

The South African-German Energy Programme (SAGEN)

Advancing the South African Power Sector Reform, supporting a capable and resilient grid and fostering the deployment of renewable energies



The Republic of South Africa has some of the world's best renewable energy resources, notably wind and solar energy. These resources promise significant potential, offering both a dependable, clean energy supply and long-term economic growth. As global demand for low-carbon products is on the rise, these renewable sources stand as the most cost-effective option, capable of deployment far more swiftly than conventional power plants. Such rapid implementation provides a quicker solution to load shedding. Shifting South Africa's energy mix towards renewables not only presents an opportunity to establish a clean and reliable energy sector but also acts as a safeguard for workers and communities in coal-producing regions. This transition facilitates job retraining, introduces new employment opportunities, and provides direct financial support, ensuring a sustainable future.

Project name	South African-German Energy Programme 5
Commissioned by	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ)
Project region	South Africa
Partners	Department of Electricity and Energy (DEE), South African Local Government Association (SALGA), Eskom, South African National Energy Development Institute (SANEDI)
Duration	01.01.2026 – 31.12.2029
Financial volume	Up to 11 million Euro and expected co-funding from the Swiss State Secretariat for Economic Affairs (SECO)

The Challenge

For several years, South Africa has grappled with a persistent energy crisis marked by constrained electricity generation capacity, recurring load shedding, and rising energy costs, with significant impacts on households, businesses, and industry. These challenges have placed sustained pressure on economic growth and employment, while exacerbating inequality and poverty. Although a range of interventions have been introduced to stabilise the electricity supply, structural constraints within the energy system remain. South Africa's aging conventional power plant fleet and lack of investment in grid infrastructure continue to pose reliability and environmental challenges. The impacts of the climate crisis have become increasingly evident, including catastrophic floods that claiming lives, disrupting livelihoods, and damaging infrastructure. Consequently, addressing energy, economic, social and climate challenges concurrently is imperative for South Africa's future.

Our Approach

SAGEN aims to support South Africa's energy transition across four key focus areas. Firstly, it supports the implementation of a competitive electricity market, including the institutional and technical capabilities required for effective market operation. Secondly, it supports municipal electricity supply and reform, with a focus on strengthening governance, financial sustainability, and service delivery. Thirdly, SAGEN supports power system planning and grid expansion to enable a reliable and resilient electricity system. Finally, it promotes the flexibilization of the electricity system to accommodate evolving generation technologies and demand patterns. These activities are closely coordinated and implemented in collaboration with the DEE, National Treasury, NERSA, Eskom holding companies, SALGA, SANEDI, and municipalities. These activities contribute to the four focus areas described above. In supporting them, SAGEN provides technical support on a broad range of topics in a multi-stakeholder landscape, cooperates with public key institutions at national and municipal level, and works demand-driven based on partner requests that align with a clear set of project indicators.



Contact person

Ms Nicole Taeumel
Head of Programme

nicole.taeumel@giz.de



Photo left: Over 60 participants from 15 municipalities attending the SSEG training and a site visit to the world-class Solar PV demonstration systems at the CSIR Pretoria Campus.

Photo right: Panel discussion during a networking reception for women in green hydrogen and renewable energies.

Our Results

Throughout its four prior project phases since 2011, SAGEN has significantly contributed to the advancement of the South African energy transition, in close cooperation with key public partners. This collaboration includes DEE, NERSA, OV support on market related topics, and the National Treasury Cities Support Programme, which supports the metro trading services programme. SAGEN also provides technical support through a pool of international and national short-term experts, as well as seconded experts in NT and SALGA.

To support municipalities in responding to the rise of Embedded Generation (EG), SAGEN initiated a technical assistance and capacity-building programme that aids municipalities in integrating EG into their networks, addressing technical, legal, and economic considerations. The programme has supported 134 municipal electricity distributors, capacitated more than 600 officials on EG topics and supported Council-approved EG approval processes in 77 municipalities. In addition, 55 municipalities use the online EG application portal to process applications from EG customers.

In addition, Municipal Energy Management Systems (MEMS) have been introduced to municipalities, enabling self-management of electricity use and substantial savings. Five of six phase 1 municipalities now have Council-approved energy management policies and committees coordinating energy efforts, supported by awareness campaigns and monitored consumption registers. MEMS is delivered through close cooperation with DEE, SANEDI, SALGA, and municipalities, and is supported by national and international experts as well as a peer exchange network. The initiative has strengthened institutional capacity, improved energy decision-making, and driven electricity savings. More than 90 municipalities have implemented energy efficiency measures, including street lighting upgrades, improved management practices, and public building retrofits, collectively reducing national energy consumption by over 200 million kilowatt-hours annually.

SAGEN has supported power system flexibilization in close cooperation with NTCSA and Eskom Distribution, with technical support from a pool of international experts. These efforts established a Standard for Hosting Capacity to streamline grid connection processes and revised the Battery Energy Storage System (BESS) application in the Distribution Network Operation Standard to enable more efficient use of distribution networks and BESS assets. As a result, NTCSA and Eskom engineers are now capacitated to optimally manage the increasing share of renewable energy in their networks and plan for future uptake, strengthening the resilience and flexibilization of South Africa's electricity system.



70 mio. tons



**134 supported
municipalities**



**77 EG
tariffs**

The just energy transition promises a prosperous future for South Africa. A shift towards a decarbonised energy system is set to underpin a thriving economy, foster societal inclusivity, and preserve a healthier environment. Both industries and households stand to gain from dependable, cost-effective, and environmentally friendly energy sources. This transition will catalyse inclusive economic growth, generate well-paying employment opportunities, and contribute significantly to poverty reduction. With these changes, South Africa is poised to unlock its full potential, ensuring energy security, advancing economic growth, and championing social equity.

Published by

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH
Registered offices Bonn and Eschborn, Germany

South African-German Energy Programme (SAGEN)
P.O. Box 28102, Sunnyside, 0002
Hatfield Gardens, Block C, 333 Grosvenor Street
Pretoria, South Africa

sagen@giz.de
www.giz.de/southafrica | www.sagen.org.za

As at

May 2026

GIZ is responsible for the content of this publication.

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On behalf of

Federal Ministry for Economic
Cooperation and Development (BMZ)

In cooperation with

Department of Electricity and Energy (DEE),
National Treasury (NT), South African Local Government
Association (SALGA), Eskom, and the National Energy
Regulator of South Africa (NERSA)