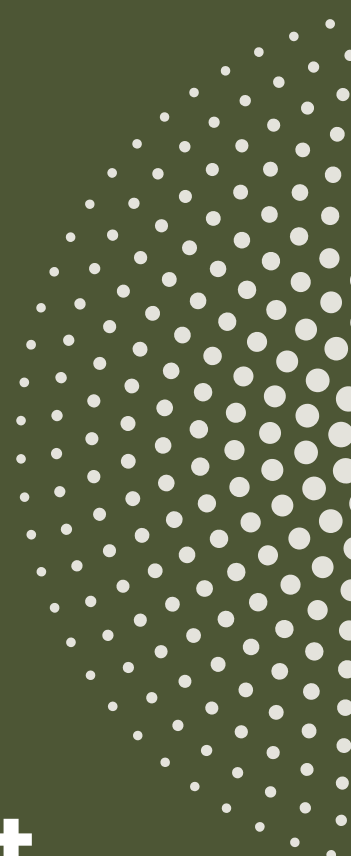


April 2025



A Provincial Blueprint for Inclusive Energy Infrastructure

Unlocking Clean Power and
Industrial Potential Through a Just,
Women-Led Energy Transition



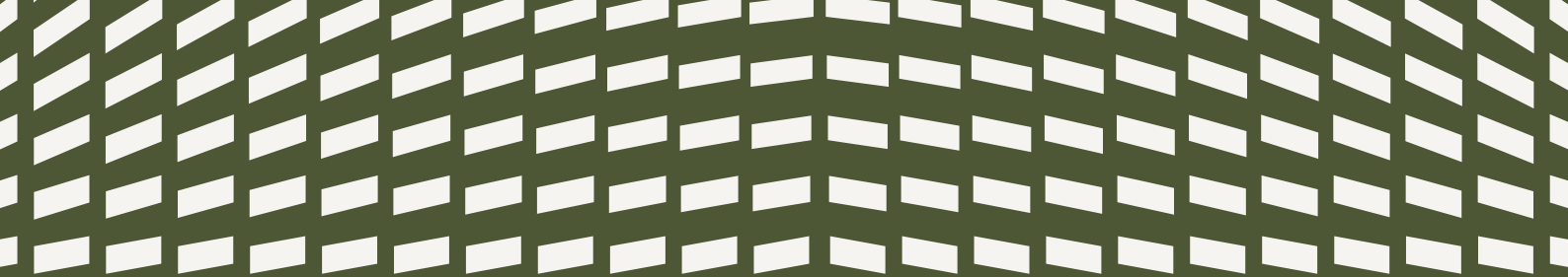


Table of Contents

03	Executive Summary
05	Strategic Vision & Execution Framework
07	Energy Infrastructure Framework
09	Utility-Scale Solar Farms
14	Public & Residential Solar
18	Assembly & Manufacturing Hub
22	Integrated Energy Strategy
25	Waste-to-Energy
29	Biomass

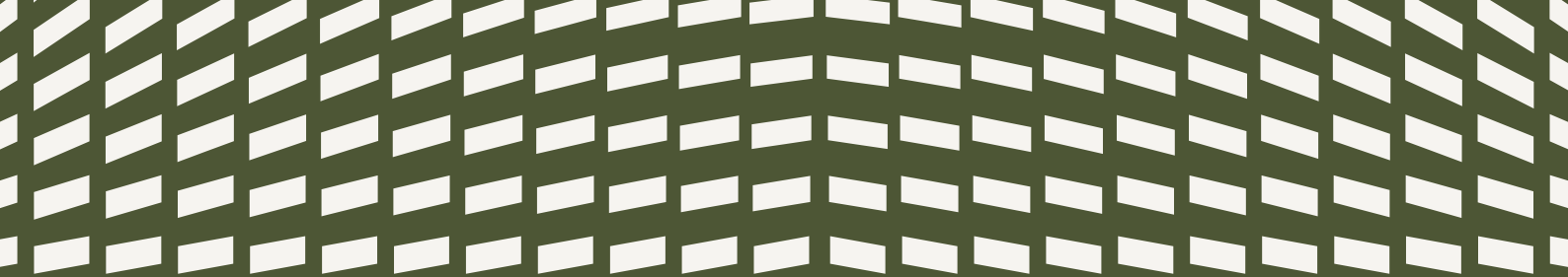


Table of Contents

32	Human Infrastructure For a Just Transition
35	Women at the Center
39	Skills Development & Training
43	Jobs & Workforce Mobilization
49	SMME and Enterprises
54	Partnerships
65	Implementation Road Map
66	Contact

Executive Summary

South Africa is in the midst of a protracted energy crisis, marked by deep structural and operational challenges across the electricity sector. Eskom, the state-owned utility, continues to face severe financial constraints, poor maintenance backlogs, and an aging coal fleet—resulting in routine load shedding, energy insecurity, and significant disruptions to industry and daily life. Limited capacity to modernise or expand generation infrastructure, combined with persistent policy uncertainty and regulatory delays, has further eroded investor confidence.

The economic consequences are real: industrial productivity is stifled, public services are disrupted, and growth potential is undermined. Yet within this crisis lies an opportunity — to rewire South Africa's energy future through decentralised, resilient, and inclusive renewable energy infrastructure.

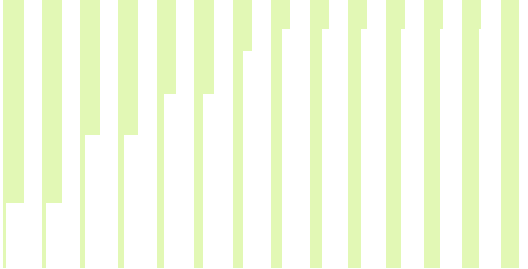
KwaZulu-Natal's Provincial Government has taken the lead, embedding renewable energy as a core pillar of its development strategy. Through the Office of the Premier, and in alignment with the 2024 and 2025 State of the Province Addresses (SOPAs), the province has issued a formal mandate to develop and scale a clean energy programme that responds directly to the dual imperatives of energy security and socio-economic transformation.

That programme is **Phemba Africa**.

Coordinated by HumanInsights.Africa and executed through its dedicated energy subsidiary, Phemba Africa, this initiative represents a provincial blueprint for energy sovereignty, women-centred development, and green industrialisation. It is structured around four interdependent infrastructure pillars:

1. **The development of utility-scale solar farms** capable of supplying 100–200 MW in Phase I, with a roadmap to scale to 1 GW by 2030;
2. **The rollout of rooftop and ground-mounted solar systems** across schools, clinics, housing developments, and public institutions to improve reliability, reduce operational costs, and bring energy into the heart of community infrastructure;
3. **The establishment of a provincial manufacturing and assembly hub at the King Dinuzulu Innovation Valley (KDIV)**, to localise production of solar components, build technical capabilities, and anchor green industrial value chains;
4. **The integration of decentralised waste-to-energy and biomass co-generation systems** across both rural and urban sites, converting agricultural and municipal waste into baseload energy while catalysing circular economy jobs and climate resilience.

Together, these interventions form the backbone of KwaZulu-Natal's energy infrastructure strategy. But at its core, Phemba is not only about generation — it is about participation.



Executive Summary

Across all project sites and technologies, the programme embeds **clear pathways for job creation, skills development, and enterprise growth**. With a focus on women and youth, Phemba's human infrastructure strategy includes accredited training through TVET and SETA systems, the development of township-based energy service providers, and long-term placement pipelines for technicians, operators, and cooperative business owners.

The initiative is designed to ensure that local communities are not passive beneficiaries — but active participants in planning, delivery, and long-term stewardship. Ownership models, local procurement targets, and cooperative structures are embedded from the outset, ensuring that economic value circulates within KwaZulu-Natal's districts and municipalities.

Initial financial modelling for utility-scale projects indicates strong commercial viability, with projected IRRs of 25%, 8-year payback periods, and long-term PPAs underwritten by provincial demand. The broader programme is structured to absorb blended capital — including equity, concessional finance, and grant funding — and is positioned to engage development finance institutions (DFIs), infrastructure funds, and PPP vehicles.

Phemba is ready for implementation.

With shovel-ready projects, pre-identified sites, political alignment, and a delivery ecosystem in place — including technical partners, financiers, and state departments — the programme offers a clear opportunity for strategic investors and institutional partners to drive infrastructure-led transformation in KwaZulu-Natal.

This is an invitation to co-create a new energy future — one that is local, inclusive, and grounded in long-term resilience.



Strategic Vision & Execution Framework

Phemba Africa is KwaZulu-Natal's government-backed strategy to drive a just, decentralised energy transition — one that addresses the province's power shortages while unlocking economic opportunity for the communities most affected by energy insecurity.

Mandated by the Office of the Premier, and aligned with KwaZulu-Natal's Provincial Development Strategy, the programme advances a diversified and circular approach to energy infrastructure. This includes utility-scale solar, rooftop systems, manufacturing localisation, and the deployment of waste-to-energy and biomass co-generation solutions across rural and industrial corridors.

By connecting energy delivery with local manufacturing, enterprise support, and rural job creation, Phemba activates energy infrastructure as a catalyst for systemic change. Each pillar reinforces the others — ensuring clean energy rollouts also generate long-term economic value and shift ownership into the hands of local communities.

Through this programme, KwaZulu-Natal will:



01

Deploy grid-connected utility-scale solar capacity across high-priority energy zones



02

Roll out embedded rooftop systems across schools, clinics, housing, and public infrastructure



03

Establish a renewable energy assembly and manufacturing hub at the King Dinuzulu Innovation Valley (KDIV)



04

Build circular energy nodes that convert municipal and agricultural waste into clean electricity, fertiliser, and enterprise



05

Embed workforce mobilisation, accredited training, and enterprise development — with a clear focus on women, youth, and rural communities

Together, these objectives form an integrated framework for energy security, economic growth, and inclusive development. What follows is a breakdown of each component — the infrastructure, delivery systems, partnerships, and impact pathways that make Phemba Africa implementation-ready.



ENERGY INFRASTRUCTURE PROGRAMMES



Energy Infrastructure Programmes

Infrastructure is not the end goal — it is the foundation for energy equity, local enterprise, and generational upliftment.

With a focus on impact and execution, Phemba Africa aims to deliver four core infrastructure objectives that drive clean energy access, local manufacturing, and economic participation throughout the province:

01 **Utility Scale Solar Farms**

Development of utility-scale solar farms to inject 100–200 MW of clean, grid-connected electricity into the KwaZulu-Natal energy system, scalable to 1 GW over time

02 **Public & Residential Solar Rollout**

Deployment of rooftop and ground-mounted solar systems across residential, Department of Public Works and Infrastructure (DPWI) buildings, schools, clinics, and other public facilities to reduce operational costs and improve service reliability

04 **Assembly and Manufacturing Hub**

Establishment of a renewable energy assembly and manufacturing hub at the King Dinuzulu Innovation Valley (KDIV) to localise production, stimulate innovation, and create new green industrial value chains

05 **Circular Power Infrastructure**

Waste-to-energy and biomass systems that convert waste into clean power, biofertiliser, and rural jobs — driving climate resilience and circular economy growth across KZN.

Deployment of Utility-Scale Solar Farms

100–200 MW of grid-connected clean energy, scalable to 1 GW across KwaZulu-Natal by 2030

The development of utility-scale solar farms lies at the heart of KwaZulu-Natal's long-term energy security and green industrialisation strategy. Phemba Africa is spearheading the rollout of an initial 100–200 megawatts (MW) of solar generation capacity, strategically located across the province. These sites will serve as the foundational phase of a broader 1 gigawatt (GW) pipeline of solar projects, designed to transform KwaZulu-Natal into a national leader in large-scale renewable energy infrastructure.

These ground-mounted solar photovoltaic (PV) facilities will be positioned in close proximity to existing Eskom and municipal substations, reducing interconnection costs and enabling timely integration into the provincial grid.



Key Project Features



Feature	Details
Initial Capacity	100–200 MW across 2–3 sites (Phase I)
Target Location	Substation-adjacent sites in Shongweni, Cato Ridge, Ladysmith, and Estcourt
Grid Integration	Direct connection to Eskom and municipal lines for stable baseload supply
PPA Model	Long-term power purchase agreements (PPAs) with public infrastructure, industrial parks, and municipalities
Investment Size	R4–6 billion total (Phase I)
IRR (Estimated)	25%, with 8–10 year payback period

Strategic Deployment Zones

Shongweni

Located near major substations and key transport corridors, Shongweni offers fast-track grid integration and EPC logistics. The site can supply nearby municipalities and unlock power for planned industrial developments along the N3 corridor.

Cato Ridge

Adjacent to a Special Economic Zone (SEZ), Cato Ridge presents strong offtake potential from industrial users. Its proximity to rail and freight infrastructure makes it ideal for large-scale solar rollout with embedded commercial demand.

Ladysmith

Situated in a high solar irradiation zone, Ladysmith's inland location is ideal for grid balancing and rural access. The site will reduce load-shedding pressure on midlands municipalities and feed power into underserved districts.

Estcourt

As a mixed agricultural and municipal zone, Estcourt presents opportunities for co-generation models serving farms, agro-processors, and public infrastructure. It supports rural electrification goals while improving local energy resilience.



Enabling Partnerships

Eskom & Municipal Utilities

Grid tie-in, licensing, and offtake

Independent Power Producers (IPPs)

EPCs, PPA structuring, and O&M services

Office of the Premier, KwaZulu-Natal (OTP)

Mandating Authority, strategic oversight and policy alignment

Development Finance Institutions & Infrastructure Funds

Concessional capital and blended finance

Department of Mineral Resources & Energy (DMRE) / Operation Vulindlela

Regulatory Authorities, embedded generation and facilitation support

KZN Department of Economic Development, Tourism & Environmental Affairs (EDTEA)

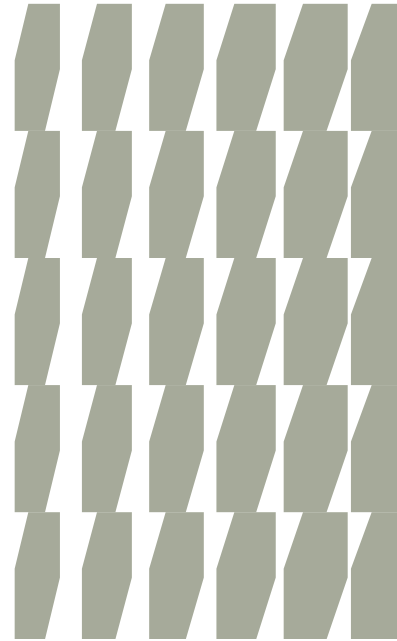
Local procurement alignment and site access

Delivering KwaZulu-Natal's utility-scale solar infrastructure requires a tightly coordinated ecosystem — combining public leadership, private sector execution, and blended capital mobilisation. From Eskom and municipal utilities enabling grid integration, to IPPs and EPCs handling development and delivery, to policy agencies like EDTEA and DMRE streamlining approvals, each partner plays a critical role.

The project is supported by Energy Capital, the officially mandated capital mobilisation and structuring partner, in collaboration with HumanInsights.Africa and the Office of the Premier. Together, these actors are aligning technical readiness with financial bankability and public policy, creating a platform for investors to participate in infrastructure that delivers energy security, climate resilience, and inclusive growth.

UTILITY-SCALE SOLAR FARMS

Measurable Impact by 2030



The large-scale solar farms in KwaZulu-Natal will play a pivotal role in stabilising the grid, alleviating the burden of load shedding, and decentralising energy supply. This initiative not only positions the province towards energy self-sufficiency but also sets a scalable, replicable template for future developments.

By enhancing energy security, it reduces dependency on Eskom and supports KZN's participation in independent procurement through frameworks like REIPPPP. Furthermore, these solar projects contribute significantly to South Africa's climate goals, with their low-carbon, high-efficiency infrastructure helping to offset hundreds of thousands of tonnes of CO₂.

By 2030, KwaZulu-Natal's utility-scale solar programme will deliver over 1GW of clean, grid-connected electricity, positioning the province as a national leader in decentralised energy generation. With 25% projected IRR, 4,000+ new jobs, and energy access reaching more than 5 million people, this initiative lays the foundation for a just, inclusive energy transition — where infrastructure meets impact.

Total solar capacity
targeted across
KwaZulu-Natal

+1GW

People served with energy
access, load reduction &
service gains

+5m

Jobs Created
Across KwaZulu-
Natal

+4K

Public & Residential Solar Rollout

Rooftop and embedded solar systems for government buildings, public service infrastructure, and low-income residential developments across KwaZulu-Natal

As part of a provincial strategy to build energy resilience and reduce pressure on the national grid, Phemba Africa—under the formal mandate from the Office of the Premier (OTP)—is leading the deployment of solar photovoltaic (PV) systems across public infrastructure and government-led residential developments, including those overseen by the Department of Public Works and Infrastructure (DPWI) and the Department of Human Settlements (DHS).

This holistic approach recognises that energy access is both a public service and a basic human right—and seeks to empower not only institutions, but also communities and households, particularly in underserved peri-urban and rural areas.



Focus Areas



Solar should power more than just buildings — it should power dignity, health, learning, and home life. That’s the promise of this deployment.

This rollout targets critical sites where energy access directly impacts public service delivery and daily quality of life. By focusing on public infrastructure, government-led housing, and community nodes, the initiative ensures solar reaches the frontlines of health, education, housing, and social wellbeing.



Public Infrastructure

Health facilities

Education centres

Municipal offices

Social service depots



Government Developments

RDP homes

Social housing complexes

DHS-supported rural housing



Community Nodes

Sport centres

Community halls

ECD facilities

Enabling Partnerships

Dept. of Public Works & Infrastructure, Dept. Human Settlements

Site access, facility audit, procurement pipelines

Department of Health / Basic Education

Facility prioritisation and system design needs

Municipalities

Building assessments, PPA structuring, community engagement

OEMs / EPCs

System design, installation, O&M

Energy Capital & Development Partners

Financing models and blended investment structuring

TVETs & Local Contractors

Training, rooftop safety certification, installation support



Delivering solar infrastructure at scale across clinics, schools, housing, and community nodes requires tight coordination across public, private, and local implementation ecosystems. This initiative draws on the institutional reach of DPWI, Department of Health, Basic Education, and municipalities to unlock facility access and ensure systems are tailored to frontline service delivery. OEMs and EPCs lead on design and installation, while TVETs and township-based contractors support on-the-ground delivery through certified rooftop safety and installation training.

Energy Capital, in partnership with Phemba Africa, structures financing and investment pipelines—ensuring that deployment is not only technically sound, but also bankable, inclusive, and implementation-ready.

PUBLIC & RESIDENTIAL SOLAR ROLL OUT

Measurable Impact by 2030



Phemba Africa's public and residential solar programme is not just a technical deployment—it is a structural intervention in the fight for energy access, dignity, and equity in KwaZulu-Natal. By bringing clean power to both public services and people's homes, this initiative ensures that the province's transition to renewable energy is inclusive, decentralised, and people-centred.

Public and residential solar deployment is where infrastructure meets dignity. It powers emergency rooms and schoolbooks, kitchen lights and community halls — while creating thousands of jobs in townships, rural districts, and informal settlements.

By 2030, this objective will have transformed over 1,000 buildings into clean energy assets, empowered local contractors to enter the green economy, and laid the foundation for widespread energy literacy and household resilience.

This is the frontline of KwaZulu-Natal's Just Energy Transition — visible, tangible, and inclusive by design.

Decentralised clean
energy capacity

+100MW

Public buildings
equipped with solar

+1K

Jobs created across
service delivery zones

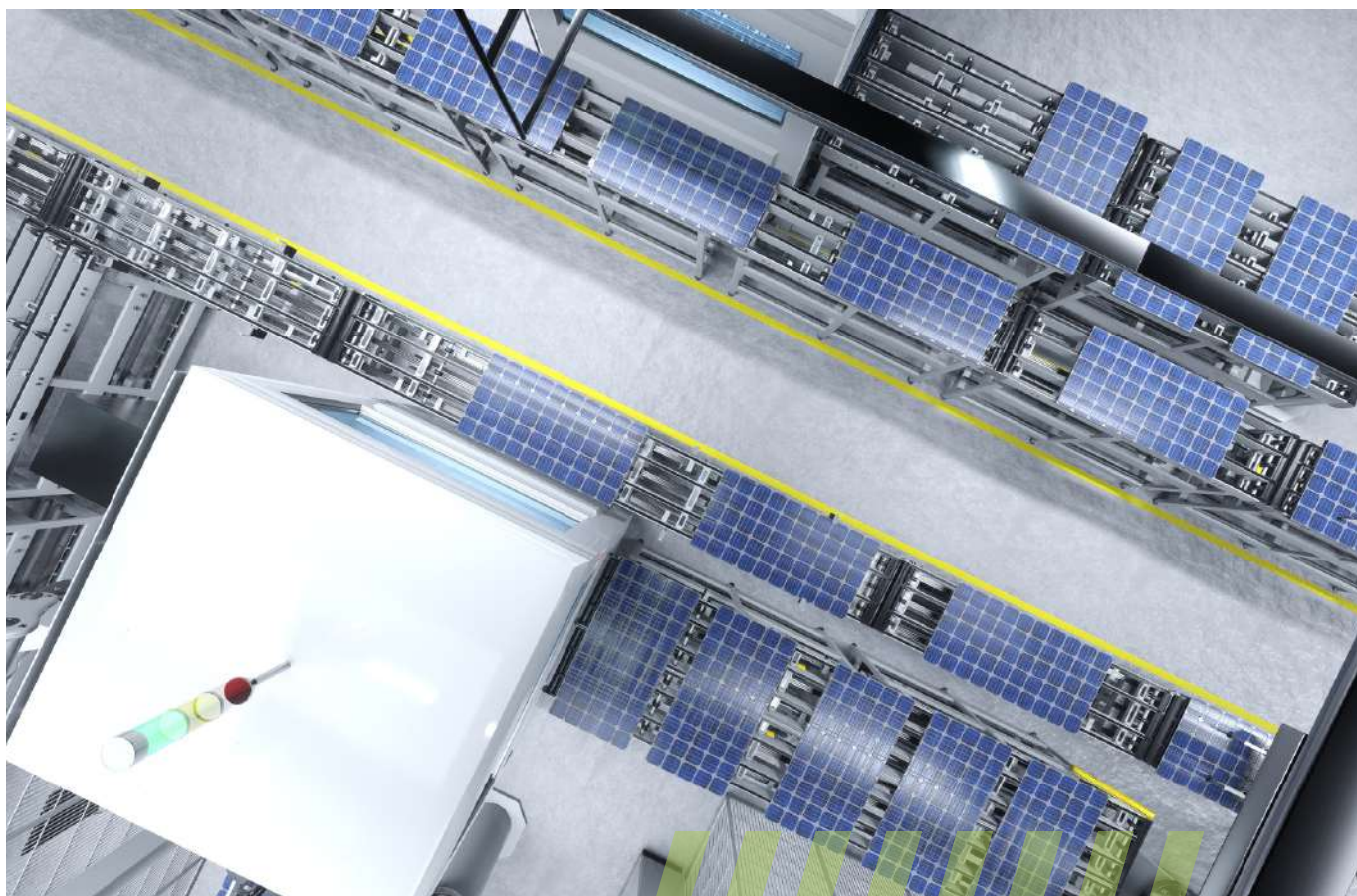
+1.5K

Assembly and Manufacturing Hub

A provincial facility to assemble solar technologies, localise production, and power green industrial growth from KDIV.

KwaZulu-Natal will establish a Renewable Energy Assembly and Manufacturing Hub at King Dinuzulu Innovation Valley (KDIV) – a provincial anchor for industrial innovation, skills development, and localisation. The facility will produce key solar technologies such as PV panels, inverters, and smart systems, while enabling domestic manufacturing capacity and job creation.

Strategically embedded in the KDIV ecosystem and aligned with national localisation policies, the hub positions KwaZulu-Natal as a leader in green industrialisation and inclusive township-based manufacturing.



Infrastructure Focus

Infrastructure is not the end goal — it is the foundation for energy equity, local enterprise, and generational upliftment.

The KDIV Assembly and Manufacturing Hub is designed as a full-spectrum industrial site — combining production, logistics, and training under one roof. From solar panel assembly to smart tech integration and local frame manufacturing, each unit supports KwaZulu-Natal's transition toward green industrialisation. By embedding skills labs and rural supply logistics, the hub becomes more than a factory — it's an engine for capability, innovation, and inclusion.

Solar Panel Assembly Line

Assemble and test PV modules for utility-scale and rooftop deployment

Inverter & Smart Tech Bay

Program, test, and dispatch inverters and smart metering systems

Logistics & Storage Facilities

Manage storage, dispatch, and rural site supply of components

Mounting & Structural Fabrication

Manufacture ground and rooftop mounting frames using local materials

Training & Innovation Lab

Operate skills development pipeline for technicians and green tech entrepreneurs



Enabling Partnerships

King Dinizulu Innovation Valley

Anchor institution, site development, and operational coordination

DTIC

Localisation incentives and industrial development support

EDTEA / KZN Government

Special economic zone integration, permits, and infrastructure

OEM Partners

Licensing and technology transfer for PV modules and smart systems

SEDA & SEFA

SMME financing, business incubation, and entrepreneurship pathways

TVET Colleges & Technical Training Institutions

Skills pipeline for assembly, testing, QA, logistics, and component innovation

At the centre of this green industrialisation drive is the King Dinuzulu Innovation Valley (KDIV) — the anchor institution for KwaZulu-Natal's energy manufacturing ecosystem. KDIV provides the physical site, innovation backbone, and coordination platform for the entire assembly hub. As a government-supported industrial zone and innovation precinct, KDIV will host the production lines, skills labs, and logistics nodes that power this transition — while also fostering entrepreneurship, prototyping, and localisation of clean tech components. Through this hub, KDIV positions KwaZulu-Natal not only as a site of installation, but as a centre of manufacturing excellence, jobs, and intellectual property creation in the renewable energy sector.

The success of the assembly and manufacturing hub rests on a tightly integrated partnership model — one that combines industrial infrastructure, policy backing, and skills alignment. From government and SEZ partners to OEMs and TVET institutions, each stakeholder plays a critical role in transforming KZN's energy ambition into an industrial capability. Together, these partners will create a green manufacturing ecosystem that delivers on jobs, localisation, and long-term energy sovereignty.

Measurable Impact by 2030

The KDIV Renewable Energy Manufacturing Hub is more than an industrial asset — it's a driver of localisation, enterprise development, and inclusive skills transformation. These KPIs reflect the scale and depth of impact this hub will deliver by 2030, aligned with KwaZulu-Natal's green industrialisation goals and the national Just Energy Transition agenda.

By anchoring production capacity within the province, Phemba Africa ensures that clean energy rollout generates more than power — it generates pathways to economic participation. From factory floors to township-based logistics cooperatives, this hub is designed to convert investment into jobs, ownership, and provincial capability. The future of energy must be manufactured at home.

Jobs created across the manufacturing value chain

+1K

Youth trained and certified in green industrial skills

+2k

SMMEs and cooperatives engaged in logistics, packaging, and supply

+100

Component localisation for solar systems deployed in KZN

60–70%





INTEGRATED ENERGY STRATEGY



Integrated Energy Strategy



Phemba Africa is grounded in a clear recognition: no single energy source can deliver the resilience, affordability, and inclusion required for a just transition. To meet the province's long-term energy needs while driving economic transformation, KwaZulu-Natal must adopt an integrated approach — one that combines solar, waste-to-energy, and biomass solutions into a unified, regionally tailored power strategy.

This section outlines how Phemba Africa supports KwaZulu-Natal's shift toward a diversified and decentralised energy mix, aligned with the objectives of South Africa's Integrated Resource Plan (IRP), Operation Vulindlela, and the national Just Energy Transition Framework.

The programme prioritises energy systems that:

- Leverage KwaZulu-Natal's geographic and sectoral advantages
- Deliver both grid-tied and off-grid capacity in urban and rural areas
- Create long-term baseload energy through circular models
- Generate local jobs, reduce landfill pressure, and valorise agricultural waste
- Attract private sector participation while improving public service delivery

Together, these efforts form a coherent energy strategy designed not only to supply electricity, but to anchor a green economy capable of delivering social, environmental, and economic returns across all districts.



Building a Resilient Energy Mix

Unlocking KZN’s full energy potential through integration

While solar power remains a cornerstone of Phemba Africa’s rollout strategy, the long-term vision goes beyond a single energy source. KwaZulu-Natal’s unique topography, industrial zones, agricultural waste output, and coastline offer an unparalleled opportunity to integrate multiple energy technologies into a cohesive, scalable, and resilient grid.

The Integrated Energy Pillars

Energy Type	Strategic Role in KZN	Key Deployment Areas	Opportunities
Solar PV	Foundation for decentralised, modular clean energy	Rural and peri-urban areas, public buildings	Grid-tied PPAs, rooftop resilience for clinics/schools, cost-saving for households
Waste-to-Energy	Clean baseload power + circular economy infrastructure	eThekwin Metro and landfill-adjacent industrial zones	Activated carbon regeneration, municipal cost savings, carbon credit potential
Biomass/Biogas	Valorisation of agri- and organic waste for rural power	Agro-processing clusters (Zululand, Harry Gwala)	Energy + fertiliser for farmers, SMME job creation, waste diversion

Waste-to-Energy

Transforming KwaZulu-Natal's Waste Burden into Clean Power, Jobs, and Circular Value Chains

KwaZulu-Natal generates over 4.5 million tonnes of waste annually, of which less than 25% is recycled. This not only threatens environmental sustainability but also places mounting pressure on landfills, municipal budgets, and public health.

Phemba Africa sees this challenge as an opportunity to catalyse a circular green economy—one where municipal and industrial waste becomes a resource for clean energy generation, job creation, and materials recovery.

By investing in state-of-the-art Waste-to-Energy (WtE) facilities, KwaZulu-Natal can dramatically reduce landfill reliance, generate base-load electricity, and unlock new revenue streams from carbon credits, activated carbon, and recycled by-products

Flagship Project: eThekweni Waste-to-Energy Facility



The eThekweni Waste-to-Energy facility will process 200 tonnes of municipal waste per day, generating 20 MW of baseload electricity. With a projected capital investment of ZAR 2 billion, the facility will be located adjacent to a major landfill site in eThekweni Metro. Revenue will be generated through electricity sales, carbon credits, waste management fees, and the production of activated carbon, with an expected IRR of 12%, and potential upside from by-product commercialisation and carbon trading.

WASTE-TO-ENERGY

A Catalyst for the Circular Economy

The waste-to-energy facility is designed to operate at the intersection of waste reduction, energy generation, and industrial regeneration:



Phased Expansion Strategy (2025–2030)

eThekwini Metro

As the site of the flagship Waste-to-Energy facility, eThekwini will serve as the urban anchor for the programme. The facility will process high volumes of municipal waste, alleviating pressure on existing landfills while generating 20 MW of clean electricity and supporting the metro's carbon reduction goals. It also sets the blueprint for future replication across other urban municipalities.

Richards Bay / uMhlathuze

This industrial corridor generates significant volumes of waste from the chemical, paper, and wood-processing sectors. Phemba will introduce industrial waste-to-energy systems that not only generate power but also help industries reduce disposal costs and improve environmental compliance. The project will also explore industrial symbiosis models with export-facing manufacturers.

uMgungundlovu / Pietermaritzburg

This agriculturally active region will host decentralised biogas and composting facilities focused on livestock waste, food processing by-products, and crop residues. These systems will provide localised energy for farming operations and agro-processors while producing organic fertilisers to strengthen regional food systems and soil health.

Mandeni / iLembe

Home to key textile, plastics, and packaging producers, this zone presents opportunities to pilot innovative waste valorisation methods — including pyrolysis, fibre separation, and energy-from-textile offcuts. The project will integrate women- and youth-led cooperatives to support sorting, feedstock collection, and by-product handling across industrial estates.



Enabling Partnerships

Municipal Waste Authorities

Secure feedstock and landfill diversion agreements

CSIR, EDTEA, and GreenCape

Technical validation, circular economy modelling

OEM Technology Providers

Plasma arc, gasification, and incineration partners

Carbon Credit Certification Partners

Tap into voluntary carbon markets

Youth and Women's Development Agencies

Skills pipelines and enterprise incubation



Building KwaZulu-Natal's waste-to-energy infrastructure demands more than engineering expertise — it requires deep alignment between municipalities, science councils, OEMs, and community networks. From feedstock security and carbon certification to inclusive enterprise incubation, each partner plays a targeted role in transforming waste into a climate asset. This coordinated framework ensures that every ton of diverted waste contributes to energy generation, job creation, and local wealth — positioning KZN as a continental leader in circular energy innovation.

Biomass

Converting KwaZulu-Natal's Agricultural Waste into Clean Energy, Organic Inputs, and Rural Livelihoods

KwaZulu-Natal's agricultural sector produces substantial organic waste from sugarcane, livestock, citrus, and food processing. These waste streams — often underutilised or environmentally harmful — hold untapped potential to fuel a new wave of rural energy access, enterprise creation, and low-carbon growth.

Through biomass and biogas co-generation projects, Phemba Africa aims to turn agricultural by-products into clean energy and nutrient-rich fertiliser, supporting both rural electrification and sustainable farming.

Biomass and biogas energy systems offer a triple-impact solution:

- Clean Energy for the Agri-Economy**
 - Powering irrigation systems, cold chains, and processing infrastructure
 - Reducing diesel and Eskom dependency in rural operations
 - Circular Input Supply for Farmers**
 - Converting livestock manure and crop residues into affordable biofertiliser
 - Strengthening soil health and reducing input costs for Greenfields-linked farmers
 - New SMME and Cooperative Pathways**
 - Enabling women- and youth-led ventures in fertiliser packaging, logistics, and energy servicing
 - Driving inclusion across both the energy and agriculture value chains
- By embedding biomass infrastructure within agricultural districts, the programme strengthens energy resilience, boosts farmer productivity, and opens the door for SMME-led fertiliser, logistics, and maintenance services — creating an ecosystem where energy, agriculture, and enterprise feed each other.**

Powered By Partnership



This initiative represents a strategic convergence between clean energy delivery and inclusive agricultural development — unlocking shared value for rural producers and communities.

To operationalise this opportunity, Phemba Africa partners with Greenfields, HumanInsights' dedicated agricultural subsidiary. Greenfields is building an export-ready, smallholder-driven agri-economy across KwaZulu-Natal, with active projects in livestock, sugar, citrus, and agri-processing.

Together, the two platforms are aligning clean energy infrastructure with agricultural production zones, enabling decentralised biomass systems to be deployed directly within farming districts. This partnership links waste recovery, energy generation, and input supply in a way that maximises value for rural producers — while expanding energy access and climate resilience across the province.

Provincial Deployment Potential

Region	Biomass Opportunity	Sector Anchor
Zululand	Sugarcane bagasse, livestock waste	Greenfields feedlots and sugar mills
Harry Gwala	Poultry litter, maize husks, cattle manure	Smallholder cooperatives
uMgungundlovu	Food processing waste (e.g. canning, markets)	Agro-processing parks, rural SMMEs
King Cetshwayo	Forestry by-products, citrus peels	Sawmills, citrus packhouses

Implementation Pathway

Phase 1: Feasibility & Pilots

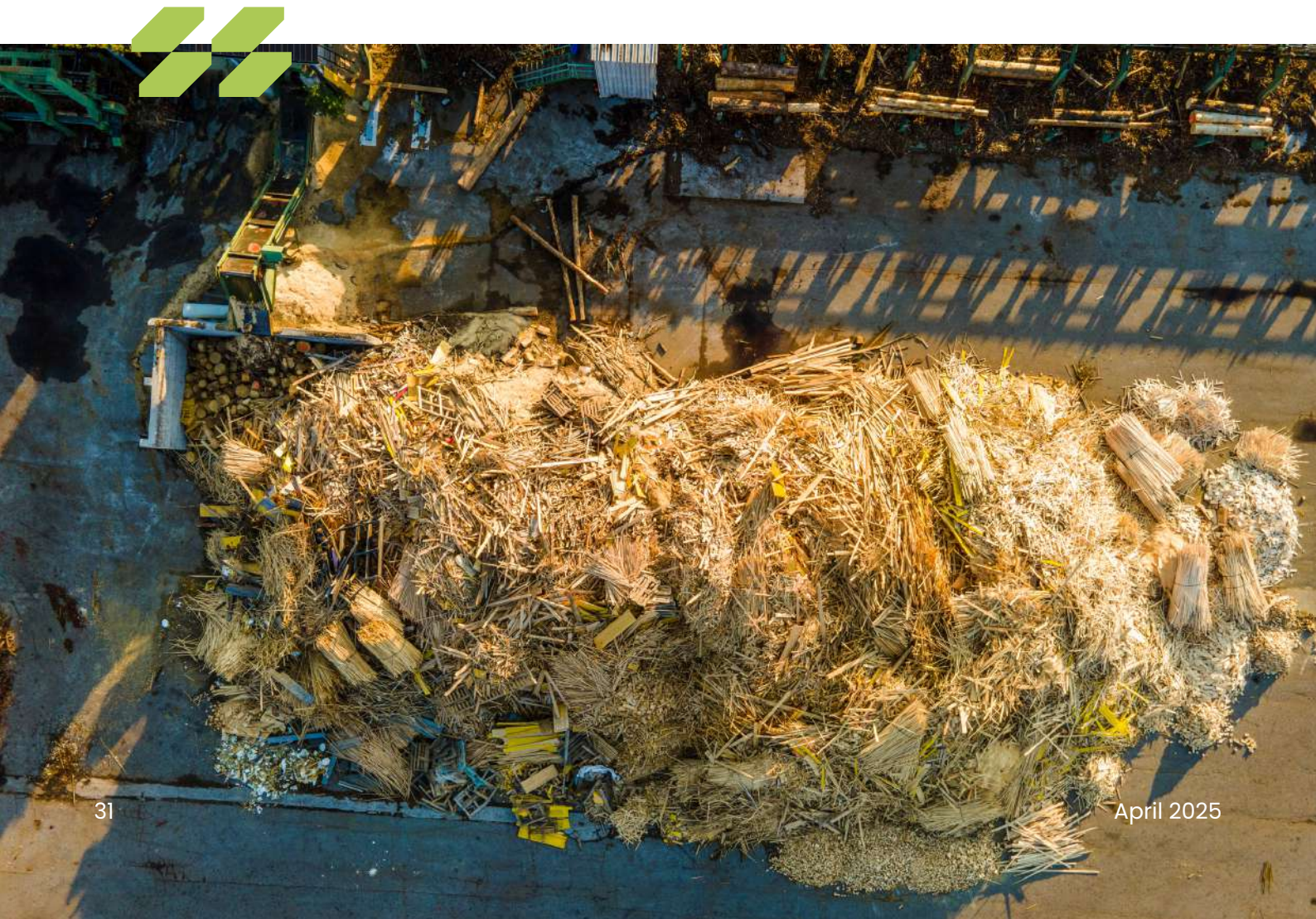
- Identify 2–3 agro-processing clusters to host pilot biogas digesters (5–10 MW range)
- Map organic waste flows and ownership models for feedstock supply

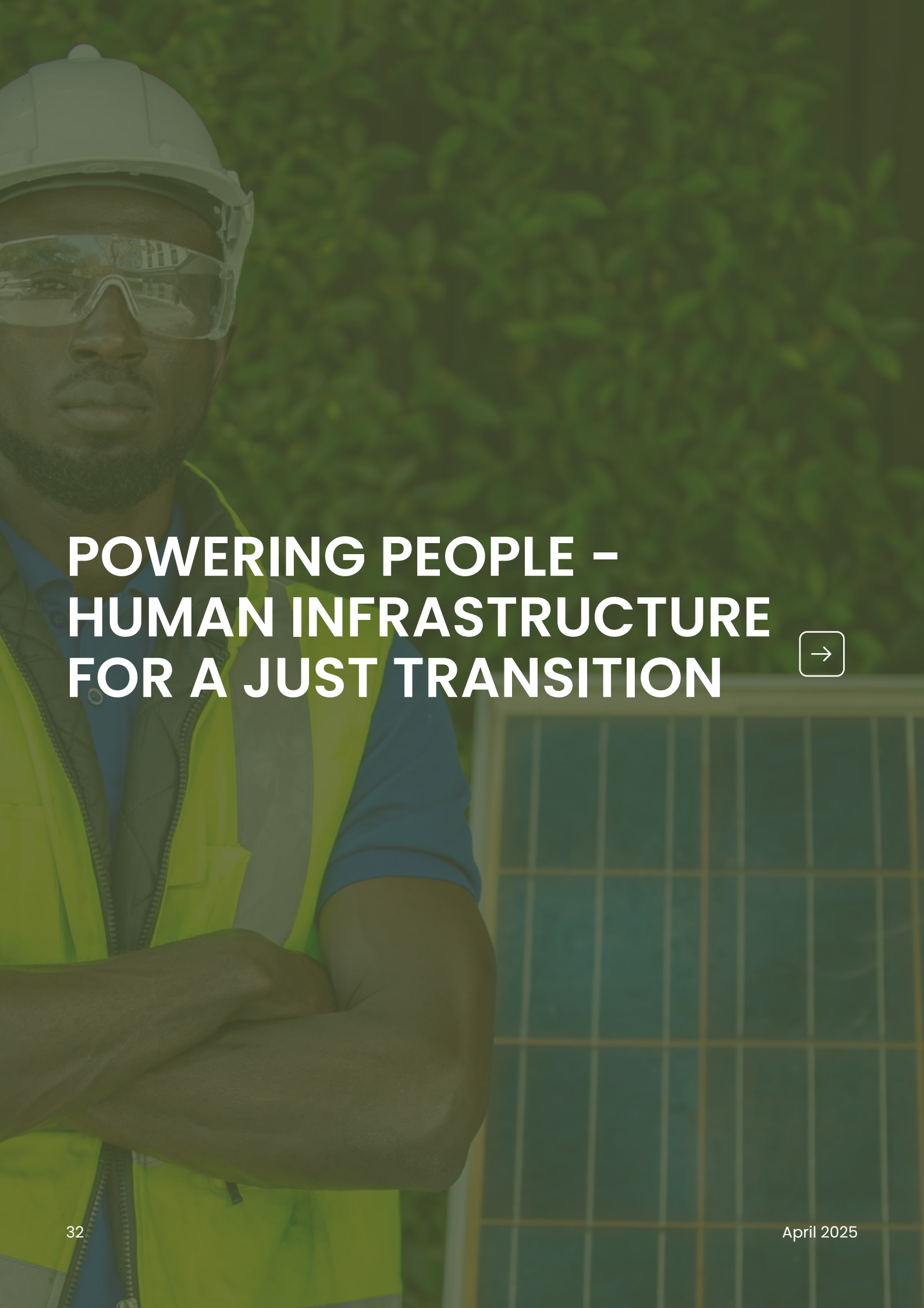
Phase 2: Rural Co- generation Facilities

- Establish decentralised biomass plants near cooperatives or irrigation hubs
- Integrate with off-grid solar mini-grids for hybrid energy models

Phase 3: Fertiliser Innovation & Circular Economy

- Commercialise organic digestate into low-cost biofertiliser for surrounding farmers
- Train women- and youth-led SMMEs in energy servicing and fertiliser distribution





POWERING PEOPLE – HUMAN INFRASTRUCTURE FOR A JUST TRANSITION





Investing in People, Not Just Projects

The energy transition must be built on more than infrastructure — it must be built on inclusion, capability, and dignity. For KwaZulu-Natal, this means not only delivering clean energy at scale, but ensuring that the people most affected by energy poverty, unemployment, and systemic exclusion are at the centre of the transition.

Phemba Africa is designed to do exactly that.

From construction sites to innovation labs, logistics hubs to cooperatives — this programme activates an ecosystem of jobs, training pathways, and enterprise opportunities that prioritise women, youth, and township-based communities. It links every solar panel, every waste processing site, every assembly line to human potential — creating not just clean energy, but a clean economy that is local, inclusive, and future-fit.

This section outlines how Phemba Africa is delivering on its human infrastructure mandate through:

- Job creation and workforce mobilisation
- Skills development and technical training
- Enterprise and cooperative development
- Gender, youth, and ownership inclusion

Together, these commitments form the social backbone of Phemba's just energy transition.

Human Infrastructure Programmes

Interlinked Human Development Pillars

Phemba Africa's commitment to a Just Energy Transition extends beyond infrastructure — it invests in people. The Human Infrastructure Programme is designed to ensure that the rollout of clean energy in KwaZulu-Natal delivers widespread economic inclusion, skills development, and long-term livelihoods.

This strategy activates workforce pipelines, enterprise ecosystems, and ownership models that prioritise women, youth, and community-based enterprises, embedding dignity and opportunity into every layer of the transition.

01 Women at the Centre of the Energy Transition

Structured participation in technical teams, leadership roles, ownership models, and value chain enterprises — supported by quotas, bursaries, and mentorship pathways across all project sites.

02 Skills Development & Technical Training

Accredited training through TVET colleges, SETAs, and mobile labs — preparing youth and women for certified roles in solar, biomass, assembly, and energy servicing.

04 Workforce Mobilisation

Job creation across all phases of energy deployment — including construction, operations, logistics, and support services — with local hiring and township-based labour models built into project design.

05 SMME & Enterprise Development

Support for small businesses and cooperatives in component supply, O&M, logistics, and by-product processing — with targeted funding pathways and toolkits for local entrepreneurs.

Women at the Centre of the Energy Transition

Redesigning the renewable energy economy to deliver ownership, opportunity, and agency for women — not as beneficiaries, but as builders, co-owners, and leaders of KZN's energy future.

Women are disproportionately affected by energy poverty — but too often excluded from energy planning, delivery, and ownership.

Phemba Africa reverses that logic.

Rather than positioning women as passive beneficiaries, the programme intentionally embeds women across every stage of the value chain — from design and construction, to servicing, management, and policy influence.

This is how we shift from an extractive model of development to one that is regenerative, gender-just, and community-driven.

Phemba is intentionally designed to centre women as builders, leaders, and decision-makers — embedding gender equity into the architecture of the clean energy economy.



Inclusion by Design



This isn't empowerment by invitation — it's ownership by design.

Women are central to Phemba's energy transition. Across every infrastructure pillar, the programme embeds specific mechanisms to enable women's participation, leadership, and ownership. From site-level jobs to cooperative-led service models, bursary-supported training to boardroom inclusion, gender equity is not a side goal — it is embedded by design. This ensures that the transition delivers social dividends where they are needed most, while unlocking the full potential of South Africa's workforce.

Infrastructure Objective	Primary Workforce Opportunities
Jobs & Workforce	50% hiring target for all site-based and technical roles, incl. EPC, O&M, biomass
Skills Development	Dedicated bursaries, toolkits, and placement support for women entering clean tech fields
SMMEs & Cooperatives	Priority support for women-owned enterprises in packaging, logistics, solar maintenance, and fertiliser resale
Manufacturing (KDIV)	Reserved spaces for women-led teams in QA, assembly, packaging, and inventory
Governance & Ownership	Inclusion of women in community trusts, local steering committees, and co-op governance structures

Structural Enablers for Gender Inclusion

To place women at the centre of the energy transition, we must go beyond rhetoric and build real, structural pathways that remove systemic barriers. This means reshaping how training, funding, and enterprise support are delivered — with women's lived realities and ambitions at the core.



Systemic Design for Women-Led Participation

- Dedicated partnerships with women's development agencies (e.g. DOW, Women's Development Fund, NGOs)
- Flexible training formats: modular courses, on-site support, and family-friendly scheduling
- Enterprise incubation through KDIV, Dube TradePort, and community business hubs
- Toolkits and starter kits for solar and waste enterprises led by women
- Mentorship networks pairing young women with professionals across the energy ecosystem
- Women-focused financing through SEFA, SEDA, and blended funding streams

This is how we shift from token inclusion to transformative participation — where women lead not only in numbers, but in ownership, innovation, and decision-making across South Africa's new energy economy.

Measurable Impact by 2030

Gender equality in the energy sector cannot be achieved through intention alone — it requires measurable targets, structural enablers, and sustained investment in women's leadership. This programme embeds gender inclusion into every pillar, from workforce mobilisation and enterprise development to training, procurement, and governance — ensuring that by 2030, women are not just beneficiaries, but builders of South Africa's clean energy future.

Workforce participation target for women across all sites

>50%

Women-led businesses supported through the programme

+75

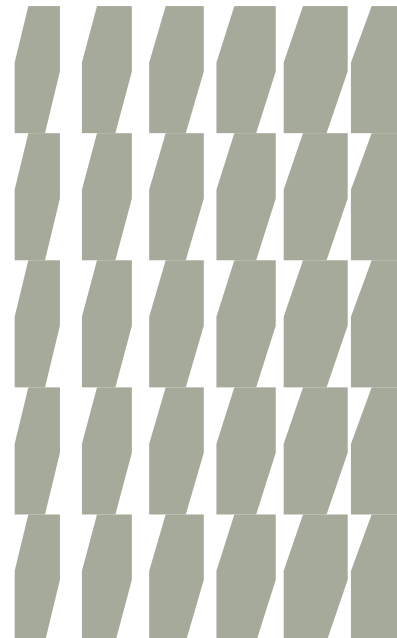
Women trained in solar, biomass, assembly, logistics

1K

Programme components with gender-based inclusion built in from the start

100%

A just energy transition cannot be gender-neutral. It must be intentionally feminist, deliberately redistributive, and deeply local. Phemba places women not at the edge of the transition — but at the heart of it. This is how infrastructure becomes a tool for equity, and how clean energy becomes a platform for generational transformation.



Skills Development & Technical Training

Building the Talent Engine for a Clean Economy

A just energy transition cannot succeed without a skilled workforce equipped to design, install, manage, and maintain renewable energy systems across urban and rural contexts.

Phemba Africa's skills development strategy is designed to ensure that local communities are not only hired — they are trained, certified, and absorbed into long-term roles across the clean energy value chain.

Through partnerships with TVET colleges, SETAs, development agencies, and technical institutions, Phemba will deliver accredited, modular training linked directly to real projects — from utility-scale solar farms and rooftop systems to biomass plants and manufacturing hubs.



Programme Pillars

When skills meet opportunity, inclusion becomes infrastructure.

Phemba Africa's training ecosystem is grounded in real infrastructure demands — equipping workers with job-ready skills linked to solar deployment, biomass systems, manufacturing, and waste-to-energy operations. Every training pathway is designed with access, relevance, and progression in mind: from informal workers gaining recognised certification, to rural youth learning on mobile labs, to women entering technical fields for the first time. These pillars form the backbone of a just transition — one that unlocks lifelong earning potential and builds a pipeline of local expertise for KwaZulu-Natal's green economy.



Technical Training Linked to Infrastructure Objectives

- Solar installation, mounting systems, inverter servicing
- Biomass operations, anaerobic digestion, safety compliance
- Waste sorting, fertiliser production, plant operations
- Component assembly, warehouse logistics, product testing (KDIV)



Certification & Accreditation

- All training aligned with TVET, QCTO, and SETA frameworks
- Short courses (3–10 days), learnerships (6–12 months), and NQF-level qualifications
- Recognition of Prior Learning (RPL) pathways for informal workers
- Mobile training nodes for rural districts and hard-to-reach communities



Inclusion-First Access Models

- Minimum 50% participation by women and youth across training cohorts
- Partnerships with women's development agencies and NYDA to fund bursaries and toolkits
- Language localisation and accessible formats for rural learners
- On-site job placement support for graduates through Phemba's project pipelines

Training content is tailored to the real skills required across each site type — from entry-level to advanced technical roles.

Enabling Partnerships

TVET Colleges

DUT, MUT, Umfolozi TVET, Majuba TVET, Elangeni TVET

SETAs & QCTO

EWSETA, AgriSETA, QCTO-accredited curriculum support

KDIV Innovation Academy

Incubation and advanced innovation fellowships

OEMs & EPCs

Industry partners who provide toolkits, mentorship, and placement opportunities

Youth Employment Services (YES), SEFA, SEDA

Wrap-around support for entrepreneurship pathways



Building a just and capable energy workforce depends on an ecosystem of partners — from training providers and industry mentors to certification bodies and enterprise support agencies. These partnerships ensure that every skill taught is aligned with real job pathways, and that every graduate has a bridge into employment or entrepreneurship. Together, they enable a provincial training system that is inclusive, future-fit, and ready to power KwaZulu-Natal's green industrial transition.

Measurable Impact by 2030

By 2030, Phemba's technical training and skills development ecosystem will deliver measurable, people-centred results. From certified solar technicians and biomass operators to micro-enterprises led by women and youth, the programme is structured to convert training into employment, and employment into long-term economic inclusion. These metrics are not just targets—they are commitments to building a new energy economy that is local, inclusive, and future-proof.

Phemba's infrastructure can only deliver impact if it is powered by people — and those people must be trained, supported, and recognised as the future of the energy economy. This skills development strategy ensures that the benefits of the transition are tangible, transferable, and transformative — especially for young people, women, and those furthest from opportunity.

Women-led service cooperatives supported through training and tools

+150

Youth trained and certified in technical energy skills

+2k

Regional training hubs and mobile labs established

5

Job placement rate of certified learners into Phemba rollouts

60–70%



Jobs & Workforce Mobilisation

Empower Local Communities Through Skills Development, Job Creation, and Inclusive Participation in the Energy Transition

Phemba Africa is designed to absorb labour at scale across every phase of energy infrastructure delivery – from solar and biomass construction, to logistics, operations, and public education.

But it goes further: jobs are not seen as an outcome, but a vehicle for long-term economic participation. Each project rollout is structured to maximise local hiring, transfer technical skills, and include women, youth, and community-based service providers.



Where the Jobs Are Created



Every solar panel should create a job. Every megawatt should create a future.

Phemba Africa is designed to absorb labour at scale across every phase of energy infrastructure delivery – from solar and biomass construction, to logistics, operations, and public education. But it goes further: jobs are not seen as an outcome, but a vehicle for long-term economic participation. Each project rollout is structured to maximise local hiring, transfer technical skills, and include women, youth, and community-based service providers. This is where the jobs are created:

Infrastructure Objective	Primary Workforce Opportunities
Utility-Scale Solar Farms	Civil works, solar installation, security, logistics, O&M tech teams
Public & Residential Solar	Rooftop installers, scaffolders, energy literacy outreach, community maintenance teams
KDIV Manufacturing Hub	Assembly line staff, QA testers, packagers, warehouse support, process technicians
Waste-to-Energy (WtE)	Plant operators, sorting crews, carbon processors, safety and compliance support
Biomass Systems	Feedstock collectors, fertiliser packagers, local agri-tech handlers
Cross-Cutting Support Roles	Environmental monitors, site educators, data collectors, logistics and transport agents

Labour Targets and Inclusion Metrics



This transition must be built with the hands of the people it's meant to serve.

To ensure meaningful participation in South Africa's energy transition, Phemba Africa has embedded clear labour and inclusion targets across all phases of programme delivery. These metrics are not compliance checkboxes — they are active levers for empowerment, skills transfer, and economic inclusion. Every construction site, rooftop system, and renewable plant becomes a job site for local youth, a skills development opportunity for women, and a livelihood pipeline for underserved communities. This framework ensures that the benefits of infrastructure investment are widely shared — and that the workforce powering this transition reflects the province it serves.

Target Group	Commitment
Youth (18–35)	Minimum 60% of all hires in construction & servicing
Women	At least 50% participation in technical and support roles
Local Labour	80%+ of roles sourced from communities near project sites
EPWP & TVET Pipelines	Integrated into all major site deployments

From Jobs to Career Pathways

Jobs created through Phemba aren't once-off contracts — they are part of a career-building ecosystem, linked to training, certification, enterprise incubation, and the broader provincial skills economy.



Skills-Linked Workforce Development

- All core technical jobs tied to TVET, QCTO, and SETA-aligned certification
- Workers move from unskilled to skilled: Construction → Installation → Operations → Maintenance
- Specialised technician pathways in: Solar diagnostics, inverter servicing, biomass digestion, biogas operations
- Dedicated bursaries and training centres for women and youth
- Mobile skills labs and rural training nodes for inclusion in hard-to-reach areas

This is not about short-term employment — it's about building a skilled, future-ready workforce rooted in the realities of KwaZulu-Natal's communities. By linking every infrastructure objective to accredited training and long-term career pathways, Phemba Africa ensures that the transition to clean energy also becomes a pathway out of poverty, marginalisation, and economic exclusion. The technicians of tomorrow are being trained today — on rooftops, in plant rooms, at cooperatives, and through mobile labs across the province.

Enterprise Absorption & Long-Term Opportunity

The long-term success of Phemba hinges on the ability to build an ecosystem that doesn't just employ — it absorbs. This means creating enterprise opportunities along the full infrastructure lifecycle, where small businesses and cooperatives take on essential roles in operations, maintenance, and community support. By linking SMMEs directly to service contracts, procurement pipelines, and product resale, the programme becomes a launchpad for township-based entrepreneurs, especially women and youth.



Embedding Local Enterprise in the Energy Value Chain

➤ Youth-led micro-enterprises trained and contracted for:

- Maintenance & servicing of rooftop systems
- Logistics for solar component distribution
- Fertiliser packaging and delivery (biomass)

➤ Women-led cooperatives for:

- Site safety & compliance
- Environmental monitoring & outreach
- Biofertiliser resale and community education

These enterprises won't just serve the energy transition — they will own a stake in it, delivering local value long after the last solar panel is installed.

Measurable Impact by 2030

By 2030, Phemba's workforce mobilisation strategy is expected to deliver meaningful, trackable outcomes — not only in job creation, but in the transformation of who gets to participate in the energy economy. From micro-enterprises to technical roles, the programme aims to support over 10,000 jobs, seed 150+ youth- and women-led cooperatives, and ensure that at least half of all new opportunities are accessed by women. These impact metrics reflect the programme's deeper commitment: to build a future energy system that is as inclusive as it is innovative.

Jobs created across energy and circular economy sectors

+10K

Micro-enterprises and cooperatives supported

+150

Youth trained and certified in technical disciplines

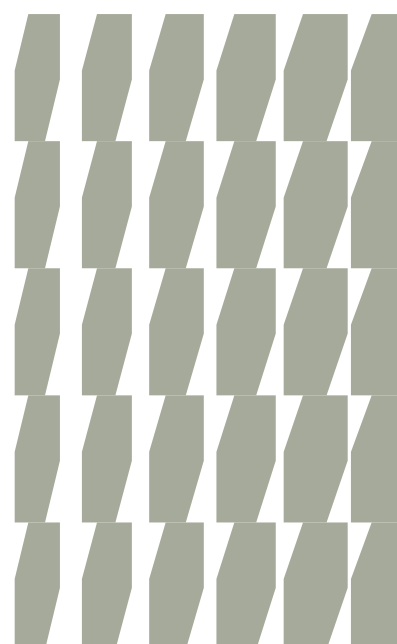
+2k

Women's participation in all new workforce initiatives

50%

Jobs are not a side benefit of Phemba Africa — they are a strategic outcome of its design. From solar fields to waste plants, from classrooms to rooftops, the programme ensures that infrastructure becomes opportunity, and that opportunity leads to lasting, local livelihoods.

This is what it means to build human infrastructure for a just energy transition.



SMME & Enterprise Development

Building Local Ownership in the Energy Economy

Phemba Africa is not only about delivering infrastructure — it's about building an economy that works for local people, in local places. Central to this vision is the activation of SMMEs, cooperatives, and micro-enterprises that can deliver services, supply components, and sustain energy systems across KwaZulu-Natal.

From solar installation and logistics to packaging, biofertiliser distribution, and diagnostics, Phemba's rollout model is structured to create entry points for township and rural enterprises, particularly those led by women and youth.

This is how the programme shifts economic value from large contractors to local communities — turning the energy transition into a platform for inclusive entrepreneurship and long-term local resilience.



Enterprise Pathways Across the Value Chain



Every infrastructure investment is an opportunity to build Black-owned businesses and community supply chains

Phemba’s infrastructure rollouts are designed with enterprise integration at every stage. Each component — from solar farms to biomass plants — opens up practical service delivery roles for local SMMEs and cooperatives.

By structuring inclusive procurement pipelines and targeting community-based providers, Phemba supports the growth of township, peri-urban, and rural enterprises. These pathways span logistics, safety services, catering, maintenance, and waste handling — unlocking value far beyond construction.

Infrastructure Objective	Primary Workforce Opportunities
Utility-Scale Solar Farms	Security, catering, logistics, PPE supply, fencing, maintenance
Public & Residential Solar	Solar panel cleaning, fault reporting, aftercare servicing
KDIV Manufacturing Hub	Packaging, transport, raw material supply, warehousing
Waste-to-Energy (WtE) & Biomass	Feedstock collection, fertiliser packaging, by-product resale, waste sorting
Cross-Cutting	Site preparation, data collection, environmental monitoring, communications & education

Enterprise Support Mechanisms

Building a just energy economy means ensuring small businesses have the tools, finance, and capacity to meaningfully participate. Phemba embeds enterprise support into every stage of project rollout — not as an afterthought, but as a core delivery mechanism for local impact.



Enterprise Enablement Toolkit

- > Standardised Toolkits for last-mile businesses (solar servicing, packaging, fertiliser resale, etc.)
- > Access to blended finance via SEFA, SEDA, Women's Development Fund, and NYDA
- > Enterprise incubation through KDIV, Dube TradePort, and community business hubs
- > Local procurement targets embedded into EPC contracts and maintenance agreements
- > Enterprise clustering models (e.g. co-ops or township-based service pools) to build scale and improve contract readiness

These mechanisms ensure that energy infrastructure also builds economic infrastructure — laying the groundwork for thousands of resilient, community-rooted enterprises across KwaZulu-Natal.

Inclusion-Focused Enterprise Development

Phemba's enterprise strategy is designed to shift access, ownership, and opportunity — placing women and youth at the centre of a new energy economy. By backing local entrepreneurs with tools, mentorship, and funding, the programme unlocks meaningful participation in sectors historically closed off to emerging enterprises.



Targeted Inclusion Mechanisms

- > 60% of enterprise support directed to women- and youth-led entities
- > Local contractors prioritised in procurement pipelines — particularly in rural and peri-urban areas
- > Business mentorship and digital tools provided through KDIV Innovation Academy and partner NGOs
- > Dedicated funding and fast-track support for worker-owned cooperatives and social enterprises

By deliberately reshaping who gets access to opportunity, Phemba sets a new benchmark for inclusive, equitable enterprise development in the energy transition.

Measurable Impact by 2030

Building an inclusive green economy means designing systems where small enterprises are not left behind, but actively built into the foundation. Through Phemba, local businesses — especially those led by women and youth — are positioned as service providers, suppliers, and innovators across every infrastructure node. These metrics reflect not just participation, but ownership.

Energy infrastructure zones with embedded SMME networks

100%

Local enterprises supported across energy value chains

+150

Women and youth-led businesses included

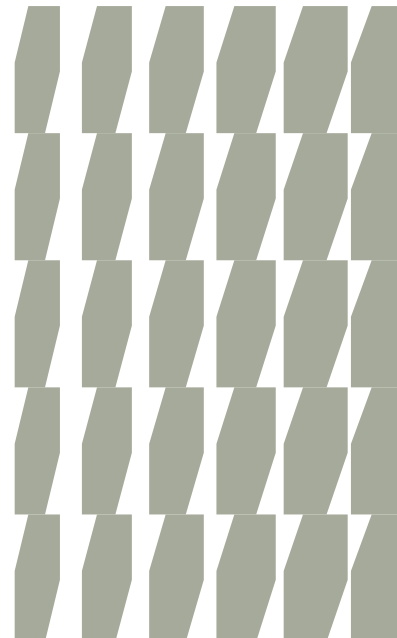
60%

In local procurement and enterprise contracts

R150m+

For a just transition to be truly just, it must deliver more than jobs — it must deliver ownership, agency, and opportunity. Phemba's enterprise development strategy ensures that energy systems are not only installed in communities — they are serviced, maintained, and owned by them.

This is how clean energy becomes local wealth.





PARTNERSHIPS & DELIVERY CONSORTIUM





A Collaborative Engine for Scalable Impact

Building inclusive energy infrastructure at scale requires more than funding and good intentions — it takes an ecosystem. Phemba Africa's delivery model brings together a growing network of public, private, and community-based actors, each contributing to a shared provincial mandate for clean energy, economic participation, and resilience.

These partnerships span policy alignment, technical execution, enterprise support, and workforce development — laying the groundwork for scalable, investable delivery. But this is just the beginning. As the programme expands, new collaborators will be critical in helping KwaZulu-Natal unlock the full potential of its energy transition.

Our Ecosystem of Impact

A just energy transition is not delivered by one actor — it's built through the strength of many.

Phemba Africa is not a standalone project — it is a growing platform for collaboration. At the core of its delivery model is a multi-sector network of institutions, agencies, and enterprises committed to building KwaZulu-Natal's clean energy future.

This consortium spans:

Public Sector Institutions

Provide strategic oversight, public infrastructure access, and regulatory alignment across all project pillars.

Technical & Infrastructure Partners

Lead on system design, grid integration, technology transfer, and long-term operations and maintenance.

Finance & Investment Stakeholders

Mobilise capital to fund infrastructure development, manufacturing, and inclusive enterprise growth.

Training & Skills Development Institutions

Equip local communities — especially youth and women — with certified technical skills linked to real job pathways.

Enterprise & Community-Based Organisations

Support cooperative formation, township enterprise development, and ensure inclusive participation at every level of delivery.



Anchored by Mandate, Powered by Partnership

Public Sector Anchors

The Phemba Africa delivery ecosystem is designed around a core set of strategic functions — from energy generation and infrastructure deployment to enterprise development, training, and finance. Each function is anchored by a lead institution or agency, supported by a growing network of collaborators at provincial, national, and community levels.

- **Office of the Premier (KwaZulu-Natal)**
Mandating authority and provincial strategic oversight
- **Department of Mineral Resources and Energy**
Policy and regulatory alignment, embedded generation approvals
- **Department of Mineral Resources and Energy**
Site approvals, local procurement, and circular economy integration
- **Dept. of Public Works and Infrastructure, Dept. of Human Settlements, Department of Health, Dept of Basic Education**
Facility access, infrastructure prioritisation, and project integration



Anchored by Mandate, Powered by Partnership

Technical & Infrastructure Partners

To deliver clean energy at scale, Phemba Africa draws on a network of engineering, utility, and research partners with the expertise to design, deploy, and maintain high-performance infrastructure. These partners are responsible for the technical backbone of the energy system—ensuring it is robust, integrated, and future-fit.

- **Independent Power Producers, Original Equipment Manufacturers, Engineering, Procurement and Construction Firms**
System design, rollout, and operations
- **Municipal Utilities & Eskom**
Grid access, licensing, and wheeling agreements
- **Council for Scientific and Industrial Research (CSIR), GreenCape**
Technology validation, feasibility modelling, and materials recovery support



Anchored by Mandate, Powered by Partnership

Training & Skills Development Institutions

Building local capability and ensuring long-term inclusion requires deep engagement with training institutions, incubators, and civil society networks. These include:

- > **TVET Colleges (e.g., DUT, MUT, Umfolozi, Majuba, Elangeni)**
Accredited skills training and rural training hubs
- > **Sector Education and Training Authorities (EWSETA, AgriSETA, QCTO)**
Curriculum, certification, and learnership pipelines
- > **KDIV Innovation Academy**
Technical upskilling, innovation incubation, and mentorship



Anchored by Mandate, Powered by Partnership

Investment & Enterprise Enablers

Financing inclusive energy systems requires partners who can mobilise public and private capital, strengthen enterprise ecosystems, and ensure economic participation. These enablers support infrastructure roll-out, enterprise formation, and scalable employment.

- **Energy Capital**
Capital mobilisation and deal structuring
- **Small Enterprise Development Agency, Small Enterprise Finance Agency, Women's Development Fund**
Finance access and enterprise support for women and youth
- **Youth Employment Service (YES)**
Workforce integration and job creation at scale



Strategic Policy Landscape



Enabling Regulatory and Policy Landscape

Phemba Africa operates within a national policy environment that actively supports decentralised, clean energy deployment. From procurement regulations to national infrastructure planning frameworks, the regulatory ecosystem enables streamlined delivery, unlocks public sector participation, and signals long-term certainty to investors and developers alike.

- Integrated Resource Plan (IRP 2019)
- Operation Vulindlela – Energy reform initiatives by the Presidency and National Treasury
- Presidential Climate Commission’s Just Energy Transition Framework
- National Infrastructure Plan 2050
- Municipal Energy Procurement Regulations (NERSA, 2021 onwards)



Together, this policy alignment and multistakeholder partnership model de-risks project execution, strengthens institutional capacity, and creates a replicable blueprint for clean energy deployment that is not only commercially viable, but socially transformative.

Partnership Matrix by Pillar



This matrix outlines the primary partners supporting each pillar of Phemba Africa, alongside their core roles. While the consortium is already in motion, each pillar remains open to new collaborators who align with the programme's mission and delivery logic.

Pillar	Key Partners	Core Roles
Utility-Scale Solar	Eskom, IPPs, Energy Capital, EPC firms	Grid access, power purchase agreements, system rollout, capital structuring
Public & Residential Solar	Department of Public Works and Infrastructure, Department of Human Settlements, Municipalities, OEMs	Facility access, embedded generation, rooftop installation, system servicing
KDIV Assembly & Manufacturing Hub	KDIV, Department of Trade, Industry and Competition, Dube TradePort, OEMs	Site development, manufacturing localisation, skills development, logistics
Waste-to-Energy	Municipal Waste Authorities, CSIR, GreenCape, OEMs, Carbon Certification Bodies	Feedstock access, tech integration, emissions offsetting, circular modelling
Biomass & Agri-Waste	Greenfields, Department of Agriculture, Rural Cooperatives, OEMs	Feedstock mobilisation, rural site rollout, fertiliser production
Skills Development	TVET Colleges, SETAs (EWSETA, AgriSETA), KDIV Academy	Accredited training, mobile labs, technical certification
SMME & Enterprise Development	SEFA, SEDA, Women's Development Fund, Youth Employment Service (YES)	Mentorship, finance access, cooperative incubation
Women & Youth Inclusion	Office on the Status of Women, Women-Led NGOs, Community Trusts	Recruitment, leadership, ownership structures

Partnering Opportunities



Scaling Phemba Africa will take collective ambition, capital, and capability.

While key delivery partners are already in place, Phemba is designed as an expanding platform — one that actively welcomes new collaborators across sectors and regions. Whether you're a funder, a technology provider, a policy actor, or a community-based organisation, there is space to contribute meaningfully to this transition.

We're actively seeking partners to support:

- **Deployment & Scale**
 - EPCs, OEMs, and grid actors ready to support solar, biomass, and WtE expansion
- **Finance & Capital**
 - Development finance institutions, blended capital funds, and philanthropic investors
- **Innovation & Technology**
 - Clean tech startups, digital infrastructure providers, and R&D institutions
- **Training & Human Capital**
 - Training providers, academic institutions, and skills development specialists
- **Enterprise Support**
 - Cooperatives, business incubators, SMME accelerators, and township-based networks
- **Social Impact & Governance**
 - Women's organisations, youth movements, and civil society actors shaping inclusion





ROLLING OUT THE TRANSITION



Implementation Roadmap

PHASE 1: Foundation & Mobilisation (2024 – 2025)

Focus: Strategy activation, institutional partnerships, community onboarding, and early deployment.

- Finalise investment case and multi-stakeholder delivery consortium
- Secure regulatory support and enabling policy alignment (IRP, Operation Vulindlela, NERSA, etc.)
- Sign MoUs with public institutions (DPWI, DHS, DTIC, KZN Government)
- Identify and map strategic infrastructure zones (urban, peri-urban, rural)
- Begin first utility-scale solar farm construction (100–200 MW)
- Launch rooftop solar pilot projects on public buildings
- Kick off workforce mobilisation via TVET & training partners
- Begin SMME readiness programmes (toolkit distribution, incubation)

PHASE 2: Acceleration & Scale (2025 – 2027)

Focus: Infrastructure delivery, localisation, circular economy build-out, skills expansion.

- Expand solar farms to 500MW+ capacity with diversified sites
- Activate rooftop solar deployments across 1000+ facilities (clinics, schools, municipal offices)
- Commission Assembly & Manufacturing Hub at KDIV
- Launch inverter and mounting structure fabrication lines
- Operationalise waste-to-energy (WTE) pilot facilities in two municipalities
- Scale up training: +2K certified technicians, women-first cohorts
- Formalise placement & enterprise absorption mechanisms
- Initiate local procurement and township-based service pools

PHASE 3: Integration & Impact (2027 – 2030)

Focus: Grid integration, job absorption, measurable impact, and replicability.

- Deliver >1GW of installed solar capacity
- Scale up biomass and WTE with 8–10 distributed plants
- Activate 5+ regional mobile skills labs for rural access
- Anchor 150+ micro-enterprises and co-ops in the clean energy value chain
- Establish monitoring & traceability dashboard (incl. carbon offset verification)
- Reach >5 million people with improved energy access
- Reach 50%+ women participation and 60% youth participation in all workforce pipelines
- Replicate model in neighbouring provinces / nationally



JOIN US IN

Powering KwaZulu-Natal's Future — With Women at the Centre

This initiative outlines a bold, province-led strategy for energy security, inclusive industrialisation, and broad-based economic empowerment. It directly responds to KwaZulu-Natal's infrastructure challenges, energy transition goals, and the need for a more resilient and equitable society.

Mandated by the Office of the Premier, the programme has been carefully designed to deliver measurable outcomes — from utility-scale generation and grid access, to manufacturing localisation, enterprise development, and public infrastructure resilience.

At the heart of this strategy is a clear commitment: women and youth are not beneficiaries of change — they are architects of it. They are positioned as builders of the province's clean energy future, equipped with tools, skills, and ownership pathways across every delivery zone.

With feasibility modelling complete and investor interest confirmed, the groundwork has been laid. What comes next is execution — through strong public leadership and aligned partnerships that can scale the opportunity and deliver real, long-term value.

**We invite you to join us in building
KwaZulu-Natal's next economy — one
powered by women, fuelled by clean
energy, and driven by shared prosperity.**



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GREEN ENERGY SOLUTIONS