



PENSANA Plc

Building the world's first
sustainable magnet metal
supply chain

ESG PRESENTATION FEB 2023

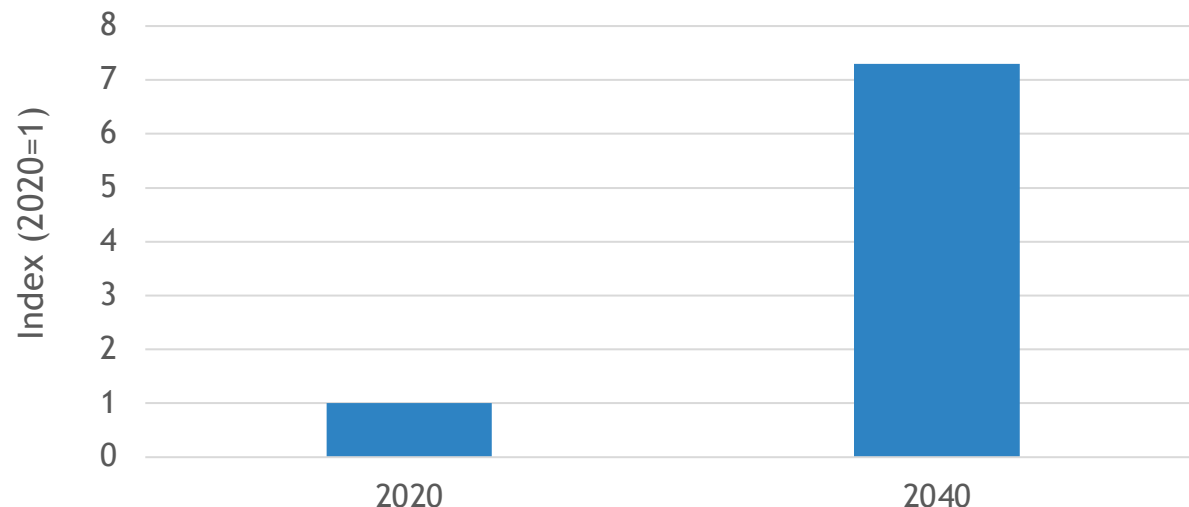
Rare earths are **CRITICAL** to the **LONG-TERM** vision of a net zero carbon and climate-resilient future

- ▶ Pensana strategically aims to produce Neodymium Praseodymium (NdPr) oxides to directly supplement the forecast global shortfall in demand to address the need for magnet metals, primarily driven by electric vehicle and wind turbine manufacturing.
- ▶ Without addressing the shortfall with a sustainable value chain, it is unlikely that the energy transition can occur as rare earth magnets are required for the construction of wind turbines and electric vehicles.
- ▶ The growth in the demand for rare earths is significantly dominated by sustainable applications, with third-party evidence from widely respected independent reports demonstrating this.



Rare Earths are non-negotiable for global net zero

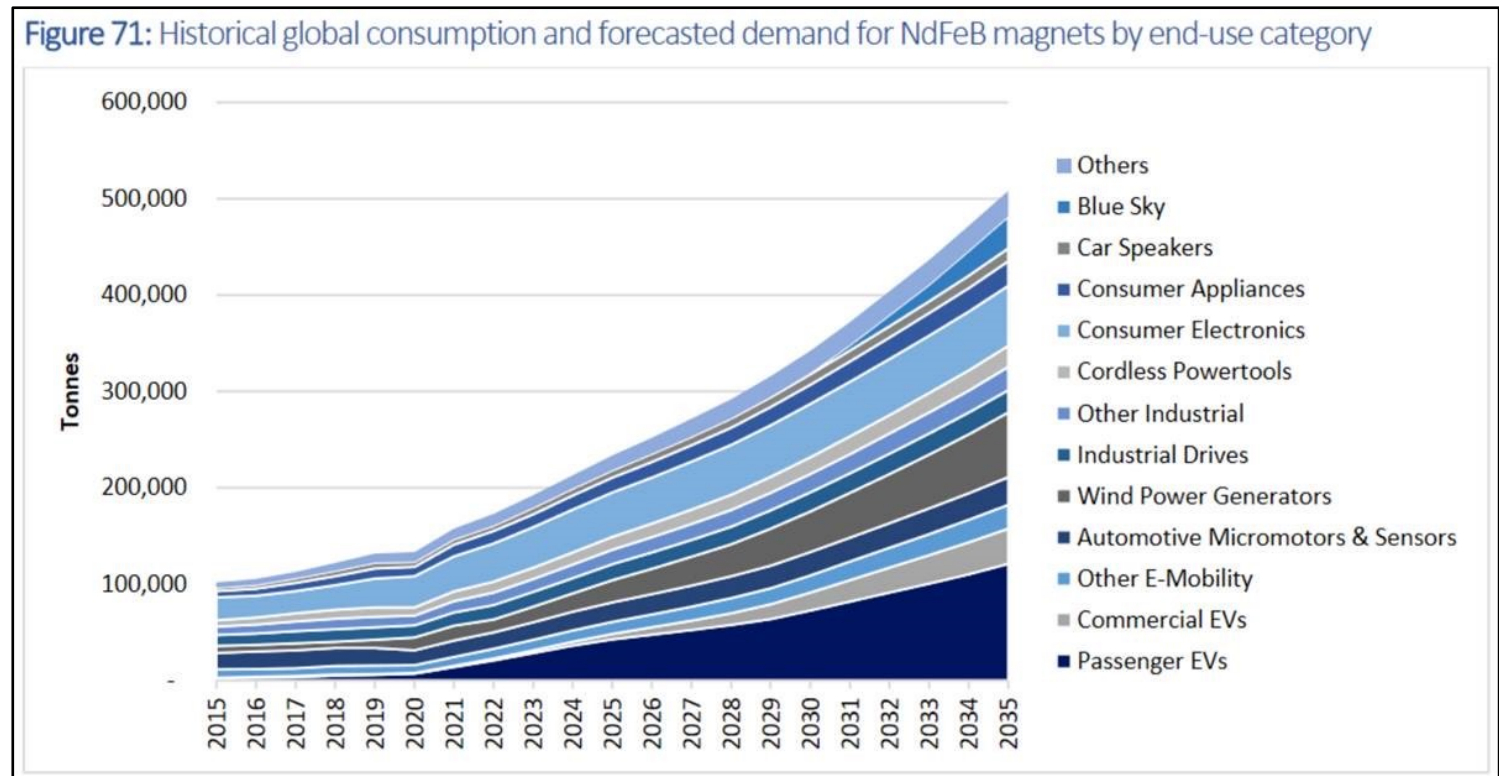
Rare earth demand from clean energy technologies will increase seven-fold by 2040 relative to 2020



- ▶ Respected climate models show clean energy technology requires a sevenfold increase in rare earth supply by 2040 to maintain a 1.5°C pathway

Rare Earths are non-negotiable for global net zero

- ▶ From 2022 through 2035 we expect the greatest demand growth to come from **commercial EV** traction motors (24.5% CAGR), **passenger EV** traction motors (14.5% CAGR) and **wind power** generators (13.0% CAGR)



SOURCE: Adamas Intelligence (2022), Rare Earth Magnet Market Outlook to 2035

SUSTAINABLE VALUE CHAIN

Lobito Port

The state-of-the-art Lobito Port is connected directly to the Benguela railway line which provides an efficient low-carbon transport mechanism. Once loaded it travels to the port in Hull where it is unloaded directly to the plant with no need for carbon-intensive road travel.

Longonjo Mine

Longonjo mine will be constructed aligned to best ESG practice. This has included instructing an independent Environment and Social Impact Assessment during the planning stage, building a power line to enable use of hydropower as part of operations and adjusting the mine area to exclude areas of biodiversity and cultural significance.

Longonjo MRES Plant

The on-site Mixed Rare Earth Sulphate (MRES) plant will process ore separate MRES product. This means more raw material will remain on site and Pensana will be transporting a product of lower weight and volume, reducing shipping requirements and carbon emissions.

Mine TSF

The tailing storage facility (TSF) mine will be constructed in line with the Global Industry Standard on Tailings Management, the leading ESG standard in the sector. This means the TSF will be built and monitored and aligned to the latest leading safety and social standards.

Reagent Manufacture

Carbon emissions from chemical reagent production (scope 3) will be considered in procurement decisions to ensure that the impact on the global climate is minimised.

Triton Power

Triton Power is ready to utilise hydrogen from the Hydrogen2Humber project to generate lower carbon electricity.

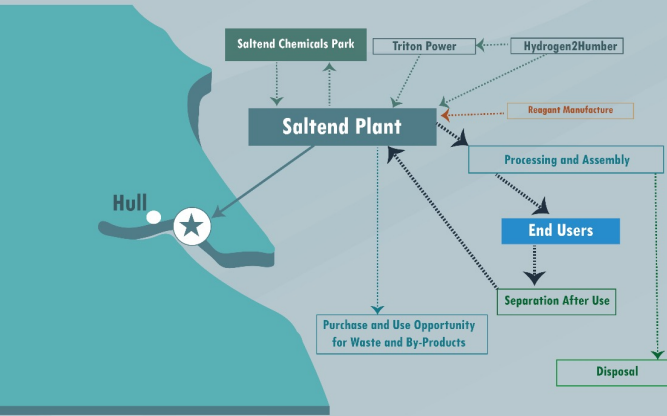
Hydrogen2Humber

Pensana have signed a cooperation agreement with Norwegian company Equinor with respect to potential offtake of hydrogen to facilitate recycling of used rare earth magnets.

Saltend Chemicals Park

The Saltend processing plant will be built within the existing Saltend Chemicals Park which allows Pensana to plug-and-play into utilities, and existing infrastructure. This means shared expertise and facilities to manage environmental risk.

HUMBER FREEPORT, UK



Saltend Plant

The Saltend plant will operate aligned to robust English law which sets high standards for mitigating health, safety and environmental risks.

The design will include solar panels for self-generation of renewable energy, and the business is also exploring future connections to benefit from the investment in renewable power from North Sea wind.

By-Product Production

Purchase and Use Opportunity for Waste and By-Product

The NdPr separation process will result in other products being created. These products might not necessarily be primary revenue-generators, but to ensure Pensana minimises its waste going to landfill, routes to market for by-products are currently being explored.

Processing and Assembly

Pensana will develop digital traceability to ensure products can be traced back to their original place of origin tagged with ESG credentials.

End Users

Pensana's NdPr will be used in wind turbines and electric vehicles and are therefore essential for supporting the drive to Global Net Zero.

Disposal

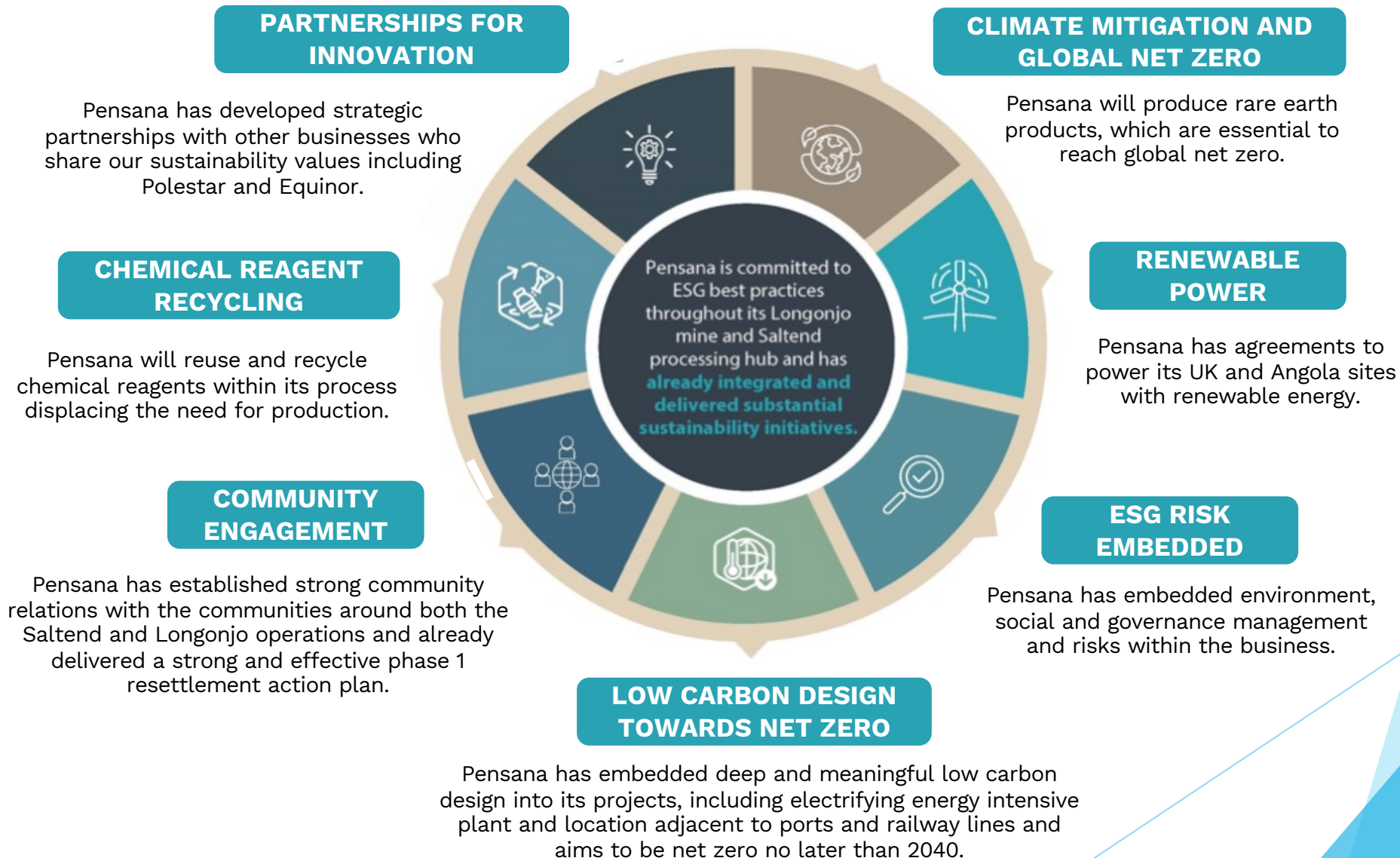
Separation After Use

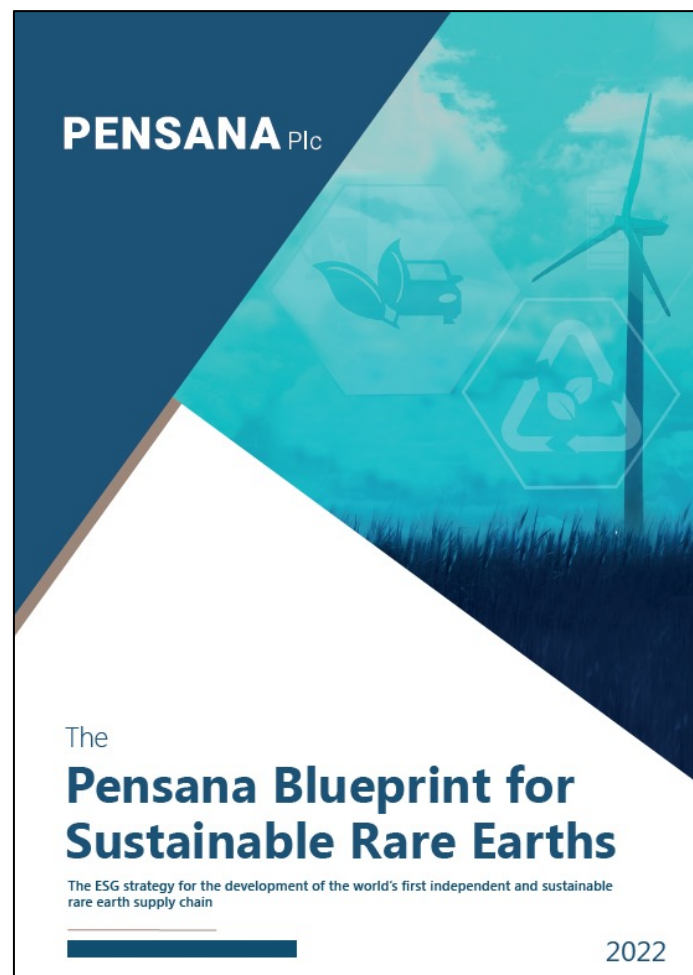
Pensana is aiming to support the circular economy by investing in research and infrastructure to develop a recycling facility for rare earths. This will reduce the quantity of used-magnets going to landfill and reduce the need for virgin feedstock taken through mining.



PENSANA Plc

Pensana has **embedded ESG at the heart of everything we do** and has already **delivered** substantial ESG interventions.





Pensana has launched an ESG strategy covering its short, medium and long-term strategic approach to ESG

Pensana has committed to 11 ambitions across the ESG suite

The climate crisis



Provide a reliable and sustainable source of separated rare earth metals and compounds, essential to global decarbonisation products.



Produce the rare earth products with the lowest embedded carbon on the market



Promote deep and meaningful carbon reduction across our entire value chain, to be net zero no later than 2040.

Our colleagues, their safety and the communities in which they live



Develop infrastructure and skills so that communities local to our sites see a direct, long term, economic benefit from our presence.



Implement a zero harm approach to health and safety.

Protecting the natural environment



Send zero waste to landfill by 2035.



Implement a world-class rare earth recycling scheme displacing some of the need for mining and reducing landfilling.



Integrates leading practice across our business to protect and enhance the natural environment in and around our operations.

Operating an ethical business with strong corporate governance



Integrate leading practice across our business to embed strong corporate governance in everything we do.



Implement a world-class sustainable supply chain backed by strong digital evidence of sourcing.

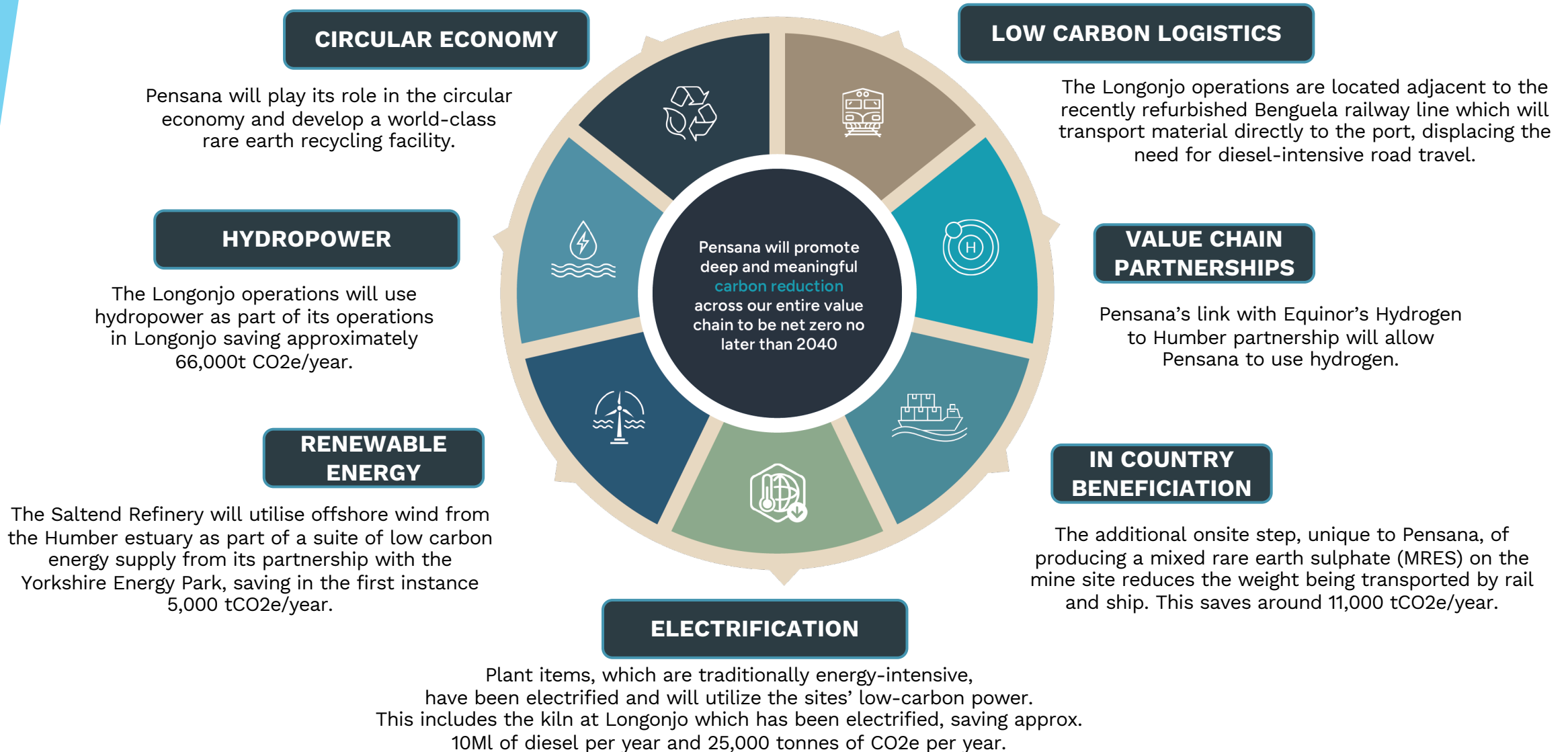


Integrate leading practice across our business to protect the human rights of our colleagues and partners.

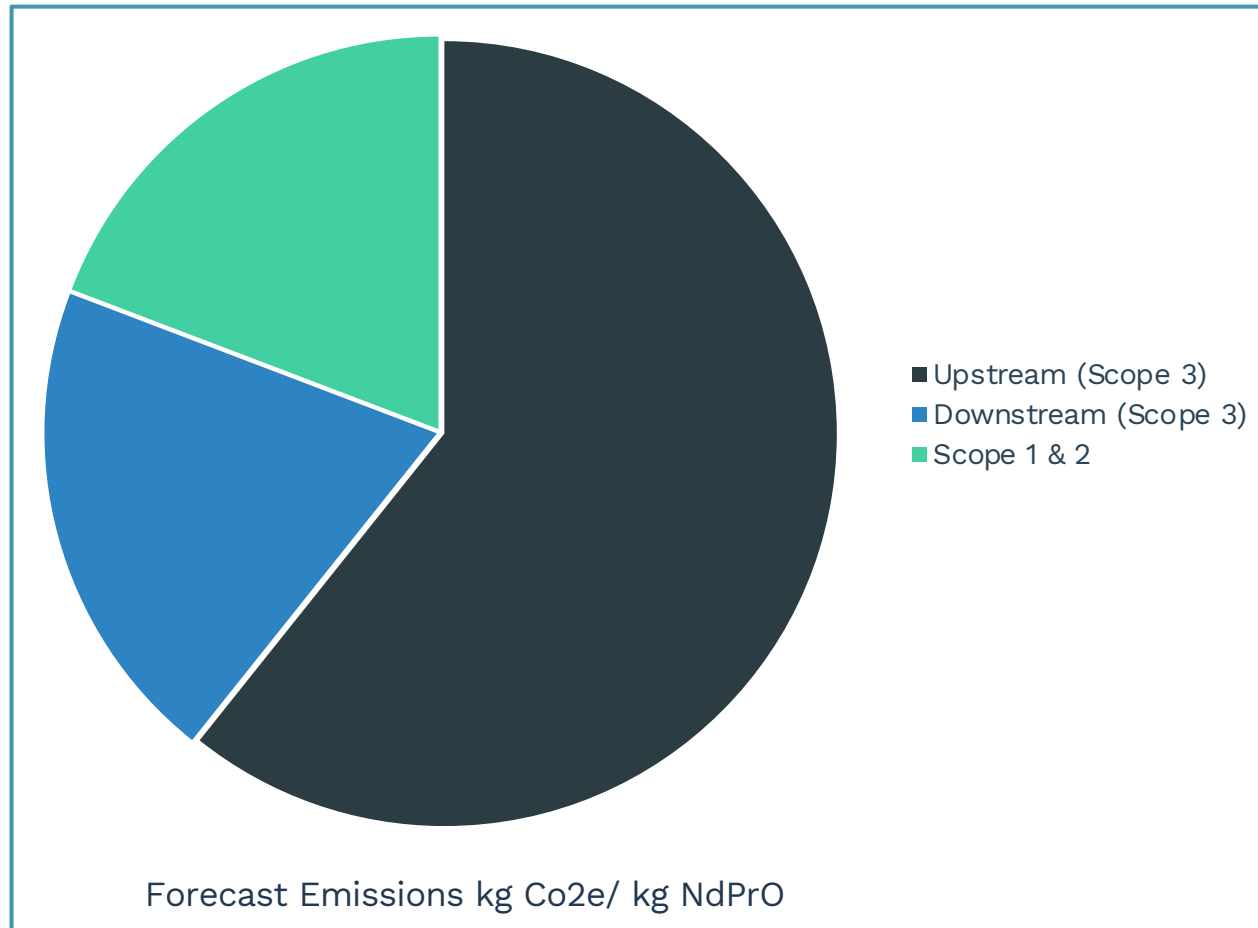
CARBON AND NET ZERO

Pensana will promote deep and meaningful carbon reduction across our entire value chain, to be net zero no later than 2040

Pensana has already embedded **deep carbon reduction** into the design process



After deep designed carbon reductions, Pensana has an understanding of the remaining emissions to be eliminated towards net zero



- ▶ Pensana has used consultant Route2 to complete a product greenhouse gas (GHG) screening

Our largest emissions by scope are:

- Scope 3 – Upstream
- Scope 3 - Downstream

This enables efforts to be focused towards deep and meaningful carbon reduction.

Pensana will target future carbon reduction across four workstreams

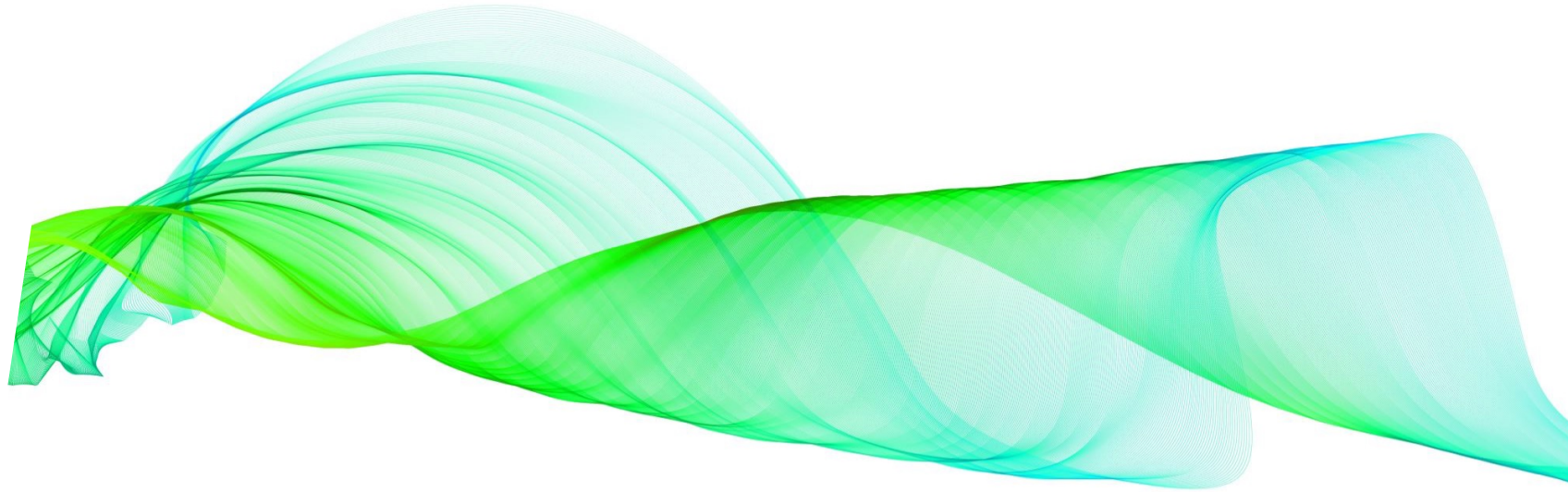
This will allow targeted innovation and capital investment

Procurement of
chemical reagents

Direct Utilities

Chemical reaction
by-products

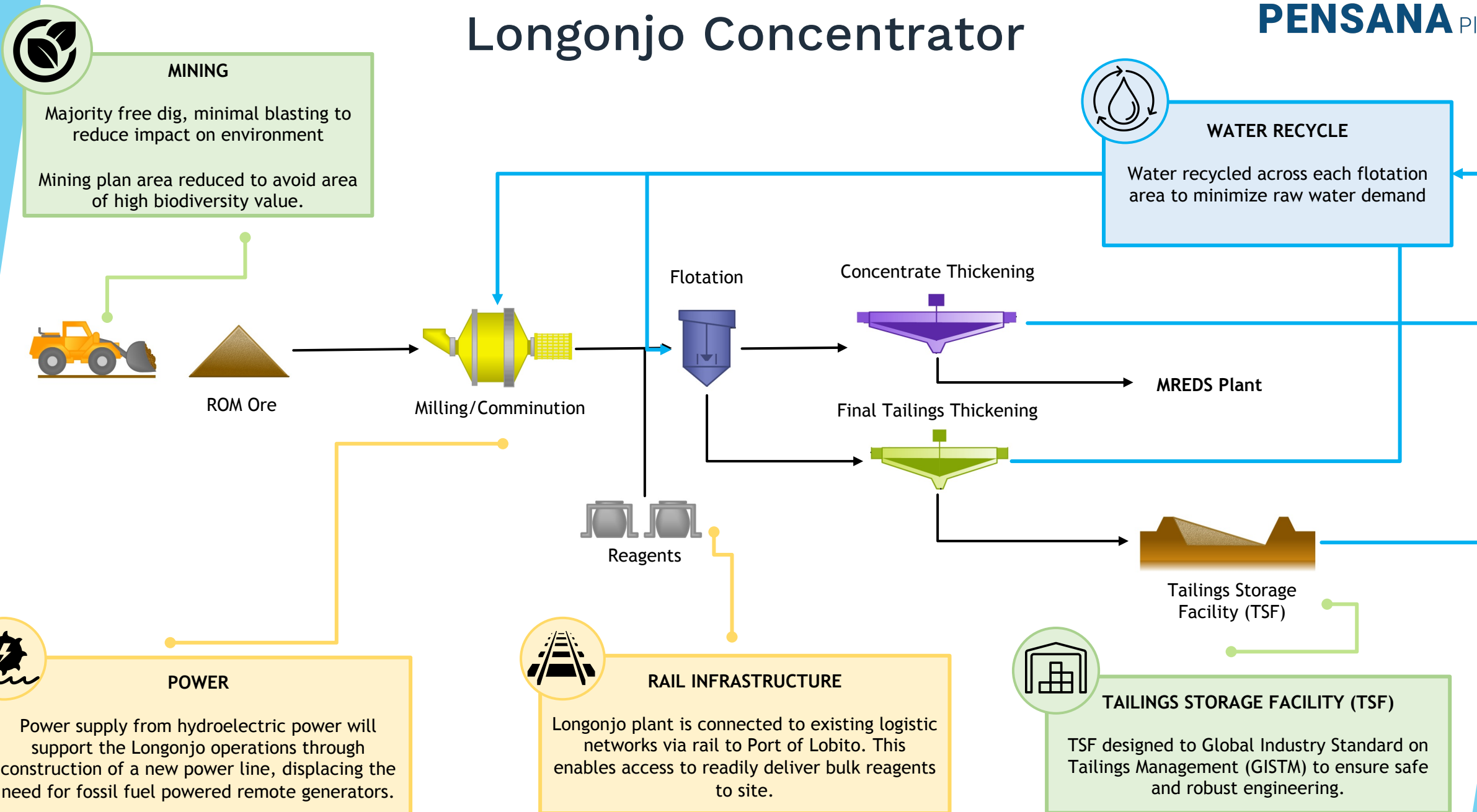
Downstream
Activity



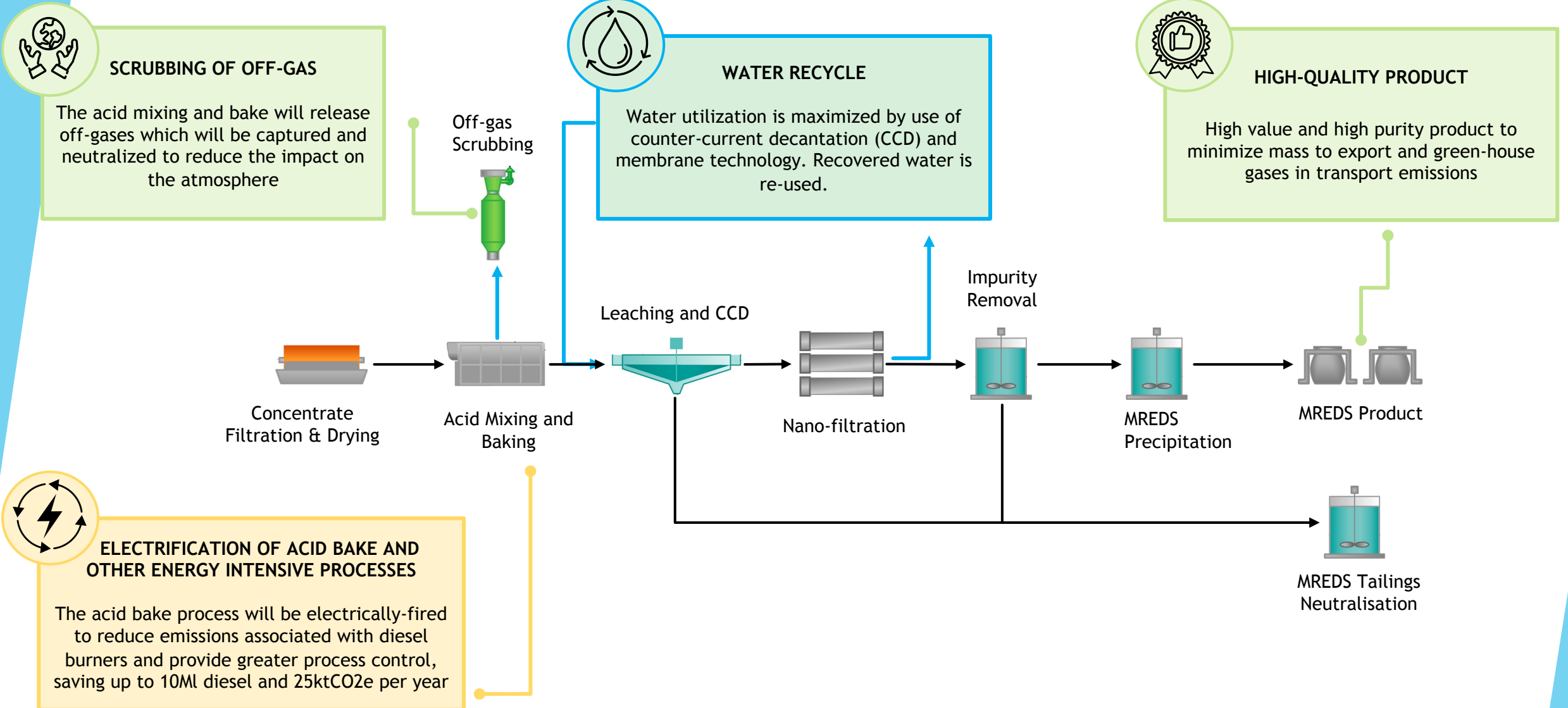
SUSTAINABLE PROCESSES

SUSTAINABILITY HAS BEEN EMBEDDED INTO THE DESIGN PROCESS
FOR LONGONJO AND SALTEND SITES

Longonjo Concentrator



Longonjo MREDS Plant



Saltend Refinery Separation Plant



HUMBER “GREEN ECONOMY” HUB

The Saltend Refinery will be part of the green hub developing on the banks of the Humber, this includes developments around CCS and hydrogen, the latter of which Pensana have an agreement with Equinor which is part of the future recycling plans for the plant



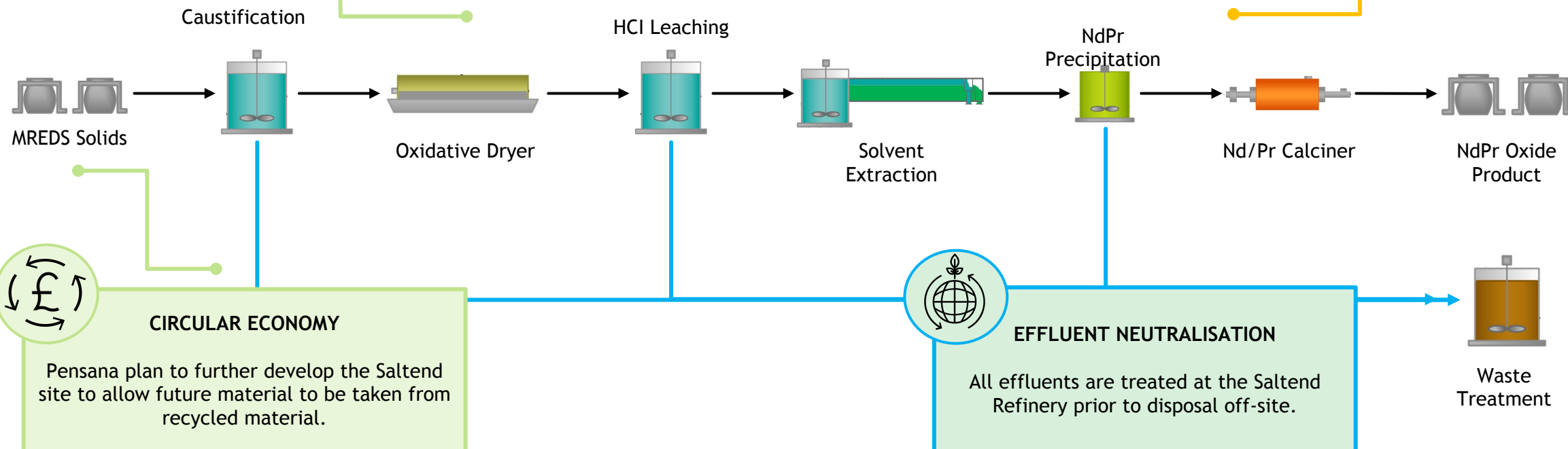
SALTEND CHEMICAL PARK

Location of the Saltend Refinery in the Saltend Chemical Park enables ready access to existing infrastructure, proximity to reagent supply, waste disposal and utilities ‘over-the-fence’.



POWER

Located on the Humber and placed to take advantage of UK investment in wind generation in the North Sea through agreement with the Yorkshire Energy Park



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