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Homegrown energy transition agenda

'Energy transition' is currently a buzz phrase in the energy sector worldwide.

Simply put, 'energy transition' pertains to the process of replacing fossil fuels with low carbon energy sources, such as solar and wind. More generally, an energy transition is a significant structural change in an energy system regarding supply and consumption.

The current transition to sustainable energy is largely driven by a recognition that global greenhouse-gas emissions must be brought down lower levels. Since fossil fuels are the largest single source of carbon emissions, the quantity that can be produced is limited by the Paris Agreement of 2015 to keep global warming below 1, 5 °C.

Over 70% of the global greenhouse gas emissions result from the energy sector. It has been wisely concluded that solar and wind power have the greatest potential to mitigate climate change. In addition to this, the transition to renewables is driven by the rapidly increasing competitiveness of both solar and wind technologies.

In recent times, energy transition has also been influenced by the ongoing conflict between Russia and Ukraine which has resulted in energy prices surging in Europe and elsewhere, as Russia curtails fossil fuel exports with the aim of pressing the European Union to reduce its support for Ukraine.

Namibia, with its immense green hydrogen potential, has recently become the centre of attention in the energy transition largely driven by the increasing pressure on Europe to find alternatives. Understandably, this has caused some discomfort in some local circles.

Mines and Energy Minister Tom Alweendo has been vocal against pressure from the West on Namibia and Africa to switch from fossil fuels to renewables. This coming after recent discoveries in oil and gas in Namibia.

Alweendo has argued that rushing Africa to abandon fossil fuels showed a total lack of concern by the West about the negative impacts this will have on the African countries. Most of Africa, Namibia included, still faces serious economic challenges as a result of energy deficit, with millions of citizens still lacking access to electricity.

Namibia, and the rest of the continent, needs to develop its own energy transition timeline that takes into account the pressing needs of its people. Africa's energy transition should not be dictated by the developed world that for centuries built its economies on fossil fuels, and is largely responsible for global warming.

Africa should be given the opportunity to harness its natural resources (both renewable and fossil fuels) in order to reap the economic benefits that come with eradicating energy poverty.

Read about this and other exciting news on green hydrogen developments inside.

As the curtain comes down on an eventful 2022, the ***Etango*** Team would like to thank all our readers and advertisers for appreciating the value of our publication and supporting us throughout the year. We would also like to wish you a Merry Christmas and prosperous 2023. Stay safe and see you soon.

Happy Reading!
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INTERNATIONAL RECOGNITION ... The Orange River Vineyards Investment (ORVI) social housing project in Aussenkehr has won the prestigious International Energy Agency Solar Heating and Cooling Programme (IEA SHC) Solar Award. The installation of the thermosyphon systems at ORVI was supported by the SOLTRAIN project, both technically and financially. **Photo: Tabby Moyo**

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BALL ROLLING ... A Namibian delegation led by President Hage Geingob, together with leaders of European partner nations, during Namibia's Green Hydrogen Strategy launch at the recent COP27 held in Sharm El Sheikh, Egypt.

Namibia Unveils Green Hydrogen Strategy

Namibia's Green Hydrogen Strategy was unveiled to the world during the 2022 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC, commonly referred to as COP27, held in Sharm El Sheikh, Egypt.

In the strategy, Namibia sets out how it intends to capitalise on the global hydrogen market potential, leveraging on its world-class renewable energy sources which enables it to produce hydrogen at a low cost.

Namibia reveals that it will focus mainly on the export of hydrogen derivatives including ammonia, methanol, synthetic kerosene and hot-briquetted iron. Three hydrogen valleys will form a green fuel ecosystem, while green fuels will catalyse deeper regional value chains and cooperation in Southern Africa.

Namibia believes that its nascent green hydrogen industry will boost the country's gross domestic product (GDP) and quality of employment, accelerate the goals set out in the Harambee Prosperity Plan to deliver broad-based prosperity to citizens, enable green growth goals and ultimately boost economic development.

“Namibia believes that its nascent green hydrogen industry will boost the country's gross domestic product (GDP) and quality of employment, accelerate the goals set out in the Harambee Prosperity Plan to deliver broad-based prosperity to citizens, enable green growth goals and ultimately boost economic development.”

A skills development strategy will create sufficient talent, while fit-for-purpose regulatory and institutional framework will be put in place. A modern delivery support system will help investors and project developers navigate Namibia's hydrogen landscape.

According to the GH2 Strategy, a shared infrastructure will enable integration of hydrogen clusters and lower costs, while Namibia will seek to forge relationships with international partners dedicated to building the hydrogen economy, through strategic diplomacy.

In his foreword, President Hage Geingob says the Green Hydrogen Strategy complements the 2nd Harambee Prosperity Plan's economic advancement pillar which aims at the development of complementary engines of growth.

"Additionally, building a thriving hydrogen industry in Namibia has the potential to make a major contribution to solving the global climate crisis while also building broad-based prosperity for our citizens. Scientists from the international panel on climate change, the International Energy Association (IEA) and the International Renewable Energy Agency (IRENA) have produced a plethora of research that contains the same conclusion – there is an urgent need to accelerate our efforts to decarbonise our energy systems. Namibia plans to respond accordingly," Geingob says.

"We therefore invite like-minded partners, public and private, to join us as we embark on an exciting and transformative journey to re-shape the global energy and industrial landscapes into a more sustainable home for all mankind."

It is believed that green hydrogen will play a crucial role in the global decarbonisation effort because of its versatility and unique ability to connect power, gas, chemicals and fuel markets, especially in hard-to-abate sectors.

Under a net-zero by 2050 scenario, global demand for hydrogen and its derivatives is expected to soar from an estimated 140 metric tonnes per annum (mtpa) of hydrogen equivalent in 2030 to 660 mtpa in 2050.

With its world-class renewable energy sources, Namibia is poised to help fill the anticipated global hydrogen demand-supply gap and lower the cost of the net-zero transition. Many countries will not be able to meet their demand fully or cost-effectively through domestic production; instead, they will rely on energy partnerships with countries like Namibia that have more abundant renewable resources to close supply gaps and lower costs.

Namibia is also well placed to serve markets in Europe, China, Japan and South Korea and other parts of the world and aspires to create an at-scale green fuels industry with a production target of 10-12 mtpa hydrogen equivalent by 2050. To this end, three hydrogen valleys will be developed in the southern region of Kharas, the central region which includes the Walvis Bay port and the capital Windhoek, and the northern region of Kunene.

It is envisaged that by 2030, the hydrogen industry could contribute up to US$6 billion (N$102 billion) to GDP, 30% more than 2030 GDP estimates with no hydrogen industry development. This would boost labour demand by generating up to 80,000 additional jobs by 2030, and up to 600,000 by 2040.

Local content manufacturing, in renewable energy components and sustainable biomass harvesting, will further enhance economic development, while a comprehensive skills development strategy based on domestic talent sourcing and attractive immigration policies will ensure sufficient labour supply.

A shared infrastructure backbone established as part of the country's first large- scale green hydrogen project (Hyphen Hydrogen Energy) will enable integration of several hydrogen clusters and lower costs.

Recognising that the cost of capital is a key determinant of hydrogen and derivatives production costs, Namibia is setting up a facility to mobilise concessionary climate finance to de-risk investments and lower the cost of capital for hydrogen projects.

As a global leader in conservation and nature-based rural development, Namibia will set the bar on environmental and community-responsible development in the hydrogen economy. As the country develops its vast but finite and delicate renewable resources, it will explore transparent auctions, joint ventures and/or government-to-government agreements with the speed needed to support energy security, combat climate change and maximise the opportunity to create sustainable wealth for the people of Namibia.

Green hydrogen generated from renewable energy will become more and more cost-competitive as electrolyser and renewable costs decrease. From 2040, green hydrogen is expected to dominate the global supply, rising from about 20% of the total hydrogen mix in 2030 to about 70% by 2050.

SMART PARTNERSHIP... President Hage Geingob in discussion with Dutch Prime Minister Mark Rutte on the sidelines of the just-ended COP27 held at the Egyptian resort of Sharm El Sheikh.

Netherlands Commits N$700 Million For Namibia Green Hydrogen Ecosystem

The Dutch government will avail 40 million Euros (about N$700 million) to Namibia as seed capital to establish a green hydrogen ecosystem in the country.

The funds will be made available through the 'SDG Namibia One Fund' announced by Dutch Prime Minister Mark Rutte during the just-ended 2022 United Nations Climate Change Conference or Conference of the Parties of the UNFCCC (COP27), held at the Egyptian resort of Sharm El Sheikh.

The grant was revealed to President Hage Geingob on the sidelines of the COP27, as the two leaders discussed the need to forge a stronger partnership to implement commitments aimed at dealing with the climate emergency.

The Dutch grant will be chanelled through the Environmental Investment Fund of Namibia (EIF) from the Dutch Climate Fund Managers and the infrastructure funding vehicle Invest International.

Namibia will also receive a substantial amount from the European Union through the European Investment Bank for purposes of building green hydrogen and renewable energy projects in the country.

President Geingob said the funds committed by the Netherlands and the European Union represented the largest amount of concessionary finance to combat the effects of global warming that Namibia has secured to date.

The focus of the Dutch funding will entirely be on the development of a hydrogen ecosystem in Namibia, with the aim of opening it up for substantially higher European funding amounts up to 1 billion Euros (about N$18 billion).

Jan Kruse, Non-Executive Commissioner of the Investment and Development Agency for Northern

Netherlands, told ETANGO that the cluster of gas and hydrogen-related Dutch companies and institutions were ready to provide valuable contribution to the build-up of a hydrogen ecosystem in Namibia with their front running experience in creating a 'Hydrogen Valley'.

"Most of that potential has not been demonstrated to Namibia yet. The funds made available will hopefully trigger a matchmaking process between Namibia and the Netherlands, forging mutually beneficial co-operations," said Kruse, who is also a private investor in Namibia.

The Dutch harbour of Rotterdam recently signed a Memorandum of Understanding (MoU) with the Namibia Ports Authority (Namport) to strategically position itself as a major player in the export of green hydrogen to European markets.

Namport and the Port of Rotterdam will collaborate on various areas, including facilitating the forecasted growth and flow of the green hydrogen supply chain from Namibia to Europe.

As part of its positioning and readiness for the emerging green hydrogen industry, Namport has set aside 350 hectares of land at the Walvis Bay North Port for allocation to hydrogen-related industries.

Namport says while the solar and wind farms will be stationed inland or offshore, the electrolyser which produces the green hydrogen, as well as the factory that converts the hydrogen into ammonia, would need to be located inside a port close to a berth from where the ammonia or the liquid organic hydrogen carriers (LOHC) will be exported in order to ensure cost-effectiveness and competitive pricing.

The agreement with the Port of Rotterdam gives the Namibian hydrogen initiative a great opportunity to form part of the energy supply mix to serve north-western Europe. The Netherlands is at an advanced stage of planning for the deployment of green hydrogen energy and the Port of Rotterdam anticipates a demand of 20 million tonnes of hydrogen per annum to pass through its port industrial complex by the year 2050.

NEW FRONTIERS ... *Port of Rotterdam Director, René van der Plas (seated left), and Namport CEO Andrew Kanime recently signed a MoU which will see the two ports cooperating in the handling of green hydrogen from Namibia.*

The Dutch northern province of Groningen became the first EU nominated 'Hydrogen Valley' because of its broad existing hydrogen eco-system, focussed on local applications. The region contains the biggest European natural gas field which has been in production for over 50 years.

This resulted in an enormous concentration in Groningen of gas-related infrastructure, supply industry and knowledge institutes around gas technology, employing around 15,000 people. However, this Dutch gas field is nearing the end of its life and hence the combined effort of the Groningen provincial government and industry is to migrate this unique eco-system to hydrogen.

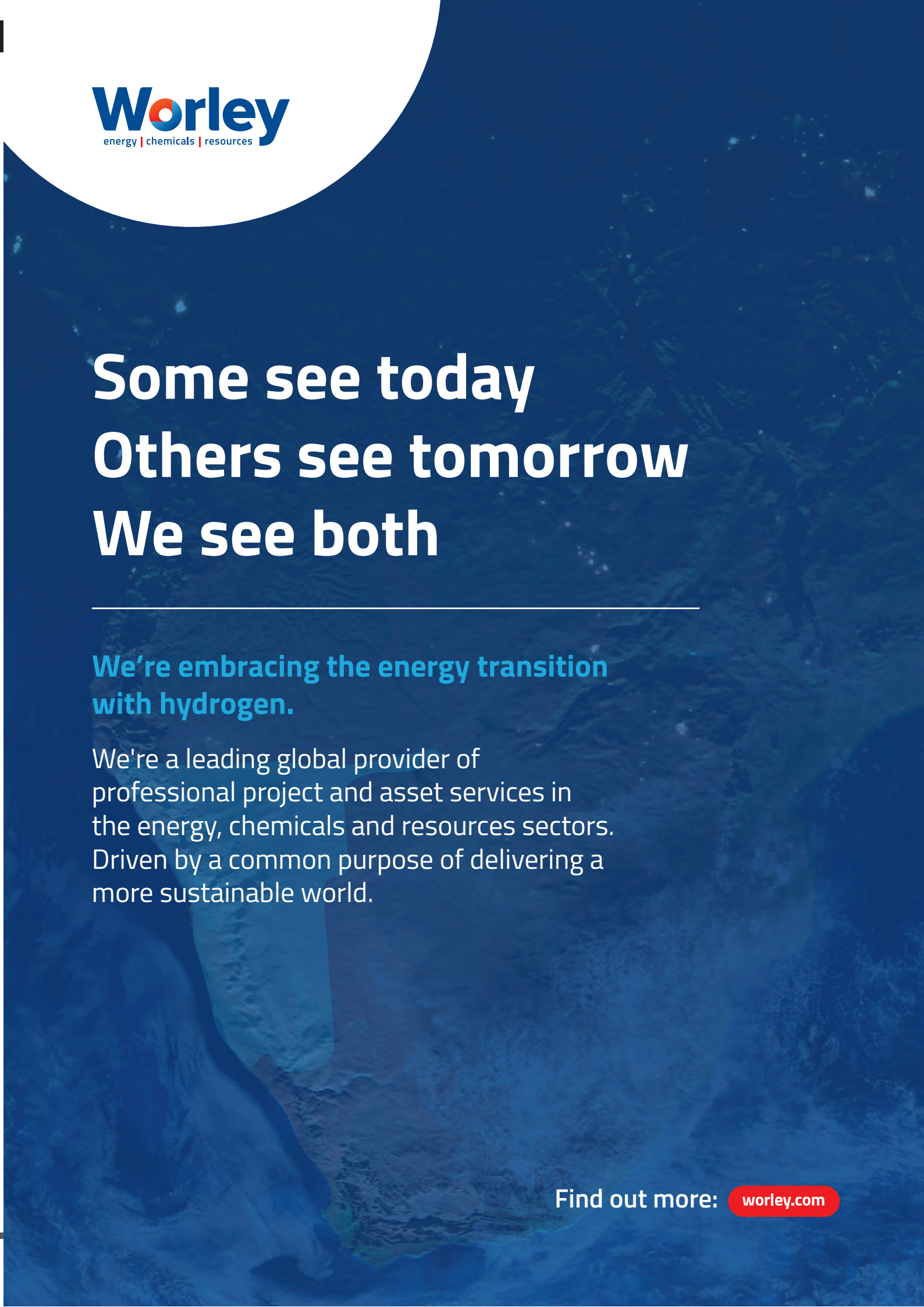
One of the flagship Dutch companies involved in this transformation is Gasunie which operates a network of 15, 500 km of gas pipelines in north-west Europe. This runs from Denmark to Belgium and is essential for the energy supply of the Netherlands and large parts of Germany. Part of this backbone pipe network will now be repurposed for hydrogen.

Salt caverns in the same region are being made suitable for bulk storage of hydrogen to complete its energy value chain.

A land based terminal will soon be constructed in the Northern Netherlands to facilitate the import of hydrogen, complementing one of the biggest green hydrogen production facilities in Europe currently under construction, the NortH2 project.

The long lasting maritime history and extensive gas infrastructure in the Netherlands means that Namibia can benefit from this expertise and relevant industrial actors.

The Dutch are making substantial funds available to support Namibia in building up the required infrastructure and acquiring relevant technical expertise, as they believe that the 'Hydrogen Valley' concept can be replicated in Namibia and adapted to create a complete eco-system aimed at the export of hydrogen and local applications alike.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'Global Opportunities Are Taken by Fast Movers' – AfDB Senior Official Cautions Namibia

Namibia must move fast to put in place policies and strategies that will help the country optimise its excellent renewable energy resources for economic growth, including green hydrogen.

This was the advice given by Anders Cajus Pedersen, Chief Regional Power Systems Officer for the African Development Bank (AfDB) based in Pretoria, South Africa, during the recent Bank of Namibia 23rd Annual Symposium.

In his thought-provoking presentation titled: *"Financing renewable energy to promote economic growth in Namibia: Policy options and strategies - lessons and experience from other countries"*, Pedersen, who has also worked for several multilateral institutions such as the World Bank, UNDP, UNIDO, SIDA, DANIDA, GIZ and USAID, said apart from policy and strategy Namibia also needs to be clear on the funding options available for investments in green energy.

"Global opportunities are taken by 'fast movers' with advantages, such as proximity to markets," he cautioned, noting that Namibia has been a little slow out of the blocks.

This comes as African countries closer to Namibia's main green hydrogen target market, Europe, Egypt and Morocco and neighbouring South Africa are fast moving towards large-scale hydrogen projects.

Pedersen said Namibia should take advantage of its world class solar and wind resources, and an existing good regulatory system.

However, he singled out the limited skills pool, relatively small market size, capacity of local ports and water supply as some of the weaknesses that could scupper Namibia's quest to become Southern Africa's energy hub.

Anders Cajus Pedersen

Emma Haiyambo

Pedersen said Namibia's issues around power transmission and grid stability also needed to be addressed as a matter of urgency.

The senior AfDB official said Namibia needs to invest in interconnectors and transmission to improve grid stability.

Pedersen said there was still room for further regulatory development in order to attract investment in the energy sector.

Emma Haiyambo, BoN Director for Research and Financial Sector Development, emphasised the need to review Namibia's legislation framework, investment climate and policies to facilitate the development of oil, gas and energy resources.

She said Namibia's green hydrogen industry was relatively new and there was currently no existing legislation governing it.

Haiyambo said Namibia's investment climate was generally positive, although current high transportation and energy prices posed challenges to doing business in the country.

She echoed Pedersen's sentiments that the relatively small domestic market and a limited skilled labour pool were among other main challenges to investment in Namibia.

Haiyambo emphasised the need for Namibia to reconcile its decarbonisation efforts with the recent oil discoveries.

She said in addressing accessibility and cost of electricity, the country needs to leverage on opportunities offered through regional integration initiatives.

"Energy is an essential pillar of any economy. Namibia's energy sector has had limited private sector participation in the past and has been characteristically state-owned. Recent reforms and restructuring efforts are creating an increasingly attractive private operating environment and subsequent investment opportunities," the BoN senior official said, adding that green hydrogen holds significant promise in meeting Namibia and the worlds' future energy demands.

***NOBLE PROJECT ... T**he Orange River Vineyards Investment (ORVI) social housing project which is this year's the winner of the International Energy Agency Solar Heating and Cooling Programme Solar Award*

SOLTRAIN funded ORVI Social Housing Project Wins IEA SHC 2022 Solar Award

The Orange River Vineyards Investment (ORVI) social housing project in Aussenkehr, in southern Namibia, is the winner of the prestigious International Energy Agency Solar Heating and Cooling Programme (IEA SHC) Solar Award.

The SHC Solar Award recognises an individual, company, or private/public institution that has shown outstanding leadership or achievements in solar heating and cooling.

Through the Southern African Solar Thermal Training and Demonstration Initiative (SOLTRAIN) a regional program on capacity building and demonstration of solar thermal systems, funded by the Austrian Development Agency and implemented by AEE INTEC, the Austrian institute for applied research, all the 58 houses at ORVI which are made from precast concrete bricks, were equipped with solar thermal systems in September 2021.

The installation of the thermosyphon systems was supported by the SOLTRAIN project, both technically and financially.

In Namibia the SOLTRAIN local partner is the Namibia Energy Institute (NEI), at the Namibia University of Science and Technology (NUST), with the Southern African Development Community Centre for Renewable Energy and Energy Efficiency (SACREEE) being the regional partner.

Helvi Ileka, Centre Head for Renewable Energy and Energy Efficiency at NEI and Leonhard Eins, Managing Director of Solsquare Energy, the company that installed the solar thermal systems at ORVI, received the award on behalf of the ORVI social housing project during EuroSun 2022. EuroSun is the International Conference on Solar Heating and Cooling for Buildings and Industry and was this year held in Kassel, Germany.

"The 2022 SHC Solar Award celebrates the substantial achievement and measurable impact of a social housing project using solar thermal to reduce energy consumption and costs. The recipient, the ORVI social housing project, is a perfect example of affordable housing that improved residents' standard of living, supported a national solar company, and annually saves energy and cuts greenhouse gas emissions – in this case, 120,000 kWh of electricity otherwise produced by old coal-fired plants thus avoiding the release of 36 tons of CO2 annually," said Tomas Olejniczak, IEA SHC Chairman.

ORVI's housing project provides a simple, affordable, sustainable solar water heating option for the beneficiaries.

NEI supervised the installation of the solar thermal systems at ORVI's housing development and conducted a successful quality inspection.

With 40-50% of electricity consumption in low-cost housing projects used for water heating, thermosyphon systems for hot water preparation (2.1 m2 flat plate collector area and 160-liter hot water tank) were supplied and installed on every home by Solsquare Energy. The hot water is used mainly for showers, washing clothes and cooking.

Ileka was delighted that Namibia's ORVI social housing project won international recognition.

She said the over 1,500 employees at ORVI never had a decent housing prior to the development and were living in poor traditional reed huts with no sanitation. ORVI's social housing project has provided its employees with affordable and yet sustainable energy efficient accommodation, and it demonstrates how simple and affordable houses can be built locally and equipped with sustainable solar technologies.

"This project is not only a success on the ground, but demonstrates how a long-standing, comprehensive training program such as SOLTRAIN can bring together local and international solar industries, research institutions from Europe and Southern Africa, and policymakers to create a framework for the widespread application of thermal solar systems," said Ileka.

The NEI Acting Head said through awareness raising, ORVI came to know about the existence of SOLTRAIN funding and Solsquare Energy had also attended training programs offered by the project and were therefore aware of the SOLTRAIN financing options for solar thermal demonstration systems.

SOLTRAIN started in 2009, and is currently at the end of its fourth phase of cooperation with Botswana, Lesotho, Mozambique, Namibia, South Africa, Zimbabwe and SACREEE.

***WE DID IT** … Helvi Ileka from the Namibia Energy Institute and Leonhard Eins from Solsquare showing off the award for the ORVI project*

***PROUD MOMENT** … (from left) Tomas Olejniczak, SHC Chair and Dutch SHC member, Werner Weiss, Austrian SHC member, Leonhard Eins from Solsquare Namibia and Ken Guthrie, Solar Award Committee Chair & Australian SHC member.*

SOLTRAIN is designed to support and contribute towards the implementation of different energy policies of the target countries that enhance the use of solar thermal systems. Energy poverty negatively affects the circumstances of large numbers of people generally and particularly in the SADC Member States.

SOLTRAIN's key focus is to contribute towards reducing energy poverty by improving access to sustainable energies, specifically solar thermal solutions, and thus directly contributing to the realisation of the United Nations Sustainable Development Goal 7 (SDG 7) and indirectly to SDG 1, SDG 12 and SDG 13.

In order to support broad rollout programmes of solar thermal systems in all six participating countries, Solar Thermal Roadmaps and Implementation Plans were developed in broad stakeholder processes in close cooperation with policy (ministries and governmental bodies).

The implementation of these roadmaps was one of the focal points of SOLTRAIN IV.

Namibia Moves Towards Green Hydrogen Production

Namibia is finalising negotiations on an implementation agreement with Hyphen Hydrogen Energy for the development and construction of a green hydrogen project in southern Namibia.

The project will deploy 5GW or renewable energy assets and 3GW of electrolyser capacity in the land parcels of Springbok and Dolphin, located in the Tsau//Khaeb National Park.

Mines and Energy Deputy Minister Kornelia Shilunga told a regional conference on the socio-economic opportunities of hydrogen for Southern Africa, held in Windhoek recently, that for Namibia to realise its vision of being a hub for green hydrogen, the country has to put in place a transparent process that is designed to maximise national benefits and lay the foundation for a long-term participation in a growing green hydrogen and ammonia markets.

The conference was hosted by the Konrad-Adenauer-Stiftung (KAS) Namibia - Angola Office in association with the Regional Program on Energy Security and Climate Change in Sub-Saharan Africa, with the aim of creating a platform for participants from academia, governmental institutions and civil society to discuss how hydrogen production could potentially support socioeconomic growth in the Southern African region.

Shilunga explained that some specific actions taken towards green hydrogen production include the establishment of the Green Hydrogen Council by President Hage Geingob.

"We are currently crafting a green hydrogen roadmap and strategy which will provide granular vision for Namibia and the regional hydrogen ecosystem.

Deputy Minister Kornelia Shilunga

> **We are currently crafting a green hydrogen roadmap and strategy which will provide granular vision for Namibia and the regional hydrogen ecosystem. The strategy will serve as a rule book for all applicants, state actors and non-state actors equally**

The strategy will serve as a rule book for all applicants, state actors and non-state actors equally," she said.

The strategy and roadmap will have the potential to unlock further land parcels beyond Tsau //Khaeb as well as other potential upstream and downstream industries for the country.

The Namibian government, together with the German government, launched a Namibian youth scholarship programme as well as a Namibian Green Hydrogen and Power-to-X (PtX) pilot projects. The hydrogen and PtX pilot project programme will fund companies and institutions that are promoting the sustainable production of green hydrogen and its derivatives.

"In addition, this programme will look to fund research projects that support these projects and initiatives," the Deputy Minister said.

Threat to National Park Diversity?

The Executive Director of the Namibian Chamber of Environment (NCE), Chris Brown, has in the meantime expressed concerns about the production of green hydrogen in the national park saying this would negatively impact its biodiversity.

Brown said while the NCE was not against the production of green hydrogen, he questioned why the process needed to have a biodiversity foot-print.

Brown, an ecologist and environmental scientist, raised the concern during a panel discussion on the social acceptance of hydrogen. Panelists were Amin Lahnaoul from FJ Julich, a German national research institutions that pursues interdisciplinary research in the fields of energy, information and bio-economy, Godrej Rustomjee from African Climate Foundation in South Africa, Abel Musumali, the National Coordinator for the Climate Smart-Agriculture Alliance in Zambia, Gloria Majiga, Executive Director of the Sustainable Development Initiative in Malawi.

Majiga concurred that there was an environmental risk in producing green hydrogen in a national park and said policy and regulatory framework needs to be put in place, which should also provide for appropriate environmental assessment and social impact assessments. She said this can provide the mitigation actions so strike a balance between people, the planet and prosperity.

"Consultation and engagement process should be participatory and meaningful. People should have access to information in a way that they understand (detailing, language, presentations and data) in a clear and concise manner, to enable them to fully and meaningfully participate. They need to be part of the decision-making processes with their concerns being given due considerations," Majiga said.

She said people cannot completely stop projects because of the negative impacts they have, but they need to have full information about the impacts and the proposed mitigation actions.

"If we cannot adequately mitigate a change in the programme, redesigning or decommissioning should also be options available," said Majiga.

LEADER ... *Hyphen Hydrogen Energy (Pty) Ltd ("Hyphen") is a Namibian registered green hydrogen development company, specifically formed to develop green hydrogen projects in Namibia for international, regional and domestic supply*

STAKEHOLDERS...*Some of the people who attended the SADC conference on socio-economic opportunities of green hydrogen held recently in Windhoek. Photo: Absalom Shigwedha*

Regulatory Framework, Civil Society Buy-in Crucial for Green Hydrogen Development

The production of green hydrogen will lead to the securing of sustainable renewable energy in the region, experts said during a recent regional conference on green hydrogen organised by the Konrad Adenauer Stiftung (KAS).

Natalie Russmann, Director of KAS in Namibia and Angola, said the main reason regional conference was hosted in Namibia was because the country's huge potential to become a major green hydrogen producer.

Russmann said the production of green hydrogen will not only decarbonise the country but will also attract foreign investors. She said there is a need to engage civil society organisations in order for local communities to benefit from green hydrogen.

"They should benefit. Civil society organisations are the voices of the voiceless and must participation in policy formulation," she said.

Anja Berreta, the Head of Programme Energy Security and Climate Change in Sub-Saharan Africa, said regional co-operation is needed in the engagement of green hydrogen, while political will and transparency for investors' trust are also key.

"Research and science is needed in the production of green hydrogen while the buy in of civil society is also crucial," said Berreta.

German Ambassador to Namibia, Herbert Beck, said there is a need to achieve sustainable energy by 2025, when the demand for energy is expected to skyrocket.

Ambassador Beck said Germany has been looking at ways of working with Namibia to develop the green hydrogen economy in the country. And as such, the two countries have signed a memorandum of understanding in which Germany has pledged 40 million Euros (about N$724 million) for green hydrogen pilot projects, as well 200 scholarships for young people to be trained in the field.

The German Ambassador said the green hydrogen will only attract investors if it meets the expectations of the industry to be a game changer, addressing poverty, unemployment and other challenges.

Jean-Paul Adam, the Director for Technology, Climate Change and Natural Resources Management at the United Nations Economic Commission for Africa (UNECA) said Africa has a lot to benefit from green hydrogen and the commission is committed to partner with African Green Hydrogen Alliance in this journey.

Adam said while the development of green hydrogen will help boost stable and affordable energy sources, there was need for an appropriate regulatory environment.

James Mnyupe, the Presidential Economic Adviser and Hydrogen Commissioner, said 10 countries that are most vulnerable to the negative impacts of climate change are in Africa and in 8 of them, 60% of the

population is employed in the climate reliant sectors.

Mnyupe said with these realities, efforts were being made to decarbonise these sectors and green hydrogen can play a major role towards achieving the desired goals.

Executive Director at the SADC Centre for Renewable Energy and Energy Efficiency (SACREEE), Kudakwashe Ndhlukula, said green hydrogen was not new and that it was the most abundant chemical element in the world.

Ndhlukula said green hydrogen will require a massive build-out of renewable energy plants as a low-cost source of electricity and all indications are that Southern Africa has pristine conditions for that.

"The good energy source alone is not good enough, because like most energy sources, there are logistical challenges of taking the resources to where the demand is. There will be a need to develop a robust soft and hard infrastructure for green hydrogen," he said.

Africa Must Not Be Rushed to Switch to Renewable Energy – Alweendo

Mines and Energy Minister Tom Alweendo has vehemently criticised pressure from the West on Africa to switch from fossil fuels to renewables.

Alweendo was addressing the 23rd Bank of Namibia Annual Symposium which was held under the theme: *"Maximising Economic Growth from Renewable and Non Renewable Energy Sources in Namibia".*

The recent discoveries in oil and gas and green hydrogen served as a backdrop to the BoN dialogue.

Alweendo said rushing Africa to abandon fossil fuels was not only condescending, "but it also shows a total lack of concern about the negative impacts of African countries rushing our switch from fossil fuels to renewables."

"Think about the potential loss of economic opportunities and greater difficulties in delivering reliable electricity to the hundreds of millions of Africans who need it so badly. Think about the ensuing loss of the livelihood that most African countries have been carefully nurturing over the last few decades.

"Pushing Africa to move forward with an energy transition on any timetable other than our own, is just another example of the lack of respect the global community has for African priorities. What is needed is for us to develop our own energy transition timeline actively and purposefully; one that takes into account the urgency of the climate change crisis and the need of the African people," the Mines and Energy Minister said.

Alweendo said the debate on energy transition was more about how to do it and not so much about whether to do it. For example, developing countries have a slightly different view on how to manage the energy transition than developed countries. He said developing countries feel that the "how" and the "when" of the energy transition debate is being

HARD TRUTH ... *Mines and Energy Minister Tom Alweendo*

> **Pushing Africa to move forward with an energy transition on any timetable other than our own, is just another example of the lack of respect the global community has for African priorities. What is needed is for us to develop our own energy transition timeline actively and purposefully; one that takes into account the urgency of the climate change crisis and the need of the African people**

dictated to them by the developed countries of the West.

RIGID ENERGY TRANSITION

"They cajole us into an energy transition strategy which they have determined according to their circumstances. To convince us of a faster and more rigid energy transition, the messaging is now about how African countries are among the most vulnerable to the negative impacts of climate change," Alweendo said.

The Minister emphasised the need for African nations to take true ownership and custodianship of their natural resources, arguing that in this manner, instead of facing hopelessness and despair, many more young people on the continent will be empowered to achieve the future they deserve.

"With this positive mindset towards responsibly harnessing of our natural resources, we can reap the economic benefits that come with eradicating energy poverty. We can grow and diversify our economies; we can industrialise our economies; we can create well-paying jobs for our citizens and create opportunities for our private sector companies and entrepreneurs. This is the only sustainable way we can manage a successful energy transition," he said.

COAXED TO ACT

Alweendo said while it was a fact that African countries are also severely affected by the effects of climate change, with devastating droughts and floods in various countries, he took offence when some global interest groups try to dissuade Africa from leveraging all its natural resources.

"They suggest, and at times demand, that Africa gives up its fossil fuel energy sources as they see these as dangerous and 'dirty, carbon-spewing' oil and gas. They coax us to, as soon as possible, switch to clean renewable energy sources such as wind and solar and that it is 'for our own good'. What we need to remember is that these countries and global interest groups have often benefited significantly from the exploitation of fossil fuels they now caution against," he said.

Alweendo told the BoN symposium that one of the most significant reasons why Africans must insist on a just energy transition, is the fact that the continent suffers from acute energy poverty. More than 600 million people in sub-Saharan Africa do not have access to reliable electricity.

"As we all know, energy is a critical catalyst for development, and we all know the level of development in our countries. In Namibia, we have seen how the lack of access to energy puts our people at a disadvantage in almost every area of life. Climate change activists will tell you that renewable power is the key to wiping out energy poverty. They will tell you about the affordability of solar micro grids, wind power and hydro power.

ENERGY POVERTY

"And it must be acknowledged that there is no doubt that renewables will play a role in addressing our energy poverty, and at the same time addressing climate change. We can all agree that renewables are the energy sources of the future. However, we are not there yet and even when that happens, renewable energy may not be sufficient to eradicate poverty energy on the continent without significant infrastructural investment that we do not have the capacity for at present," Alweendo argued.

In the energy transition discussion, Namibia occupies a unique position. Given the recent oil discovery, the country is fortunate in that it now has both renewable and non-renewable energy sources to exploit.

Alweendo made it clear that it is Namibia's intention to harness its fossil fuel resources, including natural gas, for domestic, regional, and continental needs. This he said will be done while also building a thriving renewable energy industry that will help with climate change.

"We are particularly excited about the green hydrogen industry that we are developing. And this is made possible primarily because of our world-class solar and wind resources – making us a potential forerunner in becoming a continental GH2 hub," the Energy Minister said.

SUN POWER … *ANIREP's newly completed 20MW Omburu EPC solar PV plant*

ANIREP to Construct 18,5MW Solar Plant for Tsumeb's Dundee Precious Metals

Alpha Namibia Industries Renewable Power Limited (ANIREP) has been selected as the preferred bidder for an Independent Power Producers (IPP) bid to provide 18, 5 megawatt solar power to Dundee Precious Metals Tsumeb via the Modified Single Buyer (MSB) framework.

This is subject to the successful conclusion of the terms of a Power Purchase Agreement (PPA).

ANIREP Managing Director Iyaloo Nangolo said: "I'm pleased to have secured yet another significant opportunity to contribute to the development of renewable energy in the country, pursuant to the 20MW solar PV Khan IPP announced on 25 March 2022, in addition to the 20 MW Omburu EPC and operation and maintenance project with NamPower, which has now been commissioned."

On completion of the Dundee Precious Metals solar PV plant, ANIREP will be supplying over 50 MW solar power as an IPP.

"We have a healthy pipeline of projects, and ANIREP is at an advanced stage in negotiating for the expansion of capacity at one of our current IPP clients from their current 5MW capacity, by adding another 6MW of Solar PV and 3 MW/30MWh of battery energy storage system," said Ya Nangolo.

Namibia is still facing a deficit in energy, resulting in imports from the Southern African Power Pool (SAPP). With a vision of becoming a 30% player in the renewable energy sector, ANIREP says it will continue to pursue installation of renewable energy to contested buyers, further acquisitions and capacity development opportunities and EPC and O&M works, with the view to increasing shareholder value.

This, the company says, is in line with Namibia's target to become a net-exporter of electricity sourced from renewables by 2030 and the National Integrated Resource Plan (NIRP) estimates that 70% or more of the electricity installed capacity should come from renewable sources by 2030.

ANIREP recently entered into a collaboration agreement with the International Finance Corporation (IFC) to determine the viability of developing a 10 to 20 MW independent solar power plant to pilot the Modified Single Buyer model in Namibia.

The MSB was introduced by the Electricity Control Board (ECB) in 2019 to allow IPPs to sell electricity directly to customers, including regional electricity distributors, large industrial and mining companies, municipalities and local authorities.

The objective is to implement a successful solar project to supply energy to a portfolio of customers, also referred to as an aggregator model, under the MSB.

ANIREP and the IFC will work on the development and implementation of the aggregation model to, inter alia, confirm tariffs and validate the business model, as well as identify the tools and operational requirements for potential scalability in Namibia and across the region" the notice reads.

"I'm pleased to have achieved this significant partnership with IFC, which provides capacity and momentum for ANIREP on its journey to contributing to the development and supply of at least 30% of the renewable energy in the country. This is on the back of the healthy pipeline of projects in the ANIREP stable," said Ya Nangolo.

ANIREP's subsidiary HopSol Africa has been involved in the construction of a significant portion of PV power plants in Namibia.

IFC country manager for Namibia Adamou Labara said: "We look forward to working with ANIREP to support the expansion of renewable, accessible and sustainable energy in Namibia, and to drive the implementation of the Modified Single Buyer model. IFC is working across the region to support partners to make the energy transition through innovative models".

Grid Stability Concerns Rise as Namibia's Renewables Generation Passes 30% Mark

Namibia's electricity generation from renewables, mostly solar, now accounts for more than 30% of the national capacity.

The country's Renewable Energy Policy has set a 70% target for total energy to be generated from renewable sources by 2030.

However, there's rising concern that the rapid growth of electricity generation from renewables could soon cause instability on Namibia's national grid due to its intermittence.

"To date, about 30% of our electricity comes from renewable sources, mainly solar. But as you know, solar and wind are only sometimes available. And we are already reaching levels of solar and wind penetration that could cause instability on our national grid," Mines and Energy Executive Director Simeon Niilenge Negumbo said when he officiated at the inauguration of upgraded electricity infrastructure at Osona Village outside Okahandja.

Negumbo said the latest National Integrated Resource Plan (NIRP 2022), which was recently approved by Cabinet, was designed with that balance in mind.

Negumbo said Namibia needs to invest in transmission infrastructure and battery storage technology to take advantage of its renewable energy resources fully.

The Mines and Energy ED said Namibia remained a net importer of electricity, importing between 50 – 70% of the electricity consumed annually.

"This is not a tenable situation because some of this electricity is imported from systems that are themselves constrained. The Ministry of Mines and Energy, in conjunction with the Electricity Control Board (ECB) and NamPower, is responsible for closing this import gap but must do so in the least costly manner. This is done primarily through the National Integrated Resource Plan (NIRP 2022)," the ED said.

NIRP will entail that 80% of Namibia's primary energy should be locally generated.

Mines & Energy ED Simeon Negumbo

OVERVIEW OF THE ENERGY SECTOR & ITS ACCESSIBILITY

Power Station Name	Type	Installed Capacity (Potential Capacity) (MW)	Percentage share
Ruacana Power Station	Run-of-the-river Hydro (Renewable)	347	50.7%
Van Eck Power Station	Coal (Non-Renewable)	90 (previously 120)	13.2%
Anixas Power Station	Diesel/Heavy Fuel Oil (Non-Renewable)	22.5	3.43%
Omburu PV Plant	Solar (Renewable)	20	2.9%
Independent Power Producers	Solar (Renewable)	199.9	29.2%
Independent Power Producers	Wind (Renewable)	5	0.07%
Total		684.4	100.0%

Bank of Namibia

Installed energy capacity per distributor

Overview of Namibia's electricity generation capacity

"Maintaining this balance between self-reliance and affordability is a dilemma. We have always wanted to be self-reliant, but building generation plants in Namibia was historically costlier than importing, especially given our lack of proven commercial hydrocarbon resources," Negumbo said.

Over the past few years, this trend has been changing as generating power from solar and wind, two resources that Namibia is generously endowed with, is now cheaper than hydro, coal, oil and gas-powered generators.

The revised NIRP maps out Namibia's least cost electricity supply path into the future and includes an energy mix that optimises the country's goal to become energy self-sufficient by using as far as the network allows, indigenous renewable energy sources in the form of wind, solar PV and biomass.

Namibia has the world's second highest solar irradiation regime, high wind power potential and potential for geothermal and bio-energy developments, while the potential for green electricity production in the country is many times the domestic electricity consumption.

150 KW Solar Plant to Power Sheya Shuushona Lodge

THE Sheya Shuushona Conservancy, situated in the Otamanzi Constituency, is the proud beneficiary of a 150 kilowatt solar power plant made possible through the ecosystem based adaptation investment window under the Empower to Adapt (EDA) project centred on the Creating Climate Change Resilient Livelihoods through Community Based Natural Resource Management in Namibia (CBNRM EDA Project).

The solar power plant, with a total of 216 panels, will provide power for the Sheya Shuushona Lodge. The solar project created 17 jobs during its construction, while a further 10 youth were trained on the operation, maintenance and administration of the power plant.

Costing over N$5 million, the solar power plant will greatly empower the conservancy in its contribution to the tourism industry and enhance Namibia's renewable energy and energy efficiency targets.

Environment, Forestry and Tourism Minister Pohamba Shifeta, who handed over the power plant to the conservancy, said access to modern energy services is one of the indices for the level of national development worldwide.

"In developing countries such as Namibia, there is still quite a significant percentage of the population, without access to energy service such as electricity. Let alone the use of green energy to curb emissions," he said.

Shifeta further stated that it was worth noting that the increased use of renewable energy, such as solar power, will not only cushion Namibia from the adverse effects of climate change but also act as a catalyst for enhancing social economic development in rural areas.

Development Bank Finances N$155m Khomas Substation

The Development Bank of Namibia (DBN has provided finance to the City of Windhoek for the erection of a new Khomas substation to the tune of N$155 million.

The existing 66kV transmission network that supplies Windhoek is reaching maximum capacity and NamPower's Van Eck transmission substation has reached its physical and operational limits. Supply capacity to Windhoek is restricted to 160MVA so a 90MVA upgrade is needed to cater for forecasted growth in electricity demand for commerce, industry and households.

The Chairperson of the City of Windhoek Management Committee, Councillor Illse Keister said the proposed Khomas intake substation will ensure additional capacity to support the forecasted demand growth.

The proposed site of the substation is north of Otjomuise Extension 10. The substation will be developed by the City of Windhoek and NamPower. NamPower will assume the responsibility of constructing and maintaining the substation. City of Windhoek will earn revenue through electricity tariffs from the increased capacity. Part of this revenue will be used to repay the loan to DBN.

The entire substation is valued at N$336 million, of which N$228 million is being contributed by the Windhoek Municipality itself. The City has already paid N$72 million from its own resources and the balance will be covered by a DBN long-term loan of N$135 million and a short-term loan of N$20 million to cover VAT.

POWER TO THE PEOPLE ... *DBN CEO Martin Inkumbi, DBN Acting Head of Investments, Heroldine Carstens, and Chairperson of the City of Windhoek Management Committee, Councillor Illse Keister after concluding the new Khomas substation financing deal. Photo: DBN*

DBN Chief Executive Officer Martin Inkumbi said the loan will be invaluable in sustaining Windhoek households, commerce and industry for the coming years.

DBN has over the past few years financed substantial land and affordable housing development projects in Windhoek, consisting of, among others, finance of N$390, 5 million for the Ongos Valley development which will deliver over 4,000 houses in phase one, finance of N$57, 8 million for 257 erven in Otjomuise Extension 5, finance of N$107 million to service 274 erven in Rocky Crest, finance of N$76, 5 million to service 287 plots in Auasblick Extension 1 and N$31, 6 million for 79 houses in Khomasdal Extension 16.

The expected increase in the number of households over the next five years will result in increased demand for electricity, which will put pressure on the municipality's energy supply infrastructure, hence the need to support the expansion of energy generation and distribution infrastructure, Inkumbi said.

TRUSTED PARTNERS *… The EIF recently renewed its partnership with the Green Climate Fund for another five years. The GCF is the world's largest dedicated climate fund.* ***Photos: EIF***

Green Climate Fund and EIF Extend Partnership

The Environmental Investment of Namibia (EIF) recently renewed its partnership with the Green Climate Fund (GCF) for another five years. The initial five-year accreditation lapsed in June 2021.

The EIF was first accredited by the GCF in 2016 as a Direct Access Entity for country level programme delivery. To date, the EIF has raised more than N$640 million for Climate Action Grants and Readiness Support from the GCF for Namibia.

The GCF is a fund within the framework of the United Nations Framework Convention for Climate Change (UNFCCC), established to assist developing countries in adaptation and mitigation measures to counter climate change. It also an operating entity of the financial mechanism that serves the 2015 Paris Agreement, supporting the goal of keeping average global temperature rise well below 1.5°C.

The GCF is the world's largest dedicated climate fund. GCF's mandate is to foster a paradigm shift towards low emission, climate-resilient development pathways in developing countries. It has a portfolio of US$10 billion (US$37, 2 billion including co-financing) delivering transformative climate action in more than 100 countries. This amounts to more than N$632 billion.

The re-accreditation by GCF means that the EIF has officially been recognised as having the global standards, competence, and governance systems to access the financial resources of the GCF. The re-accreditation assessment process took into consideration the fiduciary standards, good governance, transparency, leadership, risk management, Environment and Social Governance (ESG) system, and financial management systems of the EIF and all other applying institutions.

The GCF funding is mainly availed in form of grants to finance climate change related programmes, including amongst others those relating to renewable energy generation and access, food and water security, ecosystems services, forest, and land use, increase resilience of rural livelihoods (such as aquaculture, conservation agriculture, rangeland management, climate resilient infrastructure and value addition), and sustainable urban transportation.

The role of the EIF as an implementing entity relates to the management and oversight of project implementation, which includes the origination and preparation of funding proposals, the subsequent management of the necessary stages of the implementation process until its conclusion on behalf of the GCF, and reporting obligations.

The EIF aims to raise funding from GCF totalling N$1, 5 billion by the year 2026. The funding will be used to

create new industries that will support economic growth in areas such as renewable energy, water management, rural development, environmentally-sound waste management systems, sustainable agriculture, recycling, green technology industries, ecosystem-based businesses, environmental research, training, bursaries and scholarships, as well as green value chains in the manufacturing sector.

The Ministry of Environment, Forestry and Tourism being the National Designated Authority (NDA) to the GCF provides guidance and support during the project preparation.

It is estimated that a shift towards a greener economy in Namibia has the potential to create 3, 500 jobs within the next three years.

The GCF climate change resources accessed by the EIF thus far include the following:

1) Climate Resilient Agriculture in three of the Vulnerable Extreme northern crop-growing regions (CRAVE) Project. The project aims to reduce climate vulnerability, increase the adaptive capacity and resilience of vulnerable small-scale farming communities in vulnerable extreme northern crop producing regions that are threatened by climate variability and change. The total GCF grant envelop amounts to US$9, 5 million while the Namibian government contributed US$500 000 in co-financing.

2) Empower to Adapt-Creating Climate Change Resilient Livelihoods through Community Based Natural Resources Management in Namibia (CBNRM-EDA). The project strives to empower rural CBNRM communities to respond to climate change in terms of awareness, adaptive capacity and low-carbon rural development. The total grant envelope amounts to US$10 million and fully capitalised by the GCF.

3) Improving rangeland and ecosystem management practices of smallholder farmers under conditions of climate change in Sesfontein, Fransfontein, and Warmquelle areas of the Republic of Namibia (IREMA). This initiative is exclusively ring-fenced for the drought-stricken Kunene and also runs over a five-year period (2019 -2024).

4) Building Resilience of Communities Living in Eight Landscapes Threatened Under Climate Change Through an Ecosystems-Based Adaptation Approach. This is the youngest of the GCF investments and seeks to increase climate change resilience of eight productive communal area landscapes, in 13 of Namibia's political regions, through implementation of ecosystem-based adaptation actions that strengthen social and ecological systems to sustain livelihoods at local level and facilitate value chains of natural resources. The total GCF funding amounts to US$9, 2 million while the Namibian government is contributing US$700 000.

SEEKING ENERGY SOLUTIONS *... SADC ministers responsible for Energy and Water who met in Kinshasa, DRC at the beginning of November. Photo: SADC*

SADC Ministers Seek Equitable Access to Energy

Ministers responsible for energy from the Southern African Development Community (SADC) region have expressed collective commitment and dedication to improve the quality of life of the SADC citizens through equitable access to energy, in line with the aspirations of the Regional Indicative Strategic Development Plan (RISDP) 2020-2030 and Vision 2050.

The Joint Meeting of Committee of SADC Ministers Responsible for Energy and Water, met on 4 November, 2022 in Kinshasa, Democratic Republic of Congo and considered progress in the implementation of the energy and water programmes and projects which seek to find sustainable solutions to ensuring security of energy and water supply.

Olivier Mwenze Mukaleng, Minister of Hydraulic Resources and Electricity of the DRC, who is also the chairperson of the SADC Joint Committee of Ministers responsible for Energy and Water, said the region must support and secure access to all kinds of energy for economic development at the same time developing regulatory frameworks which will limit environmental and social impact associated with these endeavours.

He said energy lies at the heart of both the 2030 Agenda for Sustainable Development and the Paris Agreement on Climate Change, and called for speedy energy transition in the region, by making sure that everyone has access to reliable, sustainable, modern and affordable energy services in line with the Sustainable Development Goal (SDG) seven, which was adopted by the UN General Assembly in September 2015.

SADC Executive Secretary, Elias Magosi, emphasised the urgency of accelerating the implementation of the regional bloc's industrialisation and market integration programmes, as outlined in the SADC RISDP 2020-30 and Vision 2050.

He stated that energy and water were enablers for industrialisation and were vital pillars in the region's collective

NEEDED INFRASTRUCTURE ... *The region has been urged to support and secure access to all kinds of energy for economic development.*

efforts to enhance regional collaboration and integration.

Magosi emphasised the significance of clean, dependable, reliable and affordable energy and water for the SADC region, and noted that failure to attain these will spell doom for the people.

In the energy sector, the deliberations focused on security of energy supply, energy infrastructure development and progress on targets from the previous ministerial meeting decisions.

The ministerial meeting further reviewed the regional power generation and transmission projects, petroleum and gas programmes, renewable energy and energy efficiency issues, energy sector regulatory activities implemented by the subsidiary organisations and the international cooperating partners supporting SADC energy programmes.

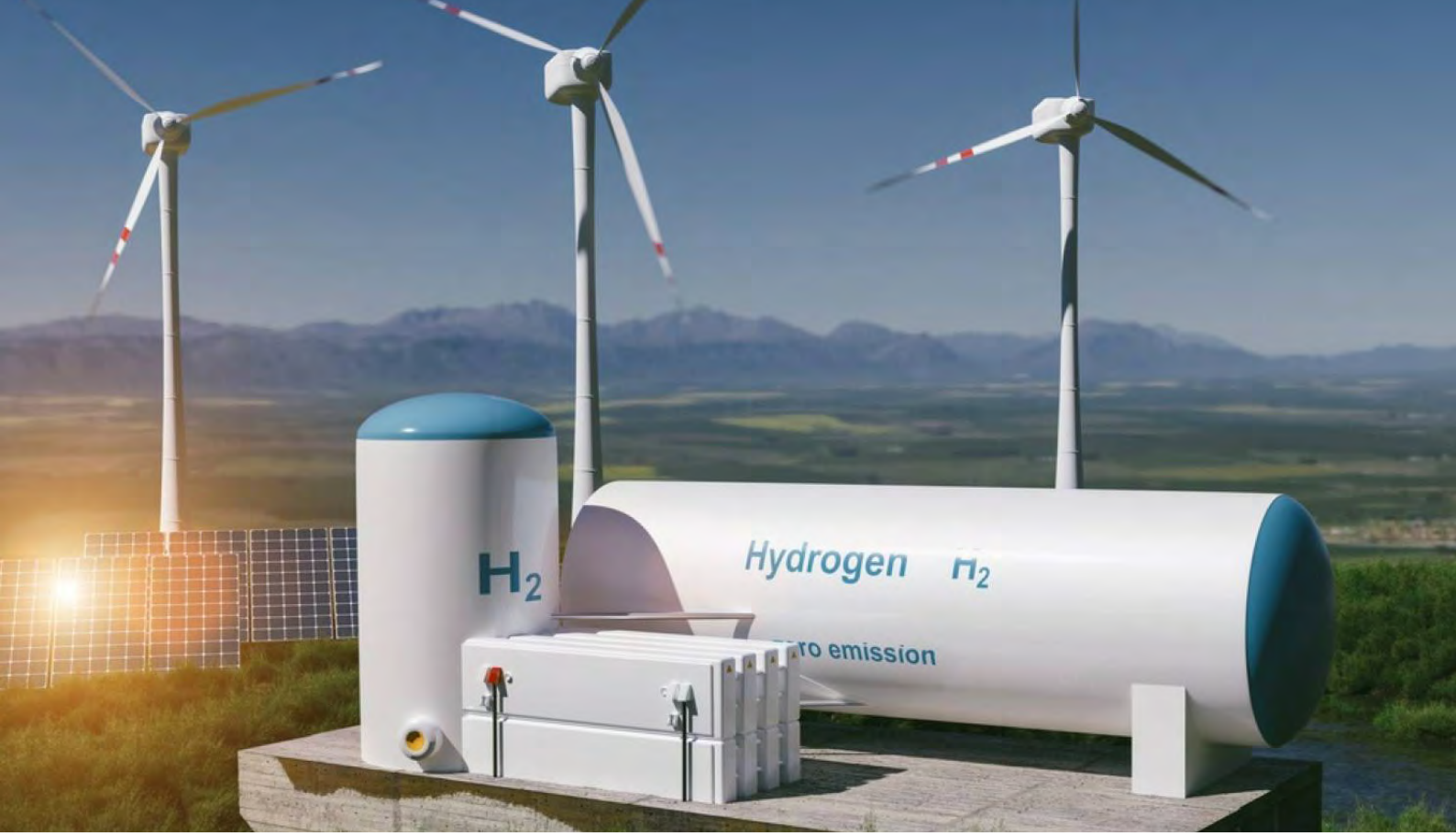
The ministers noted and reviewed status on progress of implementation of activities and programmes, and made assessment status of power supply and demand in the region and made commitment to accelerate the implementation of Regional Priority Generation Projects.

On the performance of the regional electricity market, ministers urged the region to expedite domestication of the approved market frameworks to increase the participation in the Southern African Power Pool (SAPP) regional markets and accrue the benefits of regional energy trading.

The ministers called for the establishment and operationalisation of the Regional Transmission Infrastructure Financing Facility (RTIFF) which aims to provide a long-term solution to energy financing challenges within the region to be supported by the SAPP, international cooperating partners, private sector and other interested investors.

The ministers urged the region to switch to cleaner fuels, such as diesel with a low sulphur level, in order to improve air quality in the region while promoting decarbonisation of the energy sector.

In terms of policies and governance of the regional energy sector, the ministers urged the states that have not signed the agreement amending the SADC Protocol on Energy to do so for the protocol to enter into force and further appealed to member states that have not yet acceded to the protocol to do so.



Green hydrogen site

Mixed Acceptance of Green Hydrogen in Southern Africa

While some countries in Southern Africa have welcomed the promising opportunities created by green hydrogen, a large section of the population remains skeptical about this energy carrier for the future.

This emerged during a two-day SADC conference on green hydrogen socio-economic opportunities held in Windhoek recently.

Godrej Rustomjee from the African Climate Foundation in South Africa said there is general high acceptance of green hydrogen in his country and there is a push away from the use of diesel generators and engines.

However, this doesn't seem to be the case in neighbouring Malawi and Zambia. Maynard Nyirenda, the Executive Director for the Sustainable Development Initiative in Malawi told the conference that generally Malawians do not care about the source of energy as long as they have power.

He said Malawi has also been slow in embracing solar energy with very few solar panels installed on building rooftops. Nyirenda said he hoped Namibia's push towards green hydrogen would help other SADC countries to think of venturing into the production of this green energy carrier.

However, he was quick to add that acceptability and readiness for use will take too long in many countries in the region.

Abel Musumali, the National Coordinator at the Climate-Smart Agriculture in Zambia said there is a need for technology needs assessment in terms of renewable energy and the introduction of green hydrogen.

Gloria Majiga from a Malawian non-governmental organisation called Publish What You Pay, which advocates for the transparent and accountable use of money that the government receives from companies that extract the country's natural resources, said there is little acceptance and awareness of green hydrogen in Malawi.

This, she said, was caused by the fact that the majority of Malawians have very little access to energy. Majiga said as the region deliberates on green hydrogen, it should also look at the value chain.

She said more research on green hydrogen technology needs to be done to help fully understand it as well as establish whether the region has the capacity for green hydrogen use.

The Acting Director of the Namibia Green Hydrogen Research Institute (NGHRI), Dr Zivayi Chiguvare, said Namibia currently imports 70% of its energy needs and energy security will only be achieved if the country produces enough electricity of its own.

"We are surviving now because of South Africa. Namibia needs to increase the generating capacity," said Dr Chiguvare. He said Namibia needs to set up electricity generating plants and the energy policies need to open up to promote an energy mix.

SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) Executive Director Kuda Ndhlukula said for Southern Africa to achieve energy security there is a need for a deeper regional integration, in terms of planning and action.

He said if Namibia can generate solar energy competitively, it can be used by other SADC countries but that will require physical inter-connectors in the region and the markets needs to be opened up.

Ndhlukula said this would also require protocols and agreements to be signed between countries in the region.

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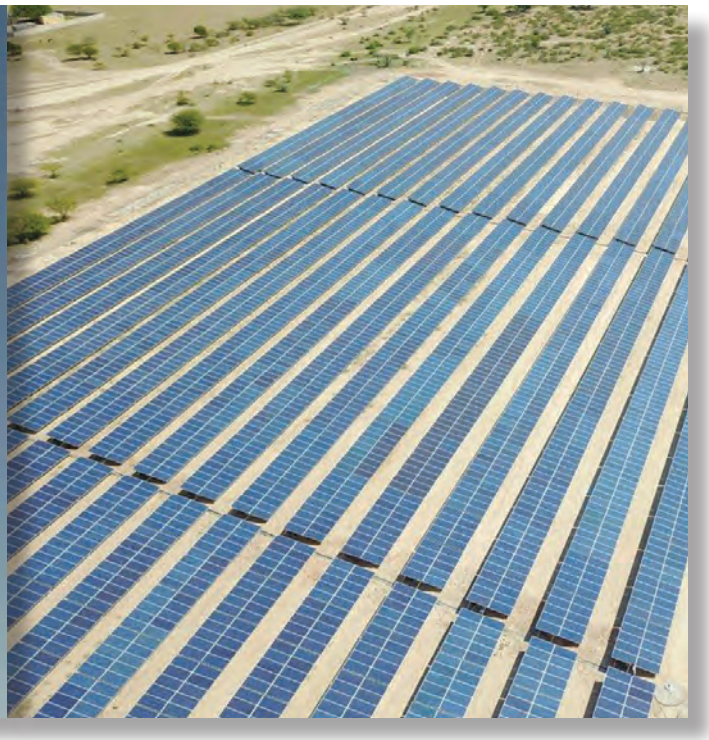

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