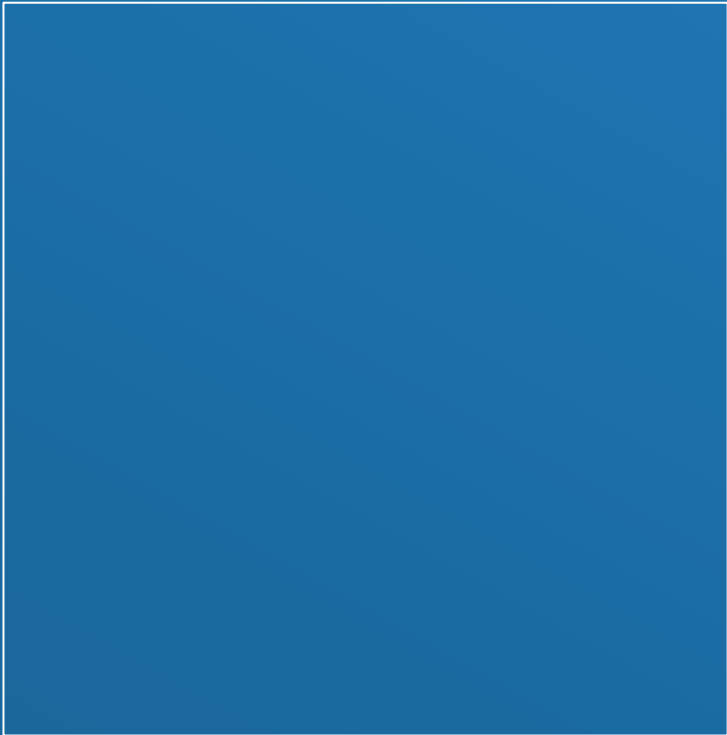


Oman Green Hydrogen Strategy

February 2024





Oman's gH2 strategy

Oman's gH2 journey

Shared infrastructure

Localization

Investing in Oman

Way Forward



Oman today



Oil & gas

Oman tomorrow



Green Hydrogen

Road to net zero by 2050



Oman's concrete actions to develop its H₂ economy

50,000 km²
of land

Land allocated for gH₂
production projects

Hydrogen
auctions

Clear process, 1st round
completed and 2nd open

6 projects
awarded

~925 ktpa of H₂ by 2030
with +38 B\$ investments

Oman gH₂
Strategy

Provided clarity and direction

Shared infrastructure
for gH₂

Concept & timeline approved, infra company
incorporated

Oman has 5 strategic objectives to move into Green H₂



Ensure **energy security** for Oman and global demand



Diversify the **local economy**, onshore the supply chain, forward connect industries and create local long-term jobs



Decarbonize the country to safeguard a sustainable future



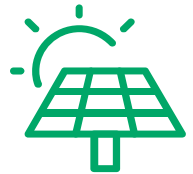
Create a Green H₂ sector with a **competitive** LCOH for export markets and attractive for **Foreign Direct Investments**



Support **innovation** and ensure capabilities development for Oman

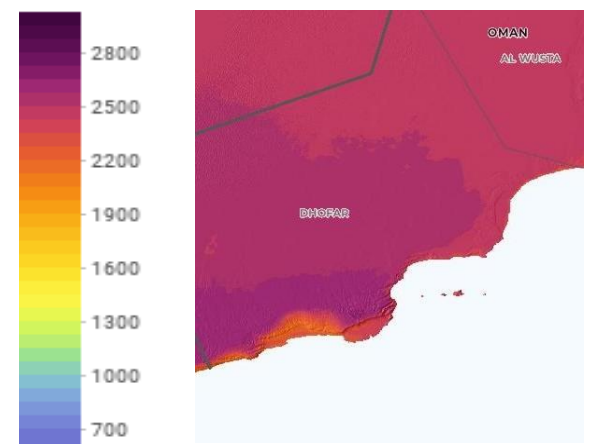


Oman is one of the top countries for renewable resources



Solar PV potential¹

kWh/m²

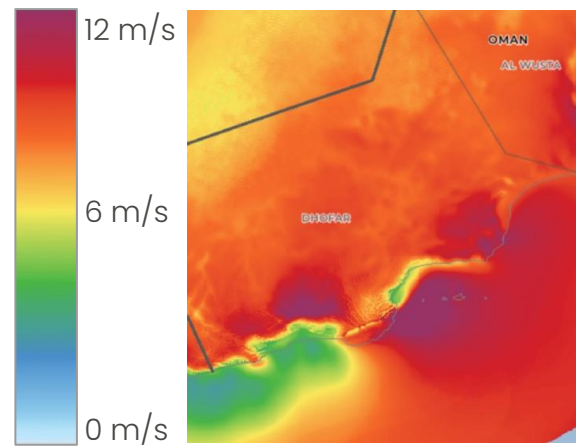


>2400 kWh/m²



Wind speed

m/s



Up to 11 m/s

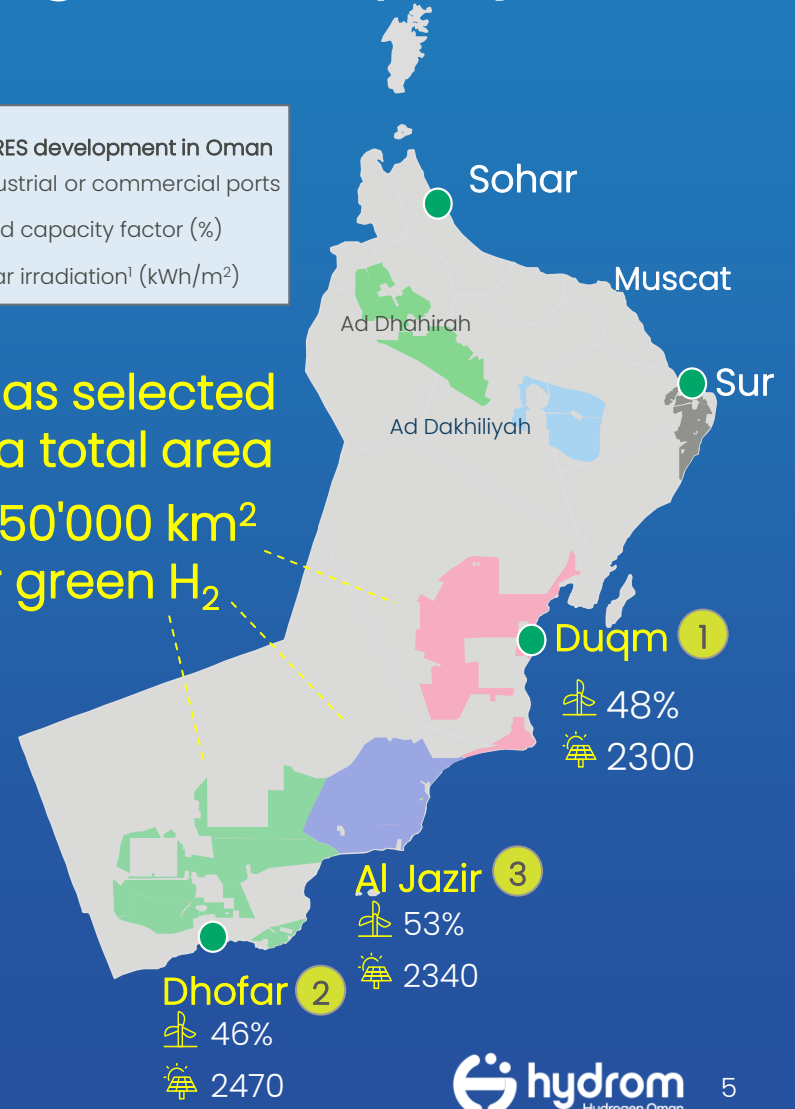
1. Global Horizontal Irradiation (GHI)
Source: Global solar atlas, Global wind atlas (July '22)

50,000 km² allocated for green H₂ projects

Areas for RES development in Oman

- Industrial or commercial ports
- 🌿 Wind capacity factor (%)
- ☀️ Solar irradiation¹ (kWh/m²)

3 areas selected with a total area of ~50'000 km² for green H₂



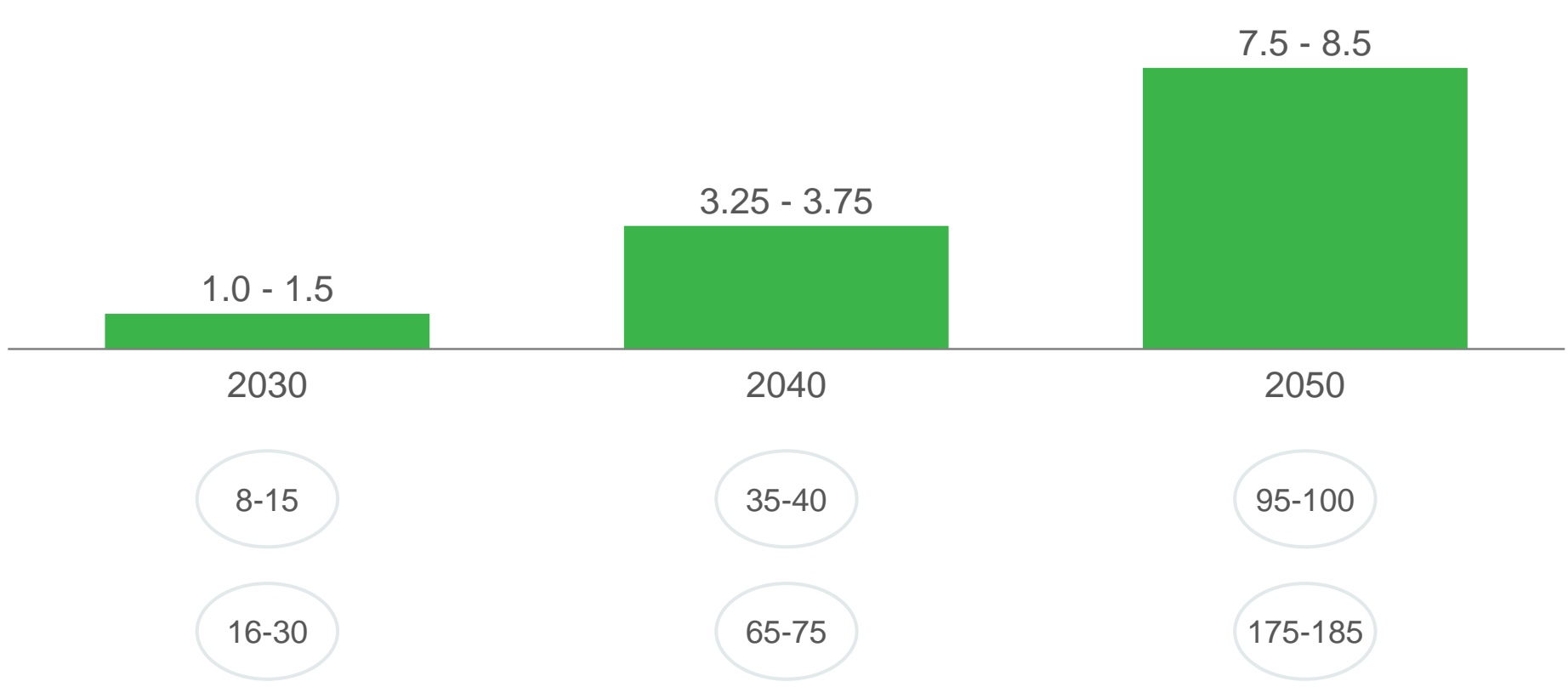


Oman has ambitious production targets until 2050, with already >1 Mtpa by 2030

Green H₂ production ambition for Oman in 2030-2050 (Mtpa)

Includes exports mainly to Europe and Asia, and local Omani demand

Oman expected to become among top 10 H₂ exporters by 2030 according to **iea**



1. Approximate values for Duqm, Oman 2. Includes 25% buffer over Renewables needed for electrolyzers to account for Balance of plant load (which includes NH₃ synthesis loop, Storage tanks for H₂/NH₃, another auxiliary facilities load). Assumption: Sustainable Development Scenario (2°C). Source: Team analysis; IEA



Establishing a gH2 ecosystem in Oman requires the development of multiple elements



Hydrom's Vision and Mission



Vision

Positioning Oman as a leading global green hydrogen hub



Mission

To create a sustainable value to Oman's economy through the development of a competitive and sustainable green H₂ ecosystem

Hydrom assumes different roles across the gH2 value chain



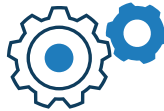
Lead

in components that fall under Hydrom's responsibilities, where the entity is fully and independently leading



Incubate

in components that require Hydrom to set them up and operate them initially before being spun off



Coordinate

in components where implementation is part of other entities' responsibilities but require coordinated approach



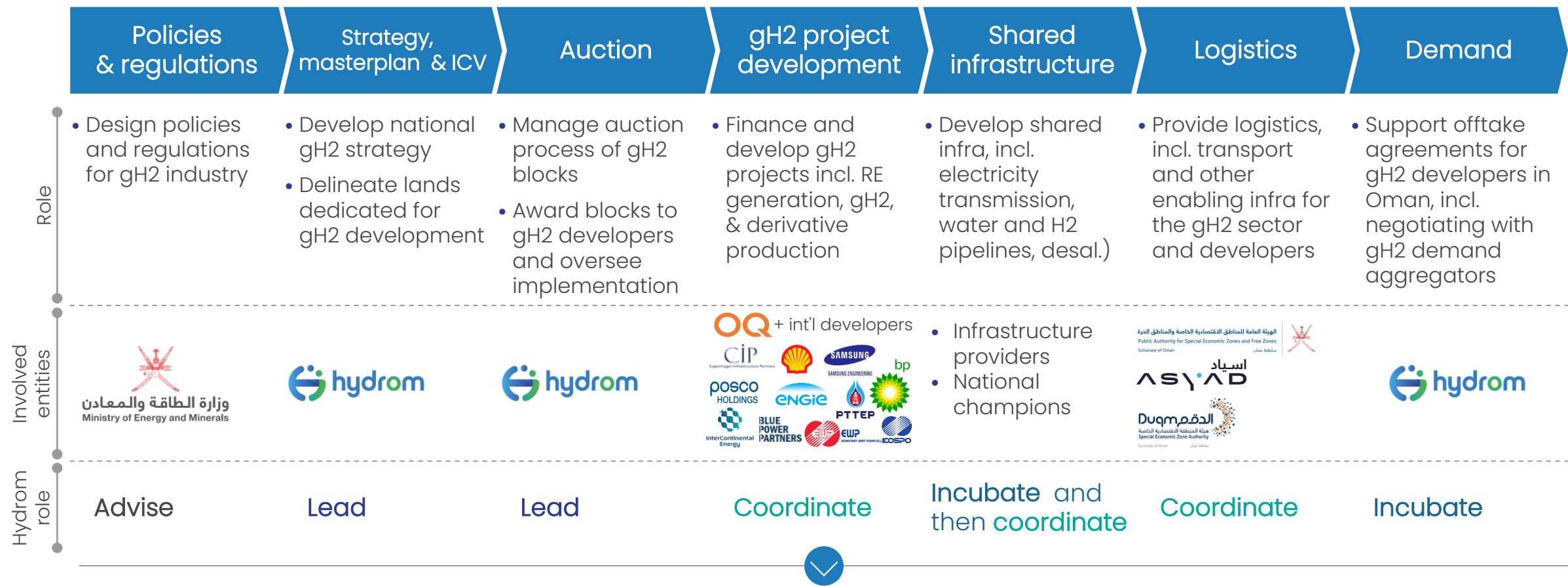
Advise

in components where other entities have core responsibilities and skills but require Hydrom's perspective

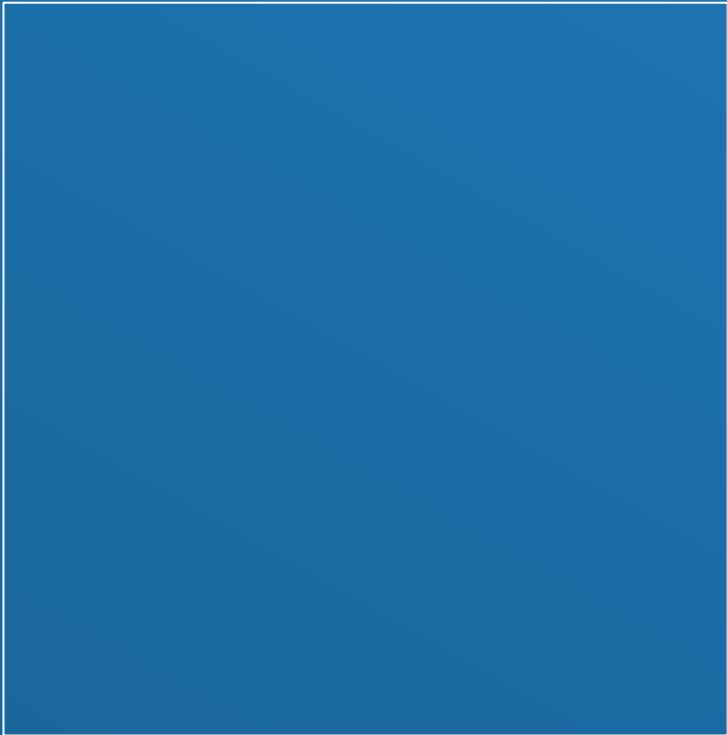


Level of responsibility

Clear sector structure and multiple roles needed to drive gH2 ecosystem in Oman, with Hydrom as central orchestrator



Hydrom as orchestrator of the gH2 sector, with the goal to maximize value creation for Oman through Oman take and In-Country Value

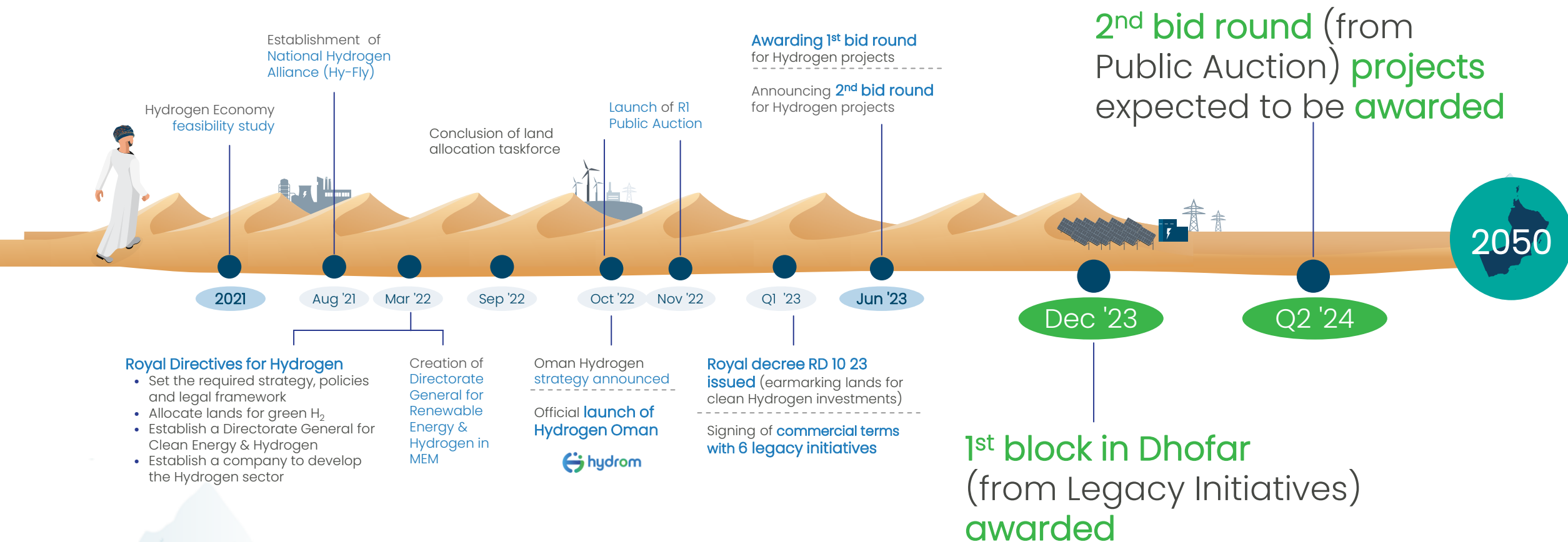


Oman's gH2 strategy
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Way Forward





Our path forward with 2 major achievements by Q2 2024



- Royal Directives for Hydrogen**
- Set the required strategy, policies and legal framework
 - Allocate lands for green H₂
 - Establish a Directorate General for Clean Energy & Hydrogen
 - Establish a company to develop the Hydrogen sector

Creation of Directorate General for Renewable Energy & Hydrogen in MEM

Oman Hydrogen strategy announced
Official launch of Hydrogen Oman

Royal decree RD 10 23 issued (earmarking lands for clean Hydrogen investments)
Signing of commercial terms with 6 legacy initiatives



Two processes being run in parallel for Public Auction and Legacy Initiatives



Public Auction (PA)

Any new investor or developer trying to start a green hydrogen project in Oman can apply for the public Auction on a competitive basis

New blocks will be auctioned on a yearly basis

Need to compete for best bid



Legacy Initiatives (LI)

Initiatives that commenced before the launch of the public auction and had some sort of land agreements in place that needed to be honored

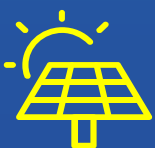
6 term sheets were signed on 14th March 2023

Given 1st dibs on land but need to match Public bids

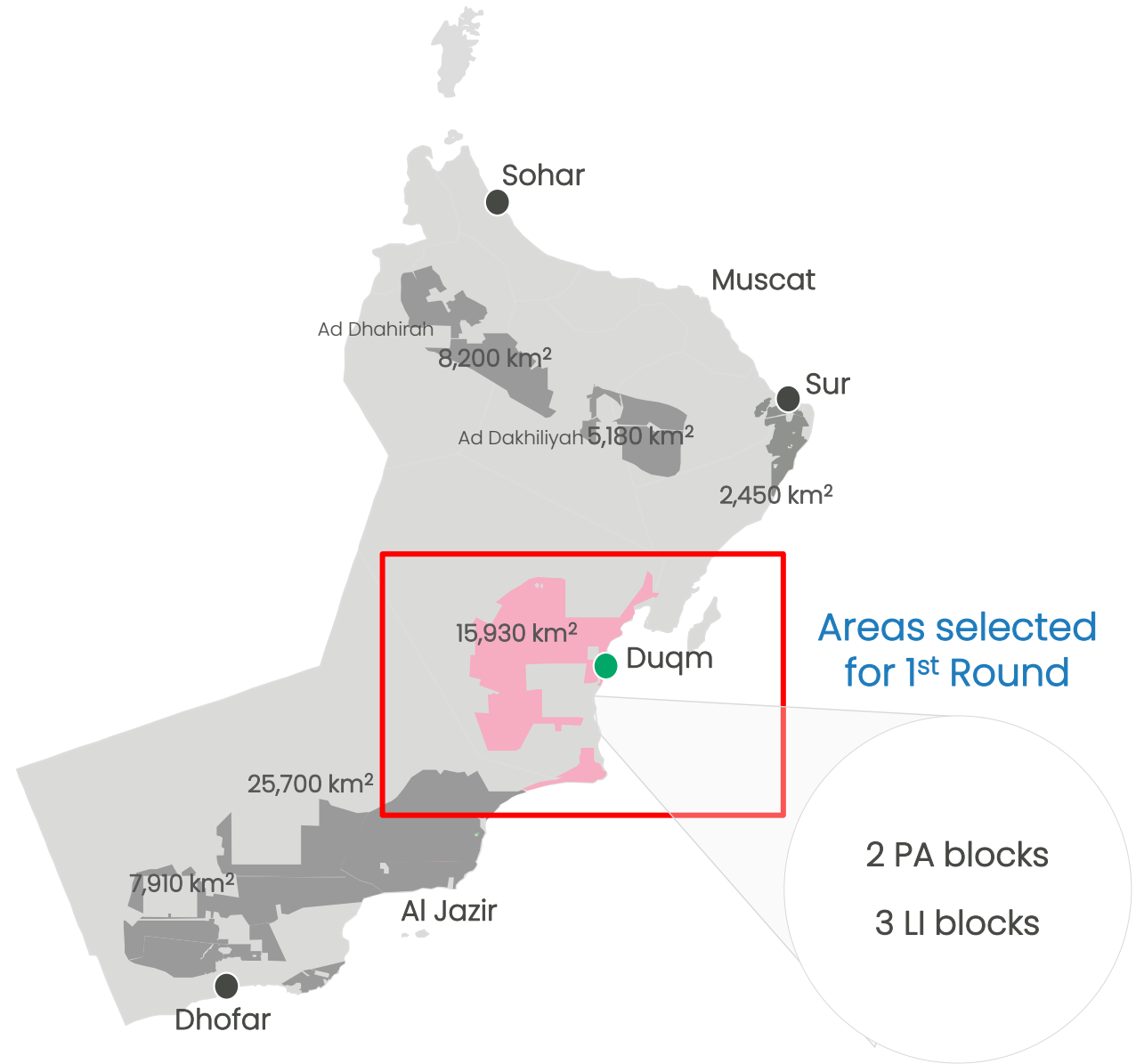
In Phase A Round 1, Hydrom put 2 blocks up for auction in the Duqm region, along with 4 legacy initiative blocks



48%
Wind capacity factor



2300 kWh/m²
Average Solar irradiation¹



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



Round 1 of auction has already been a strong success and signal of Omani gH₂ attractiveness for international players



5 continents represented

Applicants coming from all over the world with stronger representation from W. EU, GCC, S/SE Asia, South Korea, and Japan



>160 international companies

Registration registrations on the auction platform



>20 international companies

Requesting to get the access to the Request for Proposal to Round 1

5 projects in Duqm awarded in June 2023, positioning Oman as one of the world's leading gH₂ hubs

 \$30 Bn Investment













 18 GW Renewables' capacity

 750 ktpa H₂ production

1st Public Auction round: 2 projects awarded
(out of 2 auctioned)

1	Amnah	 <small>Copenhagen Infrastructure Partners</small>  	 1 st Jun
2		      	 (21 st Jun)

Legacy Initiative process: 3 projects awarded so far
(out of 6 term sheets signed)

1		    	 1 st Jun
2			 1 st Jun
3		  	 (21 st Jun)



RES = Renewable Energy Sources; Lis = Legacy Initiatives

In December 2023, 1st project in Dhofar (Legacy Initiative) was awarded, setting Oman on target to meet 2030 ambitions



Marubeni

SAMSUNG

SAMSUNG C&T



2023 Closing



\$38 Bn

Investment



22.5 GW

Renewables' capacity



925 ktpa


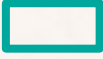
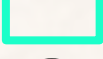

H2 production

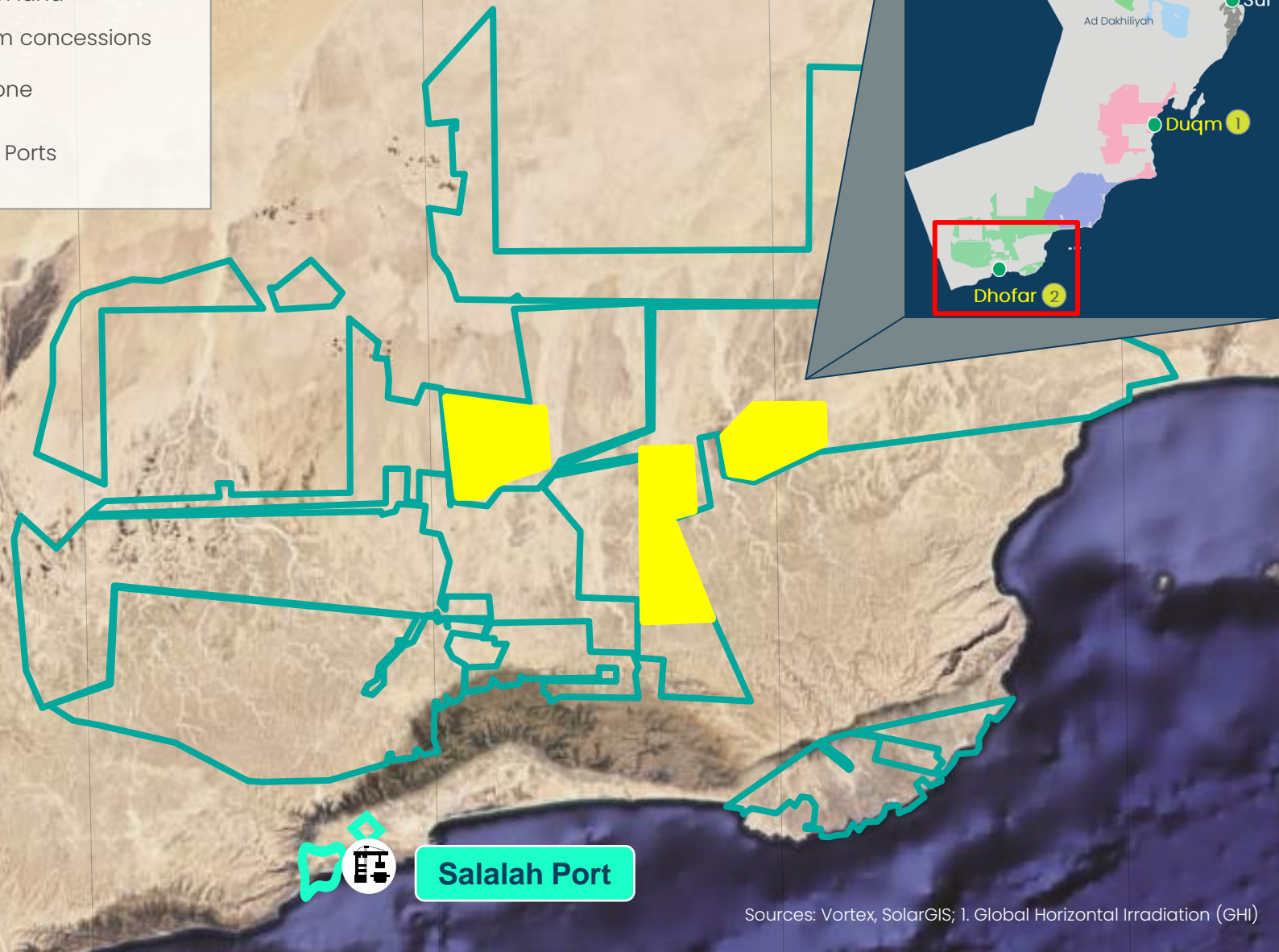
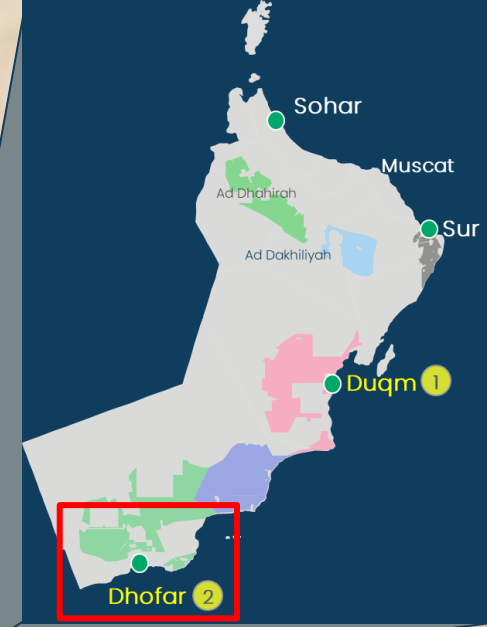



6

Project Development Agreements

Legend

-  Selected Round 2 public auction land
-  Hydrom concessions
-  Free Zone
-  Target Ports



 **Salalah Port**

In Phase A Round 2, Hydrom offers 3 Blocks for auction in the Dhofar region

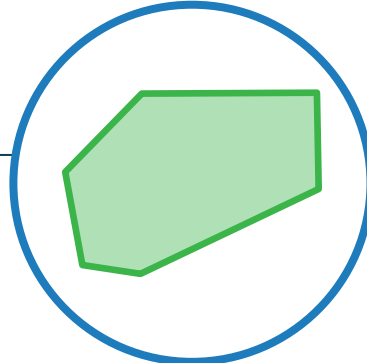
 **+180** registrations on the auction platform

 **+40** granted access to public RFQ

Sources: Vortex, SolarGIS; 1. Global Horizontal Irradiation (GHI)



Phase A Round 2 | High level overview of block details

	 Block Z2-02	 Block Z2-06	 Block Z2-07
Size	400 Km ²	341 Km ²	341 Km ²
Avg. wind speed (m/s)	7.5 – 9.7 	7.5 – 8.3 	6.8 – 7.4 
Avg. solar irr. (kWh/m ²)	2440	2411	2415
Topography	Complex	Simple	Mixed

Note: Buffer zones not required within the block area



Phase A Round 2 | Auction Process and Timeline



Note: dates are subject to change

RFQ = Request for Qualification; DL = Deadline; SOQ = Statement of Qualification; RFP = Request for Proposal; Note: Round 2 timeline is indicative and might have minor changes; Consultations and 1-to-1 Q&As sessions will be organized by Hydrom and bidders;; 2. If SOQ submission will occur after SOQ Target Submission Date, qualification notification will not be guaranteed before RFP release; 3. RFP and project docs will be released only to qualified applicants



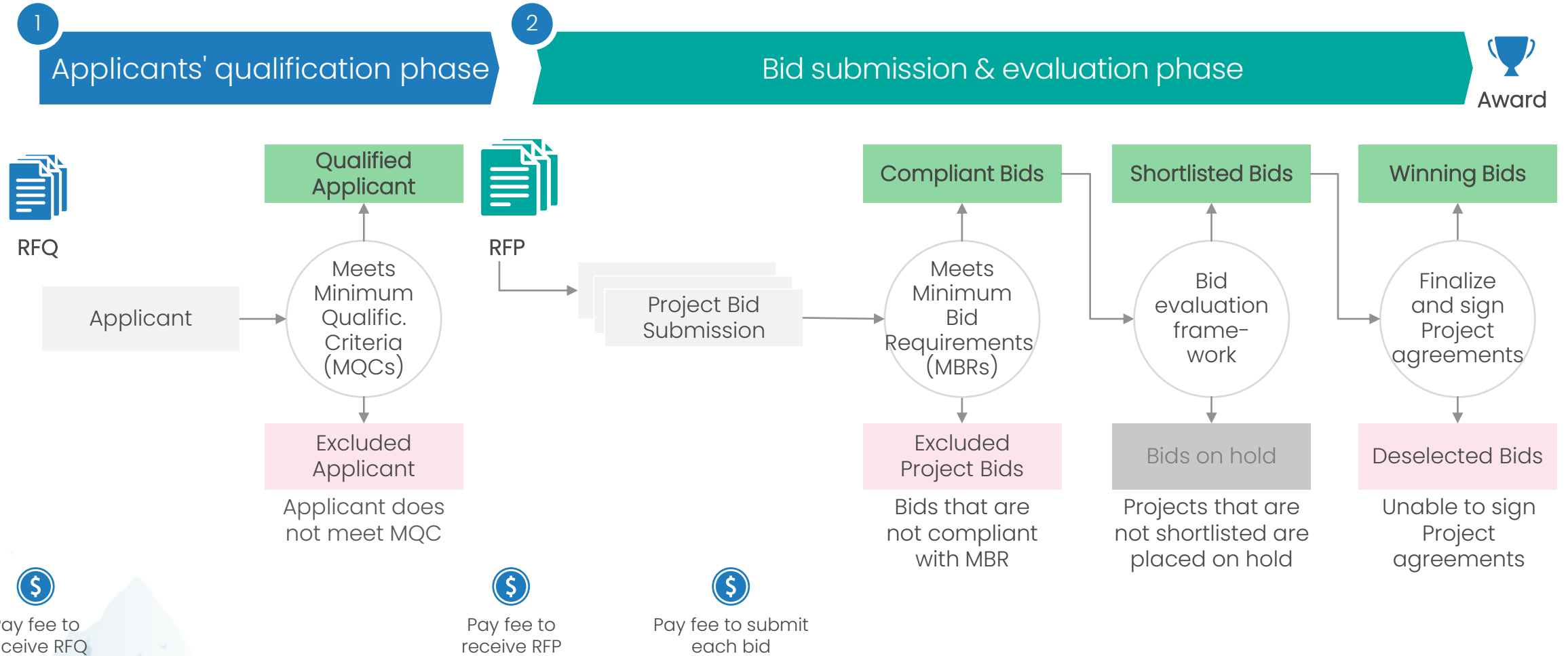
Phase A Round 2 | Overview of key project parameters, details will be shared in RFQ / RFP

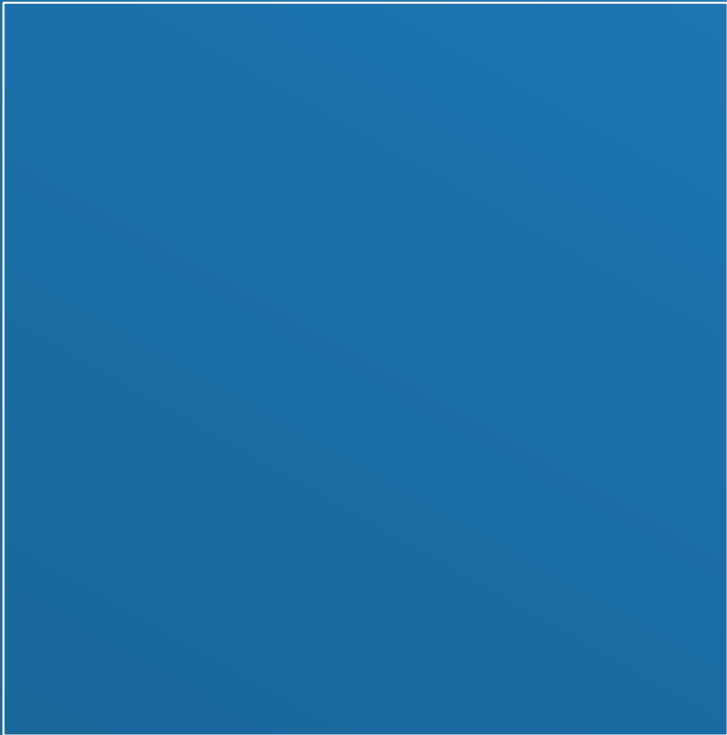
Parameter	Detail
Duration	<ul style="list-style-type: none">• 47 years from project development & land sub-usufruct award
Oman take	<ul style="list-style-type: none">• Land fees to be paid for the used part of land once production starts• Base royalties and Upside fee• Corporate tax applies• Back-in right for Beneficiary to acquire share in Project Company
Scope	<ul style="list-style-type: none">• Integrated projects to produce Green H₂ & potentially derivatives (RES generation, H₂ production, derivatives conversion, offtake)• A minimum target H₂ production will be required• Infrastructure to be shared between projects
Incentives	<ul style="list-style-type: none">• Reduced land fees in development & construction phase• ICV incentive fee to decrease with increasing level of Omanization
Conditions	<ul style="list-style-type: none">• Offtake of electricity not allowed in general

Note: RES = Renewable Energy Sources



Phase A Round 2 | Overview of auction process



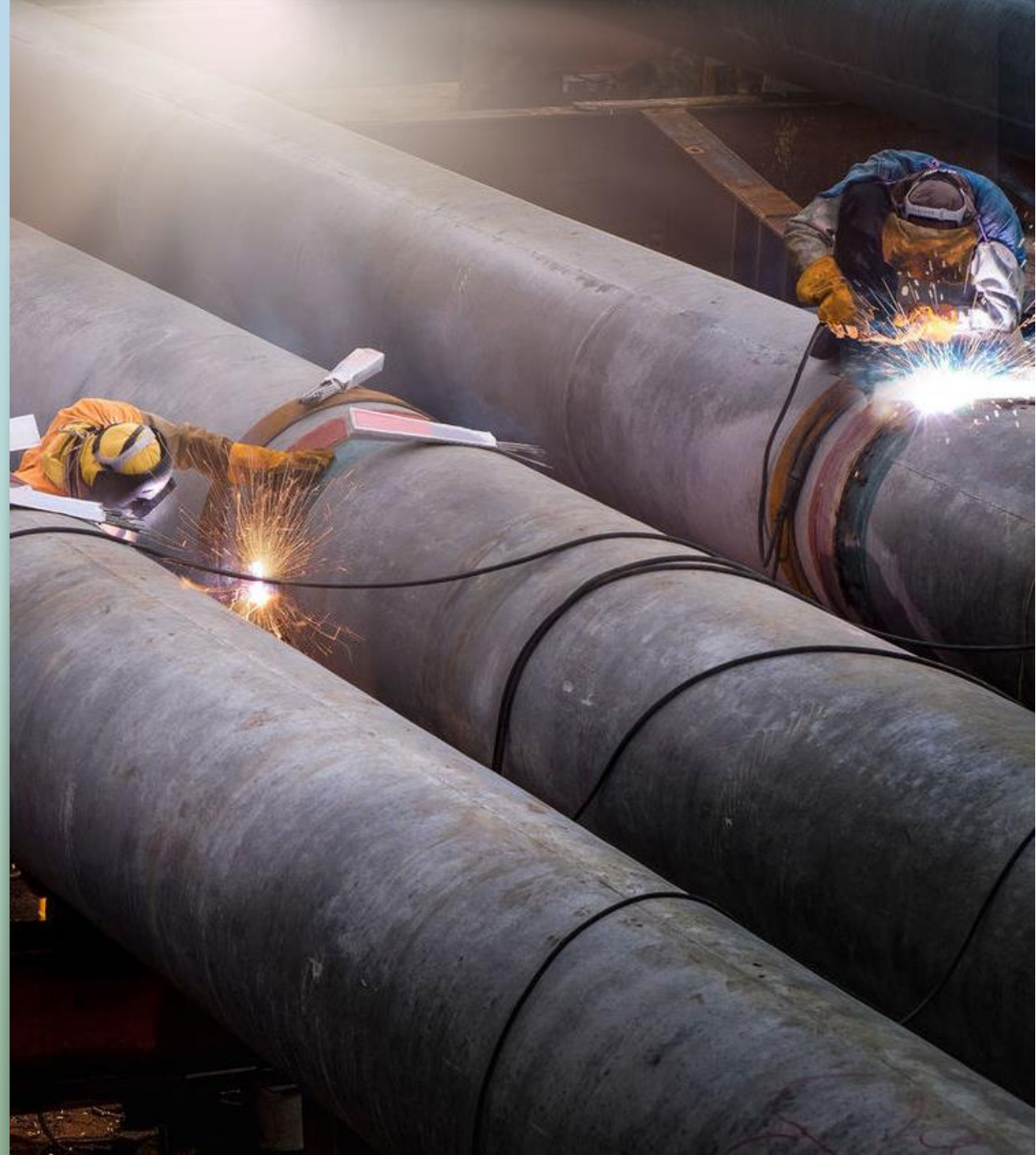


Oman's gH2 strategy
Oman's gH2 journey
Shared infrastructure
Localization
Investing in Oman
Way Forward

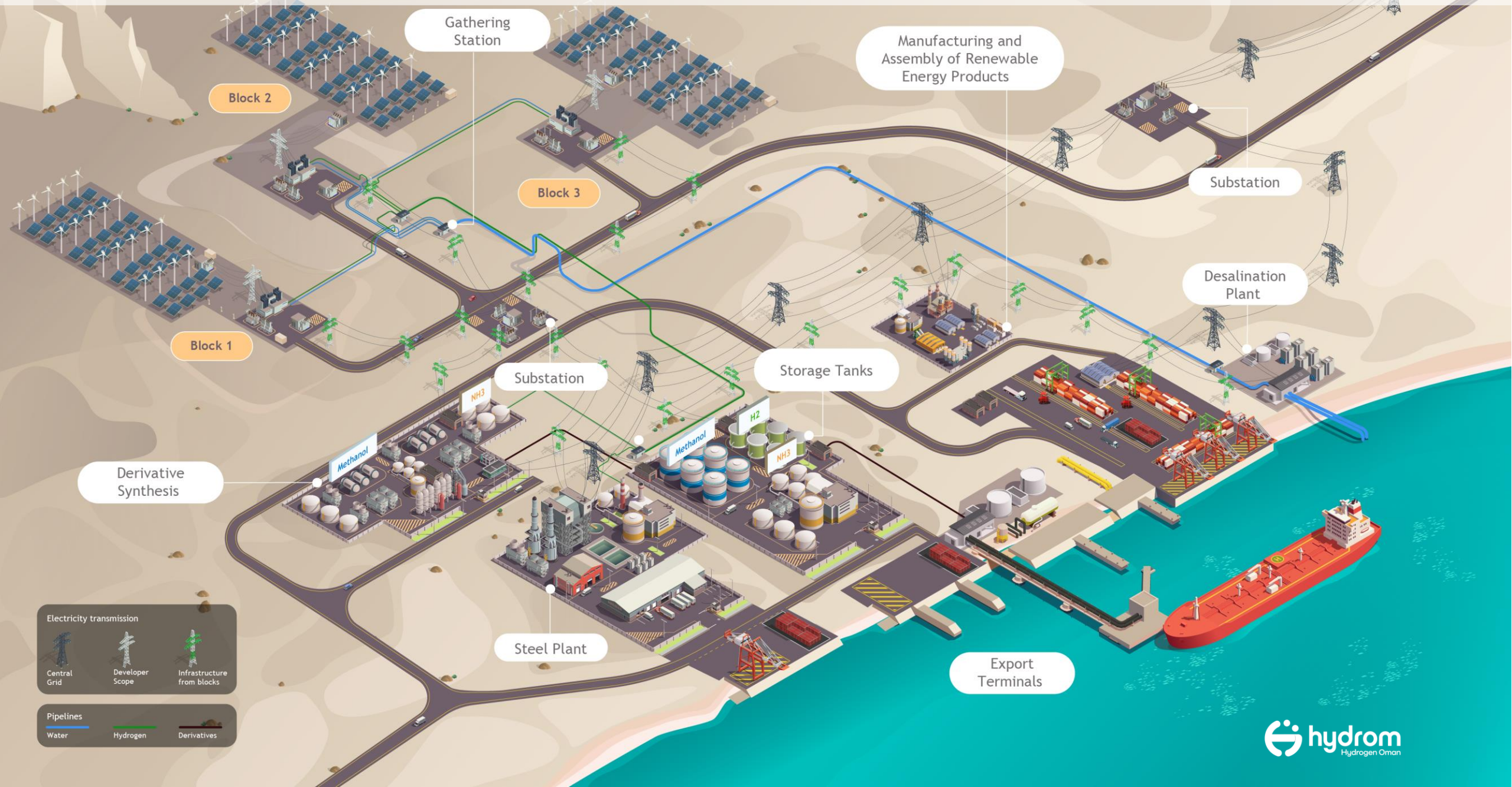


Oman expects to support gH₂ projects making a shared infrastructure available for common use

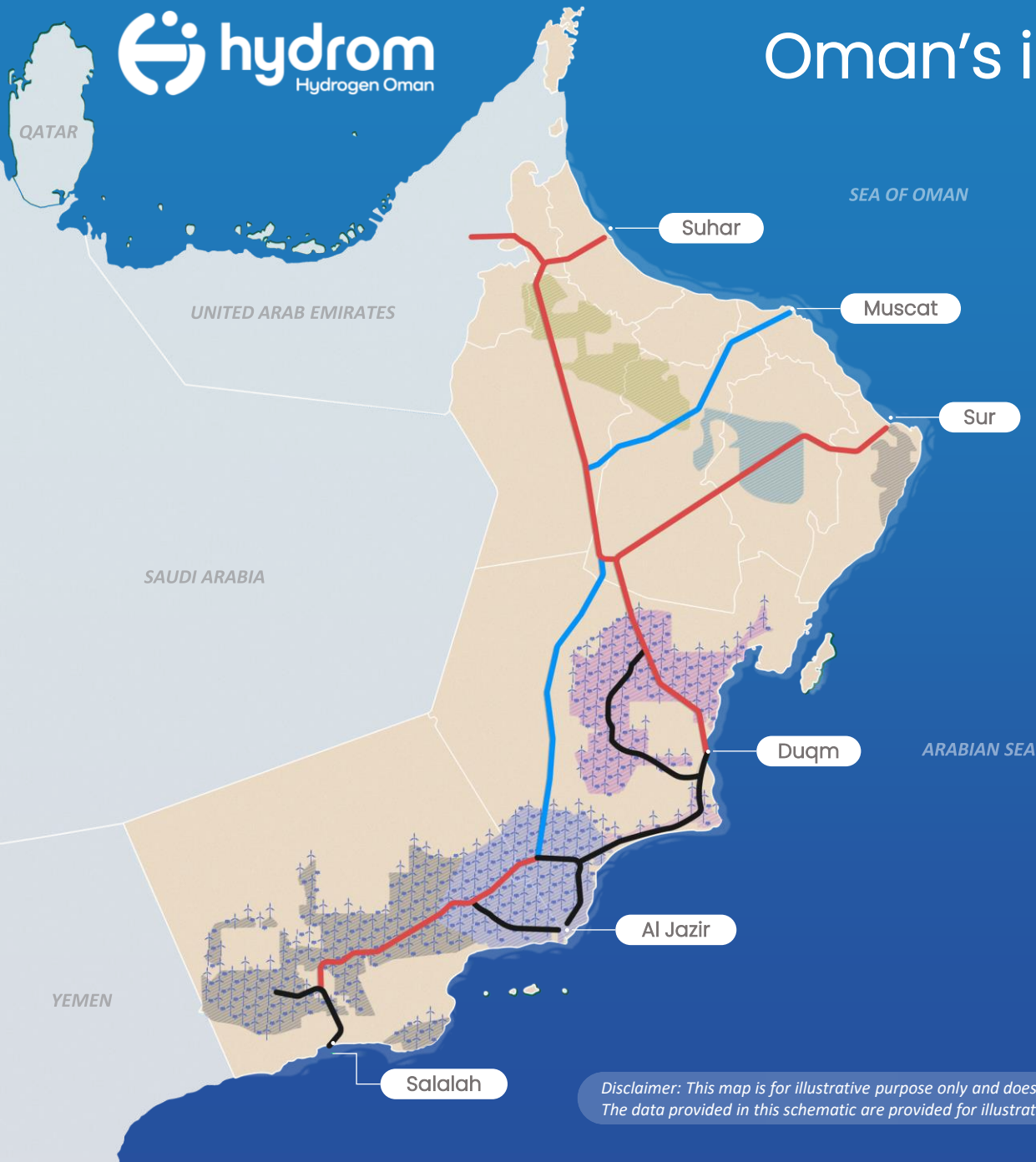
- Optimal configuration and conditions being further assessed and defined through **technical studies**
- **Business model and regulatory framework** updates will allow gH₂ Developers to partake in the Shared Infrastructure deployment



Oman will develop a fully integrated hydrogen ecosystem



Oman's integrated hydrogen ecosystem



- > Key **economic and industrial zones** of Oman to be **connected** via an infrastructure network
- > Approximately **2000 km** of low carbon **Hydrogen pipelines** spread across Oman
- > **Spurring localization of key industries** and forward connected industries in existing and new industrial zones

— 2030 | — 2040 | — 2050

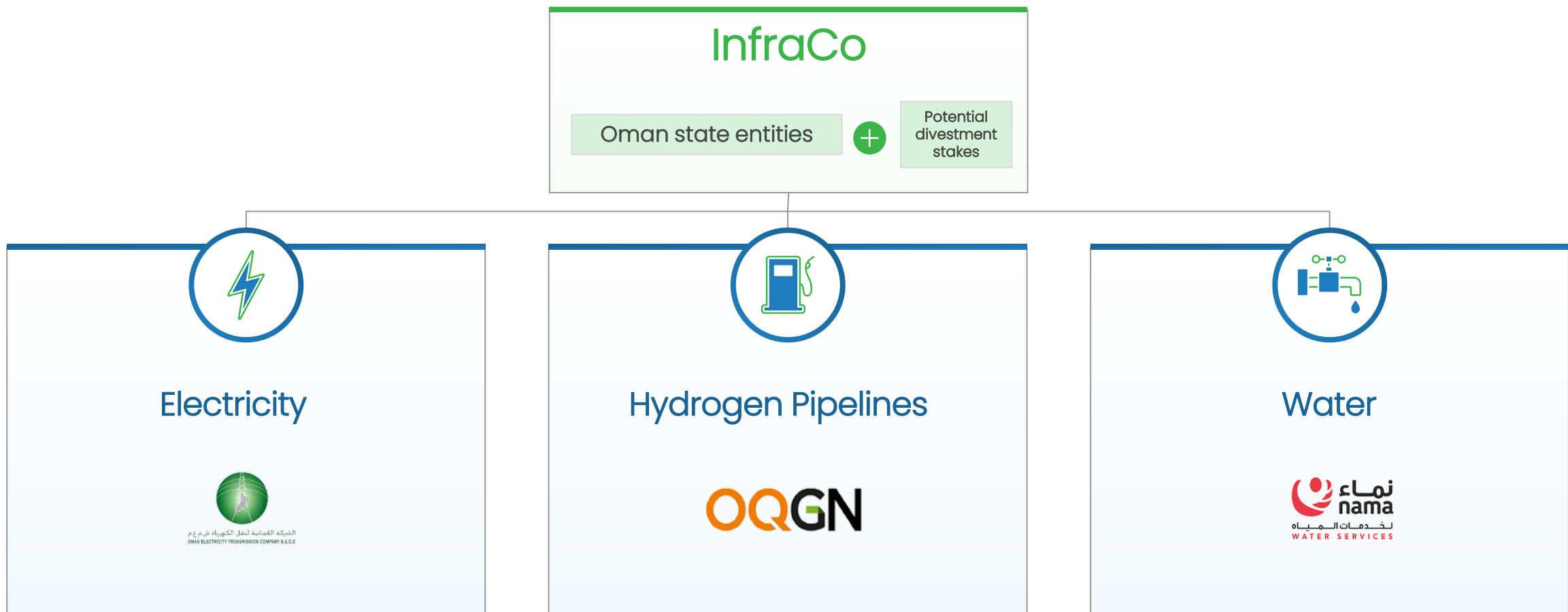
• Green Hydrogen Hub |  Wind and Solar plants

Disclaimer: This map is for illustrative purpose only and does not necessarily accurately reflect international borders. The data provided in this schematic are provided for illustration purposes only. Hydrom is not responsible for the misuse or misinterpretation of the data.

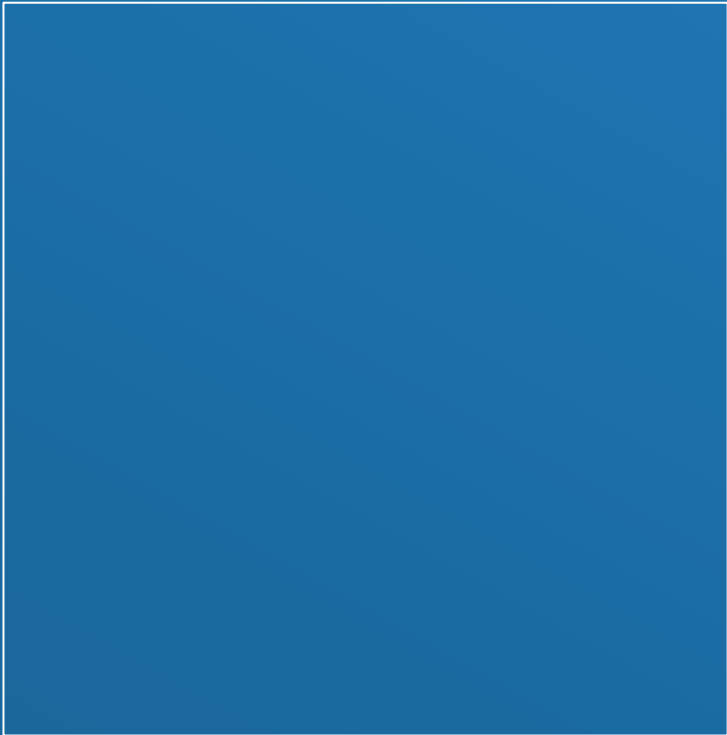


InfraCo. has been established in December 2023 with national champions allocated for each of the three infrastructure packages,

Illustrative



Source: Expert input; team analysis



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ICV & Domestic Industry Development are key goals of Oman in its path to developing a green hydrogen ecosystem

In Country Value (ICV)

Domestic Industry Dev.

Local Employment

Education & research

Domestic sourcing¹

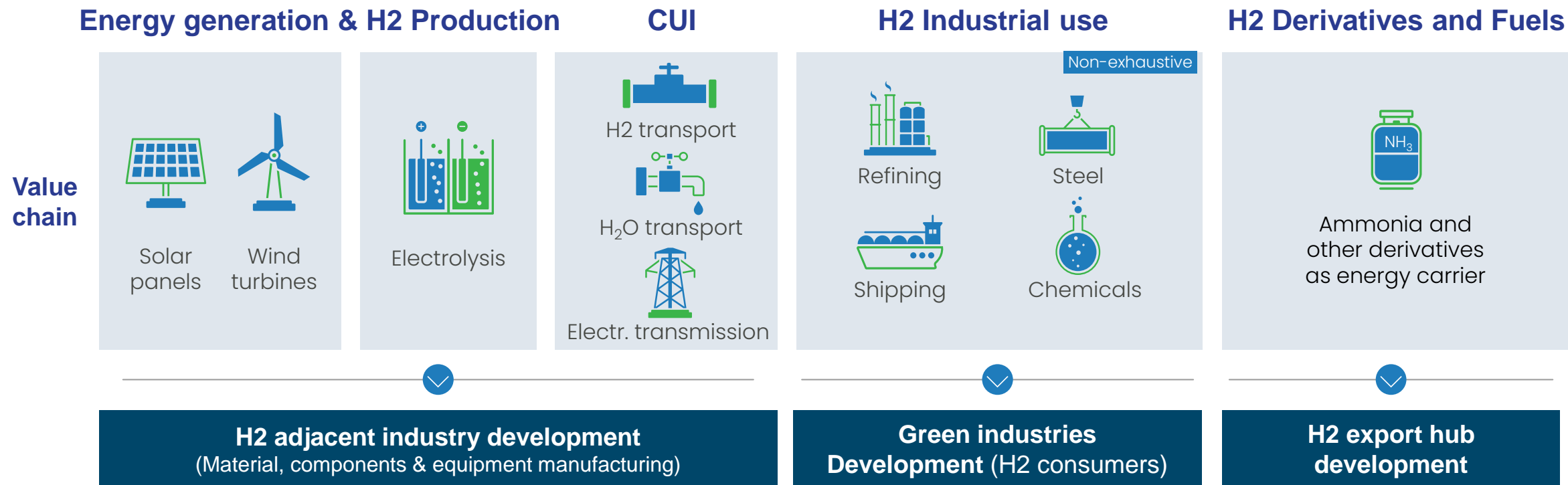
Upstream industries development

Downstream industries development





Opportunities exist across green H2 value chain in Oman



Opportunities across H2 value chain



Component & equipment manufacturing can be on-shored (e.g., electrolyzers)



Respective raw materials production can be developed locally (e.g., glass, steel)



Decarbonized products to be sold for export



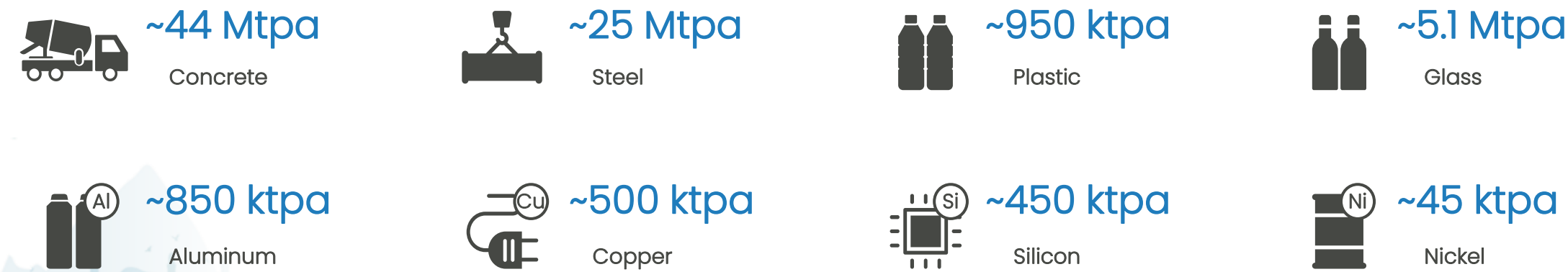
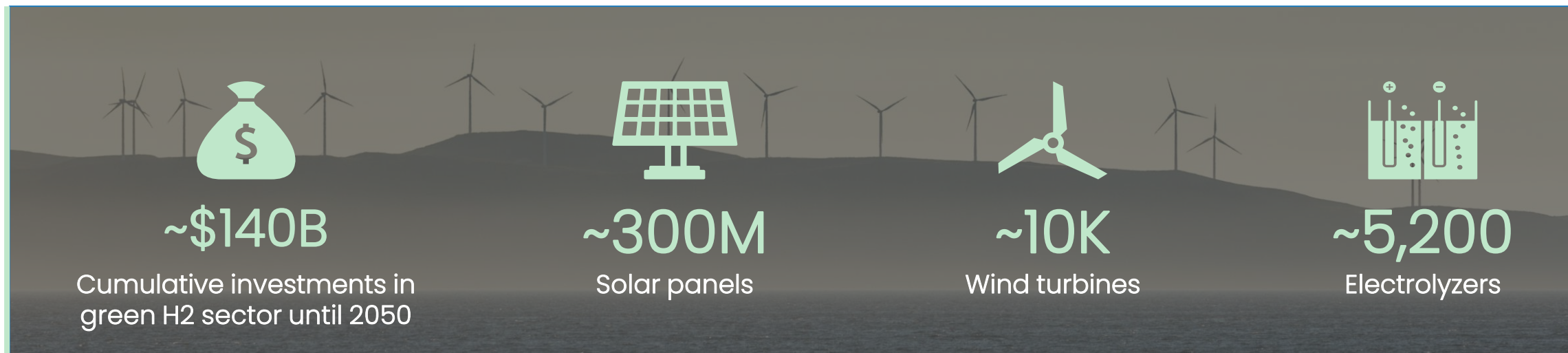
Decarbonized products to be utilized locally



Oman can become a H2 commercial & logistics hub



Massive installation of H2 assets requiring production of raw materials & components from adjacent industries





Short- and medium-term localization of opportunities

Short-term opportunities

Up to ~5 years from today



Wind turbine manufacturing of components (eg tower segments, blades)



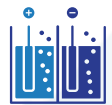
Iron ore pellet and hot briquetted iron production



Logistic solutions, services and infrastructure



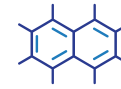
Solar PV assembly



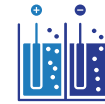
Electrolyzer assembly

Medium-term opportunities

5+ years from today



eFuel production



Electrolyzer manufacturing



Green Steel production

Support the development of those key low carbon technologies for Oman and rest of the world



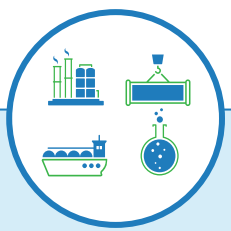
Four key enabling factors to capture the opportunities to localize the business in Oman

Illustrative

Opportunities



H2 adjacent industry dev.



Green industries Development



H2 export hub develop.

Enablers / requirements

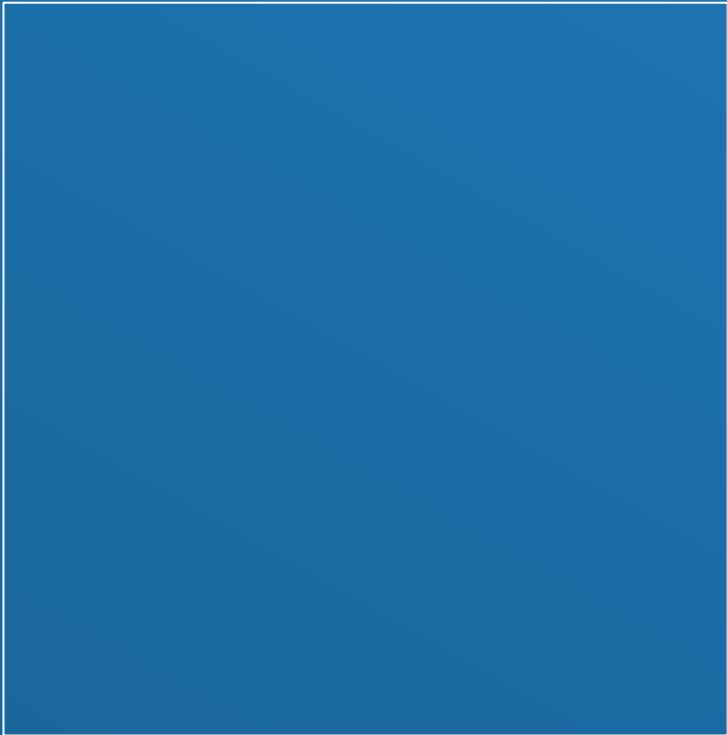
Supporting Infrastructures

Regulation & Incentives

Human talents & capabilities

Business Ecosystem





Oman's gH2 strategy

Oman's gH2 journey

Shared infrastructure

Localization

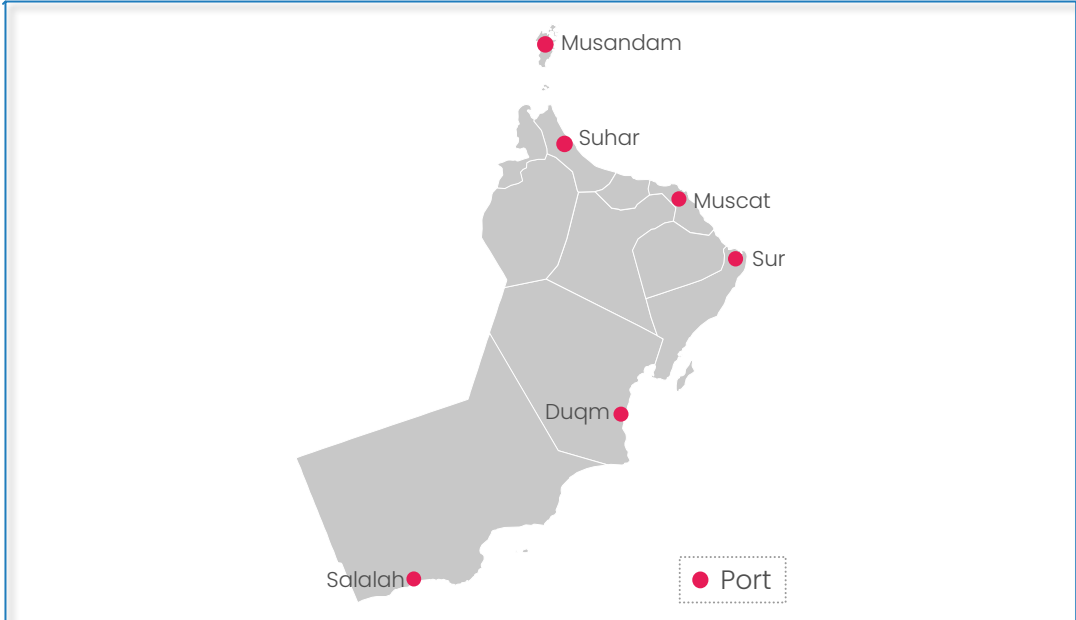
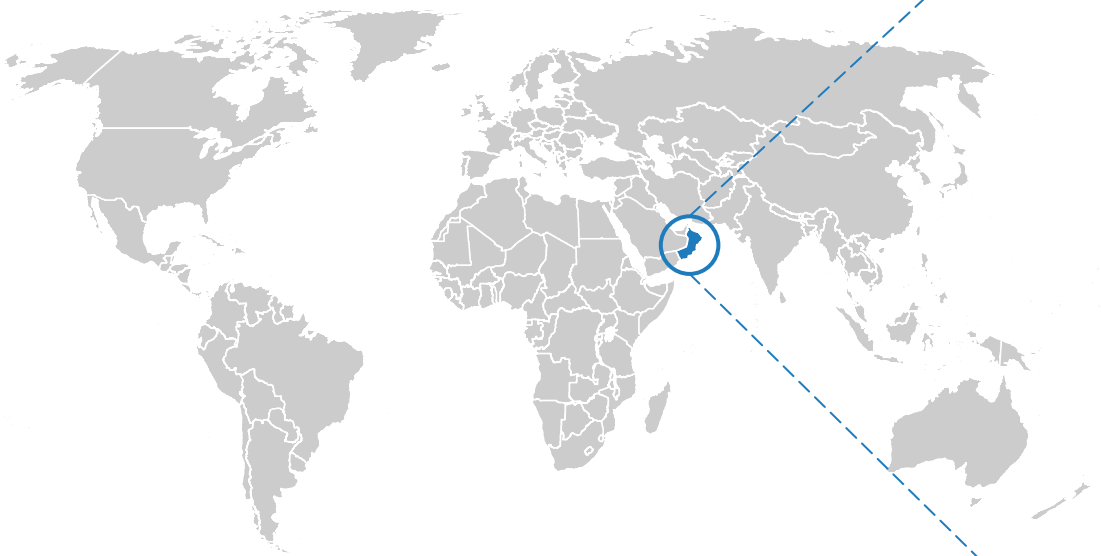
Investing in Oman

Way Forward





Economically and politically stable, Oman is an attractive destination for investors with a highly competitive offer



5.1M
population in 2023



309,500 km²
area



\$88B
GDP of 2021



Top 35%
countries by political
stability index¹

1. Oman political stability index 0.51 (2021) on a scale of -2.5 to 2.5. Political stability index includes corruption perceptions, political rights, civil liberties, competitiveness, cost of starting a business, shadow economy. Source: National Centre for Statistics and Information in Oman, The Global Economy

5

Oman Value Drivers to succeed in the gH₂ business



World-class resources & strategic location

The Sultanate of Oman, strategically located between two key H₂ demand centers (Europe & Asia) has earmarked 50'000 km² of land with prime natural resources



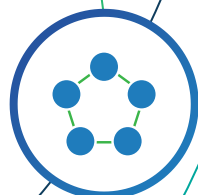
Business friendly environment

Oman is economically & politically stable, with long-term partnership in the energy sector and is home to a young and talented local workforce



Available tier-1 infrastructure & logistics

International companies looking to localize their business can get access to developed infrastructures & connections to international trade routes



Open, structured & transparent process to develop H₂ projects

The Sultanate has defined an open and transparent auction process to award H₂ projects supported by a well-defined sector governance



Results oriented and fast-moving Omani H₂ sector

5 projects awarded from the first round of Public Auction & Legacy Initiatives in a record time, positioning Oman as one of the world's leading gH₂ hubs



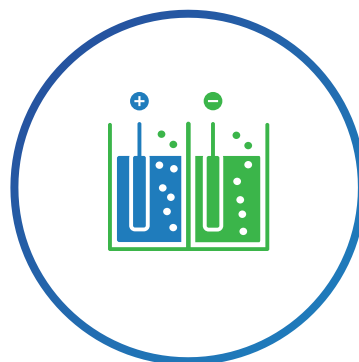
Five potential roles for international players to play in Oman and contribute to the growth of green H₂ economy



H2 project developers



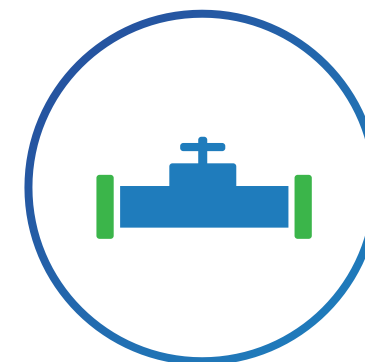
H2 financial partners



H2 equipment providers (OEMs)



H2 industrial off-takers



Infrastructure developers



Production equipment



Technical skillset



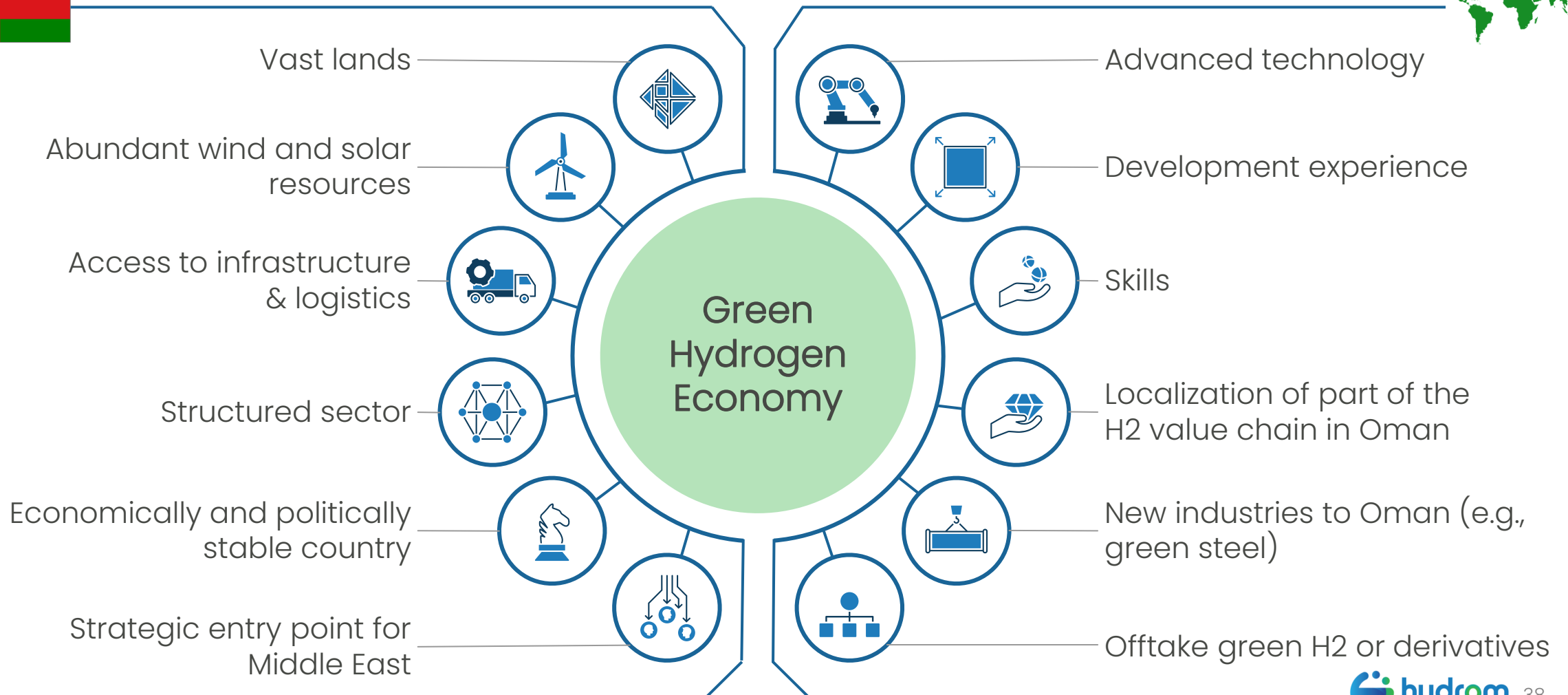
R&D capabilities

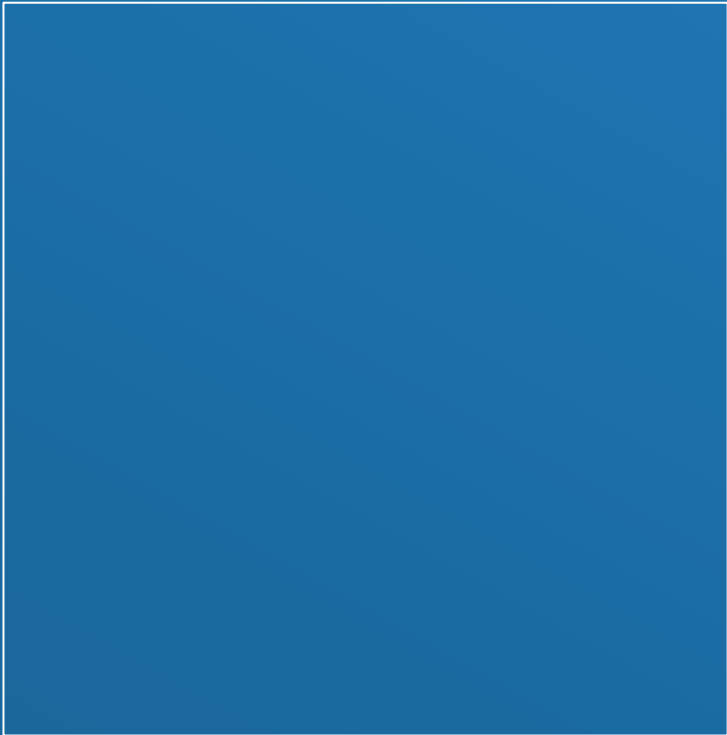


Knowledge-based workforce



Oman and Global Partners can have fruitful collaborations to help build a green hydrogen economy



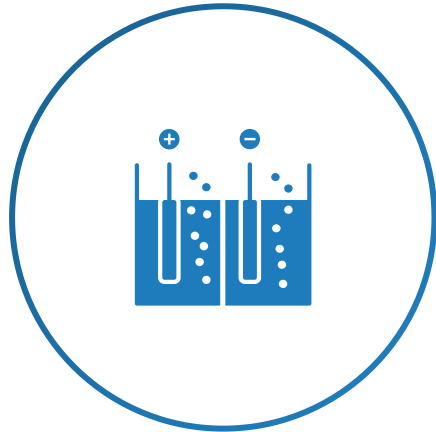


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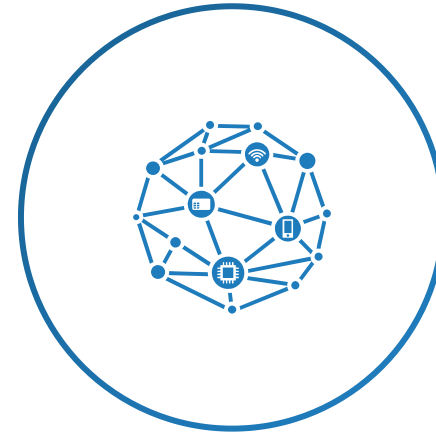




Three strategic objectives for Hydrom in the next 5 years to fulfill its orchestrator role of the gH2 sector



Award blocks to meet production targets and support gH2 projects move forward



Actively support the creation of an enabling ecosystem (shared infrastructure, logistics, capabilities)

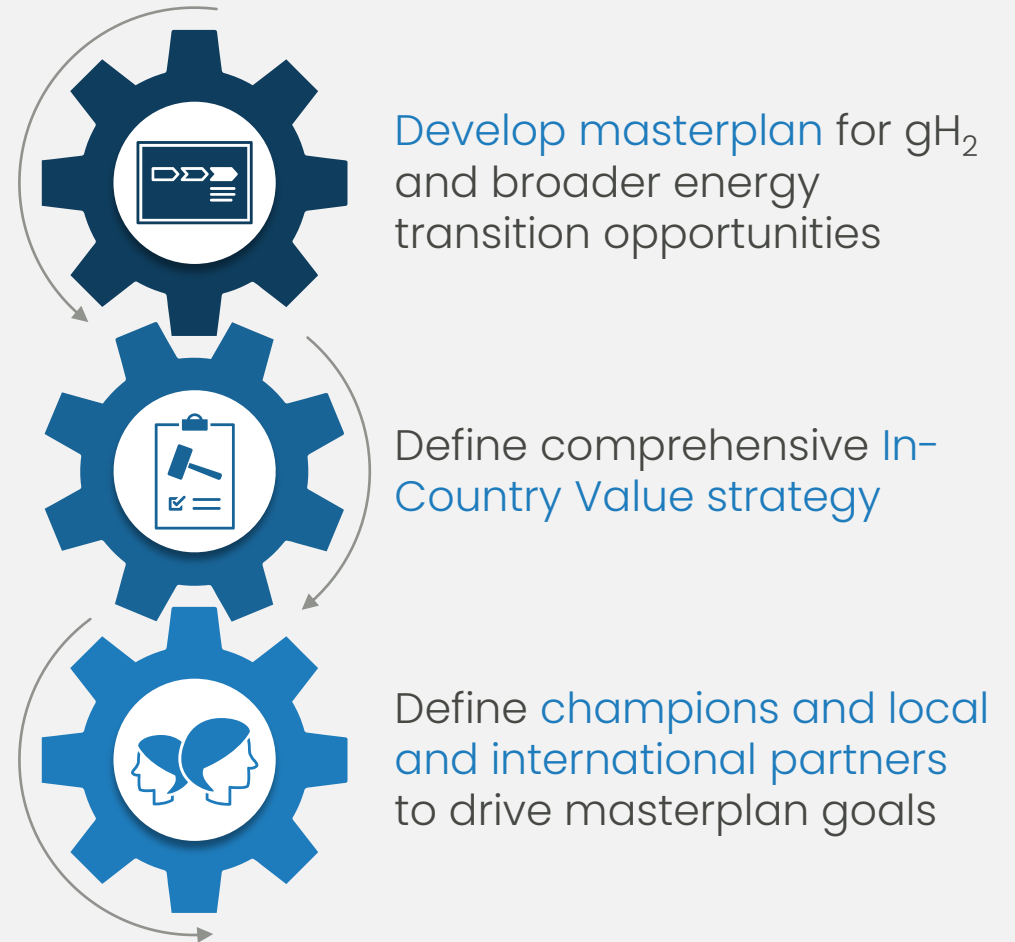


Maximize value creation for Oman through upstream and downstream industries localization



Oman can decarbonize its economy while capturing growth opportunities offered by the transition

3 key steps required to unlock Oman energy transition opportunities



1. National In-Country Value
Source: Team analysis



Energy transition can unlock multiple opportunities across industries for Oman

Industrial and technological hub



Oman can provide abundant access to cheap energy, particularly gH₂ and low-cost power

This will become a key input for industries with both flexible and less flexible power demand (e.g., data mining and green steel, respectively)

Mining hub



Mining industry creating a positive feedback loop

- Operations powered by renewable energy
- Resulting minerals used in renewables value chain, increasing deployment

Bunkering & logistics hub



Opportunity for Oman to become a hub for shipping given

- It will be producing hydrogen & derivatives
- It will have ports located along major trade routes

Agricultural hub



Excess electricity and water from gH₂ production leveraged to increase Oman's agricultural output

Clean-powered greenhouses increasing throughout Oman, along with crops and cattle

Tourism hub



Sustainable tourism operations flourishing throughout the country as suppliers decarbonize their operations (e.g., with zero-emission buildings, circular practices) and natural landscapes are preserved

Oman can become a global sustainability leader





Hydrom will be honored to meet international players and provide further information on gH₂ opportunities in Oman



H₂ project developers



H₂ financial partners



H₂ equipment providers (OEMs)



H₂ industrial off-takers



Infrastructure developers



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Sultanate of Oman



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08:00 – 17:00 (GST)



THANK YOU
 hydrom
Hydrogen Oman

Together, we deliver a green,
resilient and sustainable future

