

Etango

Namibia's Leading Renewable Energy Technologies
Magazine

September-October 2019

THE FUTURE IS HERE!



**Namibia, Botswana
moot 5,000 MW
solar megaproject**



**UNDP champions
electric vehicles
technology**



**ANIREP set to
revolutionise
Renewable Energy
sector**



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Joint projects key to unlocking Namibia's renewables potential

Namibia currently ranks among the fastest growing solar energy markets in Africa, with several Independent Power Producers (IPPs) helping to unlock the country's solar and wind energy potential.

The country has doubled its installed PV capacity in the past two years, with several IPPs signing Power Purchase Agreements with NamPower.

However, boasting one of the best solar regimes in the world and an equally rich wind energy resource, Namibia could be miles ahead in the deployment of renewable energy technology. To fast track this, buoyed by the global expansion of the solar market which is reducing costs and improving the efficiency of photovoltaic solar panels and related equipment, alliances are needed with neighbouring countries, such as Botswana and South Africa, for larger joint renewable energy plants.

News that the governments of Namibia and Botswana are considering a proposal by Power Africa for large scale solar megaprojects over the next two decades is

indeed welcome.

Although this proposal is still in its infancy, it has gained support from reputable institutions such as the World Economic Forum (WEF), the African Development Bank (AfDB), the World Bank and the International Renewable Energy Agency (IRENA).

There's no doubt that a joint solar project involving Namibia and Botswana makes the best sense, considering that the two neighbouring countries have one of the highest solar irradiation in the world, coupled with strong legal and regulatory environments, suitable land availability and rising domestic and regional demand for electricity.

The two neighbours also have a common goal of reducing their dependency on South Africa's Eskom which is embroiled in operational troubles and battling to meet its domestic demand. We therefore urge the two governments to speed up negotiations with Power Africa to see these mega solar projects come to fruition in the near future.

Equally, South Africa is leading southern Africa push towards becoming a top global wind energy destination.

According to estimates by the Global Wind Energy Council (GWEC), the Southern African Development Community (SADC), a region comprising 16 countries, alone has a wind energy potential of around 18 GW.

Namibia has made very slow progress on wind energy and could leverage on South Africa's wind energy gains and consider setting up a joint wind plant that could benefit both countries.

In this Edition of *Etango*, we bring you details on the proposed Namibia-Botswana solar megaproject. We zoom in on the United Nations Development Programme (UNDP) pilot Vehicle-Grid-Integration (VGI) and Electric Vehicle (EV) project, and also unpack plans by the recently-listed Alpha Namibia Industries Renewable Power Limited (ANIREP) to change the face of the Namibian renewable energy sector.

Happy Reading!
Editor

globe@africaonline.com.na

[twitter](#) @tabbymoyo



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Editor

Tabby Moyo

Graphic Design & Layout

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Cover picture:

PILOT PROJECT: The United Nations Development Programme (UNDP), in collaboration with UNICEF, has launched a pilot Vehicle-Grid-Integration (VGI) and Electric Vehicle (EV) project in Namibia.

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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

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Namibia, Botswana to team up on 5,000 MW solar megaproject

The governments of Namibia and Botswana are planning to develop a 5 gigawatt (GW) solar megaproject over the next two decades, the World Economic Forum (WEF) Network of Global Future Councils has revealed.

The power project was proposed by Power Africa, an American initiative aimed at supporting economic growth and development by increasing access to reliable, affordable, and sustainable power in Africa.

The megaproject provides for building both photovoltaic (PV) and concentrated solar power (CSP) plants.

High-ranking officials from Namibia and Botswana met Power Africa on the sidelines of the US-Africa business summit held in Maputo, Mozambique in June this year.

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.

WEF revealed that the Namibia-Botswana solar project would be developed through a multi-phase procurement programme. The two neighbouring countries are seen as ideal for gigawatt-



Industrialisation, Trade and SME Development Minister Tjekero Tweya



NamPower MD Kahenge Simson Haulofu

scale solar due to their high solar radiation, strong legal and regulatory environments, suitable land availability and potential to host a low-cost, efficient electricity market to meet rising demand in the region.

Namibia has 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.

The first phase of the project could see a 300-500 MW solar tender issued to meet domestic demand in the two countries. A second stage, planned to allocate 0.5-1 GW more solar, would be to generate power for export. A third and final phase would see the contracting of 1-3 GW more generation capacity for electricity to be traded across Africa’s regional power pools.

Industrialisation, Trade and SME Development Minister Tjekero Tweya said Namibia and Botswana still needed to agree on the terms and conditions set by Power Africa.

“The investor is bringing money and technology and therefore they have certain expectations that we must consider. We are treating this as a matter of urgency as we would not want to lose the investment,” he said.

Both countries are members of the Southern African Power



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,”

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.

WEF said members of the Global Future Council on Energy continue to meet with officials from Botswana and Namibia to advance this ambitious megaproject.

Both Namibia and Botswana



are currently implementing their own independent solar plans, although at a more limited scale. Namibia’s power utility NamPower recently announced a Corporate Strategy and Business Plan (2019-2023) through which it intends to add 150 MW of new generation capacity to its portfolio by way of 20 MW of solar, 40 MW each of biomass and wind and 50 MW of guaranteed ‘firm’ electricity output.

Kahenge Simson Haulofu, Managing Director of NamPower said: “Namibia is benefiting from the global expansion of the solar market, which is reducing costs and improving the efficiency of photovoltaic solar panels and related equipment”.

The Botswana Power Corporation in mid-August issued a request for qualification for the development and construction of two PV plants with a combined capacity of 100 MW.

The two countries want to reduce their dependence on power imports from South Africa, which is facing a power crisis due to the financial and operational troubles of state-owned utility Eskom. The ambitious 5 GW scheme being mooted could conceivably see the tables turned, with Namibia and Botswana exporting power to their regional neighbours.



Learners pose next to one of the electric vehicles launched as part of the UNDP project

UNDP champions electric vehicles technology in Namibia

The United Nations Development Programme (UNDP) in Namibia, in collaboration with UNICEF, has launched a pilot Vehicle-Grid-Integration (VGI) and Electric Vehicle (EV) project, which it aims to scale up in the near future.

VGI is a way whereby the electric vehicles can provide benefits or services to the grid by using bi-directional charging or managing the charging time and levels. Using VGI charging station enable stored energy in the electric vehicles to be sold back to the grid, and it can also provide building load peak shaving and energy shifting, among many other benefits which

reduce the cost of owning an electric vehicle.

The VGI showcase at the UN House in Windhoek was created as part of the UNDP Office of Information Management and Technology CO ICT Advisory Services (UNDP OIMT/CIAS) vision of creating smart UN facilities. The showcase is aimed at testing the solution, gain experience and collect vital data during its operation.

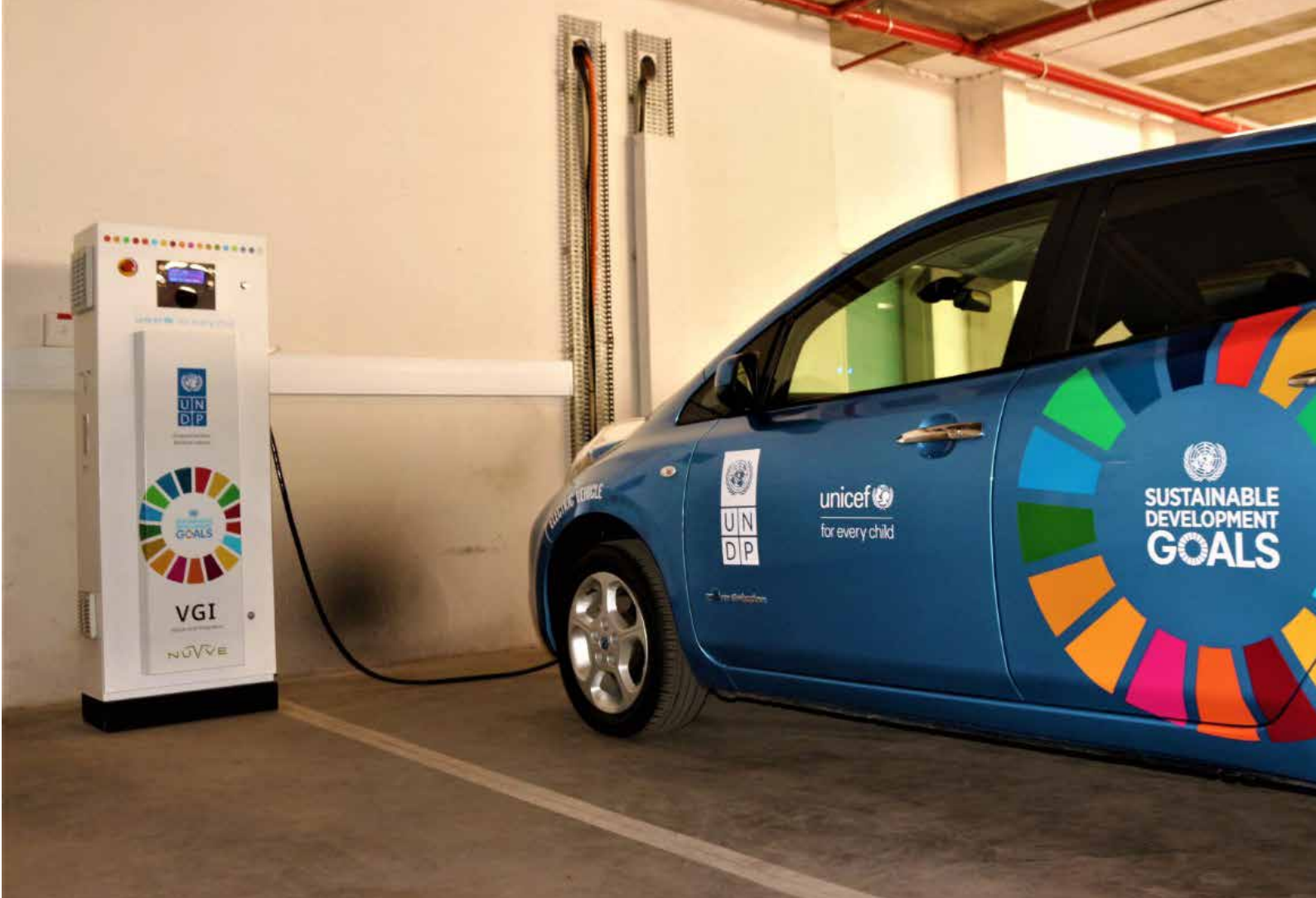
This is the first installation of VGI technology in Namibia, and the first at a UN compound in Africa. It is envisaged that demonstrating the solution to internal and external stakeholders will serve to

trigger widespread adoption across the country.

Nissan South Africa donated the two Nissan LEAF electric vehicles, while Nuvve donated the two charging stations.

UNDP Resident Representative, Ms. Alka Bhatia, said after almost three years of planning the pilot project was finally ready to be showcased to Namibia and the world.

“Apart from the innovative technology that these cars come with, I am very proud to also mention why this project is unique. This is the first installation of the Vehicle-Grid-Integration electric vehicle project in Namibia and



One of the two charging stations donated by Nuvve

also in Africa at a UN compound," she said.

"Additionally, as part of our efforts, I would like to mention that in 2017 this building, also known as the UN House Namibia, has adopted solar power with the installation of 104 Kilowatts Peak solar PV system. This system has been combined with electric vehicle connected via bi-directional power charger this year," the UNDP Resident Representative said.

Ms Bhatia said Namibia was making great strides in the energy sector and by using the electric cars and charging them through the solar energy here, the UN will contribute to its "Greening the Blue" efforts and reduce carbon emissions significantly.

Mr. Gerald Demeules, Global ICT Advisor at the UNDP OIMT, speaking from Copenhagen, Denmark, said many people were accelerating the shift from ICE [internal combustion engine] to electric vehicles (EVs) because green e-mobility was profitable.

"Profitable because EVs offer more value by offering the grid operator to store energy: a buy-low, sell-high dynamic. This marks enormous strides with incredible potential in reducing CO2 [emissions] and inspiring many more to follow suit," he said.

With this project the UNDP aims to ensure business continuity, decrease dependency on externally and diesel-power based sources, lower costs of EVs ownership, manage electricity

charges, increase energy efficiency, facilitate environmental responsibility and pilot emergency response services with EV.

Excess solar power produced by the UN solar plant is used to charge the EVs when they are connected to the charging stations. In the evening, EVs serve as power sources replacing more expensive energy from the grid (energy shifting). When grid power goes down, whether due to infrequent wide-scale grid outages or more frequent outages caused by local disruptions, the EVs can be used as a backup power supply to power the primary appliances like lighting, communication equipment and, if possible, lower priority functions like refrigeration or limited air-conditioning.



Mines and Energy Deputy Minister, Hon. Kornelia Shilunga, centre, flanked by Rudi Moschik, a Solar Thermal Expert from AEE – INTEC and NUST Dean of the Faculty of Engineering, Dr Samuel John, with the training participants

SOLTRAIN builds capacity among housing developers

The Ministry of Mines and Energy, through the Namibia Energy Institute (NEI), recently held a three-day training course on thermosyphon solar water heaters (SWHs), targeted at housing developers of Osona Village, outside Okahandja, and vocational instructors.

The training, which was held in collaboration with the Osona Village Project, took place from 30 September to October 2, under the framework of the Southern African Solar Thermal Training and Demonstration Initiative (SOLTRAIN) Project Phase 4. The training was conducted by Rudolf Moschik, a Solar Thermal Expert from AEE-Institute for Sustainable Technologies (AEE – INTEC).

The course, which was both theoretical and practical, was aimed at increasing the knowledge of Preferred Land Development Holdings (Pty) Ltd companies and the related developers who are involved in the broad roll-out programmes of small-scale solar water heating systems for the residential sector in Namibia, on the different types of

thermosyphon SWHs.

Participants were trained in the design, installation, quality controls, quality of imported products, commissioning, quality checks, maintenance and monitoring of thermosyphon systems and were shown different types of thermosyphon systems.

Some solar water heater demonstration systems of different types were also made available at reduced cost for installation at social institutions and at these roll-out programmes in areas to be identified as flagship sites under SOLTRAIN IV.

Subsidized Demonstration Systems

Only the companies that sent representatives to the training course and passed the examination will be eligible to qualify as installers for the SOLTRAIN subsidized demonstration systems.

Mines and Energy Minister, Hon. Kornelia Shilunga, who was the keynote speaker at the training course applauded the Osona Village Management for accepting the

proposal from the SOLTRAIN Project to train their contractors on quality assurance in the selection and installation of Solar Water Heaters.

She also commended the Osona Village Management for being innovative by introducing the first eco village in Namibia, which serves as a demonstration, education and research centre.

“I have been informed that all residential buildings at Osona Village, are to be equipped with Solar Water Heaters, to keep their electrical connection demand capacity as low as possible.

The Ministry appreciates this initiative and hopes that it serves as an example for other housing developers to follow suit and help the Ministry to achieve the goals set out in the Solar Thermal Roadmap,” she said.

In addition to offering training to technicians and instructors, experts under the SOLTRAIN project are revising the Osona Village SWHs specifications, to ensure that the installed systems comply with the highest possible quality standard.

This is so as to guarantee a long

service life time of the systems and high solar yields, as well as attain the desired savings on electricity usage. The new SWHs will be designed so that they have the highest possible solar fraction, and will be equipped with an electrical back-up.

Measuring Performance

"I'm also informed that the measuring instruments which were installed at National Housing Enterprise (NHE) houses in Otjomuise will be re-installed at Osona Village to measure the performance and quality of different recommended Solar Water Heaters and compare the results with the existing systems installed, which will be randomly selected.

SOLTRAIN will co-finance the difference in the cost of the recommended Solar Water Heaters that are going to be installed for research purposes," said the Deputy Minister.

The curriculum for the Vocational Training Centers (VTCs) has been approved and the SOLTRAIN project will assist in strengthening the capacity of the trainers to ensure quality-training programmes for an effective mass rollout.

"The Ministry will remain committed to support all entrepreneurs who can

manufacture locally produced products for this implementation plan. As a government, some of our aims and objectives with regards to energy include: improving the level of technological innovation, the security of supply of electricity, and in turn, self-sustainability of the energy sector," said Deputy Minister Shilunga.

In his address to the course participants NUST Dean of the Faculty of Engineering, Dr Samuel John, said Namibia will continue to strengthen close collaboration with the AEE – INTEC, Institute for Sustainable Energy Technologies and the Austrian Development Agency, and other project partners, through concrete projects and programmes.

"NUST believes that the project is very relevant in supporting our energy goals and in the development of the energy sector in the country," he said.

Over 300 trained

Between 2009 and 2018 more than 300 technicians and instructors have been trained in a number of courses under the SOLTRAIN Project. A Solar Thermal Roadmap and Implementation Plan for Namibia was developed in close cooperation with the Ministry of Mines and Energy. This Roadmap and Implementation Plan was officially signed in July

this year by the Minister of Mines and Energy, Hon. Tom Alweendo.

In order to achieve the goals set out in the Namibian Solar Thermal Roadmap, more collaboration with housing projects is required for broad roll-out of small-scale solar water heating systems. It is also essential to have enough skilled experts to be able to design, install and to maintain these solar thermal systems. Additionally, a deeper understanding of the future role and the possibilities of solar thermal systems in a sustainable energy supply is needed.

SOLTRAIN is a regional initiative on capacity building and demonstration of solar thermal systems in the SADC region.

It is funded by the Austrian Development Agency (ADA) and co-funded by the Opec Fund for International Development (OFID).

The initiative started in 2009, and is now in its fourth phase of cooperation with Botswana, Lesotho, Mozambique, Namibia, South Africa and Zimbabwe. Its aims to support the target countries in changing from a largely fossil energy supply system to a sustainable supply structure based on renewable energy in general, and on solar thermal in particular.

In Namibia SOLTRAIN is managed by the Namibia Energy Institute, at the Namibia University of Science and Technology (NUST).



Rudi Moschik and some trainees doing an installation at Osona

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Namibia ranks among Africa's 'Big 5' fastest growing solar energy markets

Namibia features among the fastest growing solar energy markets on the African continent according to a report by the International Renewable Energy Agency (IRENA).

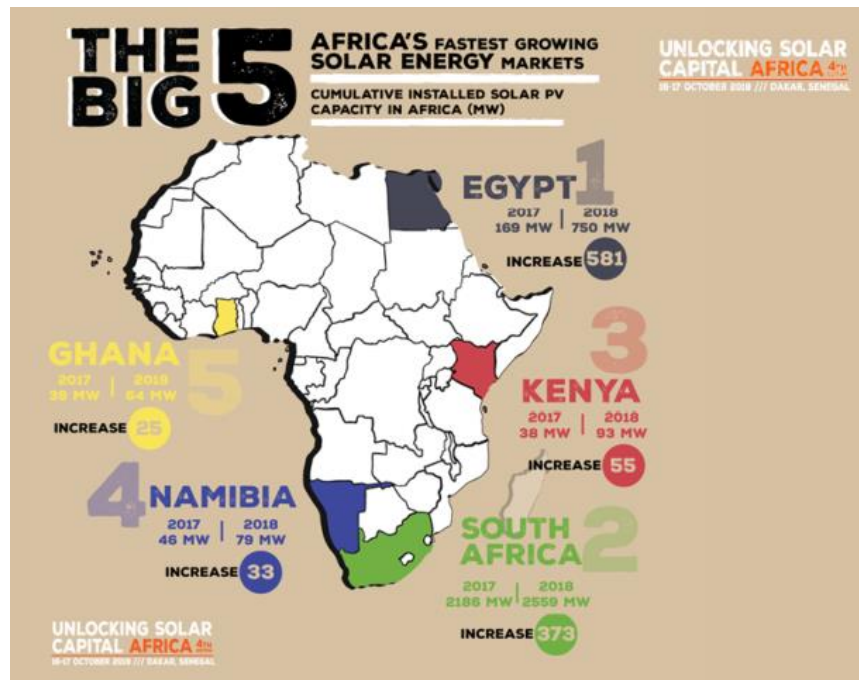
The agency states that in 2018 growth was primarily driven by five specific countries, namely Namibia, Egypt, South Africa, Kenya and Ghana. Together they contributed 1,067MW of newly-installed PV capacity.

To dissect this development, Solarplaza analysed the five fastest growing solar PV markets in Africa ("The Big 5") in more detail, based on the 2018 statistics provided by IRENA.

Namibia: The driest country in Sub-Saharan Africa, was able to almost double its installed PV capacity, from 46MW in 2017 to 79MW in 2018. The country has always shown significant potential for solar energy development but has only recently been able to truly step up to the plate.

South Africa: The country has long been hailed as Africa's largest solar energy market, and justifiably so. With an installed PV capacity of 2.5GW, the country is by far the largest market in terms of operational solar systems. However, the country's solar market has experienced some stagnation over the past years, especially due to the postponement of its renewable energy auctions. Despite this, South Africa was still able to add 373MW of solar energy capacity to its power mix in 2018.

Egypt: One of the sunniest countries in Africa - has enjoyed



Africa has shown great progress in the development of its solar energy markets over the last year.

a monumental year in terms of new PV installations, making it the fastest-growing solar energy market in Africa in 2018, ahead of South Africa, Kenya, Namibia and Ghana. The country's solar industry burst onto the scene last year by adding around 581MW of new PV capacity, an almost fourfold increase compared to what it had installed in 2017, thereby overshadowing the 373MW of PV capacity added by South Africa. Much of this capacity was bundled up in the monumental Benban solar PV complex, which is still adding MWs of capacity by the day.

Kenya: This is one of the strongest and most advanced economies in Central and East Africa, added 55MW of PV capacity, a new record for the country. The country currently has an energy mix consisting of around 65% of renewables, making it one

of the renewable energy leaders in Africa. However, the solar sector still has its work cut out for it, if it wants to challenge hydropower in the renewables space.

Ghana: The only country in West-Africa highlighted in this report, has put an impressive amount of focus on solar energy development over the last couple of years.

The country added 25 MW of new PV installations in 2018 to come to a total of 64 MW of cumulative installed solar energy capacity, which represents an annual growth of 76%. All in all, 'the Big 5' have positioned themselves as the continent's fastest-growing solar energy markets. Will they be able to retain their positions over the coming years, or will ambitious fast-movers like Nigeria, Botswana, Mali or even Angola make a sprint to a podium position?

ANIREP set to revolutionise Renewable Energy sector

Alpha Namibia Industries Renewable Power Limited (ANIREP) has become the first energy company to list on the Namibia Stock Exchange (NSX) development capital board.

ANIREP is the brainchild of Tulive Private Equity, an infrastructural fund manager; Jordaan Oosthuysen Nangolo, a construction project cost and management consultancy; EMCON PSE Consultants; and Finland-based Doranova Oy. The company was established in 2018 to facilitate the investment of long-term capital in infrastructural renewable energy projects in Namibia and sub-Saharan Africa, especially around renewable energy generation, transmission and distribution.

It has a keen interest in leveraging the modified single buyer model as approved by Cabinet in April 2019. The deregulation of the electricity supply industry in Namibia can lead to the consolidation of hitherto fragmented independent power producer (IPP) players.

ANIREP listed on the NSX on 12 September, after successfully raising N\$110 million from institutional and retail investors via a private placement process. The NSX had required the company to raise at least N\$50 million before listing.

The offer to selected investors was to subscribe for a total of 25 000 000 ordinary shares, with an issue consideration of N\$250 million.

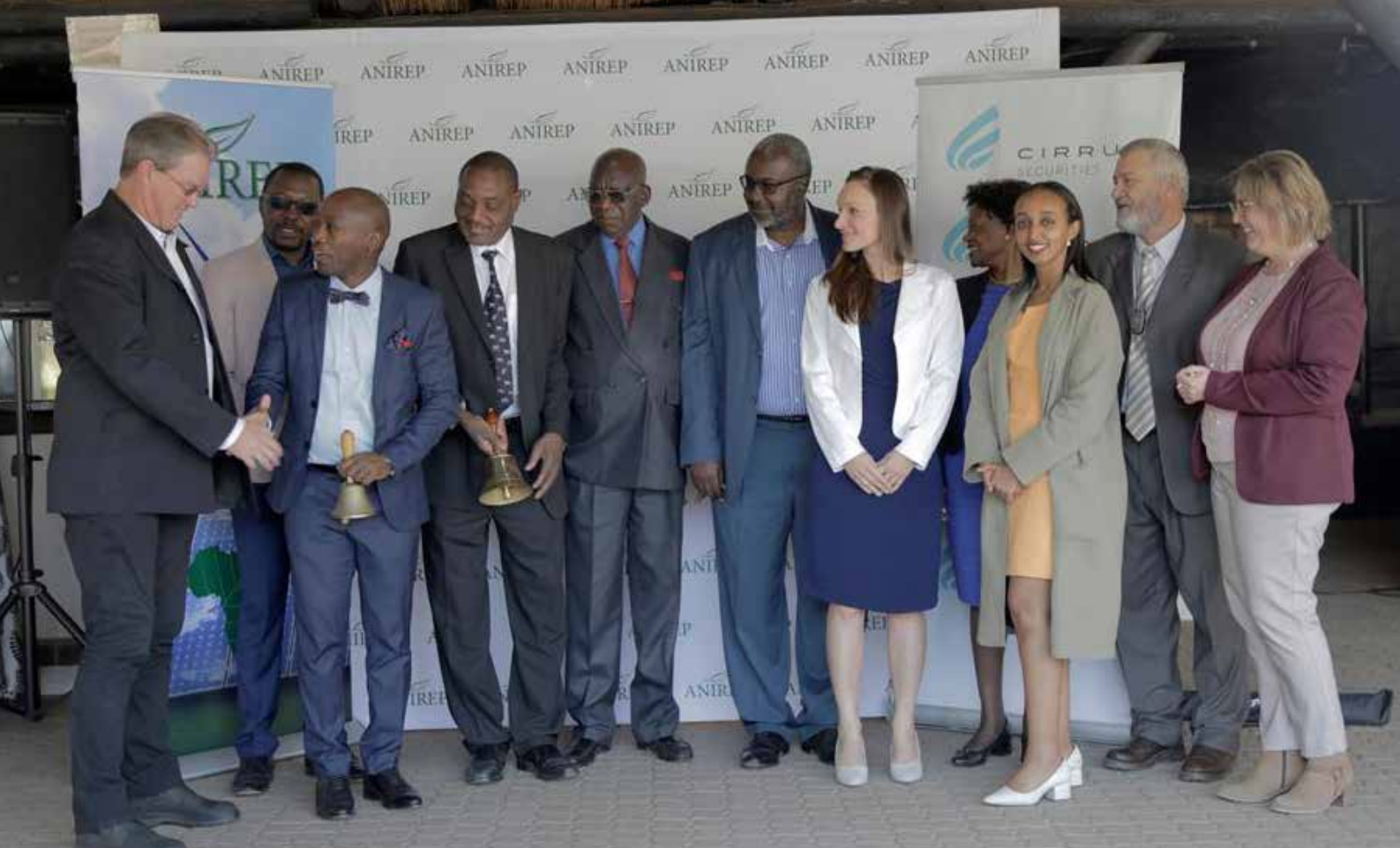
“We were happy with the subscription that we got. We are supposed to raise about



ANIREP Managing Director Iyaloo Ya Nangolo



We believe this is quite an endorsement of our business case to consolidate the fragmented renewable energy space in Namibia. So, as a Namibian listed company, we are privileged to bring the PIC on board, but it's a test to the fact that it's the first time that you can buy an energy asset on the NSX



HISTORIC: ANIREP listing on the Namibia Stock Exchange (NSX)

N\$250 million, we got more than N\$110 million. We must now and look at viable assets in the market from development to construction to post-construction which are generating assets. We can consolidate the fragmented renewable energy space sector in the country,” ANIREP Managing Director, Iyaloo Ya Nangolo said.

ANIREP said it was currently exploring potential transactions in the renewable energy space from generation, transmission to distribution.

“The targets will be winnowed through a strategic value chain analysis framework from a pool of development, construction and operations of viable assets,” the company said prior to its listing.

Africa’s biggest pension fund, the Public Investment

Corporation of South Africa (PIC), with assets worth over N\$2 trillion, made its first investment in Namibia’s capital markets by subscribing to 5 300 000 shares in ANIREP via a transaction valued at N\$53 million.

The investment by PIC provided a boost for ANIREP’s fund-raising efforts and brought the total tally of funds raised to over N\$163 million from local and international investors, through the private placement.

“We believe this is quite an endorsement of our business case to consolidate the fragmented renewable energy space in Namibia.

So, as a Namibian listed company, we are privileged to bring the PIC on board, but it’s a test to the fact that it’s the first time that you can buy an energy

asset on the NSX,” Ya Nangolo said.

NSX Chief Executive Officer Tiaan Bazuin said the listing of ANIREP on the local bourse brings both deepening and diversification of the Namibian capital markets.

Rome Mostert of Cirrus Securities’, the sponsoring broker of ANIREP’s listing said: “If you look at Namibia in general, renewable energy is something we have plenty of.

We have renewable sources, so doing wind and solar energy is a favorable theme.

We have seen a lot for companies moving into that space and it is exciting. We have all the necessary resources that are for free and this provides a perfect opportunity to benefit from that.”

Green Climate Fund invests in renewable energy, water

The United Nations Green Climate Fund (GCF) has availed US\$8.4 million (about N\$122 million) to Namibia to finance renewable energy and water climate resilience projects. The funding has been availed through the Environmental Investment Fund (EIF).

The funding agreement was signed between Yannick Glemarec, Executive Director of the GCF, and Benedict Libanda, Executive Director of the EIF, at the recently concluded GCF Global Programming Conference in Songdo, South Korea.

The funds are intended to finance projects that will make people resilient to climate change, as Namibia is one of the African countries most affected by this phenomenon. "Young people will be the most affected by climate change, which is why we have found different funding mechanisms and programmes. We will fund start-up projects mainly in the green sector," says Benedict

Libanda. He added that his "strategy is to diversify the investment portfolio of the GCF in Namibia by accessing large scale financing, particularly in the fields of renewable energies, water infrastructure...".

Namibia wants to rely on renewable energy to supply its population with electricity. It relies particularly on solar energy, a resource that is particularly available in an arid country with 300 days of sunshine per year. A number of solar projects developed by independent producers (IPP) are underway in the country. As for water, the situation is a little more complicated. Surface water resources are scarce, leading the government to focus on wastewater treatment and reuse. He has also recently become interested in seawater desalination, a viable but very often costly solution.

March against climate change

Meanwhile, pupils from several

schools in Windhoek marched from the Ministry of Environment and Tourism to Parliament Gardens to hand over a petition calling on lawmakers to implement national policies against climate change.

The demonstration was organised by several civil society bodies, including Earthlife Namibia, a non-governmental organisation which promotes the sustainable use of natural resources.

Earthlife Namibia's chairperson, Bertchen Kohrs, said she wanted every school in the country to march against climate change until lawmakers do something about it. The initiative is part of a global intervention of pupils fighting for action on climate change.

Among the demands tabled by the petitioners is that they want every house in Namibia to be fitted with photovoltaic solar panels that are environmentally friendly, and do away with the burning of fossils that damage the environment.



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INAUGURATED: Vice president Nangolo Mbumba (with hat) unveils a plaque at the inauguration of the 5MW Trekkopje Solar Project. Looking on are Orano chairperson Harry //Hoabeb (far right), major shareholder in Sertum Energy Maurizio Decinti and deputy minister of Mines and Energy Kornelia Shilunga

Sertum Energy's Trekkopje Mine 5MW solar plant comes online

Independent power producer Sertum Energy Namibia has commissioned a 5 MW portion of a 27 MW capacity solar project at the Orano Trekkopje Mine, some 50km out of Swakopmund.

The 5 MW plant, which cost N\$120 million to erect and is located close to the substation directly feeding the mine and Orano's desalination plant near Wlotzkasbaken, was commissioned by Vice President Nangolo Mbumba on 3 October.

Sertum Energy Namibia is a partnership between Namibian businessman Elton Katangolo and Italian-listed company Enertronica SpA, which specialises in the development and construction of solar plants around the world.

Sertum signed a 25-year power purchase agreement with NamPower as part of the Electricity Control Board's renewable energy feed-in tariff (REFiT) programme. The REFiT programme aims to add 70 MW to Namibia's energy

generation capacity to reduce reliance on electricity imports, while at the same time accelerating investment in renewable energy technologies.

Under the REFiT programme 14 energy companies have been given long-term contracts to set up power plants and feed the power they generate into the national grid.

The Trekkopje solar power plant features trackers that have been mounted on the structures to allow the modules to follow the movement of the sun during the day, thus optimising the already high irradiation.

The electricity produced by the Trekkopje plant is fed into the national electricity grid from a substation not far from the plant, which is intended to supply the uranium mine, owned by the French company Areva, now Orano.

The Trekkopje substation was also built to supply electricity to the Orano desalination plant near the mine, mainly used to supply water to the Trekkopje uranium

mine, a facility that never went into service and was expected to have a capacity of 55,000 m3 per day.

Inaugurating the solar plant, Vice President Mbumba said renewable energy was the fuel of the future and has a positive and significant impact on the growth of the Namibian economy.

"This project demonstrates government's commitment to supporting renewable energy technologies and private players' participation in the national energy sector," he said.

Deputy minister of Mines and Energy Kornelia Shilunga said that through the establishment of such solar projects, Namibia was "slowly but surely" becoming less dependent on importing electricity from the Southern African Power Pool. Namibia's renewable power supply capacity has grown to approximately 35% of Namibia's total electricity production and about 12% of the country's maximum demand.



A wind farm in South Africa

Southern Africa poised to become global wind powerhouse

Southern Africa is moving towards becoming a top global wind energy destination, with enabling factors including an exceptional resource and a growing recognition that wind power can help plug Africa's energy gap, attract investment, foster economic growth and create jobs.

According to estimates by the Global Wind Energy Council (GWEC), the Southern African Development Community (SADC), a region comprising 16 countries, alone has a wind energy potential of around 18 GW.

"This is one-third of the region's current power pool," said Johan van den Berg, head of the Africa-EU Energy Partnership (AEEP) Secretariat. "The East Coast of Africa, stretching from Northern Mozambique to Kenya, has a huge potential."

Other wind energy hotspots include Namibia, Mauritius,

South Africa remains the continent's wind powerhouse, but other countries are catching up fast, experts said during the country's windpower conference, Windaba, held in Cape Town in October

Zambia and Tanzania, added Ntombifuthi Ntuli, Chief Executive of the South African Wind Energy Association (SAWEA).

South Africa remains the continent's wind powerhouse, but other countries are catching up fast, experts said during the country's windpower conference, Windaba, held in Cape Town in October.

In terms of energy generation capacity, Africa's energy mix is no longer confined to oil, coal and gas.

Namibia's National Integrated Resource Plan calls for 149 MW of wind energy to be developed by 2035. Tanzania has plans to develop four onshore wind energy projects with a total capacity of 550 MW. Recently the country announced a 300 MW wind farm of which construction will start soon.

South Africa leads Africa's wind push and since the inception of its Renewable Energy Independent Power Producer Procurement (REIPPP) programme, the country

has procured 3,366 MW from 36 independent wind power producers.

Besides strengthening the country's overall energy security, the South African wind energy sector has attracted R80.6 billion worth of investments since 2011, of which Foreign Direct Investment (FDI) accounted for R13.2 billion.

South Africa's good wind resource has also played a key role in the development of wind energy. A study by the Centre for Scientific and Industrial Research (CSIR) indicates that the wind resource potential in South Africa is extremely good and that wind turbines with extraordinarily high load factors could be operated on 80% of the surface area, along the coast but also inland.

Miguel Arias Canete, commissioner for Climate Action and Energy at the European Commission, noted that developing a wind energy ecosystem in Southern Africa has not been just about generating clean and affordable power and attracting investment. It is also about stimulating job creation.

Wind IPPs creating jobs

According to SAWEA statistics, South Africa's wind IPPs helped create 10,099 job years since 2011. That is a third of all job-years created by all 112 renewable Independent Power Producers (IPPs) that fall under the REIPPP.

"South Africa's engagement has allowed the development of a vibrant industry on the continent and has contributed to creating

local employment in the sector," Canete said.

Whilst South Africa should definitely be seen as an African wind energy role model, Van Den Berg stressed that other countries shouldn't simply copy what the neighbour has done.

"Markets vary. There needs to be a localised approach to developing sustainable wind energy sectors in the region," he said, noting that the country can nevertheless teach the rest of the continent a few lessons in terms of developing a resilient and investor-friendly wind energy sector.

"The first thing countries need to do is to make sure policies and regulatory frameworks are optimised and are stable. This is necessary to have financiers back projects," he explained.



An experts panel discussion during the windpower conference, Windaba, held in Cape Town in October

Namibia seeks European partners in biomass projects

Namibia presented itself as a prospective partner country for biomass projects

at this year's Wood Energy Conference held in Würzburg, Germany on 26 September. The conference also included wood energy players from Austria and Switzerland.

The delegation from Namibia comprised government officials from the National Planning Commission, the ministries of Agriculture and of Industrialisation, Trade and SME Development, experts on environmental issues, researchers and sector representatives, including from the Namibian Charcoal Association (NCA), the Walvis Bay Corridor Group and the Namibian Biomass Industry Group (N-BiG).

With 250 entrepreneurial participants, the congress themed 'Sustainable Solutions for Climate Protection', presented an ideal opportunity for networking and business-to-business meetings. The Namibian delegation presented Namibia's "big biomass opportunity" during the keynote presentation and at information stalls.

"Germany has taken the political decision to stop burning coal. Bush biomass from Namibia clearly has the potential to play a role in the biomass import sector – competitiveness and sustainability of production

and supply provided. Investment decisions are expected to be taken within the next three to five years," said Matthias Held, managing director of the German Wood Energy Association.

Joseph Hailwa, director of forestry in the Ministry of Agriculture commended Namibia's participation at the congress saying it presented the country with an opportunity to promote the country's biomass sector to relevant players in Germany.

Participants explored options based on a two-fold and complementary approach: large-scale international off-take opportunities as well as technology solutions for application in Namibia.

Over 30 million hectares of rangeland are considered to be bush-encroached in Namibia.

This is a third of the country. It is estimated that 300 million tonnes of biomass are available for sustainable harvest within the scope of rangeland restoration.

Bush encroachment creates unique opportunities for the Namibian economy if biomass is recognised as a valuable resource for existing and new value chains. A 20 MW energy plant, for example, would require about 150 000 tonnes of biomass per annum which translates to harvesting about 13,900 hectare of farmland per year.

The Namibian Biomass Industry Group points out that currently only 1,36 million tonnes per year of bush biomass are utilised and that harvesting and logistics structures need to be up-scaled significantly to utilise the socio-economic and ecological benefits.



The Namibian delegation to the Wood Energy Conference in Würzburg, Germany, included Dr Michael Humavindu (2nd left) the Deputy Executive Director of MITSMED.

Germany is also facing an undersupply of biomass which requires off-takers to source internationally.

Concerning the up-scaling technology solutions for application in Namibia, a number of processing options were discussed, including wood chip-based heating/cooling for residential areas and possibilities to combine solar and biomass technologies.

The Namibia Agricultural Union (NAU) has said local commercial farmers were prepared to harvest bush on their farms and sell it on big scale, should it be economically viable.



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Growing crops under solar panels in the face of climate change

By Rochelle Neidel

Climate change and the issues around addressing the adverse effects of the changes in our environment have been a hot topic amongst activists, academics, farmers, politicians and world leaders.

In a riveting speech at the just-ended United Nations General Assembly, 16-year-old Greta Thurnberg took issue with world leaders regarding the slow progress in policy reform.

"You have stolen my dreams and my childhood with your empty words. And yet I'm one of the lucky ones. People are suffering. People are dying. Entire ecosystems are collapsing," she said.

The scarcity of water for agriculture purposes is a direct effect of climate change and as Namibian farmers and academics we cannot look away or turn a deaf ear to this international conversation. Climate change has affected us adversely here at home, it has emptied baskets, dried crop fields and the only glimmer of hope is a better raining season.

Farming crops under solar panels, a process called agrivoltaics, can boost food production, water saving and the efficiency of electricity production, researchers say.

Building resilience in renewable energy and food



Rochelle Neidel



Farming crops under solar panels, a process called agrivoltaics, can boost food production, water saving and the efficiency of electricity production"

production is a fundamental challenge in today's changing world, especially in regions susceptible to heat and drought. Agrivoltaics, also known as solar sharing, is an idea that gained traction in recent years.

Few studies, however, have monitored all aspects of the associated food, energy, and water systems, and none have focused on dryland areas—regions that experience food production challenges and water shortages, but have an overabundance of solar energy.

In Namibia we have an abundance of solar energy and therefore can optimize that resource through growing animal feed under solar panels. In addition to the benefits to the plants, the researchers also found that the agrivoltaics system increased the efficiency of energy production. Solar panels are inherently sensitive to temperature—as they warm, their efficiency drops. Cultivating crops underneath the PV panels allowed researchers to reduce the temperature of the panels.

Overheating solar panels are actually cooled down by the fact that the crops underneath release moisture through their natural process of transpiration.

It is a win-win-win in terms of bettering how we grow our food, utilise our precious water resources, and produce renewable energy.



Agrivoltaics is a process of growing crops under solar panels

Early results suggest that, when grown under the panels, vegetables such as peppers, broccoli, and Swiss chard can produce about 60 percent of the volume they would in full sun.

At the same time, a dual-use system offers about half the power-generation capacity per acre of a conventional installation, and the costs are higher. However, while these systems offer less energy generation and lower crop productivity than solar panels or agriculture alone, the combination generally pays off.

Meteorologists have suggested that the forthcoming raining season will be better than the last one, but the future of farming relies on innovative and smart practices to transform the current state of agriculture.

As the new rainy season approaches, one can imagine the planning that farmers are undertaking to prepare their livestock for the coming

commercial year. Sustainability is and will be the main goal and long-term-vision of every farmer.

A very interesting concept of growing crops under solar panels is fast gaining prominence in most countries around the world. This process allows a farmer to grow crops under solar panels, which allows them to produce crops and feed for livestock while producing electricity in an environmentally friendly manner.

Renowned scientist and professor in Economics and nutritional science-agriculture, Dr Prabhu Pingali, says renaissance means the renewed understanding and recommitment to the fundamental role of agriculture in the development process. Operationally it implies different approaches at country level, based on the stage of development.

For the least developed countries, it could mean re-engaging agriculture's potential

as a driver of overall economic development, while for the emerging economies, it could be small holder inclusion in agricultural commercialisation and/or reducing rural-urban income gaps.

Food sectors in developing countries are witnessing profound changes driven by: rapid income growth; urbanization; global inter-connectedness; technology access; and climate change.

Rochelle Neidel is a seasoned farmer and thought leader in various disciplines of Agriculture. She is a certified Agro - processor and is one of the youngest female black farmers involved in livestock breeding and feed production.

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GREEN JOURNALISTS: GAJ founding members (from left) Mr Tabby Moyo (Secretary General, Namibia), Ms Violet Nakamba (Zambia) and Mr Aziz Diouf (President, Morocco), pictured with Mr Badr Ikken (2nd from right) from IRESEN during the Solar Decathlon Africa held in Benguerir – Morocco

Green Africa Journalists Network launched

A network of African Journalists active in the fields of sustainable development and green energy was recently launched in Benguerir, Morocco, on the sidelines of the Solar Decathlon Africa event.

The Moroccan Research Institute for Solar Energy and New Energies (IRESEN) and the University Mohammed VI Polytechnic (UM6P), with the support of the Moroccan Ministry of Energy; Mines and Sustainable Development and the U.S. Department of Energy,

organised the first African edition of the international competition for green buildings Solar Decathlon Africa from September 13 – 27.

The event presented an appropriate setting to launch the Green Africa Journalists Network (GAJ), which will serve to inform and support the dynamics of the African continent in sustainable development and green energy transition, in accordance with the commitments made by its states under the Paris Agreement of 2016.

The Paris Agreement is an

agreement within the United Nations Framework Convention on Climate Change (UNFCCC), dealing with greenhouse-gas-emissions mitigation, adaptation, and finance. Its long-term goal is to keep the increase in global average temperature to well below 2 °C above pre-industrial levels; and to limit the increase to 1.5 °C, since this would substantially reduce the risks and effects of climate change. Under the Paris Agreement, each country must determine, plan, and regularly report on the contribution that

it undertakes to mitigate global warming.

The Green Africa Journalists Network was born out of an initiative by a group of eight journalists from the continent who met in Vaasa, Finland, during the Vaasa Energy Fair in 2018. The founding membership of GAJ is made up of professional journalists from Egypt, Ghana, Morocco, Mozambique, Namibia, Nigeria, Tunisia and Zambia, seeking to promote awareness in the fields of energy transition and sustainable development. Its objective is to expand the membership to all the African countries within the next 10 years.

"The objective of the Network is to train its members in the concept of energy transition and sustainable development and to undertake all the useful actions to inform and support the dynamics of the African continent in these two fields. To do this, the Network intends to organize training sessions for the benefit of its members, civic society organizations and lawmakers in various African countries," says Aziz Diouf, the

interim President of GAJ.

To achieve this goal, Mr Diouf says the Network is already making efforts to engage international organizations and donor partners to finance the implementation of the Green Africa Training (GAT) program.

The GAT Program is an educational program on energy transition and sustainable development in Africa.

Its objectives are to popularize the concepts of energy transition and sustainable development among journalists, civic society organizations and law makers from all African countries and organize capacity-building sessions for African journalists as specialists in energy transition and sustainable development issues and as good informers of African public opinion in those areas where information and awareness are of paramount importance.

To this end, the GAJ Network will work in close collaboration with UNESCO, particularly to help African journalists wishing to specialize in sustainable development to appropriate the content of the book that the international organization

published in 2014 under the 'Climate Change in Africa: A Guide for Journalists'.

Mr Badr Ikken, the Director General of IRESEN, welcomed the creation of GAJ, saying the Network would go a long way in promoting sustainable development initiatives in Africa and said IRESEN was looking forward to collaborate with GAJ in various Solar and New Energy promotion initiatives.

Mr Tabby Moyo, the Secretary General of GAJ said it was high time that African journalists played a key role in climate change mitigation and adaptation efforts.

"We should be actively involved as journalists because we are the conveyors of information.

There is a dire need on our continent for relevant information in the fight against climate change to reach the grassroots population which is the most affected by the changes in climate," he said.

For more information on GAJ contact Mr Aziz Diouf at Email gajassociate@gmail.com or Mr Tabby Moyo at Email: tabby@afol.com.na

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Energy Efficiency key to fighting Climate Change

By Ruan Bestbier

The Bank of Namibia's report on the country's second quarter economic performance found that fuel imports significantly contributed to the decline in the national current account.

An analysis by PSG Namibia states that the value of fuel imports increased in part due to a rise in fuel consumption stemmed from higher electricity production at the Anixas diesel-run power plant. This emergency diesel power station had to be used due to poor rainfall adversely affecting the Ruacana hydropower station's electricity output.

This situation is one example as to why Namibian companies have turned to investigating and deploying energy efficient technologies to reduce their dependence on traditional forms of energy, such as fossil fuel and electricity. This is motivated by the fact that by applying energy efficient methods, more can be done with less.

By definition, energy efficiency means using less energy to provide the same service or produce the same product. Increasing energy efficiency often costs money up-front but in most cases,



In Namibia, we continuously see the impact of global warming and the effects of climate change on our local environment and businesses. With Bank Windhoek's Green Bond initiative coupled with SUNREF's technical assistance facility, we aim to turn bankable projects into sustainable realities."

this capital outlay is recovered in the form of reduced energy costs within a short time period. This also makes efficiency improvements an attractive starting point for reducing carbon emissions and mitigating climate change.

The impact of the cost of energy is also felt in key economic industries in Namibia such as fishing and manufacturing. The fishing industry continues to be an energy intensive activity and fishing fleets still need to adapt to high and ever-changing energy prices. In addition, the volatile oil price is a cause for economic concern for the fishing industry.

In Namibia, we continuously see the impact of global warming and the effects of climate change on our local environment and businesses. With Bank Windhoek's Green Bond initiative coupled with SUNREF's technical assistance facility, we aim to turn bankable projects into sustainable realities. By effecting energy efficient technology or practices on your business, the long-term benefits will include savings in cost and maintenance expenses and most of all show that you are serious about climate change and its impending consequences.

It is important to note that

the scope of the overall savings and the methodology required, depend on the situation and location of the building or company and improving energy efficiency is a key tool for reduced carbon dioxide emissions over the long run.

Limited energy security and rising energy prices will likely continue to challenge the growth of Namibian businesses in the near future.

These trends tied with the negative impact of bush encroachment, which is estimated to cover half of the country, resulting in a decrease of agricultural yield, reduction of biodiversity and water resources coupled with the impact of drought and a strain on energy resources, make green economy growth a priority in Namibia. In turn, it demonstrates the need to assess and build resiliency to a changing climate.

To be more energy efficient, the way forward is to take a systematic approach with the purpose of obtaining an adequate knowledge of the existing energy consumption profiling your building or group of buildings, an industrial or commercial operation.

Further, identifying and quantifying cost-effective energy savings opportunities and to report the findings of these opportunities to the management of your organisation to take action. One of the immediate remedies for addressing these concerns is to apply

energy efficient practices which reduces your carbon footprint and enhances cost savings, leading to an overall contribution to your company's bottom line.

The United Nations (UN) Climate Action Summit, hosted at the UN's Headquarters in New York during September 2019, called for decisive action on the impact of climate change. This has reverberated worldwide with countries taking action to combat the effects on their citizens' livelihoods. Moreover, the main goal of the summit was to advance climate action for reducing greenhouse gas emissions to prevent the mean global temperature from rising by more than 1.5 degrees above preindustrial levels. Communities the world over are experiencing food shortages, massive displacement and risks to their livelihoods and lives. In Namibia, the annual average economic losses as a result of climate-related disasters, amounts to billions of Namibian dollars.

To implement recommended changes to address climate change, effective policies, private-sector action and public-private cooperation are needed to assist in creating a more inclusive, sustainable, and affordable and secure local energy system.

These regulation changes must target overall energy policy; demand and supply-side measures; energy tariff regulations; power sector

reform; energy efficiency policies, laws, targets and plans; establishment of energy efficiency agencies; and promotion of energy efficiency. Notable examples is the willingness of local authorities and the government who have taken action by establishing the Centre for Renewable Energy and Energy Efficiency (CREEE). This the organisation is responsible for the continuation of the work done by the Renewable Energy and Energy Efficiency Institute (REEEI) on Renewable Energy technologies and their use, Energy Efficiency practices, policy and regulation development and climate change mitigation studies.

Furthermore, the issuance of Namibia's first Green Bond and being a proactive partner of the SUNREF Namibia Programme, is testament to Bank Windhoek's and Capricorn Group's vision of being the financial partner of choice, ultimately leading to positive change in the country and the Southern African region.

It is evident that there are still many untapped opportunities to use energy efficiency to save money, cut harmful pollution and meet our climate goals of a limiting global temperature rise below two degrees Celsius to preindustrial levels.

•Ruan Bestbier is Bank Windhoek's Manager for Sustainable Investments and Deal Origination

More big companies turn to solar energy

More local companies are turning to solar energy in their quest to curtail their production costs as well as reduce their carbon

footprint.

Among the companies that have recently adopted solar energy are Coca-Cola Beverages Africa and the Tunacor Fishing Group

Coca-Cola has installed 1 740 solar panels and nine solar inverters at its Windhoek factory to generate at least 9% of the factory's total power requirements.

The new system is expected to reduce annual carbon emissions by 832 tonnes, which is equivalent to planting 80 117 trees.

Coca-Cola chief executive officer, Jacques Vermeulen, said the company invested about N\$5,7 million to get the project off the ground. He said the company was bent on reducing its carbon foot print.

"People matter. Our planet matters. Profitability is important, but not at any cost," said Vermeulen.

He said Coca-Cola would likely implement solar-powered systems at a number of sites across its operations in at least three other



countries.

Tunacor will incorporate solar energy at its new 4 000 square metre Walvis Bay horse mackerel value-addition factory, to provide enough clean energy for onshore fish-processing activities.

This will be the first fishing factory to operate on solar energy.

New US Embassy to incorporate solar power

The new N\$200 million American Embassy to be constructed in Klein Windhoek in 2020 will be a state of the art facility, incorporating Namibia's abundant solar energy, as well energy efficiency.

The bigger embassy will be built on erf 127 (756 square metres) and erf 353 (5 acres) situated at the corner of Metje Street and Nelson Mandela Drive.

US ambassador to Namibia Lisa Johnson said the new, bigger embassy will serve as the American platform to partner, prosper and grow together with Namibia over the long run.

Embassy spokesperson Walter Parrs said construction work will commence mid-2020 with completion expected at the end of 2023. He said the new facility will be designed to meet

the highest standards of sustainability and energy consumption that fit American and Namibian elements, reflecting the Windhoek environment.

The architectural plan for the embassy will be done by an American company while construction will be done mainly by Namibian companies.

Upon completion, the embassy building will create energy on site through solar photovoltaics and will reduce water consumption, returning as much water to the local system for re-use.

All American agencies and departments in Namibia will be housed under one building, including the Department of State, the Centre for Disease Control and Prevention (CDC), the President's Emergency Plan for AIDS Relief (PEPFAR), the US Agency for International Development (USAID), and the Department of Defense (DoD).



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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