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& Development Board

WIND TURBINE BLADE MANUFACTURING INVESTMENT PROPOSITION

Sector: Energy

Sub-Sector: Wind Turbine Blade Manufacturing

1. Abstract

The renewable energy sector is escalating rapidly due to the global shift toward reducing carbon emissions and adopting sustainable energy solutions. Namibia is endowed with high south and coastal wind speed. The coastal location of Namibia and high wind speed both onshore and offshore is good for investing in wind energy infrastructure. In countries like Namibia, where energy scarcity is a critical issue, applying an open innovation approach in leveraging the renewable energy sources such as wind can lead to more efficient, cost-effective, and sustainable solutions. Namibia imports 60-70% of electricity from South Africa, Zambia and Zimbabwe. According to the National Renewable Energy policy of 2017(NREP) the country plans to achieve 70% power generation from wind, solar PV, concentrated solar power (CSP), biomass and hydropower) gradually by 2030. Namibia's energy deficit is compounded by the green industries, population growth, and escalating demands from green hydrogen industry, mines and domestic use. Therefore, there is a need to invest in wind turbine manufacturing plants to maximise the electricity generation from the wind source.

2. Value Proposition

Namibia has critical raw materials such as lithium, cobalt and natural graphite for batteries, or rare earth elements that can be used for permanent magnets for wind turbines, electric motors or computer data storage devices, representing an enabling factor for decarbonising energy production and mobility ecosystems through wind turbine manufacturing. The wind turbine manufacturing will impact the country economically, socially and environmentally.

(a). Economic impacts

- **Import substitution**

Wind turbine manufacturing will provide economic benefits to the **40 MW wind project (Lüderitz) and Diaz (44 MW)** by shifting away from imported turbines toward more locally manufactured wind turbines. This means more electricity will be produced leading to no reliance on imported electricity.

- **Marketing strategies**

Wind turbine manufacturing will put Namibia on the world map as a manufacturing hub for wind turbines and this will lead to investor attraction in the renewable energy sector.

- **Attracting Investment**



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The establishment of a wind turbine manufacturing industry will attract both domestic and foreign direct investment, leading to the development of additional renewable energy infrastructure.

- **Export hub**

The global wind energy market escalates, Namibia could become a regional leader in wind turbine manufacturing, exporting turbines to countries within Africa or globally, leading to increased foreign exchange earnings and improve Namibia's balance of trade.

- **Energy self-sufficiency**

The project reduces power imports, thereby helping the country to save money that can be invested in other ways.

(b). Social impact

- **Capacity building**

Establishing wind turbine manufacturing plants will promote the development of skills in renewable energy technology, manufacturing, and engineering. Local workers could receive training in advanced technologies and gain expertise, which could benefit Namibia's workforce in the long term.

- **Job creation**

Wind turbine manufacturing will lead to direct (26%) and indirect (38%) job creation. It will create around 27 000 jobs by 2050.

(c). Environmental impact

- **Lower greenhouse gas emissions**

Each MWh of electricity generated by the wind farm is estimated to prevent the release into the atmosphere of 0.9871tCO_{2e} of greenhouse gases.

3. Market Analysis

(a). Identify the gap of the proposed project



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Namibia spent a lot of money to import wind turbines from China and Germany. Therefore, there is a need to establish a manufacturing industry to meet the local and regional demands.

(b). What is the current status quo of the market for that proposed project

The wind turbine market is currently not congested, so far only wind turbine importers (the wind farms in South) are controlling the market. The Diaz Wind Power Station is currently under construction in Namibia, indicating active development and sale of wind turbines for power generation projects.

(c). Outline the local, regional or international demand for the product or service being developed.

In Namibia, the demand for wind turbines is currently high due to the country's abundant wind resources, a goal to significantly increase renewable energy generation with 70% by 2030. The demands from green hydrogen industry which will require large amounts of wind power, leading to significant potential for more wind farm projects and a growing need for wind turbines.

The Namibian government aims to achieve a 70% by 2030 renewable energy source, driving demand for wind turbines. The production of green hydrogen using wind power is expected to escalate the demand for wind turbines in Namibia. Green hydrogen projects are estimated to demand 20GW of wind energy generation capacity that will be the primary offtaker for locally produced wind turbine towers and blades. The wind turbine manufacturing in Namibia will cater for the demand centres, such as the //Kharas and Erongo regions in the near term and the Kunene in the future. The green hydrogen production in the //Kharas, Erongo and Kunene region is approximately to require 14GW, 6GW and 32GW of wind energy by 2050, thereby providing a significant domestic market for wind turbines.

(d). Competitive landscape

There are no local manufacturing companies for wind turbines in Namibia, importers for wind turbines are the competitors so far. However, there is an investor in the South that is interested in the wind turbine manufacturing industry. There are two wind turbine manufacturing companies in South Africa.

4. Business Model Considerations

(a). Major Cost Drivers

- High capital costs



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- Capacity building for designers and assemblers
- Electricity costs - the wind turbine manufacturing requires much power.

(b). Revenue Streams

- Import substitution meaning more funds will remain in the country and be diverted to social projects.
- More revenue will be created from sales of wind turbines.
- More investors will be attracted to renewable energy projects and more tax will be injected into the country's economy.

5. Legal/Policy Considerations

- Namibia Energy Regulatory Authority Bill, 2019
- Electricity Bill 2019
- Safety Code
- The Namibian Quality of Supply and Quality of Service Standards
- Compliance Policy (2019)
- National Renewable Energy Policy (2017)
- National Energy Policy (2018)
- National Integrated Resource Plan(NIRP)

6. High-Level Risk Profile

- Competing with the existing wind turbines manufacturing companies in South Africa.
- The wind turbine might not meet the international manufacturing standards

7. Applicable UN Sustainable Development Goals Alignment

Wind turbine manufacturing is vital for achieving the United Nations Sustainable Development Goal (SDG) 7, which aims for affordable, reliable, sustainable, and clean energy generated from renewable energy sources. It also aligns with the Sustainable Development Goal (SDG) 8 and 9.

For more information regarding this opportunity, please contact us at catalogue@nipdb.com.