

Etango

Namibia's Leading Renewable Energy Technologies
Magazine

July-August 2019



37MW HARDAP SOLAR PLANT COMES ONLINE



**NATURA'S 50MW
SOLAR PARK SET
FOR 2020**



**SOLAR-POWERED
AQUAPONICS FOR
FOOD SECURITY**



**A CALL FOR REAL
EMPOWERMENT
OF NAMIBIANS**



**ELECTRIC VEHICLES
A REALITY FOR NAMIBIA**

NAMIBIA'S LARGEST SOLAR PHOTOVOLTAIC POWER PLANT INAUGURATED



The 37 MW Hardap Solar PV Power Plant, located on farm Koichas near Mariental was officially inaugurated by the Deputy Minister of Mines and Energy, Kornelia Shilunga on Thursday, 20 June 2019.

The USD 70 million investment, with an expected lifespan of 25 years has approximately 140,000 crystalline silicon panels mounted on single axis solar trackers and covers a 100 hectare land area.

The facility is one of the most productive in the world because of the location's extremely high irradiation levels and is expected to meet $\pm 5\%$ of the country's annual energy demand.

The power plant reached its Commercial Operation Date (COD) in November 2018 and it is forecasted that around 112 GWh of clean electricity will be evacuated into Namibia's National Grid every year.

The power plant was procured on a competitive basis, with a minimum reservation of 30% shareholding for Previously Disadvantaged Namibians (PDN). The contract was awarded to the Alten Energy Consortium as the successful tenderer. Alten Africa, has a controlling interest of 51% in the Alten Solar Power (Hardap) (Pty) Ltd investment vehicle, NamPower (Pty) Ltd 19% and local PDN shareholders, namely, First Place Investment

CC, Mangrove (Pty) Ltd and Talyeni Investments (Pty) Ltd a collective 30%.

Alten Solar Power (Hardap) (Pty) Ltd is financed by Standard Bank South Africa and Proparco for over USD 50 million.

The PV plant will aid in reducing reliance on energy imports in the region and at the same time help Namibia advance towards security of supply, through the effective and economic use of locally available resources.



FLTR: Mayor of Mariental, Willem Mensah, NamPower MD, Kahenge S. Haulofu, Hardap Regional Governor, Hon. Esme Isaack, Deputy Minister of Mines and Energy, Hon. Kornelia Shilunga, Alten Africa Executive President, Juan Laso and Leefa Ndilula, Mangrove (Pty) Ltd.

Reforms boost Renewable Energy Sector

Sweeping reforms in the Namibian Energy Sector, notably the Modified Single Buyer Model (MSB) and the Independent Power Producer (IPP) policy, have tremendously boosted the growth of the country's renewables sector.

This has come with yet another positive twist of increasing domestic supply and curtailing the high imports of electricity from neighbours.

In this edition of **Etango** we feature two large scale solar PV plants – the recently inaugurated 37MW Hardap Solar Plant and the 50MW solar farm to be developed by TeraSun Energy at Arandis in 2020. These mega plants attest to Government's effort towards levelling the playing field in the energy sector and creating a conducive environment for IPPs to invest in the local energy sector.

To date, 18 Power Purchase Agreements (PPAs) have been signed, translating into a supply of 176MW of renewable energy. Fourteen of these projects (totaling 117MW) are already in operation. It therefore goes without saying that renewable energy sources of power, such as solar, wind and

biomass, will play a key role in meeting the country's future electricity needs and thereby minimise the imports.

We are confident that with increased support from Government and clear direction emerging for the adoption of RE technologies, we will see more investment towards renewable energy technology as we move towards the goal of having 70% of the energy mix coming from renewable resources by 2030.

Government should continue to underline its commitment to renewable energy by striving to increase the current level of RE development in Namibia. In addition, we must see renewables being incorporated in ALL new housing developments, office, and other commercial developments taking place in the country.

For the off-grid populations, renewable energy solutions must be implemented to better livelihoods of all Namibians and give hope to future generations.

Etango Magazine has for the past 10 years been Namibia's only publication focusing on renewable energy, highlighting key developments in this important area of the

energy sector. However, we feel time has come to broaden the publication's horizons to cover a wider scope of climate adaptation and mitigation issues, of which renewable energy and energy efficiency are part of.

Namibia is on the frontline in facing the impact of climate change and measures to be taken to adapt our lives to these changes so as to reduce the negative impacts.

These need to be in the public domain more as it is imperative for the greater public to be aware of the climate change implications, the reasons and measures that should be taken to mitigate the adverse effects of our changing environment. As a country, we also need to urgently scale up our response to the changing environment.

We will therefore continue to count on your support and that of other relevant players in the protection and safeguarding of Namibia's environment for future generations.

Happy Reading!
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Cover picture:

OFFICIALLY LAUNCHED: The N\$750 million, 37MW Hardap PV plant, outside Mariental, which was inauguration on 20 June 2019. **Photo by Conrad Roedern**

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Natura's 50MW, N\$900m Power Park set for 2020

In the face of growing power deficits, Natura Energy has made headway in its bid to develop and implement a 50 megawatt (MW) TeraSun Energy solar photovoltaic power park initiative to provide the much-needed electricity, at competitive rates, to large power consumers in Namibia.

This is subsequent to Cabinet's approval in April of the new Modified Single Buyer (MSB) model regulatory framework which allows independent power producers (IPPS) to sell electricity to large power users locally and internationally across the national transmission grid.

Speaking to **Etango**, Ezio Vernetti, the Managing Director of Natura Energy highlighted that Namibia will benefit greatly from the initiative taken by the Electricity Control Board (ECB) and Government to restructure the electricity supply industry by adopting the MSB model policy.

"I believe that prices for electrical energy will be offered by the private sector at cost saving rates for large power users, municipalities and REDs (regional electricity distributors) alike. These saving benefits are also expected to reach not only households, but the economy at large. After almost three years of unprecedented consecutive negative growth, the Namibian economy desperately needs both investment and cost-



Ezio Vernetti, Natura Energy Managing Director

saving measures throughout all sector be it private or public," said Vernetti, adding that the TeraSun Energy Power Park project addresses both these goals in a positive and constructive manner.

The TeraSun Power Park will be located in Arandis, in Erongo Region, which enjoys among the best solar irradiation in the country and has the potential to generate more than 2 460 kWh/kWp/year. The N\$900-million investment will be structured through TeraSun Energy, a special purpose company that will engage large power users to conclude electricity supply agreements with firm supply durations of 5 to 15 years.

"The project will be 100% privately financed with an appropriate mix of shareholder equity and commercial loans. From a financing point of view, the TeraSun Energy project could also represent a valuable investment opportunity for institutional investors such as venture capital and pension fund managers in Namibia. We are already engaging constructively with funders and have full confidence that the project will meet all the required bankability criteria," the Natura Energy MD further explained.

Speaking about project timelines, Vernetti noted the firm's aim was to commence construction in the first quarter of next year and to have the

I believe that prices for electrical energy will be offered by the private sector at cost saving rates for large power users, municipalities and REDs (regional electricity distributors) alike. These saving benefits are also expected to reach not only households, but the economy at large.



TeraSun Energy PV site

Power Park delivering cost-effective energy to its customers by the last quarter of 2020.

“All project development activities are currently on track to deliver on these targets.”

“We carried out a very detailed and in-depth study of the Namibian power system late last year which demonstrated that Namibia can become 100% self-sufficient and even export power by 2026 at a lower levelled cost of electricity. Such strategy would bring into the Namibian economy approximately N\$15 billion of investments.

“A multitude of companies would benefit from this. This investment number that we calculated coincidentally happens to be the exact same investment target that the Government has for its 31st July Investment Conference. Look no further. Namibia has a massive renewable energy resource which still remains untapped. Create an enabling environment, and investments and jobs will certainly come,”

remarked Verneti optimistically.

By the end of 2019, over N\$10 million will already have been invested in project development activities to ensure delivery of the power park by the end of 2020. Construction is expected to commence in the first quarter of 2020.

The project is the brainchild of the Natura Energy project development team under executive directorship of Johny Ashipala, Annitta Attieh and Verneti, together with Frans Mushimba and Jennifer Stride.

In terms this new regulatory market framework, players are to be known as contestable customers and eligible sellers. Contestable customers are all the REDs, the City of Windhoek and all NamPower customers that are connected to the transmission network.

These contestable customers will be allowed purchase electricity from the TeraSun Energy Power Park via bilateral transactions for up to 30% of their annual energy purchases.

The motivation for this policy

change in Namibia is a drive for both electricity self-sufficiency and price competitiveness.

Through the MSB model, government wishes to enhance the security of electricity supply through the growth of domestic power generation and the reduction of its reliance on electricity imports.

“The TeraSun Energy Power Park, through the enabling policy framework of the ECB, opens up new horizons in the electricity supply industry in Namibia and sets an example for the continent.

The innovation of allowing private sale and purchase transactions of electricity to take place over the national grid is significant. Whilst the MSB currently limits only 30% of NamPower’s sales as being contestable, the policy represents a major shift in the mind-set and opens the sector to competitiveness and innovation. In the region, Namibia is pioneering this approach at the moment,” concludes Verneti.



UNVEILING: (from left to right) His Worship the Mayor of Mariental, Willem Mensah, NamPower Managing Director, Kahenge Simson Haulofu, Hardap Regional Governor, Hon. Esme Isaack, Deputy Minister of Mines and Energy, Hon. Kornelia Shilunga, Alten Africa Executive President, Juan Laso and Leefa Ndilula from Mangrove (Pty) Ltd, during the inauguration ceremony.

Namibia's largest solar park to date comes online

Spanish company Alten Energías Renovables and its Namibian partners have commissioned the Hardap solar power plant outside the southern town of Mariental. With a 45.5 MWp capacity, the Hardap solar park will enable Namibia to reduce its electricity import dependency.

Local utility NamPower, Mangrove, Talyeni and First Place Investment are the local companies involved in the Hardap solar park which started feeding power to the national grid in November 2018.

Between the time the Hardap

PV plant went on line in November 2018 and its official inauguration date on 20 June 2019, it had already produced 74.7 GWh or 74700MWh. At 80.7cents/kWh, this translates to sales of N\$60.2 million in seven months.

The Hardap solar power plant covers an area of 100 hectares and Alten estimates that the amount of electricity produced by the solar power plant will supply at least 70,000 homes.

Mines and Energy Minister Tom Alweendo, in remarks read on his behalf by deputy minister Kornelia Shilunga, said Namibia, which imported 73 percent of its annual electricity

requirements last year, was committed to reducing its dependency on imports and the use of fossil fuels.

"The Hardap Solar PV Plant attests to government's effort in levelling the playing field and crating investment and competitive opportunities for Independent Power Producers (IPPS), to contribute to Namibia's Power Supply," said Minister Alweendo.

NamPower Managing Director Kahenge Simson Haulofu said the development of the Hardap solar plant was a demonstration of the power utility's unwavering commitment to supporting

local partnerships, IPPs and embracing renewable energy solutions.

To date 18 Power Purchase Agreements (PPAs), translating in the supply of 176MW of renewable energy, have been signed and 14 of the projects consisting 117MW are already in operation.

Haulofu said the Hardap Solar PV Plant was the first renewable energy plant to be procured through a tendering process.

“The cost benefit of electricity from engaging in competitive bidding cannot be overemphasized, as evidenced by the base tariff of this plant of Nc80.7/kWh compared to the Nc137 of the Renewable Energy Feed-in Tariff (REFiT) PV projects. The energy produced by this plant is only beaten by our Ruacana power station supply, being the cheapest available,” said the NamPower MD.

Alten Africa Executive President Juan Laso said the Hardap PV plant, although not the biggest that his group had developed, was one of the world’s most productive PV plants, thanks to the technology used and its location which has extremely high irradiation levels.

Leefa Bayete Ndilula, Director of Mangrove, which together with Talyeni Investments and First Place Investment, are the BEE partners of Alten Developments Africa in the Hardap PV Plant, commended NamPower for insisting on 30 percent local participation in the project, with the aim not only to empower locals with shareholding but to ensure that skills and knowledge in PV plant development is transferred by involving local partners in management and technical decisions.

The PPA between NamPower and Hardap PV is for a 25-

year period. To date a total investment of N\$750 million has been made into the plant of which 73% was financed by Standard Bank South Africa and Proparco and the remaining 27% is the equity portion required from Alten Africa and the BEE partners. The three BEE companies were obliged to put down N\$56 million which was obtained through a loan from Alten Africa.

“For this project, Alten Hardap procured the services of an international EPC contractor, Sterling and Wilson, to design, procure and construct the PV plant. Substantial emphasis was placed on the use of local contractors and Sterling and Wilson subcontracted the bulk of the work to Hopsol Africa who procured all other local services. Roughly 450 local workers were contracted during the construction phase of the plant,” Ndilula said.



The gigantic Hardap solar plant outside Mariental. Photo by Conrad Roedern



Deputy Mines & Energy Minister Shilunga (third from right, front) with MME, NEI, NUST and AEE-INTEC officials and participants of the Train-the-Trainer course

Highly successful SOLTRAIN Project enters 4th Phase

The Southern Africa Solar Thermal Training and Demonstration Initiative (SOLTRAIN) Project has entered its fourth phase building on the successes of the previous three phases, which started in 2009.

SOLTRAIN is a regional project implemented in Botswana, Lesotho, Mozambique, Namibia, South Africa and Zimbabwe, and is managed by AEE - Institute for Sustainable Technologies (AEE INTEC), an Austrian research institute active in solar thermal energy research. The project is financed by the Austrian Development Agency (ADA) and the Opec Fund for International Development (OFID).

To date, the three phases of SOLTRAIN have resulted in about 3,000 people being trained in 100 training courses conducted in the six partner countries. In addition, 326 solar thermal demonstration systems, ranging from 2 to 600 m² in collector area per system, have been installed in these countries.

The fourth phase, which will run from July 1, 2019 to 31 December, 2022, will have the

SADC Centre for Renewable Energy and Efficiency (SACREEE) as a new partner to introduce solar thermal in other member states which are not currently part of the SOLTRAIN project. It will target support towards the Solar Thermal Roadmap Implementation, conduct policy workshops, solar thermal campaigns and technical tours for decision makers.

The first Train-the-Trainer course under SOLTRAIN IV took place on 11-13 July at the Namibia University of Science and Technology (NUST), organised by the Namibia Energy Institute (NEI). It was conducted in collaboration with the African Development Bank (AfDB) to see how solar water heaters can also be financed on commercial basis.

Deputy Minister of Mines and Energy, Hon. Kornelia Shilunga, in her remarks at the opening of the course, said the Ministry was grateful that Phase 4 of the SOLTRAIN project includes support towards effecting the Solar Thermal Roadmap and Implementation Plan. She also expressed her gratitude to the

AfDB for collaborating with the SOLTRAIN project and educating the course participants on the measurement and verification solar thermal systems.

"The Solar Thermal Roadmap and Implementation Plan for Namibia has just been signed (by the Minister of Mines and Energy) and I want to inform you that the work has just started to ensure that every one in Namibia is heating their hot water with a solar water heater. The Ministry of Mines and Energy will remain committed to support you all in this implementation plan," said Deputy Minister Shilunga.

The Train-the-Trainer course was attended by more than 40 participants from solar thermal companies, institutions of high learning, Regional Electricity Distributors (REDs), municipalities, local authorities, the ECB and Vocational Training Centres (VTCs).

"The curriculum for the VTCs was also approved and I am informed that the SOLTRAIN IV project will strengthen the capacity of the trainers to ensure quality training programmes for effective mass rollout. The



Deputy Minister Shilunga (5th from right) with senior staff members from MME and NEI during the technical tour to Solar Water Heater systems installed at houses constructed by the NHE, in the Otjomuise area of Windhoek.

Ministry will remain committed to support all entrepreneurs who can manufacture locally produced products for this implementation plan. I hope our utilities, such as the REDs and City of Windhoek are also here and will support the roll out," said Hon. Shilunga.

On 21 June, 2019, the NEI conducted a technical tour, under SOLTRAIN, to Solar Water Heating systems installed at houses constructed by the National Housing Enterprise (NHE), in the Otjomuise residential area of Windhoek. The tour was attended by Deputy Minister Shilunga and senior staff from MME and NEI.

"I visited some of the solar water demonstration systems implemented by the SOLTRAIN project at the NHE houses and I was impressed. I am also informed that there are still some challenges especially with the public institutions systems such as health facilities, and that SOLTRAIN has planned some special courses to bring solutions to these challenges," said Hon. Shilunga.

The Deputy Minister thanked the beneficiaries of the solar systems for allowing the systems to be installed at their premises for research purposes. She was impressed by the feedback she got from the beneficiaries and encouraged them to continue giving updates in order to help decision makers to implement the right policies.

Dr Samuel John, in remarks made on behalf of Professor

Pramanathan Govender, the Deputy Vice-Chancellor: Research and Innovation at NUST, said the NUST team will remain committed to deliver as outlined in the SOLTRAIN project document.

"Namibia will continue to strengthen close collaboration with the AEE – INTEC, and the Austrian Development Agency, and other project partners, through concrete projects and programmes. NUST believes that SOLTRAIN is very relevant in supporting our energy goals and in the development of the energy sector in the country," said Dr John, addressing the Train-the-Trainer course participants.

Dr Werner Weiss, the SOLTRAIN Project Coordinator, said in the fourth phase of the project focus will be placed on the following five key areas:

- Supporting political stakeholders in the implementation of the Solar Thermal Roadmaps and Implementation Plans that were published after a broad stakeholder process in all partner countries.
- Increasing technical skills and skills transfer by carrying out a number of training courses targeted at different competency levels and stakeholder groups in the value chain of solar thermal technology.
- Raising of awareness on the potential of solar thermal technology by using targeted campaigns. Through such awareness raising, relevant

stakeholders and the public will be made aware of the wide range of applications for solar thermal systems.

- Strengthening institutional structures, including expert advice, training and technical support to the local industry, politicians and policy makers. This will be done through supporting the solar thermal technology platforms that were established in the previous phases.
- Demonstrating that solar thermal technology works in practice. The fourth phase will set up about 100 additional solar thermal demonstration systems in order to apply the knowledge taught in the training programs to installers, students and politicians. Both small and large scale plants will be set up in social institutions and small and medium enterprises, and will contribute to water heating, cooling and the generation of process heat.

With the solar thermal demonstration systems at least 2,500 MWh electricity will be saved annually and 430 tons of CO₂ emission will be avoided.

By improving access to sustainable energies, specifically solar thermal, the fourth phase of SOLTRAIN will continue to contribute to the realisation of the UN's Sustainable Development Goals, specifically, SDG 7 directly, and SDG 1, SDG12 and SDG 13 indirectly.

Sustainable Power for Namibia



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and
Operating Solar & Wind Parks



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Namibia aims to cut power imports to 20% in 3 years

Namibia, which last year imported a record-breaking 73 percent of its annual electricity requirements, aims boost local energy generation to meet at least 80 percent of local power demand by 2022.

The high power imports were necessitated by the crippling drought which affected generation at the main Ruacana Hydro Power Station.

Figures released by the Ministry of Mines and Energy indicate that between 1990 and 2009 Namibia's average annual electricity imports were around 48 percent, and between 2010 and 2017 the average import percentage was 38 percent. This shows that the country needs to step up its local electricity generation to cut on the power imports.

Mines and Energy Minister Tom Alweendo said during the Mining Conference in May that government was concerned about the high electricity imports and was working hard to address the unstable situation.

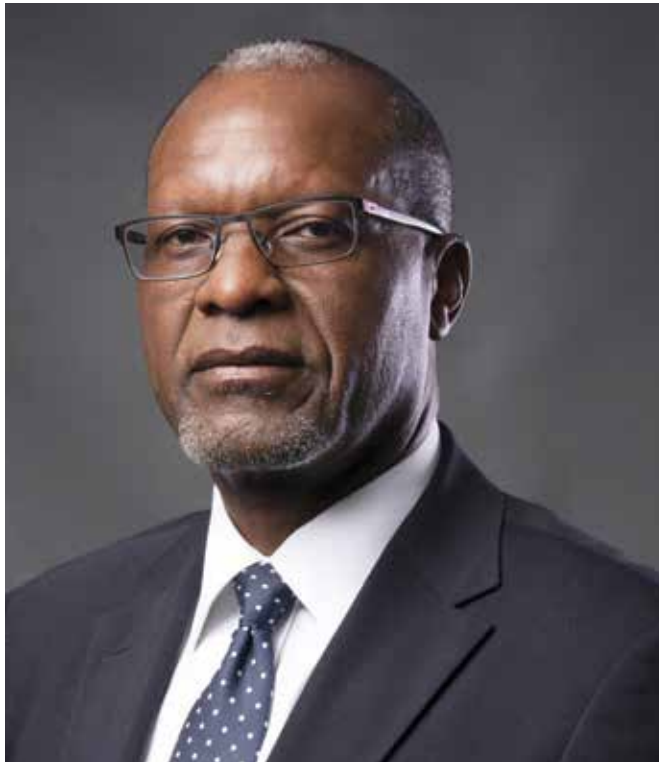
"Over the years, we were able to attract independent power producers (IPPs) to invest in electricity generation, and we will continue to do so," he said.

As a step to attract more IPPs, the government recently introduced a significant change in how electricity generated by the private power producers is sold. The Modified Single Buyer Model (MSB) and the IPP policy are envisioned to increase domestic supply and curtail imports.

"Currently, all IPPs are required to negotiate and sign power-purchase agreements with NamPower because it is only NamPower that is allowed to purchase electricity from IPPs. As from September, this will change, where IPPs will be allowed to sell their electricity to large buyers," said Minister Alweendo.

The MSB market model will allow eligible IPPs to generate and sell electricity directly to customers such as regional electricity distributors (REDs), large industrial and mining companies, municipalities and local authorities.

Namibia also plans to use renewable energy as a long term plan in dealing the country's



Mines and Energy Minister Tom Alweendo

power deficit.

Cabinet approved several updated and new policy documents to meet the short and medium term energy demands as well as other related challenges in the energy sector.

Speaking at the inauguration of the 37MW Hardap Solar Power Plant outside Mariental, NamPower Managing Director, Kahenge Simson Haulofu, said the more the economy grows the more energy Namibia will need to support socio-economic development.

"Local generation is important as it will help reduce reliance on imports and at the same time help Namibia advance towards security of supply. As part of NamPower's plans to address the situation, a number of generation projects are planned in line with the National Integrated Resource Plan (NIRP)," said the NamPower MD.

Deputy Energy Minister Kornelia Shilunga told Parliament recently that government has budgeted about N\$81 million to improve energy supply in Namibia during the 2019/20 financial year.



Ombepo Energy is Namibia's first wind farm and it was financed by DBN

DBN steps up power finance for renewable energy

With more than N\$470 million disbursed to five solar projects and one wind generation project, Development Bank of Namibia (DBN) Senior Portfolio Manager Hellen Amupolo says that the Bank has developed an excellent body of experience in the field of renewables. On this basis, it is ideally placed to advise and finance entrants into the field.

DBN pioneered finance for Namibia's first privately owned solar generator, Omburu Sun Energy, outside Omaruru, as well as the first Namibian wind farm, Ombepo Energy, at the southern coastal town of Lüderitz. Based on financing models developed for these forms of renewables, Amupolo says the Bank will be able to efficiently advise on proposals for finance and appraise applications.

Under the Modified Single Buyer



Hellen Amupolo, DBN's Senior Portfolio Manager

Market Framework (MSB), which allows larger scale consumers, such as local authorities and large enterprises to transact directly with Independent Power Producers (IPPs), Amupolo says DBN expects an increase in demand for its finance.

She adds that the proliferation of renewable power in the market will lead to a snowball effect as more entities are exposed to success stories. Amupolo expects the model to ripple to enterprises who will be able to serve their own needs and on-sell excess electricity to other enterprises, as well as local authorities.

In terms of the DBN's financing model, products are available for the public sector, legally constituted public private partnerships (PPPs) operating on a build and operate model, and private sector entities. Private

sector entities may be diverse, ranging from mines, factories and light industry, to lodges and commercial facilities.

Amupolo says DBN's renewable energy finance has been developed on the basis of offtake agreements, but in the case of the private sector in particular, it can additionally benefit from reduced operating costs associated with lower levels of energy purchased from the conventional grid, as well as on-selling the excess power generated.

The term of the finance is dependent on the entity's ability to recoup costs. Although the DBN provides optimum terms for the finance, it recognises the need of applicants to allow for returns to the infrastructure. Typically, the Bank offers a 10-

year facility but may in certain instances extend this to 20 years depending on the need.

To ensure optimum returns to the project and its viability, Amupolo counsels entrants to the IPP market to seek the best possible technical expertise.

She notes that although inclusion of an international partner with technical expertise can provide security to shareholders, the development of the project can be outsourced to regional or international technical contractors. If an internationally-based technical contractor registers a local company with local shareholders on a joint venture basis, the DBN will be able to provide contract-based finance.

Regarding the extent of the DBN's involvement in a power

project, Amupolo says that the Bank is typically associated with the generation project, although project developers should also involve the Bank in transmission and distribution.

In the case of local authorities and state owned enterprises (SoEs), the DBN can finance reticulation, distribution to businesses and households.

"The market is new, but it is growing, spurred by liberalisation," says Amupolo. "The need for diversified sources of electricity is evident and the regulatory environment is favourable".

The DBN Senior Portfolio Manager invites interested renewable energy project developers to contact her at DBN for further discussion on potential financing.



Be a part of the 50MW solar PV

TeraSun Energy Power Park

The Namibian Electricity Regulations are now allowing the bilateral trading of electricity over the national grid from private Eligible Generators to Contestable Customers throughout the country.

Your power bill has cash for you.

Electricity bills of large power users trap cash that can now be released back to participating customers of the Modified Single Buyer model programme and of the TeraSun Energy power park.

- Cash savings assured
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Contact us at:
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Energy expert Leefa Ndilula wants real empowerment of Namibians

Leeefa Bayete Ndilula is not new to the Renewable Energy industry having started her journey in this field 15 years ago with her involvement in the GEF-funded Barrier Removal to Namibian Renewable Energy Programme (NAMREP).

Through her company, Mangrove (Pty) Limited, Ndilula has been providing business development consulting services mainly in the energy sector, specialising in providing strategic sector advice to clients and partners with an emphasis on supporting the full lifecycle of the projects.

Recently, through her company Mangrove, Ndilula became involved as a director and shareholder in the largest solar park in Namibia to date, the 37MW, N\$750 million Hardap Solar PV Plant just outside Mariental.

Ndilula's company is one of the three Namibian empowerment companies in the project, with a shareholding of 12%. The other local companies are First Place Investments which is co-owned by Dr Helena Ndume and Thirzah Paulus, also with a 12% shareholding. Talyeni Investments (Pty) Limited, owned by Nambata Angula, Tangeni Erkana, Winnie Mukupuki, Hilya Herman and Einny Akwaake, owns a 6% stake in the Hardap solar park. The rest of the shareholders are Spanish company Alten Africa, which owns the majority 51% and NamPower with a 19% stake.

As a director and shareholder



Mangrove Director Leefa Ndilula

of Alten Solar Power Hardap (Pty) Ltd, Ndilula has been involved in the project from the onset and she's happy that NamPower took the lead in declaring that 30 percent of the shareholding in the mega project be placed in the hands of indigenous Namibians, with the ultimate aim of transferring skills and knowhow to locals.

But, Ndilula is against the token empowerment of Namibians in these mega projects. She wants to see real empowerment where Namibians are involved in management and all aspects of running such projects from inception.

"If Government and all the other entities involved in empowerment are serious then we need to put measures in place that compel

the foreign companies to make use of local services, especially services that are locally available. Local partners must be the ones leading the way and advising the foreign partners because they understand the country's business environment better," Ndilula said in an interview with **Etango** Editor Tabby Moyo.

"Within a set time frame, say 10-year period, we need to have locals running these companies. And to achieve that we must ensure that knowledge and skills are transferred by involving the local partners both and in management and at governance level, where most operational and technical decisions are made. You find that for some companies even invoicing is done outside the country when this can be done in Namibia. This cannot be acceptable!

"We are currently in discussions with all our partners for local partners in Alten Hardap to be involved in the management of the company. Such a move is what empowerment deals should encourage. This will allow Namibians to learn management and financial aspects of renewable energy companies," Ndilula said.

"Our Government needs to put in place clear 'Empowerment Performance Indicators' detailing what 30% local shareholding entails. Is there skills transfer by the foreign companies?," Ndilula questioned.

The current trend in Namibia is that most foreign companies that win major contracts form management companies

in which they are the sole shareholders. The management company then charges a fee to the Special Purpose Vehicle, which is the company that develops and operate the plant and in which the locals have shareholding, resulting in them getting double payment – in dividends and management fees, and employing no locals hence no skills transfer.

“What we would like to see happening in our case is to have all the shareholders in the SPV as shareholders in the management company. Ideally the management company must be in the hands of Namibians. But it’s an ongoing discussion,” Ndilula said.

She also took exception to the perception that Namibian entities that get involved in such big projects as previously disadvantaged Namibians (PDNs) were wheel burrowed

into the projects making them instant millionaires, which she said was far from the truth. The truth is that as shareholders are actually required to put down equity in such projects.

“In our case the plant was financed via project financing model where the principal debt of 80% was financed by a commercial bank and a DFI and the remaining 20% had to be financed by the shareholders.

The total project cost was N\$750 million and all the shareholders (excluding NamPower) had to put down 20% of the N\$750 million. This translated to N\$56 million required from the local partners. Of course if we say we are from previously disadvantage background we do not have that kind of money so we approached various financial institutions which proved to be a challenge for us as they

demand collateral,” she said.

Ndilula also spoke about the need to create a local pool of expertise in various business fields so that in the near future Namibians would not need to rely heavily on foreign players to bid for large projects.

“Awarding authorities for contracts should look at the expertise of the people in local companies vying for the tender in the respective industries. What I mean by this is that if Mangrove, Talyeni or First Place wants to bid for a similar project versus company A which has no experience in the energy sector, due consideration should be accorded to the company that has the expertise in order to enhance those skills. By doing this, we ensure the sustainability of skills gained so that in 10 years from now local companies are fully capacitated to stand alone,” Ndilula concluded.



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PHILOSOPHY

Mangrove (Pty) Ltd is a company that forges strategic partnerships and alliances with other companies, which share our vision and support our ongoing strategy to expand and enhance our capacity.

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Solar-powered Aquaponics: How Namibia can improve Food Security with sustainable RE solutions

BY PAULUS MULUNGA

Namibia is a dry country that is characterised by a subtropical desert climate. It is one of the driest countries in Africa, south of the Sahara Desert, with limited surface water sources that are reliant on extremely inconsistent rainfall patterns.

Namibia is currently experiencing a severe persistent drought, the second in three years, with the head of state President Hage Geingob having already declared a state of emergency due to its severity.

These challenges severely threaten the country's already precarious ability to grow its own food for its people. This has resulted in over-reliance of imported food from neighbouring countries, in particular South Africa. This scenario is not sustainable as the neighbours also need to prioritise on meeting



Paulus Mulunga

their own domestic demand before they consider exporting their food.

On a global scale, population growth combined with increased food consumption and a greater demand for animal protein means that by 2050, there will be an estimated 60% increase in the global food demand.

Aquaponics is defined as a system of aquaculture in which

the waste produced by farmed fish or other aquatic creatures supplies the nutrients for plants grown hydroponically, which in turn purify the water. This way of farming is emerging as an ideal technology to bring fresh, nutrient rich food to urban environments and can be a solution to the food security challenge facing Namibia.

Innovative aquaponics systems, mixing hydroponics and agriculture, presents a new, organic approach to produce crops while saving up to 90% of water.

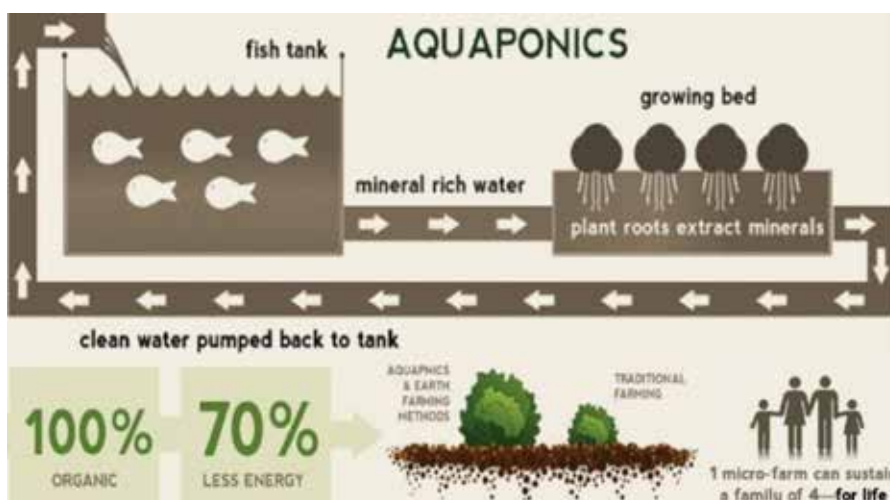
Aquaponics systems are a combination of fish and crops farming. These systems are designed to raise large quantities of fish in relatively small volumes of water by treating the water to remove toxic waste products and then re-using it.

Crops grow rapidly with dissolved nutrients that are excreted directly by fish. It reduces dependence on resources such as land, water and fertilisers.

The diagram below/above presents a flow chart of an aquaponics system

Renewable Energy Technologies (RETs) can be integrated to power the pumps in the Aquaponics system or provide energy to the operating environment for areas that are not connected to the National Grid.

The diagram below shows how these various technologies can be integrated at a remote school where self-sufficiency



The diagram above presents a flow chart of an aquaponics system



Guests touring the Dagbreek School Aquaponics project. In the front row: Headmaster of the school, Paul du Plessis, Christine //Hoebes, Deputy Minister of Presidential Affairs, Former Prime Minister Nahas Angula, and former Finnish Ambassador Anne Saloranta. In the back row: Secretary to the National Assembly, Jake Jacobs and Chairman of NFF, Johan de Waal.

can be achieved and ensure people have food and energy so as to facilitate development.

In 2016, an Aquaponics project was inaugurated at Dagbreek School for the Intellectually Impaired learners in Windhoek.

Light Systems Namibia was contracted to provide an RE solution to power the pumps in the system. The school is able to generate its own fresh food thereby safeguarding the health of its learners.

Guests touring the Dagbreek School Aquaponics project. In the front row: Headmaster of the school, Paul du Plessis, Christine //Hoebes, Deputy Minister of Presidential Affairs,

Former Prime Minister Nahas Angula, and former Finnish Ambassador Anne Saloranta. In the back row: Secretary to the National Assembly, Jake Jacobs and Chairman of NFF, Johan de Waal.

Aquaponics can provide a collaborative environment where various government agencies and ministries can work together to tackle the affects of Climate Change in Namibia. The Ministries of Education, Fisheries and Marine Resources, Agriculture and Mines and Energy can set up a task team to study the possibilities that Aquaponics farming can bring to Namibia.

Interesting recommendations from a technical workshop on Advancing Aquaponics in Indonesia can be the starting point for the task force could including (i) education, training and communication amongst various players; (ii) research and development in the field of Aquaponics; (iii) socio-economic and feasibility studies in Namibia; (iv) regional and international cooperation in the SADC Region; and (v) capacity development of an enabling environment at the national level.

***Paulus Mulunga is the Managing Member of Light Systems Namibia**

Rural communities embrace Red Cross Renewable Energy initiative

Renewable energy projects implemented by the Namibia Red Cross Society (NRCS) in March 2017, in the Zambezi and Kavango regions, have changed the lives of most of the beneficiaries.

The NRCS, in collaboration with the Spanish Red Cross, implemented the European Union-funded project to promote renewable energy for the purposes of climate change mitigation in Namibia.

The project aims to promote the use of renewable energy and energy efficient technologies in 10 selected rural communities of the Zambezi, Kavango East and Kavango West regions. The chosen beneficiaries were Mayana in Kavango East, Sikondo and Sharukwe in Kavango West

and Mpacha, Lichaba, Walumba, Lisikili, Saili, Lyeebangwe and Muyako in the Zambezi Region.

The project included the installation of solar water pumping systems in the agricultural production, to replace diesel-powered boreholes. The systems have now been officially handed over to the beneficiary communities.

NRCS secretary general Bernadette Bock said over 300 households benefited from the project. Community gardens were supplied with floating solar-powered pumping systems.

In addition to the renewable energy technologies, a new wood efficient stove model was introduced to the beneficiaries in an effort to reduce deforestation.

The improved Elephant Cook stove is an energy saving

innovation stove originally designed in Uganda. It is designed to achieve maximum transfer of heat and help the users to have firewood saving of 50-60% when compared to the traditional open fire stove. This implies that the same amount of firewood used by a family in one day with a traditional open fire stove can be used for 4-5 days with the rocket stove. Yet another benefit of these stoves is the affordability as it is built using local materials including clay and anthill soil for the main structure. Insulating materials include grass and sawdust which are also found locally rendering it almost cost free to build.

About 200 energy-saving Elephant cooking stoves were constructed in a bid to reduce the cutting down of trees for firewood.

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GIPF acquires majority stake in 6MW Momentous Solar

The Government Institutions Pension Fund (GIPF), through one of its fund managers Mergence Unlisted Investment Managers, has acquired the majority stake in the N\$120 million, 6MW Momentous Solar One plant, located near the southern town of Keetmanshoop.

Mergence Portfolio Manager, Hileni Nghinaunye, says the acquisition of the majority stake in the project by GIPF signals a positive trend to localisation of the industry, "a solar plant owned by Namibians for Namibians". The shares purchased from Canadian Solar will be held in the Mergence Namibia Infrastructure Fund Trust on behalf of the GIPF.

With GIPF's investment in the solar plant, local ownership has risen from 30% to 86%. The increase in the shareholding was achieved through the refinancing of the 30% stake

initially held by local entrepreneurs, MTJ Investments.

"The restructuring of MTJ's funding by Mergence makes provision for earlier returns to MTJ Investments allowing MTJ to participate more fully in the project. Post-acquisition, the local ownership of 30% will grow to a minimum of 86% from the investment of the Mergence Namibia Infrastructure Fund. As a sign of further localisation, accounting and reporting previously done offshore will be transferred to a local service provider," Nghinaunye says.

Momentous Solar One, located near NamPower's Kokerboom substation outside Keetmanshoop, is the first project that Canadian Solar developed, energised and sold in Africa. It is the third project in Namibia in which Mergence will have a stake, the first two being the Ejuva 1 and 2 plants in Gobabis which was

officially opened in August 2018.

The solar plant, which has been in commercial operation since November 2017, will provide solar power generation for a period of 25 years under the Renewable Energy Feed-In Tariff (REFIT) programme, at the rate of N\$1.37 per kWh. It is powered by 18,480 Canadian Solar CS6U-325P modules and generates approximately 14,800 MWh of clean energy annually. Canadian Solar will provide operations and maintenance services to the plant for the immediate future. There will be further localisation of on-site jobs as seller responsibility for the plant.

According to NamPower Managing Director Simson Kahenge Haulofu, the 18 Independent Power Producers (IPPs) currently in Namibia are expected to invest a combined N\$3, 5 billion towards the local electricity supply sector.



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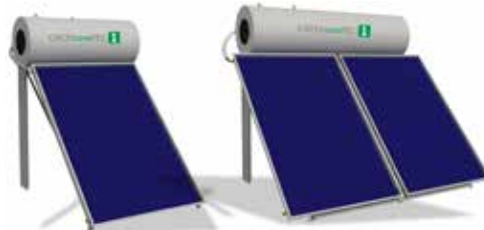
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Professor Frank Kavishe (right) with Founding Father Dr Sam Nujoma and SWAPO Secretary General Sophia Shaningwa at the inauguration of UNAM's first ever solar powered desalination plant in Henties Bay

Solar can power Namibia desalination plants

Namibia, which is currently experiencing a debilitating drought, needs at least three solar powered desalination plants to provide water to meet the entire country's needs, as well as export excess water to neighbouring countries in need, a University of Namibia (UNAM) professor says.

Professor Frank Kavishe, UNAM's acting pro-vice chancellor for research, innovation and development, says Namibia should consider sourcing funds to construct desalination plants in order to meet the country's rising demand for the commodity.

Kavishe made the call while briefing the Founding Father Dr Sam Nujoma and SWAPO Secretary General Sophia Shaningwa during a tour of a new containerised seawater desalination pilot project at the UNAM Sam Nujoma Campus, at Henties Bay.

The pilot plant, which has capacity to produce 3 000 litres of potable water per hour and up to 30 000 litres on a sunny day, was installed by Solar Water Solutions, a company based in Espoo, Finland. It consists of a reverse osmosis system installed in a container and powered by a solar mini-grid.

A single large-scale desalination plant costs in the region of N\$3 billion to construct. Namibia's only desalination plant is privately owned by Orano Resources, previously Areva Namibia. The Orano plant can produce up to 20 million cubic metres of water annually.

"The establishment of desalination plants will allow Namibia to adapt to climate change by providing a sustainable and reliable water source in the midst of recurrent drought, while also mitigating against climate change by increasing dependency on clean renewable energy

with its associated zero carbon emissions,” Kavishe said.

The professor proposed that one desalination plant be built between Swakopmund and Henties Bay to supply water to the central areas of Namibia, including Windhoek, another one on the Kunene River and a third one built at Lüderitz.

“We can have solar-powered desalination plants at the mouth of the Kunene River to supply the northern regions, and we can have another at Lüderitz for the south. When it comes to renewable energy, we have solar, wind and wave energy. We can combine all this, and achieve what we want,” the respected professor said.

Coupled with producing adequate potable water for the country, Kavishe said the desalination plants could help convert the arid Namibian desert “into a green scheme”, able to produce the much-needed food.

Dr Nujoma echoed Kavishe’s views saying solar-powered desalination plants were the solution to Namibia’s water crisis.

He said the Henties Bay plant could be developed into a sustainable source of water for Namibia’s central coast, as well as central Namibia and the capital, and urged the government to fund its expansion to minimise reliance on underground water aquifers.

“We must invest in infrastructure



UNAM's desalination system has zero energy costs

now because water supply is diminishing due to climate change, which is being felt in the country,” said the former head of state.

A solar-powered desalination unit produces potable water from saline water through direct or indirect methods of desalination powered by sunlight. Solar energy is the most promising renewable energy source due to its ability to drive the more popular thermal desalination systems directly through solar collectors and to drive physical and chemical desalination systems indirectly through photovoltaic cells.

Direct solar desalination produces distillate directly in the solar collector. An example would be a solar still which traps the sun’s energy to obtain freshwater through the

process of evaporation and condensation. Indirect solar desalination incorporates solar energy collection systems with conventional desalination systems such as multi-stage flash distillation, multiple effect evaporation, freeze separation or reverse osmosis to produce freshwater.

The basic principles of solar water distillation are simple, yet effective, as distillation replicates the way nature makes rain. The sun’s energy heats water to the point of evaporation. As the water evaporates, water vapor rises, condensing on the glass surface for collection. This process removes impurities, such as salts and heavy metals, and eliminates microbiological organisms. The end result is water cleaner than the purest rainwater.



The containerised UNAM desalination plant

Renewable energy makes electric vehicles a reality for Namibia

With fuel prices continuing to escalate, Namibian motorists are now considering turning to electric vehicles and vehicles running on hydrogen which are on the rise globally.

Namibia has the opportunity to be the first major mover on the African continent to support a major shift to e-vehicles (EVs), including e-scooter and e-bikes that are well suited for relatively short daily trips in urban areas. They can be re-charged during working hours, lunch breaks or at home during night. The country is endowed with renewable energy sources to recharge the batteries.

Conrad Roedern, one of the strong proponents of EVs in Namibia, says he knows from his 22-year experience of driving EVs that they are the perfect solution for driving in and around town.

"There are more electrical socket-outlets than petrol stations in the country. As an advocate for an overall energy transition to renewable energy in Namibia, electric mobility yields a much higher saving potential in terms of fuel savings and CO2 reduction compared with making the electricity sector renewable. It is important to begin with using EVs where they currently constitute the highest user value. This is for all transportation needs in and around town, for daily commuting between – for example – Okahandja and Windhoek or Swakopmund and Walvis Bay," Roedern tells Etango.

He says one of the biggest



Conrad Roedern in discussion with Minister Tom Alweendo after he gave him a test ride in the BMW electric vehicle during the inauguration of the Ohorongo PV plant on 7 September 2018. Photo by Harald Schütt

advantages of Namibia adopting the use of EVs is that they can be powered with "fuel" from within the country - electricity generated from renewable energy sources, preferably PV Solar and Wind-generated.

Roedern is now leading a campaign to step up the use of EVs in Namibia.

"Several people in Namibia are building their own EVs by converting conventional cars. One of them is Axel Conrad who converted a Landcruiser pickup into an EV, ideally suited for silent game-driving at lodges. We might think of creating an EV chapter within the Renewable Energy Industry Association of Namibia (REIAoN). Another initiative I am part of together with two pioneers is the import of used Japanese EVs, like the Nissan Leaf, in order to make

them much more affordable," he says.

Brand new EVs start at a cost of around N\$500,000, while a used Nissan Leaf EV imported directly from Japan to Namibia and in excellent condition would cost between N\$120,000 and N\$160 000. Fully battery-electric EVs are not yet marketed by the automotive sector of Namibia. A BMW i3 can be brought in by the local dealership on special request. One can bring in EVs from South Africa or get a used Japan import.

"The few EVs on Namibia's roads encountered no major obstacles with registration and licensing. Bringing an EV purchased in South Africa into Namibia constitutes just the same effort than for any other car. The biggest obstacle is that potential buyers are

often threatened to receive no technical support from the local auto companies when it comes to repairs and maintenance. The selling of oil-based fuels and ICE-cars (internal combustion engine) is still a major business for the government – for example through NAMCOR imports and fuel taxes – as well as for our automotive sector. On the other hand, we are faster and faster driving “into a greenhouse” because climate change is real. I am confident that in medium terms the EV will be acknowledged and adopted as the better solution for most transport purposes; this in terms of better technical, financial and environmental viability,” says Roedern.

A typical sedan-type EV would use 15 kWh per 100 kilometres. A user who owns a PV net-metering or off-grid system can put his or her own electricity into their EV. Just 200 MW of installed PV alone can provide electricity to run 320,000 sedan-type EVs.

“This is already plus-minus one-third of our total sedan-type vehicle population. Think of the amount of money which could be saved from leaving the country. Its about N\$3.6 billion in petrol or diesel at current market price,” says Roedern.

Running costs of an EV are about 30 percent of a conventional ICE vehicle since EVs are so much more energy efficient and require minimal maintenance service. No oil change, no spark plugs and even almost no wear and tear on the brakes since braking is mostly done via recuperation of energy. Only the purchase price is higher so that one arrives at typically 60% when the vehicle depreciation is included. CO2 emissions are only 30 percent lower if one takes the Namibian generation mix of electricity into

Cost and CO ₂ Comparison: Battery Electric Car vs. ICE-Car			
Input Values: (NB: green values can be changed as input)			
Assumptions:	5	years comparison period	
EV CO ₂	0.40	kg CO ₂ /kWh	Namibian Mix
ICE car CO ₂	2.33	kg/liter	for petrol fuel
EV (kWh/100km)	14	consumption (mainly town-use)	
ICE-car (litr./100km)	8	consumption (mainly town-use)	
EV maint./year	4000	N\$	service, repairs, insure etc
ICE maint./year	10000	N\$	service, repairs, insure etc
N\$ per kWh	2	N\$	electricity cost/kWh
N\$/l petrol	14	N\$	fuel cost/liter
EV	130000	Price	second hand Nissan Leaf
ICE-car	90000	Price	second hand VW Polo
EV rest value	40	%	after comparison period
ICE-car rest value	40	%	after comparison period
EV and ICE-car	50	km driving per day	
Output Totals:			
total km driven:	91250	km during comparison period	
EV kWh cost:	25550	N\$ EV	electricity cost
ICE-car fuel cost:	102200	N\$ ICE	fuel cost
Driving cost EV:	45550	N\$ EV	electricity + maintenance
Driving cost ICE:	152200	N\$ ICE	fuel + maintenance
Project cost EV:	123550	N\$ EV	incl. value loss of car
Project cost ICE:	206200	N\$ ICE	incl. value loss of car
Percentage cost:	59.9	% of ICE-car cost	
Total CO ₂ EV:	5.11	tons of CO ₂	
Total CO ₂ ICE:	17.01	tons of CO ₂	
Percentage CO ₂ :	30.0	% of ICE-Car CO ₂ -Emissions	



A Nissan Leaf EV which can be imported from Japan

account – and this will probably become even greener. Home-generated solar electricity is even much “greener” and much cheaper.

For more info on EVs you can contact Conrad Roedern on 081-2745334 or email roedern@africaonline.com.na

Solar tracking devices to aid giraffe conservation

In April 2018, the Giraffe Conservation Foundation (GCF) undertook the largest ever GPS satellite tagging of giraffe in order to better understand their spatial movements and habitat use in the wild.

Twenty-five solar powered GPS satellite units were fitted to giraffe in Kidepo Valley and Murchison Falls National Parks in northern Uganda. Now the GCF is aiming to raise N\$14 million to bring the solar-powered satellite tracking units to Namibia.

“To save giraffe in Africa, we need to gain a better understanding of how many giraffes there are, where they live, and how they move and use their habitat, in particular in areas where they share it with people,” the foundation said. With only about 111 000 giraffe remaining in the wild, the animals were listed as “vulnerable to extinction” on the International



A giraffe fitted with a twiga tracker

Union for the Conservation of Nature list of threatened species in 2016, the foundation said, adding that giraffe numbers in Africa have plummeted by 30% over the last 30 years alone, and likely more than 90% in the last century.

The foundation said the ‘Twiga Tracker’ project aimed to track a minimum of 250 giraffe throughout their range with GPS satellite solar units developed by its partner

Savannah Tracking in Kenya. ‘Twiga’ is kiSwahili for giraffe.

At a unit cost of US\$2 500 (about N\$36 000) and deployment costs in remote areas of Africa estimated at US\$5 000 (about N\$72 000), though, the tracking project is an ambitious goal, and the foundation was aiming to raise US\$1 million (some N\$14 million) for it.

The foundation said it had so far deployed more than 75 new tracking units in Chad, Kenya, Namibia, Niger, Uganda and Zimbabwe.

The foundation has also launched an online and collaborative photo-identification database of giraffe sightings and individually catalogued giraffe. \Through GiraffeSpotter.org, people can assist with giraffe conservation research by submitting photos and sighting data of giraffe to help with an Africa-wide population estimation of the iconic animals.

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Al Wasl Plaza will be the heart of the Expo 2020

Namibia to seek solar energy investors 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, which will take place in Dubai, United Arab Emirates, from 20 October 2020 to 10 April 2021, under the theme: “Connecting Minds, Creating the Future”, with the aim of luring big investors in the sector.

Namibia is crafting a strategic advertising and public relations campaign leading up to one of the world’s major expositions, the World Expo 2020,

Minister of Industrialisation, Trade and SME Development, Hon. Tjekero Tweya, says Namibia’s renewable energy sector, as well as mining and tourism sectors, provide an exceptional value proposition for attracting investment and creating awareness about what Namibia is able to offer and deliver.

Namibia recognises that renewable energy represents a valuable economic resource for Namibia. Renewable energy

is also seen as a key catalyst to achieving the goals set out in the Harambee Prosperity Plan which aims to, among other things, increase local electricity generating capacity from 400 MW to 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 Expo 2020.

“We are calling upon the private and public sector, small-and-medium enterprises, especially those businesses and entities in renewable energy, mining and tourism sectors to come forward and pledge your commitment towards Namibia’s participation in the World Expo 2020, Minister Tweya appealed.

In the meantime, Namibia has also been aggressively pushing for development in solar energy and is hoping to draw investors from the

United Arab Emirates.

Minister of Mines and Energy, Tom Alweendo who was in Abu Dhabi for the sustainability week, said government is in a better position to negotiate with independent power producers for renewable energy.

The Minister said as part of Namibia’s NDP5 and HPP renewable energy targets, Namibia was looking to acquire the best quality RE technology in order to meet the targets.

The Namibia Chamber of Commerce and Industry (NCCI), whose members also attended the ABU Dhabi Sustainability Week, hosted annually in Abu Dhabi, had an opportunity to engage with various firms involved in renewable energy.

“From a business perspective, this platform created an excellent opportunity to exchange and to discuss with business people who have expressed an interest to invest in Namibia’s energy sector,” said Martin K Shipanga, the Chairman of the NCCI Windhoek Branch.



Hon. Alweendo (middle), UNIDO Representative Khaled El Mekwad (middle to right); and Dr Claudia Fischer, Charge d'Affaires a.i. of EU Delegation, pose for a group photo with conference delegates

Energy Efficiency key to Namibia, SADC industrial competitiveness

Namibia and fellow Southern African nations have taken first steps towards boosting their industrial competitiveness through the promotion of Energy Efficiency.

Namibia hosted SADC's first Industrial Energy Efficiency Conference in May, which brought together over 150 regional and international experts to take stock of the status of industrial energy efficiency, share best practices, identify policy recommendations and outline investment prospects.

Mines and Energy Minister Tom Alweendo told the conference that Energy Efficiency was the most cost-effective way to support industry in overcoming barriers in improving their competitiveness and addressing the effects of climate change.

"That is why we say Energy Efficiency is the First Fuel," the Minister said.

With recurring and often

prolonged droughts, Alweendo said the power supply status in the region was in a precarious situation and this called for accelerated efforts in adopting and implementing energy efficiency, as well as other climate change mitigation and adaptation measures across all the facets of our economic sectors.

"The SADC Industrialisation Strategy and Roadmap (2015-2063) on the one hand, identifies energy as a major barrier, and on the other as a key enabler for industrial competitiveness of the region.

It is our understanding that energy costs are significant as they represent about 20-35% of the production costs of industries in a number of countries in the SADC region. This is the trend in all member countries where the manufacturing industry is a significant consumer of energy. It is regrettable to note that very few improvements in

energy conservation are taking place largely due to a general lack of awareness and guiding policy frameworks for energy efficiency," the Minister told the conference.

The European Union has rendered support to the recently-established SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) in developing the SADC Industrial Energy Efficiency Programme (SIEEP).

The programme is designed to assist the SADC industrial sector to become competitive by using less energy for the same service, or as efficiencies increase even offer additional services more effectively, at comparable quality and quantity of products through an enabling environment (policy, regulatory, institutional, financial frameworks) as well as projects that will demonstrate energy savings and the co-benefits of reduced costs of doing business.

Additionally, greenhouse



Hon. Alweendo tries out the SunCycle; Prize Winner Ms Marita Walther (far right) from EBikes4Africa, proudly shows her winners certificate

gases (GHG) emissions, job creation and contribution to industrialisation in the SADC region are aimed to be prioritised in the implementation of SIEEP.

Partnership within SADC countries is therefore key to unlocking the economic value brought by energy efficiency across the value chain.

Dr Claudia Fischer, Chargé d’Affaires at the European Union Delegation in Windhoek, said energy was the sector on which SADC can depend on in the coming years.

“Energy serves as a lever for development, a pole attracting investment and as a vehicle to create numerous jobs. It is on this basis that the EU has committed resources to assist the SADC Industrial Energy Efficiency Initiative,” she said.

The EU has identified inadequate comprehensive

policy and legal framework, as well as lack of financing options as the main barriers to the development of energy efficiency in SADC.

“Sustainable and modern energy is crucial to meet the Paris Agreement. Therefore, the EU stands ready to establish partnerships with SADC and other regional organisations to support their energy transition efforts.

These efforts are essential for building resilience and fight against climate change,” said Dr Fischer.

SACREEE is playing a key lead role in assisting SADC countries set their own national targets and in raising awareness on technologies and policies.

SACREEE Executive Director Kudakwashe Ndhlukula, in his presentation, said Energy Efficiency was a topical issue in

light of power constraints in the SADC region. Energy presents high production costs in industry in the region while past demand-side management (DSM) initiatives were mainly outside the industrial sector.

Ndhlukula reiterated that some of the major gaps identified limiting adoption of Energy Efficiency and renewable energy activities in industry include lack of comprehensive, clear and harmonized policies, strategies and targets for EE/RE adoption and regulatory framework, such as energy management regulations, performance standards for equipment and services; and weak tariff regimes. There are also limited incentives for uptake of energy efficiency and renewable energy, while access to financing remains limited, especially for small and medium enterprises.

Wärtsilä Modular Block solution for ready-to-go power plants

Finnish technology group Wärtsilä has introduced the Modular Block, a reliable and efficient solution for sustainable power generation, with fast delivery and installation.

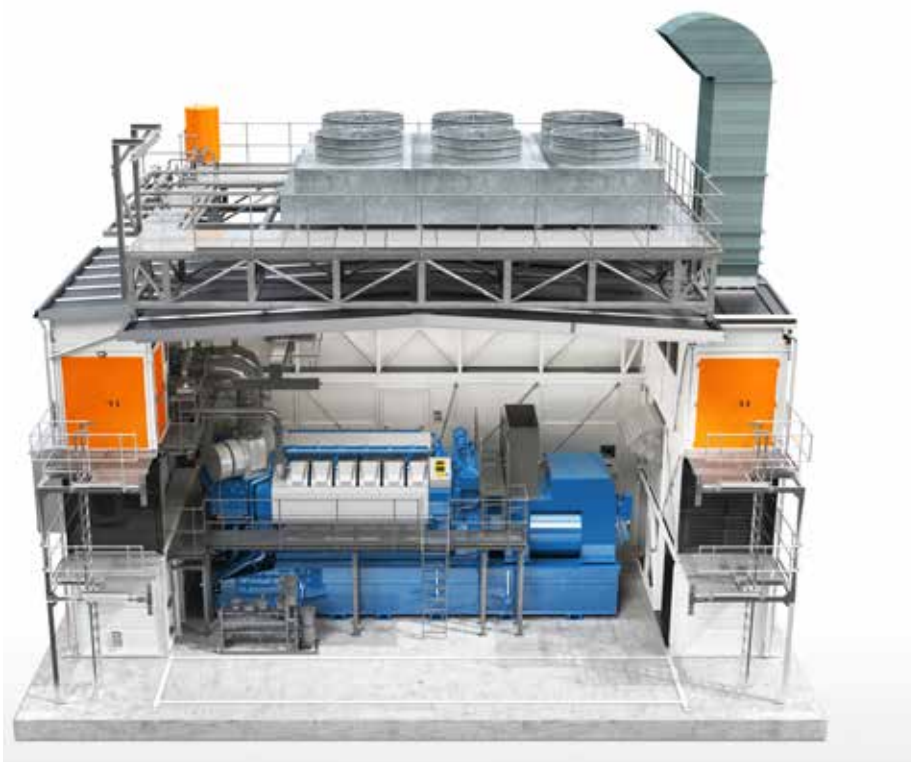
The Wärtsilä Modular Block power plant solution is a pre-fabricated, modularly configured, and expandable enclosure for Wärtsilä medium-speed 34SG gas engine generators. Aside from the gas engine generator, the Modular Block concept's enclosure also incorporates engine-specific auxiliary units. The solution enables to reduce the on-site installation time from several months to a few weeks, depending on the full scope of supply.

Wärtsilä says its Modular Block is easy to integrate with renewable energy and storage systems, and is ideal for providing grid stability and balancing when integrating renewable energy sources with intermittent production.

The concept thus makes Wärtsilä's advanced medium-speed engine technology available for applications where it would not otherwise be viable with a conventional custom designed permanent building. Medium-speed engine technology has inherently higher efficiency and lower lifecycle costs than containerised high-speed engines or gas turbine solutions.

The technology could offer a reliable energy solution to Namibian mines and large industries in search of reliable and cost-effective energy solutions.

Wärtsilä is offering the Modular Block as a full engineering, procurement and construction (EPC) project. The solution is easily expandable to accommodate increased energy demand, and to



Wärtsilä Modular Block solution for ready-to-go power plants

respond to fast-growing customer business needs. The concept also enables dismantling and relocation, meaning it also offers new business models, such as power as a service or rentals.

The flexibility of the concept enables its timely expansion with minimal front-end investments, or relocation to accommodate changing power generating requirements. This, combined with the high efficiency of the power generation asset, the minimised on-site installation time, and its configurability with external systems makes the Modular Block an excellent solution for many power generation enterprises. It can be a perfect fit for industrial customers or utilities, and for independent power producers associated with them.

"This concept reverses the traditional power delivery paradigm for data centers. Typically, the utility controls the supply and its cost, with the center having a back-up generator in case of an emergency. Here, the data center has control over its own electric supply, which is delivered at an economic and predictable cost, and the grid acts as the back-up. Furthermore, any excess power generated by the Modular Block can be sold to the utility," says Antti Kämi, Vice President, Engine Power Plants, Wärtsilä Energy Business.

"The concept takes our well established experience and know-how in prefabricated modular power plants to the next level, combining

modularity and ease of use with

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UN Resident Representative in Namibia Alka Bhatia



Electrifying rural areas poses unique challenges for African governments. Remote and scattered, rural homes, unlike homes in urban areas, are costly and often impractical to connect to the grid.

United Nations urges Namibians to tap into renewable energy

The United Nations Resident Representative to Namibia Alka Bhatia wants local communities to turn to renewable energy and green technologies, not only to curtail pollution but also to improve their lives.

In remarks delivered during the commemoration of World Environment Day, on June 5, held at Karasburg under the theme Beat Air Pollution, Bhatia said nine out of 10 people worldwide breathe polluted air. Additionally, air pollution causes 7 million premature deaths annually.

Bhatia called on communities

and individuals to come together to explore renewable energy and green technologies and improve air quality in cities.

Electrifying rural areas poses unique challenges for African governments. Remote and scattered, rural homes, unlike homes in urban areas, are costly and often impractical to connect to the grid.

Under the New Partnership for Africa's Development (NEPAD), countries are seeking innovative alternatives to give rural families efficient means to cook their food and light their homes. Stand-alone sources of energy, such as solar,

wind and mini-hydro generators, can help fill the gap.

NEPAD, Africa's development blueprint, recognizes that to achieve the desired social and economic prosperity, countries must boost access to cheaper and reliable energy. Excluding South Africa and Egypt, no more than 20 per cent (and in some countries as few as 5 per cent) of Africans have electricity. This figure falls to an average of 2 per cent in rural areas where the majority of Africans live — a far cry from the 35 per cent consumption level, or more, African leaders wish to achieve.

Wärtsilä Modular Block solution for ready-to-go power plants

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superior medium-speed engine performance. Modular Block, being a cost-effective solution that is configurable to different needs, scalable and re-deployable, brings fast and reliable power wherever needed," he adds,

Wärtsilä Energy Business is leading the transition towards a 100% renewable energy future. As an energy system integrator, the company designs, builds and serves optimal power systems for future generations.

It also provides the needed

flexibility to integrate renewables and secure power system reliability, offering a variety of engine-based flexible power plants - including liquid gas systems - hybrid solar power plants, energy management systems and storage and integration solutions.



Zimbabwean Energy Minister Fortune Chasi (left) and his Zambian counterpart Matthew Nkhuwa signing the SACREEE inter-governmental Memorandum of Understanding

SADC takes stock of Energy projects implementation

Southern African Development Community (SADC) Ministers of Energy and Water met in Windhoek in May to review progress in the implementation of energy and water projects.

The SADC ministers or their representatives from Angola, Botswana, Eswatini, Lesotho, Mauritius, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe also reviewed the current status of energy and water supply as the region strives towards food security.

Representatives from international cooperation partners comprising United Nations agencies, implementing agencies, development partners, youth representatives also attended the Ministers meeting, which was preceded by a three-day meeting of senior officials responsible for energy and water.

Namibia's Mines and Energy Minister Tom Alweendo noted the progress that has been made by SADC member states towards ensuring security of electricity and water supply, in line with meeting the overall Sustainable Development Goals.

Alweendo noted the increase in

demand for water and electricity as SADC's population and industrial activity continues to grow, underlining the need to speed up projects aimed at increasing electricity and water supply.

Alpheus Naruseb, Namibia's Minister of Agriculture, Water and Forestry, said investing in energy and water infrastructure does not only have positive economic benefits but also positive trade-offs in the form of improved security and reduced poverty.

Dr Thembinkosi Mhlango, SADC's Deputy Executive Secretary for Regional Integration, appealed for support, at the highest level, of the regional grouping's member states towards the implementation of energy and water projects that contribute to the realisation of the five-year targets in the Revised Regional Indicative Strategic Development Plan (RISDP).

In terms of supply and demand for electricity, the region has installed generation capacity of 71,950MW (megawatts), therefore, with regard to the current peak demand and generation capacity reserve margins, there is a relatively small deficit of just above 650 MW.

The meeting also reviewed the regional power programmes and

projects, petroleum and gas sub-programmes, renewable energy and energy efficiency issues, the energy sector regulatory sub-programme implemented by the subsidiary organisations and the international cooperating partners supporting the SADC Energy programme.

The Ministers noted progress in the amendment of the Protocol on Energy of 1996 and approved the Roadmap to finalise the review and amendment of the Protocol, urging member states who have not yet acceded to the Protocol to do so without delay.

SADC member states have also been urged to commit to the Regional Priority Power Projects for improved security of energy supply and directed the Secretariat to present a comprehensive report on energy projects that are under preparation and development by regional project preparation facilities.

For the purpose of executing its mandate, the Secretariat received support from the International Renewable Energy Agency (IRENA) to undertake a project to engage young entrepreneurs to formulate bankable and sustainable projects.



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