

23rd ANNUAL SYMPOSIUM

Theme: Maximising Economic Growth From Renewable And Non-Renewable Energy Sources In Namibia





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Preface

The Bank of Namibia held its 23rd Annual Symposium at the Safari Hotel on the 3rd of November 2022 under the theme: Maximising economic growth from renewable and non-renewable energy sources in Namibia. The symposium theme focused on how Namibia can maximise economic benefits from renewable and non-renewable energy sources. The symposium theme focused on the recent discoveries in oil and, gas, in the country, and the planned production of green hydrogen using renewable energy resources. The Symposium hoped to find ways in which the country can maximise the benefits from these discoveries and use them to uplift especially the vulnerable and less fortunate members of the society.

The 23rd annual symposium aimed addressing the following questions:

- How to ensure that the discovered minerals/natural resources (oil – onshore and offshore) and green hydrogen development benefits and contributes to broad-based development that results in employment creation and reduction of poverty and inequality?
- How to prevent the Dutch disease/resource curse?

- What should the regulatory landscape be so that Namibia optimally benefits from these discoveries, including ownership? Is the current regulatory landscape adequate to ensure the country gets a fair share of the discovered resources and also competitive to attract FDI?
- How can synergies between new investments and existing policies, such as local participation and local procurement and value addition, be enhanced?

These issues, among others were addressed through presentations given by local and international speakers and supplemented by a panel discussion comprising of representatives from the Nord University (Norway), the African Development Bank, Ministry of Mines and Energy, the Green Hydrogen Commissioner, the Commonwealth Secretariat and the Bank of Namibia.

This booklet contains the papers presented by the speakers at the symposium. It also includes a summary of the key policy issues emanating from the symposium and recommendations on the way forward.



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Welcoming Remarks

by Mr Johannes !Gawaxab, Governor of the Bank of Namibia Director of Ceremonies

Honourable Tom Alweendo, Minister of Mines and Energy, Honourable Ministers and Deputy Ministers Present, Members of Parliament, Members of the Diplomatic Corps, Executive Directors of Government Offices/Ministries and Agencies, Deputy Governors and Board Members of the Bank of Namibia, Distinguished Speakers, Distinguished Panelists, Captains of Industry, Members of the Media, All invited guests, Ladies and Gentlemen,

Good morning!

- 1. It is my profound honour to welcome you to the Bank of Namibia's 23rd Annual Symposium. I wish to express my gratitude and appreciation to our invited guests and discussants for availing time to be with us on this occasion and share their views and knowledge on this important topic, which is *Maximising economic growth from renewable and non-renewable energy sources in Namibia.*
- 2. The Annual Symposium of the Bank of Namibia aims to contribute to Namibia's development and economic policy discourse. Annually, the Bank identifies a vital development and economic issue facing Namibia, to which this dialogue can contribute evidence-based solutions. The Annual Symposium is, therefore, a forum designed to bring together policy experts, academics, and economic development stakeholders to discuss the economic and policy issues on the identified topic. And as such, the Bank felt the need to get ahead of Namibia's recent discoveries (the oil and gas discoveries and the green hydrogen initiatives) so that we can get the policy issues right from the onset. My hope for this symposium is that we can contribute to the crafting of policies and recommendations that will allow the country to exploit the benefits of renewable and non-renewable energy and review possible options for the country to ensure appropriate equitable participation of Namibians in these opportunities, now and beyond.
- 3. Through appropriate management and allocation of oil, gas, and green hydrogen revenues, our country

can promote economic diversification and thus build the basis for higher and stable growth. The critical challenge for us is to harness the oil, gas, and green hydrogen resources by making the right strategic choices and synchronizing their implementation in a context that improves the lives of the poor through increased investment in health, education, physical infrastructure, and other non-oil sectors.

- 4. However, this will only be possible if the Government approaches the oil and gas sector and the green hydrogen initiatives in a national, rational, and strategic manner. We are fully aware that these sectors cannot only bring significant financial resources and enormous transformational opportunities but also come with challenges. There are many examples around the world where developing countries have obtained windfalls from oil and gas but eventually ended up poorer than before. We must avoid the resource curse at all costs. We must learn from the experiences of others.
- 5. In my message today, I would like to talk about the following three key issues; first, how Namibia should position itself to maximize its gains from these discoveries; second, briefly reflect on some critical measures to be put in place to avoid resource mismanagement; and finally, speak to the head-start we have made as a country through the establishment of the newly established sovereign wealth fund, the Welwitschia Fund.

6. Regarding the gains and maximization, I would like to

highlight some critical success factors that the country should embrace to ensure benefits for all Namibians. The question in the mind of every citizen is how as

a country, we should expect to gain from these new discoveries. One of the most immediate ways should be through additional direct and indirect employment. Exploration activities should also generate new infrastructures such as roads, railway lines, electricity supplies, schools, and hospitals that, although provided for the minerals industry and its workforce, can also benefit the rest of the population. It should contribute to developing skills and local businesses at the local level. Skills development should entail using the migration policy to facilitate skills transfer and the acquisition of skills that are not locally available. Meanwhile, the economy can be stimulated as mineral companies forge multiple outward linkages – backwards to industries that supply goods and services or forwards to industries that process mineral outputs.

- 7. The issue of ensuring optimal local content in the exploitation of resources must remain prominent. The finalisation and adoption of the Local Content Policy is therefore of paramount importance. Facilitating local content and participation in the oil and gas value chains has the potential to ensure broad-based benefits from these resources. To avoid and prevent the much dreaded "resource curse" that has plagued many developing countries with newly discovered natural resources, the private sector will need to capitalize on these opportunities.
- 8. This brings me to the second critical success factor, transparency and accountability in allocating resources. This would ensure that access to these resources is granted in such a way that it prevents mismanagement and other abuses and that the benefits trickle down. How do we do this, you may wonder? Firstly, we need to ensure that Namibians and firms seize opportunities to provide services to these industries. Secondly, the allocation of these resources should be in a transparent manner; it should be done through an auction or open market bidding. Well-designed auctions can promote the efficient allocation of resources without requiring governments to have full prior knowledge of resource values or costs. Compared with administrative allocations, auctions are more transparent, less dependent on officials' subjective judgment, and can yield more significant revenues or cost savings for governments.

Director of ceremonies, ladies and gentlemen,

9. In a 1995 study, the economists Jeffrey Sachs and Andrew Warner demonstrated that resource-rich countries generally do not become wealthier. This brings me to the third point. Natural resource wealth is not necessarily a blessing. Spending this newfound wealth in terms of oil crowds out industries that are exposed to international competition, thereby reducing growth capacity – the so-called Dutch disease. Other leading economists find that the relationship between economic development and natural resources is more complex; many countries become poorer after discovering abundant natural resources, while others become wealthier. Sachs and Warner conclude that the quality of the institutional framework is decisive. To escape the resource curse, there are examples of countries that have successfully established Sovereign Wealth Funds, such as the Norwegian Government Pension Fund Global, which you will hear about later.

10. Early this year, Namibia launched its own Welwitschia Fund, managed by the Bank of Namibia under the auspices of the Ministry of Finance - before announcements of significant windfalls were realized. With the Fund, we are better positioned to institute longterm oil and other natural wealth management. The Stabilization Account of the Fund will aim to insulate the budget and economy from commodity price volatility and external shocks to the Namibian economy. The Stabilization Account closely resembles "normal foreign reserve" assets to protect domestic economies against economic shocks through countercyclical positioning. The Stabilization Account is premised on the regular setting aside of the portion of specific categories of public revenue to build the Fund while applying strict withdrawal rules. As a result, the withdrawals will mainly be during exceptional circumstances. On the other hand, the Intergenerational Savings Fund facilitates the investment of defined proceeds from the present utilization of natural resources and from divestiture in state assets. Intergenerational Savings Fund aims to promote long-term prosperity and ensure intergenerational equity in the distribution of net economic benefits from the intertemporal utilization of the country's natural resources.

Ladies and gentlemen,

11. Scaling up renewable energy is no easy task and calls for mobilising massive savings and investing them productively in a risky environment. Renewables bring far-reaching benefits in terms of human health, energy access, environmental protection, and the response to climate change, along with the potential to create new jobs around the world. Sustainable energy finance is essential in the energy transition and innovation. Meeting a future global increase in energy demand in a sustainable way while reducing emissions from existing infrastructure will require billions of dollars of investment. However, there is currently a gap of many hundreds of billions of dollars between existing investments and what is required. This means that, as a country, we will need to ensure that the investment climate is conducive to attracting such investments, in addition to mobilizing local resources.

- 12. Ladies and gentlemen, my remarks are not aimed at preempting the discussions and ideas that we will have during the course of this symposium. They are not to create an impression that we know and have all the solutions. The symposium, therefore, offers us the opportunity to collectively reflect and deliberate on this important topic, particularly around a few things which I believe are crucial to transforming the Namibian economy and converting challenges into opportunities. In this regard, I would like you to ponder on these few questions for the consideration of the experts on this subject, those of us who are policymakers, practitioners in this sector, and all participants in this symposium.
 - How to ensure that the discovered minerals/natural resources (oil – onshore and offshore) and green hydrogen development benefits and contributes to broad-based development that results in

employment creation and reduction of poverty and inequality?

- How to prevent the Dutch disease/resource curse?
- What should the regulatory landscape be so that Namibia optimally benefits from these discoveries, including ownership? Is the current regulatory landscape adequate to ensure the country gets a fair share of the discovered resources and also competitive to attract FDI?
- How can synergies between new investments and existing policies, such as local participation and local procurement and value addition, be enhanced?

Director of ceremonies, ladies and gentlemen,

13. Allow me to end my remarks with a quote by John H Schaar, "The future is not a place we go to, it is a place we create. The paths are not to be found, but made.", therefore let us create the future we want as a nation, by doing all that we can do, as far as humanly possible.

I thank you.



Keynote Address

Honourable Tom K. Alweendo, Minister of Mines and Energy

Esteemed Ladies and Gentlemen

- I would like to thank the Governor of the Bank of Namibia for inviting me to speak at this important gathering, the Bank of Namibia symposium. The symposium was instituted in the early days of the Bank – to be exact, the first symposium was held in 1999. The idea was to create a platform that was a practical expression of the Bank's position as a centre of excellence, a platform where stakeholders could discuss and debate issues that are critical to our socio-economic development. I therefore commend the Bank for having kept this platform for engagement and maintaining that commitment.
- 2. This year's theme is "maximizing economic growth from renewable and non-renewable energy sources in Namibia". This theme could not be more apt given the global energy crisis we are all experiencing. This theme is equally more important for another reason and that is that for far too long Africa's natural resources have not been used in the best interest of the continent. The continent's resources have been exploited to unfairly benefit other continents. And Namibia has not been exempted from this history. The time has come where this must change. Therefore, my remarks will be about natural resources in general and not only energy resources.
- We are discussing this theme at a time when, across 3. the continent, the African people are demanding that they see better returns from their natural resources including minerals, fisheries, and energy resources. Advancements in digital and social media platforms have enabled the African people to see the lives of their fellow global citizens in other parts of the world. They are therefore justified in demanding that their standard of living must improve - especially considering that their resources have directly contributed to the higher standard of living for some outside our continent. It is the expectation of the African people that their elected political leaders provide the necessary leadership that will enable smart investment – investment that delivers win-win outcomes
- 4. It is not that the Africans do not understand the complexity of investing in the natural resources sectors because they do. They understand very well that investing in these sectors does not come cheap. They understand that we need partners who have

the necessary expertise and capital in exchange for the rights and privilege to obtain some of our natural resources. But they are also looking for a mutually beneficial relationship with the investment community; a relationship built on a concept of shared economic benefits.

- 5. There was a time when the accepted wisdom was that the only purpose of businesses is to make a profit and maximize shareholders' value. And I suspect that some of us still have the same understanding as to why businesses exist. Increasingly though, when I listen carefully to the youth of today – the people who will bear the brunt of the decisions we make in the present – they seem to think slightly differently. They do not necessarily disagree, but they define the purpose of businesses as that of serving society. They believe that businesses, while making profits, should strive to have a far more positive impact on society's well-being.
- 6. I believe that future successful investments in our natural resources will be those that are able to re-imagine their businesses. The successful and sustainable ones will be those that are able to deliver on both making a profit for their shareholders and positively impacting societies where they invest and operate. This will happen only when investments in our natural resources include a commitment and investment plan to make life better for the communities where we operate. This plan should include providing decent jobs, respecting local and community cultures and customs as well as immersing oneself as a corporate member of that community and contributing to the broader advancement of that community.
- 7. Let me now say a little more about energy resources especially in the context of an energy transition that we are all familiar with. In 2015, global leaders signed what came to be known as the Paris Agreement to address climate change. The main goal of the Agreement is to limit global warming to below 2 degrees Celsius. This was going to be achieved by limiting the use of fossil fuels and encouraging the use of renewable energy hence the energy transition debate.
- 8. The debate on energy transition is 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. Developing countries feel that the "how" and the "when" of the energy transition debate is being dictated to them by the developed countries of the West.

- 9. 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".
- 10. To be clear, here I am not taking issue with the fact that African countries are severely affected by the effects of climate change. We are all affected. We have seen devastating droughts and floods in various African countries. Most of us have experienced the rainfall pattern that has changed, in the process negatively affecting food security on the continent. Therefore, climate change is real, and it must concern all of us as global citizens.
- 11. What I, however, find unreasonable is when some countries and 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". For some of us, this urging from our supposed friends is tantamount to the proverbial "kicking away the ladder".
- 12. 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. Also and historically, many Western countries have exploited raw materials from the continent, processed them, and sold them for a huge profit. At the same time, there is a distinct unwillingness to recognise and acknowledge the positive impact that our resources have had on their current standards of living. It is like they are saying "do as I say, not as I do".
- 13. Not only is this kind of a mindset 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.

- 14. 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. It may not be easy, but it will be necessary to take true ownership and custodianship of our natural resources. In this manner, instead of facing hopelessness and despair, many more of our young people will be empowered to achieve the future they deserve.
- 15. With this positive mindset towards responsibly harnessing our natural resources, we can reap the economic benefits that come with eradicating energy poverty. We can grow and diversify our economies; we can industrialize 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.
- 16. 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.

17. 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. 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.

18. In the energy transition discussion, Namibia occupies a unique position. Given the recent oil discovery, we

are fortunate in that we have both renewable and nonrenewable energy sources. It is our intention to harness our fossil fuel resources, including natural gas, for our domestic, regional, and continental needs. We will be doing this while at the same time 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 worldclass solar and wind resources – making us a potential forerunner in becoming a continental GH2 hub.

19. In conclusion ladies and gentlemen, Namibia, like many African countries, is faced with some formidable socio-economic challenges. Over the last couple of years, the economy has not grown sufficiently; our income inequality is among the highest globally; our youth unemployment is far too high and still rising. This picture can change if all of us can re-image our economic potential. This is what we have been doing under our economic recovery blueprint, HPPII that our President, Dr Hage G. Geingob, launched in March 2021.

20. It is for us to make it happen and we therefore have work cut out for us. We must continue to strengthen

the culture of effective governance; to foster ethical and professional leadership. We will do better and succeed faster when strong governance structures and ethical conduct becomes a must in our society.

21. I once again want to commend the Governor and his staff for organising this symposium. As your stakeholders, it

is our expectation that the Bank continues to conduct empirical research on how best we can rebuild our economy using our God-given natural resources.

I thank you.



Overview

The Oil, Gas And Energy Resources In Namibia By Dr. Bernie Zaaruka Technical Expert, Bank of Namibia Charlotte Tjeriko-Katjiuanjo Senior Economist, Bank of Namibia (Presented by Dr Emma Haiyambo)

1. Introduction

- 1. In early 2022, significant developments regarding oil and gas discoveries were confirmed in Namibia. The discoveries of potentially large crude oil reserves in Namibia have initiated discussions on its potential impact on the Namibian economy and how it could alter the course of development. In addition, steps to develop green hydrogen in Namibia has also added to the confidence and optimism as potential panacea, given the economic difficulties that the country has endured over the last few years.
- 2. The discoveries in the oil and gas sector hold great promise to transform the Namibian economy. Since independence in 1990, Namibia has continued to battle high levels of poverty inequality and unemployment, particularly among the youth. The gains realised in this regard has continuously faced consistent pressure from multiple unfavourable factors, such as persistent climatic shocks, external economic shocks, slow traction in achieving economic structural transformation and economic growth that is not generating sufficient employment. Recently, the COVID-19 pandemic has had a devastating impact and caused significant reversals in the economic gains.
- 3. It is important to be alert to challenges of resource rich economies and to avoid the resource curse. While the recent petroleum and green hydrogen discoveries have generated optimism, the experiences of natural resource countries have also raised some apprehensions and hence motivations that Namibia must ensure the resources have a transformational impact on the Namibian economy. Therefore, it is important that from the onset Namibia is alert to avoid the resource curse, in terms of corruption that is normally prevalent in resource sectors and in general to avoid the "Dutch Disease" common to resource intensive economies.
- 4. The discoveries present Namibia with an opportunity

to improve its energy security. Oil and natural gas play a major role in the economy as primary sources of energy. It is therefore important to critically assess how at a practical level Namibia can go about ensuring that it benefits the most from the opportunities in the process and value chain of oil and gas production. Similarly, it must also be explored how the discoveries can support the generation of affordable energy that supports other industries and contribute to energy security in the country. The oil and gas industry is often divided into three segments: upstream, the business of oil and gas exploration and production; midstream, transportation and storage; and- downstream, which includes refining and marketing (Inkpen, 2011; Burclaff, 2022). The processes and systems involved in producing and distributing oil and gas are highly complex, capitalintensive, and require state-of-the-art technology. The question is therefore whether Namibia has potential to take advantage of opportunities in these processes.

- The opportunities in the oil and gas can complement 5. the growing renewable energy sources in Namibia. Namibia's energy industry comprises of a formalised downstream liquid fuels and electricity subsectors, as well as the upstream oil and gas subsectors. Less structured and developed downstream gas and thermal energy subsectors exist too. Various renewable energy sources are used, both in formal and informal settings and in the various sectors of the economy. Midstream, however, Namibia remains reliant on importing all liquid fuels. The downstream liquid fuels sector imports all fuels used in the country, while the upstream oil and gas exploration have resulted in significant findings. In the electricity subsector, Namibia continues to rely heavily on imports from neighbouring countries. Solar, wind, water, biomass and geothermal are some of the renewable energy sources that are currently being explored and developed in the country.
- 6. The Namibian Government has identified the need for increasing energy supply as one of the key enablers to achieve its development agenda. In this attempt, several policies have been adopted over the past few years. They include the National Energy Policy of 2017; the National Renewable Energy Policy of 2017 and the Independent Power Producers' Policy of 2018. These policies enhance on the goals of the second Harambee Prosperity Plan II (HPPII) and Namibia's Fifth National Development Plan (NDP5).

- 7. Reliable energy supply is critical for high and sustained economic growth. Access to energy is fundamental to a country's development, however, as economies continue to grow and evolve, rising incomes and growing populations demand more energy. The United Nation's Sustainable Development Goal 7 seeks to ensure access to affordable, reliable, sustainable and modern energy for all and achieving this will require increasing access to electricity, the take-up of clean fuels and renewable energies, and energy efficiency. Ever increasing energy prices, insufficient electricity supplies, and the dependency on foreign energy sources pose significant risks to the development aspirations of Namibia. If the country is determined to achieve the development goals stipulated in the Vision 2030, NDP5 and the HPPII, sustainable energy supplies are a necessary cornerstone underpinning that vision.
- 8. The main objective of this overview paper is to assess the current situation in Namibia with respect to the exploitation of oil and gas in the country and the potential opportunities embedded in the discoveries. Specifically, the paper.
 - reviews the main legislation governing petroleum exploration and production activity and energy related laws in Namibia;
 - assesses the process of the allocation of Exclusive Prospecting Licences (EPL) particularly related to new discoveries in the energy sector (oil, gas and green hydrogen industry);
 - iii. reviewing the investment climate and policies to see whether they are attractive to investors.
 - iv. reviews the current status of the energy sector and its accessibility in Namibia
 - v. offers policy options benefiting Namibians and how best to leverage the discovery of new energy resources for economic development in Namibia.
- 9. Following this introductory section and based on the above-mentioned objectives, the paper is arranged as follows, section two presents the policy and regulatory framework governing the gas and oil industry and other related energy sectors, including the processes of the allocation of EPLs and the investment climate in Namibia, while section 3 reviews the status of the energy sector and its accessibility in Namibia.

Section 4 looks at the policy options that aims at giving

Namibia more control and benefits of its energy resources as well as attracting foreign investors to leverage resources for economic development. Section 5 concludes and gives brief policy options.

2. Policy and Regulatory framework governing the Gas and Oil Industry and Energy related laws in Namibia

- 2.1 Policy and Regulatory framework: Oil and Gas industry
- 10. There are several laws and regulations governing petroleum exploration and production in Namibia. These include, Article 100 of the Constitution of the Republic of Namibia 1990 (the 'Constitution'); The Petroleum (Exploration and Production) Act 1991 (Act 2 of 1991) (the 'Petroleum Act'); The Petroleum (Taxation) Act 1991 (Act 3 of 1991) (the 'Taxation Act') as amended by the Petroleum Laws Amendment Act of 1998; The Water Act 54 of 1956; The Atmospheric Pollution Prevention Ordinance 11 of 1976; The Prevention and Combating of Pollution of the Sea by Oil Act 6 of 1981; and The Environmental Management Act 7 of 2007. These laws are relatively old and were formulated during a time when the prospects and potential of the oil and gas were generally uncertain. Certain aspects of provisions such as matters of decommissioning and safety of high-risk activities have also been pointed out as inadequately provided for under the laws.
- 11. The Petroleum Act is administered by the Minister of Mines and Energy, who appoints a Commissioner of Petroleum Affairs and a Chief Inspector of Petroleum Affairs. These officers exercise or perform the powers, duties and functions conferred upon them by or under the provisions of the Petroleum Act and such other functions as may be imposed upon them by the Minister (Ministry of Mines and Energy, 2022).
- 12. The Petroleum Act provides for the payment of annual charges by holders of exploration and production licences over the exploration and production areas. The annual charges are calculated by multiplying the number of square kilometres included in the block or blocks to which the licence relates by different values depending on the nature of the licence. In the case of exploration licences the multiplier depends on the particular period during which operations are executed, and in the case

of production licences the multiplier used is 1500 (PWC, 2013).

- 13. The Model Petroleum Agreement serves as a basis for negotiation with applicants for exploration licenses. This Model is a concession type of agreement, and its clauses are drawn from the international petroleum industry practice and as such should not hold any surprises for international petroleum companies. The Model makes provision for the applicant of a license to commit to a minimum exploration work program. The Model further sets out the procedures to be followed by a licensee on discovery of petroleum (PWC, 2013).
- 14. The holder of an exploration license who makes a commercial discovery is entitled to apply for a production license and, subject to complying with the requirements of the Act, is entitled to the granting of such license. A production license may be granted for a period not exceeding 25 years and may be renewed for such further period, not exceeding 10 years, as the Minister may determine at the time of such renewal. A production license may be renewed only once. Among the many other clauses of the Model is one that provides for a Technical Advisory Committee (TAC) consisting of an equal number of Government nominees and nominees of the licensee to monitor the petroleum operations of the licensee. The TACs under the First and Second Round Licenses proved to be a useful interactive forum between the Government and existing licensees in Namibia on the details of their petroleum operations (Ministry of Mines and Energy, 2022).
- **15.** Application for an exploration license in Namibia are done under the Open Licensing System. Interested companies can apply any time for the available unlicensed areas. The Ministry of Mines and Energy makes available information on the available unlicensed areas. A separate application is required for each unlicensed area. The Open Licensing System has been criticised for not necessarily facilitating maximum benefits in terms of royalties and taxes. In this regard, there has been calls for review its review.

2.2 Electricity Policy and Regulatory framework

16. As part of its core mandate, the Ministry of Mines and Energy (MME) is responsible for the development of the principal policies and plans that shape Namibia's electricity sector. Under its mandate as regulatory authority of the country's electricity sector, the Electricity Control Board (ECB) has developed numerous rules, regulations, codes, standards, charters, procedures and related instruments. These provide the guiding framework for most activities taking place in the electricity supply, transmission, and distribution industry today.

- 17. The National Energy Policy of 2017 (NEP) defines Government's strategic intent relating to the energy industry. The NEP recognises the pivotal role that energy plays in national development, and its essential roles as driver and lubricant of continued socio-economic upliftment. The policy emphasises the critical role that the discovery, development and beneficial use of Namibia's plentiful indigenous energy resources play. It differentiates the energy sector into the more formalised electricity, upstream oil and gas and downstream liquid fuels subsectors as well as the less formalised downstream gas and thermal energy subsectors. As an expression of Government's energy-related intent, the NEP is "to ensure the development of Namibia's natural capital and its sustainable use for the benefit of the country's social, economic and environmental wellbeing". Its principal goals, in relation to all forms of energy, are to;
 - ensure the security of all relevant energy supplies to the country;
 - b. create cost-effective, affordable, reliable and equitable access to energy for all Namibians;
 - c. promote the efficient use of all forms of energy and incentivise the discovery, development and productive use of diverse energy resources
 - Regarding the electricity sector, the NEP's main objectives are to enhance security of supply through effective and economic use of locally available energy resources while also leveraging regional opportunities.

18. The National Renewable Energy Policy (NREP) of 2017 guides Government on the development of the country's renewable energy sector. Central to the NREP is the scale-up of contributions derived from local renewable energy sources. Amongst others, the NREP aims "to enable access to modern, clean, environmentally

sustainable, and affordable energy services for all Namibian inhabitants", and "to meet [Namibia's] shortterm and long-term national development goals, and to assist Namibians climb the development ladder, empowered by access to energy at levels that facilitate engagement in productive activity". The Policy is based on the following goals: 1. enhance energy security by leveraging renewable resources; 2. optimise the renewable energy contribution to the country's electricity mix; 3. increase access to affordable energy services for income generation and poverty reduction.

2.3 The Fiscal Regime and Investment Climate in the Oil and Gas Industry in Namibia

19. The tax regime for petroleum exploration and production activities is regulated by the Taxation Act. Petroleum income tax is levied at 35 percent of taxable income and an additional profits tax (APT) levied on the after-tax net cash flows from petroleum operations. The after-tax net cash flow is determined by deducting the exploration and development expenditure as well as the petroleum income tax from gross income. Income tax is levied in respect of each license area. License areas are

taxed separately, even if the taxpayer has been granted the right of exploration in different license areas. This means that, for each license area granted to them, the taxpayer is expected to pay tax.

20. Royalties are charged by virtue of the Petroleum Act.

They are payable guarterly on or before the last day of each month following each guarter. The rate at which royalties are charged depends on the licensing round in which the licence was issued. Royalties on licences issued during the first and second licencing rounds are charged at a rate of 12.5 percent of the market value of the licence, determined in the terms and conditions of such licence and based on the petroleum produced and saved in the production area during each quarter. Royalties on licences issued during the third and fourth licensing rounds are charged at a rate of 5 percent of the market value. The Minister may prohibit the removal of petroleum from the production area and any other dealings in respect of the petroleum if the payer fails to remit payment. The royalty paid is deductible in the determination of the taxable income of the license holder

| Table 2.1 Sum | mary of main tax charges |
|-----------------|---|
| Income Tax | 35% plus Additional Profit Tax (APT) APT level on after tax from petroleum operations Levied separately for each license area |
| Royalties | 5% gross revenueValue of crude oil gas for royalty and tax purposes |
| Withholding tax | • 25% On services |
| License Fees | License application fees, annual rental charges, annual training fees |

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Source: Ministry of Mines and Energy

Other tax laws that apply to the oil and gas industry are:

 The Income Tax Act 24 of 1981, as amended, which provides for withholding tax of 10% imposed on all management, consulting, technical, administrative and entertainment services paid by a Namibian resident to a non-resident, subject to the provisions of any double taxation agreements;

- The Value Added Tax Act 10 of 2000 which currently rates VAT at 15%; and
- The Stamp Duties Act 15 of 1993 which provides for the collection of stamp duties on instruments at rates determined in the schedule to the Act.

INVESTMENT CLIMATE AND INCENTIVES IN THE OIL AND GAS INDUSTRY

- **21.** The investment climate in Namibia is generally positive. Namibia is upgrading its transportation infrastructure to facilitate investment and position itself as a regional logistics hub. An expansion at Walvis Bay Port concluded in 2019, and there are plans to extend and rehabilitate the national rail line, including to neighbouring countries from the port. Namibia has the best roads on the African continent, according to the World Economic Forum. The country also has access to the Southern African Customs Union (SACU), the Southern African Development Community's (SADC) Free Trade Area, and markets in Europe and China. Challenges to investment in Namibia include a relatively small domestic market, high transportation costs, relatively high energy prices, and a limited skilled labour pool.
- 22. The incentives for the oil and gas industry, in the form of a customs rebate and import VAT exemption provisions, are laid down in Schedule 4 to the Customs and Excise Act, 1998 and Schedule 5 to the Valueadded Tax Act, 2000, respectively. Companies which have obtained a prospecting or drilling licence in any of the prospecting blocks identified by the ministry of mines and energy would be the prime beneficiary. This notwithstanding, any subcontractor to the main license holder is also included in the rebate/exemption provisions should they be engaged in constructing any installation, device or equipment to be used solely for the exploration or mining of oil and natural gas (Mbai, 2021). It is important to note that the rebate or exemption provisions are not automatic and are subject to certain pre-approvals and conditions outlined in the Customs and Excise Act 20 of 1998 and Value Added Tax (VAT) Act 10 of 2000 respectively (see Appendix A).

2.4 The Allocation of the EPLs and Local Ownership in Namibia

2.4.1 Oil and gas industry

23. The licenses for exploration of petroleum are granted by way of application. An application must contain particulars of the applicant's proposed minimum exploration operations and expenditure in respect of the block or blocks to which the application relates, amongst others. Section 10 of the Petroleum Act states that exploration and production licences may only be granted to companies but there is no statutory requirement for the company to be incorporated in Namibia. This is one of the key. challenges highlighted to be amended in the new act. However, within 21 days of establishing a place of business in Namibia, all foreign companies must lodge with the Registrar of Companies such relevant documents to constitute the foreign company locally (Palmer, 2016).

- 24. The state-owned NAMCOR is the national oil company that works with the Ministry of Mines and Energy (MME) to promote the country's acreage. It also acts as an advisor on national petroleum policy and has the capacity to act on behalf of the state as its commercial arm. The MME is the regulator of the Namibian oil industry.
- 25. In terms of Government participation, no applicant is compelled to offer NAMCOR a share in a license. However, NAMCOR can participate in licenses if this is offered during negotiations, and if NAMCOR decides to accept the invitation to participate (MME, 2022). The Minister is required by section 13 of the Petroleum Act to enter into a petroleum agreement with an applicant for a petroleum exploration license before he/she grants such license. To facilitate the discharge of this statutory obligation, the Government has prepared and published a Model Petroleum Agreement.

2.4.2 Green hydrogen industry

- 26. The green hydrogen industry is relatively new in Namibia. For this reason, Namibia currently has no laws governing the creation of green hydrogen; if green hydrogen production were to begin, this would mean that there would be no laws governing its production and use. However, the Government of Namibia has indicated a need for a legal framework governing green hydrogen operations and is the works of developing such a framework (Kandjoze, 2022).
- 27. Namibia has pronounced itself to participate in the global decarbonisation efforts. Central to the drive towards decarbonisation is that atmospheric greenhouse gas (GHG) emissions are substantially reduced. From an energy perspective, global GHG emissions reductions are

often technically feasible, and frequently economically viable. Decarbonising the global energy industry is most effective when carbon abatement opportunities that offer net-positive environmental and economic paybacks are undertaken first.

- 28. Transforming the global energy industry by reducing its emissions necessitates a dramatic shift away from producing and consuming fossil fuels such as oil, coal, natural gas and their multitude of derivative products. Switching current fuels to low- or no-carbon energy sources is often possible. For example, the electrification of some parts of the transport industry, or the heating and cooling of buildings by using clean electricity, is both possible and increasingly viable.
- 29. Namibia received a N\$500 million grant from the German Government, earmarked to fund the implementation of four green hydrogen pilot projects, which will cost about N\$892 million. These projects include the Gh2 Port Applications, the Cleanery H2 Refuelling Station, the H2-Diesel Dual Fuel Locomotives as well as the Daure Gh2 Agriculture Projects. The projects have commenced, and environmental impact analysis have been done in some, completion dates of the project development vary from 2023 to 2026.

2.5 Challenges within the Legal Framework

- **30.** A few challenges have been highlighted in the legal framework that required the re-evaluation of said regulations. One such challenge is lack of specific regulations to regulate high-risk occupational health. Occupational Health and Safety in Namibia is governed by the Labour Act 11 of 2007 in conjunction with the "Regulations Relating to the Health and Safety of Employees at Work" (Regulation 156). The Labour Act does not contain specific provisions to regulate the technical and high-risk occupational health and safety risks present in mining operations (IGF, 2018). It is thus necessary to ensure that the ongoing reviews of the legal framework in the oil and gas and energy sector includes this aspect to ensure appropriate provisions.
- 31. Another challenge is the fact that there are no requirements in the Petroleum (Exploration and Production) Act 1991 for building the capacities of communities to understand the potential environment

and socioeconomic impacts presented during the Environmental Impact Assessment process. Although local procurement and contracts for service provision are promoted through the Petroleum (Exploration and Production) Act 2 of 1991 and are supported through the Public Procurement Act 15 of 2015, there is no requirement for building capacities. Some stakeholders are generally well informed, but while the main socioeconomic focus of the mining sector tends to be job creation, there is often limited information on other socioeconomic factors, such as gender inclusivity or the promotion of local content. A study by the National Planning Commission (NPC) indicates that the mining sector contributes only about 1.7 percent to employment in Namibia and though communities appreciate the contributions by the mining companies through corporate social investments, they are of the view that more could be done (NPC, 2021). It is thus important that reporting requirements on the socioeconomic is provided for in the legal framework, which will in turn bring about the necessary awareness.

- 32. The Government through the Ministry of Mines and Energy (MME) has been undertaking a comprehensive review of the existing legislative and fiscal framework for the petroleum industry to maximize the sustainable development of its oil and gas resources. Under sustainable development the oil and gas sector is expected to result in additional benefits through linkages to other sectors of the Namibian economy. In this regard, the Commonwealth Secretariat's Oceans and Natural Resources (ONR) Division has been requested to provide technical assistance on sector reform under the following themes:
 - Review of and recommendations for changes to the overall existing legislative, fiscal and regulatory arrangements for petroleum sector administration in Namibia; and
 - The development of a local content policy (LCP) and implementation strategy for the Namibian petroleum sector.
- 33. The Petroleum Legislation Bill will be reviewed in conjunction with the Petroleum and Production Act, 1991 as per the changes and evolution of the industry. Also, the exercise aims to introduce two non-

existent policies, namely the Regulations and Local Content Policy (LCP). There is currently a draft of a local content policy under the Ministry of Mines and Energy. A distinct LCP workstream was created to discuss recommendations and agree on amendments and the way forward. These have culminated in a draft Local Content Policy for which the MME is in the process of seeking official adoption by the Government after a consultation process internally and externally with the industry. Once in place, the Policy will aim to ensure clear guidelines for local content requirements, facilitate wider benefits through participation of local suppliers and contribute to employment creation in the country.

3. Overview of the Energy Sector and its Accessibility in Namibia

3.1 Institutional setup in the energy sector

- **34.** The Electricity Control Board (ECB) is Namibia's regulatory authority for the electricity industry. The state-owned electricity utility company, namely the Namibia Power Corporation's (NamPower)'s core mandate is to generate, transmit, trade, distribute and supply the country with electricity. NamPower supplies the electricity from its own supplies, supplemented by imports from the SADC region and this is facilitated through the country's transmission networks, which are interconnected with the Southern African Power Pool (Zambia, Zimbabwe, South Africa and Botswana being key parties).
- **35.** Since 2015, more than 20 Independent Power Producers (IPPs) have commenced operations. The promotion of IPPs in the electricity supply industry is required to meet the increased demand. Additional IPPs are likely

to join the sector as the modified single buyer market is implemented . The ECB expects the newly introduced Modified Single Buyer (MSB) framework to add 450 megawatts of solar power to the national generation capacity, once fully implemented . Three regional electricity distribution companies namely the Northern Regional Electricity Distributor (Nored), the Central Regional Electricity Distributor (Cenored), and the Erongo Regional Electricity Distributor (Erongored), NamPower as well as selected local and regional authorities and other IPPs distribute and supply electricity to end-users.

3.2 Energy Supply

3.2.1 Energy capacity in Namibia

- **36.** The country's traditional generation capacity consists of a mix of hydropower, coal, diesel and thermal. The four state-owned power stations currently supplying electricity to the domestic market are: Anixas, Paratus, Van Eck and Ruacana. These domestic electricity generation plants, however, supply less than one-third of power consumption. As a result, Namibia imports most of its electricity primarily through bilateral contracts with South Africa's national power utility (Eskom), ZESCO of Zambia, ZPC of Zimbabwe and to a lesser extent, the Southern Africa Power Pool.
- **37.** Namibia's installed power capacity is about 664.4 MW, made up of NamPower power stations and Independent Power Producers as shown in the Table 1 below. NamPower's installed capacity was reduced in 2020 as a result of the Van Eck Power Station refurbishment project, which resulted in the plant being re-classified from 120 MW to 90 MW. In 2020, the company had an installed capacity of 489.5 MW.

| Table 3.1 Installed energy capacity in Namibia per distributor, 2022 | | | | | | | | |
|--|---|---|------------------|--|--|--|--|--|
| Power Station Name | Туре | 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% | | | | | |

Source: Renewable Energy and Energy Efficiency NUST, and authors calculations

38. The contracts Namibia had with Eskom and Zambia came to expiry during 2022 and new contracts have been signed. The country signed a new 5-year agreement with ZESCO of Zambia in February 2022 to supply an additional 80MW of electricity, in addition to their previous contract of 100MW. The contract with Eskom was extended for a period of 3 years in April 2022; however, the supply of electricity was reduced from the current 200MW to 100MW (NamPower, 2022). The Zimbabwe contract remains active and thus no change is observed.

3.2.2 New initiatives in energy supply

39. The planned projects under the Harambee Prosperity Plan (HPP) include a 40 MW biomass bush to electricity project at Tsumeb and a 50 MW Anixas heavy fuel oil peaking plant expansion at Walvis Bay. Bids for the latter were closed on September 3, 2021. The projects also include a 40 MW wind generation project at Rosh Pinah, the 20 MW Omburu Solar PV plant at Omaruru (which was inaugurated in June 2022), the 20 MW Khan solar PV plant at Usakos and a 50 MW wind IPP project at Lüderitz. Moreover, additional generation capacity will be investigated through PPPs and other frameworks during the HPPII period and beyond. Potential projects for private funding would be a feasibility study on a 100-150 MW concentrated solar power plant, a feasibility study for a 300 MW solar park, 10-40 MW biomass generation projects, and 20-50 MW solar PV and wind projects. Other key investment opportunities may include investments in battery and storage technologies and investments in natural gas.

- **40.** Namibia's Southern Corridor Development Initiative (SCDI), as articulated in HPPII is part of Namibia's ambition to develop a Synthetic Fuels Industry. The Hyphen Green Hydrogen project is the first of the critical undertakings in the SCDI. The development is expected to produce more than four times the amount of electricity that Namibia currently consumes and could kick-start an industry that could contribute approximately US\$ 4.1 billion to GDP and could result in employment creation of approximately 280,000 of direct and indirect jobs (Kandjoze, 2022).
- 41. Currently, green hydrogen is not part of the energy mix in the country, and it is also not included in the National Integrated Resource Plan (NIRP). However, Namibia is making progress towards developing the green hydrogen sector. Green hydrogen is expected to play a significant role in the decarbonisation and the world's transition towards net-zero carbon emissions. Due to its large solar and wind resources, Namibia aims to take advantage of its green hydrogen potential and the global transition to renewable energy. In August 2021, President Hage Geingob officially launched the "Request for Proposal" for the development of green hydrogen

and green ammonia projects in the //Karas region in the South of the country. Namibia has the potential to produce about 2.5 million metric tons of green ammonia annually, according to preliminary estimates, and could attract more than USD 6 billion in foreign direct investment based on its green ammonia and green hydrogen production potential (NUST: Renewable Energy and Energy Efficiency, 2022). 42. Over the past ten (10) years, NamPower recorded a positive energy demand growth for five consecutive years since financial year 2013/14 until financial year 2017/18. Beyond financial year 2017/18, negative to minimal growth has been recorded and the reduction in electrical energy consumption is attributed to the economic downturn, exacerbated by the COVID-19 pandemic impact.

3.3 Energy Demand

3.3.1 Energy demand and imports
Figure 3.1: Energy Demand in Namibia

43. According to NamPower's annual report of 2021, Namibia had a maximum peak demand of around 617 MW. Currently, the installed capacity is around 684.4 MW, resulting from local Independent Power Producers increasing their share of the total supply into the system by around 22 percent (ECB Annual Report, 2021). However, Namibia remains heavily dependent on electricity imports to meet demand, mainly because some power stations do not generate at full potential (e.g, Van Eck Power Station). In 2021 Namibia imported between 50 and 60 percent of its annual electricity consumption from the Southern African Power Pool (SAPP) through bilateral power purchase agreements (PPAs) from South Africa (Eskom), Zambia (ZESCO) and Zimbabwe (ZPC).

44. The percentage of imports into the country depends heavily on the output from the Ruacana Hydro Plant. Good rainfall in the Kunene Province of southern Angola results into increased output from Ruacana Hydro Plant which then reduces energy imports. In 2021/22, the output from the hydro plant declined significantly by 19 percent from the previous year, resulting into increased import of electricity . The seasonal and irregular fluctuations in the river flow and limited capacity of the upstream dam implies that this electricity cannot be

stored. In cases of excess electricity supply, the country exports it to the SAPP pool. The volumes heavily depend

on the output from Ruacana Hydro Plant and is mostly during the wet season (December to April).

Source: Bank of Namibia

45. Mineral fuel import of Diesel, Petrol and Kerosine into Namibia show steady increases from 2017 to 2021. Except for aviation kerosene, mineral fuel imports have increased to pre-covid numbers. The subdued aviation kerosene imports can be attributed to tourist numbers that are still down, as well as the liquidation of the national airline. The table below shows volume of imports in millions of litres, while the value of imports is in billions of Namibian dollars. The average price per litre is calculated by diving the volumes by the value.

| Table 3.3 Mineral fuel imports | | | | | | | | |
|----------------------------------|-------------------------|-------|-------|-------|-------|-------|--|--|
| | | 2017 | 2018 | 2019 | 2020 | 2021 | | |
| Distillate fuel (diesel) | Volumes | 771 | 888 | 1,003 | 862 | 1,078 | | |
| | Value | 4,614 | 6,502 | 7,717 | 5,451 | 7,924 | | |
| | Average price per litre | 6 | 6 | 8 | 6 | 7 | | |
| | | | | | | | | |
| Distillate fuel (diesel) | Volumes | 420 | 437 | 466 | 396 | 396 | | |
| | Value | 2,511 | 3,124 | 3,264 | 2,302 | 2,987 | | |
| | Average price per litre | 6 | 7 | 6 | 6 | 7 | | |
| | | | | | | | | |
| Aviation Kerosene | Volumes | 70 | 105 | 86 | 41 | 46 | | |
| | Value | 424 | 788 | 657 | 294 | 339 | | |
| | Average price per litre | 6 | 8 | 8 | 7 | 7 | | |

Source: NamRa

- 46. Namibia currently has an estimated electricity access rate of about 45 percent, comprising of 71 percent urban and 19 percent rural. However, around 300 000 households had no access to electricity in 2020 (Namibia: Geospatial Least Cost Electrification Plan, 2021). To address this issue, the Ministry of Mines and Energy has established a policy framework and begun to design a program of activities to support electrification expansion. In 2020, the National Electrification Policy (NEP) was drafted, articulating the Government of the Republic of Namibia (GRN) support for electrification expansion, and confirming the goal of achieving universal access to electricity by employing a combination of grid and off-grid technology solutions to power households and businesses. The current approaches indicate that government only provides access to schools, clinics and government infrastructure, while households are required to fund their own electrification efforts. This implies that rural electrification might take longer to achieve.
- **47.** Namibia's national electrification rate is lagging behind the HHPII targets. The country's national electrification rate in 2021 is at 45 percent, 5 percentage points lower than what was envisaged in the HPPII, with the rate electrification rate for the rural areas is estimated at 19 percent, while the rate for urban areas is estimated at 71 percent. According to the National Electrification Policy of 2021, during the past decades, informal areas around urban centres have expanded rapidly. Often, the rate at which such areas are electrified, if at all, is much lower than their growth . In 2021, relevant data showed there

are still certain schools, clinics and government offices that are unelectrified.

- overall tariffs 48. Average increased overtime. characterized by gradual price increments over the years. The consistent increase in tariffs emanated from, amongst other factors, the Cabinet decision in 2009 that stated that electricity tariffs should be cost reflective and remain as such from 2010 onwards (Figure 2). The average retail tariffs in Namibia decreased by 0.65 percent from 252.40 Namibian cents per kWh in 2018 to 250.77 Namibian cents per kWh in 2019. The Regional Energy Association of Southern Africa in 2019 indicated that Namibia has the highest average tariff levels of 15.671 US cents per kWh within the SADC region, after Mauritius. The average retail tariff in Namibia has increased by 1.6 percent, from 250.77 cents per kWh in 2019 to 255.0 cents per kWh in 2020. The high electricity prices in Namibia have accessibility implications and is a significant impediment to economic development
- **49.** In 2022, the Electricity Control Board (ECB) approved an overage electricity tariff increase of 7.6 percent for NORED. NamPower, on the other hand, applied for a 12.78 percent increase in electricity tariff, translating into N\$2.28 per kWh, N\$2.32 for the ECB levy and N\$1.75 for the NEF levy. However, the ECB only granted an increase in bulk electricity tariffs of 7.30 percent. Residents residing in regions whose source of power is CENORED are the most pressurised in terms of the average electricity tariffs..

Figure 3.3: Overall Tariffs

- 4. Challenges and Policy Options: Leveraging new discoveries/natural resources for long-term growth in Namibia
 - 4.1 Reforming current legal framework to attract investors
- 50. The current open door licensing system of the resource allocation should be substituted for an open and transparent bidding process, wherein different agents bid with extra royalties, income taxes, or the government's portion in a profit-sharing agreement. The winner would commit a certain minimum investment within a specified timeframe to minimize the possibility of daring offers. More specifically, such a system could be implemented by establishing exclusive prospecting licenses that are auctioned and, in case of success, are subsequently upgraded to the next stage licenses.
- 51. The regulatory framework is underscored by numerous outdated laws, regulations and agreement that should be amended and consolidated into a single document to keep track of the dynamics in the gas and oil industry. Given the prospects that have been revealed through the discoveries, it is imperative that a review is considered. The Ministry of Mines and Energy has commenced an exercise to reform Namibia's downstream and upstream petroleum legal framework. Furthermore, several pertinent amendments such as the finalisation of the local content policy and regulations; a review of the current royalty rate to make it more consistent with other petroleum jurisdictions and all other related fiscal extraction tax instruments, as well as the provisions on decommissioning and state participation in the petroleum industry among others will require a considerable effort.
- **52.** Another critical issue is about decommissioning of the oil fields. Decommissioning Fund and capacity development in the oil & Gas sector. Should the office of the environmental commission be transformed into an effective agency that can respond to oil spillage very quickly with export to calculate the risk and institute measures quickly, or are we preparing for the Gulf of Mexico Oil spillage nightmare that is still lingering up to today?

53. The Government should deal with the possibilities of regulatory arbitrage. In an industry dominated by joint ventures (JVs), companies operating on one block with different financial years and obtained production licences at different times can lead to high regulatory arbitrage.

4.2 Address the fiscal regime in the extraction industry

- 54. Namibia should benchmark on the royalties to ensure competitiveness. The issue of how much Namibia benefits from its natural resources has received a lot of attention and there are sentiments that the country may be getting a raw deal in this regard. Therefore, international evidence should be analysed to assess how this proposed framework compares with that observed in benchmark countries, also considering other applicable taxes to evaluate how it could affect Namibia's competitiveness.
- **55.** Namibia should continue to employ a mixture of royalties and income-based levies; to afford a balance of protection against financial risks to governments as well as investors. This paper cautions that the Namibian Government should avoid moving fiscal instruments toward reliance on income-based levies only, as the loss of revenues from noncompliance appears more serious than any incremental benefit of income-based taxes in terms of greater economic efficiency being generally advocated for in developed nations.

4.3 Local content

56. The Government should promote the use of local inputs to target employment, industrial, and technological development. The current draft of the local content policy should specifically aim to maximize the benefit to Namibian citizens. This will be through the enhancement and development of strategies that will target phased participation of Namibian labour, goods and services, companies, ownership and financing along the value chain.

The Government local content policy should aim to address the following:

1. To provide a clear and stable regulatory framework

for Local Content requirements

- 2. Identification of specific sectors for the development of local capacity
- 3. Maximising employment and development of Namibians
- 4. Maximising the participation of local suppliers along the value chain
- 5. Encouraging the transfer of technology, knowledge and skills
- 6. Promoting Namibian ownership and financing at all levels of the sector
- **57.** The said local participation efforts should be clear and concise. When embarking on the local participation framework, Namibia should introduce clarifications to reduce uncertainties associated with their interpretation with the purpose of alleviating the negative effect of opaqueness on investment.

4.4 Addressing the accessibility and cost of electricity in Namibia

- 58. Access to affordable modern energy such as electricity is a pre-requisite to a more competitive economy, while universal access to electricity is a critical requirement for equality of opportunity within the economy. The Government therefore must have funding options available to all Namibians by offering affordable electricity supply.
- **59.** In urban areas, where a distribution grid exists, a grid extension is often cost-effective to obtain access to electricity. In areas not fully served by a distribution grid, mini grids are increasingly becoming a viable alternative to traditional electricity supplies via the grid. In low-demand areas and dispersed settlements, stand-alone electricity supply systems, e.g., solar home systems, can provide (at least elementary) access to electricity, even if it is not entirely the same as being grid-connected.

4.5 Improve the ease of doing business

60. There is a lack of readily available information for potential investors. A key aspect to decision making for investors is quality information. Investing into Namibia for a foreign entity means entering an unknown market (laws and regulations, accessible market size, transport and logistics etc.). Having all this enables the investor

to make an informed decision about investing into the country. Oftentimes, other markets are chosen not because they are better than Namibia's, but because there is more information on the other market.

- 61. To facilitate development, the Government needs to ensure that regulations and requirements strike an appropriate balance between fairness, effectiveness and consistency. There are clear parallels between the rules and regulations influencing business development and socio-economic development overall. Clear requirements and straightforward compliance allow businesses and entrepreneurs to focus on innovation, problem-solving and employment all factors contributing to development. And once set, rules should be stable at least for periods that broadly agree with the lifetime of relevant projects in the extractive industries.
- 62. The importance of investment has long been recognised by Namibia's policy makers. However, the need to create conducive investment conditions has become an obvious national development goal over the past few years. The launch of the one-stop-shop on 28 October 2022 is a steppingstone in the right direction.
 - 4.6 Government will need to reconcile decarbonization efforts vs oil discoveries
- 63. As Namibia participated in COP26, the country promised to reduce emissions by 91 percent over the next five years. Namibia has an opportunity to significantly reduce its emissions - and that of its neighbours - by leveraging its natural endowments to attract muchneeded foreign direct investment. The country will therefore have to reconcile its decarbonization efforts with the recent oil discoveries, by doing more good with the decarbonization efforts (green hydrogen efforts).

4.7 Leveraging on opportunities offered through regional integration initiatives

64. Regional infrastructure development should be at the forefront of the developmental agenda. Regional infrastructure development creates a larger market and greater economic opportunities. The development is critical to promote and sustain regional economic development, trade and investment as well as contributing to poverty eradication and improved social conditions. On the 6th of October 2022, Namibia and Zambia signed an agreement to build an oil and gas pipeline from Walvis Bay, a port town on the coast of Namibia, to Zambia. At the signing occasion, the Minister of Mines and Energy indicated that if the agreement is executed as planned, the project has the potential to unblock economic potential, not only for Namibia and Zambia; but also for the wider SADC (Southern African Development Community) region.

5. Conclusion and policy recommendations

5.1 Conclusion

- 65. The discoveries of oil and gas resources in Namibia has breathed in optimism and has potential to assist the economy to recover from recent setbacks. Namibia needs to ensure that the resources are managed appropriately and that the benefits transmit to the ordinary citizens. In order to achieve that, the legal framework and governance structures under which the resources are exploited have to be watertight to prevent and avoid the so called "resource curse". The discoveries of carbon fuels in Namibia are happening at a time when the world is transitioning to clean energy sources. The exploitation of the discovered resources may therefore raise questions on the country's commitment to transitioning to clean energy. However, the energy gap in Namibia and on the continent justifies its exploitation and must be undertaken with a clear view of transitioning to clean energy in the long term.
- **66.** Energy is an essential pillar of any economy. The availability, affordability and security of energy supplies are necessary pre-requisites for development. Namibia is blessed with substantial solar, wind and biomass resources. These renewable energy resources constitute a comparative national advantage that the country can use to its long-term socio-economic benefit. It has been shown that in countries with supportive frameworks, upscaling renewable energy technologies bolstered the gross domestic product, created new jobs, and cost effectively delivered clean energy services to un- or underserved areas.
- 67. Namibia's energy sector has had limited private sector participation in the past and has been characteristically state-owned. Recent reforms and restructuring efforts,

however, are creating an increasingly attractive private operating environment and subsequent investment opportunities. Private sector participation is allowed across generation, transmission and distribution components of the electricity supply sector, although NamPower still has a monopoly on electricity transmission. Direct transactions between IPPs and local distributors are also allowed, albeit subject to specific conditions and limitations.

68. Green hydrogen, produced through renewable resources such as solar and wind, holds significant promise in meeting the world's future energy demands. However, the economics of green hydrogen are challenging today, primarily because the underlying costs and availability of renewable energy sources vary widely. Green hydrogen is hydrogen generated entirely by renewable energy or from low-carbon power. Exploitation of this resource should therefore serve as a building block in ensuring a balanced mix for transitioning to the clean energy in the long term. 69. The recent discovery of oil has prompted the country to review various legal framework to ensure that Namibians benefit. This warrants a comprehensive review that looks at the regulatory environment, fiscal regime, local participation, ease of doing business, as well as the cost of electricity in the country. This will determine whether Namibia maximizes the economic benefits from the recent discovery of oil, as well as the Green Hydrogen initiatives. It is also important to ensure that this process is undertaken expeditiously.

5.2 Recommendations

- **69.** The paper has shown that Namibia has adequate laws in place, and that the country has prioritised renewable energy in its policies. However, to give effect to these good intentions, Namibia needs to do the following:
- 70. Consider proper appropriation of exploration licences, through auctions and offer to high best bidders to improve the transparency of the EPLs allocation process in the country. There is a need to replace the current first-come-first-serve approach with an open and transparent auction system in which interested parties bid with extra royalties, thus maximizing the benefits all Namibians derive from natural resources.
- 71. Namibia will need to review the current mineral

royalties and taxes to ensure balance between attracting investors and safeguarding optimal benefits for the country from the resources. Such balance is important to facilitate investment, while at the same time addressing the notion that Namibians are not participating meaningfully in these sectors or that government is comfortable with the current royalties and tax rates, which are perceived as inadequate.

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- **73.** The issue of ensuring optimal local content in the exploitation of the resources must remain prominent. The finalisation and adoption of the Local Content Policy is therefore of paramount importance. Facilitating local content and participation in the oil and gas value chains has potential to ensure broad-based benefiting from these resources.
- 74. Namibia will need to increase private sector participation in the energy sector to curb the inadequacy of public sector capacity. Namibia has one of the highest solar irradiation levels globally and excellent wind resources. Strengthening private sector participation in renewable energy will enable Namibia to transition into a regional,

green power supplier.

- **75.** There should be targeted incentive packages to reduce the investment risks faced by early adopters in the green hydrogen initiatives. This could include a mix of financial incentives (when the country's fiscal position improves), fast-tracking access to land, assistance in meeting or exceeding legal and regulatory provisions, utility connections and related matters of immediate relevance to lower the barriers to targeted investments.
- **76.** Targeted efforts are needed to increase information dissemination, especially to potential investors. The lack of investor information will need to be addressed through the dissemination of information to potential investors. The NIPDB has been working hard to address this challenge and should continue doing so and with more vigour.
- 77. To attract investors, the Namibian Government will need to reconcile the stance on decarbonization vis a vis oil. Investors that are interested in decarbonization and are serious about climate change may not want to invest in Namibia as the country moves towards oil exploration efforts.
- 78. Cooperation on energy infrastructure development at a SADC regional level should be prioritized. Collaboration within SADC should be a priority for Namibia. For example, South Africa is working on its own green hydro initiatives which is likely to create competition between the two countries. There should be a possibility for collaboration and offer joint projects to investors.

Policy & Strategies

Leveraging non-renewable energy sources for robust long-term sustainable growth: Lessons and experience from other countries

ABSTRACT

It is possible to convert natural resources into wealth for long-term sustainable development and thereby avoid the Resource Curse. But to succeed, there are major obstacles for host governments to overcome. Governments should aim to implement policies that strengthen a system of "good governance"; avoid dependence on one commodity and strictly control resource-based revenues and their spending.

There are significant risks associated with starting up new oil and gas projects in a "net-zero" world. Future demand for oil and gas will decline and assets may lose their value. Every country's policy must reflect the special circumstances of that country There are no external models to copy, but it is possible to learn from other countries' mistakes and successes.

1. Introduction

- Namibia is facing fundamental questions about how to develop the country's potentially huge and varied energy resources. As a background to these decisions this paper will analyse why some resource-rich producing countries have succeeded, and others have failed to build sustainable societies.
- 2. The concept of the Resource Curse will be central for the analysis. I will first place the concept in an historic and theoretical setting. Initially it was built around an economic understanding of the "Dutch disease". Later explanations turned more towards the concept of "governance". No country with a well-functioning governance system has fallen prey to the Resource Curse.
- 3. Secondly, I will examine six policy areas that resourcebased governments need to get right to overcome the challenges of the Resource Curse and build long-term sustainable growth.

Governments must aim to:

- Build competent and accountable institutions
- Avoid state companies becoming "states within states"
- Combat corruption
- Implement a well-functioning legal and regulatory framework
- Develop national competence and industrial capacity (the "ripple" effects)
- Ensure that rents (excess profits) from the resource rich industries are collected, spent, and saved in a way that benefits the population as a whole

- 4. Thirdly, the ongoing low carbon energy transition adds a new set of risks for energy producing countries. The "net zero" objective is the guiding principle for approximately 75 percent of the world economy. World oil demand in 2050 can be twenty percent of today's level. In such a situation there is a danger that producing countries will end up with "stranded assets". The transition also opens new opportunities, like new green hydrogen/ammonia projects. Gas seems to have brighter prospects than oil in the future global energy mix.
- 5. There are many examples of successful transformations of natural resources as a basis for a successful form of industrialization and social and economic prosperity. However, every country must create its own policies that depend upon its own preferences. Namibia can learn something from countries like Norway and be inspired by its successes and learn from its failures. But Namibia can also learn from studying the costs and opportunities of oil and gas production in other African states like Ghana, Uganda, and Mozambique or further afield in Guyana or Timor-Leste.
- 6. Throughout my career I have worked on topics related directly or indirectly to the Resource Curse- primarily within the oil and gas sector. I want to thank the Namibian Central Bank for giving me the opportunity to share my insights about a concept that will remain of use to resource-rich countries. Other industries, including those linked to the green shift can learn from the experiences of the oil, gas and mining sector.

2. The Resource Curse

7. The resource curse, also known as the paradox of plenty, refers to the paradox that countries with an

abundance of natural resources (like fossil fuels and certain minerals), tend to have less economic growth,

less democracy and worse development outcomes than countries with fewer natural resources. (Wikipedia)

Figure 1: Correlation between GDP growth and resource dependence

Source: Paltseva, E., & Roine, J. (2011).

- 8. Fig 1 shows data that seem to support the Resource Curse hypothesis. The graph is based on an OLS regression analysis exploring the relationship between per capita GDP growth (1975-2010) and resource dependence (1975). Extremely resource-abundant countries, such as the oil states in the Middle East, the Democratic Republic of Congo and Venezuela, have not experienced sustained rapid economic growth per capita. Secondly, there is virtually no overlap between the set of countries with large natural resource endowments and the set of countries with high levels of GDP growth per capita. (Norway is an exception.)
- 9. The understanding of the Resource Curse has changed over time while the number of scientific papers written on the subject has increased. The first explanations were mainly economic in nature and primarily linked to various aspects of the phenomenon of the Dutch Disease. Later the discussion centered increasingly around the concept of "governance". A Google Scholar search shows that while in 1995 there were only 13 scientific papers that explicitly referred to the so-called Resource Curse, the number increased to 543 in 2005

and to 2,360 in 2015. Papyrakis has presented a broad and thorough overview of the scientific development of the concept. (Papyrakis, 2017)

10. This paper will mostly refer to examples from the petroleum industry, but right from the start the concept of the Resource Curse was largely built around experience from the mining industry. Only later were more references made to the oil and gas industry.

2.1 The Dutch Disease

11. The explanation of the Resource Curse originally focused on the phenomenon of the Dutch Disease. The term had its origin in a situation in which Holland found itself after the country started up large-scale production of natural gas from the beginning of the 1960s. It was first used by The Economist (1977, p.78). By the 1970s Holland's industrial production had stagnated while the guilder exchange rate strengthened by 16 percent during the period 1971-77.

12. Several economists tried to understand why this was the

case. Articles about the Resource Curse were published from the mid-1980s supported by observations that countries like Nigeria and Angola experienced a collapse in their traditional agricultural exports in parallel to their growing oil sectors. The point of departure for writers like Krugman (1987), Sachs and Warner (1985) was the concept of the Dutch Decease. These articles shared an understanding that the producing states had received a form of "foreign exchange gift" which, in turn, strengthened the exchange rate of the countries' currencies, thereby rendering their export sectors uncompetitive. Corden and Neary, (1988) argued that the key mechanism for the "curse" was through a crowding out process of traditional sectors through the wage mechanism and not necessarily through the exchange rate

13. Some of the insights and mechanisms underlying the Dutch case had already been noted and acted upon by governments. The Norwegian government published as early as 1973 a very influential Parliamentary Report (Stortingsmelding nr.25, 1972-73) that described how in a future oil-dominated Norwegian economy (Norway had at that time barely got its oil industry under way) excessive spending of oil and gas revenues would have negative effects on the non-oil sector of the economy.

2.2 "It is all about governance."

- 14. As more research was undertaken and the discussion broadened, it became clear that the explanations for the Resource Curse had to include new explanatory variables. The concept of "governance" was introduced as a generic and overall explanation for factors ranging from corruption to the quality of institutions in producing countries. One commonly used definition of "governance" is: "The exercise of economic, political, and administrative authority to manage a country's affairs at all levels. It comprises mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations, and mediate their differences." (UNDP)
- 15. For an example of this new emphasis, which gave rise to numerous new publications, see Sachs, Stiglitz and Humphrey (2007). Stevens (2015) argued that governance was the key explanatory variable for the

Resource Curse, but that any analysis must also deal with climate issues. Stevens argued vehemently that it was possible to industrialize countries on the basis of natural resources. The sociologist Michael Ross conducted a comprehensive study showing the connection between the "resource curse" and several variables ranging from the level of conflict to the participation of women in the labour force. (Ross,2012). In a later writing he concluded that "...there is now robust evidence that one type of mineral wealth, petroleum, has at least three harmful effects: It tends to make authoritarian regimes more durable, to increase certain types of corruption, and to help trigger violent conflict in low- and middle-income countries" (Ross, 2015, p.239).

- 16. The Oil for Development (OfD) programme run by the Norwegian government during the period 2007-2021, , built a "theory of change" around the concepts of sustainability and governance. The operative goal of the OfD program was "economically, environmentally and socially responsible management of petroleum resources which safeguards the needs of future generations" (OfD, 2017). Petroleum activities should, according to the program, be based on broad and accepted sustainability principles.
- 17. The program listed three overall principles of "governance" that must be in place to succeed. i) Clarity of goals, roles and responsibilities; ii) The authorities must manage the petroleum sector according to their mandate; iii) The authorities are transparent in their formulation and management of the petroleum sector.

2.3 Two methodological questions have been raised about the Resource Curse concept.

- 18. The first was posed by Brunnschweiler, who questioned the causality of the traditional resource curse argument when she wrote "Treating resource dependence as endogenous, we reverse the causality implied in earlier work....We find that countries with certain institutional designs fail to industrialize—and failing to develop significant non-resource sectors makes
- 19. The second question was raised by Bjørndahl, who argued that Norway was a case "where it seems clear that the predictions based on existing theory do not apply" (Bjørndal et al., 2018, p.1). The reason was that

all previous analysis had only considered the spending consequences of increased oil and gas production but omitted the resource consequences. Norway has built an internationally competitive oil and gas supply industry which also had to be taken into consideration. Farooq (2019) introduced a new variable in the debate when he wrote "Heightened geopolitical uncertainty and associated oil price increases go together with a weakening of oil exporter currencies. The latter result may explain coincidences of higher oil prices and a weakening of oil exporters' currencies." (Farooq, 2019, p. 1)

3. Five policy areas to get right

- 3.1 Build competent and accountable institutions
- 20. Government institutions will play a central role in resource rich countries whether the industry is run by governments or private owners. These institutions range from ministries and the directorates that create the "rules of the game" of the industry, to institutions that more directly deal with the resource, environmental, fiscal and social aspects of the activities.
- 21. Accountable and competent institutions must be able to carry out government policies in a fair and predictable way. Policymaking must be sufficiently institutionalized. By building policymaking around strong and competent institutions there is a much greater chance of a positive outcome seen from the government's perspective. Fair and predictable state institutions also give non-state entities like the business community and civil society the necessary predictability and confidence to carry out their activities.
- 22. It is of particular importance that the communication by state institutions must be understood by the citizens and business community. They must communicate national development objectives and the role of natural resources in a clear way. These institutions must act

transparently to facilitate an informed public debate, so that the public – including civil society organizations, politicians, and the media – can hold the executive branch to account. They must give sufficient legal space for civil society to operate.

- 23. However, it is very challenging to build institutions and make them operational. Many donors have initiated their Technical Assistant (TA) programmes in the hope of relatively quick results. But they and their local counterparts have come to realise that there are no "quick fixes".
- 24. Once created, which experience tells us can take a long time, these institutions must become operational. There are numerous examples where the mere existence of institutions does not in any way guarantee that the institutions are operational. One of the best ways to build such institutions is to "twin" them with existing institutions in donor countries. Experience tells us that "embedding" external experts over long periods in local institutions is a good way to proceed. "Fly in/fly out" experts are of much less value. Empirical studies conclude that the quality of institutions/governance matter.
- 25. Countries with better institutions have higher economic growth, while those with bad institutions have lower growth. Fig 2 measures the relationship between the quality of institutions in resource-rich countries and economic growth. Countries with better institutions and large natural resource sectors ((Norway, Canada, Australia, Chile, Botswana, USA) have higher economic growth (no resource curse). A country with bad institutions is likely to have a lower growth rate than a country with good institutions. A country where 20 percent of GDP is based on natural resources and the quality of institutions is about average has a long-run rate of growth 1.4 percent lower than countries with strong institutions.

(b) With bad institutions

(c) With good institutions

Source: Maehlum et al. (2005)

3.2 State -owned enterprises must not become "states within states"

- 26. State-owned enterprises (SOEs) are business-oriented majority government-owned institutions that sell goods or services or manage state equity and keep their own balance sheets. More than 146 of these enterprises have been established in the upstream oil, gas or mineral sectors, with almost a third focused primarily on mining (Bauer,2018, p.5).
- 27. SOEs operate in the twilight zone between commercial companies and a semi-commercial world, where government signals are mixed with commercial signals from the market. This makes these companies' governance system difficult to define precisely. In the worst kind of world, such companies (in both rich and poor countries) end up responding neither to the signals of the market nor to the signals of governments. They end

up in a situation of limbo that gives their management great independence. They become "states within states", often characterized by slow project development, high costs, low revenues, excessive liabilities, and inefficient allocation of revenues between SOEs and other public entities. The consequence can be high losses, very major misallocations of investments or an unwanted influence on political processes.

28. Inadequate transparency and oversight are one cause of SOE mismanagement and large losses. The 2017 Resource Governance Index scores confirm a tendency towards opacity among SOEs. Fifty-eight percent of the national oil companies and 72 percent of the national mining companies measured in the index do not disclose enough timely, quality information about their activities and finances to carry out proper external assessments (Bauer,2018, p 6). 29. There are great differences between different types of SOEs. Some have reached a level of technological and commercial sophistication that makes them comparable to the major privately owned oil /gas/mining companies. These companies have generated significant value for their primary shareholder, the state, and have made substantial economic contributions to their countries. Examples of such companies vary from Equinor (Norway) to ADAC (Emirates) and Sinopec (China) to mention just a few. The problems these companies face are not negligible, but they are gualitatively different from the great majority of SOEs that are subject to severe challenges, especially in the broader field of "governance". Examples of such SOEs range from Pertamina (Indonesia) to PDVESA (Venezuela) and Sonangol (Angola).

3.3 Combating corruption

30. Natural resource countries are very prone to corruption. Fig 3. shows the relationship between the level of corruption and the resource intensity of a country. The oil and gas sectors are perceived as the third most bribery ridden, after the public works/construction and utilities sectors. They stand out as one of four sectors where improper contributions to high-ranking politicians are seen to be noticeably high.

Share of natural capital in national wealth 1994 (%)

Source: Gylfason (2004)

- **31.** Several factors indicate that natural resources are susceptible to corruption. These include high levels of rents; a concentration of revenue flows; technical complexities of the sector; easily formed natural monopolies and strategic significance that justifies secrecy (or so it is often argued).
 - The direct cost of corruption is huge for the individual country, ranging from loss of revenues to the state budget, poor technical standards of oilfield operation which become safety hazards and failure of producers and distributors to respect social and environmental standards.
 - The *indirect consequences* of corruption are also important and include capital flight, skewed design of the tax system, unfair competition in the market, extreme income inequalities and finally, corruption breaks down the social contract in any nation and thereby undermines its political and social stability.
- **32.** Almost all countries which depend on natural resources face potential problems with corruption. Nigeria and Mozambique are examples of countries where it has been extremely difficult to eradicate corruption in petroleum-dependent states.

3.4 A legal and regulatory framework must be in place.

- **33.** A legal and regulatory framework for governing petroleum activities is essential. Laws are written and enacted by political entities like parliaments. Regulations are standards and rules adopted by administrative agencies that determine how laws will be enforced. Petroleum laws allocate administrative powers and structure government organizations. Such a legal framework is also important for regulating the relationship between the state and investors. It creates consistency, transparency, and predictability in petroleum regulatory and fiscal regimes. This builds investor confidence.
- **34.** Finally, the legal framework is also important for regulating the state's relationship to its own population. Such a framework is normally built on two pillars:
 - International law: Offshore natural resources are regulated by the 1982 United Nations Convention on the Law of the Seas (UNCLOS). UNCLOS Art. 77 gives a coastal state the exclusive right to regulate its oil and gas sector.
 - Domestic laws: The centerpiece of the judicial framework is normally a petroleum law with associated regulations. Host countries often seek external help to formulate such laws. Norwegian lawyers have helped to draft ten petroleum laws in African countries over the last four decades
 Technical experts have helped to draft the corresponding regulations.
- **35.** In many cases the initial importance of the laws has been superseded by "Host Government Agreements" (HGAs) entered into between investing companies and local governments. Sometimes these agreements have been entered into in response to what investors see as a tendency of the governments to "walk away" from the intentions of the original petroleum laws. International Oil Companies (IOCs) often lack the necessary trust in the judicial system of host countries. HGA agreements often stipulate that legal conflicts shall be resolved by arbitration in another jurisdiction (e.g. UK). Alternatively, HGAs have been a way for governments to "walk away" from the constraints of the law .

36. There are also important provisions to be found in Production Sharing Agreements (PSAs), such as requirements to set aside a part of the total gas production for domestic use and agreements to provide training for domestic manpower. It is a clear advantage for host countries that the commercial relationship with commercial investors is built on the provisions in the law or based on a model Production Sharing Agreement and is not subject to individual negotiations in each case. Few, if any, host governments are likely to have the necessary skills and resources to negotiate with international companies and come out on top. It is therefore in their interests to refer to existing laws when it comes to drawing up contracts and not be drawn into a negotiating position where they have little chance of prevailing.

3.5 Health, Safety and Environmental considerations

37. Over time the legal framework has also been applied to Health, Safety and Environmental (HSE) issues. This legislation sets strict requirements as regards the responsibilities of individual enterprises for risk identification, risk reduction, preparedness, and response. Management of major accident risk is required to be an integral part of petroleum activities and local industry in the petroleum sector must adhere to the principle of "prudent operations" as stipulated in the regulations of the industry.

3.6 Ripple Effects for a more diversified and sustainable economy

- 38. All countries with resource-based economies invariably express a strong desire for their resources to contribute to a wider form of national industrial and economic activity, here described as Ripple Effects. Ripple Effects from the oil and gas sector can be divided into four subcategories. This section will only deal with experiences from the petroleum sector, but the insights are also relevant for other industries.
 - i. Downstream integration. Historically the oil and gas sector has given rise to local refineries and petrochemical plants, here characterized as "downstream investments". The probability of such projects being realized increases with the size of the domestic market, the higher the transportation

costs of the commodity produced and the more difficult it is to trade the commodity in question.

- ii. A process with a great potential local "spinoff effects" in developing countries is fertilizer production. Historically fertilizer production has been largely based on natural gas (grey fertilizer), but it can also produce low carbon (blue) fertilizer or emission-free green fertilizer via green hydrogen produced by renewable energy.
- **39.** The demand for fertilizer in Africa is likely to continue to grow in line with economic and population growth. Fertilizer use in Sub Saharan Africa is today at a level between 15 and 20 kg/hectare of arable land, while the aim of the FAO is to increase this to 40 kg/hectare. The average global use is 137 kg/ha (Foreign Policy, 2022). Sub Saharan Africa today consumes approximately 5 million tons fertilizer (urea) per year, which until 2022 was almost all imported. The International Energy Agency's (IEA) net zero scenario assumes that most of the fertilizer production globally by 2050 will be based either on green or blue hydrogen.
 - 3.7 Gas can be an input to a broader industrialization process.
- 40. In its recently published "African Energy Outlook" IEA writes that Africa's economic development is heavily interrelated with its energy development. "Seizing this opportunity (to further develop the continent's energy system) calls for an economic transformation that goes beyond energy supply, including an expansion of key industries, including fertilizers, steel, and cement. The expansion of these industries would generate wealth, create jobs, and reduce Africa's burden of imports generally, which is becoming an urgent concern in the wake of Russia's invasion of Ukraine (IEA, 2022a, p.192). Much of the possibilities of industrial development would also depend on new gas-based baseload and intermittent power in the region.

3.8 Local content policies

41. Local content policies seek to promote the supply of domestically produced goods and services and the employment of the local workforce. They generally require that a producer sources part of its inputs or labour force from the domestic economy. This is hardly surprising as between 40 and 80 percent of the revenue generated in oil and gas and in mining is spent on the procurement of goods and services. Historically, these investments have, for poor resource-rich countries been sourced almost exclusively by imports. The multinational companies have moreover historically relied on their "regular" suppliers that have almost exclusively been located in their own part of the world.

- 42. This has led to a situation where 90 percent of all low - or medium-income producing countries today have some form of local content policies. The problem is, however, that many such policies have been badly designed. They have not taken full into account that the potential for local value creation is very limited and that it will take a long time to reach the often very ambitious and unrealistic goals of local content policies.
- **43.** Many countries stipulate a given minimum "local content" percentage to be implemented within a very limited time. McKinsey (2013, p.75) concluded that there were no phased-in policies in 73 percent of the nations they examined. Experience from other parts of the world shows that this is not wise. Norway gradually built its local content policies and took almost ten years from the startup of its oil activities until it had fully applied this policy.
- 44. There is very seldom any differentiation of the local content policy between different parts of the economy. There is often one "target" for the local content of a whole industry, whether we talk about sophisticated production systems or local supplies to drilling rigs or mines. This is not sensible; local content policies should only be supplied in a sector of the economy where the host country has a reasonable probability of success. Uganda is a recent example of a country that has developed a very good overview of its national resources that helps to identify where the country has a competitive edge.
- **45.** Resource-rich countries must think long term. This means that local content must also deal with human capital. There are many examples. At one end of the scale this entails training of local manpower that is directly or indirectly linked to the industry in question. At the other end of the scale are foreign companies (and

their governments) that have entered R&D co-operation with local universities and research institutions. Such policies will both strengthen local entrepreneurship and build the long-term knowledge base of a country.

4. The financial value chain

- 46. How a nation captures, spends, and saves income from natural resources is extremely important in deciding how that nation deals with the Resource Curse. Income from natural resources is in many cases different from other revenues. Income from oil and gas, but also from some minerals like lithium, copper, and cobalt, gives rise to economic rents. These are revenues in excess of "normal profits". These, often vast, sums when compared to the GDP in the host countries, however welcome, also pose serious challenges. These range from the need to create new institutions like special tax authorities and Sovereign Wealth Funds to formulating sustainable economic policies that tend to come under great pressure from domestic and international" rent grabbers".
- **47.** Governments must mobilize the best investor companies that have the right combination of skills, appetite for risks and a good track record. The best companies will leave most value for the host states. This is a difficult balancing act, not only in the oil, gas and mining sector, but in all sectors in which foreign companies are involved.
- **48.** In an excellent overview, Ovesen (2021) has described the different elements of the financial value chain in a resource-rich country. He emphasizes the importance of transparency and accountability in this process and the importance of stakeholder participation. These factors have attracted considerable attention over time. Several international organizations, such as the Extractive Industries Transparency Initiative (EITI) created in 2003, have played an important role in this respect. There must be room for participants other than governments and companies, like civil society, in this process.

The following recommendations are to be given to Governments to:

4.1 Maximize the value of natural resources

49. Resource management must be in place to avoid waste of resources and ensure efficient petroleum operations.

By maximizing the value of the resources in place, encouraging optimal recovery, require optimal utilization of infrastructure and unitization of oil and gas deposits that extend across areas licenses to different (groups of) companies, national governments will "maximize the size of the cake".

4.2 Ensure that governments receive a fair share of the resource rent

50. Since the nationalizations of oil in Mexico in 1937, one of the key conflicts of the oil industry has centered around the division of the oil rent. This has been closely related to guestions of nationalizations, state participation and taxation Even though much of this issue was settled on a global level following the dramatic changes in favour of state ownership by the OPEC nationalizations of 1973, this issue must be continuously monitored by host states. Effective collection of the government's share of the resource rent through the Production Sharing Agreements (PSAs) is important. Direct payment of the revenue streams to the tax authorities/treasury should be aimed at without letting the payments from the IOC go via intermediary authority institutions and/or the national State Oil Company. Several institutions handling PSA payments will increase the risk of corruption.

4.3 Build effective and competent petroleum revenues administration

51. Build an effective and competent petroleum revenues administration which must be able to audit revenues and costs and be able to monitor state income. This point is closely related to the point made earlier (3.1) of the need to build strong and competent national institutions.

4.4 Spend your revenues wisely; "Follow the money."

- **52.** The revenues must be spent for the benefit of the whole country and not for the benefit of a few. Host country should have three aims.
 - Prevent volatility in revenues from distorting the economy by separating earning and spending of revenues
 - Divide revenues between present and future generations

Divide revenues between central and local levels

4.5 Different types of Sovereign Wealth Funds (SWFs)

Governments can administer possible savings through different types of Sovereign Wealth Funds (SWFs):

- Stabilization funds reduce the impact on the domestic economy from volatile revenues.
- Savings funds redistribute wealth between current and future generations.

A number of key elements have to be sorted out for SWFs to work properly.

- What are objectives and governance structures of the respective funds?
- Investment rules and procedures for operational management must be in place.
- Proper mechanisms for oversight and disclosure of the funds

When working properly, Sovereign Wealth Funds (SWFs) have led to greater macroeconomic stability, greater ability to live with market risk and less vulnerability to the potentially negative effects of oil income on economic diversification.

- **53.** The Norwegian Oil Fund is today one of the world's largest SWFs with a value of USD 1.4 tn . The Oil Fund stands out as the most important diversification policy of the Norwegian economy (Nore, 2019, p.55). A key provision of the Fund is the "spending cap" that limits the average amount (three percent of the value the Fund) that can annually be transferred to government budgets.
- 54. Building an SWF is no "quick fix". The first deposits in the Norwegian oil fund were made in 1995, more than twenty-five years after first oil was produced. Several resource rich countries have created Sovereign Wealth Funds. In Africa there are 27 such funds. (SWFI). The oldest is in Botswana, built around diamond production. Most SWFs are found in oil and gas producing countries like Angola (2009), Nigeria (2011), and Ghana (2011). These SWFs differ widely in their size, adherence to governance principles and effectiveness in achieving their aims. One outlier is Timor-Leste (2005) which has built a well-functioning fund with assets corresponding to eight times GDP.

5. An overview of the Resource Curse: Four categories of countries

- 5.1 The OECD countries have done better than other countries in combatting the Resource Curse. This is not surprising. There are numerous historical examples of how access to ample natural resources has given rise to economic growth/industrialization in countries. The economic historian Habakkuk (1962) argued that greater natural resource endowments in the United States helped explain why it surpassed England as an economic power in the 19th century. The present-day Canadian economy was initially based on natural resources. Countries like Chile, Australia and Norway are today great exporters of raw materials but show little signs of the Resource Curse.
- 5.2. For many emerging economies the situation is pretty much the same as for the OECD countries. Countries like Malaysia and Vietnam have significant oil and gas production, but do not seem to have much of a problem in living with such structures. Part of the reason is found in the fact that oil and gas account for a small part of the total economy and there is a reasonably robust governance in place. Indonesia is however an example of an emerging economy with large oil, gas, and mineral governance challenges.
- 5.3 The Middle Eastern oil states are in a special situation. Their petroleum-based societies are in many ways dysfunctional authoritarian states that still depend entirely on one single source of income. There are, however, some exceptions like Dubai and Oman which, over time, have created societies with a more diversified economic structure. Saudi Arabia is also trying to diversify and modernize its heavily oil-dependent society, but so far with uncertain consequences. Of the Kingdom's exports 79 percent still are oil related (2022). Iran is a separate case. It is a highly diversified economy, but its oil and gas sector de facto finances and makes it possible for the authoritarian regime to stay in power.

5.4. The Resource Curse seems mostly to be a challenge for low- and middle-income African countries. Botswana is an outlier; since the 1970s it has been a significant producer of diamonds, earning large revenues, but with few traces of the traditional Resource Curse. Countries like Nigeria and Angola are opposite examples. Uganda, Ghana, and Senegal are examples of countries where production is about to start up or is modest. There are indications that these societies will be able to manage their resource dependence in a reasonably efficient way. A country like Mozambique has seen how the existence of

natural resources has had dire negative effects on the internal security situation.

6. Risks due to the emergence of a low carbon global energy system

55. The ongoing low carbon energy transition adds a new set of risks for fossil producing countries. A form of "net zero" objective is the guiding principle for approximately 75 percent of the world economy. Fig.5 shows how, in this scenario, the market outlook for oil in 2050 is bleak compared to the demand for critical minerals and renewable power production. For gas the outlook is brighter than for oil in the global energy mix.

Note: mb/d = million barrels per day; Mt = million tonnes

Source: IEA 2021

Two risks emerge from a low carbon global energy system for oil producing states.

6.1 Risk 1: An uncertain future demand for fossil fuels

- 56. IEA's analysis of "Net Zero" states that by 2050 global production of oil will be about 20 percent of today's level. Global oil demand in this scenario is expected to decline by four percent annually towards 2050 (IEA,2021, p.57). Other ("best estimate") projections give the same picture and conclude that the global demand for oil will peak by 2025 and steadily decline (DNV 2022). There is a real possibility that in a "worst case" scenario some oil producers will end up with "stranded assets". Some oil will be impossible to sell irrespective of price. Alternatively, the economic return on the investments may be much smaller than originally expected as prices will decline.
- **57.** In such a scenario gas will retain its competitiveness longer than oil. The IEA assumes that by 2050 gas supply in the net zero scenario will be 1,700 bcm compared with today's level of 3,900 bcm (IEA 2021, p.160). DNV assumes that gas demand will peak in 2040, 15 years after oil reaches its peak.
 - 6.2 Risk 2: Which producer will produce the last barrel?
- 58. There is every reason to believe that the lowest cost producer will become the marginal supplier of oil and gas by 2050. Fig 2 estimates that the low-cost OPEC producers will have a market share of around 50 percent compared with 34 percent today. Deep water offshore production today has significantly higher costs than the lowest cost producer even if costs have decreased in recent years (Journal of Petroleum Technology, 2022). In a shrinking market the high-cost producers will be at a clear disadvantage.
- 59. Geopolitics may soften such a conclusion. There may be geopolitical agreement among key buyers of oil and gas that they do not want their oil and gas imports to originate in areas like Russia or parts of the Middle East. This may open up for new gas production in areas like Africa. There may also be an international consensus that it is the poorest producers that will have the right to produce the marginal barrel in 2050. But this requires a

"global governance" perspective which today does not exist.

How can host countries adjust to a new low carbon reality?

There are at least three ways forward:

- 60. First, to abandon new developments of oil and gas projects altogether because market risks of development are so significant. This will require a thorough evaluation of the costs and benefits of implementing such a strategy. How much income will be foregone and for whom, compared with the potential benefits of adopting more low carbon solutions?
- 61. Secondly, to concentrate on smaller projects which primarily aim to satisfy national or regional demand. This will decrease market risk and make it easier to adjust the size of projects to the size of the national economy. But this strategy has also the likely disadvantage of increasing unit costs of production.
- 62. Thirdly, to continue to plan to develop oil and gas resources, but simultaneously try to find ways to reduce the associated carbon risk to the projects. This can be done by a mixture of legislative and policy measures which will decrease the probability of ending up with "stranded assets".

7. Policy options

Governments can:

63. Try to implement "full cost" pricing, which includes the costs of emissions. This will influence relative future costs of extraction. Policies which aim to reduce the carbon footprint of extraction and along supply chains may give a better relative position to projects that produce oil and gas with lower emissions. This can either be done by exerting pressure on the investing companies to minimize the carbon footprint of production and transport (Scope 1 and 2 emissions), in the expectation that costs of emissions will continue to increase. Alternatively, governments can attempt to get companies to adhere to policies that limit Scope 3 emissions (the emissions from the final products of the value chains) including making use of Carbon, Capture and Utilization (CCUS) solutions.

- 64. Try to transfer as much as possible of the risk away from governments to the commercial investors. This can be done by renegotiating contracts so that government revenues are received as early as possible in the production cycle. This makes sense on the assumption that Risks 1 and 2 above will increase over time but would likely entail a lower absolute income to governments.
- 65. An alternative way to transfer such risk away from the government would be to scale back or even eliminate the state oil company's equity investments. Government income would then only come via taxation. This would require a full reassessment of the historic role that national oil companies have played until now.
- 66. Finally, governments can reduce the risk of its overall national energy portfolio by a process of diversification. This can be done by developing both fossil and low carbon energy projects. The problem with this strategy is, however, that it will require large amounts of human and other forms of capital to be realized. Especially for small economies this may be a great challenge.

8. Conclusion

- **67.** There is nothing inevitable about the Resource **Curse.** It is possible to turn natural resources into wealth for long-term sustainable development and thereby avoid the Resource Curse. But to succeed, there are major obstacles for host governments to overcome. Governments must manage the sector through competent institutions, predictable framework conditions and by combatting corruption. The resource sector must enable diversification of the local economy and, perhaps most important, the government must manage the many challenging financial aspects of the sector in a transparent and competent manner.
- 68. The concept of the Resource Curse has been useful for governments, civil society, and companies. Today, much more is known about the dynamics and characteristics of the "curse" than when the concept was first identified in the 1980s. The discussions since then, among all stakeholders, have contributed towards identifying the key policies which must be in place to combat the Resource Curse.
- 69. More political economy analysis is needed. One of the

weaknesses of the present discussion of the Resource Curse is that it has played down the political economy of each producing state. The individual states have become too much of "black boxes". Which domestic power interests have most influence when it comes to formulating policies? What are their links to the international sources of power and influence?

- 70. Geopolitics and geoeconomics must play a central analytical role. Following the war in Ukraine, the way international resource-based industries operate will change. There will be much more emphasis on avoiding reliance on single sources of supply. The quest for increased self-reliance either on a national or regional level and efforts to construct geopolitically secure supply lines will become much more important. These developments will have a major influence on how the individual countries organize their industries and how the international companies position themselves strategically. This will strengthen the position of nationally based renewables production that will decrease the need to transport energy across borders. For an innovative study of geopolitics in a low carbon world see IRENA (2019).
- **71.** The insights from the Resource Curse discussion are in large part relevant for the Green Shift. Almost all insights from the "governance" part of our analysis, can be linked to the Green Shift. Analysing the quality of institutions, combatting corruption, and creating the right incentives for transparency and accountability is as relevant for the Green Shift as for fossil industries.
- 72. Part of the green production system, like mining of copper, cobalt, silicon, and critical minerals, gives rise to resource rents with possible important macroeconomic consequences for their host countries. These need to be controlled, like the situation for traditional resource industries. Chile is an example of a country that has earned large amounts of rent from the copper industry without falling into the Resource Curse "trap".
- **73. The Green Shift differs in one important way.** The new "green industries" like production of renewables, hydrogen and ammonia are not likely to generate super profits compared to the oil and gas industry. While the latter depend upon production of non-renewable resources, access to "green energy" is

practically limitless. The expected return on capital in the two industries is likely to differ significantly and the prospects for "government take" will be much lower in the new green world than in the old fossil world.

74. There are different ways to eliminate or reduce future market risk, especially in the oil sector. A future low carbon global energy system will increase the market risks of any country planning to develop new fossil resources. More work needs to be done to identify

and evaluate different strategies for producer nations that can reduce or eliminate such risks. Some of these strategies are dramatic; like not to develop resources or eliminate state equity investments in projects. Others, like reducing the carbon footprint of production and use of energy resources are more familiar strategies. Diversifying national risk via developing both fossil and green projects may also be a possible strategy.

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Financing renewable energy to promote economic growth in Namibia

Policy options and strategies - lessons and experience from other countries By:

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ABSTRACT

It is possible to convert natural resources into wealth for long-term sustainable development and thereby avoid the Resource Curse. But to succeed, there are major obstacles for host governments to overcome. Governments should aim to implement policies that strengthen a system of "good governance"; avoid dependence on one commodity and strictly control resource-based revenues and their spending.

There are significant risks associated with starting up new oil and gas projects in a "net-zero" world. Future demand for oil and gas will decline and assets may lose their value. Every country's policy must reflect the special circumstances of that country There are no external models to copy, but it is possible to learn from other countries' mistakes and successe

I. Introduction

- 1. State of the electricity market in Namibia. The Namibian energy and electricity market is in a state of flux and undergoing progressive liberalisation. The government has set itself the task of creating an enabling environment in which private sector players increasingly participate in the electricity market. This is hoped to usher in new forms of electricity generation and distribution models.
- 2. Namibia is uniquely placed to be to become the renewable energy hub of Africa. The abundant availability of sunlight throughout the year and proximity to billions of cubic metres of seawater and vast marine resources in the Atlantic Ocean places Namibia in a strategic position to become an energy hub in Southern Africa.

| SWOT analysis Namibia as an Energy HUB in (Southern) Africa: | | | | | | |
|--|--|--|--|--|--|--|
| Strengths | Weaknesses | | | | | |
| World class wind World Class solar Gas and oil appear to be present in commercial quantities | Relative remoteness and global remoteness Very limited talent pool (in relation to potential needs), due to low population Significant investments in ports will be needed. Water supply could be an issue. | | | | | |
| Opportunities | Threats | | | | | |
| Namibia is a safe country in relation to energy security. EU Carbon Border Adjustment Mechanism Dual use water infrastructure can be developed on the back of energy investments. Couple growth in RE production with energy access | Slow start >>> Global opportunities are taken by "fast movers" with advantages, i.e. closer to markets "Energy security" South Africa as a competitor and market | | | | | |

- II. Is there a clear framework for renewables in Namibia? How can it be improved or enhanced, or developed if it does not exist?
- 3. A well-designed framework for the Namibian policy could offer real opportunity to reconcile policy tradeoffs and identify potential complementaries among the three objectives of energy security, climate change mitigation, and job creation. The SWOT frameworks for strategic thinking become extremely useful in the decision-making process; and the following analysis could be summarized as follows:

2.1 Strengths

- 4. Cost-reflective consumer tariffs are economically efficient and requires that the customer's tariff should equal the marginal cost of supply. At a regional level, the Namibian tariff levels (average of N\$2.48/kWh) are almost the same with other countries that do not receive subsidies, and tariffs are cost reflective, i.e. at around N\$2.00/kWh to N\$2.60/kWh, depending on consumption patterns. It is argued that achieving cost-reflective tariffs will attract private investments, leading to much-needed competition and reduced electricity tariffs. Therefore, this should augur well for the Namibian economy.
- 5. Namibia has a good regulatory system with an established regulator. Namibia's Electricity Control Board (ECB) is a reputable institution with good governance. The ECB is a statutory regulatory authority established in 2000 under the Electricity Act 2 of 2000; which has subsequently been repealed by the Electricity Act, 4 of 2007; the latter Act having expanded the ECB mandate and core responsibilities. The core mandate of the ECB is to exercise control over the electricity supply industry with the main responsibility of regulating electricity generation, transmission, distribution, supply, import and export in Namibia through setting tariffs and issuance of licenses.
- 6. Modified single-buyer system: The Modified Single Buyer Model (MSB) was introduced as a new market platform in 2019, which will gradually replace the current Single Buyer Model (power purchase only by NamPower). The MSB strengthens the role of Independent Power Producers (IPPs) by allowing certain

customers (Contestable Buyers) to purchase a portion of their electricity needs directly from IPPs (Eligible Sellers).

7. World-class plans for Green Hydrogen: Namibia aim to put itself on the map as a world leader in green hydrogen and related products, including ammonia, methanol, synfuel, and eventually green steel.

2.2 Weaknesses

- 8. There is a lack of skills within the energy sector in the country. As the number of jobs is increasing in this relatively new sector, skills shortage appears as the main growing challenge for the country, also considering the low population. However, this can also be an opportunity for the country to upskill and reskill job seekers.
- 9. The country is disadvantaged in terms of market size and may be hard to attract investors. The size of the market plays a big role in attracting investments, and due to the country's small market size, it may be hard to attract investors (Green Hydrogen notwithstanding).
- **10.** The country has one of the most unequal economies. It is among the countries with the worst income disparities in the world (a Gini coefficient index of 64 in 2021, according to the World Bank).
- **11. There is a lack of robust regional integration.** The country does not have strong enough Interconnectors with Angola, South Africa, Botswana and Zambia.

2.3 Opportunities

- 12. There is room for regulatory development within the electricity sector. Namibia is not ranked first on Electricity Regulatory Index (ERI) for Africa (AFDB), although it is still within the top 5 in Africa. The ERI survey shows that Uganda is the top performing country at 0.823 followed by Kenya, Tanzania, Namibia and Egypt in the Electricity Regulatory Index 2021. This implies that Namibia has an opportunity to become the top performing country in Africa.
- 13. Enhancing electrification rates on-grid and off-grid requires more power in the system and creative thinking, in regulation as well. Off-grid solar systems present a promising solution to electrify these remote

areas by closing the access gap as well as featuring lower costs and shorter waiting times until being connected, in comparison with grid extensions. "Electrify All" entails moving Namibia towards e-mobility and e-fuels, however without regulation and incentives, this will likely not happen.

2.4 Threats

CASE STUDY: THE DANISH WIND ENERGY SUCCESS

Denmark is currently a world leader in the use and market of both onshore and offshore wind energy. In recent years, Denmark has steadily emerged as a leader and role model in the global green energy transition. Its greenhouse gas (GHG) emissions since 2010 have been reduced at greater pace than those of the European Union (EU) average. This transformation is even more impressive, given that the country used to be a significant oil and gas producer which also relied heavily on coal for power generation.

In 1972, oil accounted for 92 percent of gross energy consumption in Denmark. Thus, when the OPEC oil crisis quadrupled the price of oil in 1973, Denmark's economy and energy supplies were severely affected. While some short-term measures such as the introduction of car-free Sundays in Denmark during the 1973/74 winter were launched, the event was the catalyst for long-term energy planning. From 1984, feed-in premiums equivalent to the tax on electricity were passed by Parliament, which led to the creation of a market for small, 25-55 kW wind turbines. Growing domestic demand for wind turbines spurred a number of small engineering companies to develop industrial mass production of increasingly large wind turbines.

These government initiatives set the wheels of Denmark's wind energy adventure in motion. 1987 saw Europe's largest onshore wind farm to date inaugurated by Elkraft on the island of Masnedø in south-eastern Denmark. The wind farm with a capacity of 3.75 MW consisted of five 750kW wind turbines. The following year, the record was beaten by a 4.68 MW wind farm called Nørrekær Enge, which consisted of 36 turbines with a rated individual capacity of 130 kW. To date,

long distances increase the temperature within power lines and thus causes significant energy losses in the form of heat. Therefore, it is important for enhancements within transmission expansions and for grid stability.

14. There are large challenges around transmission and grid

stability. A surge might occur when producers generate too much power without warning, and the entire system

would shut down. Similarly, electricity distribution over

the country has two large wind turbine manufacturers based in Denmark and two large off-shore developers are Danish CIP and Orsted (DONG).

As a global hub for wind energy innovation and development, the Danish wind industry employs more than 33,000 people. The availability of a highly skilled workforce, state-ofthe-art facilities for testing prototypes and a comprehensive network of companies, research institutions and government research programs make up an innovative R&D environment like nowhere else in the world. In Denmark, you can test all parts of a wind turbine from nacelles and blades to full-scale, almost market-ready, turbines, which is why companies from all over the world have located central parts of their R&D operations in Denmark. The wind industry supports a further 63,000 jobs in adjacent industries.

In 2020, 50 percent of the electricity consumed by the Danish power sector came from variable renewable energy (VRE) sources, making it the country with the highest VRE share in its power system. During some days, VRE production exceeded demand, and as a result the power system ran on 100 percent VRE while the rest was exported.

Today, Denmark is the leading player in the market and use of both onshore and offshore wind energy in the world, attributed to favourable public policies, reliable financial support, and industrial innovation. The use of wind power has evolved over time from a share of less the 10 percent of total electricity usage (Figure 1) in 1990 to 12 percent in 2000 and currently holds a share of 57.7 percent in 2023 (wind onshore 32.5 percent and offshore 25.2 percent).

Source: Energy-charts.info

How the country achieved the above:

a) Consistent flexible regulations

As needs for support declined (first turbines were 250 - 300 kW) incentives were scaled back, but agreements were always honoured. There were 8000 hours of full-load subsidies.

b) Government fiat was used

Economic benefits were directed toward ordinary citizens, such as in the Middelgrunden wind farm stands on the shoal Middelgrunden.

c) Utilities had an obligation to strengthen distribution and transmission networks.

The costs were "socialized", that is, they were put on everyone's bills.

d) Balancing of demand and supply was and is still done by investments in powerful interconnectors with neighbouring countries.

E.g. excess wind power flows to Norway during the night, during the day Norway sends (saved) hydro-based power back. Regional markets were also expanded: NordPool provides day-ahead and intraday trading.

III. The role of African Development Bank in renewable energy

- 15. With an active portfolio of energy projects totalling over USD 12 billion, the Bank is a key stakeholder and influencer in supporting access to clean and affordable energy across the African continent. The New Deal on Energy for Africa aims at achieving universal energy access, with priority given to low-carbon technologies which harness the abundant, hydro, solar, geothermal and wind resources of the continent. Investments in power generation, inter-connections, transmission and distribution are critical to unlocking Africa's vast economic potential, enabling the growth of value-adding industries and services, and helping to improve regional integration through pooled resources.
- 16. Pursuing the Strategy for the New Deal on Energy for Africa launched in 2016, the Bank approved a total of USD 7.2 billion from its own resources, of which 80 percent was for public and 20 percent for private. The Bank further mobilized USD 850 million in cofinancing resources over the 2016-2020 period. These commitments are expected to:
 - Increase power generation capacity by an additional 3 GW of installed generation capacity, of which 2.2 GW is from renewable energy sources.
 - Support grid reinforcement and extension with the construction of over 7,000 km of transmission lines, of which 3,000 km are regional interconnections to facilitate regional integration and power trade. In addition, some 65,000 km of distribution lines

Figure 1: Overview of Bank Energy Investments (2000-2021)

with associated substations were financed which will enable access to electricity for about 12 million people.

Stimulate the market for decentralized energy solutions, with 3 million people gaining offgrid energy access notably through Solar Home Systems (SHS) and Green Mini Grids.

The African Development Bank in key figures

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| 1964 | Year when the AfDB was established | | | | | | | |
|------|---|--|--|--|--|--|--|--|
| 125 | Percent capital increase in 2019 | | | | | | | |
| AAA | Ratings with a stable outlook from all main rating agencies | | | | | | | |
| 5 | Strategic priorities to accelerate Africa's development | | | | | | | |
| 81 | Member countries, incl. all 54 Africa countries | | | | | | | |
| 209 | Billion dollars of authorized capital | | | | | | | |
| 26 | Billion dollars of outstanding loans with an attractive pricing | | | | | | | |

6.2 Billion dollars of approvals in 2021 for public and private sector operations

17. Figure 1 below shows the Bank's lending of credit in the energy. The Unit of Account (UA) was ~UA 14.48 billion committed to energy sector projects since 2000, of which ~UA 11.74 billion for the public sector (denoted as "public" in graph) and ~UA 2.74 billion for the private sector (denoted as "privé" in graph).

Source: African Development Bank

IV. Financial Instruments for the Public and the Private Sector

- **18.** The African Development Bank offers long-term debt to both the public and private sector clients. These lending instruments can be accompanied by derivativebased hedging solutions called Risk Management Products (RMPs), which are embedded in certain loans or offered to clients as a standalone product, allowing them to hedge themselves against interest, foreign exchange and commodity price risks as needed.
- 19. The African Development Bank is Africa's premier development financial institution with the mission to spur sustainable economic development and social progress in its Regional Member Countries (RMCs). The Bank is rated AAA by top agencies and presents 0 percent risk weighting under Basel II.

20. The Bank achieves this objective by:

Mobilizing and allocating resources for investments in Africa in the form of a wide range of instruments

4.1 Lending Instruments: Public Sector

Fully Flexible Loans for Middle Income Countries (Loans with Sovereign Guarantee)

customized to the projects and clients;

Providing policy advisory and technical assistance to support development efforts.

21. Beyond financial products, the offer of the African Development Bank comes with value add:

- African markets: decades of experience as one of the largest multilateral source of guarantee, debt and equity financing in African markets;
- Full cycle capital access: it can leverage the Bank's funds and seamlessly deliver financial products according to company maturity;
- Sector experience: deep technical knowledge and expertise, with access to energy specialists based across the continent;
- Patient capital: long-term investment horizon with impact capital;
- International network: with a diversified network across stakeholders, ADB can introduce companies to co-investors, potential clients, and other strategic partners.

| Table 1 Public Sector Lending Instruments | | | | | |
|---|--|--|--|--|--|
| Eligibility | Regional Member Countries and Public Sector Companies with sovereign guarantee in ADB or Blend countries | | | | |
| Maturity | Up to 25 years | | | | |
| Grace Period | Up to 8 years | | | | |
| Pricing Formula | Base rate + 0.80%+ maturity premium | | | | |
| Base Rate | Floating (6m Libor/Euribor, 3m Jibar) | | | | |
| Maturity Premiums | Up to 0.20% | | | | |
| Interest Rate features | Free initial option to fix + Option to fix, unfix and re-fix for a fee at any time, cap and collar | | | | |
| Currency Conversions | Option to change currency at any time | | | | |
| Currencies | EUR, USD, ZAR, JPY, LCY | | | | |

Source: African Development Bank

The Noor Ouarzazate I CSP project in Morocco

- 22. The Noor Ouarzazate Solar Complex is a 580MW solar power project located 10 kilometers north of the Moroccan city of Ouarzazate. It's the world's biggest concentrated solar power facility. The Ouarzazate Solar Power Station Project Phase I will enable Morocco to honour its national and international commitments. It is part of the Moroccan Solar Plan designed under Morocco's energy strategy and, on a larger scale, it forms part of the Concentrated Solar Power (CSP) Investment Plan of the Middle East and North Africa Region (MENA). Under the Moroccan solar plan, five complexes will be built in Ouarzazate, Foum Al Oued, Boujdour, Sebkhat Tah and Aïn Béni Mathar.
- 23. The Ouarzazate Power Station Project 1 is the first CTF-supported project for large-scale implementation of CSP technology in the MENA region. Morocco's solar

energy programme is expected to create jobs locally. Eventually, it will enable Morocco to sell green energy to Europe at profitable rates and earn foreign exchange. This will have a positive effect on its trade balance. The project components are: (i) construction of energy infrastructure; and (ii) operational support, and project administration and management.

24. The Noor I CSP plant created around 1,000 construction employment opportunities and 60 permanent jobs during the operation and maintenance phase. By offsetting 240,000 tonnes of CO2 emissions per year, Noor I was projected to contribute to the fight against global warming. Together, Noor II and Noor III were to help reduce 533,000 tonnes of CO2 emissions annually. When completed, the entire Noor solar complex was expected to reduce global CO2 emissions by an estimated 760,000 tonnes per year.

4.2 Lending Instruments: Private Sector

Standard Private Sector Loans (Line of credit, Project Finance, Corporate Loan)

| Table 1 | Public Sector Lending Instruments | |
|--------------|-----------------------------------|---|
| Eligibility | | Public Sector Companies of ADB, Blend countries without a sovereign guarantee; and Private Companies in all Regional Member countries |
| Maturity | | Up to 15 years |
| Grace Perio | d | Up to 5 years |
| Pricing For | mula | Base rate + lending margin |
| Base Rate | | Floating |
| Maturity Pr | emiums | N/A |
| Interest Rat | te features | Free initial option to fix up to disbursed amount for the maturity of the loan |
| Currency Co | onversions | N/A- but available in Bank's lending currencies & LCY |
| Currencies | | EUR, USD, JPY, ZAR, LCY |

Source: African Development Bank

a) The Nachtigal 420 MW Hydro IPP in Cameroon

25. Jointly developed with the Republic of Cameroon, EDF and IFC, the project will increase national installed capacity by 33 percent, which will help meet the national demand for additional power. The Bank provided a USD 150m loan with 18 years tenor for a total cost of USD 1.2bn. The plant will be connected to the Southern Interconnected Grid (RIS), which accounts for 94 percent of Cameroon's electricity consumption. The project also includes the construction of a 225 kV substation and a 50 km transmission line to the Nyom 2 connection station. Nachtigal will be the third project to benefit from the hydroelectric potential of the Sanaga River, after EDEA (276 MW commissioned in the 1950s) and Song Loulou (384 MW in the late 1970s). The project site has good all-season road access, which will facilitate the transportation of equipment during the construction phase. The hydroelectric facilities and the production substation are located in the same perimeter, while the transmission line is located in another perimeter.

b) The 100 MW Redstone CSP Project in South Africa

26. Redstone Concentrating Solar Power Plant (CSP) is being developed in the Northern Cape Province of South Africa. The Redstone CSP plant Project is designed to design, build, operate and maintain a 100 MW capacity concentrated solar power plant. It is expected to close the energy supply gap, reduce dependence on coal, limit carbon emissions, create local jobs, and develop a national solar energy industry. Redstone's capacity will be increased, with a thermal storage potential increased to 12 hours (1,200 MWh), a relatively economical option compared to battery storage used in photovoltaic solar power plants. The thermal storage system will allow the Redstone CSP (100 MW) to operate at full capacity for 12 hours in the absence of solar radiation (after sunset or on temporary cloudy days). The project will provide the country with access to clean energy and reduce peak-hour production costs and will be carried out by experienced private sector developers and contractors, particularly ACWA and Solar Reserve.

4.3 Eligibility Criteria

27. Operators wishing to work with the Bank must meet eligibility criteria and follow the application procedure.

Who is eligible?

- An enterprise/project must be located and incorporated in the Bank's Regional Member Countries of the Bank whether they are promoted by African or non-African investors.
- An enterprise/project must be either majorityowned (more than 50 percent) by private-sector investors or publicly owned, have strong financial standing and a proven managerial autonomy.
- Projects for the establishment, expansion, diversification and modernization of productive enterprises (i.e. capital expenditure).
- The size of the investment is determined by the single obligor limit and other prudential considerations.
- Maximum Bank participation is 33 percent of total project costs for Greenfield projects. The percentage can be higher for projects entailing expansion of existing facilities.
- Evidence of strong integrity, a good reputation, and adequate financial standing
- The project must aim to maximize development impact in line with the country's strategic priorities.

V. Guarantees Program to Mitigate High-Risk Perception in Africa

- 28. The Africa Co-Guarantee Platform is an innovative and collaborative mechanism to unlock access to finance for transformative projects in Africa. It was created in 2018 to bring together major guarantee and insurance providers for trade and investment, creating synergies and scale. The Platform works by scaling up and standardizing risk-mitigation instruments across multiple guarantee-providers reduce client transaction costs and shorten lead times to financial close. The Platform also provides guarantees and insurance for trade and investment through its Partners. It further offers capacity-building in risk mitigation for African governments, agencies and other stakeholders.
 - The Partial Risk Guarantee (PRG) is a financial guarantee that covers sovereign and political risks when payment default is caused by a government or a government-owned entity's failure to meet specified contractual obligations to the project.
 - The Partial Credit Guarantee (PCG) supports private sector entities and covers commercial debt service on scheduled payments of commercial debt, against all risks or specific events of default.

• Benefits:

- ◊ Supports mobilization of long-term resources;
- Mitigates lending risks;
- ♦ Crowds in private sector financing.

- Key features of the guarantees:
- The tenor is the same as underlying guaranteed debt;
- The guarantee is irrevocable and on-demand, with a payment that indemnifies without waiting for trial and legal actions;
- ♦ The amount is only equal to a portion of the debt covered (up to 50 percent).

| Indicative ACT Financing Plan for South Africa (US\$, millions) | | | | | | | | |
|---|-----|------|-----|------|--------------|---------|--------|-------|
| IP Components | ACT | MDB | | | Country | Private | Othere | Total |
| ir components | | IBRD | IFC | AfDB | Counterparts | Sector | others | Total |
| Project 1: Retiring and Replacing Coal-based Power Generation Capacity | | | | | | | | |
| Component A: Decommissioning | 10 | 100 | | 40 | | | | 150 |
| Component B: Repurposing and capacity replacement | 230 | 375 | 70 | 165 | 300 | 860 | | 2,000 |
| Component C: Socioeconomic impact mitigation | 110 | 90 | | | | | | 200 |
| Project 2: Mpumalanga Community Development Project | | | | | | | | |
| Community-Driven Development | 100 | 5 | | 5 | | 15 | 30 | 155 |
| Project 3: Energy Efficiency, Distributed Generation, and community Generation Programs | | | | | | | | |
| Energy Efficiency and distributed generation | 50 | 5 | | | | | | 100 |
| IP total | 500 | 570 | 70 | 255 | 300 | 875 | 30 | 2,605 |

VI. The Sustainable Energy Fund for Africa

29. The Sustainable Energy Fund for Africa (SEFA) is a multi-donor Special Fund managed by the African Development Bank. It provides catalytic finance to unlock private sector investments in renewable energy and energy efficiency. SEFA offers technical assistance and concessional finance instruments to remove market barriers, build a more robust pipeline of projects and improve the risk-return profile of individual investments. The Fund's overarching goal is to contribute to universal access to affordable, reliable, sustainable, and modern

energy services for all in Africa, in line with the New Deal on Energy for Africa and Sustainable Development Goal 7.

- Special Fund providing catalytic finance to unlock private sector investments in clean energy (converted from trust fund in Q4 2019).
- Total Capitalization of ~US\$ 425 million since launch in 2012, with ~US\$ 300 million raised since conversion, 9 donors.
- Key achievements include sponsoring new commercial finance vehicles, Africa Renewable

Energy Fund and Facility for Energy Inclusion.

- Cumulative Portfolio of 68 operations for a total commitment of ~ US\$160 million, representing a US\$ 4 billion investment pipeline.
- Flexible financial instruments beyond TA grants, including junior equity, concessional debt, and results-based finance.

Objective Contributing to universal access to affordable, reliable, sustainable and modern energy services for all in Africa, in line with the AfDB New Deal on Energy for Africa and the Sustainable Development Goal 7.

Green baseload increasing the penetration of renewable energy in power systems, with a focus on power system stability and alternatives to fossil-fuel baseload generation options

Green mini-grids Accelerating electricity access to undeserved populations through private-sector led isolated/independent mini grid systems

Energy efficiency improving the efficiency of energy services through enabling frameworks and new business models, also including clean cooking and small solar technologies

Policy Advisory

Program Design

Project

preparation

Capacity

Development

Catalytic finance

7.5 million new electricity connections

3,000MW new RE capacity

1,000,000 MWh/year energy savings

USD 5 billion Investment mobilized

VII. The Facility for Energy Inclusion

30. The Facility for Energy Inclusion (FEI) is a USD 500m debt financing platform anchored by the African Development Bank via the Sustainable Energy Fund for Africa (SEFA). FEI is intended to provide appropriate financing for the wide variety of borrowers and forms of power generation that the Fund invests in. The Fund can provide long- and short-term finance, from traditional project finance to inventory/construction finance and refinancing, either to corporates or SPVs. FEI targets small-scale projects from private sector companies to provide tailored debt instruments that are adapted to the industry (i.e., local currency loans).

The facility is split into 2 different funds, with the objective of:

- Aggregate capital;
- Structure bankable projects;
- Accelerate development of electricity access solutions using clean energy.

VIII. Green Hydrogen

31. Hydrogen is used almost exclusively as a material. In 2020, the hydrogen amount used worldwide was around 90 million tonnes. The annual demand has increased by 50 percent in the last twenty years . In the course of global efforts to mitigate climate change and the accompanying advancing de-fossilisation (i.e., the substitution of fossil raw materials), the importance of hydrogen produced in a green-house gas-neutral way is likely to increase in the future. Thereby, green hydrogen - i.e., hydrogen produced from renewable electricity by means of electrolysis - offers the best prerequisites for a timely scaling of production while at the same time minimising greenhouse gas emissions.

32. The Bank, as Africa's premium financing institution, has multiple roles to play in ensuring a green economy:

- Massive need to raise awareness and educate public and private sector (starting within the Bank)
- Develop national and regional strategies, linked to LTS and NDCs – GH2 has the potential to help Africa, more than any other continent, leapfrog a fossil fuelled development pathway.
- Support the development of commercial models, contracts and agreements (ALFS)
- Lead, convene, support industry associations eg African Green Hydrogen Association
- Mobilize public sector finance from donors,

international climate funds (CIF included), bilateral donors etc and private sector to invest: Directly for Green hydrogen projects; Indirectly for associated investments in supply chain; Wind, solar, hydro and geothermal energy generation projects; Dual-use potable water solutions; Industrial development; Transport; Ports

• Goal: To Ensure Africa becomes a supplier of green hydrogen to the global north in a just and equitable manner.

Progress made by the Bank, to date:

- Climate Investment Funds (CIF) funded study (Just Transition in a Renewable Energy Riche Environment - Potential Role of Green Hydrogen)
- Supporting African Green Hydrogen Alliance (Launched at CoP 27)
- Received and reviewed proposals including Namibia GH2; GH2 to ammonia to fertilizer in Zimbabwe
- Convened African Green Hydrogen Forum in Abj:
 - Global hydrogen demand is expected to increase sevenfold by 2050, requiring USD 450-900 billion in cumulative investment.
 - Global import market for hydrogen and its derivatives is expected to grow by 5-6 times between 2030 and 2050 to reach 100-180 million tonnes by 2050.
 - ♦ There is a need to localize green hydrogen value

chains, thus creating jobs for African countries while addressing knowledge gaps.

 Governments should adopt inclusive approaches to ensure communities benefit from green hydrogen investments.GH2 event coming up at CoP27.

IX. Policy options for Namibia

- **33.** Invest in inter-connectors and transmission (gridstability). Namibia should upgrade and expand their transmission infrastructure to support a smooth global transition to renewable energy. Trading of energy/power is a driver of VRE development.
- **34.** It is important to promote the use of local inputs to capture the benefits to the local population. Therefore, it would be prudent to identify specific sectors for the development of local capacity. The issue of ensuring optimal local content in the exploitation of the resources must remain prominent. However, it is also important to note that local content can sometimes be negative, such that local content rules tend to inflate costs and can "act as a brake". Therefore, it is important to scale-up local content and local employment rules over time. Local focus on solutions drives skills' development and hence later exports, e.g., Windhoek as Africa's vehicle-to-grid (V2G) frontrunner will create skills, markets and opportunities for Namibian companies.

Policy issues emanating from the 23rd Bank of Namibia Annual Symposium by Bank of Namibia Research and Financial Stability Department

1. Introduction And Background

- The Bank of Namibia held its 23rd annual symposium on 1 the 3rd of November 2022 at Safari Hotel and Conference Centre under the theme: Maximising economic growth from renewable and non-renewable energy sources in Namibia. The symposium theme focused on the new discoveries made in the country, namely the oil, gas, and green hydrogen. The Symposium hoped to find ways in which the country can maximise the benefits from the discoveries and use such to uplift especially the less fortunate and vulnerable members of the society. Many of the world's wealthiest countries have benefited greatly from mineral extraction. For example, Australia, Canada, Finland, Sweden, and the United States have all had extensive mineral industries and used them as a platform for broad-based industrial development. Moreover, in these countries, minerals exploitation seems to have benefited regions with mines by at least some measures. In the nineteenth-century mineral exploitation in Australia, for instance, brought development to the states of Victoria and Western Australia.
- 2. In January 2021, ReconAfrica began exploratory drilling and had been bullish in its claims that the Kavango Basin could contain up to 31 billion barrels of crude oil. The Namibian Government approved the drilling of three test wells. In April 2021, the company announced that it had found a "working petroleum system," a second test well has been drilled, and seismic surveys will be conducted to evaluate the viability of potential oil production. ReconAfrica's literature says an oil boom would provide jobs and lift local people out of poverty. TotalEnergies's Venus and Shell's Graff discoveries also have transformational potential for the offshore Orange Basin play - WoodMac suggests Venus could be the biggest-ever sub-Saharan oil discovery. This makes Namibia the focus of renewed global attention as the latest of Africa's potential 'Elephant' producers, exciting a range of companies and potentially more work off South Africa. However, the country also needs to look at the potential downsides of these minerals, such as the Dutch disease.
- 3. How should a country expect to gain from the minerals sector? One of the most immediate ways should be through additional direct and indirect employment. The

mineral exploitation activities should also generate new infrastructures such as roads, railway lines, electricity supplies, schools, and hospitals that, although provided for the minerals industry and its workforce, can also benefit the rest of the population. It should contribute to developing skills and local businesses at the local level. Skills development should entail using the immigration policy facilitating the acquisition of skills that is not locally available and facilitate skills transfer. Meanwhile, the economy can be stimulated as minerals companies forge multiple outward linkages – backwards to industries that supply goods and services or forwards to industries that process mineral outputs.

- 4. Green hydrogen, produced through renewable resources such as solar and wind, holds significant promise in meeting the world's future energy demands. The economics of green hydrogen, however, are challenging today, primarily because the underlying costs and availability of renewable energy sources vary widely. Green hydrogen is hydrogen generated entirely by renewable energy or from low-carbon power. Green hydrogen has significantly lower carbon emissions than grey hydrogen, which is produced by steam reforming of natural gas, which makes up the bulk of the hydrogen market. Nearly all of the hydrogen consumed in the world is used by industry for refining petroleum, treating metals, producing fertilizer, and processing foods. Petroleum refineries use hydrogen to lower the sulphur content of fuels. Namibia has made a commitment to exploit green hydrogen and has made great strides. And the symposium theme hoped to tackle how the country can exploit benefits from green hydrogen.
- 5. It is against the above backdrop that the 2022 Symposium theme was selected, to contribute to discussions on how the new discoveries can contribute sustainable economic growth development in Namibia. More specifically, the deliberations were guided by the following key questions:
 - How to ensure that the discovered minerals/natural resources (oil – onshore and offshore), and green hydrogen benefit and contribute to broad-based development that results in employment creation, poverty and inequality reduction?
 - ii. How to prevent the Dutch disease/ resource curse?

How to ensure that the minerals discoveries oil (onshore and offshore), and green hydrogen benefits and contributes to broad-based development that results in employment creation, poverty and inequality reduction?

- iii. What should the regulatory landscape be so that Namibia optimally benefits from its minerals, including ownership? Is the current regulatory landscape adequate to ensure the country gets a fair share of the discovered resources?
- iv. How can synergies between new investments and existing policies such as local participation and local procurement and value addition be enhanced?
- 6. These issues, among others, were addressed through presentations given by local and international speakers and supplemented by a panel discussion comprising of representatives from the Ministry of Mines and Energy, the Office of the President, the African Development Bank, the Nord University of Norway as well as the Commonwealth.
- 7. A major conclusion that emanated from the 23rd Annual symposium was that the country has an adequate petroleum regulatory framework that can ensure appropriate derivation from the resources, although a few elementary things still need to be addressed. The key policy recommendations made were the need to:
 - build accountable resource governance institutions to avoid the resource curse;
 - address the fiscal regime in the extraction industry;
 - ensure that appropriation of exploration licences should be done in an open and transparent auction system;
 - promote the use of local inputs to target employment, industrial, and technological development; and
 - improve the ease of doing business; leveraging on opportunities offered through regional integration initiatives.

2. Key Policy Issues Emanating From The Symposium

8. Key recommendations from the papers and discussions at the Symposium are that the country must from the onset ensure that economic benefits from the new discoveries trickle down to the most vulnerable communities, as well as ensuring certain things are in place to avoid rent-seeking behaviours. The following is a summary of the key policy issues that emerged from the symposium:

- i. Build accountable resource governance institutions to avoid the resource curse
- 9. Accountable institutions allow for transparency and accountability in allocating resources. Accountable institutions ensure that access to resources is granted in such a way that prevents mismanagement and other abuses and that the benefits trickle down. The quality of institutional setting, prevention of corruption, law and order, and limiting bureaucratic inefficiencies are important. Good institutional setting could diminish rent seeking activities and ensure the security of property and contractual rights. In turn this would encourage investment.
- 10. Through appropriate and transparent management and allocation of oil, gas and green hydrogen revenues, Namibia can promote economic diversification and build the basis for higher and stable growth. The critical challenge is to harness the oil, gas, and green hydrogen resources by making the right strategic choices and synchronizing their implementation in a context that improves the lives of the poor through increased investment in health, education, physical infrastructure, and other non-oil sectors. This ensures that access to these resources is granted in such a way that it prevents mismanagement and other abuses and that the benefits trickle down.
 - ii. Address the fiscal regime in the extraction industry
- 11. Namibia will need to review the current mineral royalties and taxes to ensure balance between attracting investors and safeguarding optimal benefits for the country from the resources. Such balance is important to facilitate investment, while at the same time addressing the notion that Namibians are not participating meaningfully in these sectors or that government is comfortable with the current royalties and tax rates, which are perceived as inadequate.
- 12. The country should continue to employ a mixture of royalties and income-based levies to afford a balance

of protection against financial risks to governments as well as investors. The Namibian Government should avoid moving fiscal instruments toward reliance on income-based levies only, as the loss of revenues from noncompliance appears more serious than any incremental benefit of income-based taxes in terms of greater economic efficiency being generally advocated for in developed nations.

- 13. Namibia should further benchmark on the royalties to ensure competitiveness. The issue of how much Namibia benefits from its natural resources has received a lot of attention and there are sentiments that the country may be getting a raw deal in this regard. Therefore, international evidence should be analysed to assess how this proposed framework compares with that observed in benchmark countries, also considering other applicable taxes to evaluate how it could affect Namibia's competitiveness.
 - iii. Appropriation of exploration licences should be done in an open and transparent auction system
- 14. The current open door licensing system of the resource allocation should be substituted for an open and transparent bidding process, wherein different agents bid with extra royalties, income taxes, or the government's portion in a profit-sharing agreement. The winner would commit a certain minimum investment within a specified timeframe to minimize the possibility of daring offers. More specifically, such a system could be implemented by establishing exclusive prospecting licenses that are auctioned and, in case of success, are subsequently upgraded to the next stage licenses.
 - iv. Promote the use of local inputs to target employment, industrial, and technological development
- **15.** The Government should promote the use of local inputs to target employment, industrial, and technological development. The current draft of the local content policy should specifically aim to maximize the benefit to Namibian citizens. This will be through the enhancement and development of strategies that will target phased participation of Namibian labour, goods and services, companies, ownership and financing along the value chain.

- a. Provide a clear and stable regulatory framework for Local Content requirements by reforming the current legal framework to attract investors.
- a. Maximise the participation of local suppliers along the value chain. Diversification of the local economy will prevent the reliance on one commodity. This can be achieved by developing national competency and capacity. Therefore, it would be prudent to identify specific sectors for the development of local capacity. The issue of ensuring optimal local content in the exploitation of the resources must remain prominent thereof.
- c. Identify specific sectors for the development of local capacity. It is of vital importance that Namibia's policy reflects its own special circumstances as there are no external models to lean on. However, it would be a shrewd move if the country learns from other countries' successes and failures.
- 16. The local participation efforts should be clear and concise. When embarking on the local participation framework, Namibia should introduce clarifications to reduce uncertainties associated with their interpretation with the purpose of alleviating the negative effect of opaqueness on investment. In this regard, the Government local content policy should aim to address the following:
 - 1. To provide a clear and stable regulatory framework for Local Content requirements
 - 2. Identification of specific sectors for the development of local capacity
 - 3. Maximising employment and development of Namibians
 - 4. Maximising the participation of local suppliers along the value chain
 - 5. Encouraging the transfer of technology, knowledge and skills
 - v. Improve the ease of doing business
- 17. To facilitate development, the Government needs to ensure that regulations and requirements strike an appropriate balance between fairness, effectiveness and consistency. There are clear parallels between the rules and regulations influencing business development

and socio-economic development overall. Clear requirements and straightforward compliance allow businesses and entrepreneurs to focus on innovation, problem-solving and employment - all factors contributing to development. And once set, rules should be stable – at least for periods that broadly agree with the lifetime of relevant projects in the extractive industries.

vi. Have targeted incentive packages to reduce the investment risks

18. There should be targeted incentive packages to reduce the investment risks faced by early adopters in the green hydrogen initiatives. This could include a mix of financial incentives (when the country's fiscal position improves), fast-tracking access to land, assistance in meeting or exceeding legal and regulatory provisions, utility connections and related matters of immediate relevance to lower the barriers to targeted investments.

vii. Develop an energy transition timeline

- 19. The Government should develop a clear energy transition timeline that will boost investor confidence in the country. As a small country that faces the triple challenges of inequality, poverty and unemployment, Namibia is well within its rights to take advantage of all the resources available in the country. However, as the world continues to move towards decarbonization, it is imperative that the country develop an energy transition timeline.
 - viii. Leveraging on opportunities offered through regional integration initiatives
- 20. Regional infrastructure development should be at the forefront of the developmental agenda. Regional infrastructure development creates a larger market and greater economic opportunities. The development is critical to promote and sustain regional economic development, trade and investment as well as contributing to poverty eradication and improved social conditions.
- 21. Cooperation on energy infrastructure development at a SADC regional level should be prioritized. Collaboration within SADC should be a priority for Namibia. For example, South Africa is working on its own green

hydro initiatives – which is likely to create competition between the two countries. There should be a possibility for collaboration and offer joint projects to investors.

- ix. Utilize available funding options from the African Development Bank
- 22. The African Development Bank (AfDB) has various funding options that can be utilized by the Namibian government, as well as the private sector. The AfDB funding options are available and eligible organisations should make use of these to increase investment in clean and cheaper energy options.
- 23. The Namibian government has the opportunity to utilise the fully flexible loan options that have favourable lending terms offered by the AfDB. The AfDB offers loans to regional member countries and public sector companies with sovereign guarantee in AfDB or blend countries. These loans have a maturity of up to 25 years, and a grace period of up to 8 years.
- 24. Standard private sector loans are also available for the private sector in Namibia. The AfDB provides catalytic finance to unlock private sector investments in renewable energy and energy efficiency. As a major stakeholder in Namibia's development and a key engine of economic growth, the private sector is expected to play a key role in increasing access to modern energy services. Private companies in all regional member countries, including Namibia qualify to access loans offered by the AfDB. These loans include up to 15 years repayment period, with up to 5 years grace period.

3. Policy Recommendations

25. The recommendations are grouped into three groups. These are growth enhancing policies, which are focused on ensuring that the discoveries contributes to sustainable economic growth in the country; investment related recommendations, which are targeted at broad based investment that will facilitate the exploitation of the resources to the benefit of the economy; and the environmental and climate recommendation, which entail appropriate manage of the environment while exploiting the resources and the impact from the use of the resources.

Growth enhancing policies

- Build competent and accountable institutions: As custodians of the oil and gas sector, the Ministry of Mines and Energy must facilitate and ensure through the legal frameworks and policies, that the mechanisms for accountability are in place.
- National oil companies are potentially useful instruments: The national petroleum company must be held to the highest accountability and transparency standards and prevent it from becoming a state within a state. These will include the following:
 - Implementing well-functioning legal and regulatory systems,
 - Ensuring transparency and accountability for all stakeholders,
 - Controlling petroleum revenues and their spending and,
 - Developing national competence and capacity on the management of the resources.
- Manage petroleum revenue: Through assurance of accountability and transparency, the Ministry of Finance and the Revenue authorities must ensure the collection of due revenues and avoid leakages.
- Maximize local value creation/industrialization: Ministry of Mines and Energy, through the local content policy, must as much as possible that wherever possible local content is prioritised and that strategies to enhance local content are pursued. This will ensure that the share and capacity of local content within the oil and gas value chain grows to adequate levels.
- **Develop a clear framework for renewable energy:** The Ministry of Mines and Energy must prioritise the develop the regulatory framework for the renewable gas sector. This will facilitate transparency and promote confidence among investors that are interested in the sector.

Investment related recommendations

- Invest in interconnectors and transmission (grid-stability): The exploitation of the resources should result in investment in growth enhancing infrastructure that will be able to benefit communities even when the resources are exhausted. Similarly, investment in infrastructure will be able to facilitate diversification of the economy.
- Make incentives and support structures timebound and results-bound: This is advised as an approach that strikes a balance between providing adequate inducement to investors and raising revenues from the resources in a reasonable time.
- Ensure benefits trickle down to local population by scaling up local content and local employment rules over time.

Environmental and climate recommendations

- Maintain a high standard of health and safety: The Ministry of Mines and Energy must ensure that the occupational health and safety in the high risk environments is beefed up and ensure that capacity to enforce is also enhanced. Similarly, education and awareness on environmental impacts must be mandatory and enforced.
- Control of emissions to air, discharges to soil and sea, chemical wastes, and ensure prudent handling of wastewater. This should include aspects such as the prohibition of flaring and venting of gas except for safety reasons stipulated by law.
- Develop and prepare a national decarbonisation strategy and framework: In order to ensure transparency and clear path on the energy mix and transition to clean energy, it is of paramount importance to develop such policy and strategy.

Concluding remarks and vote of thanks

Mr. Ebson Uanguta, Deputy Governor of the Bank of Namibia

Director of Ceremonies

Honourable Tom Alweendo, Minister of Mines and Energy, Honourable Ministers and Deputy Ministers Present, Members of Parliament,

Honourable Regional Governors and Councilors present, Members of the Diplomatic Corps,

Executive Directors of Government Offices/Ministries and Agencies,

Deputy Governors and Board Members of the Bank of Namibia,

Distinguished Speakers, Distinguished Panelists, Captains of Industry, Members of the Media, All invited guests, Ladies and Gentlemen.

Good afternoon!

- 1. It has given us a deep sense of satisfaction as the Bank of Namibia to host the 23rd Annual Symposium under the theme "Maximising Economic Growth from Renewable and Non-renewable Energy Sources in Namibia". As highlighted earlier by the Governor, the symposium seeks to dissect pertinent development and economic issues that impact national performance. It was indeed a thought-provoking engagement which depicted the relevance of such events. I am confident that today's deliberations and discussions will further deepen and stimulate our thinking as Namibians. Therefore, the Bank will continue to oversee issues pertaining to economic development in Namibia and we will continue to deliver, with your support, of course.
- 2. Director of Ceremonies, ladies, and gentlemen! Before I deliver my vote of thanks, I thought it would be ideal and useful to summarise a few key issues and ideas emanating from this Symposium. Today's proceedings have highlighted that there are basics and a value chain, as Dr Nore showed us, to be followed to ensure that we have the basics right. Once we have these basics in place, we will surely be able to avoid the dutch disease, otherwise known as the resource curse.
- 3. The first thing that we need to get right as a country, is the fiscal regime. The fiscal regime is the set of tools that determine how the revenues from oil, gas and mineral and resources are shared between the government

and companies. There are a variety of fiscal tools that can be used to create a fiscal regime to govern oil and mining projects, including royalties, taxes, production sharing, and bonuses. The fiscal regime determines how much revenue Namibia generates from the resources and therefore, the country should continue to employ a mixture of royalties and income-based levies; to afford a balance of protection against financial risks to government as well as investors.

- 4. Secondly, we need to be cognisant of the resource curse that is prevalent in resource rich countries and get ahead of it. While the recent petroleum and green hydrogen discoveries have generated optimism, the experiences of natural resource countries have also raised some apprehensions and hence motivations that Namibia must ensure the resources have a transformational impact on the Namibian economy. It is therefore important to be alert to possible challenges and find ways to avoid the resource curse.
- We need to build accountable resource governance 5. institutions or enhance the current ones. While no single "one-size-fits-all" model of governance can be held up as the gold standard, there is a strong consensus around the role and significance of effective, accountable, and inclusive institutions in promoting sustainable and equitable development. Government organisations which uphold principles of integrity and disclosure, and are subject to objective and thorough oversight processes, are more accountable to the public and less susceptible to corruption and the mismanagement of funds which can divert precious resources away from governments' goals. This means that Namibia will need to ensure that we have the right institutions and governance in place to prevent rent-seeking behaviour.

Through appropriate and transparent management and allocation of oil, gas, and green hydrogen revenues, our country can promote economic diversification and thus build the basis for higher and stable growth. The critical challenge for us is to harness the oil, gas, and green hydrogen resources by making the right strategic choices and synchronizing their implementation in a context that improves the lives of the poor through increased investment in health, education, physical infrastructure, and other non-oil sectors. This ensures that access to these resources is granted in such a way that it prevents mismanagement and other abuses and that the benefits trickle down. The allocation should be done through an auction or open market bidding.

Finally, we need to ensure that the revenue generated is used wisely, and the biggest impact will be through saving for the future generations. As the governor has alluded to, the country has already started to put in place various systems to ensure intergenerational savings.

With that said, there are a few specific policy recommendations below:

Policy Options available for Namibia

- a. Provide a clear and stable regulatory framework for Local Content requirements by reforming the current legal framework to attract investors. Namibia needs to review, evaluate and reform the current mineral royalties and taxes to ensure balance between attracting investors and safeguarding optimal benefits for the country from the abundant resources. Therefore, implement a well-functioning legal and regulatory systems.
- b. Maximise the participation of local suppliers along the value chain. Diversification of the local economy will prevent the reliance on one commodity. This can be achieved by developing national competency and capacity. Therefore, it would be prudent to identify specific sectors for the development of local capacity. The issue of ensuring optimal local content in the exploitation of the resources must remain prominent thereof.
- c. Identify specific sectors for the development of local capacity. It is of vital importance that Namibia's policy reflects its own special circumstances as there are no external models to lean on. However, it would be a shrewd move if the country learns from other countries' successes and failures.
- d. Furthermore, the government should aim to avoid that state oil companies become "states within states" by:
 - Implementing well-functioning legal and regulatory systems,

- Ensuring transparency and accountability for all stakeholders,
- Controlling petroleum revenues and their spending and,
- Developing national competence and capacity.
- 6. All in all, this can be attained by implementing policies that strengthen a system of "good governance", particularly by building competent and accountable institutions.

Director of Ceremonies, ladies and gentlemen,

- 7. I believe we all have a mutual sentiment that the Symposium has been very effective in meeting its purpose. Hence, the need to implement policies and recommendations that would result in robust growth and development in Namibia. In this house, we shall embrace stable governance and conflict-free and corruption-free environment for the benefit of all. This requires further hard work; therefore, let me wish all of us today a lot of enthusiasm, energy, and shared trust during this journey of achieving a better future for all.
- 8. On behalf of the Bank of Namibia Board, Management, and staff, I wish to express my sincere gratitude to all the speakers, panellists, invited guests from various industries and the public for your mouthful contributions. Allow me to take this opportunity to convey a special appreciation to the Minister of Mines and Energy, Honourable Tom Alweendo, for delivering a very insightful keynote address and providing high-level support to the outcome of the Annual Symposium.
- 9. By the same token, I would like to extend my highest respect to other dignitaries in our midst. I would also like to thank the media represented here today, for not only capturing the event, but also for ensuring that the Bank of Namibia Symposium discussions and deliberations will be taken beyond this venue in order to ensure that the nation at large benefits from today's discussions. Also, my gratitude goes to the Management and staff of Safari Hotel for this beautiful and convenient venue and for supplying us with good refreshments during our deliberations. Let me also extend a final word of thanks to the organising committee members, staff members of the Bank of Namibia. Thanks for a job well done.

- 10. Finally, I would like to inform you that as usual, the proceedings of the symposium will be compiled in a booklet, titled: "Bank of Namibia Annual Symposium 2022", which will be posted on the Bank of Namibia's website. Once again, thank you all and the Bank of Namibia looks forward to seeing you at our 24th Annual Symposium next year.
- 11. I wish you a great and fruitful day ahead.

Thank You!

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