Etango
Namibia's Leading Renewable Energy Technologies Magazine
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GH2 PILOTS TAKE SHAPE

Alweendo Seeks 'Just and Equitable' Energy Transition

Namibia's Billion Dollar Green Hydrogen Pilot Projects Unveiled

Emesco Gets Greenlight for 125MW Karasburg Solar Plant

Namibia inches closer to energy freedom

Namibia's green hydrogen (GH2) revolution is now in full swing and the nation, whose economy has been wavering over the past few years, now pins all its hopes on this energy carrier of the future.

Without a doubt GH2, seen as the critical enabler of the global transition to sustainable energy and net zero emissions economies, will unlock vast economic opportunities for Namibia. Around the world, there is unprecedented momentum to fulfil hydrogen's longstanding potential as a clean energy solution.

To begin with, let us define GH2 in layman's terms. Green hydrogen can be best defined as hydrogen produced by splitting water into hydrogen and oxygen using renewable (mostly solar or wind) electricity. Therefore, Namibia's nascent green hydrogen industry will rapidly expand the country's renewable energy footprint and will result in competitive electricity tariffs.

Namibia's hydrogen ambitions will be powered by 5 gigawatts of renewable energy generation capacity and 3GW of electrolyser capacity. The country's total electricity demand is currently below 700MW per annum.

Renewable energy technologies have already reached a level of maturity that allows competitive renewable electricity generation, which is a prerequisite for competitive green hydrogen production.

The increased generation capacity driven by GH2 will result in excess electricity which will turn Namibia from a net importer of energy to an exporter over a short period of time. SADC faces an energy deficit so a ready market is available.

Apart from boosting electricity generation from renewables, Namibia will quickly establish itself as a regional energy transition and global decarbonisation champion.

Namibia's potential for scaling up a green hydrogen industry is massive and global energy transition players are lining up to have a piece of the Namibian GH2 cake. However, government needs to move quickly to set rules and create a conducive policy environment in which public and private sectors can be empowered to accelerate the deployment of green hydrogen.

Without a doubt Namibia is on course to achieving the vision of becoming a green hydrogen hub and thereby contributing to addressing climate change. But, Namibia must do all what is necessary to ensure that the country provides a conducive investment environment.

This edition of ***Etango*** looks deeply into the GH2 economy and breaks down Namibia's prospects. We also bring you news on the new 125MW solar PV plant to be developed by Emesco in Karasburg after obtaining the necessary approvals from the Electricity Control Board, as well as plans by French independent power producer HDF Energy to start producing electricity from its green hydrogen power plant outside Swakopmund by 2024. This will be Africa's first green hydrogen power plant.

Happy Reading!
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Cover picture:

GH2 DEMO HUBS … Namibia's four green hydrogen pilot projects were unveiled during the Green Hydrogen Conference held in the capital in August. As much as 25 applications were received for the pilot projects under Namibia's Green Hydrogen initiative. Among the pilot projects given the greenlight is a Cleanergy hydrogen refuelling station being set up at Walvis Bay.
Photo: Cleanergy Solutions Namibia

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Namibia's Billion Dollar Green Hydrogen Pilot Projects Unveiled

Namibia's four green hydrogen pilot projects were unveiled during the Green Hydrogen Conference held in the capital in August. The groundbreaking conference was jointly organised by the Economic Association of Namibia (EAN), Namibia Investment Promotion and Development Board (NIPDB) and Hanns Seidel Foundation (HSF).

The German government has available 30 million Euro (N$523 million) to fund the projects which range from hydrogen dual fuel locomotives, refuelling stations, port applications to agriculture.

As much as 25 applications were received for the pilot projects under Namibia's Green Hydrogen initiative.

Green Hydrogen Commissioner James Mnyupe, who unveiled the projects, said an amount of N$96 million (€5, 66 million) has been made available to test green hydrogen applications in the Walvis Bay port environment. The project is being developed by the partnership between Cleanergy Solutions Namibia, CMB Germany, Namibia Ports Authority (Namport) and the University of Namibia (UNAM).

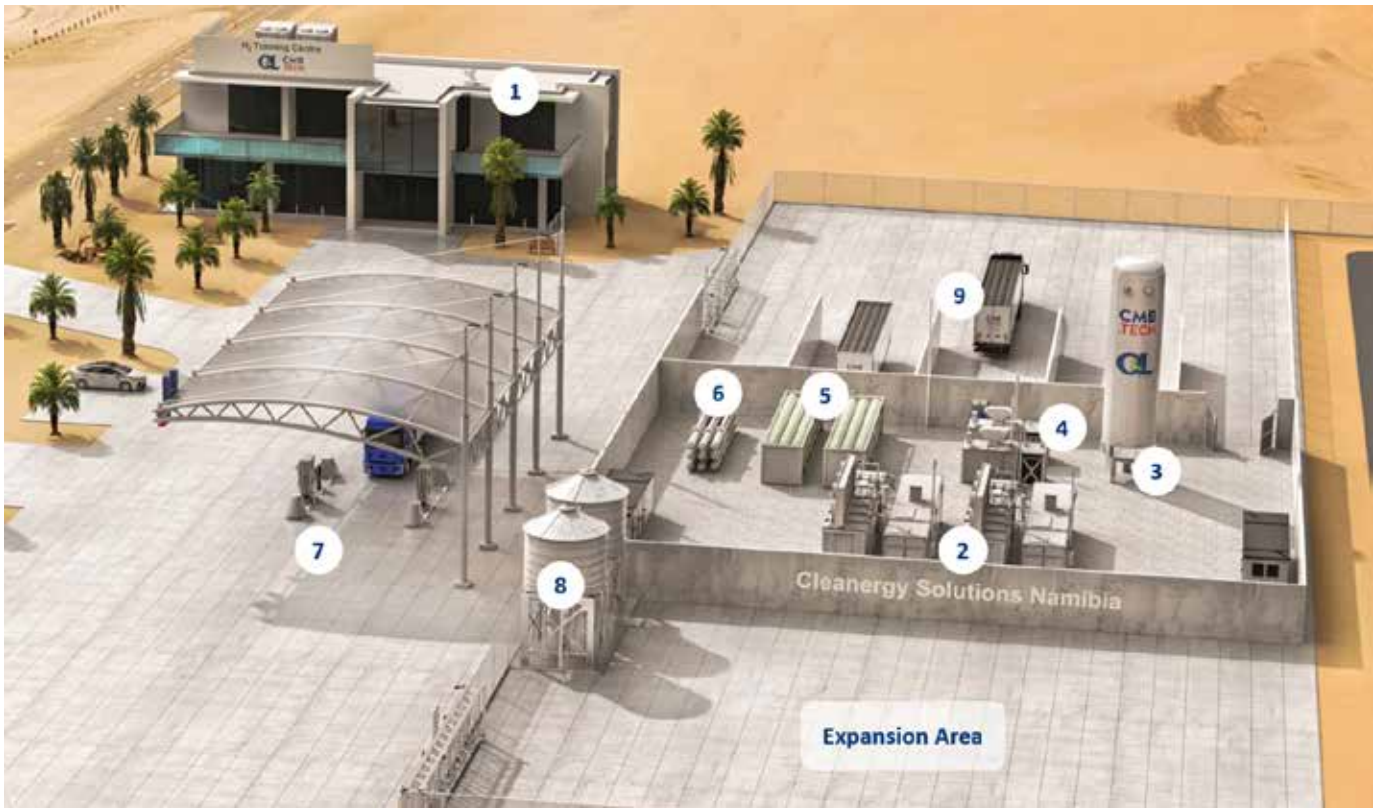
It will consist of a 5 megawatt (MW) electrolyser and a hydrogen mobile refueller (945kg at 500bar). It will convert a tugboat and existing port equipment to operate on hydrogen dual fuel technology, develop green bunkering and refueling infrastructure at the port and elevate the Germany-Namibia partnership across the entire green hydrogen value chain for the proposed technologies.

A Cleanergy hydrogen refuelling station is being set up at Walvis Bay. The N$425 million (€25 million) project will consist of a 5MW solar photovoltaic system, a 5MW electrolyser and a hydrogen refueling system. The pilot project will test technologies to develop offtake applications in transport, mining and port sectors and facilitate technology and skills development in Namibia. Building upon the lessons learned with the pilot plant, a second phase with a bigger commercial plant including ammonia production is planned.

The Cleanergy demonstration hub will be the first of its kind in Africa where hydrogen directly from a PV farm will produce green hydrogen which is dispensed at a public refuelling station.

Nearly N$130 million (€7, 63 million) has been made available to develop a hydrogen dual fuel locomotive pilot project to be carried out in conjunction with TransNamib. A fleet of 50 locomotives operating on the Walvis Bay to Kranzberg corridor will be converted to use GH2 dual fuel.

The partnership of CMB.Tech, UNAM, Hyphen Technical,



DEMO HUB *… The Cleanergy demonstration hub at Walvis Bay. 1) H2 training centre 2) H2 process and power containers 3) Low pressure buffer 4) Compressor 5) 300 bar buffer 6) 500 bar storage tanks 7) 350 bar dispensers 8) Water tanks 9) Tube trailers base*

SETTING THE PACE *… Beneficiaries of the 30 million Euro funding by Germany towards various green hydrogen pilot projects in Namibia pictured with Green Hydrogen Commissioner James Mnyupe (extreme left) and German Ambassador to Namibia Herbert Beck (3rd from left) during the unveiling of the projects.*

TransNamib, Namibia Green Hydrogen Research Institute (NGHRI) and Nicholas Holding is working on this project.

The project will convert two locomotives in different ways to operate on hydrogen and diesel and will be demonstrated along the 210km (one way) Walvis Bay to Kranzberg route in 18 months. CMB.Tech will provide its hydrogen dual fuel technology and the hydrogen fuel from its Walvis Bay green hydrogen project.

An amount of N$258 million (€15.1 million) has been set aside for a 1, 5 gigawatts green hydrogen project that will produce 508kg of green ammonia per day in the first phase in the Daures constituency. The project aims to establish a green scheme for ammonia nitrate crop, develop integrated application technologies for using green hydrogen in agriculture, ammonia nitrate and cleaning detergents; and fuel cell operated center pivots, boreholes and houses.

Partners in the agriculture project are NGHRI, University of Stuttgart, Enapter, Windwise and Enersense Namibia.

Green Hydrogen Commissioner Mnyupe also presented what he called the Namibian and regional hydrogen ecosystem which details initial plans to develop four hydrogen valleys namely; Erongo, Karas, Otjozondjupa and Kunene.

- **Valley 1** (Erongo) will see the use of solar PV-powered electrolysis to produce ammonia and a terminal for synfuels export from the port of Walvis Bay.
- **Valley 2** (Karas) will involve the development of a solar photovoltaic and on-shore wind hybrid renewable energy powered electrolysis project to produce ammonia for export from the ports of Lüderitz and Oranjemund. These will be linked through a hydrogen pipeline.
- **Valley 3** (Otjozondjupa) will produce synfuel using carbon dioxide emitted by the cement industry and solar PV powered hydrogen as feedstock for export from Walvis Bay.
- **Valley 4** (Kunene) will see the establishment of a solar PV and wind hybrid renewables powered electrolysis plant to produce ammonia near a new port facility to be built.

Plans also include developing green copper trade with Zambia by hydrogen rail, interconnection with Angola through EU Global Partnership, ramping up domestic demand to fuel hydrogen-powered open pit-mining trucks, heavy duty trucks, buses and rails and hydrogen trucking along the planned logistics corridor. Hydrogen and renewable power export to South Africa and carbon dioxide imports from South Africa are also being planned.

Namibia National Green Hydrogen Conference

Alweendo Wants 'Just and Equitable' Energy Transition

While Namibia is poised to play a leading role in the global energy transition fuelled by green hydrogen, it would be unfair to expect the country and other African countries to outrightly discard fossil fuels, says Mines and Energy Minister Tom Alweendo.

Namibia is currently pulling out all the stops to develop the nascent US$12 billion green hydrogen economy, at a time that the country has also announced substantial oil discoveries.

During the recently held Namibia Green Hydrogen Conference, which drew a large number of major global energy transition captains, Alweendo once again raised the debate on fossil fuels versus renewable energy.

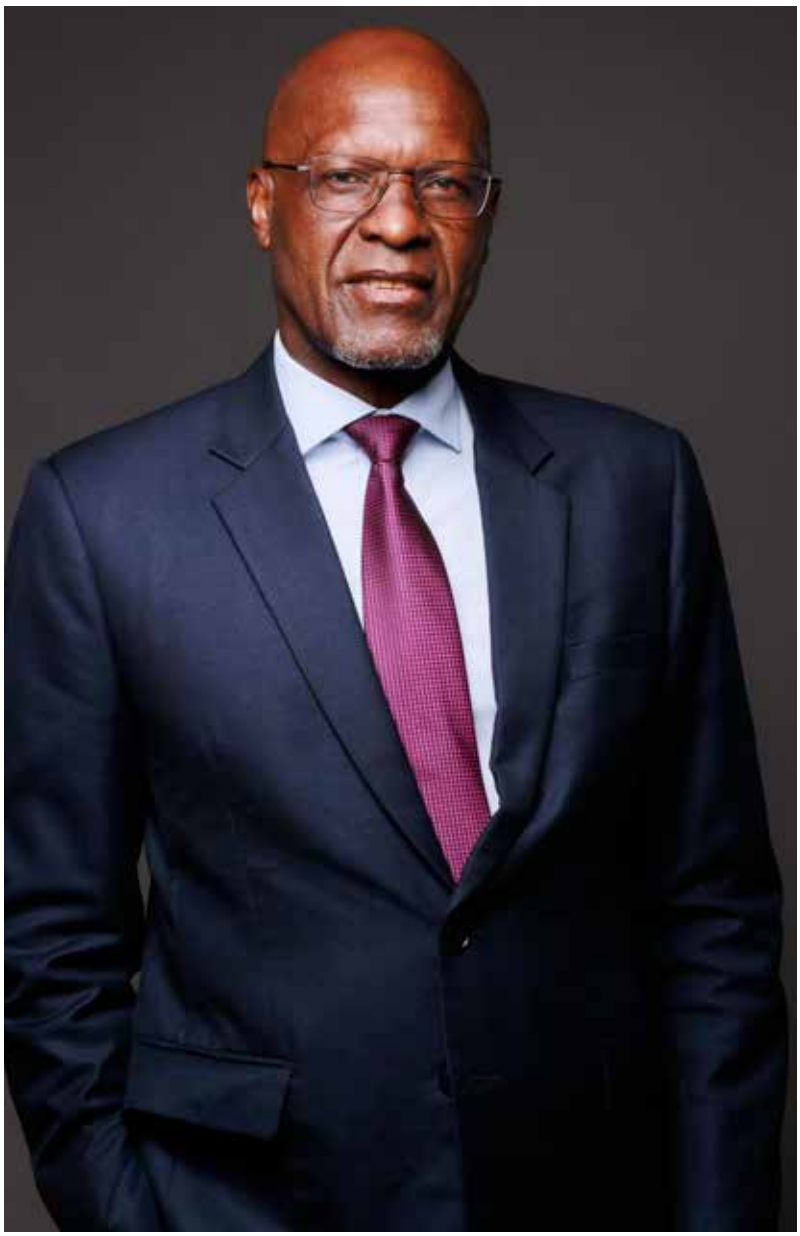
Elephant in the room

"I think there is an elephant in the room and this big elephant goes like this: is there no contradiction when Namibia embraces both fossil fuel and renewable energy. Are we not supposed to heed the call for the energy transition?

"Recognising the inevitability of the energy transition, we understand and accept that fossil fuel may no longer be the fuel of the future and that the world is transitioning to renewable energy. We are, however, also calling for an energy transition that is just and equitable among all nations," the Energy Minister said.

Alweendo warned that there was a need to guard against an energy transition process that has the potential to adversely affect some countries without any mitigation.

"It is the case that countries that are highly dependent on fossil fuel for their socio-economic development, may need a little more time to transition than countries that



Mines and Energy Minister Tom Alweendo

Recognising the inevitability of the energy transition, we understand and accept that fossil fuel may no longer be the fuel of the future and that the world is transitioning to renewable energy. We are, however, also calling for an energy transition that is just and equitable among all nations

have already made an inroad into the renewable energy space. Let us also remember that in Namibia, just like in many African countries, our biggest challenge is energy poverty. For that reason, our focus is more to provide livelihood to the country's growing population," he said.

Real investment

Alweendo, however, reassured the conference of Namibia's commitment towards developing the green hydrogen economy. He said real investment from the local and international private sector will play a critical role in making this venture a success.

"For us to reach our vision, we need real investments. Given the fact that green hydrogen is a relatively new industry, we may find that private capital might be a little bit hesitant. Here again for us to galvanise private capital, we need global collaboration that will have the effect of providing a conducive investment environment. We need the global direct foreign investments to come up with innovative investment instruments that will assist in de-risking private capital," Alweendo said.

The Energy Minister said Namibia was on course to achieving the vision of a green hydrogen hub and thereby contributing to addressing climate change.

Mitigate risks

"Our ambition is to become a continental green hydrogen hub. And this is possible primarily because of the world-class solar and wind resources. We also have more than enough land where green hydrogen assets can be built. Having great solar and wind resources are certainly necessary. However, these might not be sufficient for us to reach our goal of becoming a continental green hydrogen hub. You need other ingredients. We need to be aware of some of the risks that need to be mitigated," he said.

He emphasised the importance of global collaboration.

"Green hydrogen is the energy of the future that will be demanded globally. Anything that is demanded globally, will need global collaboration. Think about things like the standards and the regulations. You need to have a globally accepted standard of what green hydrogen is; and this can only be achieved when you have a meaningful global collaboration. It is through collaboration and not competition, especially at this early stage, that we will create a sustainable global green hydrogen industry," Alweendo said.

International collaboration

Since last year, Namibia has been actively seeking collaboration with other nations on green hydrogen. Partnerships have been forged with countries such as Germany, Belgium and the Netherlands, as well as the European Union.

"To our potential investors in this new industry, I can confirm that in us you will find a serious and committed partner. We will do all what is necessary to ensure that we provide you with a conducive investment environment. We will be a partner you can rely on. We, however, will demand one thing from you. The envisaged investment has to be mutually beneficial to both you as an investor and us as your host country," Alweendo said.

He warned the energy investors that Namibia will demand "to the extent possible", that their investment takes the issue of local content seriously.

Namibia National Green Hydrogen Conference

SEEKING ALTERNATIVES *… German Ambassador to Namibia Herbert Beck (right) in discussion with Economist Robin Sherbourne during the Green Hydrogen Conference.*

Green Hydrogen a Necessity for the World – Ambassador Beck

The pressing need to decarbonise the world has created urgency over the development of green hydrogen and it's gratifying to see Namibia taking the lead in this energy carrier of the future, says German Ambassador to Namibia Herbert Beck.

Speaking during a discussion at the recent Green Hydrogen Conference in Windhoek, Ambassador Beck said there was no doubt that green hydrogen was a necessity for the entire world.

"We are polluting the world and we cannot continue like this. We need to decarbonise our industries and our lives. Germany, as the world's third largest economy, has to take the lead in that process. We have to create a world market for green hydrogen and we are delighted to note that Namibia is moving forward in this area," Ambassador Beck said.

Germany has signed a multi-million dollar agreement with Namibia to cooperate in accelerating the development of green hydrogen and ammonia. Germany has committed 40 million euros (about N$705 million) towards this initiative.

Ambassador Beck said the private sector must play a leading role in the development of the green hydrogen economy, but cautioned that this was a long term investment and not a "quick buck" project. For Namibia, he said, green hydrogen held the biggest potential to address existing vast inequalities

in the country, as well as combat prevalent hunger.

Ambassador Beck said the recent attack on Ukraine by Russia had placed pressure on European countries to seek urgent alternatives to fossil fuels. Green hydrogen was one such alternative being considered.

Deputy Minister of Mines and Energy Kornelia Shilunga said Namibia was playing a lead role in the green revolution and energy transition. She said green hydrogen holds great potential in meeting the world's energy needs and Namibia, due to its excellent solar and wind resources, vast land, geographical position, and good international relations, had a competitive advantage to become a key player.

"Our potential for scaling up a green hydrogen industry is massive. However, I would like to highlight the importance of creating synergies between the public and private sector players and international cooperation in order to unlock Namibia's full potential," Shilunga said.

The deputy minister said for this reason Namibia had entered into strategic partnerships with several international players, notably Germany, Belgium, France, the Netherlands and Qatar. Namibia is also due to sign a Memorandum of Understanding on green hydrogen with the European Union (EU) before COP27, due to be held in Sharm El Sheikh, Egypt, from 6 to 18 November.

The Joint Declaration of Intent (JCOI) signed between Namibia and Germany looks to strengthen cooperation in the field of green hydrogen and associated synthetic fuels. The JCOI will see Germany private companies offering offtake security for Namibia's green hydrogen molecules.

The government of the Netherlands is funding a study on the port expansion master plan, being done by the Namibia Ports Authority (Namport) and the port of Rotterdam.

"No country can play it solo in dealing with global issues and problems, whether it is the industry or government. For us to deal with global problems we need global solutions and answers," Shilunga said.

As part of the government's drive to forge smart synergies with other players, Namibia has discussed the possibility of new co-operations with China on green hydrogen. These will include Chinese state-owned enterprises with the latest technology in green hydrogen coming to invest and partner with Namibian companies in green hydrogen projects.

Discussions have also been held with investors from Saudi Arabia who are keen to be part of Namibia's success story on the frontier of clean energy.

Shilunga said international investors were lining up to invest in Namibia's green hydrogen economy.

> We are polluting the world and we cannot continue like this. We need to decarbonise our industries and our lives. Germany, as the world's third largest economy, has to take the lead in that process. We have to create a world market for green hydrogen and we are delighted to note that Namibia is moving forward in this area

"A lot of investors are interested in partaking in Namibia's green hydrogen economy. We are also engaging with the international market on green hydrogen and ammonia. We will create demand from off-takers for Namibia's green hydrogen," said the deputy minister.

Shilunga underlined the government's need to set rules and create a conducive policy environment in which public and private sectors can be empowered to accelerate the deployment of green hydrogen. She said on the other hand players in the industry, such as suppliers, utility companies and transport manufacturers need to play their part to continue developing and supplying the appropriate technologies.

"On our side as government, we continue to level the regulatory system that is creating the demand for investment and enhance attraction decrease tariffs and costs that are associated with green hydrogen production and distribution," she said.

Dr Stefan Kaufmann, Germany's Innovation Commissioner for green hydrogen and member of the Bundestag, has said a hydrogen-based economy can only be a reality if joint action was taken at international level to unlock the potential of hydrogen as an energy carrier of the future.

Namibia National Green Hydrogen Conference

Namibia well placed to be a Green Hydrogen Leader - Worley

Namibia is well positioned to play a leading role in the world energy transition being driven by cleaner alternatives such as green hydrogen.

One of the world leaders in energy transition with a footprint in 49 countries, Worley, has thrown its weight behind Namibia and is ready to help the country make the most of an inexhaustible energy carrier that has the greatest potential to take the world to the end of the energy transition.

Addressing the recent Green Hydrogen Conference held in the capital, Dr Hans Dieter Hermes, Vice President for Hydrogen at Worley, said Namibia had all the key elements needed to succeed – excellent solar and wind resources, as well as functional ports linking the country to the key markets.

"It is therefore important to get things right from the onset and leverage on already available research," said Dr Hermes, in his presentation titled, 'The Hydrogen Market until 2050 - Boosts and Barriers'.

He said the high decarbonisation expectations in the world will drive up the demand for green hydrogen from various sectors of the economy, such as industry, transport, energy and heating in buildings. This will require large installed production capacities and an international trade market.

"Governments, developers, investors, suppliers, engineers, researchers, traders, off-takers, and societies, need to cooperate to remove the barriers to scale up low carbon hydrogen to meet the demand. Then, we do have a chance to reach net zero emissions by 2050," Dr Hermes told the conference.

He said the European Commission's "REPowerEU" plan has set a target of 20 million tonnes of hydrogen to meet the regional bloc's demands by 2030. Of this, 10 million tonnes are earmarked to be produced locally and the other 10 million tonnes to be imported from countries like Namibia.

***IT CAN BE DONE** … Dr Hans Dieter Hermes addressing the Green Hydrogen Conference in Windhoek.*

The European Commission's REPowerEU plan contains a suite of concrete measures to phase out Russian fossil fuels by 2027 and boost the EU's renewable energy production and energy efficiency measures.

Europe is expected to lead the green hydrogen projects pipeline in the near term, with Namibia and the rest of Africa scaling up from 2025, Dr Hermes said.

Central Europe holds the greatest potential for hydrogen imports from Namibia and Africa given the scale up of domestic consumption and resource constraints.

Dr Hermes said investment costs in green hydrogen are driven by solar and wind energy, with power generation plants making up 62% of the total investment. Hydrogen production facilities will account for 19% of the total investment, water supply (8%) and erection of ammonia plants (6%).

Dr Hermes cautioned that Namibia needs to make the necessary moves to ensure that the enabling elements such as regulatory frameworks, infrastructure, supply industry and trained specialists,

were in place.

Regulatory requirements were needed to drive standardisation/taxonomy, certification, offtake facilitation instruments (CfD, guarantees) and to enable the forming of a hydrogen products trading price.

Investments in ports ("hydrogen ready" terminals), storage capacities, pipelines and distribution networks was a must, while shared assets for hydrogen projects, such as pipelines, also needed to be put in place.

Addressing a breakfast meeting on green hydrogen held under the theme 'Opportunities for investors in Namibia', which took place on the sidelines of the World Economic Forum (WEF) in Davos, Switzerland, in May this year, Chief Executive Officer of the Australian-based Worley, Chris Ashton, said his company stood ready to support Namibia's green hydrogen targets.

"We look forward to seeing where the conversation goes and working with the Namibia Investment Promotion and Development Board (NIPDB) to support Namibia's green hydrogen targets," Ashton said.

He said Worley is part of the solution as the company has been involved in commercial applications of hydrogen for decades and has delivered more than 200 low-carbon energy projects, and in total, over 3 300 energy transition projects globally.

Ashton said Worley has expertise in the production, transport, storage, processing and use of hydrogen.

"Green hydrogen is a central component with enormous potential to support the transition to a lower carbon future. It can help sectors that are struggling to decarbonise. Namibia not just has the natural resource, natural competitive advantage, but it has a clear strategy," said Ashton.

Worley believes in the long-term potential of green hydrogen, which it describes as the "glue that can hold the future low carbon construct together".

Today, less than one percent of current hydrogen production is low-carbon. This means most of the hydrogen being produced comes from fossil fuel plants that release carbon into the atmosphere. However, pathways already exist for a hydrogen economy that can quickly and reliably slash emissions.

Thus, Namibia has committed to using the country's renewable energy potential to reduce the world's reliance on carbon-based fuels. As such, green hydrogen is key to the country's future energy systems.

Namibia National Green Hydrogen Conference

HOT TOPIC *... Dr Hermes (centre) during a panel discussion with Namibia Hydrogen Commissioner James Mnyupe (left) and Dr Zivayi Chiguvare, Chairperson of the Namibia Private Sector Green Hydrogen Task Force.*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Local Private Sector to Play Key Role in Green Hydrogen Value Chain

A private sector task force has been established to ensure inclusive participation by Namibian businesses in the hydrogen sector across the entire value chain.

The Namibia Private Sector Green Hydrogen Task Force will seek to ensure that local large industrial groups, SMEs, start-ups, laboratories and authorities, among others, play a key role in the green hydrogen economy.

Chairperson of the Task Force, Dr Zivayi Chiguvare, told the Green Hydrogen Conference that various working groups have been set up to try and maximise the participation by Namibian enterprises in the green hydrogen (GH2) value chain.

Opportunities for Namibian enterprises will arise in areas including raw material sourcing, production, storage and transportation.

Some of the GH2 projects where local participation can be maximised have been identified as follows;

- Seawater desalination plants
- Solar and wind power plants (for desalination of seawater)
- Photovoltaic and wind electricity generation and storage in hydrogen
- Water resource management
- Environmental impact assessments.

The working group on Green Hydrogen Value Chain Opportunities will seek to identify upstream and downstream opportunities for the local private sector, identify strategies to maximise involvement and beneficiation and assess and define the green hydrogen value chain within the Namibian context.

The business promotion working group will seek to showcase Namibian companies, and their offers in the hydrogen sector, to foreign public and private decision-makers and clients. It will provide collective support to Namibian companies in the hydrogen value chain in order to facilitate the identification of business opportunities and partnerships, the identification of relevant actors and decision-makers for their projects and for their financing on local and foreign markets.

The working group will also provide insight and guidance on the integration of local investors and entrepreneurs in the sector and amplify the messages conveyed by the Namibian hydrogen value chain to public and private decision-makers.

The private sector task force will also work on reviewing the regulatory framework, which the various branches of the GH2 value chains fall in and offer recommendations or propose amendments to remove constraints and to protect the environment.

Dr Zivayi Chiguvare

It will ensure that all Namibians are included and no one is left out in benefiting from GH2 industry and that the public is kept abreast of the key developments in this new industry.

Dr Chiguvare said the private sector group will conduct research to enhance local participation at different stages, and to unlock markets in Africa, while also contributing to the skills development required by the GH2 sector by offering inputs into curriculum and course developments.

"The taskforce has been established to engage with public and private decision-makers and relevant players while promoting and showcasing Namibian companies' solutions, offers and projects. Stakeholders are invited to collaborate with the taskforce. Private sector participants can contribute to the development of the Green Hydrogen Value Chain in Namibia by communicating through their respective associations," he said.

Namibia National Green Hydrogen Conference

The Erongo Desalination Plant outside Swakopmund

InnoSun's Sorexa to Power Orano Desalination Plant

Orano Mining Namibia has contracted InnoSun Energy Holding (Pty) Ltd to provide additional solar power for the Erongo Desalination Plant (EDP) under a 10-year power purchase agreement (PPA).

The agreement will see InnoSun establish a 4.5MW solar plant at the Trekkopje site just north-east of Arandis, from where power will be supplied to the EDP, situated some 35km north of Swakopmund.

The initiative is expected to enable Orano to make the provision of water to the Erongo region from a green electricity source more affordable in the long-term, and contribute greatly to efforts to reduce the carbon footprint of the EDP.

InnoSun Energy Holdings Executive Director Usuta Imbili told **Etango** that the solar park to be built under the name of Sorexa Sun Energy (Pty) Ltd, an entity owned 100% by InnoSun Energy Holding, will supply the Orano desalination plant with the 30% contestable quantity of power as per the Modified Single Buyer (MSB) market rules.

"The power plant will have an installed capacity of 4.5MWac, with a single-axis tracking system, and will be connected to the NamPower Trekkopje substation. Construction is scheduled to start around the fourth quarter of 2022. The Sorexa Sun Energy 4.5MW (1st phase) solar PV plant will be located adjacent to the Trekkopje Uranium mine, approximately 25km north east of Arandis," Imbili said.

She said all the power to be generated by the Sorexa Sun Energy plant will be for the exclusive use of the desalination plant. But, Imbili said the solar power plant could be extended in the future to supply other customers in Namibia and on the Southern African Power Pool (SAPP).

Sorexa Sun Energy plant will also be the first large scale PV plant in Namibia to supply energy to a desalination plant. It is part of the Orano group policy to lower its carbon footprint and increase the share of low-carbon electricity at its operating sites worldwide. It will represent a reduction of circa 10 000 tons of CO_2 equivalent,

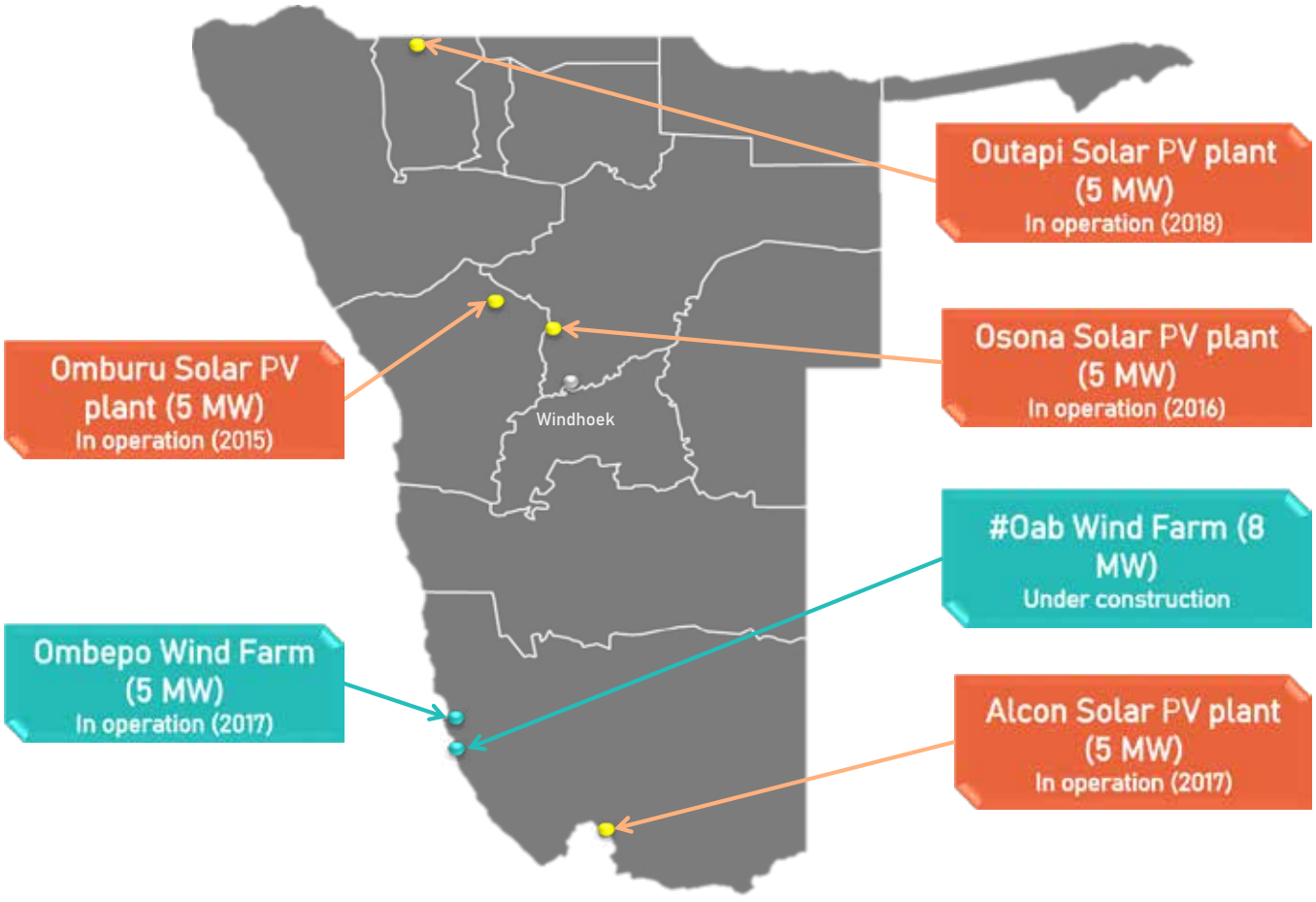
amounting to 30% of the desalination plant's current annual greenhouse gas emissions. Orano said it was proud of its current contribution to the development of the Erongo region through the desalination plant, and of the contribution of the uranium mining sector to the production of decarbonated electricity.

Meanwhile, Imbili also gave an update on InnoSun's 8MW #Oab wind farm project at Elizabeth Bay Mine.

"The #Oab project at E-Bay mine is going ahead, we have obtained all the permits to build this wind farm, including a Generation License from the regulator, the ECB, an Environmental Clearance Certificate (ECC), an Export License for the SAPP market, and currently busy negotiating an off-take agreement with Sperrgebiet Diamond Mine, the owner of the E-Bay Mine," she said.MWith regards to the company's role in the development of Namibia's Green Hydrogen economy, Imbili said InnoSun has a role to play as it aims to be one of the suppliers of green energy for the processing of green hydrogen. "We have several wind projects at advanced stages in the area and this gives us advantage for this (green hydrogen) sector," she said. Namibia has committed itself to increasing the share of renewable energy in electricity production to 70% by 2030.

The 5MW Alcon Solar PV plant located near Aussenkehr on the banks of the Orange River, on the border with South Africa.

InnoSun: Success story in Namibia



Some of the representatives of the regulator, municipalities, vocational training centres (VTCs), government ministries, SACREEE, private sectors, financial institutions and members of the academia who attended the 3rd Policy Workshop for Policy Makers on Solar Heat.

SOLTRAIN 3rd Policy Workshop discusses funding opportunities for Namibia Solar Thermal Technology Roadmap implementation

The Ministry of Mines and Energy (MME), with support from the Namibia Energy Institute (NEI) and SADC Centre for Renewable Energy and Energy Efficiency (SACREEE), conducted the 3rd Policy Workshop under Southern African Solar Thermal Training and Demonstration Initiative (SOLTRAIN) project for Namibia.

Around 28 participants from the regulator, academia, municipalities, vocational training centres (VTCs), government ministries, SACREEE, private sectors and financial institutions, attended the workshop which was held at the Namibia University of Science and Technology (NUST) on 9 August.

The main objectives of the 3rd Policy workshop were to bring together government ministries, electricity supply industry key players, industry associations, financials, donors, researchers and academia to discuss funding opportunities and the mobilisation of national and international financial resources for the implementation of the Namibia Solar Thermal Technology Roadmap (STTR). In addition, the workshop also aimed to discuss the necessary roles and measures for the implementation of the Namibia STTR.

It highlighted some of the successful solar heat implementation programs for the acceleration transformation of the Namibia energy system towards more energy efficiency (EE) and renewable energy (RE) to reach the goal of self-sufficiency.

Director of Energy in the MME, John Titus, highlighted the goal of the Namibia STTR of achieving a fully functional 0.5 m^2 (approximately 0.35 kW thermal equivalent) of flat plate solar thermal collector installed capacity per inhabitant in the country by 2030. He further indicated that, by achieving the said penetration of solar thermal collector installed capacity, around 1.5 million m^2 of collector area need to be installed by 2030.

Titus said the STTR will help in achieving the goals of the National Energy Policy and Renewable Energy Policy on ensuring the security of all relevant energy supplies to the country, create cost-effective, affordable, reliable and equitable access to energy for all Namibians, promote the efficient use of all forms of energy and incentivise the discovery, development and productive use of the country's diverse energy resources.

''The value of energy efficiency in relation to avoided generation is not well quantified and therefore often poorly understood, and, in most cases, it is not part of investment decisions. The intervention of SOLTRAIN in the country has quantified these benefits of separating heating demand from total electricity demand to align the country with the energy transition," said Titus.

The increased use of solar thermal energy has the potential to reduce Namibia's dependency on imported electricity, reduce greenhouse gases (GHG) emissions, increase the security of local supplies and create savings for end-users, creating job opportunities, thus resulting in positive macro-economic benefits.

Werner Weiss, Director of the Austria-based Institute for Sustainable Technologies (AEE – INTEC) and the SOLTRAIN Project Coordinator shared some successful solar heat implementation programs in his virtual presentation to the workshop. He shared lessons and opportunities in other countries and highlighted some successful solar heat implementation programs around the world.

Weiss said in order to accelerate the use of solar energy, all leading countries have introduced either subsidies, obligations, tax credits or tax incentives. However, he highlighted that promoting renewable heating through financial incentives

taken from the public budget becomes more and more difficult as the market volumes increase, but a key advantage of solar obligations is that they have a very limited impact on public budgets.

He pointed out some of the support schemes such as demand side support mechanism, direct grant and rebate schemes and certification trading schemes for tradable certificates.

Helvi Ileka, Acting Director of NEI and SOLTRAIN project focal person for Namibia, shared information on the developments since the last two policy workshops and the status of the funding application for Namibia STTR.

She said funding was availed by MME to hire a consultant for the Namibia STTR to be converted into a bankable proposal and that technical assistance was being sought from the African Development Bank (AfDB) to ensure that a bankable proposal supported by financial institutions was developed.

Anders Cajus Pedersen from the AfDB African Development Fund, in his virtual presentation, shared the financing mechanisms on solar water heater programs and the on-bill financing scheme.

He said most of the energy efficiency investment was in the building sector, followed by the transport sector and then the industry sector.

Pedersen highlighted some benefits of energy efficiency on the environment (lowering GHG emissions and other pollutants), economic (lowering individual utility bills, create jobs, and help stabilise electricity prices and volatility), utility system benefits (providing long-term benefits by lowering overall electricity demand, thus reducing the need to invest in new electricity generation and transmission infrastructure) and on risk management (helping diversify utility resource portfolios and hedging against uncertainty associated with fluctuating fuel prices).

He shared his experience on the on-bill financing mechanism (OBF), used by a utility company to finance energy-efficiency improvements in a building or a facility. The utility provides financing (i.e., loan) to its clients for implementing RE and EE measures. The OBF is designed to address the initial cost barrier to adoption of EE technologies and services.

Some of the advantages of the OBF highlighted by Pedersen include addressing "first-cost" hurdle to customer adoption by requiring little capital up front, it can be structured to use third-party capital at no cost to taxpayers or ratepayers, provides a secure revenue stream because failure to pay can be tied to disconnection, can use past bill repayment as a proxy for credit, expands access to retrofits and lowers cost of capital because threat of utility shut-off leads customers to prioritise utility payments and leverages existing utility resources and customer practices to collect payments.

However, he also highlighted some challenges with the OBF such as utilities could be reluctant to take on role of financing entity; potential exposure to consumer lending laws, may require up-front investment by utility to reform billing structures and other systems and in certain instances, ensuring that energy savings will exceed loan/tariff payments could be difficult.

The workshop concluded that AfDB will offer technical assistance to the Terms of Reference (TOR) developed by NEI for converting the Solar Thermal Roadmap into a bankable proposal. Furthermore, AfDB indicated that it will provide inputs to the bankable proposal once it is developed.

The workshop ended with a technical tour to the SOLTRAIN funded demonstration system at the Katutura State Hospital Maternity Ward solar water heating system.

Workshop participants on a technical tour of the Katutura State Hospital Maternity Ward solar thermal system installation.

ANOTHER FIRST *… Pinehas Mutota, ECB GM Economic Regulation issues licenses to Nico Knight, Emesco Energy Namibia's* Business Development Manager. Photo: Emesco

Emesco granted generation and export licence for 125MW Karasburg solar energy plant

The Electricity Control Board (ECB) has issued generation and export licenses to Schonau Solar Energy, a 125 MW solar PV plant being developed by renewable energy company Emesco in Karasburg, in the southern tip of the country.

The project is estimated to cost US$105 million (approximately N$1, 8 billion).

The licences are the first of their size and kind to be issued by the ECB under the Modified Single Buyer (MSB) Framework.

Emesco's solar plant will generate electricity for 25 years and will export its power via South Africa into the Southern African Power Pool's (SAPP) competitive electricity markets. The SAPP operates four competitive electricity markets between 12 member countries and has facilitated trade between utilities in southern Africa since 1995. The operating member countries include Namibia, Botswana, Democratic Republic of Congo, Eswatini, Lesotho, Malawi, Mozambique, South Africa, Zimbabwe and Zambia, which are primarily represented by each country's national utility.

The SAPP is allowing and encouraging private companies to join it to trade electricity via its organised markets. This is supported by the ECB's MSB market structure which enables private companies to export power to the regional power pool.

Emesco's registration of Schonau Solar Energy as a market participant on SAPP will make it the first independent solar power producer (IPP) to contribute to the SAPP grid under the MSB framework. NamPower, together with Schonau Solar Energy as market participant on SAPP, will co-ordinate the export and trade of electricity on the regional power pool competitive market.

Pinehas Mutota, ECB General Manager for Economic Regulation said: "The ECB is pleased that the Modified Single Buyer Model has gained momentum, it is our belief that the MSB will contribute to the government objectives for Namibia to become an energy exporter. The issuing of the generation and export licenses to Schonau and other players is an indication and commitment by the Namibian government to assist in reducing the power deficit in the region."

Emesco Commercial Director Pieter Rossouw said: "The Schonau project is a major step towards Namibia becoming a net exporter of energy through harnessing its abundant solar resource. The project will add to a diversified energy mix, reduced costs, and decarbonisation in the Southern African Power Pool. Emesco is developing its pipeline of similar sized projects to provide renewable energy to support the green hydrogen initiative in Namibia and further expansion in the SAPP region."

Rossouw said Emesco has developed a significant pipeline of projects that includes solar, wind and storage technologies to be rolled out in Namibia with further expansion into the SADC region planned in the near future.

Emesco is a full lifecycle energy services company delivering reliable, cost-effective, clean energy into renewable energy markets in Southern Africa. The company's development, engineering and operational services ensure revenue generating assets are implemented on time and are maintained at their highest levels of efficiency to optimize return on investment.

Namibia to Drive World Decarbonisation – Hyphen CEO

Namibia's green hydrogen industry will be at the forefront of driving global decarbonisation says the Chief Executive Officer of Hyphen Hydrogen Energy (Pty) Ltd, Marco Raffinetti.

Hyphen Hydrogen Energy is the company earmarked to pioneer the scale-up of hydrogen production in Namibia, having been awarded preferred bidder status at COP26 last November, 2021.

"What we are trying to do – together with the government of Namibia – is not just craft a project, what we are trying to do is to craft an industry… an industry that is not just important to Namibia, but important to the globe as we drive decarbonisation," says Raffinetti during a conversation on the *IJGlobal* podcast – Infra Dig.

IJGlobal is an infrastructure journal and project finance magazine which provides market leading intelligence for the energy and infrastructure finance industry.

The US$10 billion Southern Corridor Development Initiative project is being driven by the Namibian government in an endeavour to lead hydrogen production in the region, create 15,000 jobs in the country, and – at full development – produce 350,000 metric tonnes of green hydrogen per annum.

These hydrogen ambitions will be powered by 5GW of renewable energy generation capacity and 3GW of electrolyser capacity on land owned by the government, with the option to scale up dramatically.

Raffinetti says "an enormous amount" of work has so far been done on the project.

"Personally, this is the most ambitious and important project that I have had the privilege to work on," he says.

Raffinetti believes that ultimately, Namibia could house up to 50 similarly sized hydrogen projects.

"Namibia is the second least populated country in the world. It is the thirty-fifth largest country by land mass. On top of that, you have some of the best solar and wind resources in the world. And those are the ingredients you need," he says.

He emphasises that "working together with the government is critical to unlocking this venture. With a country of only 2, 5 million people, seldom can you work on one single project that can have such an enormous change in trajectory for a country.

Since COP26 Hyphen has been busy assembling a team to deliver the project and is currently seeking to move on to "awarded bidder" status which relies on the conclusion of legal agreements with the government.

"Because this is a nascent industry and we are trying to do something incredibly ambitious, the discussion with government has been about how we enable this industry," Raffinetti says.

Hyphen CEO Marco Raffinetti

This stage of the process is all the more important as Namibia has every intention of scaling up hydrogen production in years to come.

"Ultimately, Namibia and the world is not successful if we have one project, we need to have 100s of these projects – 1,000s of these projects – similarly scaled in order to have any impact on carbon reductions," he adds.

Namibia's green hydrogen project will represent the largest single foreign direct investment into the country.

"It truly is of an enormous scale. And project financing we believe will play an integral role in financing the project. We don't think we will get there without project finance," says Raffinetti.

"The really interesting discussions we are starting to get into with lenders is around the government support mechanisms – not only Namibian government support mechanisms, but also external support mechanisms driven particularly by the Europeans who are looking to drive the climate agenda… but also (Joe) Biden's *Inflation Reduction Act* that has just been passed," he adds.

***MILESTONE** … The solar park just outside Windhoek completed by Namibian Engineering Corporation in March 2022.*

NEC completes 3,1MWp solar park outside Windhoek

In July, it was announced that the Electricity Control Board (ECB) approved a 7, 30% increase in the average bulk tariff. The tariff increase will be applicable to all NamPower bulk customers. Distribution utilities like the Regional Electricity Distributors (REDs), local authorities and regional councils are still allowed to apply to the ECB for a review of their distribution tariffs, which become applicable to consumers once approved.

Electricity tariffs in Namibia and all over the world are on the increase. In addition, there is a growing concern about Namibia's grid stability due to the dependency on electricity supplied by South Africa's Eskom. This supply contract is up for review soon. And even though NamPower indicated that it will reduce Namibia's dependence on Eskom to just 100MW (down from 300MW currently), it remains to be seen whether Eskom will actually able to continue to supply any power to Namibia, given the utility's challenges in fulfilling the demand at home in South Africa.

A growing number of businesses in Namibia are making big investments to install solar plants and battery back-up on the systems to support their load and

the grid.

Namibian Engineering Corporation (NEC Power & Pumps) started with civil works on a 3, 1 MWp solar park just outside Windhoek in June 2021. Due to the ongoing worldwide shortages in various supply chains, major parts and components were delayed and the project was only completed in March 2022.

This new solar park makes use of 5 890 Jinko bi-facial modules. Bi-facial modules have the benefit of generating power from both direct sunlight as well as reflected light by being double-sided panels. This provides 5 to 8% more yield over a year, being particularly effective once direct sunshine

is reduced by light cloud cover or dust in the air.

To further provide the highest yield to the client, the panels were mounted on Ideematec LTec single axis trackers which allow them to follow the movement of the sun through the course of the day, optimised for every day in the year. This further enhances the efficiencies of the plant. The overall tracker gains are about 24% compared to fixed installations.

The panels are connected to 19 150 kVA SMA inverters via String DC combiner boxes to optimise production and ensure highest safety precautions for the equipment. The high efficiency SMA inverter AC output power is stepped up to the client's 1 kV ring-main reticulation to distribute the solar power to the entire commercial setup. Safety relays, protection panel and plant monitoring has been installed in the onsite control room, and can also be remotely controlled. All loads on the commercial property are provided with clean solar power during the day.

This solar plant has been designed and built ready to be integrated into a hybrid setup. This ensures that the plant can be extended to operate grid independent in future should the need arise and allows for the import of other energy sources that are to be linked the clients grid in future. As the client has a focused day time operation, the plant has a very fast payback period of under three years.

To ensure optimal production and up-time, the plant will be operated under an NEC Operational Maintenance (O&M) agreement.

NEC Power & Pumps has long standing experience in the design, optimisation and construction of solar parks which includes hybrid solutions as well as full island

***HI-TECH**… The solar park's inverter container.*

solutions for the off-grid market. Since 2014, with the installation of the first MW solar park in Namibia (Omburu 1), where NEC was the main contractor, a further 5MW solar plants were added to the grid, by NEC installation teams in recent years.

NEC believes in the highest quality solar installations so that clients can put their trust in renewable energy. Solar plants are designed based on the clients requirements to ensure that the demand matches the production and that systems are supported with battery back-up and generators where required.

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Namibia Green Hydrogen Research Institute Moves to Boost Local Knowledge and Skills

With Namibia's green hydrogen economy fast gathering momentum, the University of Namibia (UNAM) has established the Namibia Green Hydrogen Research Institute (NGHRI) which will serve as a national research and capacity building hub.

NGHRI will conduct local research and provide innovative solutions and will also help to up-skill and re-skill Namibians as well as develop local businesses across the value chain of green hydrogen.

Professor Anicia Peters, UNAM Pro-Vice-Chancellor for Research, Innovation and Development, said NGHRI was established in October 2021 and it will collaborate with organisations who develop local businesses. Peters said UNAM has seconded two dedicated staff members to the NGHRI for coordination.

The institute will be home to researchers and students, as well as exchange staff and students from international institutions, experts from private sector and government departments.

NGHRI boasts six key centres;

- Centre for Clean Hydrogen Production
- Centre for Hydrogen Storage, New Materials and Delivery
- Centre for Hydrogen Fuel Cell Technology and Mobility Applications
- Centre for Hydrogen Energy Use, Economics, Law, Environment & Society
- Centre for Hydrogen Capacity Building, Competence and Standards, and
- Centre for Hydrogen Digital and Emerging Technologies.

Peters said collaboration with government and private sector partners, international academic and research institutes was identified as key to institute's success.

UNAM's strengths to support the green hydrogen economy include having climate change mitigation and adaptation as strategic goal, having deployed successful pilots in desalination and renewable energy (wind, solar and biomass) and having over 70 researchers already working in green hydrogen related research areas. UNAM also has campuses (12 in total) and land countrywide, with a large agriculture footprint for expanding green schemes and offtake of fertiliser. NGHRI will commence with three green hydrogen pilot projects with partners under Joint Communique of Intent (JCoI) program.

"Green hydrogen needs different layers of skilled personnel and capacity building for entrepreneurs and unemployed youth. Coordination and collaboration for skills development is a prerequisite," said Peters. UNAM has concluded a number of agreements with international universities, local and international private sector partners in the area of green hydrogen. During the COP26 summit, UNAM engaged the University of Edinburgh in Scotland on possible partnerships in the area of green hydrogen.

"Such strategic partnerships also include financing, equipment, training and expertise exchange, which includes serving as a member of the Council of Scientific and Industrial Research (CSIR), Energy Research and Development and Innovation Advisory panel in South Africa astute research and regulatory bodies," Peters explained.

Namibia National Green Hydrogen Conference

Swakopmund hydrogen power plant to produce electricity by 2024

French independent power producer (IPP) HDF Energy says its green hydrogen power plant outside Swakopmund, touted as Africa's first, will start producing electricity by 2024.

Once operational, the N$3,1 billion power project will supply clean electricity, 24 hours a day all year round, boosting Namibia's precarious electricity supply situation.

HDF recently had its scoping report approved by the Ministry of Environment, Forestry and Tourism and can now proceed with finalising the Environmental and Social Impact Assessment report.

"This important step in the permitting process confirms a favourable context for the project. As a result, HDF Energy is one step closer to constructing the first green hydrogen power plant in Africa, among the first that HDF Energy deploys globally. It comforts the capacity of Namibia to become a trailblazer in green hydrogen power that others will emulate. This step is also one of many that ensures compliance with the Namibian laws and for the benefit of the Namibian people," said Nicolas Lecomte, HDF Energy director for Southern Africa.

The Swakopmund power project will see the construction of an 85 megawatt solar photovoltaic plant powering electrolysers to produce hydrogen that can be stored.

"Yearly we can produce 142 gigawatt hours, enough for 142,000 inhabitants and that is conservative," Lecomte said.

HDF Energy Namibia is a subsidiary of the French IPP HDF (Hydrogène De France) specialising in hydrogen power. HDF

has launched its operation in the Southern African market and is fully committed to addressing Namibia's energy needs starting with the initiation of the Renewstable Swakopmund (RSWK) as a non-intermittent renewable electricity power plant in the country.

HDF will use Namibia's solar potential to participate in the implementation of the partnership signed between the country and the European Union (EU) for the development of the green hydrogen industry.

The RSWK project is expected to create 300 direct jobs during its construction phase and 45 during the operational phase with more jobs anticipated to be created indirectly across the value chain. The project also aims to contribute to Namibia's knowledge base and development of the green hydrogen economy through partnerships with universities and training institutions.

EIF hands over solar-powered mini desalination plants

The Environmental Investment Fund of Namibia (EIF) recently handed over solar powered reverse osmosis units installed at the three community water points, namely Farm Vrede, Goiegeluk Pos and Santamab Pos in the Spitzkoppe area.

These technologically-advanced facilities will contribute massively to improving livelihoods of the communities at these three communal farms. The EIF funded the pilot project to the tune of one million Namibia dollars from its own resources. The water softening facilities will make water at the three community water points suitable for human consumption and irrigation purposes.

EIF Chief Operations Officer Karl Aribeb said the small initiative will go a long way in contributing to a broader goal of achieving universal and equitable access to safe and affordable drinking water for all.

Aribeb further highlighted that Namibia is a water-scarce country and ranks amongst the 30 driest countries in the world.

"It is against this background that I would like to urge all stakeholders and implementing partners of this project to ensure that the little water that we have is conserved, respected, shared and enjoyed by present and future generations in our country," he said.

***ACCESS TO SAFE DRINKING WATER** … One of the solar powered reverse osmosis units installed by EIF at the three community water points in the Spitzkoppe area.*

Governor of the Erongo Region Neville Andre Itope said the mini desalination plants will ensure an efficient and a regular water supply system for the whole community.

"The three mini desalination plants are a result of concerted effort in addressing climate change at the local level. These facilities are expected to impact many beneficiaries, including small-scale farmers in the area. In the process, they will improve sanitation, hygiene and serve as a platform for rural economic emancipation to many households in the Daures Constituency," he said.

Director of Rural Water Supply, Sanitation and Coordination in the Ministry of Agriculture Water and Land Reform, Elijah Ngurare, said he was confident that the investment made by the EIF into the technologically advanced mini desalination facilities will contribute massively to improving community livelihoods of the communities at the three communal farms.

Wernhil's 2nd Solar System Comes into Operation

***LOWERING CARBON FOOTPRINT** … Wernhil's first solar system started generating electricity in the first week of October, 2019.*

Wernhil Shopping Centre's new carport solar installation is now in operation with a peak capacity of 990 kW, complementing the existing 1, 13 megawatts from a rooftop solar photovoltaic system installed three years ago.

With a capability to produce 2 108 700 kilowatt-hours (kWh) annually, the new solar system at Windhoek's iconic shopping mall which came into operation on 5 September forms part of the second phase of Wernhil's solar installations. The two systems were engineered and installed by O&L Nexentury with another Ohlthaver & List subsidiary, Kraatz Engineering, as a sub-contractor on the new system.

O&L Nexentury was created following the merger of O&L Energy and Cronimet.

The company's Managing Director Bernd Walbaum said the Wernhil carport PV system was the 11th solar plant that O&L Nexentury had developed and built within the O&L Group.

"The advanced bifacial solar PV panel technology of the system enables the capturing of sunlight on both sides of the panels, unlike their mono facial counterparts. Besides these projects, there are further interesting renewable energy projects in Namibia, South Africa, Botswana, West Africa and Germany (that O&L Nexentury is pursuing)," Walbaum said.

The system consists of 1,517 Canadian Solar modules and nine high-tech inverters, creating a PV capacity of 990-kilowatt peak (kWp).

Broll Namibia Managing Director Terence Makari said the new installation will greatly support the O&L Group as it continues to reduce its carbon footprint by shifting to sustainable energy sources.

"We recognise our collective responsibility to urgently address climate change and this solar plant will greatly support us as we continue to reduce our carbon footprint by shifting to sustainable energy sources. Thanks to this installation we can expect a reduction in our carbon dioxide emissions of about 2100 tonnes per year as well as savings of an estimated N$1, 28 million in the plant's first year," Makari said.

From the left, Terence Makari, Broll Namibia MD, Gideon Shilongo, O&L Group Director for Corporate Affairs, and Bernd Walbaum, O&L Nexentury MD, at the launch of the O&L Group's second solar installation at Wernhil Shopping Centre.

Wernhil's first solar system installed by the then Cronimet started generating electricity in the first week of October, 2019. It consists of 400 Wp PERC modules technology. The technology deployed maximises the production of electricity from the sun's rays.

REIAoN Kicks Off Renewable Energy Rural Awareness Campaign

The Renewable Energy Industry Association of Namibian (REIAoN) has launched the Renewable Energy Rural Awareness campaign financed by the GIZ Green People's Energy project.

The rural awareness campaign will help improve access to information and strengthen advocacy for rural renewable energy product and service providers, through the creation of awareness and training. REIAoN, being the relevant industry representative, is ideally positioned to leverage its position to support and maximise the impacts of the off-grid renewable energy sector.

The awareness campaign will focus on the Kavango East and West, Zambezi, Ohangwena, Kunene, Hardap and !Karas regions.

REIAoN Project Manager Anna Hamukwaya said the campaign will focus on renewable energy technologies and services in rural areas, while also creating awareness on matters relating to the adoption and use of renewable energy and energy efficient technologies.

"We also aim to establish a network of professional relationships with SMEs within the renewable energy industry that are based in different regions, as well as international bodies; to advocate for renewable energy related projects in communities through local authorities and to teach the communities about RE, how it can be incorporated in their daily lives for their small businesses, farming or agricultural purposes or day to day household use," said Hamukwaya.

REIAoN aims to sign up at least 50 new members by the end of the campaign.

"Regional authorities in different regions have identified communities within their jurisdiction that we will be visiting, for example, Shikenge in Kavango East, Mpungu in Kavango West, to name a few. The aim is to visit at least two communities within each region over a period of one month," said Hamukwaya.

Alastair Aspara, REIAoN Vice Chairperson said wind and solar do not require water, which is beneficial to rural areas especially where farms are concerned. He said households can use renewable energy for power, cooking, charging batteries and heating up homes. There is also major economic benefit to be had in the use of renewable energy in rural communities, especially in improving methods of subsistence and small-scale commercial farming.

The REIAoN team engaging learners and community members at Shikekete school in Kavango West.

REIAoN Consultant Harald Schütt demonstrating the solar cooker to residents of Shikenge village in Kavango East.

The awareness campaign will also share information through platforms such as radio clips in various local languages and distribution of flyers, catering for over 12 rural communities and reaching over 2000 people.

"Additionally, we will be doing rural stakeholder engagements and advocacy meetings with several local authorities and local agencies (excluding municipalities and town councils). Furthermore, REIAoN hopes to establish at least one professional partnership with a renewable energy association occupying a similar position in a foreign or global market through this campaign," said Aspara.

REIAoN's objectives include the promotion of matters concerning renewable energy, with a focus on renewable technologies, to create awareness on matters relating to the adoption and use of technologies using renewable energies and energy efficient technologies and practices and to establish a network of professional relationships with national and international bodies that share similar objectives.

DIRE SITUATION *... South Africa has suffered a record year for power cuts, with state-owned Eskom unable to meet demand as its fleet of aging coal stations experience frequent breakdowns.*

South Africa Turns to Wind Power to Ease Record Load Shedding

South Africa will move ahead with the allocation of three onshore wind stations from a delayed round of bidding to provide renewable power, an initiative intended to help mitigate record levels of power cuts.

The Coleskop Wind Power, San Kraal Wind Power and Phezukomoya Wind Power developments are ready to be signed off following the receipt of regulatory approvals, the Department of Mineral Resources and Energy announced. Other projects are expected to be finalised at a later date.

A total of 25 wind and solar power projects worth about N$50 billion of investment and forecast to add nearly 2,600 megawatts to the national grid were announced almost a year ago.

South Africa has suffered a record year for power cuts, with state-owned Eskom unable to meet demand as its fleet of aging coal stations experience frequent breakdowns. The government has rolled out a number of programs to add capacity, but they have been prone to delays.

The energy department originally planned to reach financial close for the fifth round within six months of announcing the winners on 29 October.

Business Leadership South Africa Chief Executive Officer Busi Mavuso said the country risks falling behind in its plans as many countries turn to renewable energy in reaction to growing demand and geopolitical events that have erupted over the last few months.

This is while South Africa itself is in crisis and desperate for new power generation amid the worst levels of load shedding on record.

Mavuso pointed out key events that are creating a storm for future energy plans:

- In South Africa, Eskom's grid is under constant pressure, with load shedding becoming more frequent and higher stages more common.
- California (in the U.S.) recently had warnings of blackouts as extreme temperatures led everyone to switch on their air conditioners and put the grid under unprecedented pressure.
- The EU and UK are facing record gas and electricity prices, leading to a cost-of-living crisis. The EU is desperately trying to reduce its reliance on Russian gas for energy.
- China plans to add at least 100,000MW of renewable energy over the next five years.

This means there is a global rush on components for solar and wind energy production that will complicate global supply chains and capacity, Mavuso said – just as South Africa is planning an aggressive ramp-up in build rates of its own.

"Already we have been tripped up by global conditions. Round 5 of the Renewable Energy Independent Power Producers Programme has been caught out by delays between the finalisation of preferred bidders and financial close."

Financial close happens when all financial terms, including the amounts needed for capital expenditure and the cost of finance, are agreed upon and signed off. Up to that moment, projects are vulnerable to moving market prices.

With global demand for renewables now increasing, Round 6 of the programme will also be affected.

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