



GREEN HYDROGEN in Namibia

A transformative opportunity for
people and planet



Scaling a green hydrogen economy in Namibia

Green hydrogen has emerged as the most promising decarbonisation solution for several key “hard-to-abate” sectors, including clean fuels for shipping & aviation, green steel and ammonia/fertiliser

THE WORLD IS MOVING

Governments are rolling out national green hydrogen strategies and committing billions to drive scale and secure supply. By COP26, 14 countries had adopted hydrogen strategies; over 20 more are actively developing them. Climate finance is starting to move to scale this new technology. The German government for example has allocated €7bn for national and €2bn for international green hydrogen projects. In the private sector, target off-taker industries (e.g., fertiliser, shipping, aviation, steel) are seeing early-moving corporates like Yara, Maersk, Airbus and ArcelorMittal taking steps to integrate clean hydrogen into their processes. At the same time, globally competitive suppliers (e.g., Chile, Australia, Saudi Arabia) are moving to meet these markets.

“**Namibia has embarked on an ambitious journey to manifest its world-leading potential as a low-cost green hydrogen producer.**”

“**With an initial strategy in place, we are now swiftly establishing an ecosystem of partners, building capacity, and identifying fit-for-purpose financing solutions.**”

THE GREEN HYDROGEN OPPORTUNITY

Namibia has the potential to become a global supplier of low-cost green hydrogen and ammonia. Capturing the benefits of a green hydrogen economy requires unprecedented national and international coordination and collaboration. It is crucial to link Namibia's green hydrogen ambitions with a comprehensive sustainable financing strategy to support the growth of the industry. A new Namibian financing platform – “SDG Namibia One” – will be key to developing Namibia's green hydrogen economy by streamlining access to public, private & philanthropic capital, linking finance to policy decisions, reducing transaction costs and accelerating high-quality project development.

We invite stakeholders to join “SDG Namibia One” – a national green hydrogen financing platform which brings together expertise and resources to scale up Namibia's green hydrogen economy

Namibia could lead the global green hydrogen market

WHY NAMIBIA?

- Namibia is positioned to be one of the **lowest cost producers of green hydrogen** in the world due to its unparalleled wind and solar resources. This is substantiated by analysis from the IEA, the World Bank, and modelling by SYSTEMIQ.
- Namibia has more than **1,500 km of coastline** which **reduces the cost of transportation** of sea water for desalination plants, while existing port infrastructure could facilitate exports.
- Proximity to South Africa** creates opportunities for cooperation and development of a regional hub.
- As a result, Namibia could become a preferred, **large-scale exporter to the EU** and potentially other markets **providing clean hydrogen derivatives** on an accelerated timeline at world-leading prices.

There is widespread acknowledgement that hydrogen will play a pivotal role in decarbonising the global economy. Volumes could reach 500-800 Mt H₂ by mid-century.



Certain 'downstream' hydrogen products like green ammonia & methanol² can be **produced in Namibia and delivered globally at lower cost vs. local production.**³

These products² represent **~half of the 2050 demand for H₂.**



In target off-taker sectors like fertiliser, shipping, chemicals – **early movers are already taking steps to consume clean H₂.**

At the same time, globally competitive suppliers – e.g., Chile, Australia, Saudi Arabia – are moving to meet these markets.

Namibia has the potential to achieve **highly competitive green hydrogen production costs.**



That value can be unlocked by **exporting green ammonia (to start) at highly competitive prices: < \$400 / t-NH₃ by 2030.**

Exporting excess clean power further improves the economics and helps **decarbonise power in Southern Africa.**



Potential to export **additional H₂-related products** (e.g., synfuels, HBI/steel) longer term.

Namibia's world-class solar and wind resources give it a long-term competitive advantage in producing green hydrogen and green ammonia.

-The World Bank¹



[1] The World Bank, *Green Hydrogen Opportunities for Namibia – Phase 1 Report*, 2020 (p.20)

[2] Other 'downstream' products include green steel (or Hot Briquetted Iron, an interim product); synthetic jet-fuel (a Sustainable Aviation Fuel).

[3] For example, green ammonia could be produced in Namibia at c. \$125/t-NH₃ cheaper than it could be produced in Europe and shipping from Namibia to Europe only costs \$30/t-NH₃.

Development outcomes for Namibia, climate outcomes for the world

Namibia has outsized potential to create value from developing a world-class green hydrogen industry. The global, regional, national and local benefits are staggering and include reduced emissions, secure and low-cost source of energy, supply chain and infrastructure development, boost to GDP and jobs, improved access to electricity and clean water.

Development outcomes for Namibia



Boost of US\$ 15-20 bn / year¹



>>100,000 domestic jobs²

- **Potential benefits to Namibia** would accrue over time and by 2040 could reach and surpass:
 - GDP boost: \$15bn-\$19bn/year¹
 - Well over 100,000 domestic jobs²
 - \$6bn-\$8bn contribution to trade balance³
 - National energy independence with potential for improved energy access
 - Attract new talent and green investors

Climate outcomes for the world



Potential to export 14 GW clean power into Southern African Power Pool



GHG emissions avoidance of 140-180 Mt CO₂e/year⁴ by 2040

- Potential to drive **scale-up and maturation of southern Africa solar and wind renewables supply chains** at reasonable cost & risk by initially serving ammonia projects underpinned by off-take agreements with blue chips in export markets.
 - Project synergies: oversize solar & wind generation to export excess clean power to SAPP, **helping South Africa's energy transition.**
- 140-180 Mt CO₂e/year avoided by 2040 assuming 5% of expected global green ammonia market served by Namibian exports.⁴

SEIZING THE OPPORTUNITY

- The Government of Namibia has started to move. Green hydrogen was flagged as **national development priority** in Harambee Prosperity Plan II; Green Hydrogen Council and Technical Committee underway; first RfP with winner selected (HYPHEN) with goal of 300,000 tons green ammonia exported by 2030; €40M grant from Germany's BMBF to support pilot projects; activity underway with Port of Rotterdam for pre-feasibility on port development; MoUs signed with Belgium, Netherlands, and Germany. Much of the above was announced at COP26 and put Namibia in the game as a player striving to become a global leader in exporting low-cost green hydrogen products.
- Project developers are building a **high-quality pipeline** of infrastructure and industrial projects in Namibia and looking to secure off-takers of green ammonia and other green hydrogen-based synthetic fuels. Crucial next step is a financing strategy that engages domestic and international participation from different types of capital providers. The design and implementation of a blended finance platform aimed at leveraging concessional development funding to mobilise billions of private investment into this industry at a competitive cost of capital is the unlock needed to accelerate the development of Namibia's green hydrogen economy.

[1] Bottom of range assumes Namibia serves 5% of expected global green ammonia market including shipping in 2040 (c.38Mt NH₃) at a price of \$400/t NH₃; top of range includes additional revenues from oversizing renewables and selling 75 TWh of excess power into SAPP/SA at \$0.05/kWh. [2] Includes direct and indirect jobs. [3] Estimated incremental impact on annual balance of accounts for ammonia and power export revenues less imports/foreign expenditures. [4] Considers direct emissions only of green ammonia production and avoided emissions from clean power export to South Africa's grid. Assumed production mix of ammonia displaced by Namibia's production: 75% SMR of natural gas + 25% blue/green hydrogen (bottom of range) and 75% SMR + 12.5% coal/HFO/naphtha + 12.5% blue/green H₂ (top of range). South Africa power grid assumed to have a load factor of 25% and grid emissivity today of 0.96-1.2 t CO₂/MWh.

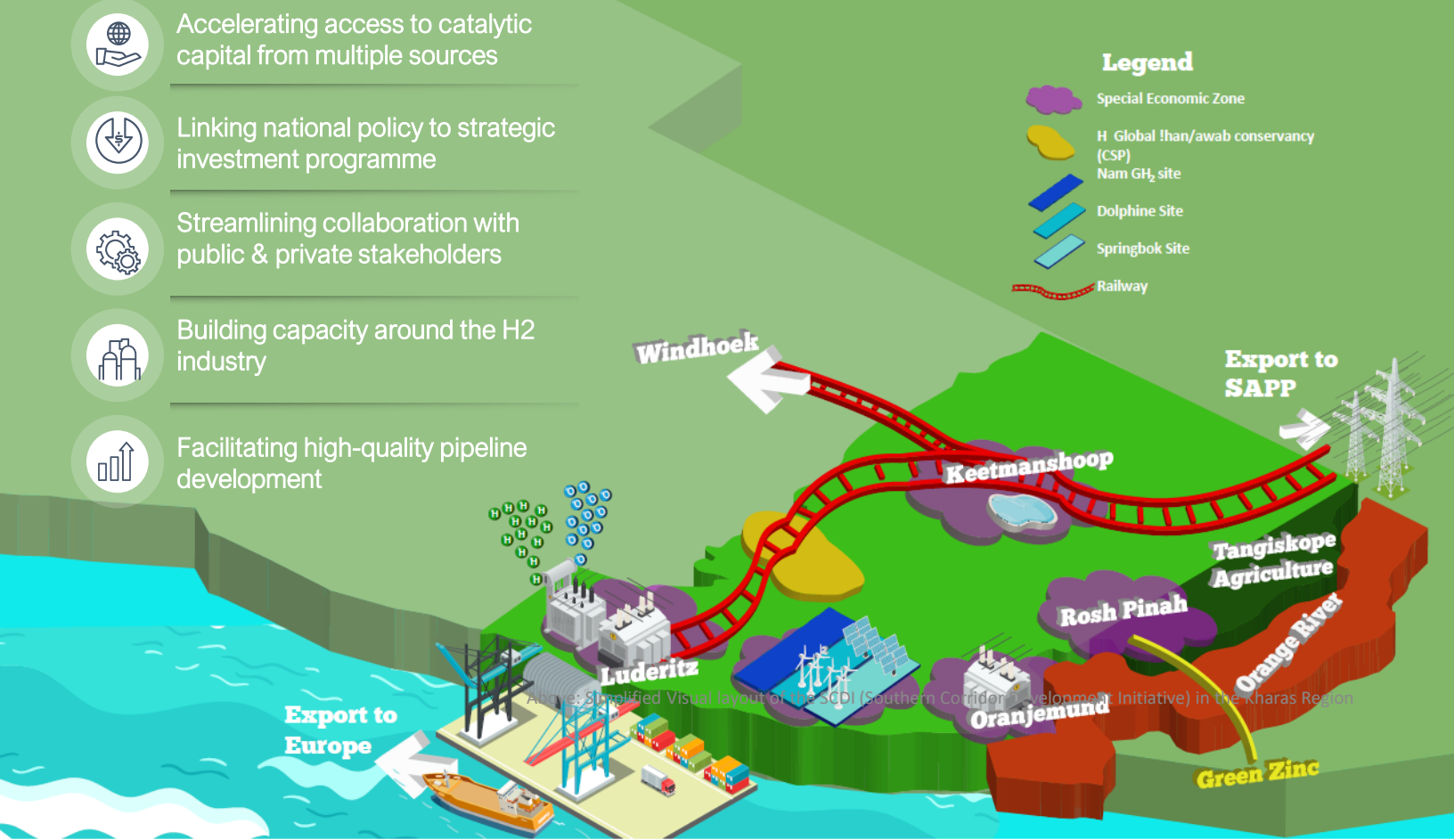
“SDG Namibia One”: a blended finance platform to tackle multiple challenges

Private investors usually say that the following roadblocks need to be addressed to incentivise infrastructure investment in emerging markets

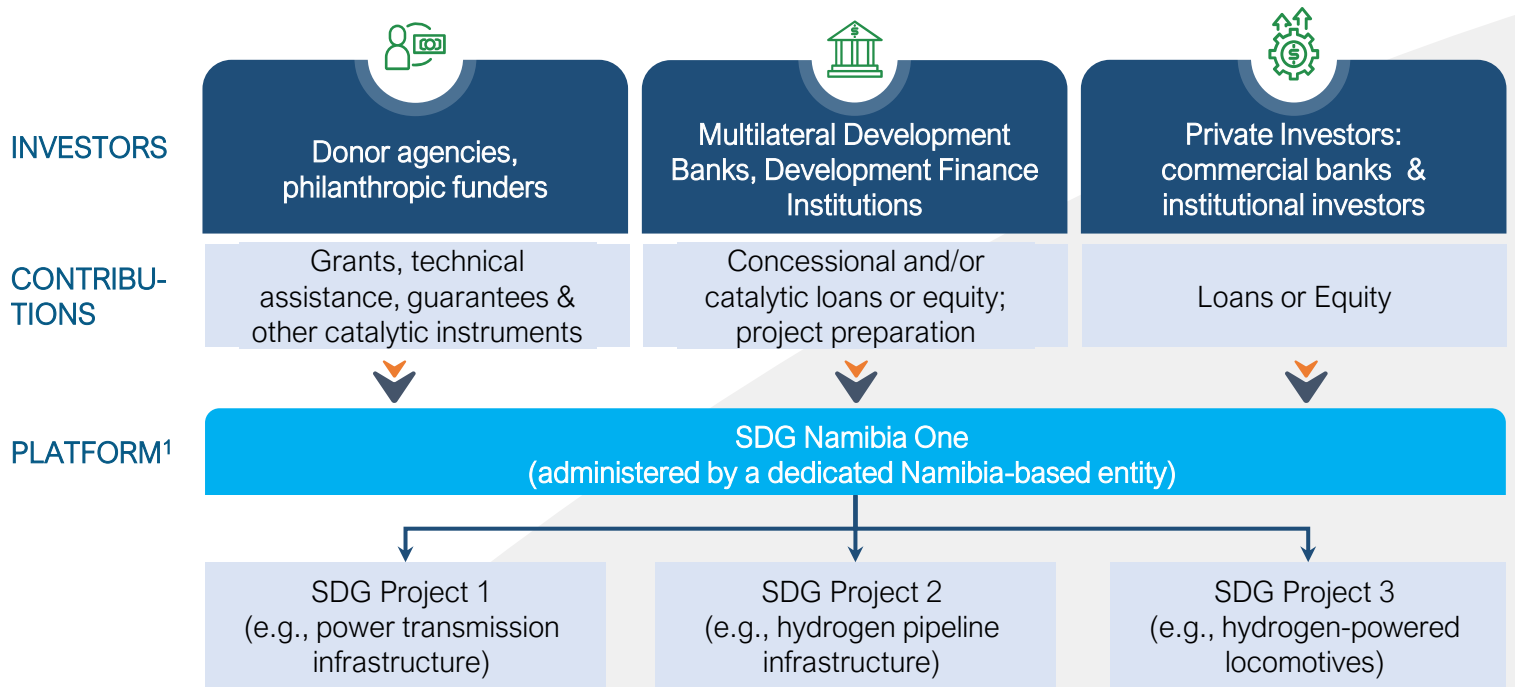


SDG Namibia One will reduce transaction costs by ...

- Accelerating access to catalytic capital from multiple sources
- Linking national policy to strategic investment programme
- Streamlining collaboration with public & private stakeholders
- Building capacity around the H2 industry
- Facilitating high-quality pipeline development



“SDG Namibia One”: a one-stop shop connecting & blending multiple capital sources with green projects



Project examples [illustrative]

Philanthropic grant to fund feasibility study examining replacing the powertrain of mining vehicles with H₂ fuel cells



Donors

Grant

Program Manager

Grant

Green Hydrogen Pilot Projects
(e.g., FCEV mining trucks, H₂-powered rail)

Sample structure for smaller-scale investments
(quantum: USD millions or tens of millions)

Philanthropic grant and loan facility for H₂ common use infrastructure (transmission lines, H₂ pipes, port)



A

Donors

Grant

Grant administrator
& arranger

Grant

Green Hydrogen Common Use Infrastructure
Projects (e.g., transmission lines, H₂ pipes, port)

Sample structure for larger-scale infrastructure
investments
(quantum: USD tens or hundreds of millions)

B

MDBs, DFIs,
private investors

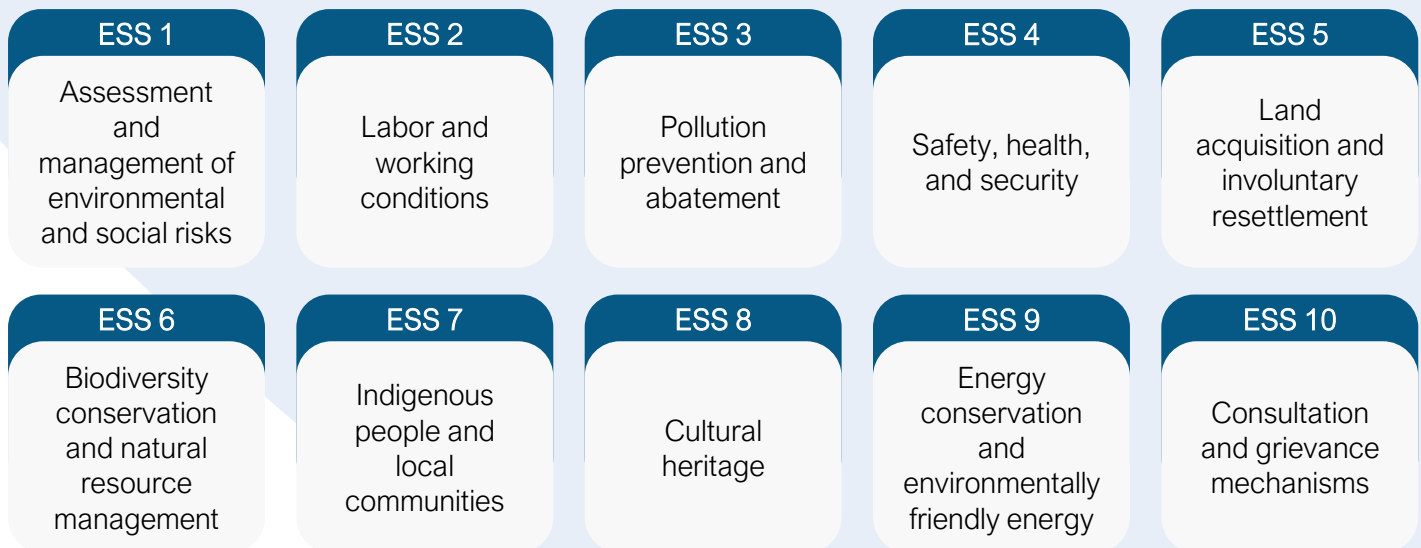
Blended
finance
capital

[1] Depicts streamlined access by donors and investors to well-characterized development and investment opportunities in Namibia – not necessarily indicative of ownership structure or funds flow.

Environmental and Social Safeguard (ESS) Framework

“SDG Namibia One” will require all business activities to be conducted in an environmentally and socially responsible manner to deliver a triple-bottom-line (people, planet, profit). Projects financed by the platform should benefit local communities and the environment as well as generate financial returns.

“SDG Namibia One” will use an Environmental and Social Safeguard (ESS) framework and guidelines which are aligned with national laws and are based on the following ten fundamental principles:



“SDG Namibia One” is expected to monitor the impact of its projects & programs via the following steps:

1. Pre-assessment to identify relevant and material SDG-impacts
2. Baseline analysis to determine target indicators
3. Impact evaluation to assess impacts measured using indicators determined during baseline analysis

ACCOUNTABILITY AND TRANSPARENCY

“SDG Namibia One” will be conceived as a multi-partner facility and will be able to work with philanthropies, public institutions, multilateral and bilateral development organisations and private investors that are focused on advancing sustainable development. “SDG Namibia One” will be operated according to the highest international standards and best practices for governance.



Who should partner with “SDG Namibia One”



1

Project developers leveraging Namibia's competitive natural resources to build green hydrogen projects

2

Hydrogen and electricity off-takers interested in stable and low-cost energy supply

3

Investors and funds providing debt or equity to clean energy & fuels projects and enabling infrastructure

4

Development finance institutions investing catalytic capital to build pipeline and finance a green hydrogen industry in Namibia

5

Donor agencies & climate funds providing de-risking instruments and technical assistance to mobilise private capital, build capacity and develop projects

6

Philanthropies committed to accelerating a just energy transition in Africa including through upskilling, pilot projects and R&D

CONTACT

The Namibia Investment
Promotion and
Development Board



<https://nipdb.com/>



SDGNamibiaOne@nipdb.com