

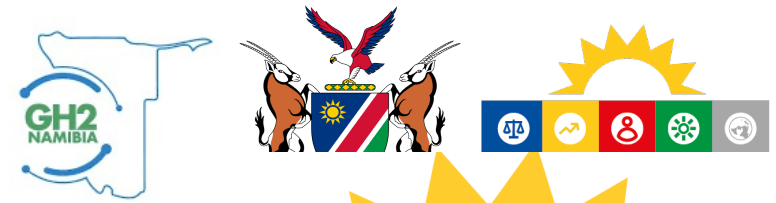
# Transforming Namibia Through Green Industrialisation

A focus on Namibia's green hydrogen industry | June 2024

| Windhoek



# Inception of the Namibia Green Hydrogen Programme



## Goal 3: Develop Complementary Engines of Growth

Activity 2: Investigate the feasibility of Green Hydrogen and Ammonia as a transformative strategic industry.

Green Hydrogen Council

Namibia Green Hydrogen and Derivatives Strategy

Southern Corridor Development Initiative (SCDI)

Green Diplomacy

Namibia Green Hydrogen Programme (NGHP)

## Harambee Prosperity Plan II

2021 - 2025



Effective Governance



Economic Advancement



Social Progression



Infrastructure Development



International Relations and Cooperation

Accountability & Transparency

Strengthening the National Anti-Corruption Mechanisms

Improved Performance & Service Delivery

Enhanced Citizen Participation & Engagement

Enhancing Security & Rule of Law

Optimize Stewardship of Natural Resources & Public Assets

Enhance Productivity of Priority Economic Sectors

Develop Complementary Engines of Growth

Zero Deaths from Hunger Poverty

Delivery of Urban Land, Housing & Sanitation

Improved Access to Healthcare

Improved Access to Quality Education & Sports

Addressing Gender Based Violence and Violence Against Children

Energy Supply Security

Water Supply Security

Strengthen Namibia's Position as a Transport and Logistics Hub

Expand Coverage for Information and Communication Technologies

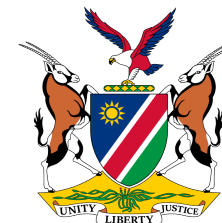
Enhance Economic Diplomacy for Economic Recovery

One Namibia, One Nation

Peace, Reconciliation, Security and Stability

Source: HPPII

## Incentives | Namibia



Namibia aspires to reach green hydrogen production volumes of 10-15 Mtpa by 2050 (corresponding to 5-8% of expected international hydrogen equivalent trade volume. With a first phase target of 1 -2 Mtpa by 2030 <sup>1</sup>.

Germany was the first country to sign a joint communiqué of intent with Namibia to develop the hydrogen economy

Clear roadmap of Namibia's GH2 & derivatives strategy (2022)

*Draft SEZ bill* with corporate tax reductions and customs duty exemptions tabled

### Incentive type : Grant funding / Collaborations

Created a Blended Finance Fund, targeting 1 Bn USD in partnership with Namibian Government

Grant funding of 45 Mn EUR from the Dutch Government has been secured.

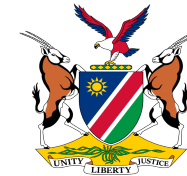
Green Hydrogen Coordination Office

Joined the African Green Hydrogen Alliance

Notes (1) : Namibia's Green Hydrogen Council launched its green hydrogen strategy at COP27 in Sharm El-Sheikh, which supports the country's commitment to the Paris Agreement on climate change, with the ultimate goal of reducing emissions to net zero by 2050.

Sources: [\(1\)](#), [\(2\)](#), [\(3\)](#)

# 3 Valleys Feasibility



## Vision for Namibia's three green valleys

Illustrative

### Northern Region

Hybrid renewable production (solar PV + onshore wind) will feed electrolysis plant and ammonia production near the new port facility



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

NH<sub>3</sub> export

### Confirmed pilot projects in Central Region

- Project 1: Green Hydrogen Applications in the Port Environment
- Project 2: Hydrogen-Diesel Dual Fuel Locomotive Pilot Project Proposal for Namibia
- Project 3: Daure Green Hydrogen - agriculture
- Project 4: hydrogen-Pilot Plant / Refueling Station in Walvis Bay

CO<sub>2</sub> import

### Central Region

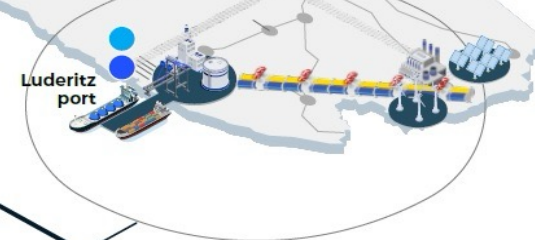
Solar PV power production with electrolysis, ammonia and terminal for synfuels for export from Walvis Bay port; hydrogen can be also used domestically for trains, agriculture, and

NH<sub>3</sub> export



### Southern Region

Hybrid renewable production (solar PV + onshore wind) will feed electrolysis and derivative plants for export from Luderitz port connected by a hydrogen pipeline



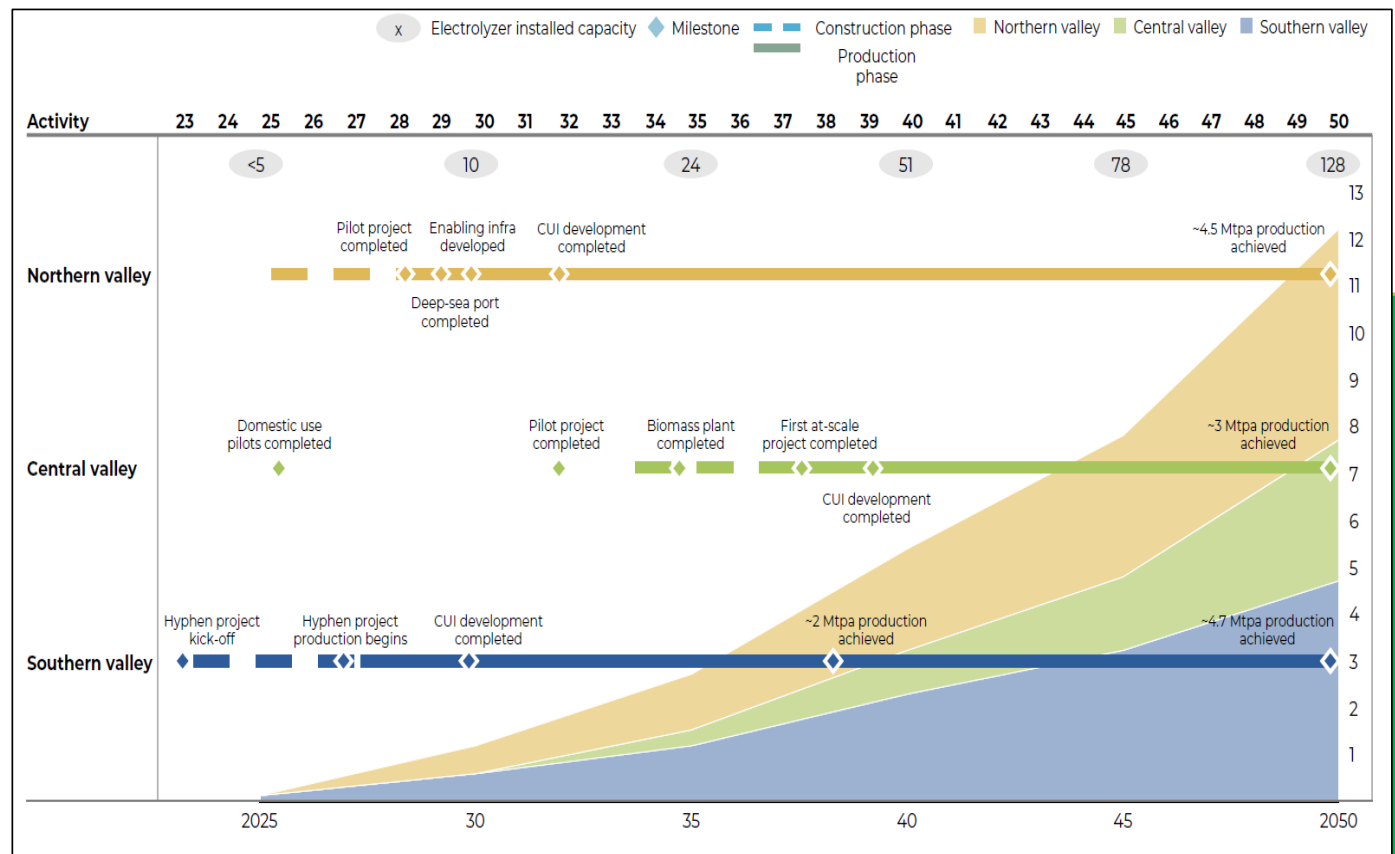


## 3 Valleys - Timeframe



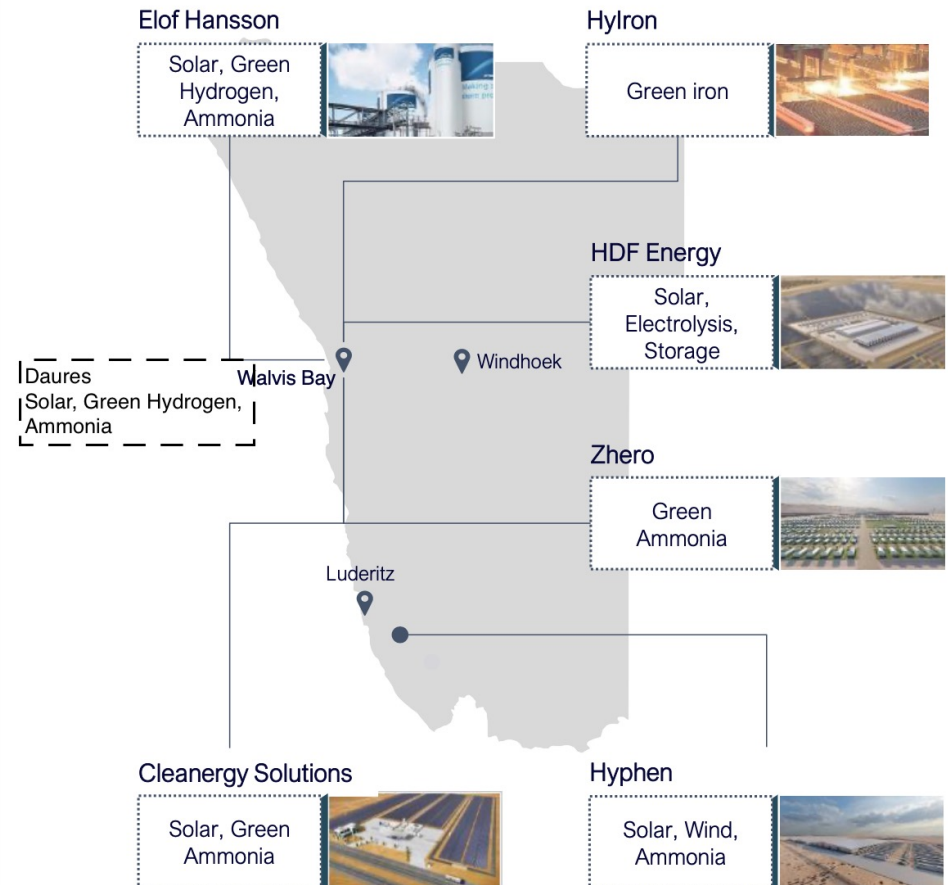
### The ambition: Create an at-scale green fuels industry in Namibia

- 2030: 1-2 Mtpa hydrogen equivalent
- 2040: 5-7 Mtpa hydrogen equivalent
- 2050: 10-15 Mtpa hydrogen equivalent



# Overview of various GH2 projects in Namibia

Project	Key GH2/Derivative to be produced	Phase of development
Hyphen	Green Hydrogen Green Ammonia	Feasibility
Elof Hansson	Green Hydrogen Green Ammonia	Development/planning phase
HDF	Green Hydrogen	Development/planning phase
Hylron	Green Hydrogen Green Iron	Phase 1/Production in 2024
Zhero	Green Hydrogen Green Ammonia	Development/planning phase
Cleanergy Solutions	Green Hydrogen Green Ammonia	Pilot/Phase 1/Production in 2024
Daures Hydrogen Village	Green Hydrogen Green Ammonia	Pilot/Phase 1/Production in 2024



# A skills development strategy to create sufficient talent



## Green hydrogen industry – direct jobs

85,000 by 2030  
185,000 by 2040

Construction, business services, transportation and manufacturing



## Green hydrogen industry – indirect jobs

60,000 by 2030  
130,000 in 2040



This leaves a talent gap of 55-60,000 workers, RISING to 120-130,000 by 2040.

To fill this gap, Namibia's skill development and labour supply strategy has been **mapped out**.



PHASE 1: the provision of scholarships as part of the youth for green hydrogen scholarships programme



PHASE 2: Involves engaging with key stakeholders: with the minister of higher education, training, technology and innovation to strategise and outline future education and research activities. Initial sessions were held and are planned for the future.



PHASE 3: The NGHP +, to ensure that training providers meet the international standards and certification of training courses and training service providers shall be pursued to ensure employment readiness of newly trained, re-trained and upskilled Namibians.



## Green Industrialisation

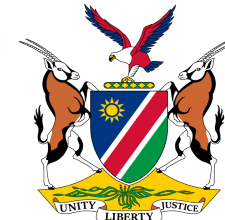
Green industrialisation offers Namibia an unprecedented opportunity to not only diversify our exports, but potentially to grow them exponentially in a labour intensive manner, promising robust multiplier impacts on the economy :

**Vision 2030 | HPP 2**





# Emerging vision: to move the economic growth trajectory



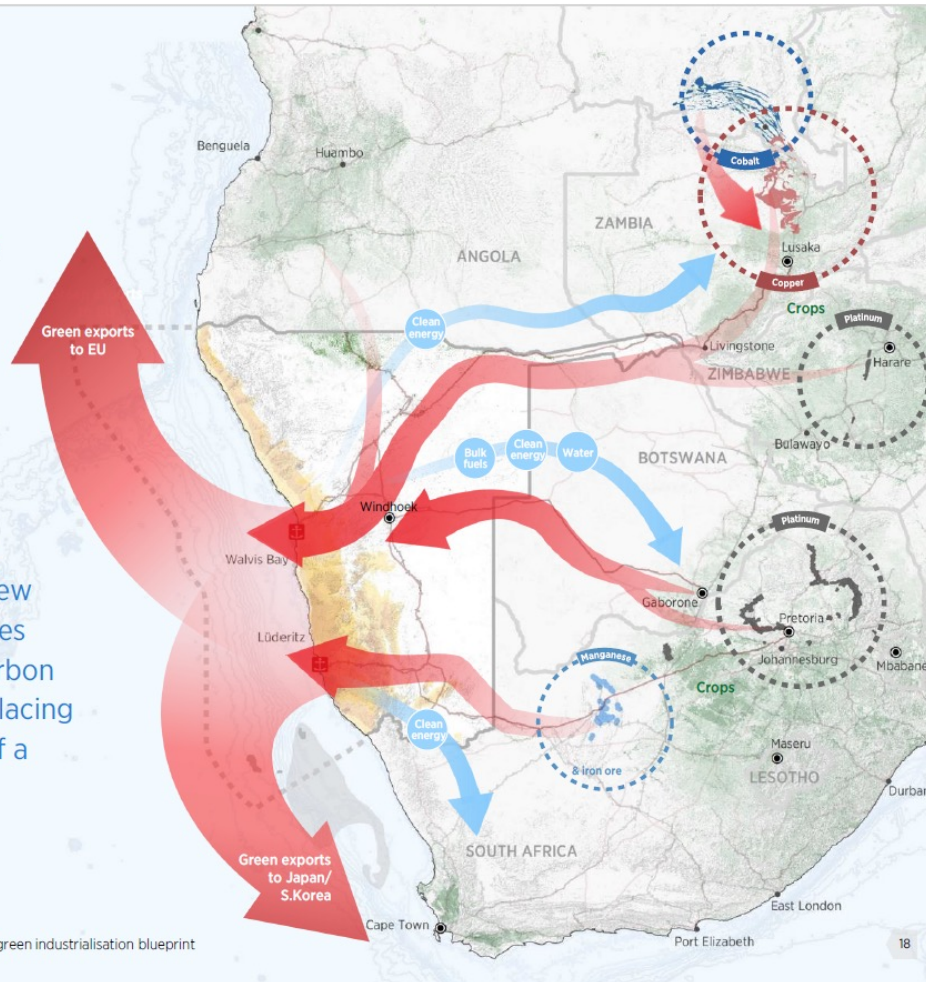
A NEW GROWTH AGENDA

## The emerging vision

Green industrialisation is the opportunity that binds domestic, regional, and global agendas.



Namibia, working with its neighbours, to deliver a new global gateway that creates modern trade and low-carbon industrial opportunities, placing the region at the centre of a rapidly greening world.

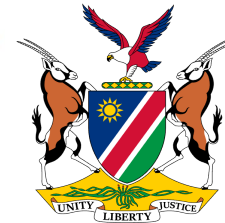


Government of the Republic of Namibia | A green industrialisation blueprint

18



## Increasing economic complexity within a green hydrogen economy



The key to a higher sustainable growth trajectory is by increasing export diversification – i.e., creating a host of globally competitive products which are value additive/economically more complex and upskill labour.

Some key sectors identified for valorisation and green manufactory, which are sustainable and fall within the achievable move per the product map space are :

Solar panel  
manufacturing

Electrolyser  
manufacturing

Wind turbine  
manufacturing

Green Steel

Green lithium

Flat glass  
production

Hot Briquetted  
Iron

Synthetic fuels



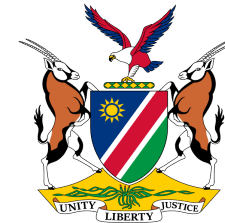


# Key sectors identified for valorisation and green manufactory

		Opportunity description	Execution model	Value-add potential (direct+indirect+induced)	Employment potential (direct+indirect+induced)	Possible location
Renewable energy hardware	1. Solar panel manufacturing	Cell manufacture & panel assembly to serve domestic gH <sub>2</sub> needs, then expand regionally as costs decline.	Attract OEM cell producers, incubate local companies for module assembly, then localise adjacent industries.	2030  \$194m 2040  \$1.3b 2050  \$1.8b	2030  2.5k 2040  12k 2050  22k	Erongo & Karas
	2. Electrolyser manufacturing	Assemble electrolyser stack & balance of plant to serve gH <sub>2</sub> needs, then expand upstream and regionally.	Invite major OEMs or int'l energy firms to set up local production by orchestrating offtake agreements.	2030  \$148m 2040  \$822m 2050  \$1.3b	2030  3.2k 2040  13.4k 2050  28k	Karas (or Erongo)
	3. Wind turbine manufacturing	Produce wind turbine towers and blades locally to serve gH <sub>2</sub> needs, then supply blades regionally.	Incubate local firm to produce towers and invite major OEMs to set up domestic blade production.	2030  \$186m 2040  \$627m 2050  \$666m	2030  7.7k 2040  20k 2050  27k	Karas/ Kunene
Mineral refining	4. Lithium refinery	Refine local concentrate to technical grade lithium for export to EU, taking advantage of diversification push.	Broker technical-grade lithium refining JV between local player and EU-based battery-grade refiner.	2030  \$165m 2040  \$207m 2050  \$248m	2030  5.8k 2040  7.1k 2050  8.6k	Walvis Bay
	5. Rare earth elements refinery	Leveraging announced REE projects, develop domestic separation facility to produce rare earth oxides.	Collaborate with Chinese refiner or invest in R&D with EU/US-based REE operator to explore new technology.	2030  \$89m 2040  \$176m 2050  \$176m	2030  2.6k 2040  4.1k 2050  4.1k	Walvis Bay/ Kunene
Low CO <sub>2</sub>	6. Flat glass production	Use low-cost, low-CO <sub>2</sub> energy to produce flat glass for Africa & EU, then expand into local raw materials.	Attract int'l player to launch local production. Export to Africa/EU, then expand to downstream products.	2030  \$184m 2040  \$387m 2050  \$553m	2030  2.4k 2040  4.9k 2050  7.1k	Erongo
gH <sub>2</sub> derivatives	7. Synthetic fuel production	Use bush biomass to produce biogenic CO <sub>2</sub> feedstock and gH <sub>2</sub> to produce synthetic fuel for EU aviation	Push JV between int'l SAF developer and existing player to produce e-SAF using local gH <sub>2</sub> & biogenic CO <sub>2</sub> .	2030  \$47m 2040  \$605m 2050  \$1.9b	2030  0.6k 2040  4.9k 2050  16k	Walvis Bay/ Kunene
	8. Hot briquetted iron production	Produce green HBI/DRI using gH <sub>2</sub> for EU, then grow to supply other 'green steel' demand centres (e.g., S.Africa).	Incubate local firm & engage miners/traders to secure iron supply. Strike offtake agmts with int'l steel players.	2030  \$245m 2040  \$736m 2050  \$1.2b	2030  1.3k 2040  4k 2050  7.9k	Walvis Bay



# How green industrialisation leads to Namibia's economic growth transformation



1

Growth

**+\$10bn**  
GDP

Potentially doubling the size of the economy.

- › \$6bn added to the economy from gH<sub>2</sub> projects.
- › \$5bn directly from green manufacturing and indirect/induced sectors.
- › The total benefits from infrastructure only partially accounted for.

2

Employment

**+250k**  
jobs

Equal to 1/5<sup>th</sup> of 2040 projected labour force.

- › Estimated 185,000 direct jobs in the hydrogen industry alone.
- › 70,000 direct, indirect, and induced jobs from green manufacturing.
- › Even more from infrastructure upgrades e.g., ports and rail.

3

Markets

**+\$20bn**  
exports

Quintupling current annual national exports (\$4.7bn).

- › \$12bn in gH<sub>2</sub> exports (assumes 5mtpa H<sub>2</sub>e at \$2,400/tH<sub>2</sub>e).
- › \$10bn from new green manufacturing sectors (p.32-48).
- › Infrastructure investment to enable improved transport and logistic.

4

Investment

**+\$55bn**  
FDI

Nearly ten times the national stock of FDI.

- › ~\$40bn to kickstart gH<sub>2</sub> and green manufacturing industries.
- › Over \$15bn to support regional connectivity and port developments.
- › Major investments already well advanced, e.g. Hyphen.

5

Decarbonisation

**75mtpa**  
CO<sub>2</sub> abated

20x Namibia's total annual CO<sub>2</sub> emissions.

- › Carbon abatement from Hyphen's 370kt green hydrogen project.
- › Allows for a zero CO<sub>2</sub> and zero-import domestic energy grid.
- › Elevates Namibia as a global green industry manufacturing leader.

Note - estimated impacts by 2040. Based on published statements only and hence non comprehensive.





## In summary

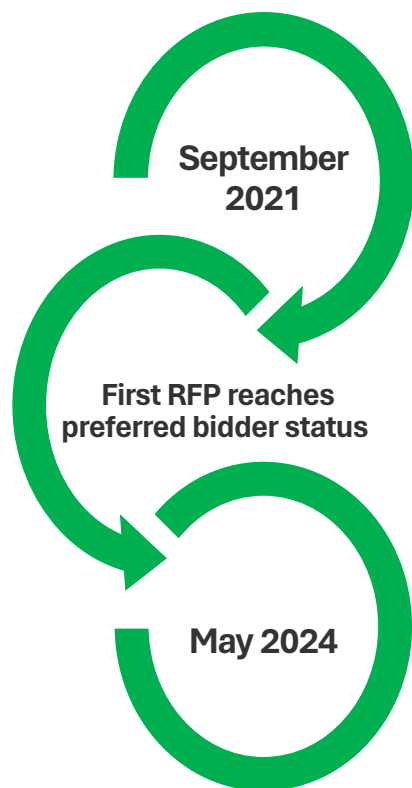
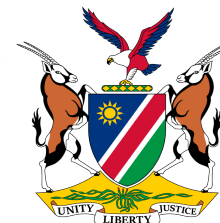


- 1. Creating sustainable growth is achieved by adding economic complexity and climbing the value-add complexity ladder – Namibia can do this via green energy and green industrialisation
- 2. Creating an environment where green goods can be manufactured competitively for exportation is essential.
- 3. Ensuring the upskilling of labour for the multiplier effect to impact the economy.
- 4. Prepare accompanying industries and infrastructure to support the green manufactory & green energy sector to achieve HPP 2.





## Embarking on Namibia's next Request for Proposals journey



9 Commercial Offers were received with proposals to develop Large Scale Green Hydrogen Projects for the Southern Valley.

Hyphen has since been awarded preferred bidder status on the Tsau //Khaeb National Park, for the development of Namibia's first fully vertically integrated GW scale Green Hydrogen project.

Namibia embarks on its next RFP journey –

First step : Market Sounding for 2 RFPs

1. Southern Corridor Green Valorisation
2. Central Valley Common User Infrastructure (CUI) Development





Thank you

