Integrated Offering

EHL Engineering | Nopal

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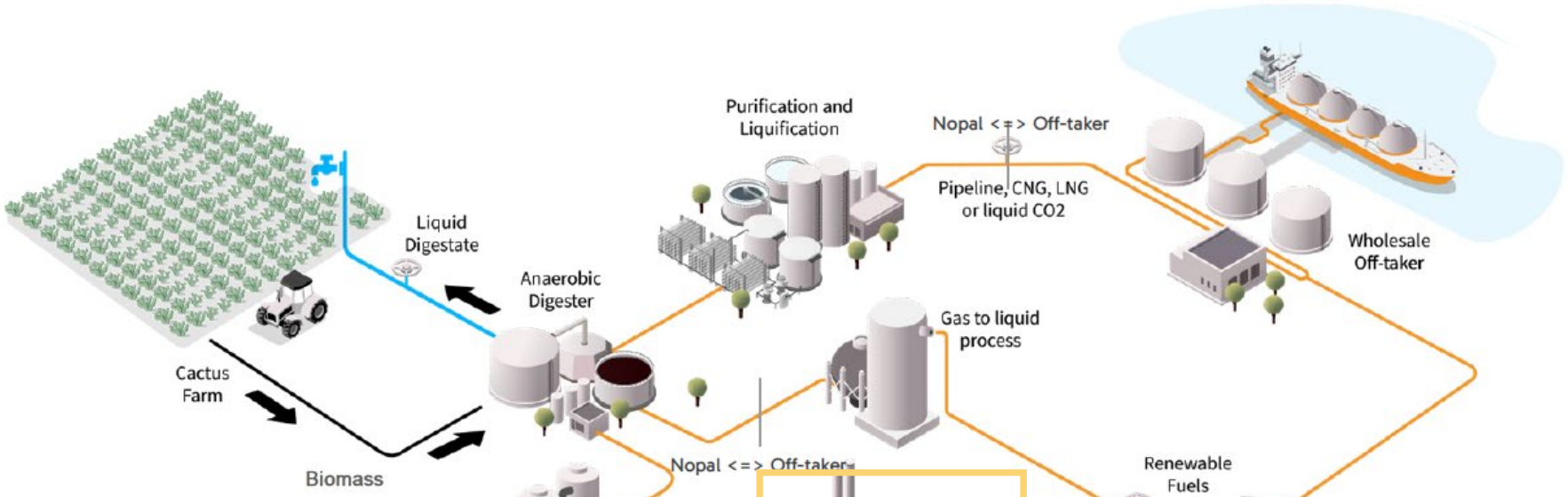
Renewable Energy | Known Technology



Transmission & Distribution

- Renewable Energy
  Implementing sustainable & eco-friendly solutions.
- Energy Provision & Generation
  Developing reliable & efficient energy solutions.
- Power System Analysis
  Conducting detailed power system studies to ensure reliability and performance.
- MV & LV Switchgear
  Designing and supplying medium and low voltage switchgear solutions.
- Earthing & Lightning Protection
  Ensuring the safety & integrity of electrical systems through robust earthing and lightning protection solutions.

Farming → Harvesting → Anaerobic digestion → Biogas

- Renewable Electricity
- Renewable LNG
- Renewable LCO_2
- Renewable Methanol
- Carbon Benefits

Substation & OHL	20
Eskom Self Build	40
Eskom Build	15
Eskom Facilitation	80

Collective >1GW

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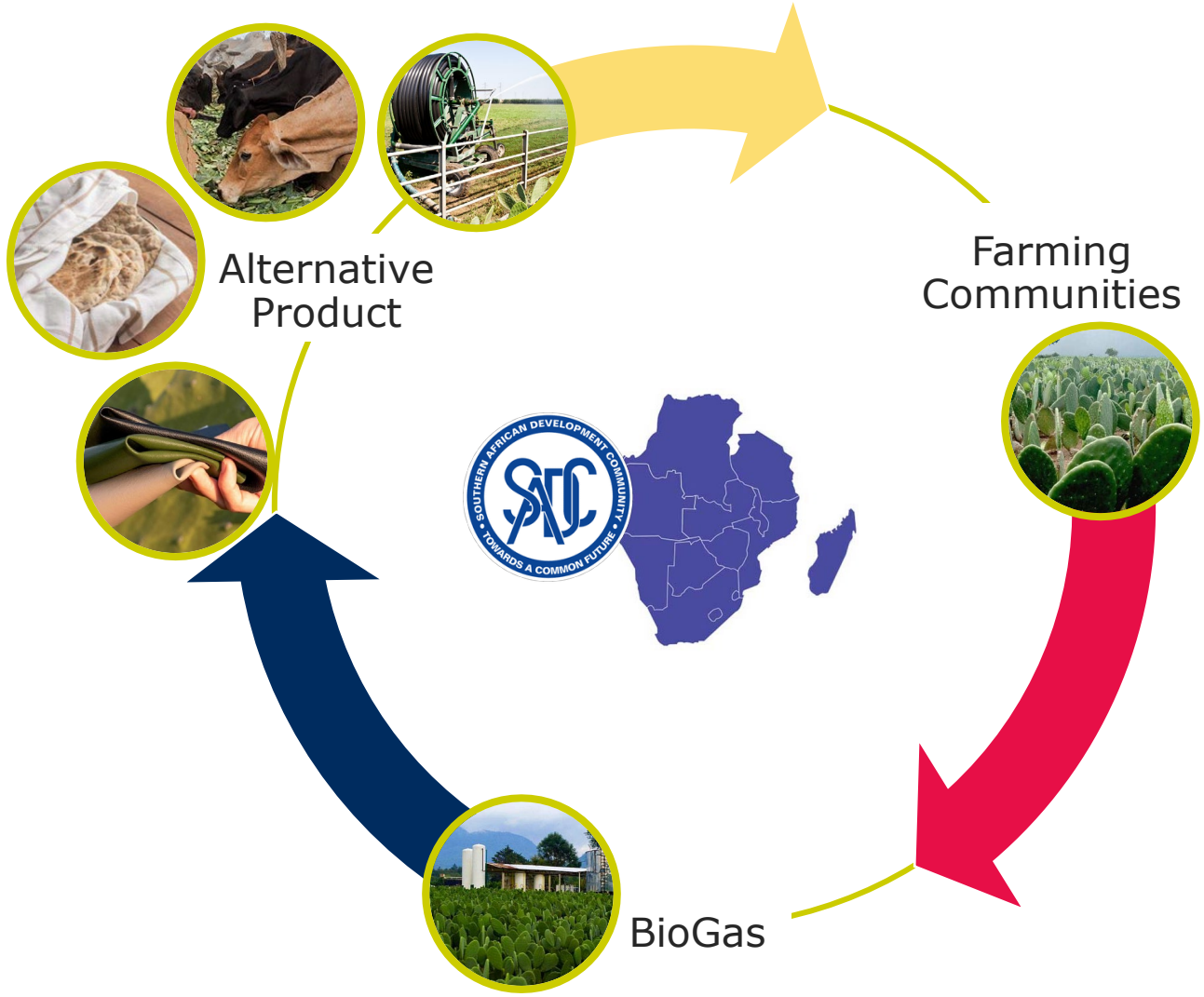
Joint Effort | Circular Economy

- Technology
- Funding

- Regional
- O&M
- Ongoing support
- Localisation
- Invested in Africa



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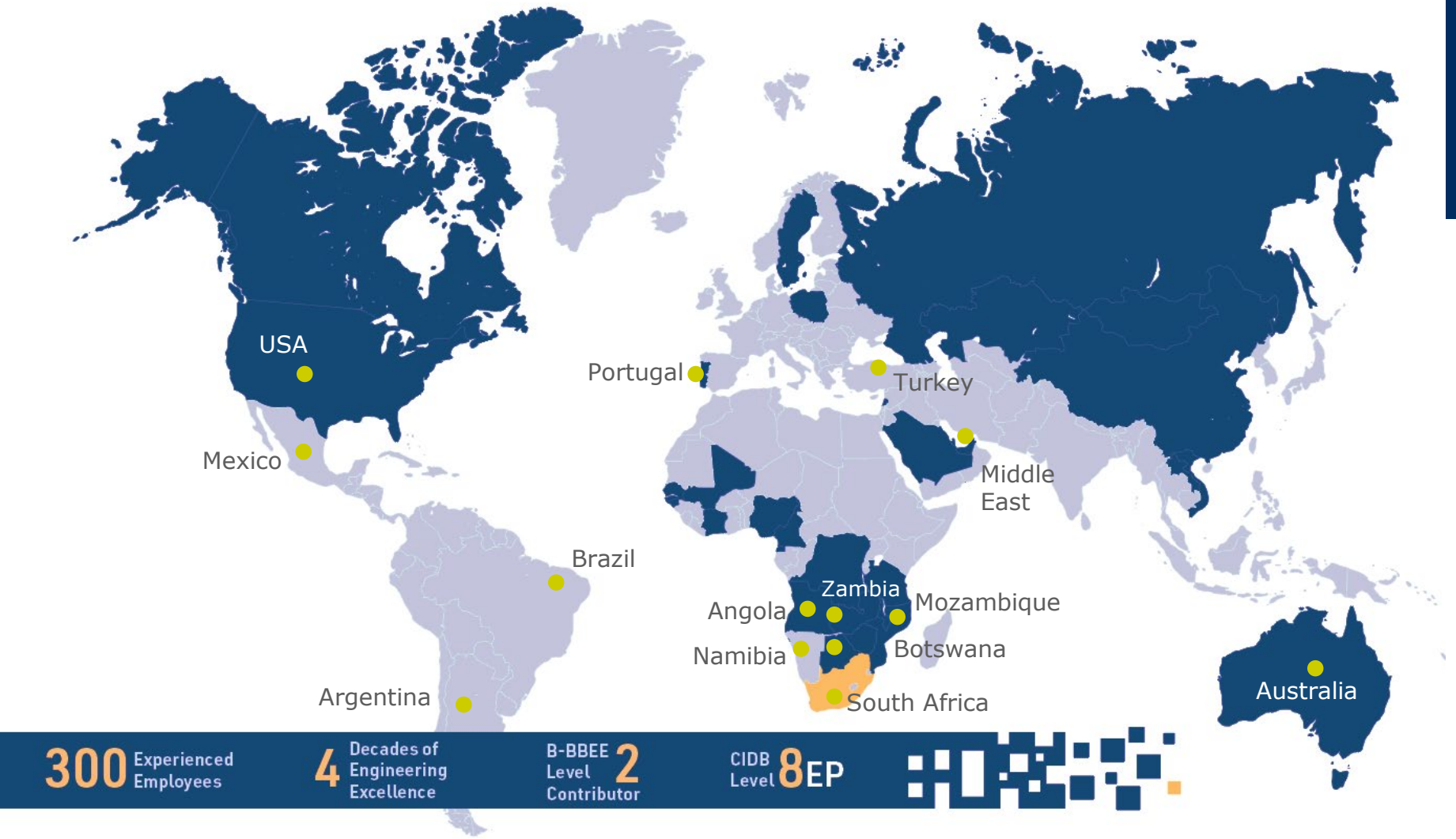
Creating Global Value

EHL seeks to offer our clients more than just a standard project-house experience.

Our focus is on understanding our client's needs while creating strong partnerships so that our elegant engineering solutions are not only designed safe but also designed to budget.



Nopal's Mission is to generate dependable and cost-effective renewable energy at scale through biomass cultivated on marginal arid land.

Help communities and industry to decarbonize energy consumption using locally produced renewable energy.

R&D Farms | Portugal; Africa
Project Underway | Namibia; Mozambique
Negotiations Underway | Angola; Botswana; Eswatini; South Africa; Kenya; Zimbabwe; Zambia; Turkey; Middle East, Australia.

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Joint Expertise

Detailed Feasibility Studies

Assess project viability & ensure successful outcomes.

Cultivation

Advanced commercial cactus cultivation and research.

- Broad genetics – specific strains for specific needs, including carbon density and biomass.
- Backed by years of experience and data.

Start-to-Finish Project Implementation

Managing all phases of the project implementation, from planning and design to execution and commissioning.

Renewable Energy Production

- Biogas facility design/build.
- Addressing global demand for renewable fuels.
- Potential production of Electricity, RMethane, RCNG, RLNG, RMethanol
- Modular farm and energy production designed for scalability.

Carbon Capture

- Nopal cactus absorbs significant amounts of CO_2 through its CAM (Crassulacean Acid Metabolism) photosynthesis process.
- Can thrive on degraded, arid lands that are otherwise unsuitable for traditional agriculture
- With over 4.8 billion hectares of land globally unsuitable for traditional crops but viable for nopal cactus cultivation, there is vast potential to scale nopal cactus farming.

Infrastructure Upgrades

Implementing infrastructure upgrades & projects to maintain and enhance operational efficiency.

Utility Authorities Liaison

Coordinating with utility authorities to ensure seamless integration & compliance with regulations.

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EHL Value Chain

Operations & Maintenance

Funding

- EPC+F
- Boot
- Project Funding

People

- Secondment partnership
- Owner's Teams

Energy

- Solar
- Wind
- Biomass
- Gas

Transmission Distribution

- Overhead Lines
- Substations
- Utility approvals
- Self-build Option

Plant

- New Plants/Shafts
- Upgrades/Life Extension
- Control Systems
- Modular Plants
- Energy Efficiency Optimisation

Manufacturing & Services

- Turnkey solutions
- Designs & Schematics
- Manufacturing
- Supply of cables & accessories
- Sign-offs & commissioning

The Challenge

Meeting Supply

Helping to meet the exceptional growth in demand for sustainable bio-energy.

As businesses struggle to secure the quantity of renewable energy required to operate effectively, Nopal has a solution.

Abundant Arid Land

Using traditional food crops for biofuel production is increasingly viewed as unsustainable, exacerbating the issue of limited arable land.

Nopal provide food security and still produce tonnes of biomass for bioenergy using vast tracts or arid wasteland.

Mass Scale

Not limited in scalability by restrictions faced by other biofuel producers who rely on arable land or existing forests, which are finite resources.

Job Creation

Contribute to 14 of the 17 UN Sustainable Development Goals (SDGS).

- Shifting to sustainable aviation fuel.
- Reduce carbon footprint.
- Comply with environmental regulations.
- Greener future air travel.

- Moving away from traditional diesel fuel.
- Embracing renewable biofuels.
- Minimizing emissions.
- Enhance sustainability.

- Seeks sustainable alternatives.
- Biofuels offer a renewable
- Key driver in the future of transportation.

- Mining companies, traditionally diesel dependent.
- Transitioning to biofuel.
- More sustainable energy practices.

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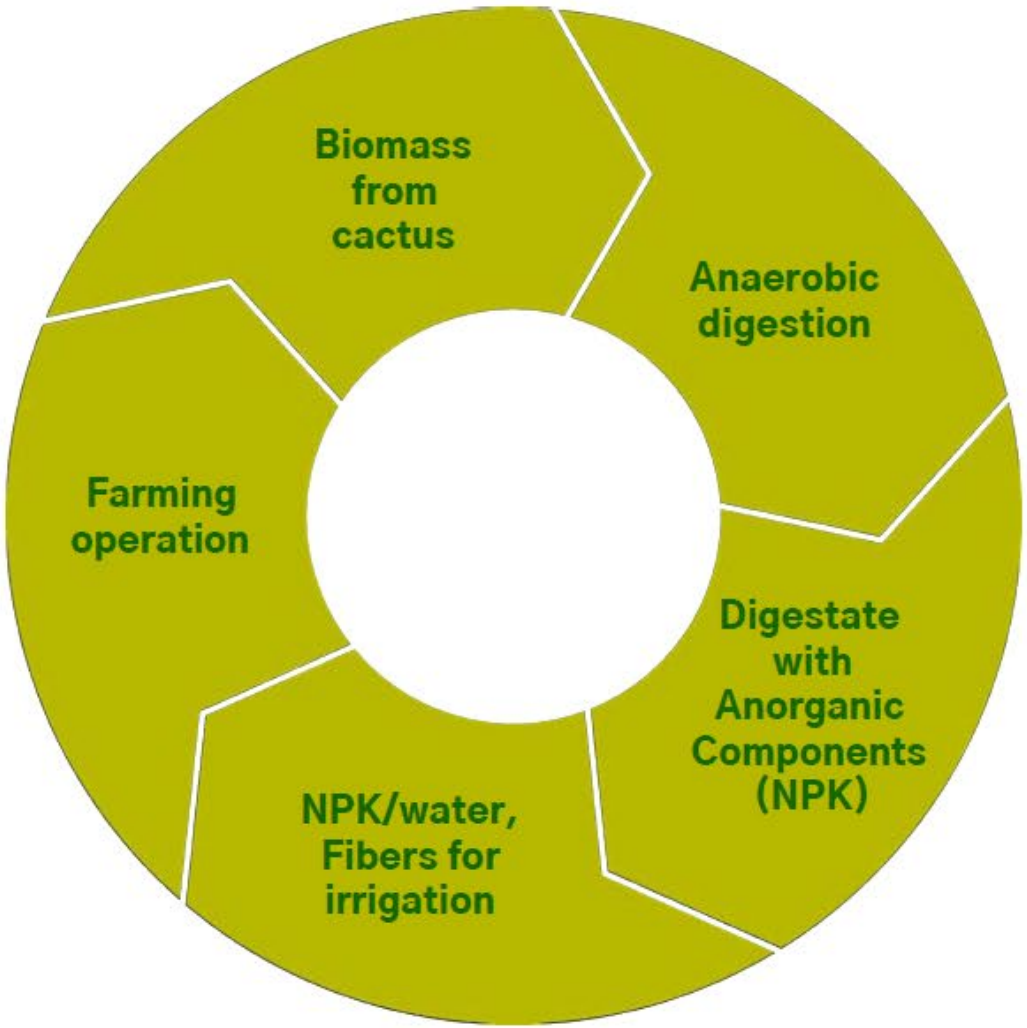
Our Process

Circular cactus farming 800 ha

Input:

Cladodes from Nopal nursery, sun, CO_2, initial fertilizer, moisture, labour



Output:

Raw Biogas to processing 25 million m3/a

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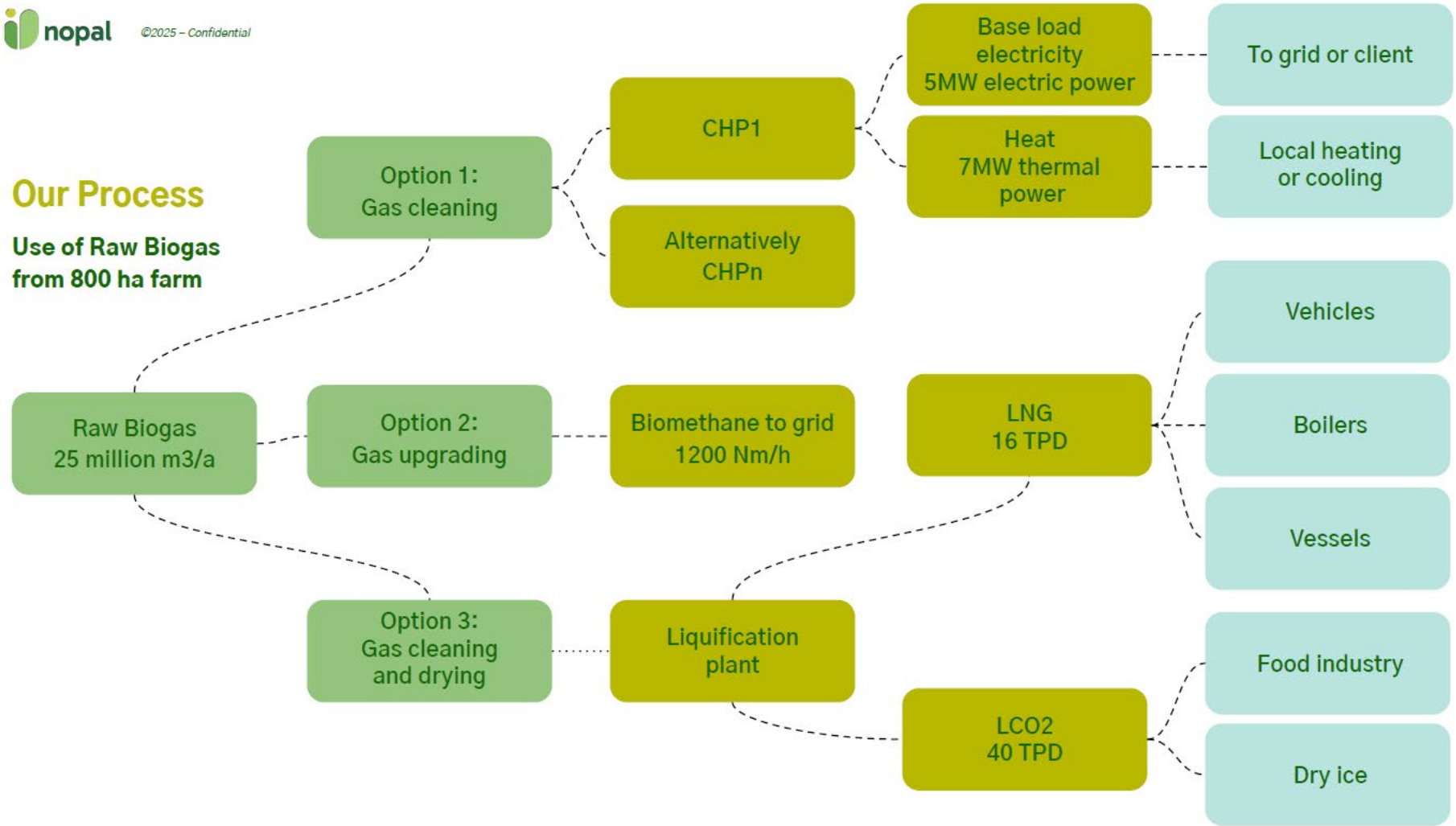
nopal

Our Process

Use of Raw Biogas from 800 ha farm



Value Engineering

- Identify cost-saving.
- Life Cycle Cost Analysis.
- Innovative Design.
- Proactive Risk Analysis.
- Sustainability
- Collaborative Approach.
- Tailored Strategies.
- Client-centered Results.
- Solar PV Project Management.

System Solutions

- Water Network Design.
- Wastewater Treatment Solutions.
- Agricultural Systems.
- Energy Isolation.
- Energy Demand Side.
- Management.

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Use of Arid Land | Renewable Energy

- OPEX in local currency | limited FOREX risk.
- No link to energy prices to CPI-Index.
- Full control on raw material cost | >15a farming cycle.
- Use available, unused land.
- High local acceptance due to job creation.
- Exponential replication of plants from local nursery.
- Price for energy predictable over long period | >20a
- Service Level Agreements with Nopal.

⚠ *Example using approximately 800 planted hectares*

	Example Output	Technology	References
Biogas	100 GWh	Anaerobic Digestion	Anaergia, Weltec, Envitec (>10.000)
Base Load Electricity	5 MW	CHP	GE, MAN (Millions)
Renewable LNG plus LCO2	5.5m kg/annum 6.8m kg/annum	Liquefaction and compression	Praxair/Linde, Ruhe Wartsila (hundreds)
Renewable Methanol	17m liters/annum	Catalytic Process	Plant Process, Others

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Use of Arid Land | Renewable Energy

Area Planning

- Plant Layout Design
- Interfacing with Existing Infrastructure
- Agricultural Development (rezoning issues)
- Land Development/ Acquisition
- Geotechnical & Land Survey
- System Optimisation

Project Preparation Readiness

- Eskom CEL, BQ
- NERSA
- EIA
- SPLUMA Requirements
- Technical Selection (Fix vs. Tracking)
- Social Labour Plan
- P2P Alignment

Environmental Services

- Execute Environmental Impact Assessment (EIA)
- Conduct Strategic Env. Assessments (SEAs)
- Secure Public Participation
- Monitor & Audit Environmental Compliance
- Conducting Specialist Studies

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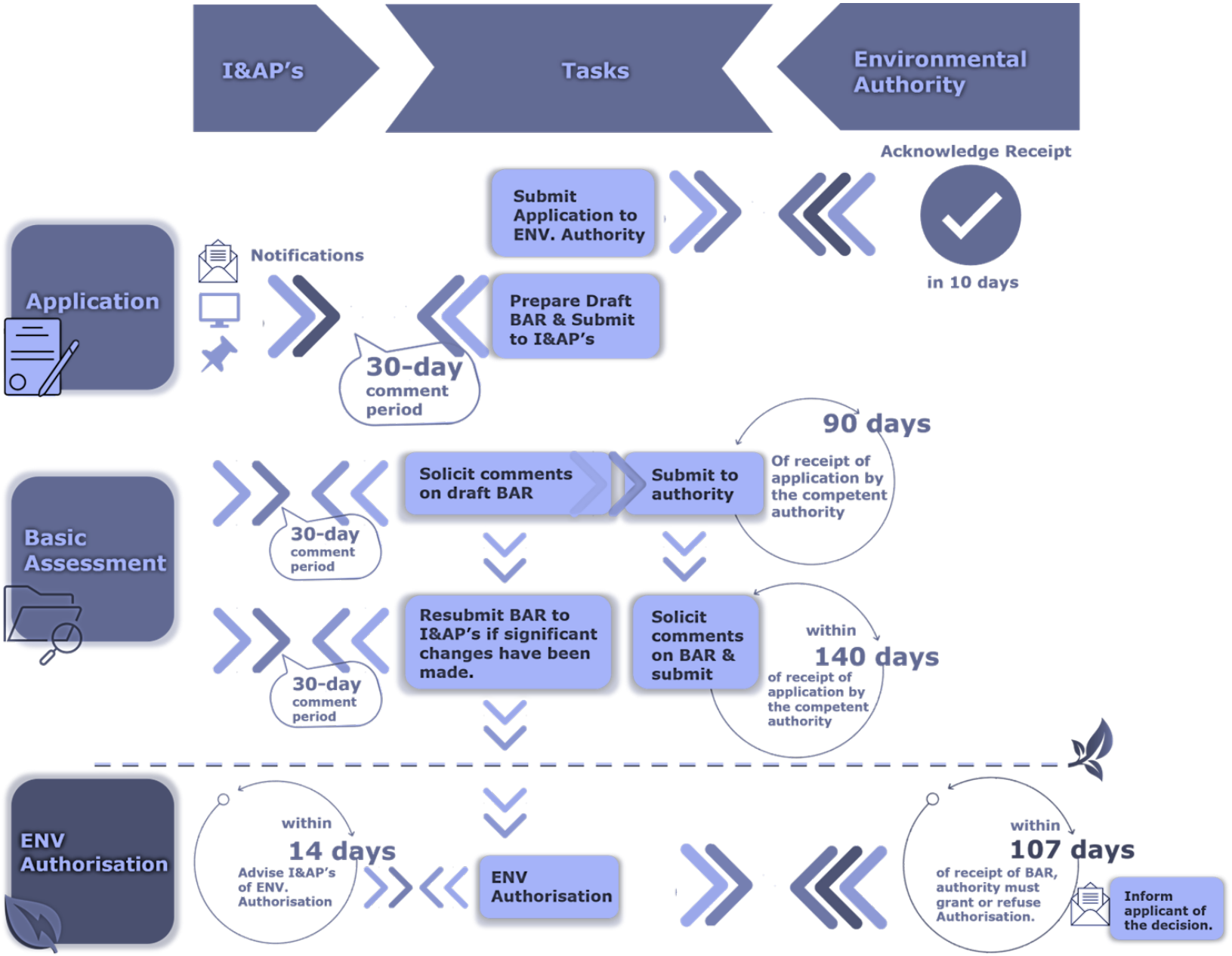
Environmental Application | SA



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Community Benefits

- Full-time, sustainable employment/income.
- Food security & entrepreneurial opportunities for product processing.
- Jams, syrups, sauces, salads and salsas.
- Catus seed oil.
- Flour for baking.
- Concentrate for beverages/health drinks.
- Livestock fodder in times of drought | 90% water

- Antioxidants
- Dietary fibre
- Potassium
- Vitamin C
- B Vitamins
- Calcium
- Magnesium
- Copper
- Taurine
- Flavonoids
- Polyphenols
- Betalains

Sustainable 'superfood' flour

Nopal cactus flour presents a unique opportunity to address current global wheat flour shortage, driven by factors such as climate change, geopolitical conflicts, and supply chain disruptions.

Cactus flour production is efficient, as nopal grows in arid conditions, making it an ideal sustainable alternative to traditional grains.

Metric ton of fresh cactus can provide 100kg of flour.

High in fiber, vitamins, and antioxidants, which contribute to health benefits and versatility in gluten-free and nutrient-dense food products.

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