



# Namibia's Hydrogen Hubs

The Erongo Valley |

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# Namibian and regional hydrogen ecosystem

Initial thinking - to be developed further with you

**Valley 4 Kunene**  
Hybrid renewable production (Solar PV + on-shore Wind) will feed electrolysis plant and ammonia production near the new port facility

NH<sub>3</sub> export

Interconnection with Angola (EUGlobalPartnership)  
H<sub>2</sub> trains (TrahsNamib)

Otjiwarongo

H<sub>2</sub> Mining trucks

H<sub>2</sub> buses

Windhoek

**Domestic demand center**  
Infrastructure to fuel heavy-duty trucks, open pit mining trucks, and hydrails

H<sub>2</sub> trucking along planned logistics corridor (EUGlobalPartnership)

**Valley 3 Otjozondjupa**  
Solar PV synfuel production using cement industry CO<sub>2</sub> emissions as feedstock for export towards Walvis Bay port

**Valley 2 Karas**  
Hybrid renewable production (Solar PV + on-shore wind) will feed electrolysis plant and ammonia for export from Luderitz and Oranjemund ports connected by a H<sub>2</sub> pipeline (Hyphen project)

**Valley 1 Erongó**  
Solar PV power production with electrolysis, ammonia and terminal for synfuels for export from Walvis Bay port

NH<sub>3</sub> and synfuel export

Walvis Bay port (Namport)

Swakopmund

Luderitz port

Oranjemund port








NH<sub>3</sub> export

RE to South Africa

H<sub>2</sub> to South Africa

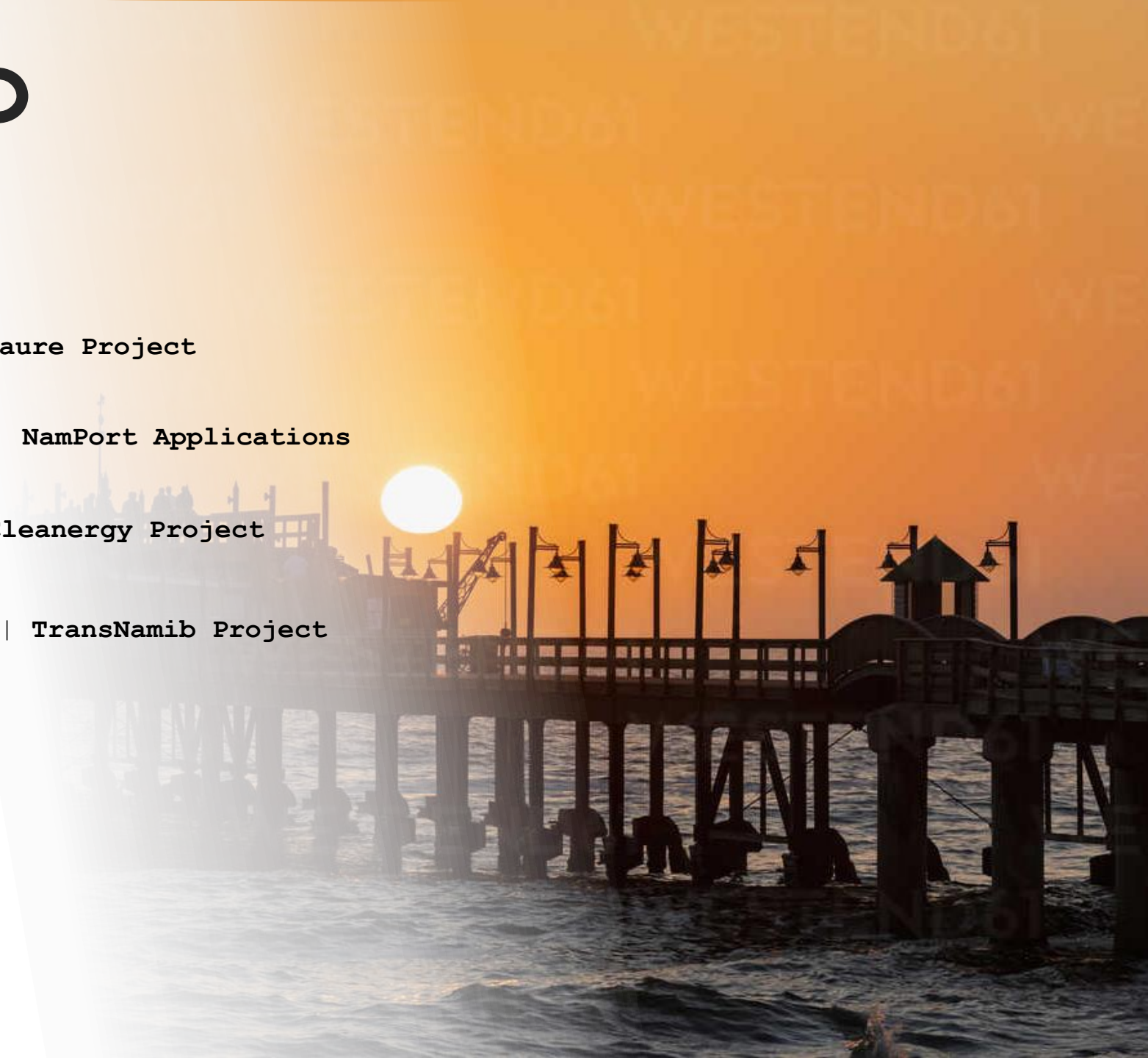
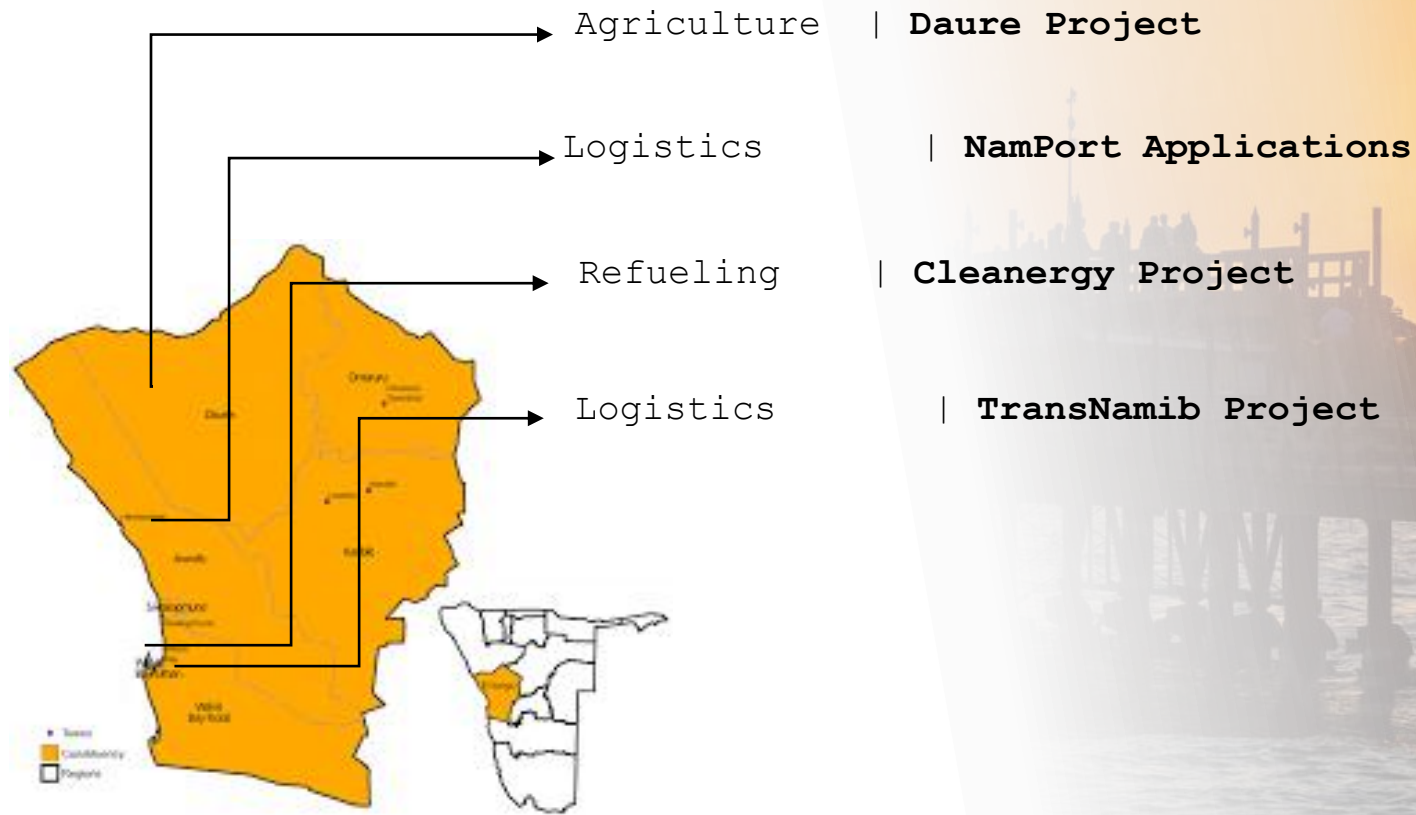
CO<sub>2</sub> from South Africa

(green) copper trade with Zambia by hydrail

-  H<sub>2</sub> pipeline
-  Export port
-  Desalination plant
-  Main cities
-  Railways
-  Project Transmission lines
-  Existing Transmission lines

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Erongo Region : Consortium 3

# Gh2 Port Applications



# Gh2 Port Applications

Green Hydrogen Pilot Plants

## Pilot Plant information

**Project Name** : Green Hydrogen Applications in the Port Environment

**Location** : Walvis Bay Port

**Project Size** : 5 MW Electrolyser and H2 mobile refueller (945kg at 500bar)

**Project Value** : 5.66 million EUROS

**Project Partners:** Cleanergy Solutions Namibia, CMB Germany GmbH & Co. KG, and Namport, UNAM

## Project Overview

The following are strategic targets of this project,

- To convert an existing tugboat to operate on hydrogen dual fuel technology
- To convert existing port equipment to operate on hydrogen dual fuel technology
- To develop green hydrogen bunkering and refuelling infrastructure at the port
- To develop safety and operation procedures for use of hydrogen at ports
- To elevate the Germany-Namibia partnership, covering the whole value chain for green hydrogen and to promote the technological solutions proposed





Erongo Region : Consortium 4

# Cleanergy H2 Refueling Station



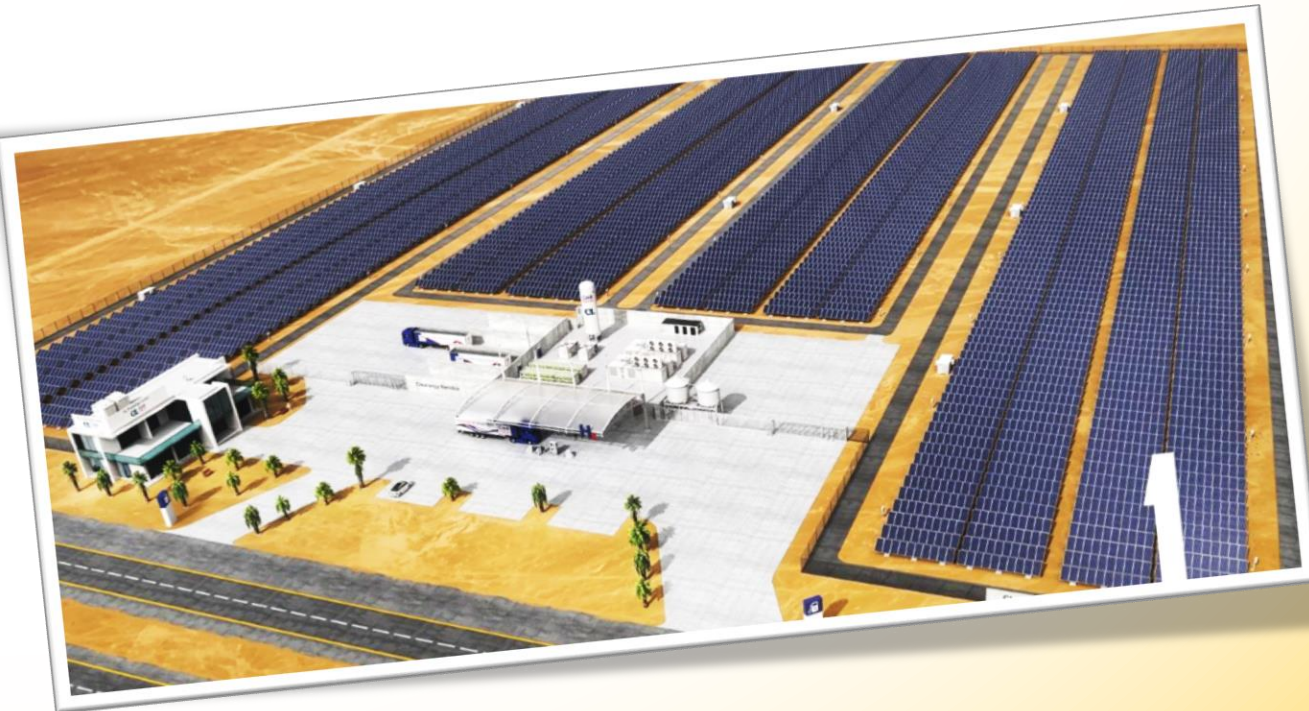
## Pilot Plant information

<b>Project Name</b>	<b>: H2-Pilot Plant / Refuelling Station in Walvis Bay</b>
<b>Location</b>	<b>: Walvis Bay</b>
<b>Project Size</b>	<b>: 5MW Electrolyser</b>
<b>Project Phase Value</b>	<b>: 25 million EURO</b>
<b>Project Partners:</b>	<b>CMB.TECH, Ohlthaver &amp; List Group (JV = Cleanergy Solutions Namibia)</b>

## Project Overview

The plant consists of a 5 MW photovoltaic solar system, a 5 MW electrolyser and a H<sub>2</sub> refuelling station. The purpose of the plant is to test technologies, to develop offtake applications within the transport sector, mining sector and port activities and to facilitate technology transfer and skills development into Namibia.

Building upon the lessons learned with the pilot plant, a second phase with a bigger commercial plant including ammonia production is planned.





Erongo Region : Consortium 17

# H2-Diesel Dual Fuel Locomotives





## Pilot Plant information

**Project Name** : Hydrogen-Diesel Dual Fuel Locomotive Pilot Project Proposal for Namibia  
with Supporting Research Projects

**Location** : Walvis Bay to Kranzberg corridor in Namibia, through TransNamib

**Project Size** : 50 locomotive fleet conversion to GH<sub>2</sub> dual fuel

**Project Value** : 7.63 million EURO

**Project Partners** : CMB.TECH, UNAM, Hyphen Technical, TransNamib, NGHRI, Nicholas Holding

## Project Overview

The following major components to be developed, implemented during the course of the project to achieve the project goal:

1. 1x Locomotive converted for the use of H<sub>2</sub> as fuel, through repowering of the locomotive with a new rail engine that is H<sub>2</sub>-ready.
2. 2x H<sub>2</sub> Valve Bank close to each locomotive engine with control valves, actuators, gauges, sensors, relief valves and cut off valves
3. 1x H<sub>2</sub> fuel tender car, a modified flat-bed container wagon for transporting the 40ft, half height H<sub>2</sub> fuel skids.
4. 2x 40ft half-height tube skids, with 8x Type 1 steel cylinder searchable to store H<sub>2</sub> as compressed gas at >200 bar.





Erongo Region : Consortium 25

# Daure Gh2 Agriculture



# Daure Agriculture Project

Green Hydrogen Pilot Plants

## Pilot Plant information

**Project Name** : Daure Green Hydrogen Proposal

**Location** : Erongo Region, Daures Constituency

**Full Project Size** : 1.5 GW (Current Phase 508 kg Green ammonia/day)

**Current Value** : 15,1 million EURO

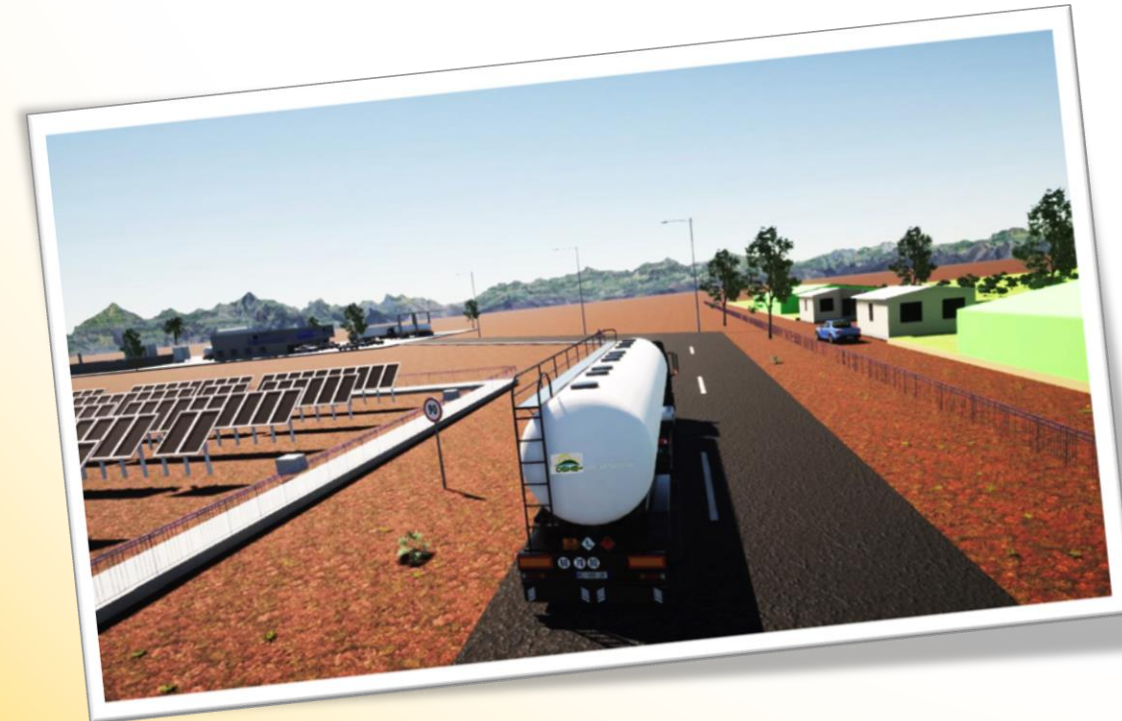
**Project Partners:** NGHRI, University of Stutgard, Enapter, Windwise, Enersense Nam



## Project Overview

The project will realize the production of green hydrogen & ammonia and utilization of its derivatives.

1. Sustainable production of green hydrogen based on renewable energies,
2. Establish of green scheme program for ammonia nitrate crops
3. Storage and transport of green hydrogen, ammonia and related derivatives,
4. Integrated application technologies for utilization of green hydrogen in agriculture, ammonia nitrate and cleaning detergents
5. Fuel Cell operated Centre pivots, boreholes and houses



# Questions ?

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