3</sup> to -0.07. a reduction of 1.9 tons CO<sub>2</sub>/m<sup>3</sup>

## Inputs



Ethanol or  
Methanol



Syrup

Syrup



Coal  
Slurry

Carbon  
Slurry



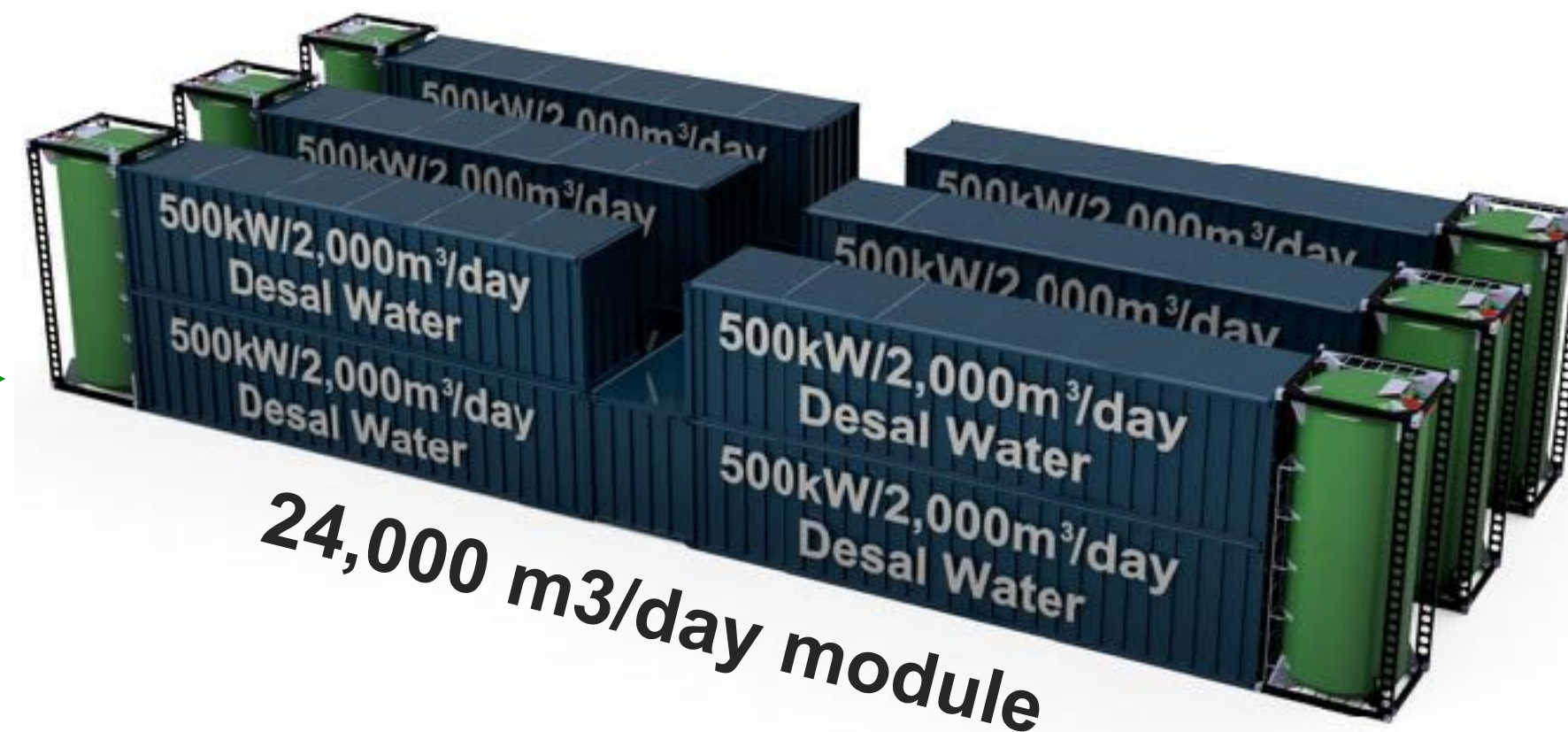
CNG  
or  
LNG

CNG, LNG or  
Pipeline  
Natural Gas



## Modular, flexible and distributed

GCT's CAPER converts coal slurry in modular, factory-built shipping containers that eliminate the need for H<sub>2</sub> pipelines. The CAPER can be operated alone or integrated with a CCR system to produce fuels



H<sub>2</sub>O



## Low energy, liquid-phase

GCT's CCR operates at low temperature (< 90°C) and in liquid-phase, eliminating the need for gas-phase compression, a major cost. System needs only 67 kWh/gallon of fuel & produces 94 gallons of fuel per ton of CO<sub>2</sub> (42 gallons = 1 barrel = 2,814 kWh/barrel).

## Users

