We are an **Energy Transition Enabler** Based in Oman

Operations in

17

countries covering the entire value chain

Global player offering **end-to-end products**, services and solutions in upstream and downstream

OQ embraces new momentum and synergies to expand our horizons and **opportunities**

Fuels and chemicals sold in over

70+

countries worldwide

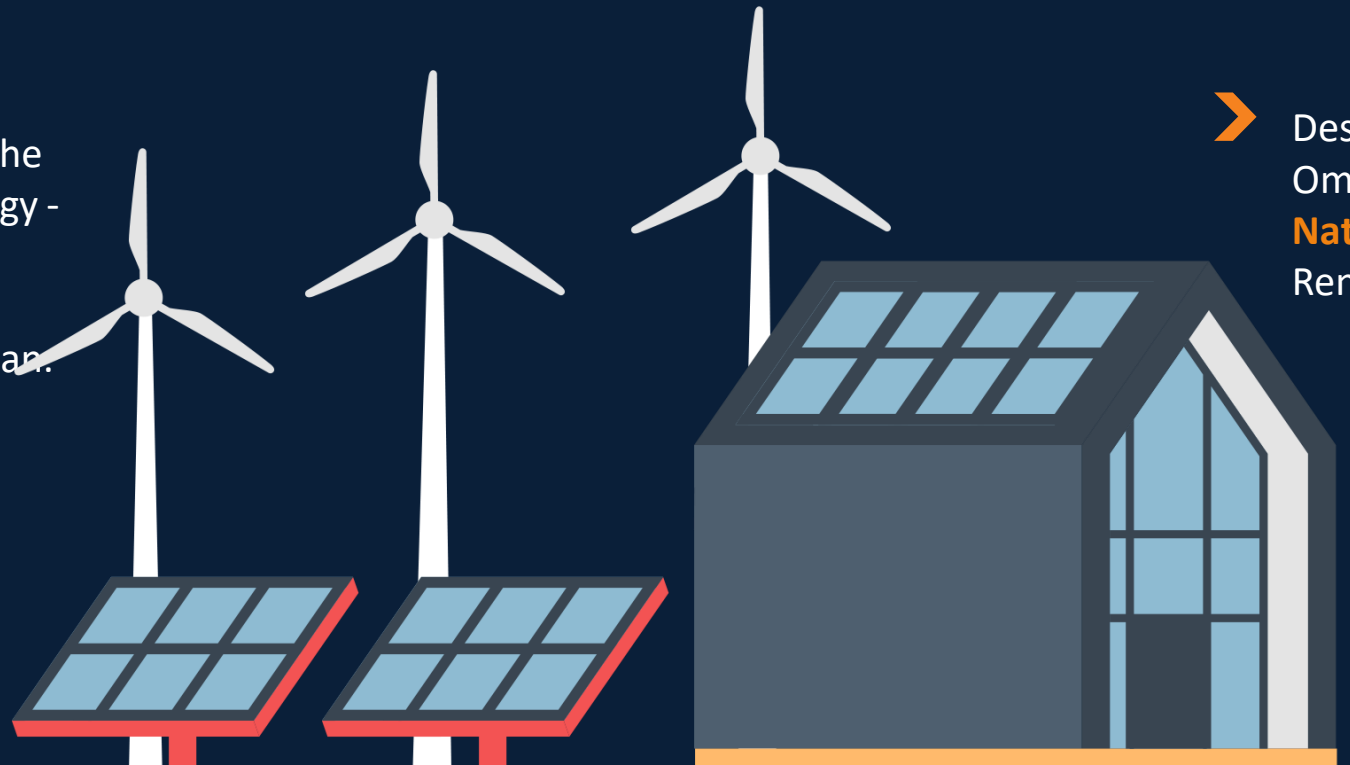
OQ Delivering Oman's Alternative Energy Future

OQ

OQ Alternative Energy

Championing the Alternative Energy Journey

- OQ's Alternative Energy (AE) is the **cornerstone** of OQ's energy transition efforts and a catalyst to achieve the national objectives.
- OQ AE will drive **sustainable economic growth** in Oman's energy value chain and enable energy transition through successful partnerships.
- OQ AE is helping Oman build a **hydrogen-centric economy** by 2040 and achieve carbon neutrality by 2050.
- **Decarbonization** is at the heart of OQ AE's strategy - decarbonization of OQ assets and ultimately decarbonization of Oman.
- Designation: Appointed by the Omani government as the **National Champion** for Renewable Energy.



Oman's Roadmap for Green Hydrogen: National Targets & Governance Structure

National Green Hydrogen Targets

- **By 2030:** Produce 1 million tonns per annum (MTPA) of green hydrogen.
- **By 2040:** Scale up to 3.75 MTPA.
- **By 2050:** Reach 8.5 MTPA, becoming a global green hydrogen leader.
- **Investment Goal:** Attract up to $140 billion in green hydrogen investments by 2050.
- **Land Allocation:** Reserve 50,000 km² for renewable and hydrogen development.

Governance Structure

- **Ministry of Energy and Minerals (MEM)**
  - Sets national policy and regulatory framework.
  - Created the Directorate General for Renewable Energy and Hydrogen.

- **Hydrogen Oman (Hydrom)**
  - Established in 2022 under Energy Development Oman (EDO).
  - Responsibilities:
    - Master planning and land allocation
    - Managing project auctions
    - Coordinating infrastructure development

hydrom
Hydrogen Oman

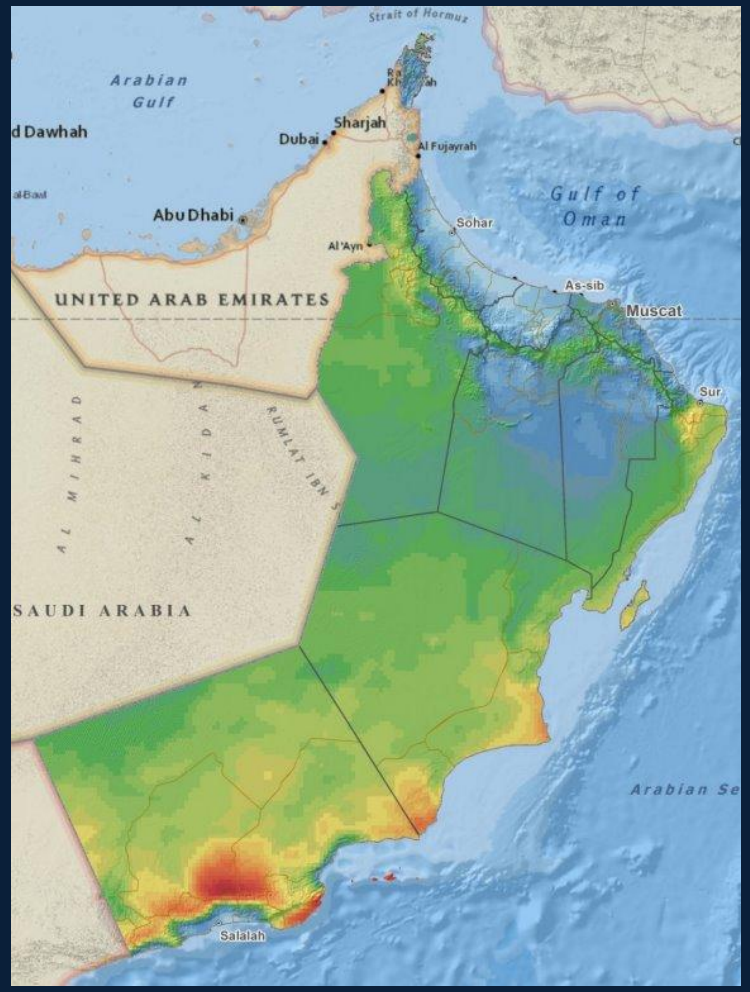
Competitive Advantage

Harnessing Oman’s Potential: Strategic Location, Economic Stability and Industry Opportunities

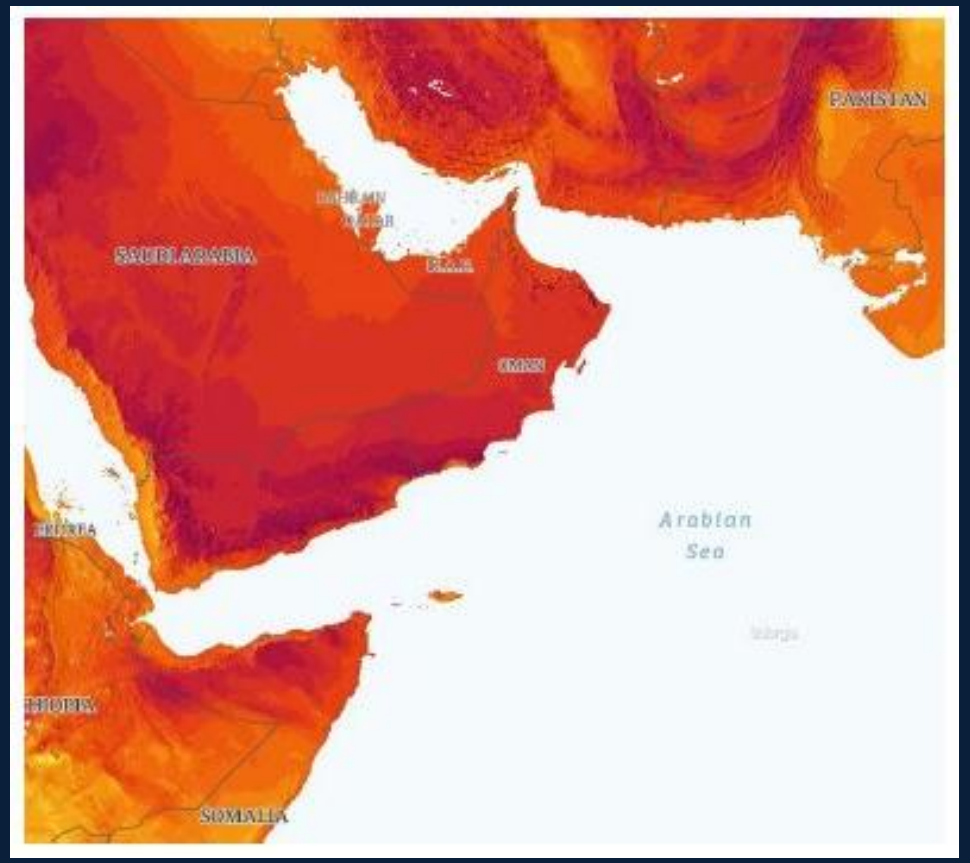
- Oman has very favorable renewable energy conditions for both solar and wind energy.
- Clear hydrogen framework with clear ecosystem.
- As a leading government integrated energy group, OQ is well positioned to play the role of the state-owned entity investing in renewable energy and integrated low carbon molecules projects in Oman.
- Leverage on the Group's broad asset base. The assets provide a platform for growth and dovetails with OQAE’s four pillars.
- Credible partner of choice with a proven track record in building partnerships to invest in Oman for over 25 years.

Oman **benefits from favorable wind and solar resources**

- **High wind resources in Al Wusta and Dhofar**



- **High solar resources across Oman**



Strategic Infrastructure Advantage: OQ AE's Role in Enabling Ammonia Exports from Salalah

OQ AE's role as a core partner in the SalalaH2 consortium significantly enhances the project's ability to deliver ammonia to global markets, leveraging its operational expertise, integrated infrastructure, and strategic position at the Port of Salalah.

SalalaH2 benefits from:

- Proximity to OQ's existing grey Ammonia Plant, benefitting from synergies in infrastructure and available facilities, transfer of expertise in construction, operations and maintenance .
- Existing export infrastructure from the freezone to the Port, and existing export facilities within Salalah Port.

Robust Infrastructure Enabling Ammonia Export to the Global Market – Salalah

Port of Salalah has been recognized as the second most efficient container port in the world. According to the 2023 Container Port Performance Index (CPPI) published by the World Bank and S&P Global Market Intelligence, Salalah retained its #2 global ranking for the third consecutive year, just behind Yangshan Port in China.

Strategic Location of Salalah (Port of Salalah)

- Located along primary East-West shipping routes.
- Gateway connecting markets in Asia, Europe, and Africa.
- Major regional hub for chemical and industrial exports.

Specialized Port Facilities

- Dedicated ammonia loading terminal.
- Advanced transfer systems and modern loading arms.
- Berths designed for large chemical tankers.

Robust Storage and Handling Infrastructure

- Cryogenic ammonia storage tanks.
- Automated handling and transfer systems.
- Pipeline networks linking ammonia production facilities directly to port.

Comprehensive Safety Measures

- Integrated leak detection and emergency response systems.
- Regular safety drills compliant with IMO standards.
- Environmental monitoring safeguarding marine ecosystems.

Efficient International Shipping Connectivity

- Scheduled ammonia shipment services.
- Streamlined customs clearance for rapid shipment turnaround.
- Integrated logistics provided by port authorities.

SalalaH2: renewable ammonia exports from Oman

WEBINAR

Siddiqa Al Lawati
Business Development Advisor,
OQ Alternative Energy

Rodolphe Kotliar
Global Head of Hydrogen & Derivatives, Dutco

AMMONIA ENERGY ASSOCIATION

Wednesday, May 7
9AM EDT (3PM CEST)

House rules

AMMONIA ENERGY ASSOCIATION

- Please post your questions for the speakers in the Q&A section. Your questions will be answered by text by the speakers or will be discussed live.

- The recording of this webinar will be shared with all registrants after the webinar, and will be available at www.ammoniaenergy.org

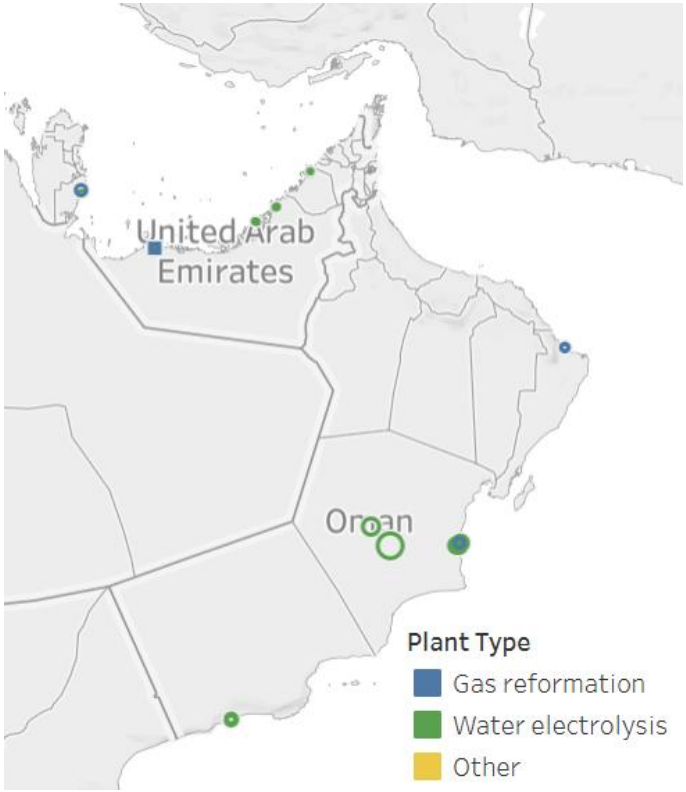
- An article summarizing this webinar will be posted on www.ammoniaenergy.org in the coming days.

Oman

Oman is an existing ammonia producer, with a combined annual capacity in excess of 1.6 million tons of ammonia from two plants, relying on natural gas as feedstock.

Oman has some of the best complementary solar and wind potential globally.

- The country published its *Green Hydrogen Strategy* in 2022, with the aim to produce renewable hydrogen and ammonia for both local consumption and export.
- Government agency Hydrom (Hydrogen Oman) was set up to structure and accelerate the development of the renewable hydrogen sector in Oman.



https://ammoniaenergy.org/lead/plants/

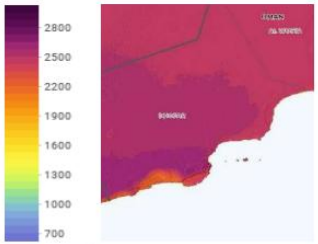
Hydrom's Green Hydrogen Strategy

AMMONIA ENERGY ASSOCIATION

Oman is one of the top countries for renewable resources

Solar PV potential[1]

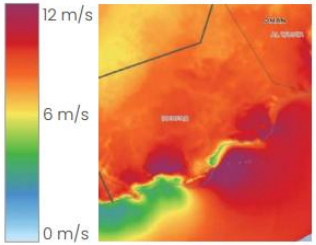
kWh/m²



>2400 kWh/m²

Wind speed

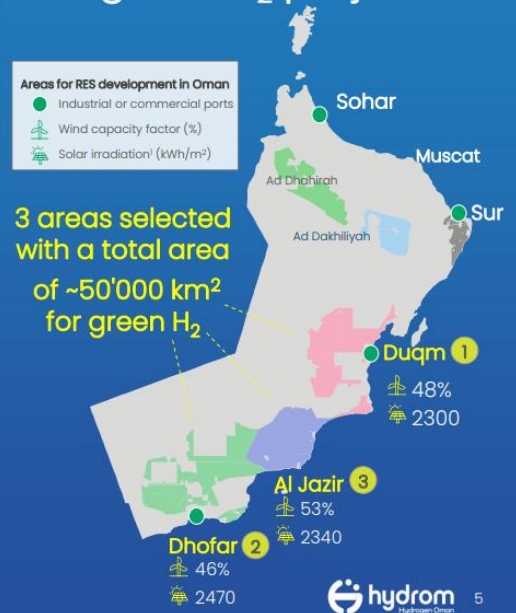
m/s



Up to 11 m/s

1. Global Horizontal Irradiation (GHI)
Source: Global solar atlas, Global wind atlas (July '22)

50,000 km² allocated for green H_2 projects



hydrom Hydrogen Oman

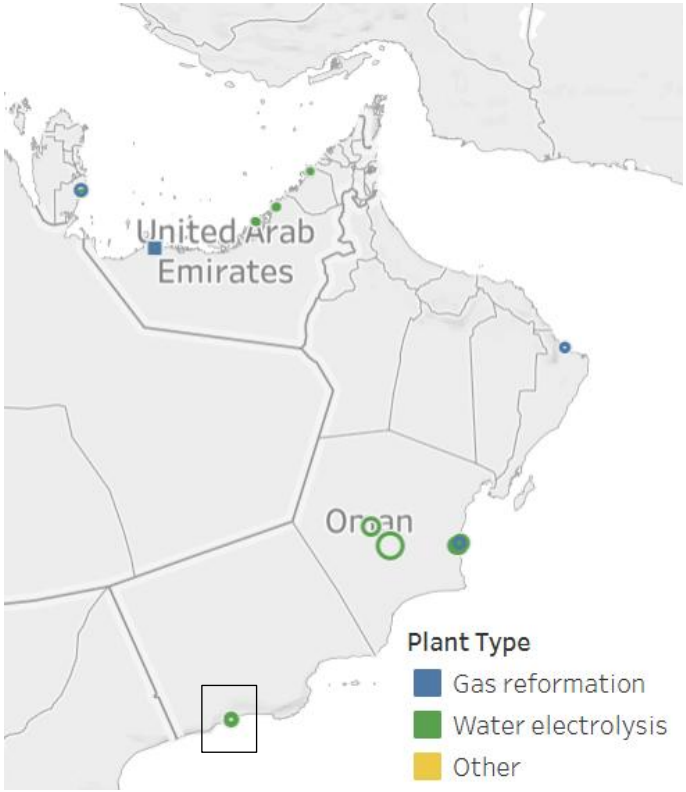
https://hydrom.om/Media/Pdf/Oman-Green-Hydrogen-Strategy-2024.pdf

SalalaH2

Various consortia are developing renewable ammonia projects in the Duqm region in the middle of Oman, and in the Salalah region.

Within the SalalaH2 consortium, Marubeni, OQ Alternative Energy, Samsung C&T and Dutco are jointly developing a renewable ammonia project in Salalah on Oman's southwestern coast.

- The project has a capacity of 1 million tons per year of renewable ammonia
- 5 GW of wind and solar capacity will power 2 GW of electrolysers



https://ammoniaenergy.org/lead/plants/

SalalaH2: renewable ammonia exports from Oman

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OQ Marubeni DUTCO SAMSUNG

Export of green NH_3 from Oman

SalalaH_2 project

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Executive Summary SalalaH$_2$

Project Overview

- Develop, implement a greenfield project of 1,000,000 MTPA of green ammonia to be exported during >40 years of operations
- **Project Development Agreement (PDA) signed** with Hydrom on December 12th 2023
- The project will also consider numbers of synergies with the local industry and upcoming projects

Estimated Capex:
- 5-7 Billion$

Project location
- Salalah, Dhofar Governorate, Oman

Schedule:
- FID 2026
- COD 2030

Offtake scenarios
- Export of Ammonia to Asia and Europe with focus on Germany
- Explore local use of some quantities of hydrogen

Plant Configuration

The project is expected to build, own and operate the following facilities

- Solar / Wind renewables
- Electrolyzer
- Batteries, Hydrogen and Ammonia storages
- Ammonia Synthesis Plant with associated ASU

The projects will share a commonly used infrastructure (CUI)

- Water supply and desalination plant
- Electricity, Water and H2 transmission pipes
- Export facilities (Port of Salalah)

Ownership

Marubeni	+++
OQAE	++
Samsung	++
Dutco	+

Consortium members SalalaH$_2$

Marubeni

- **Leading IPP developer in the world**
  Capacity of over 38GW with 72 power plants world-wide
- **Experience in renewable projects in the MENA**
  Developing and operating over 2.4GW of renewable projects
- **Ongoing decarbonization projects**
  Abu Dhabi SAF Project, Ammonia Supply Chain Project in Australia
- **Value for project development**
  Project management, supply chain development, equity & financing

OQ

- **Global energy company with roots in Oman**
  With operations across 17 countries, OQ operates across the energy sector's entire value chain from exploration and production to marketing and distribution of end-user products.
- **Focus on decarbonization and energy transition**
  OQ Alternative Energy is predicated on three pillars: Green Molecules/Clean Electrons/Energy Efficiency and Optimisation
- **Global energy company with roots in Oman**
  LPIC, Sohar Refinery, OQ Methanol/Ammonia, OQ Gas Networks

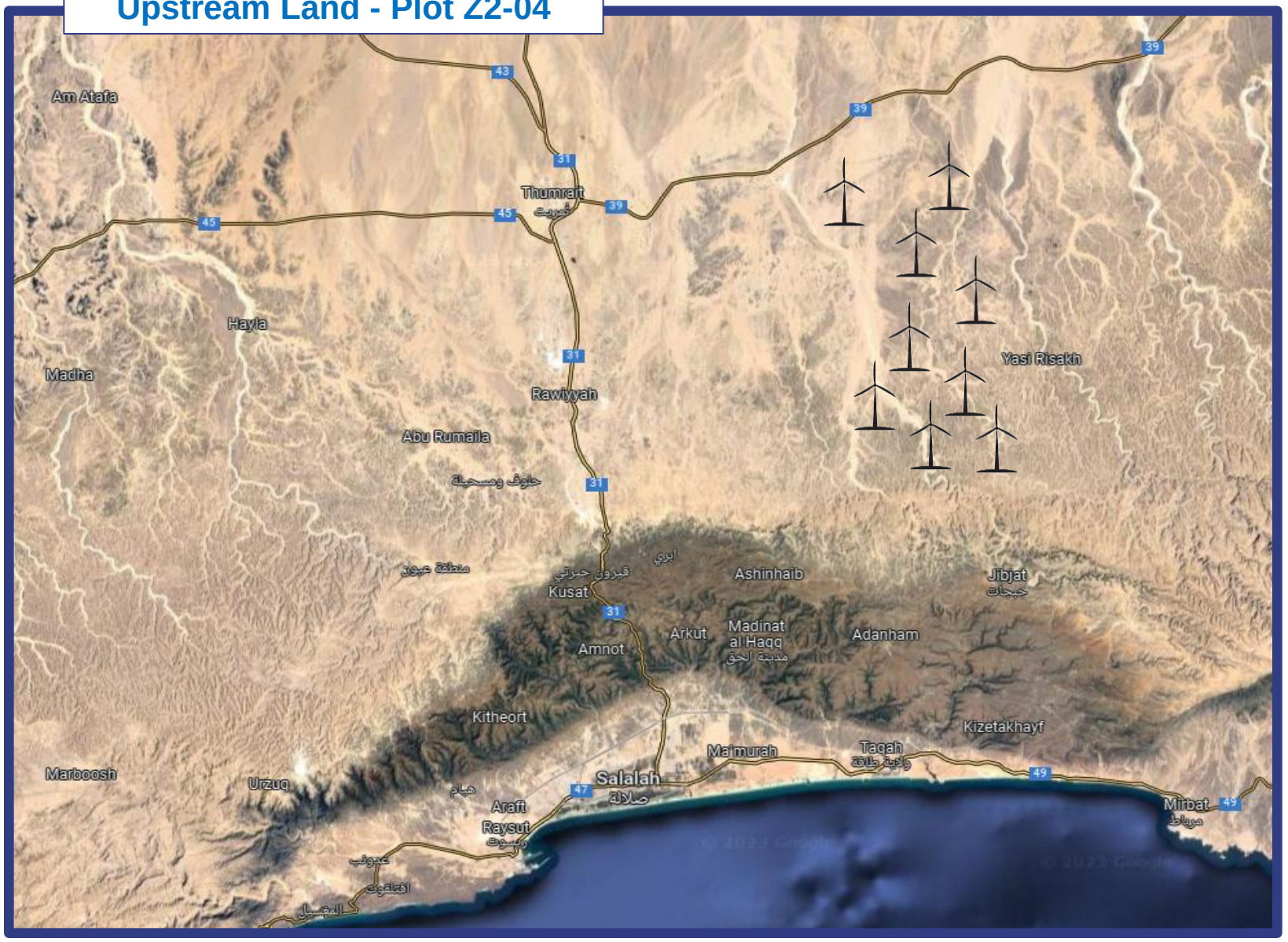
DUTCO

- **Global industrial conglomerate based in UAE**
  Large-scale civil engineering works, ports dredging, pipeline engineering, logistics, petrochemicals, steel manufacturing, rare earth metals production, solar & hybrid solutions
- **Experience in water management solutions**
  Design, manufacture, installation of Packaged Seawater RO Plants
- **Key references**
  Construction of Jebel Ali Port, DEWA's G station Power & Water Desalination plant, Qafac Methanol Plant in Qatar, Antimony production plant in Sohar with OIA

SAMSUNG C&T

- **Top Global player in the power generation and energy infrastructure**
  World-class technical capabilities demonstrated through large-scale project execution including Power Plants (Combined Cycle, Nuclear, and RNE, Energy Storage Facilities (LNG, LPG), and Desalination Plants.
  Worldwide Experience
  Samsung C&T has completed 76 projects with a total capacity exceeding 65 GW, establishing a global presence.
- **Business Focus:**
  Business Development, Investment, Engineering and Construction

Upstream Land - Plot Z2-04



- First assessment based on public databases VORTEX, SOLAR-GIS, NASA, Meteonorm, etc

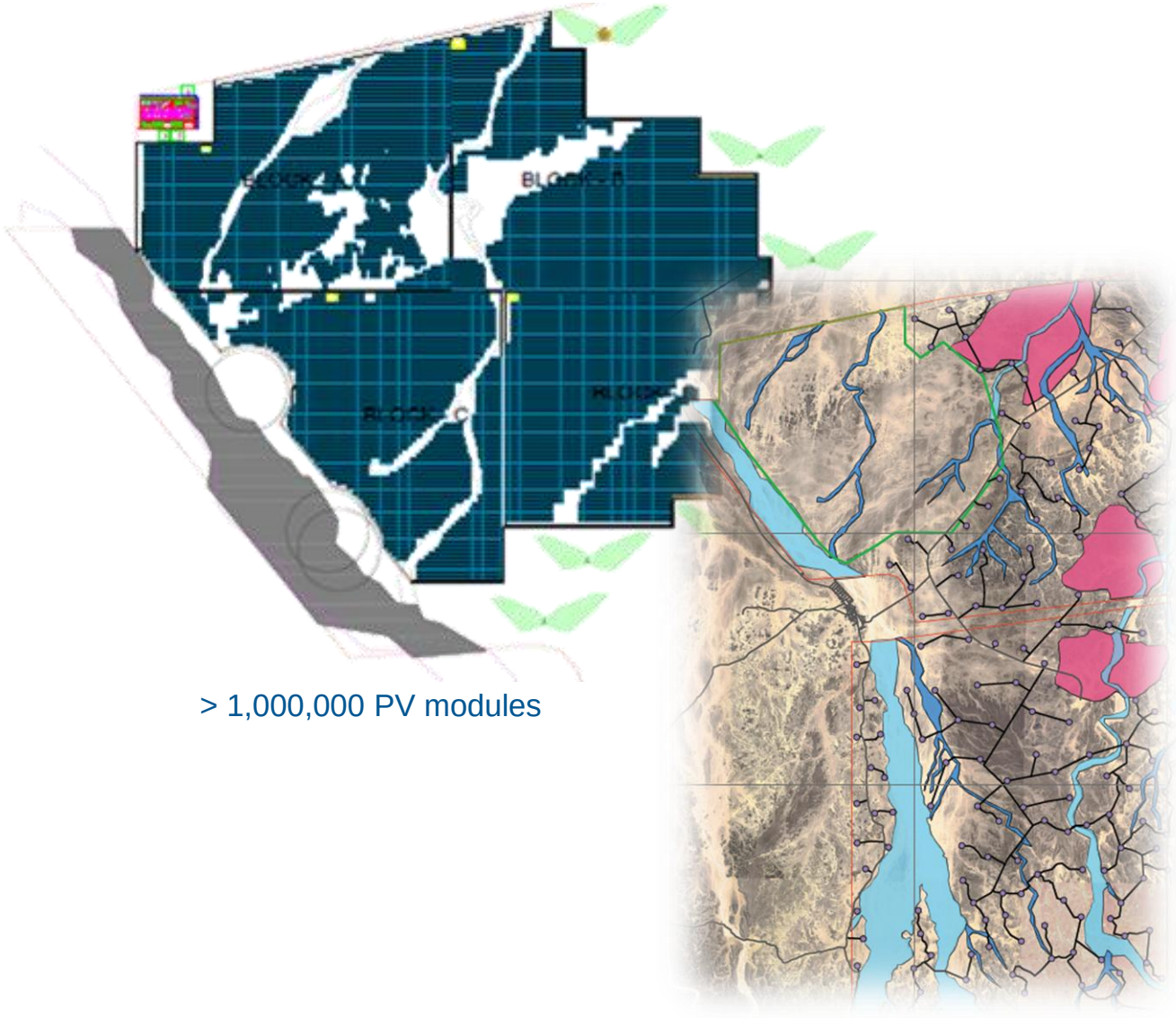
Solar

- Energy Yield Assessment (EYA) conducted
- Specific proposals from OEMs
- Capacity factor of > 30%
- Energy produced of > 2750 kWh/kWp/y (P90)

Wind

- Comparisons with national measurements
- 12 months wind measurement campaign
  - 7 Masts at 100 m
  - 2 Lidars at 80-300m
- Wind speeds > 15 m/s in Summer
- Capacity factor of > 40%
- Results confirmed by external engineering company

Results exceeding expectations SalalaH$_2$



> 1,000,000 PV modules

> 250 wind turbines of > 7 MW

The final **energy modelling concept** finalized during Pre-FEED helped to identify the optimum combination between Wind and PV in order to achieve the:

Globally very competitive LCOE and LCOH

Pre-FEED Project configuration SalalaH$_2$

- 400 km2 on one of the best spot Oman can provide
- 100 km North of Salalah with wind ; peaks > 15 m/s during summer
- to welcome > 1,000,000 PV modules
- and > 150 wind turbines

- 400,000 m2 next to the existing port infrastructure
- Direct pipeline connection
- 6 km away from the existing jetty and loading equipment
- Upsides & Synergies from surrounding industries

Upstream

Bi- facial
Single axis tracking
auto cleaned

Solar Plant

Wind Farm

Li-Ion

Demin
& Make-up

pAEL

Electrolysers

H2 storages

H2

Electricity

Elec

Downstream

Desalinated Water

Desalination unit

H2 storages

Ammonia production

EXPORT
(Japan)
(Korea)
(EU)

?

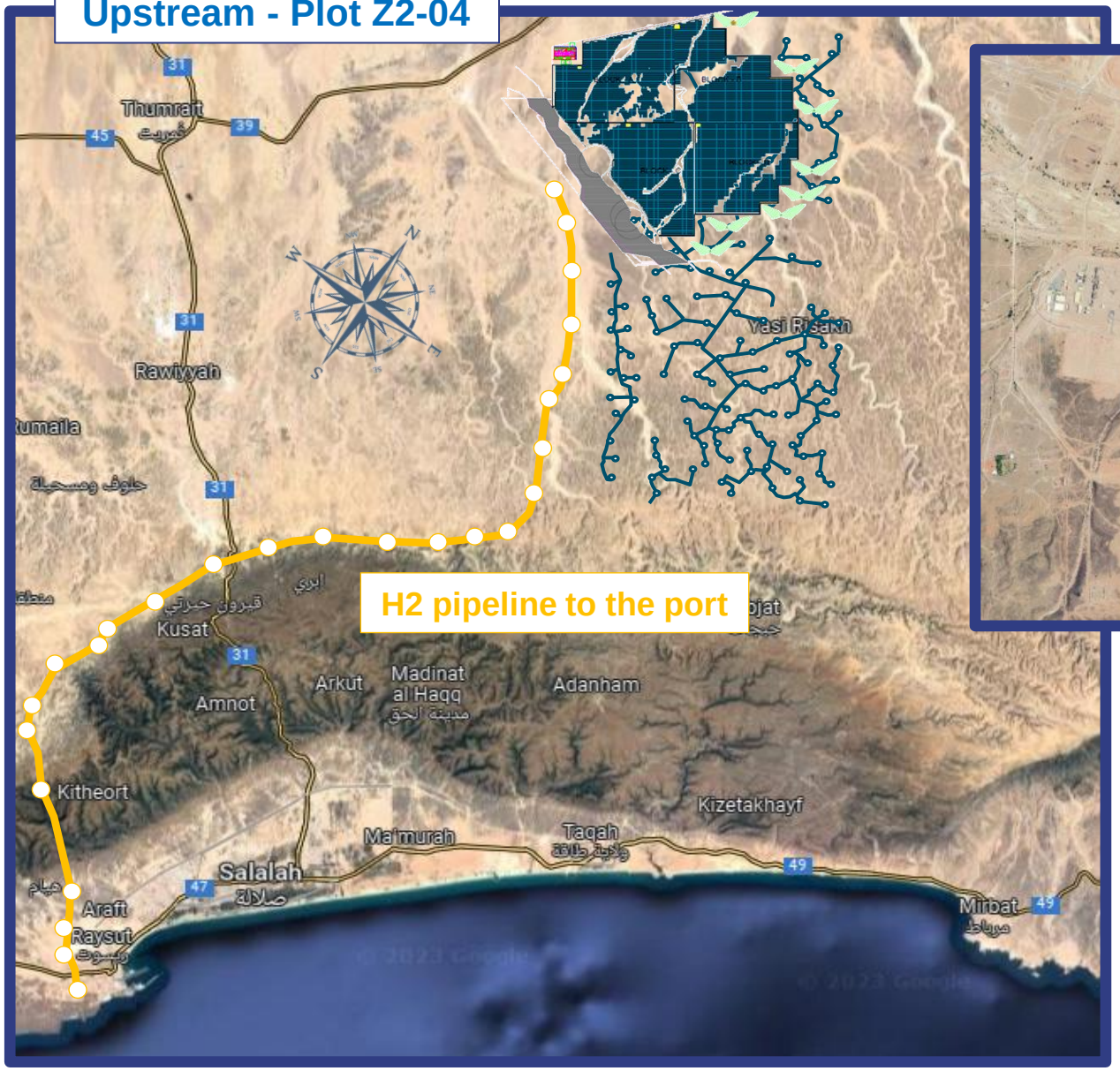
ASU

O2

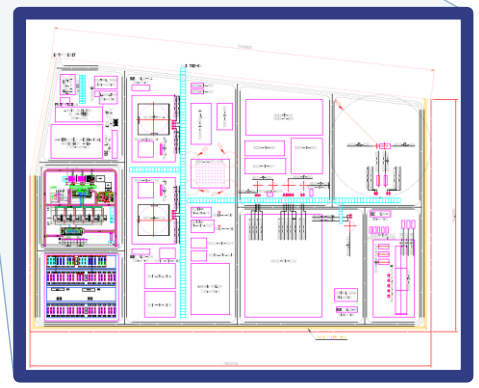
NH3 storages

Project locations SalalaH$_2$

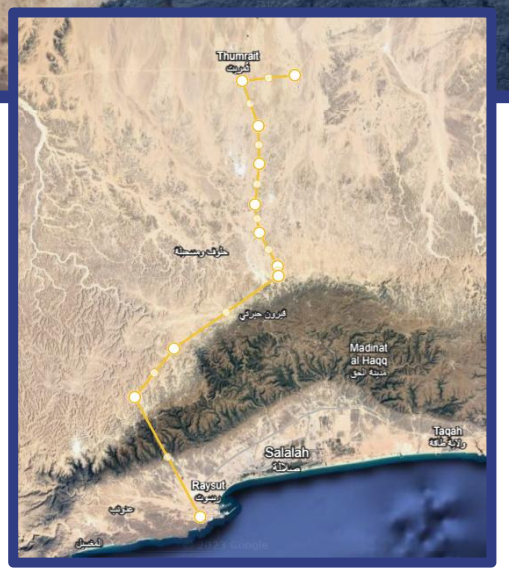
Upstream - Plot Z2-04



Downstream - Salalah Free Zone



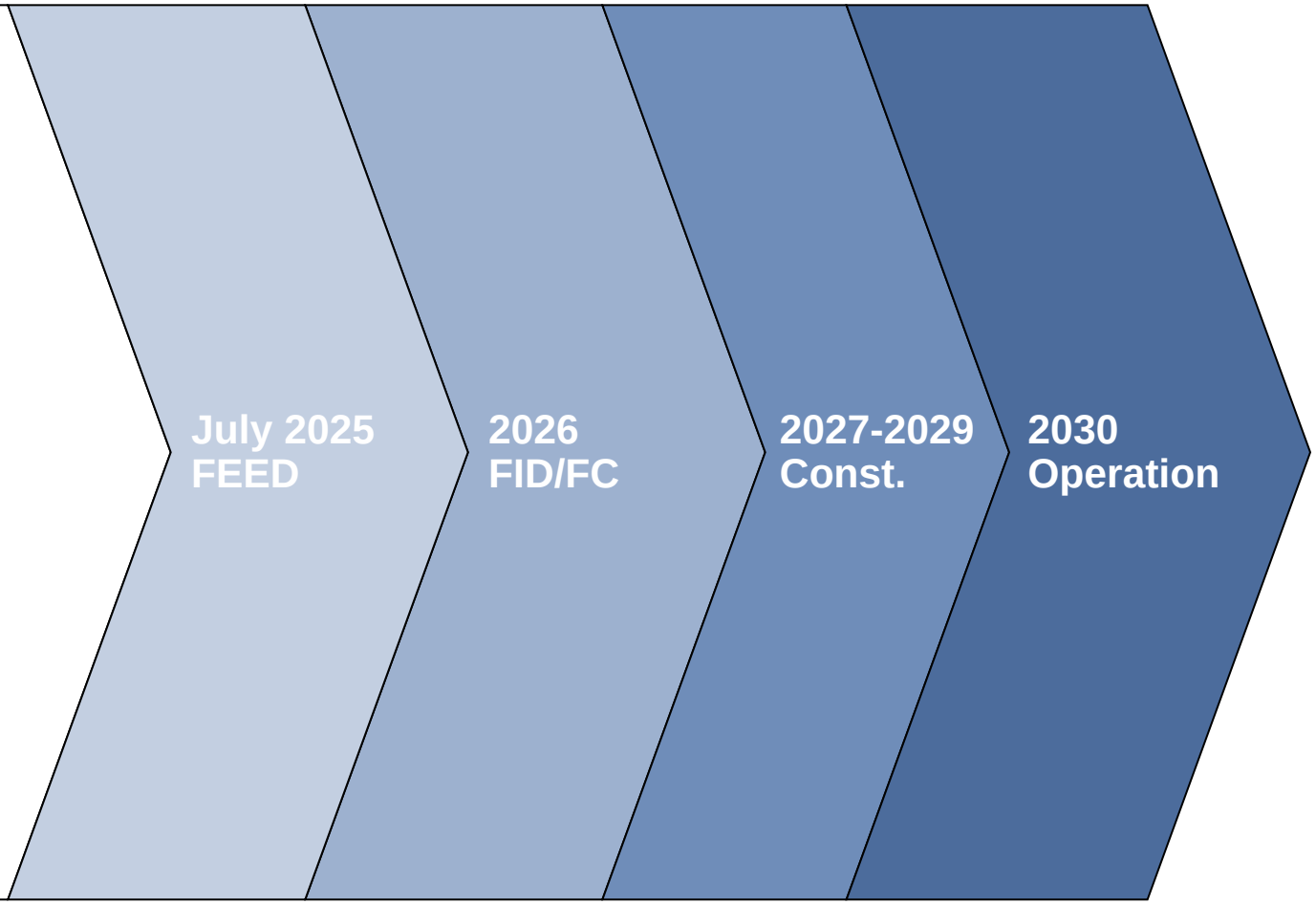
Ammonia + ASU



Project status SalalaH$_2$

Timeframe 2023/2025

- [x] **Project site secured (PDA/SUA signed)**
- [x] **FS Completed**
- [x] **Wind Measurement** (11 months data collected)
- [x] **Pre-FEED +** (Finishing in May 2025)
- [ ] **Offtake agreements**
- [ ] **FEED start** (June 2025)



European Export SalalaH$_2$

NH3 Production → Ocean shipping → Storage → Inland shipping → Cracking → Last mile → **Final H_2 customers**

SalalaH2 | Local partners

FOB Price ($/t)

NH_3

Int. transportation
To qualifying port in EU

US$/ton

Port infrastructure
NH3 storages available

US$/t

Uploading on barges
Transfer to secondary port

US$/t

Offloading at secondary port
Cracking to H2

US$/t

Pipeline transportation
Delivery to end-user

US$/kg

Transfer to ownership

H_2

H_2 Price $/kg

Conditions offered SalalaH$_2$

- ✓ Green ammonia qualifying with EU standards
- ✓ Deliveries FOB or DAP through partnerships

Very competitive LCOA achieved considering:

- ✓ Contractual volumes > 200,000 tpa
- ✓ Long term contractual period to reach price target
- ✓ Price indexation formula to follow market trends during operations

Contact us

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Thank you for your attention