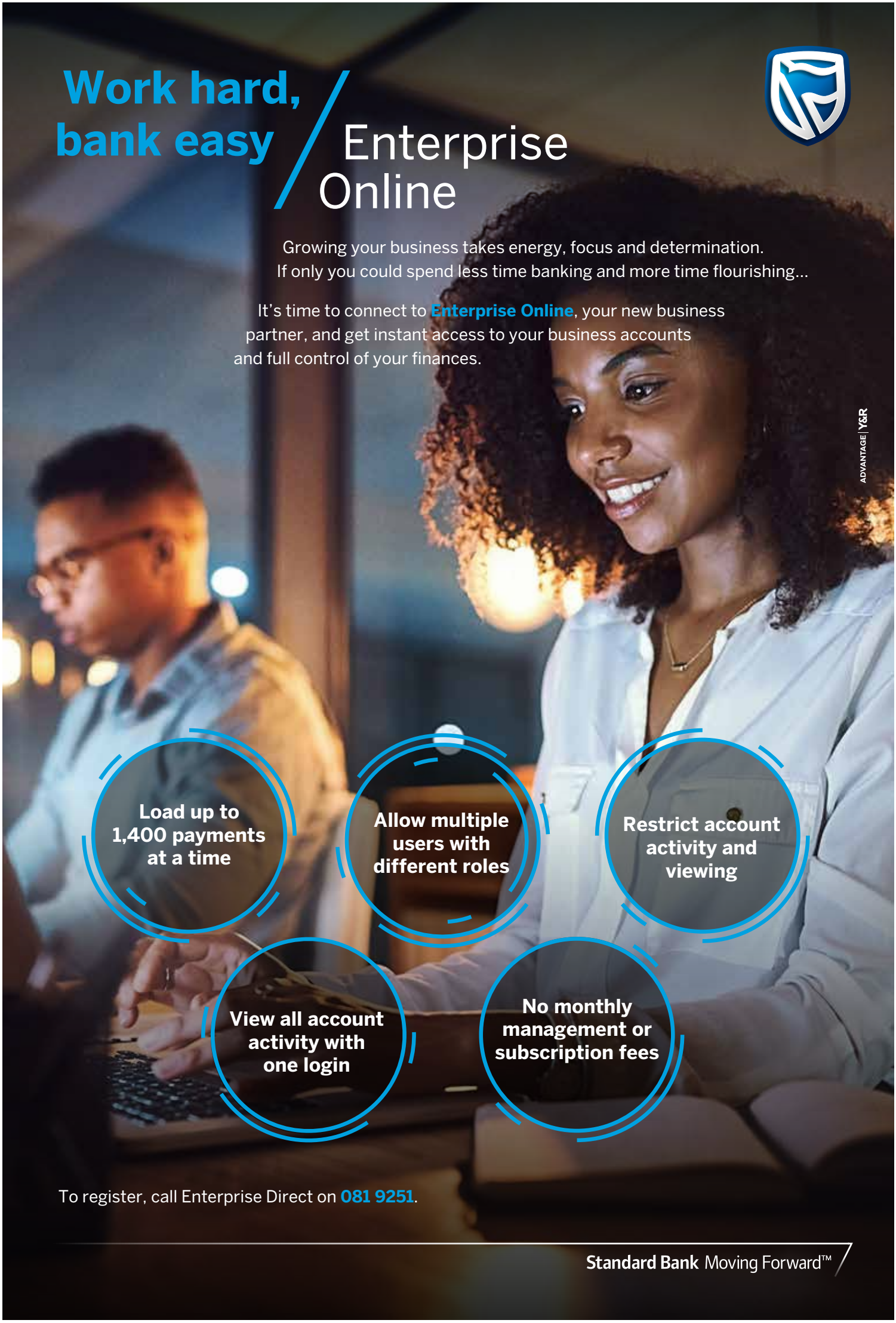
Etango
Namibia's Leading Renewable Energy Technologies Magazine
January-February 2021

Pioneering Wind Technology

SOLTRAIN explores use of solar heat in industrial processes

Is Namibia ready for Green Hydrogen Economy?

NamPower inks deals to add 40MW solar power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REIAoN, Etango forge strategic partnership

Since the publication's inception some 13 years ago, ***Etango*** has played a key role in the promotion of renewable energy technologies in Namibia and has been the one-stop publication for anyone seeking information on developments in the local and regional RE sector.

We are proud to announce that we are taking our commitment to the Namibian RE industry a step further with the signing of a Memorandum of Understanding (MoU) with the Renewable Energy Industry Association of Namibia (REIAoN). REIAoN represents all who are interested in the promotion of the Namibian RE industry.

Although REIAoN and ***Etango*** have enjoyed an excellent working relationship over the years, the MoU formalizes the two parties' commitment to collaborate as partners in the Namibian RE sector and in information sharing pertaining to developments within REIAoN, as well as the Namibian RE sector in general.

As REIAoN's official media partner, ***Etango*** will also extend some privileges to the association's paid-up members, such as a 20% discount for all advertising or advertorials placed in the publication. News from REIAoN members will also enjoy prominence in the publication.

From the onset, ***Etango*** has been a firm believer in Namibia's renewable energy potential and it is without a doubt that with our close cooperation with REIAoN we will be able to help push forward the agenda to add more megawatts of power generated from renewables to the Namibia energy mix.

Renewable energy will not only speed up Namibia's quest to become energy independent and increase access to electricity for the population, but will also go a long way towards reducing the country's carbon footprint as per stipulations and commitments made by world states under the Paris Agreement of 2016.

In this milestone edition of ***Etango*** we continue to explore the opportunities that the Green Hydrogen Economy, in conjunction with other renewables, has for Namibia. There is increasing evidence of fossil fuels being replaced by renewable energies. The main drivers of this migration are climate mitigation, decarbonisation and competitiveness of renewable energy technologies.

We look at efforts being made by the Ministry of Mines and Energy, together with the Namibia Energy institute and the Namibia University of Science and Technology, to increase the application of solar energy for industrial processes.

Our cover feature explores new technology being applied in the wind energy sector. We look at an innovative rock foundation for wind turbines that will be first implemented at the 8 megawatt Elizabeth Bay wind farm being developed by InnoSun Energy.

Happy Reading!
Editor

globe@africaonline.com.na
twitter @EnergyEtango

GLOBE COMMUNICATIONS NAMIBIA
Reg. No. 2007/3268
VAT No. 4530957015

OFFICIAL MEDIA PARTNER OF
REIAoN Renewable Energy Industry Association of Namibia

Contributors

Publisher
Globe Communications Namibia cc

Editor
Tabby Moyo

Graphic Design & Layout
Globe Communications Namibia

Advertising
Katengela Sandra

Distribution
Globe Communications Namibia

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Cover picture:

PIONEERING WIND TECHNOLOGY: Spanish company Nabrawind and Peikko have developed an innovative rock foundation for wind turbines that will be first implemented at the Elizabeth Bay wind farm being developed by InnoSun Energy.

Etango Magazine is produced by Globe Communications Namibia cc,
Unit 9, Tal Terrace, Wecke Street, P.O. Box 99113, Windhoek, Namibia
Telephone: +264 61 247 086 / +264 61 245 190
Cell: +264 81 626 0010
Email: globe@africaonline.com.na

Nabrawind and Peikko develop an innovative rock foundation for Elizabeth Bay wind farm

Nabrawind and Peikko have developed an innovative rock foundation for wind turbines that will be implemented at the Elizabeth Bay wind farm being developed by InnoSun Energy, the Franco/Namibian renewables company.

The wind park to be built at Elizabeth Bay, known as #Oab, will be the second wind project to be developed by InnoSun in Namibia, the first being the 5MW Ombepo wind farm outside Lüderitz. The #Oab wind farm is earmarked to produce 8MW.

Peikko, a European leader in solutions for onshore wind turbine foundations, has a long and strong track record in innovative rock foundations. It will deliver steel components, such as FATBAR Rock Anchors, to the Elizabeth Bay project and also be responsible for the foundation design.

What makes this innovative foundation different is that it uses the transition piece developed by Nabrawind for its Nabralift Tower. The transition piece distributes the load through three distant points directly anchored to the rock subsoil. As a result, the size of the resulting footings becomes small, and the number and metric of the anchors are reduced.

An installation of Nabrawind's Nabralift Tower at the Oualidia project in Morocco. The project is run by InnoVent, InnoSun's parent company

Another benefit of this foundation is the simplification of the manufacturing process on site, where only two trucks are needed to bring the concrete for each footing, avoiding the need for large local concrete plants. Along the logistic simplification, the excavation is also simplified, since only three local ground zones are affected.

The innovative rock foundation also benefits from a significant concrete reduction, which at the same time cuts downs the CO2 emissions by a 90% compared with

standard foundation alternatives.

"Thanks to the expertise of Peikko, we now have a great solution to improve the competitiveness of our Nabralift solution in rocky sites. We see a very interesting market for this solution, with two new projects already under negotiation," says Ion Arocena, Programme Manager of Nabralift.

Peikko, which has long experience especially in the Scandinavian market, highlights the satisfaction of developing such innovative projects.

The company has already taken first steps in Africa since it has cooperated with the large Lake Turkana 365-turbine wind farm located in Kenya.

"We are extremely satisfied with this innovative project that we are facing in such a different country as Namibia. Our solutions are both reliable and timesaving, and we can also provide our customers important cost-savings in materials used. Being part of green energy production supports our goals for a more sustainable way to design and build," says Antti Rousku, Sales Director at Peikko.

Namibia will be one of the first countries to use Nabralift transition.

Peikko is a leading global supplier of slim floor structures, wind energy applications and connection technology for precast and cast-in-situ construction. Its innovative solutions offer a faster, safer, and more efficient way to design and build.

Nabrawind Technologies S.L. is a Spanish company involved in the design and development of advanced wind technologies. It was founded in 2015 based on two international patents applied by the promotors of the mother company Evoluwind SL.

Nabrawind Technologies is focused on the solution of the main barriers of the wind energy evolution: the great growth of the wind turbines and their components. The best positions for wind farms are already occupied and 90 % of future locations will be, in the short term, based on low wind sites (class III and IV).

For this reason, the wind sector needs to increase the turbines rating power, rotor diameter and tower heights, whereas the cost of energy must be reduced.

An impression of the innovative foundation developed by Nabrawind

Some of the representatives of industry from the food and beverages, mining and laundry sectors, energy consultants and members of the academia who attended the information sharing workshop on solar heat for industrial purposes

SOLTRAIN explores use of solar heat in industrial processes

The Ministry of Mines and Energy (MME) and the Namibia Energy Institute (NEI), at the Namibia University of Science and Technology (NUST), has started engaging local industry to explore the possibilities of how solar energy can be used for industrial processes.

The first information sharing workshop with various representatives of key Namibian industries was held in Windhoek on 11 February, 2021, under the framework of the Southern African Solar Thermal Training and Demonstration Initiative (SOLTRAIN) Project Phase 4.

Almost half of the world's heat demand is required in the industrial sector. A large part of this is low-temperature heat, which is used in the food and beverage industry, as well as in the mining industry.

There is a huge potential to replace the fossil fuels currently used in various industrial processes with solar energy.

SOLTRAIN will work with the local industry to identify specific areas where solar thermal energy could be applied for industrial processes. Industry will also be given an opportunity to set up demonstration systems at their premises which will be partly financed by the SOLTRAIN project.

Nico Snyders, Deputy Director: Renewable Energy in the MME, in remarks made on behalf of the Director of Energy John Titus, said there was a need for Namibia to promote the use of alternative energy sources, particularly renewables, and adoption of energy efficient technologies to reduce the cost of production of goods thereby minimizing the contribution of greenhouse gas emissions.

"Renewable energy can play a big role in addressing some of our challenges associated with low energy access and poor energy security. The SADC Industrialisation Strategy and Roadmap (2015-2063), identifies energy as a major barrier, and on the other hand as a key enabler for industrial competitiveness of the region. Energy efficiency is the most cost-effective way to support industry in overcoming these barriers, improving their competitiveness, and addressing the effects of climate change," said Snyders.

While noting that energy costs in industrial processes were significant, representing between 20-35% of the production costs, Snyders said very few improvements in the energy conservation were taking place largely due to a general lack of awareness and guiding policy frameworks for energy efficiency.

"Opportunities for improving energy efficiency are available, and often investments in energy efficiency provide relatively quick returns with

a high degree of certainty. However, businesses and individuals are not capitalising on the opportunities due to barriers such as lack of awareness," he said.

NUST Deputy Vice-Chancellor (Research and Innovation), Professor Pramanathan Govender, in remarks delivered by the Professor of Renewable Energy Systems, James Katende, said the institution was looking to embrace solar energy research and innovation as a niche area for addressing issues of energy access, energy inadequacy (the huge gap between energy demand and supply), and the environmental concerns, as well as climate change challenges underlying energy uses.

He said NUST, in conjunction with the SOLTRAIN project, aims to see an acceleration of the installation of the solar thermal systems in the country, in order to achieve the vision for the Solar Thermal Roadmap and Implementation Plan of 2019.

"We therefore want to understand industry requirements and how we can meet these demands by demonstrating the reliability of renewable energy for heating and cooling in the industry, to reduce cost, secure economic viability and thereby boost job creation," Professor Govender said.

In his virtual presentation to the workshop, Dr Werner Weiss, Director of the Austria-based Institute for Sustainable Technologies (AEE – INTEC), the key implementer of the SOLTRAIN project in southern Africa, highlighted the potential for solar heating and cooling in various sectors of industry, giving some case studies such as the Miraah in Oman, the world's largest solar process heat plant which was significantly enlarged in 2019 and now has an installed capacity of 300 MWth. The plant delivers 660 tons of steam per day to the Amal oil field.

He also cited examples of companies worldwide and regionally that have successfully implemented solar thermal technology in the dairy, mining, brewing, tannery and laundry processes.

South Africa-based energy specialist, Henning Holms, from Holms and Friends, whose firm provides solar solutions for buildings, virtually shared his experience in the construction and operation of solar thermal systems for industrial applications.

He shared his experiences with solar thermal hybrid systems, such as the combination of electricity and photovoltaics, heat pumps and biomass.

Holms and Friends benchmarck solar projects include the Wits Junction, a student residence in South Africa housing 1 160 students, the Sharjah EM brewery in the United Arab Emirates and a Pretoria butchery using solar heat pump combination.

Helvi Ileka, acting head of the NEI and SOLTRAIN project focal person for Namibia, shared information with the industry representatives on how to apply for funding for demonstration systems.

She said so far funding for demonstration systems has been focussed on beneficiaries located within Windhoek, Swakopmund and Walvis Bay, and on social institutions like hospitals, clinics, community centres, orphanages, home for elderly people or small enterprises (such as lodges, small hotels or small industrial facility).

SOLTRAIN funding of demonstration systems has also been targetted at developers implementing affordable housing national programmes, such as Osona village. Projects which have a special focus on institutions which support women (such as girls schools, maternity clinics, shelters for battered women) and marginalised groups, have also enjoyed preference.

With new applications for demonstration systems, SOLTRAIN will consider a limited number of bigger or special systems, small solar cooling/ air conditioning units, industrial application or for solar drying. Simple space heating systems in cold areas, such as solar floor systems, will also be considered.

The demonstration systems are used as training and test cases for the quality inspectors.

SOLTRAIN offers a maximum funding of 50% of the demonstration system cost, including the installation cost. However, due to limitations in funding it is recomended that those applying for large systems must engage AEE INTEC in the early stages of design.

SOLTRAIN

Southern African Solar Thermal Training & Demonstration Initiative

Renewable Energy Industry Association of Namibia (REIAoN) retains leadership

REIAoN hosted its Annual General Meeting on the 26th of January at which four of the five outgoing Board members were re-elected to serve for another 12 months.

RETAINED: *(from left) Colin Lindeque, Alastair Aspara, JB Scheepers and Paulus Mulunga*

NEW ADMINISTRATOR: *REIAoN's new Administrator Christopher Swart*

The new Board will work closely with the Association's Administrator in the coming months to set the overall strategy for the year.

Some of the solar water heating systems that were built in the Osona Village Project in Okahandja

Social institutions, housing projects make up bulk of demonstration systems in SOLTRAIN's Phase 4

Werner Weiss

Thermal heating and cooling includes a multitude of applications in Southern Africa, such as hot water preparation in the household, hospital or hotel sector, space heating and cooling of buildings. In industry, in addition to the drying of agricultural products, it also includes the provision of process heat, such as low-temperature applications in the food and beverage industry.

To illustrate the magnitude of the potential, heating and cooling for private, commercial and industrial purposes accounts for almost 50% of the total final energy demand in Southern Africa.

In order to demonstrate solar thermal systems for the above applications, SOLTRAIN is again supporting the installation of at least 100 demonstration systems in its fourth phase. Since the start of this phase in July 2019, 38 applications for the installation of solar thermal systems have been submitted. Of these, 31 systems with a total collector area of 500 m² have been approved so far.

It is noteworthy that companies in Namibia and Zimbabwe have been most active in this phase, with 16 and 10 applications respectively, and that 30 of the approved solar thermal systems directly benefit women or marginalised groups.

It is noteworthy that companies in Namibia and Zimbabwe have been most active in this phase, with 16 and 10 applications respectively, and that 30 of the approved solar thermal systems directly benefit women or marginalised groups.

The applications range from hostels for female students to a training centre for the San Community in Namibia and a maternity clinic in Zimbabwe. The largest systems are those for the Katutura Hospital in Windhoek in Namibia (120 m²) and the solar systems that are being built on apartment buildings in the e-junction project in Cape Town (249 m²).

As already announced in the last SOLTRAIN newsletter, companies that have taken part in the SOLTRAIN training courses can submit applications for funding for demonstration systems to all project partners at any time.

For country partners see: *https://soltrain.org*

SASSCAL Executive Director, Dr Jane Olwoch

Green Hydrogen Energy can play key role in slowing climate change

Green Hydrogen Energy (GHE) has the potential to slow climate change and create a sustainable future for Namibia and Africa as a whole, Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) Executive Director, Dr Jane Olwoch, says.

SASSCAL has teamed up with the SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) to coordinate the Atlas of Green Hydrogen Generation Potentials in Africa: H2Atlas-Africa. On 19 November, 2020, the Namibia National Team held a stakeholders meeting to chart the way forward in supporting sustainable and economic development in Africa through a viable hydrogen economy.

SASSCAL has maintained a close partnership with the German Ministry of Education and Research, BMBF, which remains the main funder for its core programme: Research Capacity Building and Service provision in the area of climate change and adaptive land management. SASSCAL's mission is to strengthen the regional capacity to generate and use scientific products and services in the area of climate change and adaptive land management. Green Hydrogen is the newest project from BMBF that SASSCAL is coordinating and has created partnerships with key institutions in the region, such as SACREEE.

"Hydrogen could play a significant role in a low-carbon future enabling a more secure energy system with reduced fossil fuel dependence (International Energy Agency 2019). GHE has the versatility to operate across various sectors including transport, industry and electricity generation…climate change and renewable energy are more

connected now than ever before," Dr Olwoch says.

And Namibia, with its excellent solar and wind energy potential, is well placed to produce clean and renewable hydrogen, and at a cost-competitive price. In addition, with Walvis Bay as a deep-sea port, strategically located and central for neighboring countries without sea access, Namibia is well placed to export.

Green hydrogen technology also creates new opportunities for employment and economic growth for the whole region.

Namibia ticks all boxes and could have one of the lowest hydrogen production costs worldwide and this on a large scale, Dr Olwoch adds.

While water challenges that Namibia and most SADC countries face could be an impediment to the production of Green Hydrogen as water is a key component, Dr Olwoch says desalination could provide an answer to this challenge. The German government has made initial funding for desalination available and all that was required to execute was support from the participating governments.

"As the SADC region industrialises on its path to sustained development, energy production and distribution will only increase in importance. The regional energy generation mix is still largely dominated by non-renewable energy, particularly coal. Coal supplies 75% of power generation in Southern Africa (SADC Energy Monitor 2018). Fossil fuels however continue to be the primary choice that many countries generally rely on.

These energy sources generate harmful greenhouse gases that accelerate climate change and its devastating impacts," she says.

Despite the dependency on fossil fuels by several SADC countries, the region has over the years experienced lowest rates of access to electricity, while intermittent power shortages have also been experienced in the past decade.

As the SADC region industrialises on its path to sustained development, energy production and distribution will only increase in importance. The regional energy generation mix is still largely dominated by non-renewable energy, particularly coal. Coal supplies 75% of power generation in Southern Africa (SADC Energy Monitor 2018).

However, SADC is generously endowed with renewable energy resources such as solar, wind and hydro. As concerns about sustainable energy and the impact of fossil fuels rise, renewable energy has become an important topic, both within SADC and around the world.

"Transitioning from fossil fuels to renewable energy represents a co-benefit in terms of reduction of greenhouse gases and reducing pollution from fossil fuels that continues to cause harm to many in the developing world," the SASSCAL head says.

Green Hydrogen has the potential to lessen the impact of greenhouse gas emissions as prescribed in the Paris Agreement that intends to limit warming to 1.5°C.

There is a growing global understanding that the universe's most abundant and cleanest element, hydrogen, will play a key role in the world's transition to a sustainable energy future.

"Climate change mitigation plays a very big role in the transition to renewable energy and now Green Hydrogen. It is also about decarbonisation and competitiveness of renewable energy technologies. Furthermore, it is also about healthy people and healthy environment. According to the latest report by Green Peace, air pollution from burning fossil fuels – primarily coal, oil, and gas – is attributed to an estimated 4.5 million deaths each year worldwide and estimated economic losses of approximately 3.3% of global GDP. Coal alone is responsible for over 800,000 premature deaths per year globally and many millions more serious and minor illnesses.

"And yet millions of metric tons of fuelwood and charcoal are consumed daily. Equally deforestation for commercial purposes is increasing as the demand for forest products increases globally.

Forests provide us with many ecosystem services and functions including the fact that they act as carbon sinks.

We are therefore experiencing a multi-legged dilemma that calls for drastic measures to reduce greenhouse gas emissions, restore our ecosystems and improve the health of society," Dr Olwoch says.

Namibia kick starts data collection for Green Hydrogen Atlas

An atlas of Green Hydrogen potentials in Southern Africa is being compiled as part of the first phase of the Go Green Go Africa Initiative aimed at creating a green hydrogen-driven economy to support sustainable development and contribute to the fight against climate change in Sub-Saharan Africa.

The Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL) in partnership with the SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) is coordinating the Atlas of Green Hydrogen Generation Potentials in Africa: H2Atlas- Africa. The H2Atlas-Africa is part of Hydrogen to Power-Africa, an initiative of the German Federal Ministry of Education and Research (BMBF) in partnership with a consortium of African relevant institutions to explore the potentials of green hydrogen production from the enormous renewable energy sources on the African continent. The aim is to support sustainable and economic development through a viable hydrogen economy. Africa has immense potential to become an exporter of green hydrogen with resultant boost to the economy and contributing to the international energy market.

The Green Hydrogen Inception meeting held in August, 2020, kick started the compilation of the Green Hydrogen Potential Atlas in SADC. In Southern Africa the project is being implemented in 12 countries, while 13 countries are participating in West Africa. Different technical, ecological and socio-economic factors will be collated and analysed to produce an interactive atlas that will pinpoint to the potential of Green Hydrogen production.

Helvi Ileka, acting head of the Namibia Energy Institute

> **A comprehensive data base will be developed to give a complete overview of the country's Green Hydrogen potential. This will be aligned with regional indicators and initiatives such as the SADC Industrialisation Strategy.**

Without this base information, the next steps could be compromised.

The Green Hydrogen Atlas will obtain views from stakeholders on the ground and by so doing ensure ownership of this phase and follow up phases. National teams are active on the ground collecting data as well as liaising with national stakeholders. The team envisages that by mid-2021 it would have a validated the Hydrogen Atlas that identifies the potentials and identifies requirements in terms of the infrastructure that needs to be developed.

Helvi Ileka, acting head of the Namibia Energy Institute (NEI), a member of the Namibia national team collecting data, said they had commenced data collection from various institutions, including government ministries and websites of reputable international organisations.

"A comprehensive data base will be developed to give a complete overview of the country's Green Hydrogen potential. This will be aligned with regional indicators and initiatives such as the SADC Industrialisation Strategy. We will also study data on renewable energy potential estimation, socio -economic indicators, hydrogen generation, water sector, infrastructure and the population," said Ileka.

A draft report on the state of Namibia's current power generation and demand, national power regulations (including distribution and transmission),

Members of the Namibia National Team who attended the stakeholders meeting on the H2Atlas-Africa project

renewable energy technologies used and land and water use regulations, has also been compiled.

The Green Hydrogen Atlas-Africa project, to which the German Federal Ministry of Education and Research has allocated €5.7 million in funding, is placing Southern Africa on the road to contributing meaningfully to the global Sustainable Development Goals.

Hydrogen as energy carrier for the future has gained global interest to supply the energy demand of the world and concomitantly reduce toxic emission and dependence on fossil fuel.

The Fuel of the Future – Is Namibia ready for Green Hydrogen?

There is increasing evidence of fossil fuels being replaced by renewable energies. The main drivers of this migration are climate mitigation, decarbonisation and competitiveness of renewable energy technologies.

Renewable electricity can help reduce emissions in road transport, low-temperature industrial processes and in heating buildings. However, fossil fuels have a significant advantage in applications that require high energy density, industrial processes that rely on carbon as a reactant, or where demand is seasonal.

To fully decarbonize the world economy, it is likely a clean molecule will be needed, and hydrogen is well placed to play this role.

Hydrogen is versatile, reactive, can be produced with low or zero emissions, clean burning, transportable, and can provide long-term energy storage at scale (figure 1).

There are no natural hydrogen deposits on earth, it must be extracted from other compounds by a chemical process. Most industrial hydrogen is currently produced from natural gas through a process known as Steam Methane Reforming, or SMR. Hydrogen can also be produced by the electrolysis of water (using an electric current to break water, H2O, into its component elements of hydrogen and oxygen).

If this electric current is produced by a renewable source (e.g. Solar PV (photovoltaic) or a wind turbine), the clean hydrogen produced is known as green hydrogen.

In 2018, over 99% of hydrogen was made using fossil fuels. With the cost of wind and solar continuing to fall, the question is whether the cost for electrolyzers and renewable hydrogen can follow. If electrolyzer manufacturing can scale up, and costs continue to fall, then renewable hydrogen could be produced for $0.7 to $1.6/kg in most parts of the world before 2050.

It is crucial to help reduce carbon emissions from industry and heavy transport, and to provide long-term energy storage at scale, and there is a growing international consensus that clean hydrogen will play a key role in this transition to a sustainable energy future worldwide.

Namibia, which has excellent solar and wind energy potential, is well placed to produce clean and renewable hydrogen, and at a cost-competitive price.

Namibia could have one of the lowest hydrogen production costs worldwide and this on a large scale. In addition, with Walvis Bay as a deep-sea port, strategically located and central for neighboring countries without sea access, Namibia is well placed to export. By investing in a hydrogen economy there will be new opportunities for employment and economic growth not just for Namibia, but the entire SADC region.

Infrastructure and logistics are key success factors for a green hydrogen economy, and Eos Capital, Namibia's leading private equity firm, is committed to the growth and development of Namibia and the surrounding region through meaningful investments and progressive impact.

Are you or your company interested in the applications of Green Hydrogen? Contact the Eos Capital team today, admin@eoscapital.com.na

NamPower inks IPP and EPC deals to add 40MW solar power

NamPower MD Kahenge Simson Haulofu

NamPower will soon add another 40 megawatts of solar power to the Namibia energy mix after the power utility recently signed engineering, procurement and construction (EPC) contracts for the construction of two 20MW solar photovoltaic (PV) power plants.

The Khan Project will be developed by Independent Power Producer (IPP) Access Aussenkjer Solar One Namibia, while the joint venture of Hopsol Africa and Tulive Private Equity is implementing the Omburu solar project in the Erongo region.

The two projects were initiated in 2018, when NamPower crafted its new Corporate Strategy and Business Plan for the period 2019-2023. In line with the new strategic intent and the determination by the Minister of Mines and Energy to develop generation projects with the total capacity of 220MW, the NamPower Board approved the implementation of six new generation projects under the strategic pillar of "Ensuring Security of Supply".

NamPower Managing Director Kahenge Simson Haulofu said the 20MW Khan Solar PV IPP Project and a 50MW IPP Wind Project were determined by the Mines and Energy Minister as the two projects to be developed as IPP projects where NamPower would only procure the energy from the power producer.

Four other projects, including the Omburu 20MW Solar PV, will be built by a contractor where the plant would be owned and operated by NamPower and funded from NamPower's balance sheet. These also include a 40MW NamPower Wind Power Project, a 40MW NamPower Biomass Power Project; and the 50MW NamPower Anixas II, Firm Power Project.

"In order to fulfil the country's developmental goals, we need sufficient supply of electricity, as the country continues to import a significant share of its electricity needs, from the SADC region. NamPower's planned generation project portfolio, which includes the two 20MW Solar PV Power Plants, are aimed at filling that supply gap and ensuring reliable supply of electricity," said Haulofu.

Furthermore, several transmission projects, which were also approved as part of the Corporate Strategy and Business Plan, will be built in the next five years in order to strengthen the Namibian grid and to dispatch the power generated from the six new generation projects to our customers.

On 23 September 2019, NamPower issued an invitation for bids via an open international bidding process for the development of a 20MW Solar PV Power Plant at Khan Substation Khan, situated approximately 45km west of Usakos in the Erongo region, on a build-own-operate. At total of 16 bids were received at bid closing date, on 28 February 2020.

Access Aussenkjer Solar One Namibia emerged as the successful bidder with an offered base electricity tariff of N$0.4905 per kilowatt-hour and a fixed annual escalation rate of three percent (3%).

The IPP will be responsible for the financing, construction, operation and maintenance of the power plant for the 25-year Power Purchase Agreement (PPA) term, while NamPower will be the exclusive off-taker of electricity generated from the power plant.

Access Aussenkjer Solar One Namibia is a joint venture consisting of Aussenkjer Energy Investment Pty Ltd, a local entity owned by previously disadvantaged Namibians (PDNs), and Access Power Limited the lead partner in the consortium. Access Power Limited has extensive experience in developing Solar PV Power Plants across Africa, especially in Egypt and Uganda where they have developed Solar PV power plants with capacity of up to 63MWp.

The consortium has committed to invest approximately N$260 million as part of the development of the 20MW Solar Power Plant.

Haulofu said the Khan 20MW Solar PV Project will contribute greatly towards reducing the overall NamPower tariff to the customer by introducing an affordable "new-build" renewable energy to the Namibian grid, addressing and supporting the renewable energy commitments prescribed in the Renewable Energy Policy and the National Energy Policy. In addition, the procurement of IPP by NamPower has the added benefit of pooling in private sector investment in the electricity generation sector.

The open international bid for the Omburu 20MW Solar PV Project was launched into the market on 22 October 2019 and closed four months later on 28 February 2020, where the procurement of the contractor for the project was managed by the Central Procurement Board of Namibia. Out of a total of 11 bids, the Hopsol Africa and Tulive Private Equity JV was selected as the successful bidder to be appointed as the EPC Contractor.

The project site is located adjacent to the NamPower Omburu transmission station, some 12km away from the town of Omaruru.

"The signature of the agreement for the Omburu 20MW Solar PV Project, introduces a milestone for NamPower; where on completion, NamPower will own and operate its very own Solar PV plant in Namibia.

The construction of the power plant will be based on a lump-sum turn-key basis where the Joint Venture of Hopsol and Tulive Private Equity will be appointed to design, procure, construct, commission, test and handover the Solar PV Plant to NamPower. The Bid was awarded for a total amount of N$317 million (excl. VAT), where the planned completion date is 9 November 2021," the NamPower MD said.

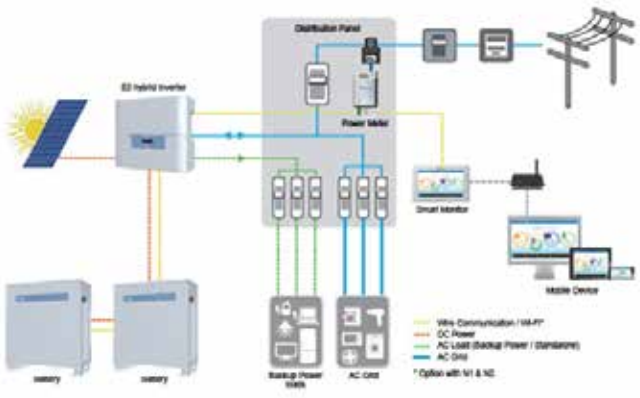
Omburu is currently home to this 4.5MW solar plant developed by InnoSun in 2015

Save money with LSN's Solar Hybrid System

Households and businesses alike have been forced to make decisions aligned with the "new normal" but savings with renewable energy solutions from Light Systems Namibia can provide some relief in these trying times.

Light Systems Namibia (LSN) understands the need for households to be thrifty and can help homeowners manage their electricity expenses by using renewable energy technologies.

LSN has a number of solar hybrid systems that generate power from solar panels but also include batteries to store energy for later use. This ability to store energy enables most hybrid systems to operate as a backup power supply during a blackout.



Basic layout diagram of a common solar hybrid system (DC coupled battery).

Why store solar energy in a battery?

A solar hybrid system stores your excess solar energy and can also provide back-up power during a blackout. This is perfect for homeowners although for the majority of businesses which operate during the daylight hours, a common grid-feed solar system is still the most economical choice. Light Systems Namibia offers solutions which include efficient lithium ion batteries that operate for over 6 years and up to 12 years, if utilized efficiently.

> Solar Hybrid systems enable you to store solar energy and use it when you're home during the evening, when the cost of electricity is typically at the peak rate.

The ability to store and use your solar energy when desired is referred to as self-use or self-consumption. It works in the same way as an off-grid power system but the battery capacity required is far less, usually just enough to cover peak consumption (8 hours or less) as opposed to 3-5 days with a typical off-grid system.

Solar hybrid systems offer the following advantages for other solar photovoltaic (PV) systems:

- Stores solar or low cost (off-peak) electricity.
- Allows use of solar energy during peak times (self-use or load-shifting).
- Power available during a grid outage or blackout – UPS function.
- Enables advanced energy management (i.e. peak shaving).
- Enables energy independence.
- Reduces power consumption from the grid (reduced demand).

The major drawback of solar hybrid systems is the initial investment cost. However, if one compares the lifespan of the system with the cost, it makes perfect sense to invest in a hybrid system - the payback-period is around 4 years, thereafter, your system will generate FREE ELECTRICITY.

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Long-dormant Kudu gas project still 'alive'

Norwegian company BW Energy has signed a deal to increase its stake in the Kudu licence, off the Namibian coast, breathing new life into the gas project that has remained dormant for years.

The company, through its BW Kudu subsidiary, will increase its stake in Kudu to 95%, from the current 56%. The state owned entity, the National Petroleum Corporation of Namibia (Namcor) will retain the remaining 5%, with an option to increase its stake to 10% after first gas production.

BW Energy, a leading player in developing proven offshore hydrocarbon reservoirs with more than 35 years of production track record, will pay US$4 million (about N$60 million) to up its stake in Kudu. The deal paves the way for gas sales and increases the likelihood of securing financing, BW Energy said. The farm-in and carry agreement means BW Energy is free to undertake a development plan and negotiate gas sales agreements.

Kudu lies 130 km offshore the southern parts of Namibia in deep water, hundreds of kilometers from other offshore energy infrastructure and supply bases in Angola and South Africa.

Namcor Managing Director Immanuel Mulunga believes that the Kudu gas field could be the first project to kickstart offshore Namibia, with the potential to reduce carbon emissions for the country, which currently imports power from coal-fired plants in the region.

BW Energy Chief Executive Officer Carl Arnet said: "Kudu gas is an important project for the energy sector and for Namibia. It has the potential to provide a valuable contribution to Namibia's energy mix and local value creation by monetising stranded gas, which is an untapped natural resource in Namibia". He continued that the next step for the Kudu joint venture will be to secure long-term commercial gas sales agreements, update the development plan to meet offtake needs and ensure robust financial project returns.

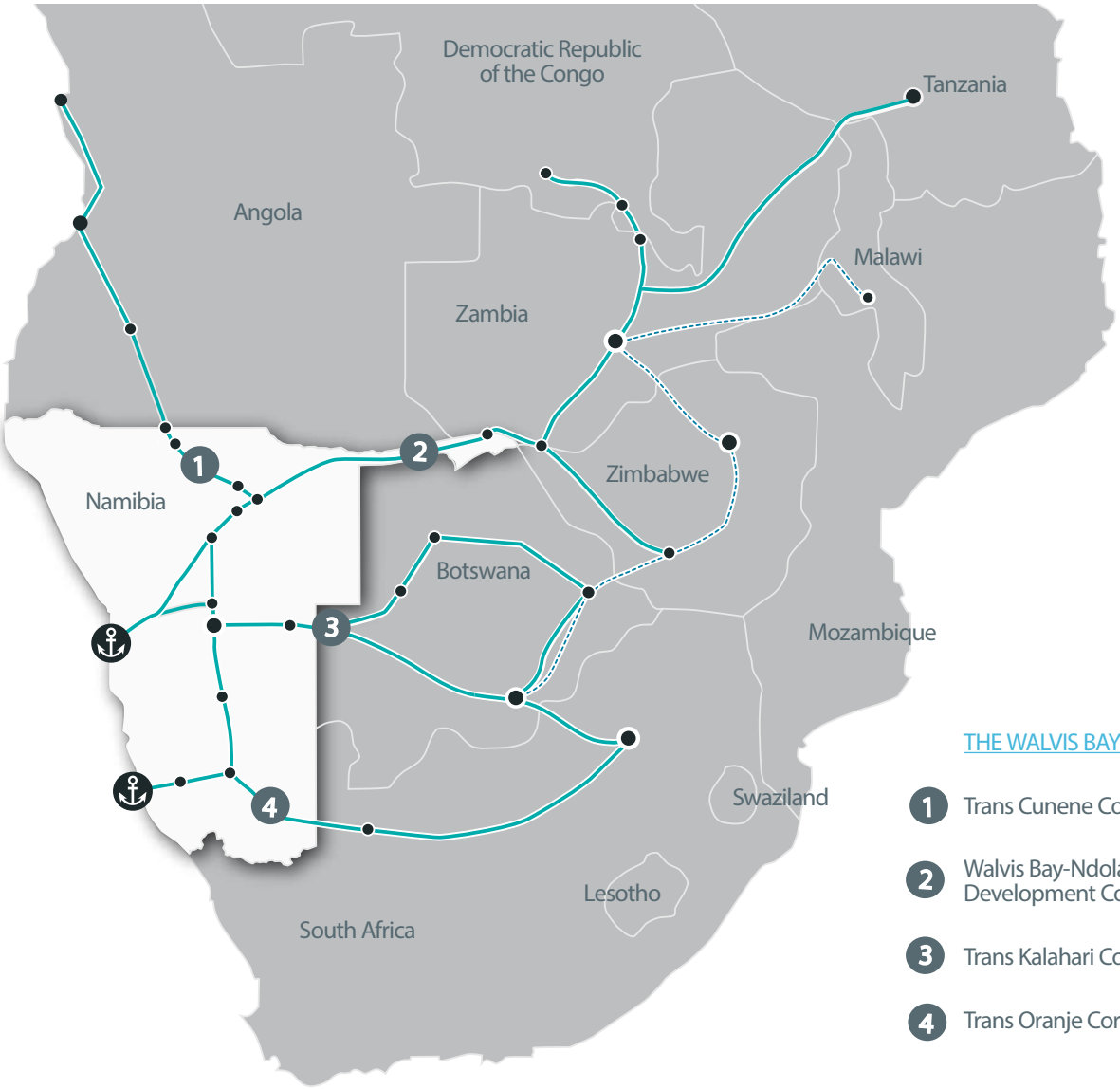
The BW Energy executive believes that adding cost-efficient gas to the energy mix is going to be vital to reach the world's environmental targets. The Kudu field holds an estimated 36.8 billion cubic meters of gas resources. Chevron discovered the resource in 1974 and a number of companies have held the licence but failed to make progress.

So far major work and resources have been dedicated to examining how best to develop the Kudu gas field. Now, the project is undergoing change to adapt to new plans. BW Kudu and Namcor have been examining various alternatives for the use of Kudu gas, including export opportunities, and supplying gas for the Namibian and regional transport, mining and shipping sectors, among others.

However, although NamPower has not included Kudu in its energy generation plans, gas-to-power is still not off the agenda should the Namibian power supply and demand requirements be different than currently anticipated.

The Kudu license is valid until 2036.

GAS SEARCH: *Kudu lies 130 km offshore the southern part of Namibia in deep water, hundreds of kilometers from other offshore energy infrastructure and supply bases in Angola and South Africa*



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World Bank charts renewable energy roadmap for Namibia

The World Bank is developing a renewable energy roadmap for Namibia aimed at assisting the country to maximise national value creation through the development and implementation of renewable energy investments.

Former National Housing Enterprise (NHE) Chief Executive Officer (CEO), Vinson Hailulu, a Harvard graduate, has been appointed as a consultant to spearhead the development of the Namibia roadmap.

The roadmap will spell out a series of utility-scale renewable energy developments, including a combination of wind, solar photovoltaic and concentrated solar power generation as well as battery storage and transmission upgrades. It will also summarise the technical studies and advisory services the government and NamPower will need to carry out during project preparation and details about the investment to be made – such as capacity, cost, location and technology.

The World Bank Group is one of the biggest promoters of renewable energies on the continent, fostering resilience and adaptation and protecting biodiversity in Africa.

World Bank Consultant Vinson Hailulu

In Africa, today, one in three people don't have access to electricity, often having to resort to using kerosene or spending hours in darkness. Almost 87% of those without electricity live in rural areas. Those who do have electricity often find it unreliable or expensive. Sub-Saharan Africa's share in the global access deficit has more than doubled between 1990 and 2016.

Despite progress in all world regions, the world is not on track to achieve universal electricity access by 2030, with Sub-Saharan Africa at great risk of being left behind. Universal access to affordable, reliable and sustainable energy – Sustainable Development Goal (SDG) 7 – is essential to reach other SDGs and is at the center of efforts to tackle climate change.

Access to electricity makes communities safer, helps small businesses thrive, and powers essential services such as schools and clinics. The World Bank is committed to helping countries transition to low-carbon energy systems and ensuring that everyone around the world has access to affordable, reliable, and sustainable energy for all.

Between 2014 and 2018, the World Bank provided more than US$11.5 billion in financing for renewable energy and energy efficiency.

Botswana will soon open bids for a 200MW concentrated solar power (CSP) plant

Botswana to open bids for 200MW concentrated solar power (CSP) plant

Botswana is preparing to open bidding for the construction of a 200 MW concentrated solar power (CSP) plant, as part of a solar power megaproject backed by the governments of Botswana and Namibia, together with the World Bank.

Under a new integrated resource plan published by the government in December 2020, Botswana plans to build 200 MW of CSP capacity by 2026. The procurement process will start this year.

In 2019, the World Economic Forum's Global Future Council on Energy proposed a giant solar expansion plan in Botswana and Namibia that could provide over 4.5 GW of PV and CSP power to customers in southern and eastern Africa.

The mega project was first mooted by Power Africa, an American initiative aimed at supporting economic growth and development by increasing access to reliable, affordable, and sustainable power in Africa. It is earmarked to be implemented over two decades.

It is envisaged that most of the energy to be generated by this gigantic initiative will be sold to neighboring countries in southern Africa, as the energy consumption of the two countries is way below the generation capacity that has been mooted.

The first phase would comprise 300 MWp to 500 MWp plants to meet the domestic demand of the two countries.

A second phase is planned to produce between 500 MWp and 1,000 MWp. A third and final phase will allow the construction of solar parks that will provide 1,000 MWp to 3,000 MWp.

The megaproject provides for building both photovoltaic (PV) and CSP plants. Namibia and Botswana currently rely heavily on power imports from South Africa's Eskom.

The Network of Global Future Councils, which is championing the megaproject, is one of the world's largest interdisciplinary knowledge networks dedicated to promoting innovative thinking to shape a sustainable and inclusive future for all.

Several financial institutions, such as the African Development Bank (AfDB), the World Bank and the International Renewable Energy Agency (IRENA) are members of the WEF Network.

Namibia and Botswana have one of the best solar regimes in the world with an average high direct insolation of 2,200 kWh/m2/a and minimum cloud cover.

"The market for electricity produced by the mega solar projects in Botswana and Namibia includes 12 other countries in the region that could be connected via new and/or upgraded transmission infrastructure," WEF said.

Both countries are members of the Southern African Power Pool (SAPP) which, among other things, aims to increase the accessibility of electricity to rural communities, develop sustainable development priorities, and to co-ordinate the planning of electric power.

Only 5 percent of rural areas in Southern Africa have access to electricity. Lack of electric power impedes their access to clean water, limits the availability of food, and constrains access to clean, sustainable sanitation.

Namibia renewables opportunities to take centre stage at World Expo 2020

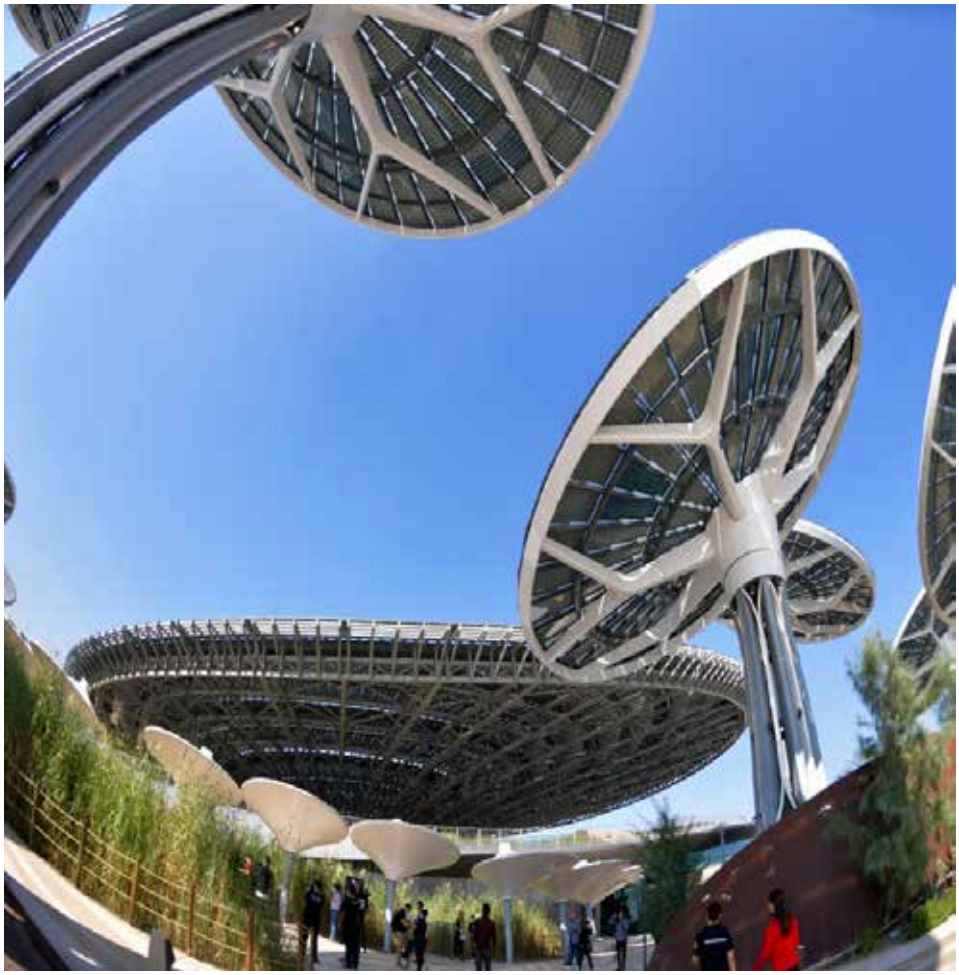
Namibia will go all out to promote itself as a renewable energy hub for Southern Africa at the World Expo 2020, now rescheduled to take place in Dubai, United Arab Emirates, from 1 October 2021 to 31 March 2022, under the theme: "Connecting Minds, Creating the Future", with the aim of luring big investors in the sector.

The World Expo was initially scheduled to take place from 20 October 2020 to 10 April 2021, but had to be rescheduled due to the outbreak of the Covid-19 pandemic.

Namibia is crafting a strategic advertising and public relations campaign leading up to one of the world's major expositions, the World Expo 2020, with the renewable energy sector, as well as mining and tourism sectors, providing an exceptional value proposition for attracting investment and creating awareness about what Namibia is able to offer and deliver.

Namibia's Commissioner General of the World Expo, Ambassador Simon Madjumo Maruta, says government's decision to participate in the Dubai Expo is important for the country to promote investment and trade, as well as to secure new markets for local products.

"It is of great benefit for the people of Namibia and not just the companies taking part. One of the purposes of participating in the expo is to share ideas and attract foreign investors. A total of 192 countries are expected to participate in the expo and the organisers have developed a programme centred on themes for countries to partake. Cross-cutting issues have been identified from social to economy and Namibia's programme is aligned to the expo programme," he said.



Namibia will be seeking investors in the renewable energy sector, in particular for solar projects

Other envisaged benefits of Namibia's participation in the expo include the increased use of Namibian ports and establishing partnerships in research, innovation and technology.

Namibia recognises that renewable energy represents a valuable economic resource for the country and the region as a whole. Renewable energy is also seen as a key catalyst to achieving some of government's key development goals, among them increasing local electricity generating capacity from 400 MW to over 600 MW. This will enable the provision of electricity to schools and health facilities; as well as increase the rural electrification rate from 34 percent to 50 percent.

Government has appealed to companies in the local renewable energy sector to work closely with the team preparing Namibia's participation in the Dubai Expo.

Namibia has also been aggressively pushing for partnerships with energy investors from the United Arab Emirates. As part of Namibia's NDP5 renewable energy targets, Namibia is looking to acquire the best quality RE technology in order to meet the targets.

LAGGING: *Despite making giant strides Africa might yet be the continent with the lowest share of non-hydro renewable energy by 2030*

Will Namibia and the rest of Africa meet renewable generation targets by 2030?

While Namibia is one of the leading African countries in the development of non-hydro renewable energy plants and has set a target to generate 70% of its electricity from renewables by 2030, doubts still linger whether the rest of the continent will meet the target of 10% renewable generation in the next 10 years.

A recent study by the University of Oxford indicates that the amount of non-hydro renewables, such as solar and wind, in Africa is likely to remain below 10% in 2030, although it acknowledges the significant regional differences.

Africa, which has for some time now carried the tag of 'promising' for non-hydro renewable energy, might yet be the continent with the lowest share of non-hydro renewable energy by 2030. Even as some countries within the continent will break away from the rest to have a much more robust contribution from solar into their energy mix.

The study found that while total electricity generation is likely to double over the next decade, fossil fuels will continue to dominate power generation in Africa. By 2030, the study suggests that 18% of energy on the continent will come from hydropower, which poses its own challenges as the number of droughts continues to increase driven by climate change, while fossil fuel driven power will come in at over 65% share.

As the continent's electricity demand continues to increase along with industrialisation and the improved wellbeing of its people, there is an opportunity to power economic development through renewables according to Galina Alova, the study lead author and researcher at the Oxford Smith School of Enterprise and the Environment.

"There is a prominent narrative in the energy planning community that the continent will be able to take advantage of its vast renewable energy resources and rapidly decreasing clean technology prices to leapfrog to renewables by 2030 – but our analysis shows that overall it is not currently positioned to do so."

To move Africa towards renewables would require a significant shock to the current system the study suggested, including large-scale cancellation of fossil fuels plants currently being planned.

It also identifies ways in which projects can be designed to improve their chances of success, including focusing on smaller size, fitting ownership structures, and the availability of development finance.

"The development community and African decision makers need to act quickly if the continent wants to avoid being locked into a carbon-intense energy future," Philipp Trotter, study author and researcher at the Smith School added.

"Immediate re-directions of development finance from fossil fuels to renewables are an important lever to increase experience with solar and wind energy projects across the continent in the short term, creating critical learning curve effects."

The University of Oxford's study did highlight that there is sizeable discrepancy between different countries and regions when it comes to rolling out solar and other renewables. In particular it pointed to South Africa, which is forecast to add almost 40% of Africa's total predicted new solar capacity by 2030.

Havana Project Secondary School solar power dream comes to life

Augustinus M Ngombe

Mines and Energy Minister Tom Alweendo inaugurated the Havana Projects Secondary School's solar power system on November 2, 2020. The N$375 000 project was made possible through financial assistance from the Ministry.

Established in 2015 with several other schools as a mechanism to absorb students enrolled in secondary school who could not get placement due to high migration of people from one region to the other and particularly from rural to urban areas, Havana Project Secondary's hope of electrification emerged against all odds. Having operated as a platoon system where learners have to attend school in the afternoon, this put learners in a difficult situation to effectively do their school work.

However, a chance meeting between Minister Alweendo and one of the teachers at the school, Mr Ngombe, would turn the situation around. The Minister was keen to visit the school and his visit resulted in the birth of the solar electrification.

Several meetings followed between the school, the planning department of the Khomas Education Directorate and the Ministry of Mines and Energy. Discussions were ongoing from the end of 2019 to early 2020. Though Covid-19 presented some challenges, the persistence of the parties involved meant there was no going back on the project.

The finalisation of the procurement of the container, which now doubles as the principal's office, and the solar panels, was done during the first lockdown, in March, 2020.

SOLAR LEARNING: *The solar system at Havana Projects Secondary School not only supplies electricity for essential services such as IT for eLearning purposes, printing and lighting, but is housed in a prefabricated container that doubles as the principal's office*

Minister Alweendo commended the tireless efforts of the principal, Mr Simasiku Mweti and teachers at the school who approached the Ministry of Mines and Energy for assistance in installing the system and never gave up in their pursuit.

"Solar systems provide a viable and sometimes the only option to benefit from clean modern electricity. The Ministry has provided electricity to schools and clinics using this approach in the Kunene, Omusati and Otjozondjupa regions. These systems provide lights and other electrical services just as good as electricity from the grid. The system here at the school not only supplies electricity for essential services such as IT for eLearning purposes, printing, making copies, lighting etc, but is housed in a prefabricated container that doubles as the principal's office," the Minister said.

NamPower and City of Windhoek have also taken initiatives to assist in powering the nation. There is hope, if flexibility in thinking, approaches to the shortcoming of the electrification can be tackled with passion and strategic leadership.

Minister Alweendo also revealed that during the 2019/20 financial year, the government has created an enabling environment to ensure development of infrastructure and an amount of N$130 million was budgeted for rural electrification. To date an amount of N$54 million was spent to electrify 39 public institutions (such as schools, constituency offices, police station, clinics and primary health centers, agricultural development centers, conservancy offices, community centers and churches), 50 households and 13 formal and informal business centers. Eight schools where also electrified in the Omusati Region.

The Rural Electrification Programme will continue to be a priority for the Ministry in providing access and usage of modern energy services.

•Augustinus M Ngombe is a teacher and leadership consultant

Africa remains the most solar rich continent in the world, and with a growing population and rapid urbanisation it's imperative for the continent to identify suitable energy solutions

Redefining Africa's solar power market

Solar power capacity and energy generation has seen a rapid increase over the last decade, becoming the fastest-growing source of renewable energy in the world.

Thanks to technological advances, a sharp decline in costs, improved policies and growing concerns over climate change, renewable energy has been placed front and centre on both the public and private agendas.

While the economic downturn caused by the Covid-19 pandemic has stifled growth, with demand decreasing across both the private, commercial and utility sectors due to the financial uncertainty faced, Africa's growing population and rapid urbanisation have meant that identifying solutions and designing systems for resilient and resource-efficient cities is imperative.

According to Joshua Low, Managing Director at Messe Frankfurt South Africa, organisers of leading solar and energy storage event in Africa, Solar Power Africa, it is critical that solutions to address the current supply chain disruptions and loss of investment are identified in order to prevent delays and cancellations of projects being commissioned in Africa.

Low says that Africa's energy deficit caused by an ageing fleet of power plants run by utilities requires both the public and private sectors to rethink the energy mix in order to meet the demand.

Despite setbacks and power constraints, many African countries have bountiful renewable energy resources – particularly in the form of solar energy, which has the potential to guarantee energy security for these countries. Unlocking this potential requires a collaborative effort, which is where events like Solar Power Africa are prime platforms to facilitate dialogue.

The event, which took place from 16 – 20 November 2020 brought together an extensive alliance of local and internationally renowned industry leaders, stakeholders and experts with the aim of discussing and unpacking strategies that aim to provide greater access to solar power and clean energy solutions on the continent.

"Despite the current economic challenges that we face, the outlook for solar energy as a viable source of energy remains strong in the medium term," Low adds.

During another virtual event, the 24-day digital 2020 Africa Energy Forum (AEF) which kicked off on October 20, African energy sector officials met to identify opportunities, air their views, form partnerships, and take the necessary steps to improve the industry. For solar, challenges in policy making, procurement processes and the effects of the Covid-19 pandemic were discussed, as well as emerging trends such as solar digitalisation.

Every year, solar industry leaders and key decision-makers in Africa's energy sector hold the AEF, dedicated to power infrastructure projects on the continent. International investors converge to discuss energy matters, as they share their interests and outlook in funding projects to supply the massive demand for power in Africa.

Daniel Schroth, acting director for renewable energy and energy efficiency at the African Development Bank, emphasized that Africa was the most solar rich continent in the world. However, despite an increase in installed solar capacity, from under

> to next page

Growth in renewables uptake worries African utilities

CAUSE FOR CONCERN?: *Some African power utilities are worried about the threat posed to their profitability by the rising penetration of renewable energy systems*

The rise of clean energy and prosumers, net metering and greenhouse gas regulation all figure among the bogeymen as far as national electric companies are concerned.

African energy authorities have been advised to introduce renewables policy and standards.

A significant proportion of the 36 national electric utilities surveyed for the African Development Bank's latest Electricity Regulatory Index report cited the threat posed to their profitability by a rising penetration of renewable energy systems.

The latest edition of the flagship report asked electricity distribution companies in 36 sub-Saharan African nations what threats they perceived to their viability.

Some 43% of the respondents mentioned the rise of renewables and, in particular, the need to accommodate 'prosumers' which both generate and consume electricity, and which expect to be recompensed for excess power fed back into the grid.

Half the utilities questioned highlighted demand-side energy management and energy efficient appliances as a threat to their business case and the same number were wary of environmental and greenhouse gas regulations limiting their emissions.

Some 42% of the electric companies surveyed said net-metering and "other disruptive technologies" posed a threat to their viability.

The index, which assesses the political and financial independence of African national energy regulators, among other aspects of their operation, includes a separate ranking devoted to assessing how the operations of such authorities affect electric utilities. In that list, no regulator attained the best, green ranking. Authorities in Namibia, Uganda and Zambia attained the second best, yellow ranking, those of Niger, Tanzania, Zimbabwe, Ethiopia and Cameroon were rated orange and the remaining 28 were red.

Redefining Africa's solar power market

300 MW in 2011 to around 6 GW in 2018, PV supplies just 1% of the continent's energy mix. Furthermore, the bulk of installed solar capacity is concentrated in South Africa and the North African nations, leaving the rest of sub-Saharan Africa under-served.

Where is the African solar market headed?

Solar utilities are finding it difficult to access large clean power consumer markets in Africa, with consumer behavior driving most African solar trends, along with the need to expedite solar infrastructure development.

Mark Davis, executive VP for clean energy at Norfund, the Norwegian bilateral development finance institution, says Africa is slowly adopting a competitive auction mechanism for large scale solar power development and shifting away from feed-in tariff regimes. Regular auctions ensure governments have a continual program to procure new generation capacity which gives the market confidence, said Davis, who added, the system also creates a long-term market, including by boosting investor confidence.

From a broader perspective, many speakers who attended the digital solar event believed Africa will see more 'mega solar' projects, in the 100-500 MW range. Results from a survey conducted during the show confirmed that feeling.

Namibian 'solar grapes' harvest begins

A pioneering Namibian table grape farming family has started harvesting grapes from their Aussenkehr farm that is run on solar energy.

Grapes from Solar Grapes, a former failed vegetable farm on the banks of the Orange River, became the earliest table grapes in Southern Africa to hit the market this season.

The Solar Grapes farm, owned by Dusan Vasiljevic who is of Yugoslav origin, derives its name from the solar panels that provide its energy requirements. From the start, solar has been a forerunner in the valley when it comes to sustainability. Established in 2013, Solar Grapes uses sustainable energy, specifically solar power, to continue producing top quality grapes in the area.

Almost thirty years after the first table grapes in the Namibian southern region were planted, Aussenkehr has developed into a prominent producer of table grapes globally with approximately 3,000 hectares planted as of 2017/8. Although it is in a desert region where it hardly ever rains, water from the mighty Orange River, bordering South Africa and Namibia, provides the lifeline for the sea of vines growing there.

Solar Grapes vineyards deliver their grapes ten days to two weeks earlier than the rest of the Aussenkehr Valley – and much earlier than South Africa's early production. In the arid conditions of southern Namibia table grapes thrive and the influence of pest and diseases are very limited. The first volumes of grapes harvested were of the Early Sweet variety, followed by the Prime Seedless variety, and then other varieties.

Initially, Solar Grapes farm marketed most of its grapes in the European Union. However, this changed and the company started developing sales in South Africa and is looking to expand further in the region and as far as the United Kingdom to take advantage of their grapes being the first to hit the market in Southern Africa.

The Solar Grapes farm

Some seedless grapes harvested at the Solar Grapes farm in Aussenkehr

Republic of Namibia

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3 PPP Finance	For legal partnerships between public and private enterprises to construct and operate renewable energy utilities
4 Contract (Tender) Based Finance	To meet short-term cash flow needs of contractors and technical specialists contracted to develop renewable energy projects
5 Public Infrastructure Finance	For renewable energy projects established by ministries and state-owned enterprises
6 Business Acquisition Finance	For buy-ins (acquisition of interest by external managers) or buy-outs (acquisition of interest by existing internal managers) to enable local private sector participation in renewables

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