

# GREEN AMMONIA TECHNICAL STUDY UNDERWAY

## MINBOS INVESTIGATES INCREASING GREEN ENERGY ENDOWMENT

### GREEN AMMONIA

- **Technical Study underway for Capanda Green Ammonia Project.**
- **Technical Study being undertaken by technology partner Stamicarbon B.V. a global leader in Green Ammonia Technology.**
- **Kick off meeting has locked the basis of design to deliver ~300Ktpy of Green Ammonium Nitrate with an end product breakdown of ~50% fertilizer (CAN) and ~50% explosives grade Ammonium Nitrate (Fig. 1), although this will be flexible.**

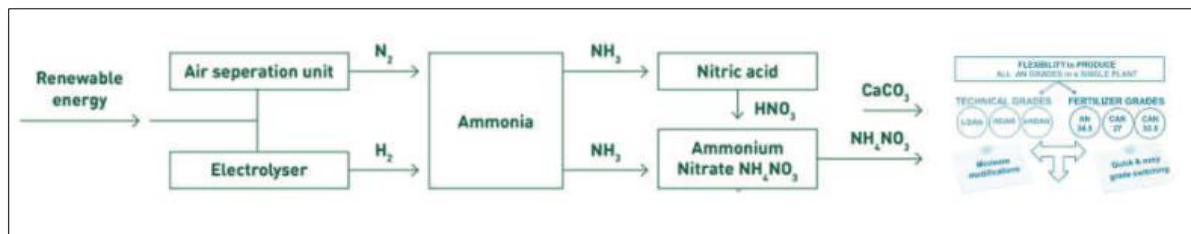


Figure 1 - The typical configuration of a Green Ammonia Nitrate Plant.

- **Technical Study is expected to take 6 months and will include plant design, CAPEX and OPEX evaluation and OPEX inputs, including hydroelectric consumption.**
- **Study results to form the basis for a Scoping Study to be undertaken immediately post completion of the Technical Study.**
- **Buoyed by the significant interest in Minbos potentially supplying explosive-grade Ammonium Nitrate across the African continent, the Company is currently evaluating the potential for further renewable energy feedstock, including Wind and Solar energy, to be paired with further existing hydroelectric power.**
- **Angola holds great potential for renewable energy production, mapping studies completed by the Ministry of Energy and Water identified potential for 16.3 GW solar power, 3.9 GW wind power, and 18 GW in hydropower throughout the country.**
- **Globally, 183Mt of ammonia is produced annually, nearly all of which is generated from fossil fuels: natural gas (72%), coal (22%)<sup>1</sup>.**

<sup>1</sup>International Renewable Energy Agency, Innovation Outlook, Renewable Ammonia (2022)

- **Every \$/GJ adds \$40/t to the cost of ammonia production. Gas input costs at current levels are now several times the ammonia price.**
- **The price and supply of gas is now irrevocably linked to the international market for Ammonia, fertilizers and most importantly, global food security.**
- **Cost-competitive Green Ammonia presents the only real alternative to carbon-emitting fossil-fuel ammonia.**
- **Minbos weighted average cost of hydroelectric power at \$USD0.011 (1.1c) per kilowatt hour is c.90% cheaper than Australian power grid pricing and more than c.55% cheaper than natural gas prices.**

**Minbos Resources Limited (ASX:MNB) (“Minbos” or “the Company”)** is pleased to provide an update on the Capanda Green Ammonia Project, and the Cabinda Phosphate Project Definitive Feasibility Study, as well as large investments the Company is making in Angola’s agriculture sector.

## **CAPANDA GREEN AMMONIA PROJECT**

With the Technical Study now underway and supported by the strong interest in its green explosive grade Ammonium Nitrate, the Company has been investigating pairing further renewable energy with its existing hydroelectric feedstock. The Company is evaluating the potential a further 400MW of solar and/or wind energy.

Increasing electric power availability to diversify the economy and meet the increasing energy demand of a growing population is among the Angolan government’s highest stated priorities<sup>2</sup>. As part of Angola Energy 2025, Angola’s long-term vision for the power sector is to diversify the investment in renewable energies through a growing role of the new renewable energies, including small hydropower plants.

The Government is looking for investments to install up to 100MW of new solar energy, 100MW of new mini-hydro capacity and 100MW of new wind farms and the establishment of a Research Center for Renewable Energy. To support investments, Angola has completed comprehensive mapping studies for solar, wind and further hydro potential (Fig. 2), capturing the opportunity for investments and giving the Company confidence that Angola’s renewable endowments, can support the Company’s vision for renewable investments

<sup>2</sup> Rapid Assessment Gap Analysis, Angola, including Solar, Wind, Hydropower (Sept 2015)

20<sup>th</sup> September 2022  
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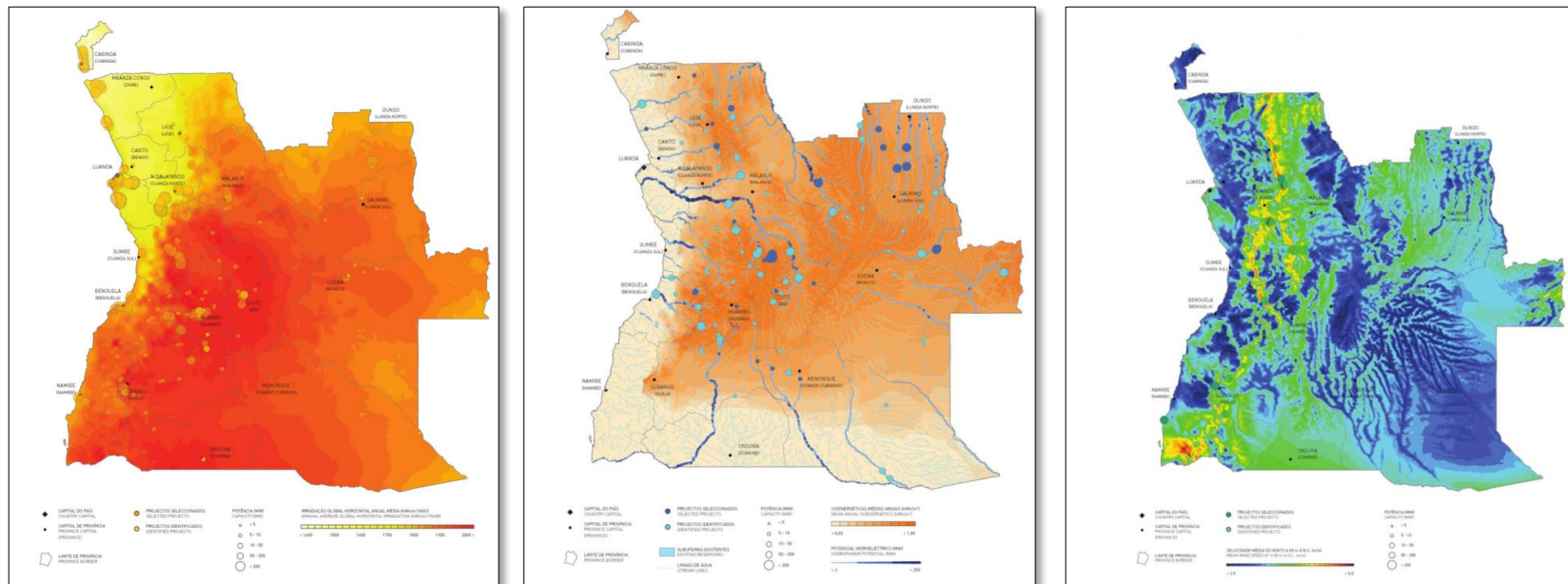


Fig. 2 - Rapid Assessment Gap Analysis, Angola, including Solar, Wind, Hydropower (Sept 2015)

## CABINDA PHOSPHATE PROJECT

As part of the Cabinda Phosphate Definitive Feasibility Study (DFS), the Company has been presented with a new opportunity for the location of the phosphate granulation plant. The alternative site is located in Zee Subantando, a suburb situated along the main highway (EN201) between Cacata and Cabinda City, approximately 36km from Cacata and 16km from Cabinda Port (Fig 3.).

The DFS is currently based on the plant being located at Futila whilst the alternative site is investigated further. It is likely that the alternative site will be the preferred location for the following reasons:

- reduced truck traffic through the city of Cabinda;
- reduced distance for ore haulage from Cacata to the plant ;
- reduced distance for product delivery from the plant to the Port of Cabinda; and,
- reduced costs to hold and maintain site.



Fig. 3 - Alternate site for Cabinda Phosphate Plant, located in Zee Subantando.

**20<sup>th</sup> September 2022**  
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## **DEFINITIVE FEASIBILITY STUDY**

The Company has been informed that there is going to be a delay in receiving the final engineering report from the International Development Fertilizer Centre.

The IFDC engineering scope was to provide a process package which will include a modified process description, process flow diagrams and overall material and heat balance based on repurposing the current granulation design and piloting of the Beneficiated Phosphate Rock process.

The Company considers this to be a minor delay, which may impact the delivery of the DFS, by approximately two weeks.

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

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## **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.