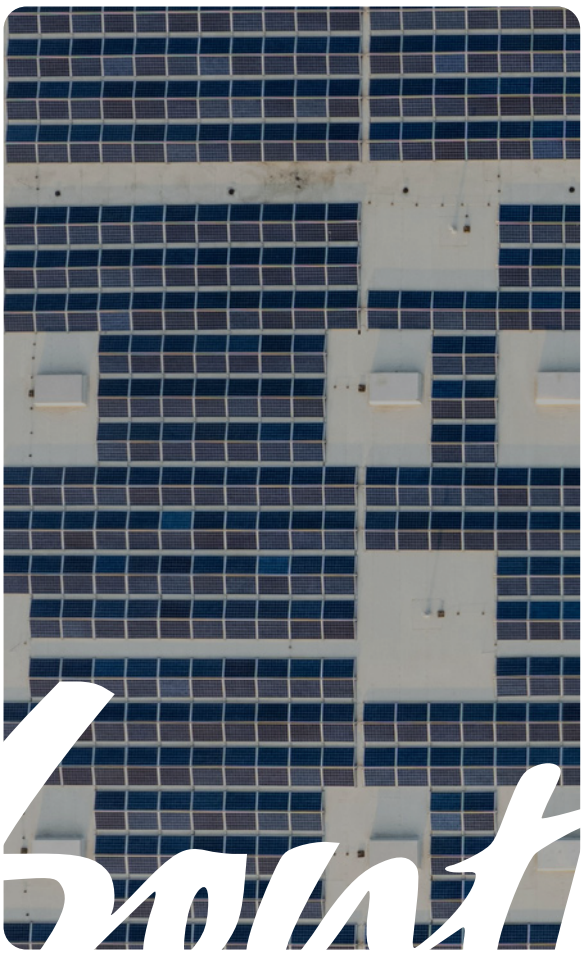
Renewable Energy & Green Hydrogen
Sector Report



EXECUTIVE SUMMARY

Africa's Green Powerhouse

SOUTH AFRICA IS TRANSITIONING FROM COAL DEPENDENCE to become Africa's renewable energy and hydrogen leader. With over 14 GW installed across solar, wind, hydro, and CSP, and a pipeline of 66-80 GW under development, the sector is scaling rapidly. Reforms under Operation Vulindlela, the 2023 EV White Paper, and the launch of the National Transmission Company of South Africa (NTCSA) in 2025 are unlocking private capital and grid expansion.

BY OCTOBER 2024, SOUTH AFRICA HAD 8.97 GW OF INSTALLED SOLAR PV (+11.9% year-on-year), 3.4 GW of wind, and 1.9 GW of hydro and CSP. REIPPPP has procured 6.4 GW since 2011, with 4.2 GW operational. Bid Window 7 (2024) added 2.7 GW (1.76 GW solar, 0.93 GW wind). Battery storage scales rapidly—Eskom's 343 MW BESS and 360 MW procured under BESIPPPP in 2025. South Africa leads Africa's 18 GWh storage pipeline with 1.6 GWh cumulative capacity by 2024.

HYDROGEN EXPORT HUBS at Coega, Prieska, and Saldanha, backed by R300 billion+ in projects, position South Africa as a strategic supplier to Europe and Asia. Hive Hydrogen's R100 billion Coega ammonia plant, Prieska's 72,000 tons/year ammonia project (target 2026), and Saldanha Bay export hub anchor the Hydrogen Society Roadmap. Global partnerships include the EU's €4.7 billion Global Gateway, Japan's hydrogen MOU, and UK-SA hydrogen collaborations.

SOUTH AFRICA HOLDS SIGNIFICANT VANADIUM RESERVES—critical for vanadium redox flow batteries (VRFBs). Bushveld Minerals pilots VRFBs for grid-scale storage. Flagship investments include Scatec Kenhardt (R16.4B, 540 MW solar + 1.1 GWh battery), Redstone CSP (R11.6B, 100 MW with 12-hour storage), and Anglo American's hydrogen haul truck pilot in Limpopo.

THE JUST ENERGY TRANSITION INVESTMENT PLAN (JET-IP) pledged $8.5 billion in concessional finance, with 50% disbursed by 2025. The South African Renewable Energy Masterplan (SAREM), approved in 2025, prioritizes localization of turbines, PV panels, hydrogen components, and batteries. NTCSA enables private transmission concessions, unlocking R390 billion by 2030.

FOR INVESTORS, South Africa delivers abundant solar/wind resources (Northern & Eastern Cape), mineral advantage (PGMs for fuel cells, vanadium for batteries), industrial base (Sasol's expertise), SEZ integration (Coega, Saldanha), and strategic geography for Europe/Asia exports.

EXECUTIVE SUMMARY

Sector Highlights

14+ GW
INSTALLED SOLAR, WIND, HYDRO AND CSP

66-80 GW
PIPELINE UNDER DEVELOPMENT

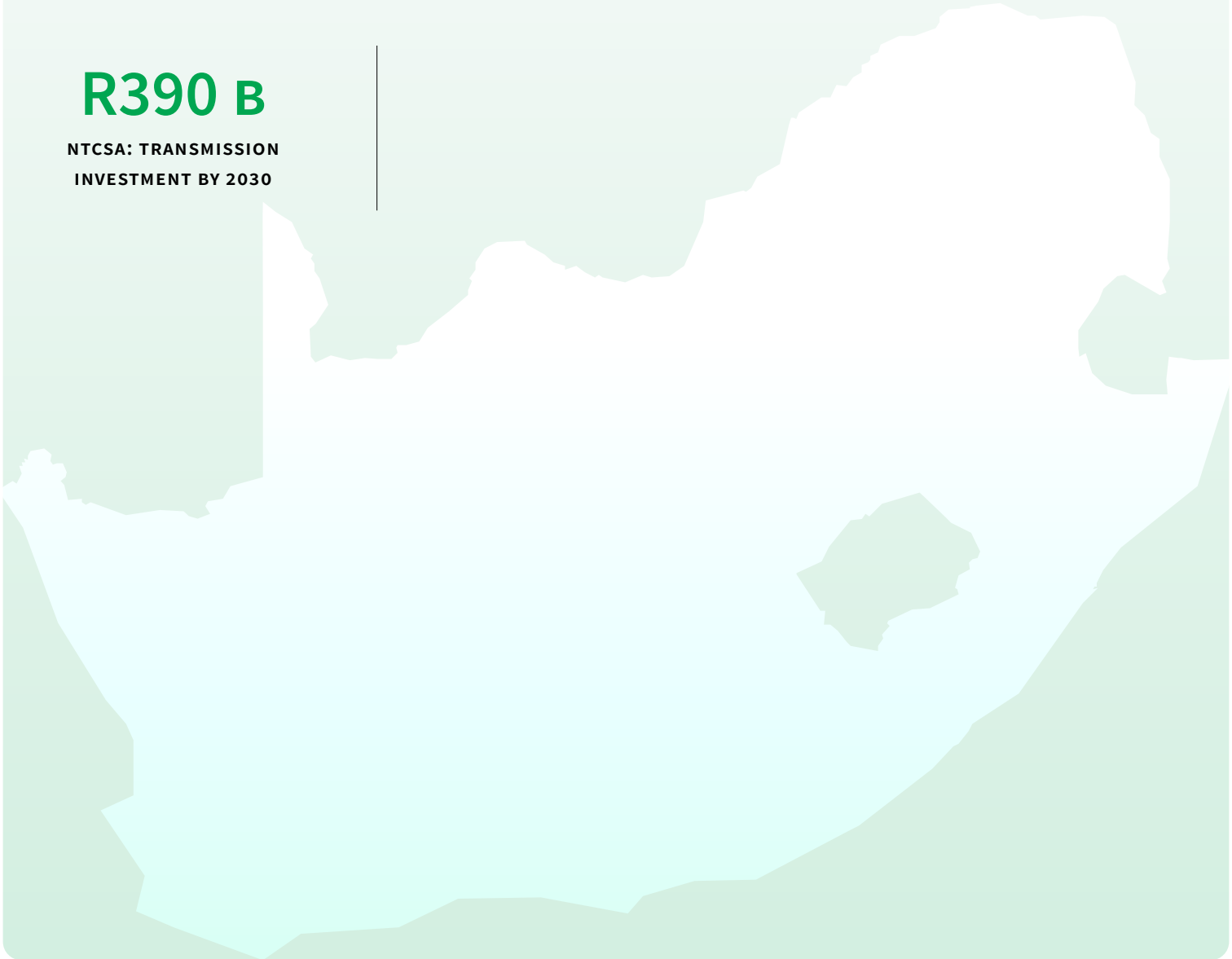
8.97 GW
SOLAR PV (+11.9% YOY)

3.4 GW
WIND CAPACITY

343 MW
BESS OPERATIONAL; 360 MW PROCURED

R300+ B
HYDROGEN PROJECT PIPELINE

R390 B
NTCSA: TRANSMISSION INVESTMENT BY 2030



FULL SECTOR BRIEF

The Big Picture

South Africa is transitioning from coal dependence—historically 80%+ of electricity—to become Africa's renewable energy and green hydrogen powerhouse. With over 14 GW installed across solar, wind, hydro, and concentrated solar power (CSP), and a pipeline of 66-80 GW under development, the sector scales rapidly despite grid constraints.

By October 2024, South Africa had 8.97 GW of installed solar PV capacity (+11.9% year-on-year growth), 3.4 GW of wind, 1.9 GW of hydro, and CSP. The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has procured 6.4 GW since 2011, with 4.2 GW operational. Bid Window 7 (2024) added 2.7 GW: 1.76 GW solar and 0.93 GW wind. Pipeline estimates range from 66-80 GW, but grid constraints mean only 6-8 GW may connect by 2030 without major upgrades.

Battery storage is scaling: Eskom's 343 MW Battery Energy Storage Systems (BESS) and 360 MW procured under BESIPPPP in 2025. South Africa leads Africa's 18 GWh storage pipeline with 1.6 GWh cumulative capacity by 2024. Operation Vulindlela removed the 100 MW licensing cap in 2022, unlocking private generation. The National Transmission Company of South Africa (NTCSA), launched in 2025, corporatizes transmission and enables private concessions, unlocking R390 billion by 2030.

The Hydrogen Society Roadmap (2022, updated 2025) and Green Hydrogen National Programme position South Africa as a global hydrogen leader. With platinum group metals for fuel cells, world-class renewable resources, and deepwater ports, the hydrogen pipeline exceeds R300 billion. Nine Strategic Integrated Projects (SIPs) include Hive Hydrogen's R100 billion Coega ammonia plant, Prieska's 72,000 tons/year ammonia project (target 2026), and Saldanha Bay export hub.

80%

HISTORIC DEPENDENCE ON COAL FOR ELECTRICITY

66-80 GW

PIPELINE UNDER DEVELOPMENT

R390 B

NTCSA UNLOCKING BY 2030

FULL SECTOR BRIEF

Utility-Scale Renewables

Scatec Kenhardt (R16.4 billion, 540 MW solar + 1.1 GWh battery, operational 2023) and Redstone CSP (R11.6 billion, 100 MW CSP with 1,200 MWh thermal storage, commissioning 2025) prove bankability of large-scale projects.

REIPPPP Bid Windows and private power purchase agreements (PPAs) align with IRP 2030 targets. Northern Cape and Eastern Cape offer world-class solar and wind yields—among the best globally.

INVESTMENT OPPORTUNITY

Solar PV, wind, hybrid plants under REIPPPP and private PPAs.
Northern/Eastern Cape yields world-class.
Scatec Kenhardt: R16.4B, 540 MW solar + 1.1 GWh battery.
IRP 2030 targets.

FULL SECTOR BRIEF

Embedded Generation & Commercial-Industrial

PPAs. Mining houses, data centers, and industrial facilities install on-site generation and battery storage to ensure energy security.

Investors capture growth in commercial and industrial (C&I) segments, where load-shedding drove rapid adoption

INVESTMENT OPPORTUNITY

Rooftop solar, wheeled PPAs for mining, data centers, industrial.
100 MW cap removed.
Energy security drives adoption.

FULL SECTOR BRIEF

Battery Storage

Eskom's 343 MW BESS rollout and BESIPPPP's 360 MW contracts prove bankability. Lithium-ion dominates short-duration applications.

South Africa's significant vanadium reserves provide entry into long-duration vanadium redox flow battery (VRFB) storage markets. Bushveld Minerals pilots VRFBs for grid-scale storage, linking mining and renewables.

INVESTMENT OPPORTUNITY

Lithium-ion (short-duration), VRFBs (long-duration).
Eskom: 343 MW BESS;
BESIPPPP: 360 MW.
Bushveld pilots VRFBs.

FULL SECTOR BRIEF

Green Hydrogen Economy

Hive Hydrogen's R100 billion Coega ammonia plant targets European markets via EU Global Gateway partnerships (€4.7 billion). Prieska's 72,000 tons/year ammonia project (2026 target) and Saldanha Bay export hub anchor exports to Europe and Asia. Sasol and ArcelorMittal pilot hydrogen-based steel production in Vanderbijlpark. Anglo American deploys hydrogen haul trucks in Limpopo, proving mining decarbonization.

South Africa supplies over 70% of global platinum—essential for proton exchange membrane (PEM) electrolysers and fuel cells. Deepwater ports at Durban, Richards Bay, Saldanha enable ammonia exports. Electrolyser manufacturing, ammonia production facilities, and fuel cell value chains create investment opportunities across hydrogen economy layers.

INVESTMENT OPPORTUNITY

Electrolysers, ammonia plants, fuel cells. Hive Hydrogen: R100B Coega; Prieska: 72,000 tons/year (2026). EU/Asia offtake.

FULL SECTOR BRIEF

Vanadium & Critical Minerals

South Africa holds significant vanadium reserves—critical for VRFBs offering 20+ year lifespans and superior long-duration storage versus lithium-ion. Bushveld Minerals commercializes VRFBs domestically and for export.

With lithium, manganese, and nickel reserves, South Africa uniquely positions to supply and host battery ecosystems, linking mining with renewable energy storage.

INVESTMENT OPPORTUNITY

ON THE GROUND

Just Energy Transition: Mpumalanga

Mpumalanga, historically coal-dependent, is central to South Africa's just transition. The Just Energy Transition Investment Plan (JET-IP) earmarks R60 billion for diversification, retraining, and renewable hubs, targeting 100,000+ new jobs by 2030.

Skills initiatives aim for 40% female participation in renewable energy jobs. JET-IP pledged $8.5 billion in concessional finance, with approximately 50% disbursed by 2025.

INVESTMENT OPPORTUNITY

Electrolysers, ammonia plants, fuel cells. Hive Hydrogen: R100B Coega; Prieska: 72,000 tons/year (2026). EU/ Asia offtake.

ON THE GROUND

Transmission & Grid Infrastructure

NTCSA's launch in 2025 corporatizes transmission and enables private concessions. Eskom's R390 billion transmission plan by 2030 addresses grid bottlenecks. High-voltage transmission lines, substations, and wheeling services open investment opportunities.

Blended finance and development finance institutions (DFIs) de-risk infrastructure investments.

INVESTMENT OPPORTUNITY

NTCSA private concessions. R390B by 2030. High-voltage lines, substations, wheeling.

ON THE GROUND

Local Manufacturing & Services

The South African Renewable Energy Masterplan (SAREM), approved in 2025, prioritizes localization: turbine assembly, PV panel production, hydrogen components, and battery manufacturing.

Engineering, procurement, construction (EPC) services, operations and maintenance (O&M), and digital energy optimization platforms expand alongside hardware manufacturing.

INVESTMENT OPPORTUNITY

SAREM localization: turbines, PV panels, hydrogen tech, batteries. EPC, O&M, digital platforms. SAREM localization: turbines, PV panels, hydrogen tech, batteries. EPC, O&M, digital platforms.

ON THE GROUND

Policy & Reform Framework

Operation Vulindlela removed licensing caps, accelerated REIPPPP bid windows, and launched NTCSA. The 2023 EV White Paper integrates transport electrification with grid planning. SAREM mandates local content targets for turbines, panels, and hydrogen tech. JET-IP coordinates concessional finance from World Bank, EU, UK, Germany, France, US. EU Global Gateway's €4.7 billion supports hydrogen infrastructure. Japan and UK signed hydrogen MOUs.

LOOKING AHEAD

Investment Opportunities

1 **UTILITY-SCALE RENEWABLES**

Solar PV, wind, hybrid plants under REIPPPP and private PPAs.
Northern/Eastern Cape yields world-class.
Scatec Kenhardt: R16.4B, 540 MW solar + 1.1 GWh battery. IRP 2030 targets.

2 **EMBEDDED GENERATION & C&I**

Rooftop solar, wheeled PPAs for mining, data centers, industrial.
100 MW cap removed.
Energy security drives adoption.

3 **BATTERY STORAGE**

Lithium-ion (short-duration), VRFBs (long-duration).
Eskom: 343 MW BESS; BESIPPPP: 360 MW.
Bushveld pilots VRFBs.

4 **GREEN HYDROGEN & AMMONIA**

Electrolysers, ammonia plants, fuel cells.
Hive Hydrogen: R100B Coega; Prieska: 72,000 tons/year (2026).
EU/Asia offtake.

5 **TRANSMISSION & GRID UPGRADES**

NTCSA private concessions.
R390B by 2030.
High-voltage lines, substations, wheeling.

6 **LOCAL MANUFACTURING & SERVICES**

SAREM localization: turbines, PV panels, hydrogen tech, batteries.
EPC, O&M, digital platforms.

LOOKING AHEAD

Challenges & Fixes

- ✓ **GRID BOTTLENECKS CONSTRAIN CONNECTION** Eskom's R390B plan and NTCSA concessions address capacity.
- ✓ **POLICY DELAYS** NTCSA implementation, wheeling frameworks face 2025 bottlenecks.
- ✓ **CAPITAL INTENSITY MITIGATED** through blended finance, DFIs, green bonds.
- ✓ **WATER DEMAND FOR HYDROGEN** addressed by desalination at Coega and Saldanha.
- ✓ **JET-IP ONLY ~50% DISBURSED** by 2025. Donor partnerships extend financing.
- ✓ **SKILLS SHORTAGE** 50,000 workers needed by 2030 mitigated by SAREM training programs.

IN SUMMARY

The Bottom Line

South Africa combines abundant resources (world-class solar/wind in Northern & Eastern Cape), mineral advantage (significant vanadium, 70%+ platinum for fuel cells), industrial base (Sasol expertise, SAREM localization), SEZ integration (Coega, Saldanha hydrogen hubs), reform momentum (Operation Vulindlela, NTCSA, JET-IP $8.5B), and strategic geography (shipping to Europe/Asia).

For investors, it's Africa's only market offering full renewable value chain—generation, storage, hydrogen, transmission, manufacturing—anchored in R300B+ hydrogen pipeline and R390B transmission investment by 2030.

GET IN TOUCH WITH BRAND SOUTH AFRICA

CONTACT DETAILS
+27 011 483-0122
+27 011 483-0124
info@brandsouthafrica.com

PHYSICAL ADDRESS
Brand South Africa
103 Central Street
Houghton, Johannesburg

POSTAL ADDRESS
PO Box 87168
Houghton 2041
Gauteng, South Africa