



OMAN'S

GREEN

HYDROGEN REVOLUTION



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INTRODUCTION

The global energy landscape is undergoing a significant transformation, driven by the urgent need to combat climate change and transition to a sustainable future. Green hydrogen, produced through the electrolysis of water using renewable energy sources, has emerged as a beacon of hope in this endeavor. Oman, blessed with abundant renewable resources, a strategic location, and a steadfast commitment to sustainability, is poised to become a global leader in the green hydrogen revolution. This comprehensive guide explores the multifaceted investment opportunities within Oman's burgeoning green hydrogen sector, offering valuable insights for discerning investors seeking to contribute to a cleaner and more prosperous future.

WHY OMAN? A HAVEN FOR GREEN HYDROGEN INVESTMENT

Oman's allure as a green hydrogen investment destination is anchored in several compelling factors:

- 1. World-Class Renewable Resources:** Oman boasts exceptional solar and wind resources, providing a consistent and reliable energy source for green hydrogen production. The country enjoys high solar irradiation levels, averaging **2,300 kWh/m² annually**, and experiences average wind speeds exceeding **8 meters per second** in certain coastal and mountainous regions. These favorable conditions ensure cost-competitive green hydrogen production through electrolysis.
- 2. Ample Land Availability:** Oman possesses vast tracts of land suitable for large-scale renewable energy projects, ensuring sufficient capacity to meet its ambitious green hydrogen production targets. The government has proactively allocated **50,000 square kilometers** for such projects, demonstrating its commitment to fostering the growth of the green hydrogen sector.
- 3. Strategic Location and Infrastructure:** Oman's strategic location on major shipping routes, coupled with its well-developed ports and logistics infrastructure, facilitates the efficient export of green hydrogen and its derivatives to key markets in Europe and Asia. The country's ports at Sohar, Duqm, and Salalah are well-equipped to handle the export of green hydrogen and its derivatives, ensuring seamless access to global markets.
- 4. Existing Energy Expertise:** Oman's extensive experience in the oil and gas industry provides a strong foundation for developing the green hydrogen sector. The country's skilled workforce and existing infrastructure can be leveraged to support the production, storage, and transportation of green hydrogen, minimizing the learning curve and accelerating project development.
- 5. Government Support and Attractive Policies:** The Omani government has demonstrated a strong commitment to developing the green hydrogen sector through proactive policies and initiatives. The establishment of Hydrogen Oman (Hydrom) as a dedicated entity to oversee the sector's development, along with the implementation of a transparent auction process for land allocation, underscores the government's supportive approach. Oman also offers attractive investment policies, including tax incentives and streamlined regulatory processes, creating a favorable environment for investors.

INVESTMENT OPPORTUNITIES ACROSS THE GREEN HYDROGEN VALUE CHAIN

Oman's green hydrogen sector presents a wealth of investment opportunities across the entire value chain, from production to utilization.

1. **Green Hydrogen Production Assets:** Investments in solar and wind farms, electrolyzers, and associated infrastructure are crucial for scaling up green hydrogen production. Oman's abundant renewable resources and supportive policies make it an attractive destination for such investments. The estimated investment required in renewable energy capacity and electrolyzers to meet Oman's 2030 target is around USD 20 billion, representing a significant opportunity for investors in renewable energy technologies and equipment.
2. **Technology and Innovation:** Oman is actively promoting research and development in the green hydrogen sector, creating opportunities for technology providers and innovators to contribute to the advancement of the industry. The government's focus on fostering a culture of innovation and supporting research initiatives opens doors for investors in cutting-edge technologies and solutions that can enhance the efficiency and cost-effectiveness of green hydrogen production and utilization.
3. **Infrastructure Development:** The development of shared infrastructure, including pipelines, transmission lines, and storage facilities, offers investment opportunities for companies specializing in infrastructure development and management. The estimated investment in shared infrastructure is around USD 3 billion, providing a substantial opportunity for investors in the infrastructure sector.
4. **Logistics and Services:** The growing green hydrogen sector will require a range of logistics and support services, creating opportunities for companies in these areas to contribute to the industry's growth. This includes opportunities in transportation, storage, maintenance, and other ancillary services, catering to the diverse needs of the green hydrogen ecosystem.

OPPORTUNITIES IN GREEN HYDROGEN DOWNSTREAM

Green hydrogen's versatility extends beyond its role as a clean energy source. It serves as a crucial feedstock or fuel in various industries, including steel, cement, fertilizers, and transportation. Investment opportunities abound in developing and expanding these industries, capitalizing on Oman's burgeoning green hydrogen production capabilities. This presents a unique opportunity for investors to participate in the decarbonization of these sectors and contribute to a sustainable industrial ecosystem.

OMAN'S GREEN HYDROGEN SUCCESS STORY: AWARDED PROJECTS

Oman's commitment to green hydrogen is evident in the successful awarding of eight projects, attracting over USD 30 billion in investments. These projects, strategically located in Duqm and Salalah, are set to produce a combined capacity of over 3 million tons of green hydrogen per annum. This remarkable achievement underscores the strong momentum and investor confidence in Oman's green hydrogen sector.

Project Name	Project Developers	Capacity of Green Hydrogen (KTPA)	Stage of the Project
Green Energy Oman (GEO)	Shell, EnerTech, OQ, InterContinental Energy	1,800	Contract signed, phases planned
Green Hydrogen project by POSCO-ENGIE	POSCO, ENGIE	200	Contract awarded, construction to start 2027
Amnah Green Hydrogen	Copenhagen Infrastructure Partners, Blue Power Partners, and Al Khadra	200	Awarded
Green Hydrogen Project by Actis and Fortescue	Actis, Fortescue	200	Awarded
Green Hydrogen Project by EDF Group, J-POWER, Yamna	EDF Renewables, J-POWER, YamnaCo Ltd	178	Awarded
HyPort Duqm Project	DEME Concessions, OQ	980 (330 + 650)	Awarded, phased construction
BP Oman Green Hydrogen	BP	150	Planning and designing

ECONOMIC IMPACT AND BENEFITS

Oman's green hydrogen ambitions are not solely driven by environmental concerns but also by the substantial economic benefits the sector promises to deliver. The development of a robust green hydrogen industry is expected to:

1. **Stimulate Economic Growth:** Green hydrogen projects will attract substantial foreign direct investment (FDI), estimated to reach over USD 50 billion by 2030. This influx of capital will fuel economic growth, create new industries, and generate long-term employment opportunities.

2. **Create Jobs:** The green hydrogen sector is projected to create thousands of direct and indirect jobs across various skill levels, from engineers and technicians to logistics and support staff. This will contribute to reducing unemployment and enhancing the skills and capabilities of the Omani workforce.
3. **Boost GDP:** The green hydrogen industry is expected to contribute significantly to Oman's GDP, with estimates suggesting a potential increase of up to 3% by 2050. This will enhance the country's economic resilience and reduce its dependence on oil revenues.
4. **Enhance Energy Security:** Green hydrogen can help diversify Oman's energy mix and reduce its reliance on fossil fuels, ensuring a more secure and sustainable energy future.
5. **Promote Environmental Sustainability:** The production and use of green hydrogen will significantly reduce carbon emissions, contributing to Oman's commitment to achieving net-zero emissions by 2050 and mitigating the impacts of climate change.

CHALLENGES AND MITIGATION STRATEGIES

While Oman's green hydrogen prospects are promising, several challenges need to be addressed to ensure the successful realization of its vision:

1. **Scaling up Production:** Scaling up green hydrogen production to meet ambitious targets requires significant investments in renewable energy capacity and electrolyzer technology. Oman is actively seeking partnerships with international investors and technology providers to accelerate the development and deployment of these technologies.
2. **Developing Export Markets:** Securing long-term offtake agreements and establishing reliable export infrastructure are crucial for the success of Oman's green hydrogen export ambitions. The government is working closely with potential importers and international organizations to develop robust export strategies and facilitate the establishment of international hydrogen supply chains.
3. **Building Local Capabilities:** Developing a skilled workforce and localizing the green hydrogen value chain require sustained investment in education, training, and technology transfer. Oman is implementing various initiatives to upskill its workforce and attract international expertise to support the growth of the sector.

OMAN GREEN HYDROGEN ECOSYSTEM STAKEHOLDERS

The development of Oman's green hydrogen economy involves a diverse range of stakeholders, each playing a crucial role in the sector's growth and success. Key stakeholders include:

1. **Government Entities:** The Ministry of Energy and Minerals, Hydrom, and other relevant ministries and agencies provide policy support, regulatory frameworks, and facilitate land allocation for green hydrogen projects.
2. **Investors and Developers:** Local and international companies invest in and develop green hydrogen production facilities, infrastructure, and downstream industries.
3. **Technology Providers:** Companies specializing in renewable energy technologies, electrolyzers, storage solutions, and other critical components contribute to the technological advancement of the sector.
4. **Research and Academic Institutions:** Universities and research centers conduct research and development, provide training and education, and foster innovation in the green hydrogen field.
5. **Local Communities:** Engaging and collaborating with local communities is essential for ensuring the social and environmental sustainability of green hydrogen projects.

CONCLUSION: PARTNERING FOR A SUSTAINABLE FUTURE

Oman's green hydrogen strategy represents a bold vision for a sustainable and prosperous future. The country's abundant renewable resources, strategic location, supportive policies, and impressive project pipeline create a compelling investment proposition for global players. By partnering with Oman in its green hydrogen journey, investors can contribute to a cleaner and more sustainable future while reaping the rewards of a thriving and dynamic industry.

GOVERNMENT INITIATIVES AND SUPPORT

The Omani government has taken proactive measures to support the growth of the green hydrogen sector. These include:

1. **Establishment of Hydrom:** The creation of Hydrogen Oman (Hydrom) as a dedicated entity to oversee the sector's development, streamline processes, and attract investments.
2. **Land Allocation:** The allocation of 50,000 square kilometers of land.

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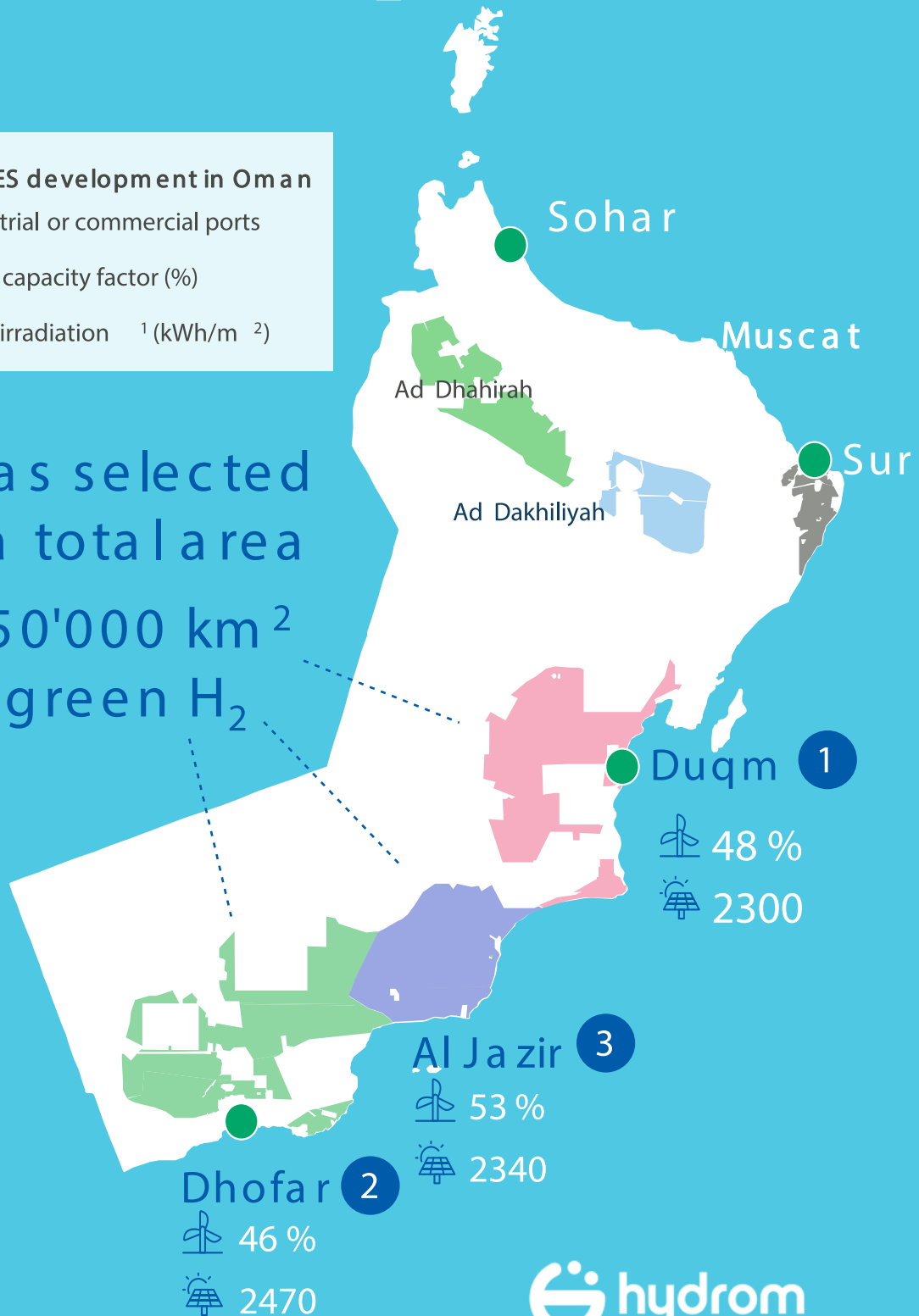
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50,000 km² allocated for green H₂ projects

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








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