



# **SAGEN: ENERGY EFFICIENCY & RENEWABLE ENERGY**

**Training and skills development for a specialised labour force to serve the energy sector in South Africa**

GIZ SAGEN supports the South African Renewable Energy Technology Centre (SARETEC) in providing specialised training and skills development for personnel servicing the sustainable energy sector.



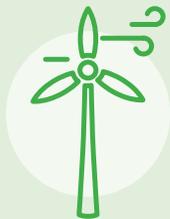
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# THE CHALLENGE



Job creation remains one of the most important objectives of the South African Government to address poverty and inequality.

The green economy and, more specifically, the energy efficiency and renewable energy industry have been identified as a potential sector that could generate significant jobs.



SOLAR AND WIND PLANTS  
HAD GENERATED

**38 701 JOB YEARS**  
FOR SOUTH AFRICANS BY 2018.

Data from the renewable independent power producer programme (REIPPPP) showed that solar and wind plants had generated 38 701 job years for South Africans by 2018. Of these, 83% were created by construction and 17% in the operational phase of the projects. The most recently signed projects will increase this to 53 774 total job years, 96% of which are for South Africans during plant construction and operations.

## SAGEN HAS SUPPORTED THE ESTABLISHMENT OF SARETEC SINCE 2012.

Additional stimulus for job creation will come from the small-scale embedded generation sector that conservatively estimates 28 jobs being created for every megawatt (MW) of solar rooftop power installed. The solar rooftop photovoltaic (PV) market has grown exponentially over the past three years, with an estimated 94 MW of installed capacity.

The transition away from a coal-powered energy sector to a sustainable energy sector utilising renewable energy and energy efficiency will require re-training and re-skilling of workers in the coal-related energy space. This will increase the demand for relevant training courses and service providers to equip workers to transition to the new energy age.

It is therefore clear that existing market conditions as well as the much-anticipated restructuring of the energy sector will create demand for well-skilled and trained labour. The South African education system is not well prepared to service the demand for training for these new industries.

SAGEN has supported the establishment of SARETEC since 2012. SARETEC provides specialised technical training and skills development to supply the demand for skilled labour in the energy sector.

# AT A GLANCE ...



## OBJECTIVE

Provide world-class RE & EE training in support of the energy sector in South Africa.



## IMPLEMENTATION PARTNER

SARETEC



## COOPERATION PARTNERS

Dept. of Higher Education and Training, Dept. of Mineral Resources and Energy, SANEDI, GreenCape, South African universities and universities of technology.



## POTENTIAL IMPACT

Reduced unemployment;  
Realised job creation potential in the RE & EE sectors;  
Technical training and skills development for personnel servicing the RE & EE sector;  
Re-trained workers for a smooth energy transition.



1. A job year is defined as one person having a job for one year. Critics argue that this is a misleading way to present job creation figures as it may overstate impacts

# OUR APPROACH

## DEVELOPING INSTITUTIONAL CAPACITY

SAGEN's involvement with SARETEC started in 2011 when the idea for a dedicated renewable energy training centre was discussed in the light of the successful launch of the Independent Power Producers Procurement Programme (REI4P). Negotiations with various stakeholders continued with a view to establishing a national training facility, hosted at an institution in the Western Cape (to easily service the wind energy projects being established in the Western and Eastern Cape) and to expand its training services to include other renewable energy technician training, for example solar and biogas. It was agreed that although the Centre would set its sights on wider renewable energy training, SAGEN would initially only support activities focused on wind energy training, drawing on the experience of GIZ in China with the development of similar wind energy training centres. These experiences and lessons learnt were used as a roadmap for the establishment of the Centre.

**THE MOST RECENTLY SIGNED PROJECTS WILL INCREASE THIS TO 53 774 TOTAL JOB YEARS, 96% OF WHICH ARE FOR SOUTH AFRICANS DURING PLANT CONSTRUCTION AND OPERATIONS.**

An international integrated expert supported by GIZ and SANEDI was deployed to SARETEC from late 2013 in order to support the establishment of the training centre. The integrated expert assisted in the design of the building as well as the development of the accredited formal wind service technician training course. SAGEN was instrumental in cementing private sector support for SARETEC, and, through a public-

private partnership with Nordex, a 2.5 MW wind turbine (worth \$5 million) was donated to the Centre. The private sector, represented by the South African Wind Energy Association (SAWEA) as well as individual companies, is actively involved in the Centre and participates in the selection of trainee candidates, offers workplace experience opportunities and serves on the SARETEC Advisory Board.



**SARETEC HAS GROWN FROM AN UNKNOWN ENTITY TO AN INTERNATIONALLY RECOGNISED TRAINING SERVICE PROVIDER IN SIX YEARS.**

Between 2013 and 2019, SAGEN supported a number of Train-the-Trainer courses for SARETEC lecturers and in 2017 assisted the Centre to achieve GWO accreditation. In 2019, SAGEN appointed an international solar expert to assist with the development of SARETEC's solar PV training offering and the operationalisation of the Centre's PV demonstration plant.

As part of institutional capacity development, SARETEC staff members and associates participated in study tours to Germany and Denmark, which enabled strategic discussions with counterpart wind energy training centres and turbine equipment manufacturers. These discussions presented SARETEC's value proposition as a cost-competitive, world-class training facility, considering favourable exchange-rate effects and the wind energy industry that had been established in South Africa. An outcome of these discussions was a five-year cooperation agreement with a leading global original equipment manufacturer (OEM).

To assist SARETEC's outreach activities, GIZ-SAGEN funded the development of a comprehensive communication strategy and implementation plan in 2016. This assisted in increasing guidance to SARETEC management to increase the centre's profile in the renewable energy industry, as illustrated by participation in the Husum international wind fair and the annual Windaba conference held in Cape Town.

SARETEC has grown from an unknown entity to an internationally recognised training service provider in six years, and the Centre is well on its way to becoming fully self-sustainable: In 2019 it covered 75% of all its operational costs through external funding.

## DESIGNING TRAINING COURSES FOR WIND AND ROOFTOP PV

GIZ SAGEN was instrumental in the process of supporting the development and accreditation of the 'Wind Turbine Service Technician' occupational qualification within the Quality Council for Trades and Occupations (QCTO) recognised process. In collaboration with the Manufacturing, Engineering and Related Services Sector Education and Training Authority (MERSETA), the qualification was piloted at SARETEC in 2016. SARETEC offers the full Wind Turbine Service Technician training course in collaboration with the South African wind energy industry and to date more than 75 technicians have been trained under the official qualification.

Since 2016, SAGEN has supported the PV industry through SAPVIA (South African Photovoltaic Industry Association) to implement the PV Green Card quality assurance mechanism, which ensures that PV systems are installed responsibly, sustainably and with the

right quality. The system is based on the PV green passport quality mark adopted in Germany. As part of the establishment of the PV Green Card, SAGEN supported SARETEC to become an official accredited assessment centre for PV installers wishing to register as PV Green Card installers. SARETEC also offers the Solar PV Technician Qualification, which was developed in partnership with MERSETA, and registered and approved by the South African Qualifications Authority (SAQA ID No 99447).

### TO ASSIST SARETEC'S OUTREACH ACTIVITIES, GIZ-SAGEN FUNDED THE DEVELOPMENT OF A COMPREHENSIVE COMMUNICATION STRATEGY AND IMPLEMENTATION PLAN IN 2016.

The qualification provides a national curriculum and presents four part-qualifications, one of which specifies the required skills to become a PV installer (skills are defined by specific exit outcomes). Based on the "Solar PV Installer" part qualification, SAPVIA together with SARETEC and GreenCape with support from GIZ SAGEN and DGS Berlin, in partnership with MERSETA (the appointed development and assessment quality partner), have developed a one-week reference training course tailored to PV installers in the market. In designing and drafting this course, GIZ SAGEN appointed international experts to assist with the training outline and material in line with the national Solar PV Technician Qualification.

### ON-GOING COLLABORATION AND SUPPORT

Highlights of the SAGEN SARETEC collaboration include the training of 10 female wind service technicians through the formal WTST qualification and an increase of 200% in female technician enrolment at SARETEC. The collaboration also resulted in excellent relations between SARETEC and European training centres and OEMs. Although the Centre is well established, SAGEN continues to provide strategic support to SARETEC with the aim of building on SARETEC's success and cementing the Centre's position as a training facility of international repute.

# THE SARETEC JOURNEY

SARETEC was established as a national training centre located at the Cape Peninsula University of Technology (CPUT) Bellville campus in Cape Town. The realisation of SARETEC was a culmination of efforts from numerous roleplayers, notably the Department of Higher Education and Training (DHET), which provided R105 million for the construction of the centre through the national skills development fund. SARETEC received further support from Nordex, which donated a nacelle for training purposes, as well as countless other institutions that provided planning, management and implementation support.

SARETEC offers an accredited qualification for wind turbine service technicians as well as part qualifications for solar PV mounters and installers and specialised training courses in hydraulics, bolting and composites for the wind industry. SARETEC is an accredited QCTO skills development provider, a Global Wind Organisation (GWO) certified training facility, is ISO 9001 certified and offers the GWO Basic Safety Training (BST) and Basic Technical Training (BTT) qualifications. It is also an accredited BZEE (Bildungszentrum für Erneuerbare Energien e.V.) network training partner and can offer its European wind turbine service technician qualification.



**28 JOBS BEING CREATED FOR EVERY MEGAWATT (MW) OF SOLAR ROOFTOP POWER INSTALLED.**

Although SARETEC is well established, the centre requires ongoing support to become fully self-sustainable and to implement additional RE & EE training courses.

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