

## **RNT-EP AFFIRMS SUPPORT FOR MINBOS' ZERO-CARBON HYDROELECTRIC GREEN HYDROGEN & AMMONIA PROJECT**

---

### **Highlights**

- **RNT-EP, Angola's electricity network operator, has confirmed its support for a long-term offtake agreement with Minbos for Zero-Carbon hydro electrical power**
- **Zero-Carbon Power to underpin the Company's Green Hydrogen & Ammonia Project in Angola which seeks to address world shortage of nitrogen fertilizer**
- **Green ammonia is critical to global food production in a carbon constrained world**
- **The Company to immediately commence both feasibility studies & technology partner search**

**Minbos Resources Limited** (ASX:MNB) ("Minbos" or the "Company") is pleased to announce it has received a formal resolution from RNT-EP, Angola's electricity network operator, that it intends to enter into an agreement with Minbos for the supply of hydroelectric power from the *Pólo Agroindustrial de Capanda* (Capunda Hydroelectric Dam).

At a meeting held last week, the RNT-EP also confirmed a draft Memorandum of Understanding ("MOU") will be exchanged between the parties to formally confirm the arrangement, expected mid-May 2022.

The Zero-Carbon Power is proposed to be delivered to the Company's project site where the Company plans, based on its preliminary work completed to date, to build a green ammonia production facility with capacity to produce nitrogen fertilizer.

As part of the proposed production process, the Company plans to convert the Zero-Carbon Power first into green hydrogen which in turn will be converted into green ammonia (ammonium nitrate).

While the final terms are still to be negotiated and agreed in the MOU, the key commercial terms that have been proposed between the parties to date are:

### **Pricing**

- Initial 100MW at \$US0.004 (0.4c) per kilowatt hour for 5 years then \$US0.008 (0.8c) per kilowatt hour for 20 years.
- Subsequent 100MW at \$US0.015 (1.5c) per kilowatt hour for 25 years.

Upon execution of the MOU, the Company anticipates that the Zero-Carbon Power offtake arrangement will deliver:

- a weighted average cost of power of \$USD0.011 (1.1c) per kilowatt hour – c.90%<sup>1</sup> cheaper than Australian power grid pricing and c.55%<sup>2</sup> cheaper than natural gas prices (most common power input into current hydrogen and ammonia production);
- long-term power security (25-year offtake);
- long-term power price stability (no risk of increased costs associated with potential carbon pricing regimes); and
- no upfront capital costs required to establish power generation (versus the capital-intensive development of solar and wind power infrastructure).

By 14 May, RNT-EP will provide a letter to the Company outlining technical clarifications required for the supply of power to the Project. This will include the despatch voltage options from the Capunda substation commensurate with the power needs of the Project, and the allocation of the practical, legal and financial responsibilities of maintaining the power lines and substation at the green ammonia plant. Angola's hydroelectric potential is enormous and is key to a project like the Company's Green Ammonia Project being successful.

Hydropower ringfences the Company's Green Ammonia Project from the "perfect storm" created by a surge in gas prices to near record levels in Europe and Asia with a shortage of ammonium nitrate caused by the shuttering of grey, brown and blue hydrogen/ammonia projects globally. Even if gas prices were to normalise to long term averages, the Company's' Green Ammonia Project will remain one of the most compelling, globally protected from any impacts associated with global carbon pricing and without substantive capital investment required in new renewable energy production.

The Capunda Hydroelectric Dam is located on the Kwanza River, in the Malange Province of Angola. The facility generates power by utilizing four turbines and 130 MW (170,000 hp) each, with an installed capacity to 520 MW's.

The land allocation of 200 hectares is within 10km of the Capunda Hydroelectric Dam, along an existing transmission corridor where the Company plans to build two green ammonia plants and is located within trucking distance to the Malange growing corridor and major regional mining projects, reducing transport costs and ensuring the Project's cost advantage is maintained (Fig. 2).

<sup>1</sup>Based on the average grid price for Australian business customers of USD0.123c/kwh (Source: Australian Energy Council Electricity Prices Business OECD (USD); International electricity prices: How does Australia compare? (energycouncil.com.au)

<sup>2</sup>Based on the Natural Gas (US, Henry Hub) spot price of USD7.18MMTBU (Consensus Economics, April 2022 edition)

**Commenting on the Formal Resolution, CEO Lindsay Reed stated:**

*"I want to thank the Government and people of Angola for entrusting the Company with the development of Africa's first truly Green Hydrogen & Ammonia Project.*

*Over the recent period we have seen significant publicity around the development of green hydrogen and green ammonia as they are the bedrock to sustainable agriculture and food security.*

*With our access to clean, carbon-free, cost-effective power, Minbos is uniquely positioned to capture value from one of world's most prospective investment thematic.*

*We look forward to progressing the project further and providing the market updates on one of the most attractive Green Ammonia Projects on the ASX."*



*Figure 1 - Minbos CEO Lindsay Reed with RNT Administrator Mr Mauro Martins*



*Figure 2 – Location of Minbos' Capanda Green Ammonia Project, 10km from the Capanda Hydroelectric station.*

## ABOUT ZERO-CARBON GREEN AMMONIA

Green ammonia technology is an established technology, having been in use for almost 100 years to produce ammonia using only electricity, air and water as inputs.

Green ammonia is a natural evolution of this established technology, 100% renewable electricity (feedstock) with the hydrogen from water electrolysis combined with nitrogen from air separation to create ammonia, the building block for ammonium nitrate and nitrogen fertilizers

By eliminating the use of fossil fuels, an environmentally friendly process is created in which hydrogen is made via water electrolysis instead of the steam reforming of fossil fuels. The energy needed will come from spare renewable hydroelectric capacity. The output is carbon-free ammonia, also known as green ammonia, the primary feedstock (or Greenstock) for green and carbon-free fertilizers.

One tonne of traditional brown, grey, blue ammonia emits two tonnes of CO<sub>2</sub> while the production of green ammonia from hydroelectric energy emits zero-carbon, delivering an environmental, social and governance (ESG) hedge against future fertilizer development activities.

Green ammonia plants are best placed in countries with an abundance of renewable energy sources that have inherently limited intermittency issues and minimise operating costs with sites ideally close to end-user markets. With its hydroelectric capacity Angola has an abundance of both.



Green ammonia also has other applications, including mining explosives and power generation. Agriculture and mining currently absorb more than 80% of global ammonia production, which is almost exclusively sourced from fossil fuels. Competition for green ammonia from the hydrogen fuel sector and pressure from carbon emission reduction activities is forecast to rapidly increase the demand for green ammonia.

Green ammonia plants can be scaled to market size and located at the market doorstep. With access to low-cost sustainable electricity Greenstock, these plants are already competitive in stranded markets remote from port infrastructure.

For Angolan agricultural industries, the current situation involves the importation of ammonia and/or fertilizer. Transportation and internal handling costs currently comprise ~45% of the cost of landed product in Angola. By developing a green ammonia facility close to end markets, there is a significant margin that can be captured whilst remaining competitive with alternative sources. Low-priced and abundant power supplies make locally produced green ammonia significantly more attractive than imported ammonia (Fig. 3).



*Figure 3 - Capunda Dam with hydroelectric plant and associated power infrastructure.*

## ANGOLA - AN EMERGING GREEN ENERGY POWERHOUSE

Angola is a country blessed with many rivers. Angola's hydropower potential is among the highest in Africa, estimated at 18,200 MW. Coupled with increasing demand for electricity following years of economic growth and urbanisation, hydropower development is a central element of the government's long-term vision for its power sector.

Angola is managing large, concurrent infrastructure developments to take advantage of its unique natural resources, including natural gas, hydroelectric, wind and solar. The Government of Angola has installed hydroelectric generation capacity of 6,400 MW and is targeting 9,900 MW of installed generation capacity by 2025 with mapping studies identifying the potential for 18,000 MW of hydropower nationally<sup>3</sup>.

Large-scale hydroelectric projects completed recently include the Laúca hydroelectric power station, a 2GW run-of-the-river hydroelectric project located on the Kwanza River that is currently the second biggest hydroelectric power facility in operation in Africa (Fig. 4), the Caculo Cabaça Hydroelectric Project, the Balalunga Project and several others throughout the southern region of the country.



*Figure 4 - Laúca Hydroelectric Plant. A 2GW run-of-the-river hydroelectric project located on the Kwanza River and currently the second biggest hydroelectric power facility in operation in Africa.*

<sup>3</sup>Africa Energy Market place - The energy sector of Angola [June 2019]

**-END-**

This announcement is authorised for release by the Board of Minbos Resources Limited.

For further information please contact:

**Lindsay Reed**

Chief Executive Officer  
E: [l.reed@minbos.com](mailto:l.reed@minbos.com)

**Chris Swallow**

Corporate Development  
E: [c.swallow@minbos.com](mailto:c.swallow@minbos.com)  
Ph: +61 412 174 822

**Compliance Statement**

With reference to previously reported Scoping Study Results, the Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

**Forward Looking Statements**

Statements contained in this release, particularly those regarding possible or assumed future performance, revenue, costs, dividends, production levels or rates, prices or potential growth of Minbos Limited, are, or may be, forward looking statements. Such statements relate to future events and expectations and, as such, involve known and unknown risks and uncertainties. Actual results and developments may differ materially from those expressed or implied by these forward-looking statements depending on a variety of factors.