

The header features a collage of renewable energy images: solar panels on the left, wind turbines in the center, and a sunburst on the right.

Etango

Namibia's Leading Renewable Energy Technologies
Magazine

March- April 2018

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- Alweendo inaugurates 5MW Ombepo wind farm
- ECB wants more investment in Off-Grid systems
- Red Cross takes RE drive to Caprivi and Kavango
- DBN targets renewable energy plants financing

The background image shows a large pile of waste being processed by a yellow mechanical claw. The claw has the number '6607' and the text 'HYDRO' on it. The scene is set against a concrete wall.

Turning Waste to Energy



PUBLIC NOTICE

NAMPOWER TARIFF ADJUSTMENT FOR THE FINANCIAL PERIOD 2018/2019

The Board of Directors of the Electricity Control Board (ECB) met on 12 April 2018, to deliberate on recommendations presented following review of NamPower's bulk tariff application for the period 2018/2019, and to approve the bulk tariff.

The ECB is pleased to share with you information pertaining to the legal provisions, the tariff application review process and the outcome.

1. PROVISION OF THE ELECTRICITY ACT, ACT NO. 4 OF 2007

The Electricity Control Board is mandated to review and determine electricity tariffs under section 27 (2) of the Electricity Act 2007 (Act No. 4 of 2007).

2. TARIFF APPLICATION

In accordance with the existing legal provisions, NamPower made a tariff application for an effective bulk tariff (inclusive of generation and transmission) increase of 6.56%, an increase from an average N\$ 1.61 per kilowatt-hour to N\$ 1.72 per kilowatt-hour for the financial period 2018/2019. The requested increase would allow NamPower to meet its service delivery costs and for the tariff to remain cost reflective.

3. TARIFF REVIEW PROCESS

Annual electricity tariff reviews are conducted to ensure that utilities charge appropriate tariffs to collect sufficient revenue to sustain a reliable and efficient electricity supply at affordable rates.

In reviewing the tariffs, the Regulator considers a number of factors which include the impact of the tariff change on the Electricity Supply Industry, the economy at large and the consumers. Consideration is further given to the National Developmental Plans, Government Policies and Cabinet directives such as the 2005 Cabinet decision directing that NamPower tariffs should reach cost reflectivity by the year 2012 and remain cost reflective subsequently thereafter.

As part of the review process, the ECB consulted different stakeholders through a stakeholder meeting, at which NamPower made a presentation of its application to the stakeholders. The Stakeholders were requested to present their views, facts and evidence on the tariff application. Submitted comments were considered in the decision making process leading to the tariff approval.

4. TARIFF REVIEW OUTCOME

The Electricity Control Board approved a 5 percent tariff increase, translating into an effective bulk tariff increase, from N\$ 1.61 per kilowatt-hour to N\$ 1.69 per kilowatt-hour.

The approved 5 percent tariff increase will allow for NamPower to cover its allowed operating costs, and recover the under recovery from previous financial years as per the reconciliation methodology, and ultimately fulfil its financial obligations including payments to the local Independent Power Producers, and ensure a continued supply of electricity.

The 5 percent tariff increase is below the projected inflation of approximately 5.3% for the period 2018/2019 and therefore the impact of the increase on inflation will be at a minimum.

The increase is applicable to NamPower bulk customers i.e. Regional Electricity Distributors (REDs), Local Authorities, Regional Councils and Mines. Respective bulk customers (Distributors) will individually apply to the ECB for tariff increases that will be applicable to end consumers.

The approved tariff adjustment is effective from 01 July 2018.

5. CONCLUSION

The Electricity Control Board and the Electricity Supply Industry are aware and concerned with the affordability of electricity in the country. It is a fact that the economy is highly dependent on reliable and affordable electricity supply. It is therefore the responsibility of the Regulator to ensure a sustainable electricity industry at affordable tariffs.

For the Stakeholders to better understand the distribution tariff structure at a national level and the relation to the cost of supply of each distribution utility, the ECB commenced a National Electricity Tariffs Study- Distribution Industry, which study is intended to assess the implementation of recommendation of the 2001 National Electricity Tariff Study and to review the cost of supply of electricity by the distributors.

The study will further assess the difference between the fixed and variable costs in relation to the relevant fixed and variable charges. The study is expected to be completed by the end of 2018 and there will be numerous stakeholder consultations during the study period.



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Off-grid systems key to meeting Harambee goals

The Namibian Government, through the Harambee Prosperity Plan (HPP), has set very challenging rural electrification targets which many in the industry have described as “over ambitious”.

The HPP, championed by President Hage Geingob, wants to see access to electricity for rural communities increased from the current 34 percent to 50 percent in the next two years. Further, the prosperity plan wants ALL schools and health facilities electrified by 2020. Indeed these are very tough targets. But are they impossible to achieve? Certainly not, if one considers the rapidly falling prices of renewable energy technologies.

Off-grid and mini-grid systems, which are stand-alone systems that provide electricity when needed without the availability of the utility grid, are key to Namibia coming closer to the Harambee targets and we welcome the challenge thrown to the private sector by Electricity Control Board (ECB) CEO Foibe Namene on off-grid systems.

Off-grid (stand-alone) systems are small systems which provide electricity to individual appliances, homes or small productive uses such as SMEs.

They thus serve the needs of individual customers, while utilising locally available renewable resources.

In most parts of Africa and Asia off-grid systems powered by solar, biomass, wind and hydro are now becoming more common, thanks to significant drops in prices for the components used.

Mini-grids, also referred to as micro-grids or isolated grids, involve small-scale electricity generation (10 kW to 10MW) and serve a limited number of consumers via a distribution grid that can

operate in isolation from national electricity transmission networks. Considering the sparseness of Namibia's population, mini-grids could be the answer to speeding up rural electrification.

Extending NamPower's national grid to remote areas, taking into consideration Namibia's vastness, will require billions of dollars over a short period of time.

Mini-grids and stand-alone systems are, without a doubt, the more cost-competitive and quicker solution to providing electricity to our remote communities.

While Namibia has seen the rapid uptake of renewable energy technologies, mostly solar, by Independent Power Producers thanks to the Renewable Energy Feed in Tariff (REFIT) programme, which has so far added over 40MW to the grid, these efforts have simply targeted guaranteeing security of supply to those already electrified.

Hence, IPPs need to also consider extending their reach to remote communities by making off-grid systems available.

Not only will this go a long way in facilitating access to the national economy by rural communities, but will also go a long way towards mitigating the effects of climate change through the use of clean renewable energy technologies.

Etango would like to see the private sector taking up this challenge to ensure we reach 100% electrification for the country by 2030.

Happy Reading!

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Cover picture:

WASTE- TO-ENERGY: Municipal waste poses challenges to several local authorities in Namibia. In tackling this problem, Namibia can draw lessons from Finland which is a world leader in managing municipal waste, turning the bulk of the junk into a useful source of electricity and heat generation. See story inside

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Seeking Energy Storage Solutions for Namibia

The Electricity Control Board (ECB) has held extensive consultations with industry stakeholders on Energy Storage Solutions for Namibia. A preliminary report compiled by RINA Consulting Services and GS Fainsinger, has been presented and shared with stakeholders for their input.

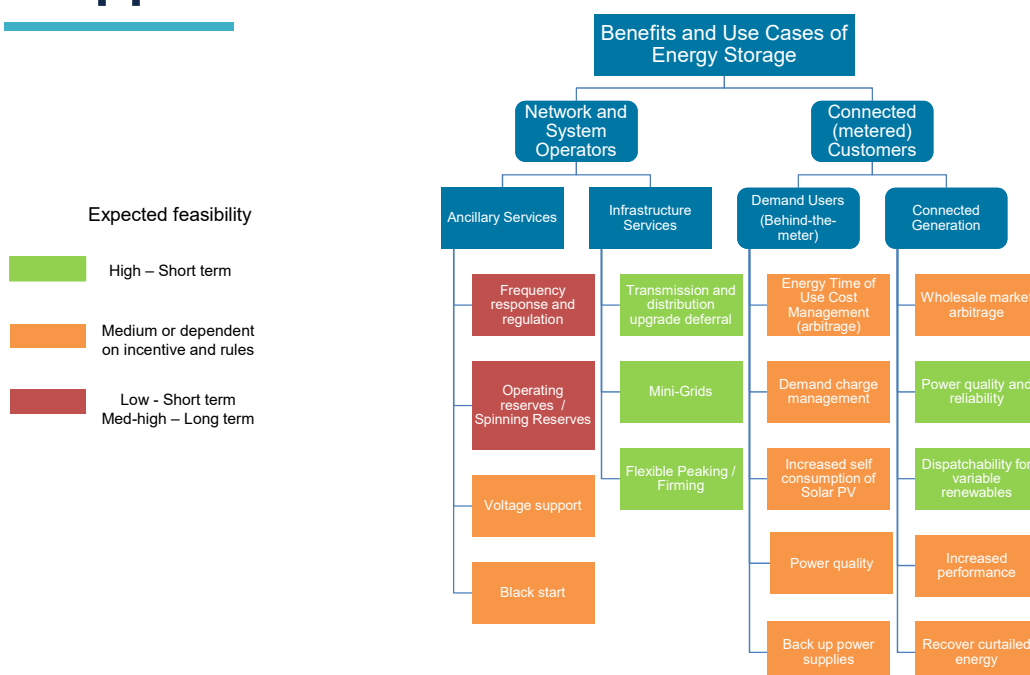
The report looks at, among other things, energy storage solutions application and use cases for Namibia, regulatory review for energy storage solutions and recommendations for Energy Storage Solutions for Namibia.

At a consultative workshop held on 23 April to discuss regulatory guidelines for Energy Storage Solutions, ECB Chief Executive Officer Foibe Namene told participants that Namibia was currently gearing up for a renewable energy revolution and has plans to continue deploying modern RE systems onto the grid. As such government last year approved the Renewable Energy Policy which outlines specific goals

“

The ability to store energy at times when the supply exceeds demand, therefore, will be key to the effective utilisation of renewable energy. Energy storage solutions (such as batteries, pumped hydroelectric storage, compressed air energy storage, etc) present a great opportunity for power to be captured when it is available and released on demand

Energy Storage Technology – Applications



to steer the electricity sector and to promote grid-connected and off-grid renewable energy development.

She said the process to Energy Storage Solutions for Namibia commenced in November 2017 with data collection from different stakeholders.

“The National Policies related to energy approved last year recognise energy storage as part of the solution towards energy security. Energy Storage Solutions have the potential to provide a number of benefits in Namibia’s ESI such as:

1. Behind the Meter applications where electricity customers buffer against rising electricity prices and outages;
2. Connecting Energy Storage Solutions with Solar PV technologies;
3. Time-shifting and/or Load Shifting where energy is stored for long durations for later release;
4. Capacity Firming through Ramp Control, energy storage can slow down the down-ramps;
5. Capacity firming through longer duration, whereby an energy storage system can sustain a smoother PV power infeed to the grid.

Without energy storage, the value of intermittent renewable energy generation options is greatly reduced by the need for investment in firm back-up generation options,” said Namene.

Further, cost-effective energy storage can potentially unlock the limitation of renewable energy generation plants and, in this way, create additional avenues for the integration of intermittent generation sources into the generation mix.

“Energy storage costs are expected to decline rapidly over the coming years, thereby becoming increasingly relevant and economically viable. However, with energy storage also comes challenges such as: regulatory considerations which includes distinct classification within the regulatory framework; market conditions such as tariff structures for different storage options; the right business model including Energy Storage Capex; technology bankability issues where access to affordable financing, deployment history requirements, lack of regulations,” said the ECB CEO.

The effective and safe integration of energy storage technologies to the existing national electricity network requires Grid Code rules on the parameters and technical specifications that the storage technology needs to meet. Namibia already has a Grid Code providing rules and guidelines for

electricity market participants on network access. However, an amendment is needed to provide more guidance on the integration of energy storage solutions and technologies.

Licensing, targeted tariff signals, and grid code rules for energy storage solutions can enable the wider adoption of storage solutions and ensure they add value for several stakeholders in Namibia’s ESI - for both the customer and system operator.

Namene said the intermittent nature of renewable energy (wind and solar PV) has for a long time prevented a larger uptake of renewables in Namibia and the region. “The ability to store energy at times when the supply exceeds demand, therefore, will be key to the effective utilisation of renewable energy. Energy storage solutions (such as batteries, pumped hydroelectric storage, compressed air energy storage, etc) present a great opportunity for power to be captured when it is available and released on demand,” she said.

Thus storage is expected to play a significant role in the successful integration of renewable energy electricity generation into the electric grid in the future.

Energy storage continues to see advances and more manufacturers are entering the market as it continues to expand and mature. For the Namibian grid, the goals should be to become more efficient, stable and (hopefully) less costly as we venture into having a “smart” grid. At the same time, Namibia must make sure that the electricity market is ready for more variable and decentralised production, and for more flexible and active demand.

The effective and safe integration of energy storage technologies to the existing national electricity network requires Grid Code rules on the parameters and technical specifications that the storage technology needs to meet.



GREEN PARTNERSHIP: (From left) Leena Klossner (NDF), Leena-Kaisa Mikkola (MFA) and Pasi Hellman (NDF) during the funding signing ceremony. - *Photo: NDF*

Namibia clean energy projects can benefit from N\$380 million new EEP funding round

The new Energy and Environment Partnership Trust Fund, covering Southern and East Africa, has availed 25 million euro (about N\$380 million) from Finland and the Nordic Development Fund (NDF) to promote clean energy access in the two regions.

The first open call for EEP Africa funding proposals will be launched during the Africa Utility Week to be held in Cape Town, South Africa, from 15 - 17 May, 2018.

The new financing commitment from Finland will support clean energy access, sustainable and inclusive green growth in Namibia and 14 other countries in Southern and East Africa. It will complement the 10 million euro approved by NDF's Board of Directors at the end of 2017.

A second signing with the Austrian Development Agency (ADA) for an additional contribution is expected to follow soon.

"Finland is a founding owner of NDF and we are very proud that today we acknowledge the growing capacity and reach of this institution, entrusting us with the legacy of this highly effective programme and with additional resources to continue to deliver climate impact, clean energy access and green growth on the ground in our partner countries," said Pasi Hellman, NDF Managing Director.

EEP was first launched in Southern and East Africa in 2010 under the leadership of MFA Finland with co-financing from Austria and since 2011, the United Kingdom. It has been



at the forefront of efforts to fast track clean energy access and sustainable and inclusive green growth across the Southern and East Africa region.

Renewables sector driver

Leena-Kaisa Mikkola, Director General for the Department of Africa and the Middle East at MFA Finland, said EEP has been a flagship programme for the Ministry due mainly to the results that it has achieved.

“EEP has been a true driver in the renewables sector in Southern and East Africa, and the transition to a Trust Fund setting under NDF will open up a whole new range of opportunities related to financing of innovative renewable energy technologies in the region. We see that EEP fits in extremely well with other renewable energy sector activities of NDF and it can also serve as a pipeline for entities such as Finnfund and the Finland-IFC

Blended Finance for Climate Programme,” she said.

More than 57 million euro has been channelled to over 200 pioneering projects leveraging innovative clean energy technologies and energy access business models to transform lives and livelihoods with particular focus on the very poor. Projects have improved energy access for more than 900,000 households and contributed to more than 8,000 new jobs, of which more than 3,000 accrued to women.

EEP financing has also triggered direct greenhouse gas (GHG) emissions reductions of more than 1.3 million tonnes of CO2 equivalent and leveraged more than 150 million euro in additional investment.

Under NDF leadership, EEP Africa transitions from a fixed term programme to an open-ended multi-donor trust fund and climate finance facility, fully aligned with the 2030 Sustainable Development Goals (SDGs) and the Paris Climate Agreement. This new chapter combines the strong EEP Africa brand and proven results-based delivery channel for blended finance and green growth together with a dynamic evolution of the facility, bringing on board new financing instruments and closer engagement with the downstream investor community.

“We can provide a sustainable base for longer-term planning and resource mobilization combined with in-house capabilities to deliver a mix of instruments to match the real needs of projects on the ground,” said NDF Vice President and Deputy Managing Director Leena Klossner.

EEP Africa will operate as an open, competitive challenge fund providing early stage grant and catalytic financing to innovative clean energy projects, technologies and business models.

A service provider team sourced from KPMG Finland was recruited through an open, international competitive selection process during the course of 2017 and is now in place and providing implementation and coordination support from regional service hubs in South Africa and Kenya.

For more information contact info@eepafrica.org.



MILESTONE: (From left) InnoSun CEO Grégoire Verhaeghe, retired politician and renewable energy proponent, Ben Amathila, Mines and Energy Minister Tom Alweendo, Deputy Minister of Environment and Tourism Bernadette Jager and Lüderitz Mayor Hilaria Mukapuli officially inaugurating Ombepo wind farm

InnoSun, Lüderitz Town Council hailed for pioneering 5MW Ombepo wind farm

The N\$180 million Ombepo wind farm just outside Lüderitz, Namibia's first grid-connected wind power plant, was officially launched by Mines and Energy Minister Tom Alweendo on 26 April, 2018.

The plant was developed by renewable energy company InnoSun, in partnership with the Lüderitz Town Council, under the company Ombepo Energy (Pty) Ltd. The three massive turbines at the 5MW wind farm started feeding power into the grid on 20 August, 2017.

Minister Alweendo said solar and wind electricity were the answer if Namibia was to reduce energy imports from neighbouring countries and acknowledged efforts that had been in this regard made over the past few years in the renewable energy sector.

The Mines and Energy Minister paid tribute to InnoSun Energy Holdings and the Lüderitz Town



InnoSun CEO Grégoire Verhaeghe and Executive Director Usuta Imbili



Council for their partnership in realising the pioneer Ombepo wind farm. He lauded the two partners in the project for harnessing natural resources to generate electricity and urged more private sector entities to play a leading role in helping government achieve the target of providing 70 percent of the country's energy mix from renewable resources by the year 2030.

NamPower Chairperson Kauna Ndilula described the official launch of the Ombepo wind farm as a "momentous occasion" which underscored Namibia's resolve to embrace and encourage investments in renewable energy solutions.

"To the Innosun team, you have done it once again! You introduced the first commercial IPP by developing the Omburo solar PV plant near Omaruru, and here we are today with you having realised another first in the development of Namibia's electricity supply industry. On behalf of NamPower, I would like to congratulate you on your pioneering work to bring additional power to the people of Namibia," said Ndilula.

Lüderitz Mayor Councillor Hilaria Mukapuli could not hide her excitement over the fact that Ombepo is the first grid-connected wind farm in Namibia.

"Lüderitz is known as the town with a lot of firsts in Namibia; the first diamond was found here by Mr. Zacharia Lewala in 1908; the first European Explorer (Bartolommeo Diaz) landed here and erected the first cross at Diaz Point (Agra Point); the first bank (current Standard

Bank) was established here more than 100 years ago; the first x-ray machine in the southern hemisphere was introduced here, as well as the first tram (a small vehicle on rails to carry coal and material)," she bragged.

She described the partnership between the Town Council and InnoSun as a "perfect combination".

"InnoSun Energy Holding brought their experience, expertise and funds to implement the wind farm and the town of Lüderitz provided the land and perfect weather conditions or natural resource (wind)," said the Mayor.

She echoed the Minister's sentiments about Namibia reducing reliance on imported energy.

"Wind energy is very competitive because it is pollution-free and can also increase energy diversity and improve the security of energy supply in Namibia. It is undisputable that wind and solar energy will surely be the important energy sources in years to come. Let us therefore, as a nation, change our existing infrastructure in order to make the switch to more renewable power into our national energy grid," said Mayor Mukapuli.

To date, Namibia has actioned 18 Power Purchase Agreements with Independent Power Producers, translating into the supply of 171 MW of renewable energy. Ten of these projects are already in operation. Together, the 18 IPPs will invest a combined amount of approximately N\$4, 2 billion in the local electricity supply sector, and ultimately the Namibian economy in the next 24 months.

(see more photos on next page)

Ompebo Wind Farm Inauguration in Pictures



ECB urges more investment in Off-Grid systems

The Electricity Control Board (ECB) has urged the private sector to consider investing in off-grid energy generation systems in order to bring electricity to remote communities.

Speaking at the recent Mining Conference & Expo, ECB Chief Executive Officer Foibe Namene said the majority of the Namibian population resides in off-grid areas but not much was being done to give them access to electricity.

The ECB CEO commended Independent Power Producers (IPPs) who have so far added over 40MW to the grid under the Renewable Energy Feed in Tariff (REFiT) programme, but wants to see off-grid projects taking off in Namibia as well.

Off-grid systems, also called stand-alone systems, provide electricity on a 24/7 basis without the availability of the utility grid. In remote areas where grid electricity is not available firewood and diesel generators, which are not economically and environmentally friendly, are used as a source of energy.

Government has developed a number of documents as well as specific initiatives, such as the Off-grid Energisation Master Plan (OGEMP), to support the electrification of remote areas mainly through renewable energy. The OGEMP aims to provide access to energy through an Energy Shop model. The plan is to establish energy shops within reasonable distances of the targeted communities. Private end users access the technologies through an ownership model and government institutions are being energised through the current public infrastructure model.

The energy shops retail suitable, approved energy products and compatible appliances modelled as energy baskets. Emphasis is placed on energy technologies and appliances that utilise renewable energy and energy efficiency. The energy shops also serve as payment



ECB CEO Foibe Namene

collection centres for the national off-grid energy financing mechanism, thus working hand in hand with the Solar Revolving Fund (SRF) administrator. Each of the 14 regions have at least one energy shop established so far.

However, this initiative has had limited success therefore underlying the need for more robust off-grid electrification initiatives that need private sector



The OGEMP has aimed to provide access to energy in off-grid areas through the Energy Shop model



CLEAN WATER PUMPING: Small-scale farmers stand to benefit from the installation of solar water pumping in community gardens

Red Cross launches Renewable Energy initiative in Zambezi, Kavango regions

The Namibia Red Cross Society has launched a project in the Zambezi and Kavango regions aimed at mitigating the effects of climate change through the use of renewable energy technologies.

The project, launched at Muyako village in the Katima Mulilo rural constituency, will aim 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 are 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 will run from March 2018 to February 2019 and will include the installation of solar water pumping systems in the agricultural production. These will replace diesel-powered boreholes.

The Namibia Red Cross Society, in partnership

“

Capacity-building on renewable energy and energy-efficiency is important. So, we are going to work with the communities to ensure that they have relevant information on climate change to enable them to make informed decisions

with the Spanish Red Cross, was awarded the project by the European Union.

Zambezi Red Cross board chairperson Innocent Mahoto said the initiative will seek to promote the use of various forms of renewable energy and energy efficient technologies in the selected rural communities and will contribute to the mitigation of the negative impacts of climate change within vulnerable in Namibia.

“Small-scale farmers of which most are in off-grid electricity areas will benefit from the installation of renewable energy technologies in community gardens that will facilitate a responsible and environmentally friendly use of resources,” he said.

“Capacity-building on renewable energy and energy-efficiency is important. So, we are going to work with the communities to ensure that they have relevant information on climate change to enable them to make informed decisions,” said the head of the Red Cross.

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

“The project will facilitate the construction of 200 energy-saving cooking stoves. We need to ensure that we reduce the cutting down of trees for firewood. It will also distribute solar lamps to 200 families, which will reduce paraffin usage and help reduce the effects of climate change, as well as indoor pollution,” said Mahoto.

Increasing off-grid energy generation through solar will also help meet Government’s targets of electrifying rural communities. The Harambee Prosperity Plan aims to provide electricity to all schools and health facilities in Namibia and increase in the rural electrification rate from 34 percent to 50 percent by 2020.

Namibia has prioritised climate mitigation actions, especially the generation of clean and renewable energy in order to both reduce energy dependency on its neighbours for electricity and to address climate change.

The EU’s Head of Cooperation, Achim Schaffert, said in the current cooperation framework ending in 2020, the EU has already committed 68 million euros to support various projects and programmes in Namibia.

“Our ambition in the Namibian context of this action is to support government’s efforts to reduce the vulnerability of the rural population to adverse impacts of climate change through developing, testing and disseminating solutions and practices, implementing innovative technologies for climate change adaptation and mitigation in rural areas,” he said.

The EU is convinced that pioneering ventures, such as the one launched by the Red Cross in the two regions, which provide access to appropriate sustainable energy technologies stimulate local investment and job creation, improve the quality of education and contribute to the reduction of rural poverty.



Another Solar Park constructed by NEC Power & Pumps



NEC Power & Pumps (Pty) Ltd (Main Contractor) constructed and commissioned its' 5th Solar Photovoltaic Park to date. The Aussenkehr Solar PV Park, owned by InnoSun Energy Holdings (Pty) Ltd, has a capacity of 6.3 MWp installed on one-dimensional trackers and is located in the far south of Namibia, between the wine farms in Aussenkehr.

The park was constructed from Civil works preparation, site leveling, excess road construction, to full production in 5 months. **NEC** was the main Contractor for the entire park construction, including all preparations and onsite Logistics. The site posed some challenges, being in the most remote location. It will provide the surrounding Wine farms and town with green energy. This proves that Namibia has endless possibilities and significant potential in the renewable solar industry.

The Aussenkehr Solar Park is changing Namibia, Mega Watt by Mega Watt, by currently exporting a capped 5MW of power to the national grid during most hours of the day. Production per day since commissioning was close to 50 000 kWh daily.

The plant consists of the following:

- **19440 x 325W Polycrystalline PV Panels**
- **108 x 50kVA 3-phase Inverters**
- **72 x One-dimensional East/West Trackers**
- **Energy Production: estimate per year
= 15,2 GWh (throttled output = 13,7 GWh/year)**



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NEC Power & Pumps has met Namibian Client needs to "Go Green" with Engineering Renewable Energy solutions for over 60 years now.

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Why NEC, Why Polycrystalline panels and high Quality Equipment?

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- Crystalline modules provide higher yield, lower cost and longer life expectancy than other technologies
- Our highest quality products have been tested and installed all over the world for the past 30 years
- Our high quality Axitec modules have the lowest degradation in the Industry with max 15% over 25 years
- **NEC** has been in the market for 60 years, with unparalleled backup and support for our clients
- Payback of 2-5 years, depending on system size, roof type and location



www.nec-namibia.com



ALTEN seals N\$600m financing for one of Sub-Saharan Africa's biggest solar plants

ALTEN Africa has secured financing for what will be the biggest photovoltaic solar power plant in Namibia and Sub-Saharan Africa (apart from South Africa), being built outside Mariental.

The plant, scheduled to be completed in September this year, will have an installed capacity of 45.5MWp for an output of 37MWac and is estimated to cost around N\$840 million to complete. ALTEN will develop, operate and maintain the solar plant.

Standard Bank (SA) and the subsidiary of Agence Francaise de Développement, Proparco, is providing a sum of over US\$50 million (about N\$600 million) for the project.

ALTEN Africa has a majority stake (51%) in the investment vehicle (ALTEN Hardap), in which NamPower has a 19% shareholding, together with local empowerment groups First Place, Mangrove and Talyeni, who jointly own the remaining 30%.

The Mariental plant, which the developers say will be one of the most efficient solar plants in this part of the world, will occupy a large land area of 100 hectares. It will boast around 140,000 crystalline silicon panels mounted on solar trackers and will be one of the most productive in the world because of the location's extremely high radiation levels. It will meet at least 3% of Namibia's total electricity needs.

Once in production the solar PV plant will upload about 112GWh of clean electricity onto Namibia's national grid, enough to meet the annual electricity needs of over 70,000 households.

Executive President of the Spain-based ALTEN Energías Renovables, Juan Laso, said the Mariental plant will have excellent results over the next few years, thanks to the support of Inspired Evolution which has experience in the regional market and a track record of close to 1 GW in clean energy infrastructure investments.

NamPower launched a tender in May 2016 to procure an Independent Power Producer (IPP) developer for a solar PV power plant on a site adjacent to its Hardap Sub-station, near Mariental. NamPower procured the land and the Environmental Clearance Certificate for the development.

This will be the first large scale grid-connected PV power generation plant to be added to NamPower's energy supply mix, following the smaller (5MW) Renewable Energy Feed-In Tariff (REFIT) projects.

The added megawatts from this project will also greatly reduce Namibia's dependency on energy imports from neighbours during daylight hours and is considered a huge step forward for the country becoming more self-sufficient and fulfilling the energy targets as set out in the Harambee Prosperity Plan.

DBN targets mining utilities financing, including renewable energy plants

The Development Bank of Namibia (DBN) is stepping up its financing for projects in the mining sector, quarrying and related industries as it views the sector as key to the country's economic prosperity.

Mining utilities such as privately owned renewable energy plants, energy and water storage systems, plant and equipment are among the areas being targeted by the DBN.

The DBN is seeking to expand its involvement in mining utilities, such as renewable energy systems, having already pioneered financing in this sector by backing Namibia's first solar project under a Power Purchase Agreement constructed at Omburu, outside Omaruru, by InnoSun Energy.

At a media briefing to introduce the new financing initiative for mining, quarrying and logistics, DBN Head of Business Development Heike Scholtz said the bank was targeting this sector because of its multiplier effect in the Namibian economy.

"The Development Bank of Namibia views the mining sector, quarrying and related industries as economic components that are vital to ongoing economic activities in Namibia, by creating employment and generating revenue. Mining is also a key forex earner and has huge potential for value addition, while its impact on infrastructure development is significant," she said.

With the new financing initiative DBN also aims to support local beneficiation projects in the mining sector.

The DBN is a trusted provider of finance, with

strong risk management, having advanced N\$7.7 billion in loans and advances at 31 March 2018.

Scholtz said the DBN aims to finance and support new enterprises, infrastructure development and upstream and downstream enterprises.

"We enable ambition, plans and future prosperity with finance. Enterprise success contributes to development."

DBN finance will seek to support growth of capacity in the mining sector, infrastructure and utilities that will help the sector to continue to support Namibia's socio-economic gains.

Enterprises that support the mining sector, such as engineering, transport and logistics, commercial services and contractors, will be eligible for DBN financing as long as they meet the bank's financing requirements.



PIONEERING PROJECT: The Omburu solar plant near Omaruru constructed by InnoSun energy with support from the DBN

Turning Waste to Energy: Lessons from Finland

By Tabby Moyo recently in Vaasa, Finland

Namibia, like most countries, battles with the problem of municipal waste. On a daily basis, households and industries generate thousands of tonnes of waste which the municipalities have to dispose of in an environmentally safe manner.

Finland is a world leader in managing municipal waste, turning the bulk of the junk into a useful source of electricity and heat generation. Westenergy Oy Ab is a Finnish company based in Mustasaari, near the city of Vaasa, that converts combustible waste into energy that powers up to 7000 homes and provides the much needed heating for up to 17 000 establishments. Westenergy owns and operates a modern Waste-to-Energy (WtE) plant which utilises source-separated combustible waste as fuel. The WtE plant has been in operation since 2012 and is an important part of a well-functioning waste management system. It generates up to 15 megawatts of electricity of which 13MW is fed into

the local grid.

“Energy is extracted from non-recyclable waste in an efficient, safe and clean way. Westenergy’s co-operation partner Vaasan Sähkö Oy uses the steam produced in the plant to drive the turbines and generators to produce electricity and heat for district heating. Over one third of the district heating needed in the Vaasa region is produced in the plant,” Sanna Hautamaa, Communications Officer at Westenergy told a small group of visiting African environmental journalists. Westenergy is owned by five municipal waste management companies operating in an area covering approximately 50 municipalities with over 400 000 inhabitants. Over 185 000 tonnes of waste is processed annually by the plant, incinerating up to 23 tonnes per hour at a temperature of over 1000 degree celsius.

Why waste-to-energy plant?

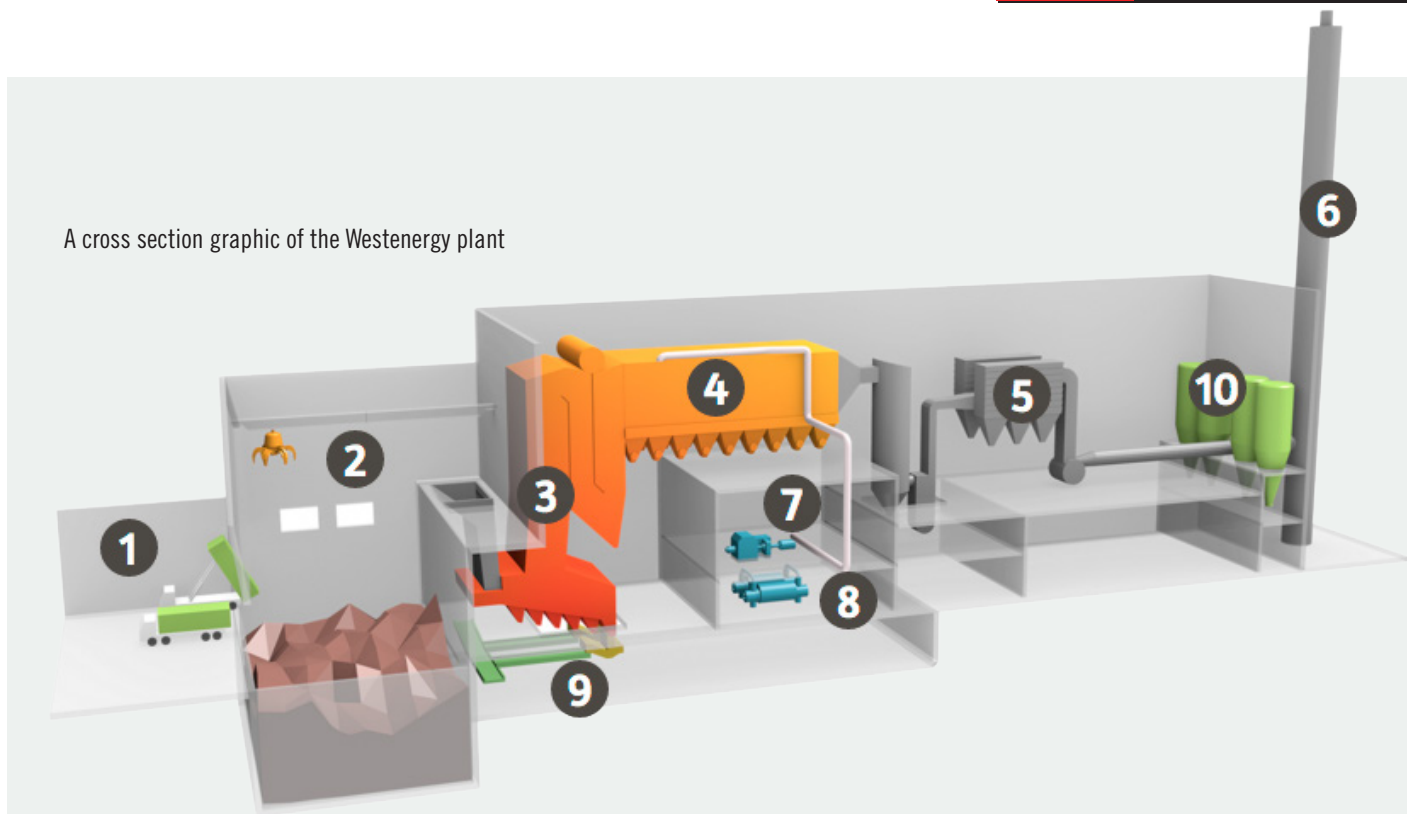
Not all waste can be recycled. The Westenergy WtE plant extracts energy from non-recyclable waste. It is an important part of a well-functioning waste management system.

The fuel used in the plant is waste that has



GOOD RUBBISH: Non-recyclable waste being collected for incineration at the Westenergy plant

A cross section graphic of the Westenergy plant



already been separated at its source location, and recyclable material, such as glass, metal and recyclable paper, have been removed.

Re-usage and recycling will still be a priority as well as collection and treatment of hazardous waste. The plant can also extract energy from industrial waste that previously has been impossible to utilise because of economic or technical issues.

Using waste as fuel has several positive environmental impacts.

Carbon dioxide emissions are reduced

Waste replaces the use of fossil fuels, that is, coal and fuel oil, in district heat and electricity production. Energy utilisation reduces the amount of carbon dioxide emissions by 100 000 to 200 000 tons in a year.

The need for landfills decreases

Almost 90% of all combustible non-recyclable waste can be utilised in the Waste-to-Energy plant, significantly decreasing the amount of waste disposed at landfills.

Methane emissions are reduced

As landfilling decreases, methane emissions will also decrease. Methane is over 20 times more harmful to the atmosphere than carbon dioxide.

More waste will be recycled

According to several studies, waste is recycled more efficiently when non-recyclable waste can be used for energy production. Energy utilisation and recycling go, thus, often hand in hand.



Sorting the different types of waste at Stormossen Oy, Westenergy's sister company

And to eliminate negative environmental impact, Westenergy makes sure to also take care of any residuals in the best possible way.

The temperature on the grate is over 1 000 °C, a temperature at which lower-quality fuel is also incinerated efficiently.



GREEN FUNDING: Alcon Consulting Services' 5MW Aussenkehr Solar PV Power Plant in the south of Namibia was financed through Bank Windhoek

Bank Windhoek sets sights on green financing

Bank Windhoek, one of the country's leading commercial banks, is shifting its large projects financing to green and sustainable initiatives, which includes renewable energy projects.

The bank showcased its finance options at the just ended Mining Expo & Conference in Windhoek, where experts from the bank's Treasury and Corporate Investment department gave advice on mining investment financing.

Bank Windhoek recently allocated a green finance facility to Alcon Consulting Services' Aussenkehr Solar PV Power Plant in the south of Namibia. The 5 MW Solar PV Power Plant was completed in November 2017. Projects of this magnitude normally take an investment of at least N\$120 million.

Bank Windhoek says renewable energy projects contribute to Namibia's national green energy security, reduce the national carbon footprint and

reduce the overall energy cost of local operations.

Projects of this nature, the bank says, will greatly alleviate the short and long-term energy demands required by NamPower, while also supporting efforts aimed at reducing the effects of climate change in Namibia and the SADC Region.

Therefore the bank has taken the initiative to advise local and international mining investors on how to make the most of their investments and limit the impact they have on the environment through alternative energy solutions.

"At Bank Windhoek, we believe in forming smart partnerships to facilitate growth and sustainability in Namibia. With InnoSun, and financing made possible through Sunref Namibia, we found a partner that provides clean energy solutions that contribute to Namibia's development goals and desired economic growth," says Lukas Nanyemba, executive officer for Corporate and Institutional Banking.

Stimulus increases investment in Khomas Solar Saver

Stimulus Investments Limited, a private equity fund managed by Pointbreak Asset Management, has increased its investment in Khomas Solar-Saver (Pty) Ltd (Khomas Solar).

Stimulus Investments owns a majority stake in Khomas Solar, which offers a long term rental solution for the installation of rooftop solar photovoltaic (solar PV) systems to corporate and commercial clients in Namibia. The business model focuses on clients with high grade properties of long term relevance and enables them to install a complete solar PV system without any capital outlay.

“These systems go a long way in fulfilling the demand for cost effective, renewable energy solutions. Our current rental portfolio includes 46 solar PV systems, with clients ranging from retailers to fuel stations to hospitals, and many other businesses. Demand for our offering has been tremendous and our project pipeline should see us commission a further 60 PV systems this year,” said Tim Frankish, one of the founding shareholders and a director of Solar Saver.

Josephat Mwatotele, the Executive Director of Stimulus Investments, said his company appreciates the opportunity to further support the Solar Saver management team as the business grows from strength to strength throughout the country.

Solar Saver contracts allow businesses to go green and start saving on their monthly electricity bills without any capital investment. Customers do not pay for their solar equipment, design or installation, but only pay for the electricity produced by the system – at tariffs well below those charged by their grid utility.

Numerous businesses throughout Namibia have taken advantage of this unique offering from Khomas Solar and have installed solar PV systems on their roofs. These include: Lady Pohamba Private Hospital (400kWp currently under construction), Metro Cash & Carry stores, Oshana Build It, Oshakati Pharmacy, River Crossing Lodge, Puma Energy (Bach Street) and Engen Academia, to name a few.

“

These systems go a long way in fulfilling the demand for cost effective, renewable energy solutions.



Khomas Solar-Saver's installation at the Windhoek Country Club Resort



The Metro Hyper rooftop in Kleine Kuppe is adorned with solar panels from Solar Saver

Metro Hyper in Kleine Kuppe, Windhoek, Metro Cash & Carry Namibia and the Windhoek Country Club Resort have also taken advantage of Solar Saver's concept and gone green.

US\$1, 4 billion facility to support Africa clean energy projects

The European Investment Bank (EIB), German insurer Munich Re and the African Trade Insurance Agency (ATI) have launched a joint political risk reinsurance facility aimed to support the clean energy sector in Africa.

The Africa Energy Guarantee Facility (AEGF) is expected to make US\$1, 4 billion of private investment in the renewable energy, energy efficiency and energy access fields in 25 sub-Saharan African countries, the EIB said.

Its objective would offer long-term insurance against non-payment under power purchase agreements, expropriation and breach of contracts, currency inconvertibility, war, civil unrest and arbitration award default.

The initiative is believed to have a significant impact on boosting new investments in Africa, where companies are usually cautious to embark on new clean energy projects as they seek long-term protection for their investment against the changing political environment.

According to Joachim Wenning, the CEO of Munich Re, the AEGF would highly stand against the major obstacle for renewable energy investments in Africa.

Adding that, for the German insurance company, the facility is “a blueprint for risk-sharing between insurers, reinsurers and international financial institutions.”

He said, technical assistance for the establishment of AEGF was provided through the EU-Africa Infrastructure Trust Fund, by EIB and EU Bank.

“The Africa Energy Guarantee Facility is another example of our strategy to create new markets by pushing back the boundaries of insurability. Munich Re has become the go-to reinsurer when it comes to creating innovative solutions and forging new partnerships. The AEGF will remove a major obstacle for renewable energy investments in Africa. For Munich Re, the AEGF is a blueprint for risk-sharing between insurers, reinsurers and international financial institutions and we strive to address other impediments to the development of emerging countries with comparable solutions,” said Wenning.

Werner Hoyer, President of European Investment Bank said sustainable energy investment in Africa is



AFRICA ENERGY BOOST: The AEGF aims to mobilise significant private
Photo: African Trade Insurance

crucial to improve access to energy, cut energy bills and enhance deployment of renewable energy.

He said as the EU Bank the EIB was committed to supporting Sustainable Energy for All and the African Energy Guarantee Facility established a clear model for partners to join and others to follow.

ATI CEO George O. Otieno said reliable access to clean and efficient energy supply is key to building a sustainable economic base. With the increased availability of clean energy, Africa will be able to attract more investments, to create environments where companies can thrive and to build healthier



financing in the form of debt and equity from banks and developers that are currently constrained to participate in the African energy sector.

communities where pollution and climate change wreak less havoc on daily life.

Products offered under the AEGF will include insurance against sovereign or sub-sovereign non-payment under a PPA, expropriation and breach of contract, currency inconvertibility, war, civil unrest and arbitration award default. As of yet, the commercial insurance market is cautious and shows limited appetite to issue such political risk protection for long tenors in Africa's energy sector.

As a consequence, private companies are discouraged from investing in Africa's energy sector because of the discrepancy between the long-term investment needed for energy projects and the short timeframe in which the political

landscape may change. Therefore we expect the AEGF to have a significant impact in catalysing new sustainable energy projects in Africa.

Additional technical assistance has also been provided by the European Investment Bank, the EU Bank, to enhance the provision of dedicated energy sector investment insurance services.

Around 600 million people out of a total population of 1, 3 billion in Sub-Saharan Africa currently lack access to electricity and most countries experience power shortages on a daily basis. To accommodate the expected population growth by 2030, it is estimated that annual investment of around US\$100 billion in energy infrastructure is needed.



MORE GIGAWATTS: South Africa's large-scale solar industry will regain its momentum following the signing of the contracts

SA signs US\$4, 7 billion of delayed renewable energy deals

South Africa has signed long-delayed renewable energy contracts worth US\$4,7 billion (about N\$59 billion) with independent power producers, in the first major investment deal under President Cyril Ramaphosa.

The signing of power purchase agreements for the 27 mostly solar and wind projects was held up for over two years under ousted president Jacob Zuma, who favored a plan to build additional nuclear power plants.

It was also the subject of a last-minute legal challenge by the NUMSA labor union and Transform RSA lobby group, but a court rejected their application for an urgent interdict.

The signing represents a victory for Ramaphosa, who has promised to unlock investment and kick-start economic growth since replacing scandal-

plagued Zuma in February.

"This will bring much-needed policy and regulatory certainty and maintain South Africa's position as an energy investment destination of choice," the energy ministry said in a statement.

Ramaphosa, a wealthy businessman, has prioritized revamping the economy and turning around struggling state-owned enterprises like utility Eskom, which will purchase power from independent producers as part of the deals agreed.

Opponents of the renewable contracts argued that Eskom could not afford the additional financial burden and that they would lead to job losses in the coal sector.

South Africa relies on coal-fired plants for more than 80 percent of its electricity generation, while renewables contribute around 7 percent.

LIST OF APPROVED & REGISTERED INSTALLERS AND SUPPLIERS WITH NTCRE / TC1 AS OF APRIL 2018

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3	Trinity Business Solutions (TBS)	SWH, Photovoltaic, SHS, Solar cookers/box, streetlights	Bernadette Simana	Telephone no: 061 258112, Fax no: 061 225667, Jacona Street, Hochland Park Erf. 1600B, Windhoek
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11	HPS Engineering	SWH, Photovoltaic, SHS, Energy Efficient appliance	Eduard C. Drotsche	Telephone no: 063 223399, Fax no: 063 223366, 101 Stapelia street, Keetmanshoop
12	ConServ Engineering Services CC	SWH, Photovoltaic, SHS, Energy Efficient appliance	Mark Riehmer	Telephone no: 061 236336, Fax no: 061 256726, 24 Parson Street, Southern Industrial Area, Windhoek, Email: info@conservcc.com
13	LED Lighting and Solar Warehouse	SWH, Photovoltaic, SHS, Energy Efficient appliance	Mark Anthony Walsh	Telephone no: 061 302516, 3 Mathem Street, Hochland Park Windhoek
14	SolTec	SWH, Photovoltaic, SHS, Energy Efficient appliance	Heinrich steuber	Telephone no: 061 235646, Fax no: 061 250460, 51 Marconi Str, South Industrial, Windhoek
15	Solar Plus Renewable. E	SWH, Photovoltaic, SHS, Energy Efficient Appliances, gas stoves, solar freezer	Leonard S. Sakaria	Cell: 0812809497, Fax: 065-260038, Onekwaya East, Ohangwena- Main Road, P. O. Box 449, Ohangwena.
16	Temako Green Energy (TGE)	SWH, Photovoltaic, SHS, Energy Efficient Appliances, streetlights & accessories	Ndilula Mwahafar	Tel: 220743, Fax: 255660, No. 2 Ruhr St, Northern Industrial Area, P. O. Box 24749 Windhoek.
17	Khomas Equipment & Appliances cc	SWH, Photovoltaics, SHS, EE appliances, torches, lanterns, chargers.	Sitali Stanley	Tel: 061 271590, Fax: 061 271591, 1264 Goudsnp St. Hochland Park, Windhoek.
18	Namibia Solar Solutions (Prop.) Ltd	SWH, Photovoltaics, SHS, EE appliances,	Letisia Shikokola	Tel: 065 230097, Fax: 065 230094, P.O. Box 90142, Ongwediva. Oshakati
19	FLA Trading cc	Photovoltaics, SHS, EE appliances	Lucky Namupolo	Tel: 061 222092 Cell: 0811290045 or 0811240882; P.O. Box 11554 Windhoek
20	SkyPower Namibia cc	All listed products, plus fridges and wind except stoves.	Chris King	Tel: 064-209952, cell: 0812720508, Fax: 064-209952, P.O.Box 1861 Walvis Bay.
21	Sunrise Solar Solutions cc	SWH, Photovoltaics, SHS, solar,	Mr. Wapale Kalla	Tel: 061-260338; Fax: 061-260338. P.O. Box 21410, Windhoek, solar@mweb.com.na
22	Nanec Trading Enterprises cc	Photovoltaic and Solar Home Systems	Regina Shiimi	Tel: 065-244135(Omuthiya), 065-260189(Ohangwena), and 065-288504 (Okongo) Cell: 0816100111 or 0814684118, fax 088640669, e-mail: nanec tradingcc@gmail.com, P.O. Box 23592 Windhoek.
23	REMI Solar Energy cc	Solar Water Heaters, Photovoltaic & Solar Home Systems	Remengius Shikongo	Cell: 0812535285. Erf 1248 Beta Street Khomasdal. P.O Box 24591 Windhoek. Email: shikongorem@yahoo.com

24	Etameko Marketing & Sales cc	Solar Cookers/box	Johannes Nekundi	Tel 061-263694/210682. Cell 0812596195. P.O Box 280 Windhoek; Fax 061-263614. Nordland Street No 38 Lafrenz Township. Email: jrnetameko@iway.na
25	NATWE Electric & Solar	Solar Water Heaters, Photovoltaic, solar Home Systems, Solar cookers/box, Energy Efficient Stoves, Solar pumps, Wind Turbines, Fridges & Freezers	Adriaan Olivier	Tel: 066 25635. Cell: 0811286018. P.O Box 1730 Rundu. Erf 536 Nkarapamwe Rundu. Email: mawa@iway.na / adriaan@mweb.com.na
26	Andjamba Construction cc	Solar Water Heaters, Solar Home Systems, Solar Cookers/box, Cellphone Charger	Mr. J T Andjamba	Tel: 065 251049. Cell: 0811286992. Fax: 065 251049. P.O Box 304, Outapi. Erf 435, Outapi. Email: temeipojohannes@yahoo.com
27	Multi Engineering and Training Services cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Solar cookers/box, Energy Efficient stoves, solar Water Pumps	Jansen Uaundja Mizee	Tel: 061 303003. Cell: 0812801545. Fax: 061 303003. P.O Box 62190 Katutura. Erf 7 Adler Street. Email: uaundjamizee@yahoo.com
28	Be Prepared Investments 56 cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Solar cookers/box, Energy Efficient stoves, Wind Turbines, Fridges and Freezers, Solar Pumps	Adriaan Olivier	Tel: 061 301334. Cell: 0811286018. Fax: 061 301334. 6 Karin Muir Street Olympia. Email: adriaan@mweb.com.na
29	Döbra Solar Development Project	Solar Cookers/box	Mr. Willem Hans	Cell: 0814216347, Fax 061 239791, RC Mission Dobra, Plot 46 Dobra, Windhoek, Email: solarcookernamibia@gmail.com
30	Central Technical Supplies	Solar Water Heaters, Photovoltaic, Solar Home Systems	Mr. Erik Lund	Cell: 0811276771; Tel: 061 224238, Fax: 061 233254, E-mail: sales@ctsnam.com, P.O Box 6751 Windhoek, 13 Walter Street, Windhoek, Namibia
31	Maltahohe Auto & Electric cc	Solar Water Heaters, Solar home systems, Solar cookers/box, Energy efficient stoves	Mr. Verwey Handrikus Jacobus	Cell: 0811483062. Tel: 063 293313. P. O Box 62 Maltahohe Namibia. Email: PoDnp03@mweb.com.na
32	Aqua conservation Services cc	Solar Water Heaters, solar cookers, Dry Sanitation	Mr. Manfred Fortsch	Cell: 0813666441. Fax2Email: 0886517324. P. O Box 6915, Ausspannplatz, Windhoek, Namibia. Email: info@aqua-conservation.com
33	Forever Electrical	Solar Water Heaters, Photovoltaic, Solar Home Systems, Solar cookers/box, Energy Efficient stoves, Grid and Off-Grid Power	Mr. Abisai Shiyagaya	Cell: 0811246969. Fax: 088 615676. P.O Box 2674, Oshakati, Namibia. Email: foreverelectrical@mweb.com.na
34	M. Engineering and Solar Power Contractors cc	Solar Water Heaters, Solar Home Systems, Solar cooker/box, Energy Efficient stoves	Mr. Moses Tomas	Cell: 0813711122. P.O Box 6164 Auspannplatz, Namibia. Erf 698 Mozambique Street, Katutura, Windhoek, Namibia. Email: twmoses02@gmail.com
35	Electro Centre cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Electrical Refrigerators	Mr. Stephen Sserwada	Cell: 0812986218, P.O Box 1879 Ondangwa, Namibia. Onethidi Main Road, Ondangwa, Namibia. Email: electrocentre@iway.na
36	Cedar Solar cc	Photovoltaic, Solar Water Pumps	Mr. Christiaan Ackermann	Cell: 0816638839. P.O Box 90433, Windhoek, Namibia. Erf 21 Nachtigal Street, Ausspannplatz, Windhoek. Email: christiaan@cedarsolar.com
37	Blits Electrical cc	Solar Water Heaters, Photovoltaic, Solar Home Systems	Mr. Francois Johannes Binneman	Cell: 0817239312. P.O Box 70, Aranos, Namibia. Erf 83 Hospitaal Street Aranos, Namibia. Email: fransbinneman@iway.na
38	Hopsol Africa (Pty) Ltd	Photovoltaic, Solar Home Systems	Mr. Bjoern Wilschke	Cell: 0811792969, Email: bjoern.wilschke@hopsol.com , P.O Box 9150, 5 von Braun Street, Windhoek, Namibia
39	Generation Resources cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Sola cookers/box, Energy efficient stoves, Wind energy	Mr. Timoteus Waendama	Cell: 0812446633. P.O Box 23603 Windhoek, Namibia. Erf 7276 Papaja Street, Windhoek, Namibia. Email: timwaen@gmail.com
40	Unity Mining & Energy Resources (Pty) Ltd	Solar Water Heaters, Solar Home Systems	Mr. Matthew Pengeyo	Cell: 081202055. Email: mathew.unityenergy@gmail.com , 12 Scheppman Street, Pionierspark, Windhoek Namibia
41	Asense Investments	Solar Water Heaters	Mr. Sahabo Emery	Cell: 0814459621. P. O Box 9993 Windhoek, Namibia. Email: asense.service@gmail.com , Parson Street Southern Industry, Windhoek Namibia
42	New Era Investments	Solar Water Heaters, Photovoltaic, Solar Home Systems, Solar Water Pumps	Mr. Flyer Huang	Cell: +264 81 124 1899, P O Box 90323 Windhoek, Namibia. Email: exclusive-sales@hotmail.com , 74 Frans Indongo Street, Windhoek West, Windhoek Namibia
43	Shwepo Investment cc	Solar Water Heaters, Photovoltaic, Solar Home Systems	Ms Leticia Amushila	Cell: 0818291315, 0811481490, P O Box 30540 Pioneerspark, Windhoek, Namibia. Email: shwepoinvestments@gmail.com , 552 Rocky Crest
44	EMG Investments cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Streetlights and Fridges	Ms Grasiانا Berasius	Cell: 0813672755, P O Box 878 Oshakati, Namibia. Email: emginvestmentscc2014@gmail.com , Erf 82 Oshikongo, Namibia
45	RID Solar (Pty) Ltd	Photovoltaic, Solar Home Systems	Mr Gerson Murorua	Cell: 0812440332, P O Box 2181 Tsumeb. Email: info@ridsolar.de , 122 Halali Street, Nomsoub, Tsumeb, Namibia
46	Transtech Distribution (Pty) Ltd	Solar Water Heaters, Photovoltaic, Solar Home Systems, Energy efficient stoves	Mr Gerhardt Jessen	Cell: 085 1290965, Tel: 061 253274, P O Box 97309 Maerua Mall Windhoek, Email: gerd@transtech.com.na , 22 Palladium Street, Properita, Windhoek Office
47	DIS Engineering cc	Solar Water Heaters, Photovoltaic, Solar Home Systems	Mr Gero Bjoern Bajorat	Cell: 0811242610 Tel: 067 303337, Email: disengineering@iway.na P O Box 555, Otjiwarongo, West Street 17, Erf 147 Otjiwarongo
48	Ellies Elsat	Photovoltaic, Solar Home Systems	Mr Clinton Olckers	Tel: 061 248425, Fax: 061 248424, Email: natalie@elliesnam.com, P O Box 80650, Windhoek, 14 Joule Street Windhoek.
49	Proska Investment CC	Solar Water Heaters, Photovoltaic, Solar Home	Martin Nambundunga	Cell: 0813719449, Fax: 264886556132, martin@proska.com.na, P.O Box 22924, Windhoek, 3 Peter Mweshinge, Avis, Windhoek.
50	Bright Solar Construction Energy cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Energy Efficient Fridges & Freezers	Johnson Weyulu Fillemon	Tel: 065 238944, Cell: 0812000068 or 085552111, Fax: 065 231142, weyulufillemon37@gmail.com, P O Box 80011 Ongwediva.
51	Light Systems Namibia cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Solar Street Lights	Paulus Mulunga and Lyndon Elliot	Tel: 061 555 000, Cell: 081 288 6222, Fax: 088 6527063, info@lsn.com.na, P. O Box 30780 Pioneerspark, Windhoek, Corner of Bismarck & Dr W Kulz Street, Windhoek.
52	Electro Dynamics	Solar Water Heaters, Solar Home Systems, Energy Efficient Appliances	Dave Nostert	Tel: 064 400323, Cell: 081 285 3163, dave@electrodynamics.com.na, P. O Box 2974 Swakopmund. Plot 134 Swakopmund, Namibia.
53	Artiflex Engineering cc	Solar Home Systems, Photovoltaic, Solar Water Heaters	Stefanus Iyambo	Tel: 061303636, Cell 081 365 3682, artiflexcc@gmail.com, P. O Box 40016, Windhoek. Erf 1981, Susanna Street, Khomasdal, Windhoek.
54	Go Solar Investment cc	Solar Water Heaters, Photovoltaic, Solar Home Systems	Wikus Jacobs	Cell: 0811414107, gosolarcc@gmail.com, 67 Okavango Road Grootfontein.
55	Supreme Engineering	Solar Water Heaters, Photovoltaic, Solar Home Systems, Energy Efficient stoves	Tanga Iileka	Cell: 081 299 5991, c/o Supreme Electronic Engineering, P O Box 55345 Windhoek, Email: tanga@supreme-engineering.com
56	Super Energy Solutions cc	Solar Water Heaters, Photovoltaic, Solar Home Systems, Portable Solar Stations, Solar Installations, solar Heat Pumps	George Seibeb	Cell: 081 259 1625, P.O Box 4579, Windhoek, Email: info@supernamibia.com

KEY
 SWH Solar Water Heaters
 SHS Solar Home Systems
 PVP Photovoltaic Water pumping



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