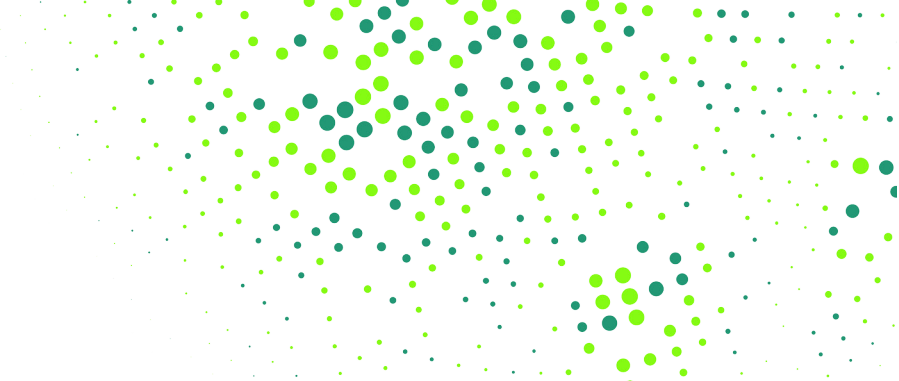


Green Hydrogen and Jobs – Hope or Hype?





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Foreword



A lot is happening, and questions remain. The Namibian green hydrogen landscape remains an area of some considerable interest, judging by all the recent activity. Another major summit has come and gone, while civil society actors have tried to elevate themselves in the discussions and decision-making spaces. Despite the flurry of recent activity, though, we are no clearer on things that really are of fundamental interest to many, if not most, Namibians: how many actual jobs will be created? What benefits will flow to adjacent local communities etc.? These questions will remain unanswered for a while yet, but there's certainly no shortage of guessing, speculation and prediction. It should be remembered that actually there's nothing firm on the table yet to work from. We have a bunch of pilot projects, all of which are staying mum about jobs, while politicians and bureaucrats continue to talk up the potential employment and economic gains to be had at some point in the future. There's still too much shifting and positioning on the green hydrogen landscape for anything to be clearly viable. But people are becoming impatient, as elections approach. To be clear, at the heart of the myriad of issues that surround Namibia's green hydrogen plans and ambitions is a very simple question: How will ordinary Namibians benefit, if at all, from any of this? This is what matters to the people of this country, for this is the question that many feel independent Namibia has failed to answer for many to date. In this issue we raise these issues – jobs, poverty, hunger, community empowerment, etc. – against the backdrop of the technical sophistication of green hydrogen-driven industrialisation. We ask whether the potential jobs figures that are so loosely being tossed about will translate on the hard ground. We ask whether it is worth it to destroy protected, pristine natural assets for something still largely untested. We call for a fact-based discussion of an emerging sector. And we raise the concern that green does not necessarily equate to clean (in the governance sense), and that we really ought to be talking more about building integrity-ensuring safeguards into what is busy arising. There's always too much hype around anything new. But it's been a few years already. The hype needs to start simmering down now. It is time for honest, open and inclusive assessment of what is happening on the green hydrogen landscape, for it is clear already that all is not as promised or promoted.

Frederico Links
Project Coordinator



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Clearly, estimating the number of jobs that a completely new industry currently in its experimental and demonstration infancy phase will create over the coming decades is inherently uncertain.

Green Hydrogen and Jobs – Hope or Hype?

• ROBIN SHERBOURNE

A lot of figures have been tossed out about the jobs that a green hydrogen industry will create, but are they realistic?

If one has ever visited a solar PV (photovoltaic) or CSP (concentrated solar power) park of any size, one of the things that tends to strike one is not only the sheer scale of land area covered by solar panels, but the almost complete absence of people. The small park in Arandis, for example, is basically managed by a single park manager. This brings home the essential truth of many renewable energy projects: that they are capital-intensive undertakings that, once built, require very little labour to manage and maintain.

Yet one of the key objectives for Namibia in pursuing the opportunities that green hydrogen may represent is the interest in creating jobs. From the beginning Government and project promoters have put forward job creation as an important benefit of developing a green hydrogen industry.

It was the Harambee Prosperity Plan II (HPP II) launched

by President Geingob in March 2021 that put forward Namibia's first official perspective on what green hydrogen might mean for Namibia and for job creation. The Plan promised to “investigate the feasibility of Green Hydrogen and Ammonia as a transformative strategic industry”, but did not itself contain estimates for the number of jobs that could potentially be created. It did commit to establishing an Inter-Ministerial Green Hydrogen Committee, drafting a National Green Hydrogen and Ammonia Strategy, conducting a detailed feasibility study by 2023 with a “Final Investment Decision by 2024”, developing the Southern Corridor Development Initiative and promised “a coordinated approach with Green Diplomacy” to “unlock support from countries with similar ambitions”. Much of the thinking behind HPP II's green hydrogen pronouncements was based on the World Bank report ‘Green Hydrogen Opportunities for Namibia - Phase I Report’ published in December 2020. The first real job estimates were contained in ‘Hydrogen for Net Zero: A Critical Cost Competitiveness Energy Vector’, a joint report by the Hydrogen Council and McKinsey & Company published in November 2021.

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This stated that global hydrogen demand was expected to increase from 140 megatons per annum (Mtpa) of hydrogen equivalent in 2030 to 660 Mtpa in 2050, owing to its versatility and unique ability to connect power, gas, chemicals, and fuel markets. 'Building towards Namibia's Green Hydrogen Future', published by GH2 Namibia in November 2022 stated that Namibia aspired to create an "at-scale green hydrogen industry with a production target of 10 to 12 Mtpa hydrogen equivalent by 2050 for export to Asia and Europe. It estimated that capturing this opportunity could boost Namibian GDP by up to \$6 billion by 2040 - an increase of 50 % on today's GDP - and create up to 600,000 jobs by 2040". It was never entirely clear how this estimate was arrived at but this number was used in most subsequent public statements on green hydrogen potential.

The Green Hydrogen Strategy published in November 2022 was more specific, stating that "hydrogen could accelerate Namibia's socio-economic development" and that "by 2030 the hydrogen industry could contribute up to US\$6 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, for example in renewable energy components and sustainable biomass harvesting, will further enhance economic development. The Government will use the additional income to advance its socio-economic goals". To put this in context, the Labour Force Survey of 2018 (the latest available) estimated that just under 190,000 people enjoyed formal sector employment in Namibia's entire private sector in 2018.

Individual green hydrogen project promoters have sometimes provided estimates of the jobs they plan to create. The largest of these is the Hyphen project which, since being awarded preferred bidder status at COP26 in November 2021, has stated that its project in the Tsau //Khaeb National Park can be expected to generate 15,000 jobs during construction and 3,000 jobs during operation. Interestingly, none of the other current green hydrogen project promoters - Cleanergy Solutions Namibia, HDF, Enersense (Dâures), HyIron - include employment estimates in the public information they make available online. According to the Green Hydrogen Commissioner, James Mnyupe, Namibia is currently home to eight active green hydrogen projects (Hyphen, Elof Hansson, HDF Energy, HyIron, Zhero, Cleanergy Solutions, Dâures Hydrogen Village, and Hyrail), positioning the country at the forefront of the green hydrogen industry. At the time of writing there was little or no information online about projects in Namibia involving Zhero and Elof Hansson.

At the Global African Hydrogen Summit held in Windhoek between 3 and 5 September 2024, offi-

cial presented the results of economic modelling suggesting the sector could generate 250,000 jobs by 2040, significantly boosting Namibia's economic growth. Local procurement is a priority, with a target to source 30% of goods and services locally. Further details are, however, scarce and more detailed breakdowns of aggregate jobs figures are not available.

None of the projects announced in Namibia involve manufacturing components which may be required by a green hydrogen industry: solar panels, solar PV plants, concentrated solar power plants, inverters, wind turbines, desalination plants, electrolyzers, ammonia production plants. At this early stage, signs of developments in these areas, including subcomponents, are not detectable although local companies such as Ohlthaver & List and Hopsol have the capacity to plan and build entire solar PV plants. Manufacturing local components was an issue that Dr Thomas Wu of the DSE Consortium addressed in concrete terms at Namibia's first Green Hydrogen Conference, from 16 to 17 August 2022, under the slogan "Made in Africa - Designed in Germany". It is worth revisiting his talk on the Economic Association of Namibia (EAN) website, but his presentation touted green hydrogen as a means of industrialisation for Namibia. As far as one can tell, nothing much seems to have come of this initiative.

Clearly, estimating the number of jobs that a completely new industry currently in its experimental and demonstration infancy phase will create over the coming decades is inherently uncertain. The estimates provided for Namibia are the results of complicated modelling exercises by consultants based on data and assumptions that are rarely made explicit. Assumptions have to be made about the labour intensity of each activity and the backward and forward links in the national economy between activities. Given they are the outputs of 'black boxes', a certain amount of scepticism about the outputs is only natural. It is hard to imagine that the current projects under development will lead to job creation on the scale advertised. The question arises, therefore, is the Namibian public being oversold a pup? ■

*** Robin Sherbourne is an economist and the author of the seminal 'Guide to the Namibian Economy', and he has consulted with the Institute for Public Policy Research (IPPR) on numerous occasions.**



Photo: Euronews

Green is not necessarily clean

• GRAHAM HOPWOOD

Green hydrogen projects in Namibia should apply the highest standards of good governance from the outset. That means complying with the Green Hydrogen Standard.

Looking at the programme of the recent Green Hydrogen Summit held in Windhoek, there were plenty of discussions focussing on business models, marketing mechanisms, offtake support, and green industrialisation, but scant mention of governance and corruption challenges.

This in a country that has experienced the Fishrot corruption scandal and the collapse of the SME Bank within the last few years. As with both those scandals, we live in denial until it's too late. The money's gone and the corrupt have fled or are dodging culpability for

as long as they can. Occasionally, they might be held to account.

There's no reason to believe the green hydrogen sector is immune to similar risks.

At present, Namibia's green hydrogen projects face the following risk factors:

- A lack of transparency - as seen in the refusal to release key documents and agreements
- Opaque processes particularly concerning access to finance and land
- Inadequate community consultation
- Concerns over how certain companies and groups of individuals are selected to run projects
- The presence of Politically Exposed Persons (PEPs) and their proxies in company structures and licence arrangements >

Renewable energy projects, including green hydrogen, should take heed of the lessons learned from anti-corruption efforts in the extractives sector.

The Extractive Industries Transparency Initiative (EITI), launched in 2003, aims to address issues of weak governance and widespread corruption by promoting greater transparency in the oil, gas, and mining sectors, while enhancing the accountability of governments and companies.

The principles of the EITI Standard should be applied to green hydrogen and other renewable projects. In essence, this would mean publishing information relating to contract transparency, beneficial ownership, production and export data, tax revenues and payments, CSR payments, and social and environmental impacts. Such reporting would be assessed for its veracity and appropriateness by multi-stakeholder oversight committees that include the government, the private sector and civil society. Transgressions would lead to public warnings, suspensions, and ultimately in a project being halted.

It is crucial that Namibia's green hydrogen projects are perceived as being implemented responsibly. Only in this way will they gain the trust of the public.

Fortunately, a Green Hydrogen Standard has already been developed by the Swiss-based Green Hydrogen Organisation which aims to promote green hydrogen in collaboration with government, industry, and other stakeholders. The Standard was only launched in 2022 but is already gaining ground.

The Standard requires companies to take a proactive approach to disclosures and sets expectations for reporting on licences, approvals, and financial transactions. It also expects companies to report on tax payments and subsidies, beneficial ownership, and community benefit arrangements.

While the Green Hydrogen Standard has picked up some industry support in Na-

mibia, there are two key areas for improvement: raising its visibility and ensuring its comprehensive adoption. Moving forward, it should serve as a benchmark for ensuring the legitimacy of green hydrogen projects through proper accreditation and certification. Companies and projects in Namibia should already be aligning with the Standard to ensure future compliance.

By overlooking the corruption risks tied to green hydrogen, we set ourselves up for failure. Corruption isn't a secondary concern - it poses a direct commercial risk, as it threatens the viability of both projects and businesses. If corruption takes root, leaving communities marginalised and benefits not shared equitably, these projects are bound to founder. The sooner we recognise that GH projects cannot thrive on hype alone, but require strong governance frameworks, the better their chances for success.■

** Graham Hopwood is the Executive Director of the Institute for Public Policy Research (IPPR)*



It is crucial that Namibia's green hydrogen projects are perceived as being implemented responsibly. Only in this way will they gain the trust of the public.

For the text of the Green Hydrogen Standard see - <https://www.greenhydrogenstandard.org/>

Further reading: Good Governance and the Just Transition: Implications for Renewable Energy Companies published by the Basel Institute on Governance (September 2024) - <https://baselgovernance.org/publications/wp-53>



Image 1: A community awaiting national development actions [Source: M Courtney-Clarke]

Opportunities and risks of green hydrogen projects for Namibia's development imperatives

• DETLOF VON OERTZEN

Realism is required to minimise unwanted trade-offs and is particularly needed to secure our water, energy, and food supplies and deliver on much-needed local jobs, guided by local realities and needs.

National development is understood to create lasting local benefits by enhancing the overall quality of life of citizens, through improvements of economic and social framework conditions. Alleviating poverty, creating jobs, providing healthcare, education and infrastructure, and ensuring an equitable access to resources will go a long way to enable Namibians to lead a dignified life and achieve personal aspirations.

Namibia's key development imperatives include, among others, securing supplies of water, energy, and food. If these prerequisites to development are constrained, or insecure, our very existence in the Land of the Brave is at risk. The supplies of water and food depend on climatic conditions. This is relevant as Namibia is increasingly affected by a changing climate, although it remains a net carbon sink.

Water is essential to produce food, and energy, e.g. electricity. Producing adequate and affordable food, in turn,

depends on the availability, adequacy and affordability of both water and energy. The interrelated nature of water, energy, and food is often ignored, particularly in fragmented Government entities acting mostly within their own silos. Singular perspectives on complex interconnected topics often leads to poor decision-making, to the detriment of the country's citizens, especially the poor and vulnerable population.

A recent Integrated Food Security Phase Classification analysis projected that 1.4 million Namibians (or 48% of the analysed population) face high levels of acute food insecurity, and require urgent support. On 22 May 2024, Namibia declared a National State of Emergency on account of the drought, which affects some 340,000 households who are in need of food aid. This is a dire situation, and is a systemic national development failure that Namibia is faced with.

>

Would new industrial ventures, for example the synthesis of green hydrogen and/or ammonia, assist to address our most critical development needs? Some suggest that an emerging green hydrogen ecosystem will become a key development driver, raising expectations of some 240,000 new jobs created by 2040. Others view the hype of a green hydrogen led industrialisation as a grand distraction from Namibia's real development issues.

At the time of writing, in September 2024, several pilot-scale green hydrogen production facilities were being constructed. These include Cleanergy Solutions' plant near Walvis Bay, Hylron's direct iron reduction facility east of Arandis, and the Daures Green Hydrogen Village north-east of Mile 108, as illustrated below.

Images from top to bottom: Cleanergy Solutions, Hylron, and Daures GH2 Village [Sources: Internet]



These initiatives expect to commence with green hydrogen production via the electrolysis of water towards the end of 2024. As pilot plants, these projects serve to prove a concept, and are not expected to generate commercially viable returns. Pilot-scale plants are of critical importance to learn-by-doing, thereby advancing the understanding of the requirements to successfully operate a commercial project at a later stage.

Often, pilot projects are characterised by their small environmental footprint and limited resource use. And, when generous grant funding is available, as has been the case for the above initiatives, the barriers to initiate a pilot project are considerably lowered. While such ventures will not address Namibia's immediate development needs, they are critically important stepping stones to get acquainted with innovative technologies, and provide vital inputs on their viability and implications if they were to be scaled up. Even if pilot projects fail, the lessons drawn are what renders them both valuable and important for advancing new ideas and concepts, without causing irreversible environmental harm, or requiring Namibians to foot their bills.

In addition to the small-scale green hydrogen initiatives described above are several ventures planned for full commercial production. Potential developers include Zhero Energy, who intend to launch a 500 kilotonnes per year green ammonia project some 70 kilometres from Walvis Bay. HDF Energy plans a firm electric power plant near Swakopmund, producing electricity and hydrogen, the latter to power fuel cells to generate electricity when the solar output is inadequate. Cleanergy Solutions, already mentioned above, contemplates adding a large-scale facility at Arandis, piping green hydrogen to Walvis Bay, to synthesise ammonia, to be piped to the Walvis Bay harbour, for export and use as a future shipping fuel. And GreenGo Energy investigates opportunities to initiate industrial-scale production facilities using Namibia's encroacher bush biomass. Potential outputs may include directly reduced iron, synthetic methanol, and aviation fuel. To date, however, none of the above large-scale projects have firm production dates.

A mega-scale green hydrogen developer is Hyphen Hydrogen Energy, who emerged as preferred bidder of a contentious government procurement process, to develop a large-scale vertically-integrated production facility in the Tsau //Khaeb National Park, south of Lüderitz. With a projected investment of US\$ 10 billion, Hyphen aims to ultimately produce some 350 kilotonnes of green hydrogen per year, i.e., about 0.3% of today's annual global hydrogen demand, for export, in the form of ammonia. Declaring a winner at the very start of what is a protracted marathon with uncertain outcomes illustrates the naivety and fundamental flaws of the procurement logic applied.

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To date, it remains entirely unclear how much and what Namibian taxpayers will end up paying for, including for common user infrastructure, to industrialise a proclaimed national park.

In contrast to travelling the globe to revel in the limelight of being associated with projects purporting to save the world, tackling key development challenges at home, including the provision of secure water, energy, and food supplies, is an often-thankless endeavour. Creating water and sanitation infrastructure is, however, not rocket science. Yet, progress to unlock new supplies and future-proof existing water-related infrastructure has been inadequate to effectively shield the population from the vagaries of recurring low rainfall episodes. Namibia's electrification sector is similarly challenged: today's access to electricity remains stagnant at below 50% of the population, and the rate at which rural-to-urban migrants arrive is far higher than the number of new urban connections established per year. And Namibia's food-producing sector remains unable to meet local demand, resulting in food shortages and severe malnutrition, most notably among the poor or otherwise vulnerable.

In the context described above, could green hydrogen and derivative industries be the key to strengthening Namibia's development imperatives? All large and mega-scale green hydrogen developments will, no doubt, have massive impacts on Namibia's economy, as new foreign direct investment inflows amounting to tens of billions of Namibia Dollars roll in. Whether such investments enhance the country's water security, enhance the availability and affordability of food, or strengthen energy supplies to meet local demand, remains doubtful. On the contrary, most new large-scale infrastructure investments are expected to initially exert additional pressures on scarce water, energy, and food resources. If initiatives are explicitly designed to bolster local water, energy, and food supplies, their security will likely improve in time. However, would investors make such provisions if they are not a prerequisite of engagement? In contrast to a localised mega-scale initiative, multiple smaller-scale and decentralised projects are likely to be more effective in creating broad-based opportunities resulting in local benefits, as new demands will incentivise local entrepreneurial action.

Large-scale new developments create multiple demands on resources, including human resources, water, land, energy, and existing infrastructure, such as housing, roads, clinics, schools, information and communication technologies, and others. Where resources are already stretched, or systemic resource inadequacies exist, national development efforts are best focused on addressing critical impediments first. Namibian national development must, first, less-

en the misery of poverty, while strengthening its abilities to adapt to and cope with the impacts of a changing climate. Unlocking new sources of rain-independent water, e.g., via seawater desalination, weaning ourselves off imported energy supplies, and bolstering drought-resistant food production, are of critical importance. If green hydrogen projects contribute to addressing the country's critical priorities, for example by securing water, energy, and food supplies, and creating long-term jobs, they should be considered. Green hydrogen initiatives with a light footprint on land and resources that are readily scaled up are likely to positively impact Namibia's development pathway. In contrast, mega-projects necessitating financial inputs from the government, are a risk-prone proposition. Namibia remains challenged in managing its most pressing development needs. This suggests that a step-by-step learning-by-doing approach with multiple independent actors would be a sensible risk management approach.

A clear-cut answer whether green hydrogen projects can support Namibia's development imperatives cannot be provided. Those initiatives that have made some progress in the past year, or so, are all pilot initiatives. Pilot projects do not rely on local taxpayers having to foot the bill for experiments, and create a gradual additional demand for goods and services that can usually be met by local suppliers. In contrast, it remains entirely unclear how mega-projects will benefit locals, when any benefits are recognised, who the beneficiaries will be, and whether they support our existing base of businesses. At the same time, mega-projects are far more likely to cause irreplaceable ecosystem losses and land degradation, contribute to an already significant scarcity of experienced local staff, and may eventually lead to Namibian taxpayers having to pay for common user infrastructure and the multitude of emerging legal and regulatory challenges.

We do not get to choose our past, but must live with repercussions of past decisions. It is therefore critically important that we focus on shaping our common future. Between the opportunities and risks that present themselves today, maintaining a sense of realism is essential. Realism is required to minimise unwanted trade-offs, for example, sacrificing our biodiversity riches to establish 'green' export industries. And realism is particularly needed to secure our water, energy, and food supplies and deliver on much-needed local jobs, guided by local realities and needs, thereby lifting Namibians out of poverty.■

** Detlof von Oertzen is an independent Namibian scientific and technical management consultant and chief executive officer of VO Consulting.*



Photo: Eline van der Linden

The wonky curve of socio-economic development in emerging industries

• ELINE VAN DER LINDEN

We should be critical and debate developmental plans and ambitions in the green hydrogen space, but we should do so using facts.

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People are not just scared of change, they are sceptical of new grand schemes that promise huge positive change.

When I started as the Deputy CEO of MCA Namibia in 2009 we were accused of conspiring with the United States of America. We were going to bring in the Americans to drill for oil in the Etosha National Park.

At a heated meeting with the SWAPO Party Youth League (SPYL) we de-escalated by calmly refuting these extraordinary allegations using facts. MCA-N ended up constructing close to 100 houses for staff working in the Park, helped the Ministry of Environment & Tourism acquire road maintenance equipment, constructed a new rest camp at Olifantsrus, and opened up the western side of the Park at Galton Gate to create a closer connection with the conservancies in the north west. This has been good for tourism.

We invested 97% of US\$302.5 million, at the time worth some N\$2.3 billion,

in education, agriculture, and tourism. Was it smooth sailing, no. Did we make mistakes, certainly. Were all investments impactful, no. But on balance, it had been good for Namibia.

So, today I have a slight case of déjà vu. I started at the Namibia Green Hydrogen Programme (NGH2P) in February 2024, fully aware that the green hydrogen space was not without controversy.

Green hydrogen is new and all that is new is typically under scrutiny. People are not just scared of change, they are sceptical of new grand schemes that promise huge positive change. Why would Namibia want to be a front-runner in an emerging sector? Why make a strategic bet in such new and unknown territory when we have many real bread-and-butter issues in Namibia? >

The scepticism and critical notes are understandable. Worldwide, and in Namibia, the green hydrogen sector is emerging and learning is ongoing. Foreign grants and social investments from overseas are in play. Off-take mechanisms with elements of subsidy are in use in countries that have identified green hydrogen and its derivatives as important to reach decarbonisation targets.

Countries and companies are positioning themselves towards commercial viability, optimising technical configurations, financial instruments, human skills development, off-take, etc..

As I find myself in 'expert' company in the green hydrogen space, the 'experts' around the table readily admit that no one is an expert just yet. This sector is emerging. We are all learning, together.

The key motivation for this strategic bet is that green hydrogen extends well beyond the energy sector and has the potential to create thousands of new jobs in the production of the green molecules, the subsequent use of these green molecules to energise industrial development, and in green corridor logistics.

Namibia can leapfrog and start to industrialise using green energy. The country's minerals no longer need to be shipped out in a raw or crushed state only, as business cases for adding value to these minerals in Namibia, using green molecules, are created. Mineral beneficiation requires intensive energy, not just electricity, and green hydrogen is well suited for this. There is opportunity in the production of green ammonia, sustainable aviation fuel and other derivatives, and green steel. We should also identify which components of a wind turbine or solar panel we can start producing in Namibia or be more ambitious and start building them from scratch.

Namibia will not leapfrog into this green hydrogen space on its own. We can add value to minerals from neighbouring countries in Namibia for ultimate export, export green hydrogen via a pipeline to South Africa to help decarbonise industries there, or export green ammonia into other Southern African countries to decarbonise existing or build new green industries.

We can fuel our heavy road transport along the Trans-Kalahari, Zambezi, Cunene and Orange River Corridors with green fuels, and so decarbonise heavy marine transport or the so-called 'hard-to-abate' sectors. And the private sector can earn hard currency by exporting green hydrogen and its derivatives to Europe and Asia, and fuel further economic development in Namibia through salaries, taxes, land rental fees, royalties, etc.

Disappointing criticism

Given all this potential, it is disappointing to hear the critics of the green hydrogen development ambitions use non-factual statements to distract Namibians from the opportunity at hand.

I have heard (after translation) Dr Panduleni Itula explain to elders in the North that the government will lease out the land parcels allocated to Hyphen Hydrogen Energy for a mere N\$20. That is not true. The agreed rental fee during the two-year feasibility study phase is EUR 6

million per annum. I have heard Dr Chris Brown, of the Namibia Chamber of Environment (NCE), say that the whole Tsau //Khaeb National Park will be destroyed by the green hydrogen developments. That is not true. The current estimate of the footprint of Hyphen represents less than 0.7% of the size of the Park, which measures 22,000 square kilometres. Moreover, Hyphen follows the performance standards for environmental and social development of the International Finance Corporation (IFC), which are regarded as the gold standard for environmental and biodiversity protection.

I have also heard local communities raise their concerns with the United Nations Commission on Human Rights about the port infrastructure required for Hyphen and how this will impact Shark Island and the remembrance of the genocide victims. That is not true. The port infrastructure for green hydrogen will be constructed at Angra Point, on the other side of the bay and not anywhere near Shark Island. Linking Shark Island to green hydrogen and Hyphen is not a fair representation of facts.

The socio-economic development curve for any programme, project or even a country is never a straight line. We navigate as government, private sector, civil society and the donor community towards the most optimal path to socio-economic development. Such navigation is challenging and requires hard choices along the way, some detours and at times even a U-turn to regroup and start again. This process is best served by brutal honesty from all stakeholders. We should want to debate using facts and where we make mistakes, admit to such.

At this juncture, is it necessary for Namibia to choose between energy from wind, solar, wave or biomass, hydro, green hydrogen, oil and gas, nuclear, etc.? Would it not be more strategic to allow research and development, create a generally conducive environment for investment in energy and no-regret industrialisation investments, create many jobs and ensure Namibians are ready to take up their rightful positions in these sectors, bring along energy-poor Namibians through grid or off-grid solutions, and collectively enforce protective measures to guard people and planet?

For this emerging green hydrogen sector, I would wish to see all stakeholders work on business cases for their proposed solutions. No wild statements, emotions and untruths, just a systematic approach to facts and figures and this country's values vis-à-vis socio-economic development and environmental and biodiversity protection. Namibia will develop a portfolio of energy solutions that considers various factors including resource availability and costs, reliability, own use and export potential, carbon emissions and no-regret industrialisation potential. Ultimately, the respective business cases will attract private sector interest and capital, while the public sector, civil society and donors must insist costs to people and planet are modelled in. ■

** Eline van der Linden is Head: Impact & ESG at the Namibia Green Hydrogen Programme.*

Updates on Namibia's Hydrogen Projects

• SUZIE SHEFENI

Interesting developments have been taking place in the Namibian green hydrogen sector since the launch of the inaugural Green Hydrogen Monitor. Namibia's Blueprint for Green Hydrogen was published in August and various global green hydrogen convenings saw the establishment of a myriad of partnerships all with the aim of turning Namibia's ambition into reality. This article looks at 6 of the newer players that have been creating momentum and explores the postponement of the HyRail project.

Zhero Green Hydrogen

One of the newer players on the block is Zhero Molecules Walvis Bay. The company is partnered with Envision Energy which will serve as its engineering, procurement and construction (EPC) partner on its Namibian hydrogen ambitions. Envision Energy is a Chinese wind turbine and energy management company that is behind the NEOM 2.2 GW green hydrogen production facility in Inner Mongolia.

Registered in 2022, Zhero intends to produce 500,000 tonnes of green ammonia annually from 2029, with the project earmarked to make its final investment decision by 2026.¹ The plant will be located about 70 km from Walvis Bay. The company has secured lease agreements for two pieces of land, one that will house an industrial park and another near Namport that will serve as a storage facility.

Elof Hansson Hydrogen Namibia

Elof Hansson Hydrogen Namibia intends to establish a green hydrogen and ammonia production plant in the Erongo Region. The project will feature a 2500 MW solar PV plant, 80 km linear infrastructure in the form of power lines, a substation and battery energy storage system. The project will also feature a desalination plant on nearby land. The project aims to develop a green ammonia plant with a capacity of 430,000 tonnes per year.

The company held public consultations for interested and affected parties in December 2023, convening in Walvis Bay. Amongst concerns raised by parties was the concern for impact on archeological and heritage sites of the neighbouring farms, of which portion 4 of Geluk no 116, as referred to as 'Jakkalsdans', was included.² The project's background information document submitted as part of the environmental impact assessment has, however, stated that, "there are currently no known heritage sites of special importance in the proposed area and hence, no negative impacts to any sites of heritage significance are expected".³

Chiffon Green Hydrogen

Chiffon Trading is a Namibian Company registered in December 2023. The company intends to construct a green hydrogen project consisting of a solar PV plant and an electrolyser plant in the Erongo Region.

The project began its Environment Clearance Certificate process in early 2024, with the first call for interested and affected parties published in local newspapers in April. Chiffon Trading has held community consultations at Spitzkoppe and Swakopmund.⁴ Furthermore, Chiffon Trading's hydrogen project on farm Bloemhof No 109 requires an additional 20,000 hectares which it has sourced from adjacent communal land. In November 2023, Chiffon Trading received support from the !Oe-#Gan Traditional Authority, which will allow the company to lease the land that forms part of the #Gaingou Conservancy.

¹ Ambition in action: Global African Hydrogen Summit witnesses multi-million euro deal signings in Namibia, available at <https://www.globalafricanetwork.com/company-news/ambition-in-action-global-african-hydrogen-summit-witnesses-multi-million-euro-deal-signings-in-namibia/>
² Proof of Consultation - Production of Green Hydrogen at the Remainder of Farm Geluk No 116, Erongo Region, Available at: http://the-eis.com/elibrary/sites/default/files/downloads/literature/3688_Proof%20of%20Consultation_Production%20of%20Green%20Hydrogen%20at%20the%20Remainder%20of%20Farm%20Geluk%20No%20116%20Erongo%20Region.pdf
³ Background Information Document, Production of Green Hydrogen at the Remainder of Farm Geluk No 116, Erongo Region, Available at: http://the-eis.com/elibrary/sites/default/files/downloads/literature/3688_BID_Production%20of%20Green%20Hydrogen%20at%20the%20Remainder%20of%20Farm%20Geluk%20No%20116%20Erongo%20Region.pdf
⁴ Chiffon Trading Stakeholder Engagement Report. Available at: https://eia.meft.gov.na/screening/4489_stakeholder_engagement_report_final.pdf

Neogreen Hydrogen Namibia

Neogreen Hydrogen Namibia is a joint venture between Alpha Namibia Industries Renewable Power Limited (ANIREP) and the Canadian hydrogen development firm, NeoGreen Hydrogen Corp.⁵ ANIREP boasts a portfolio of companies that are well recognised in the Namibian renewables sector including HopSol Africa, ANIREP Solar and ANISOL. Registered in 2021, Neo Green was amongst the 6 bidders for the Southern Corridor Development Initiative request for proposals, bidding for the Springbok site. Hyphen was selected as the preferred bidder for the development project. Neogreen has expressed its interest in developing green hydrogen and green ammonia projects in the Karas region.⁶ In 2021 the company signed a land lease option for Farm Geelschaap no.19 owned by Namibian businessman Lazarus Jacobs for the purpose of conducting feasibility studies and ultimately generating solar power in support of future green hydrogen projects.⁷ In October 2023, the parent company NeoGreen Holdings signed an agreement with Danish firm, Bunker Holding, to collaborate on the operations, logistics, and marketing of green ammonia and synthetic fuels across the former's global project portfolio, including Namibia.



GreenGo Namibia signs MOU at the Global African Hydrogen Summit.

GreenGo Energy

GreenGo is a Danish renewable energy firm that announced its Namibian debut at the Global African Hydrogen Summit in September. At the summit, GreenGo Energy signed an MoU with local Namibian developer InnoSun Energy Holdings to co-develop solar and wind projects linked to scaled green hydrogen production. The company also entered a partnership with Lodestone, a Namibian iron mining company, with the intention to explore innovative solutions to integrate green hydrogen into the steel production process.

The project is still in its nascent stages, with the company's CEO having declared its intention to "actively participate in Namibia's upcoming tender process for green hydrogen".⁸ It is likely that the company will explore solar PV, wind and hydrogen projects under its Megaton project brand which has been seen in renewable projects in Mauritania and Denmark.

⁵ Co-sponsorship of Dr Hage Geingob Cup Rugby Tournament, Available at: <https://static-media.fluxio.cloud/neogreen/xKm3Llb5.pdf>

⁶ Traction: Namibia's Green Hydrogen Overview. Available at: <https://gh2namibia.com/wp-content/uploads/2022/09/Traction-Namibias-Green-Hydrogen-Overview.pdf>

⁷ 2,500 ha Solar PV site option agreement in the Karas region of Namibia. Available at: <https://static-media.fluxio.cloud/neogreen/vgLFRxfK.pdf>

⁸ Anu Bhambhani, Africa Solar PV News Snippets: Germany To Fund Namibia's Largest Solar Park & More. Available at: <https://taiyangnews.info/markets/africa-solar-pv-news-snippets-germany-to-fund-namibias-largest-solar-park-more>

Kaoko Green Energy Solutions

Kaoko Green Energy Solutions is a local renewable energy-generation assets development company. Focusing on green hydrogen and its derivatives, the company has been at the forefront of developing hydrogen clean cooking technologies as well as research and development in marine renewables and energy storage systems.

In 2023, Kaoko Green Energy Solutions signed an MOU with the Finnish company AW-Energy that specialises in near-shore wave technology. This agreement will see the development of the /hao project that integrates AW-Technology's patent wave energy technology, WaveRoller®, into Namibia's energy mix. It intends to construct a WaveRoller wave farm at Wlotzkasbaken, near Swakopmund. The project also aims to explore the feasibility of wave farms in other locations and expand to support Namibia's desalination and hydrogen project energy needs in its second and final phases.⁹

Furthermore, Kaoko Energy is also developing a pilot hydrogen solar panel project at Walvis Bay, at the J.P Brand Primary School. This project is a partnership between Kaoko Energy and Belgian companies Solhyd and COOSHA Impact Venture, which have developed a hydrogen cookstove and refrigerator that operates on low-pressure hydrogen, sourced from their solar-hydrogen panels. The local project will demonstrate the potential of clean cooking and promote its expansion in Namibia.



Kaoko Green Energy Solutions Co-Founders demonstrate Green Hydrogen Cooking to a Namibian and Belgian delegation.

TransNamib Halts Hyrail Project

TransNamib announced the suspension of its dual-fuel hydrogen-diesel locomotive conversion project in September 2024. The project titled 'HyRail Namibia' is a joint venture between CMB.TECH, Hyphen Technical, the University of Namibia and TransNamib and has received funding from the German government's JCOI / PTX grant. It was anticipated that the project would take 18 months to complete with the expected trial service to begin in the last quarter of 2025.

In the last decade, TransNamib has been plagued by numerous problems including decreasing transport capacity, increasing operational and maintenance costs due to old and obsolete equipment and infrastructure and the outflow of qualified personnel.¹⁰

These problems have resulted in cash flow and governance challenges that still impact TransNamib's capacity to date. The decision to pause the project has been described as a strategic realignment, allowing TransNamib to focus its limited resources to ensure the provision of quality rail transport services.

During this deferment, TransNamib will initiate a preparatory phase that will allow the parastatal to develop a well-rounded approach that balances its core objectives with its decarbonisation ambitions. The partners have, however, indicated that they expect to have a green hydrogen powered locomotive on track by April 2025. Many have evaluated this decision as a smart move for Africa's first hydrogen train project. The risks associated with first movers may be too burdensome for a parastatal to undertake, especially one in a precarious position. The pause to re-energise TransNamib's operations and develop a transition plan may yield greater outcomes. ■



Visualisation of the HyRail dual-fuel hydrogen-diesel locomotive.

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⁹ Sangita Shetty, AW-Energy Collaborates with Kaoko Green Energy Solutions to Develop Renewable Energy Solutions in Namibia. Available at: <https://solarquarter.com/2023/05/11/aw-energy-collaborates-with-kaoko-green-energy-solutions-to-develop-renewable-energy-solutions-in-namibia/>

¹⁰ Ministry of Works and Transport, Business plan / restructuring plan for TransNamib Holdings Ltd. Available at: <https://www.gopa-infra.de/projects/business-plan-restructuring-plan-transnamib-holdings-ltd>

Green hydrogen from below and above. Reality Check!

From 28 to 30 August 2024, over 40 Namibian and South African community activists and civil society representatives gathered in Windhoek for a workshop under the theme “Shared Energy Futures: Civil society and community voices on green hydrogen”. The workshop took place at the NUST Hotel School, and was organised by the Namibia Development Trust (NDT), Economic and Social Justice Trust (ESJT) and Frack Free Namibia, with support from the Heinrich Boell Foundation, Cape Town Office. The participants came from areas affected by green hydrogen projects/developments in Namibia and South Africa.

Namibian participants included Civic+264, LAC, IPPR, NDT, ESJT, CCN, MUN, TUCNA, FrackFree Namibia, Rights Not Rescue Trust, various conservancy representatives, the Erongo Regional Conservancy Association, Hanganeni Artisanal Fishing Association, NNF, WWF, Nama Traditional Leadership Association (NTLA), Youth4Can, Namibia Environment and Wildlife Society (NEWS), Namibia Conservancy Chairpersons Association, Southern Natural Resources Management Association, and NACSO from Namibia. South African participants included Natural Justice, Earthlife Africa, groundwork, WoMIN, all of whom are also members of Hydrogen Watch South Africa.

Overall, the workshop aimed to amplify civil society and community voices on green hydrogen developments, so that they feature in and shape the conversation on the subject in the context of the Global Hydrogen Africa Summit, which also happened in Windhoek in September 2024. The workshop facilitated the exchange of expertise regarding green hydrogen in general, sector plans in Namibia and South Africa, and experiences on the ground. secondly to amplify the voices of civil society and front-line communities. It was hoped that discussion would explore questions about what conditions would enable Green Hydrogen to contribute to a ‘win-win’ outcome for all affected parties, and how viable those options would be.

The 3-day workshop programme included discussions about green hydrogen and its impact on land, water, and biodiversity, as well as its possible contribution to a just energy transition. Questions of history, heritage and development were also highlighted.

Workshop organisers were also able to secure 10 free tickets for CSO representatives to attend the Global Hydrogen Africa Summit, with the hope that outcomes of the workshop discussions could also find their way to the Summit itself.

Images and text provided by Hans-Christian Mahnke.



Ronny Dempers (NDT) welcoming the participants to the workshop on Day 1.



Louivenzia “Lukey” Komases (IPPR), Melanie Markus (Civic +264), and Siphesihle Mvundla (Groundwork SA) during the 1st day in group sessions, sharing experiences from the ground



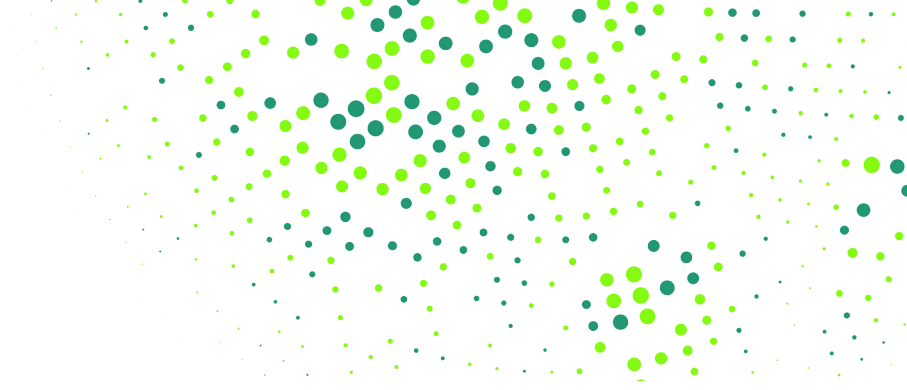
Some of the participants giving feedback during a group-work session at the workshop.

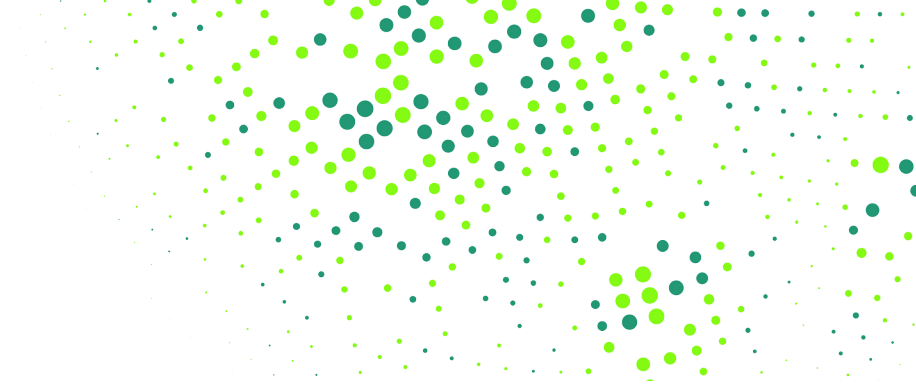


Participants at the end of the workshop.



Day 3, Ronny Dempers (NDT) moderating the session on ‘Reflections for future engagement and advocacy’.





About the HSF

Present in more than 60 countries world-wide, the Hanns Seidel Foundation (HSF) is a German non-profit organisation promoting democracy, good governance and the rule of law across the African continent. Cooperating with its Namibian partners, such as IPPR, HSF also seeks to contribute to sustainable development by strengthening peace, human security, and environmental protection. The contents of this publication do not necessarily reflect the views and opinions of the HSF.

About the IPPR

The Institute for Public Policy Research (IPPR) is a not-for-profit organisation with a mission to deliver independent, analytical, critical yet constructive research into social, political and economic issues that affect development in Namibia. The IPPR was established in the belief that free and critical debate informed by quality research promotes development.

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