Optimising Diesel Displacement for Remote Mines

Cleaner Energy Solutions

Reinhardt Labuschagne

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Acknowledgement to Country

We wish to acknowledge the traditional custodians of the land we are meeting on, the Whadjuk (Perth region) people. We pay our respects to the Elders both past, present and future for they hold the memories, the traditions, the culture and hope of their people.

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ENERGISING™ CHANGE

CO_2 CH_4 N_2O HFCs PFCs SF_6 NF_3

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NET ZERO EMISSIONS

from our facilities and operations by

2035

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30% REDUCTION

in the emissions intensity of our energy solutions by

2030

Scope 1 DIRECT
Company Activities

- Energy/Heat Generation at Company Facilities
- Company Vehicles
- Fugitive Emissions

Scope 2 INDIRECT
Upstream Activities

- Purchased Electricity, Steam, Heat & Cooling

Scope 3 INDIRECT
Upstream Activities

- Leased Facilities
- Operational Waste
- Fuel/Energy Related
- Purchased Goods/ Services
- Employee Commuting
- Business Travel
- Transport & Distribution
- Capital Goods

Scope 3 INDIRECT
Downstream Activities

- Transport & Distribution
- Use of Sold Products
- Leased Facilities
- Investments
- Processing of Sold Products
- End of Life for Products
- Franchises

Scope 1 DIRECT

Scope 2 INDIRECT

Scope 3 INDIRECT

Scope 3 INDIRECT

Looking at the options via different lens

The viability of any one proposed option will depend on the primary priority for the business.

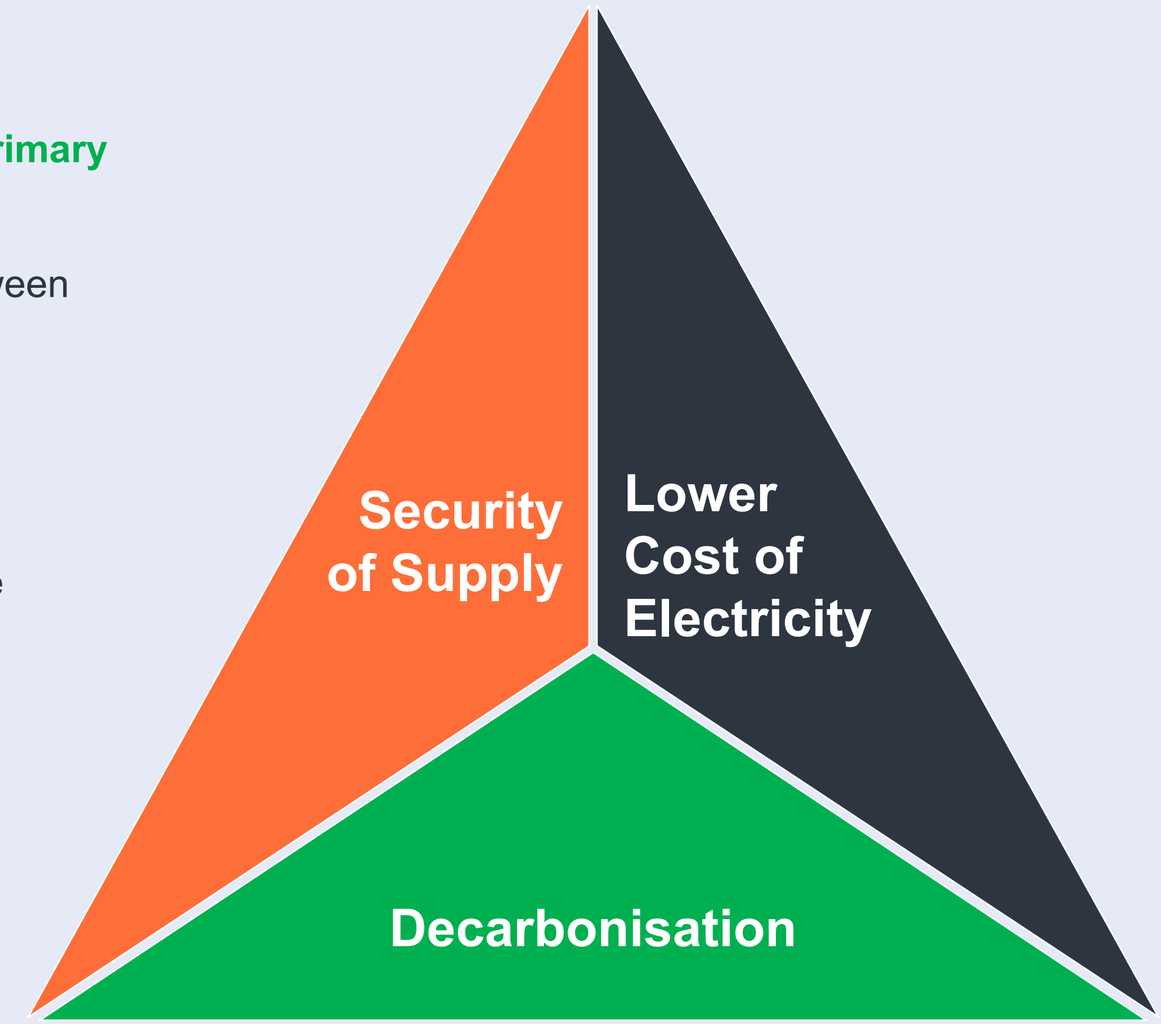
The global energy transition has seen the need for a **balance** between three key priorities in power supply arrangements:

- Decarbonisation
- Security of Supply (Reliability)
- Lowest Cost of Electricity

Maximising one priority can lead to a **detriment in another** of the priorities.

To realise an **optimum** outcome, it is necessary to determine which is the **primary** priority, and the **tolerance level** of detriment in the other priorities.

For example: A very high level of renewable energy can be significantly more capital-intensive (financial risk) and can also create challenges in achieving reliability and stability of the network (technical & commercial risk).



Practical Ways to Optimise Diesel Displacement for Remote ~~Mines~~

Switch to Gas or alternate fuels

Battery Energy Storage Systems (BESS)

Organic Rankine Cycle

Renewable (Solar and Wind)

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PROVIDING RENEWABLE OFF-GRID POWER FOR A REMOTE GOLD MINE

SPOTLIGHT

Enabling renewables – harvesting energy for local communities

Customer: **Northern Star Resources**

Location: **Porphyry Gold Mine, Western Australia**

Sector: **Mining**

THE CHALLENGE

Reducing diesel consumption and costs in challenging conditions

THE SOLUTION

Supplying a relocatable solar farm and battery storage solution

THE IMPACT

Cost-effective carbon reduction: Implementing a scalable off-grid power solution

KEY FACTS

4.4 MW
Solar farm

2 MW / 1 MWh
Battery storage

1.67 million L
potential fuel savings p.a.

4,486 TCO2
Estimated reduction p.a.

10 year
PPA agreement

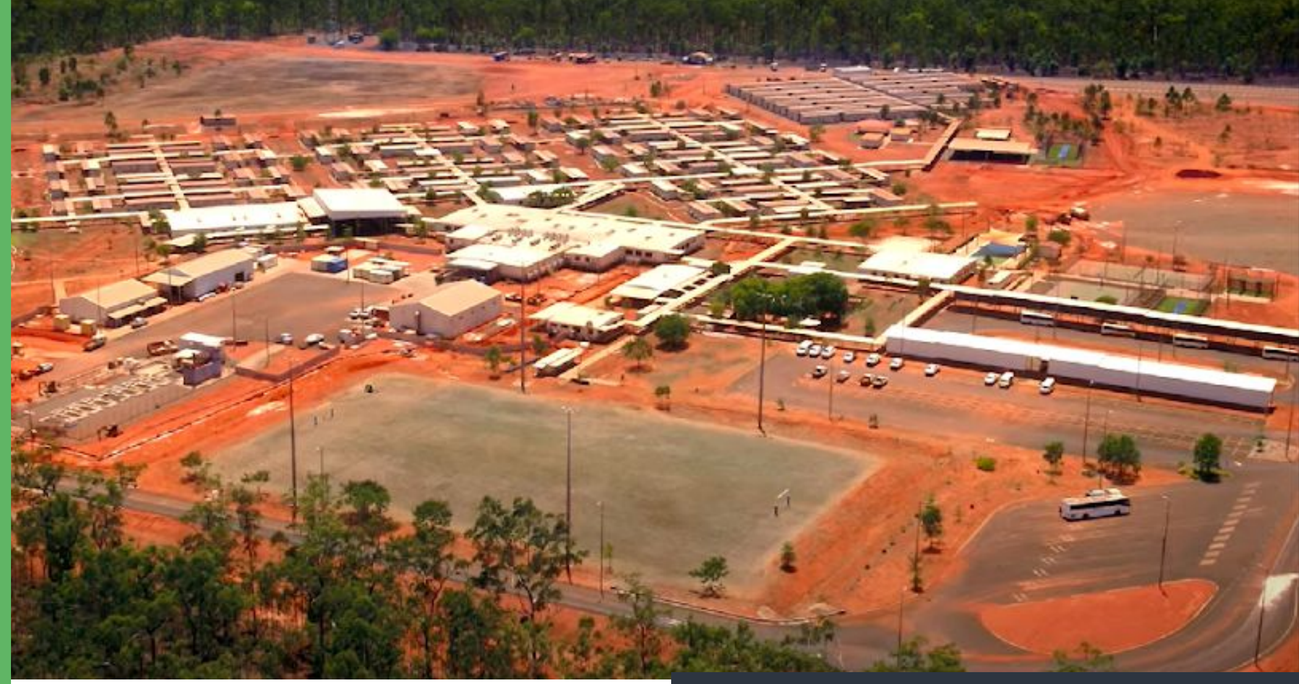
AGGREKO TO BUILD, OWN AND OPERATE SOLAR FARM AND BESS AT RIO TINTO'S AMRUN PROJECT

SPOTLIGHT

Enabling renewables – harvesting energy with emission reductions

Location: **Weipa, Cape York Peninsula, Queensland**

Sector: **Mining**



THE CHALLENGE

Help Rio Tinto reduce Scope 2 emissions at its Weipa operations by up to 10%.

THE SOLUTION

To build, own and operate a 12.4 MW solar farm and 8.8 MW / 2.1 MWh Battery Energy Storage System (BESS) under a long-term power purchase agreement for Rio Tinto's Amrun project in Weipa

THE IMPACT

Once operational, Aggreko's 12.4 MW solar farm and BESS are expected to reduce Amrun's diesel electricity consumption by 37 percent

KEY FACTS

12.4 MW
Solar farm

8.8 MW / 2.1 MWh
Battery storage

5.5 million L
potential fuel savings p.a.

14,000 TCO2
Estimated reduction p.a.

KEY FACTS

After Expansion

19.3 MW
Solar farm

9 MW / 9 MWh
Battery storage

50.6 MVA
Gas power

SPOTLIGHT

Granny Smith Hybrid Expansion

Customer: **Gold Fields**

Location: **Granny Smith Mine, Laverton, Australia**

Sector: **Mining**

THE CHALLENGE

Help our customer introduce renewables into their energy mix without compromising power reliability.

THE SOLUTION

Leverage the benefits of hybrid energy and minimise capital outlay.

THE IMPACT

Lower energy costs and minimised environmental impact.

BACKGROUND

This decarbonisation journey began almost 8 years ago with Aggreko replacing the existing diesel power station with a high-speed, gas-fueled reciprocating engine station. Aggreko further advanced the mine’s power system in 2019 by adding 7.7 MWp Solar and 2 MW/1 MWh BESS of renewable generation. Now in 2024, we are expanding and decarbonising the mine’s power system, adding increased gas engine capacity along with a solar farm and BESS.

Thank you.

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