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SECTOR REFORM AND UTILITY COMMERCIALIZATION (SRUC)

Background Report on Namibia's Power Sector: IPP Procurement

July 2015

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SECTOR REFORM AND UTILITY COMMERCIALIZATION (SRUC) PROJECT

BACKGROUND REPORT ON NAMIBIA'S POWER SECTOR: IPP PROCUREMENT

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INTRODUCTION

USAID's **Sector Reform and Utility Commercialization Program (SRUC)** aims to enhance the financial viability and long term sustainability of developing countries' electricity systems, thereby enabling their expansion and establishing the necessary preconditions for clean energy investments.

USAID wishes to use the SRUC Task Order to provide support to the power sectors of Zambia, Mozambique and/or Namibia. In August 2015, USAID and SRUC advisors will carry out a scoping mission to each of the three countries to gain a more complete understanding of the current state of their respective electricity sectors. This scoping trip will provide information that can be used to design an effective SRUC technical assistance program that will reduce system losses and/or facilitate IPP program design and implementation.

This *Background Report* has been written to provide USAID and the SRUC team with easily accessible information prior to their departure on the scoping trip. The document provides insights into the Namibian power sector, focusing on recent and current efforts around IPP procurement programs. The Report is structured as follows:

(a) A review of the IPP procurement programs with specific attention on renewable energy procurement, including details on current IPP procurement mechanisms, methodologies and processes (bidding processes, evaluation criteria and selection). Included are details on prior procurements and current plans for private sector participation in the energy sector moving forward. The report also discusses policies, laws and government support for private sector involvement.

(b) To the extent desk research allows, detailed information on IPP procurement activities will include a review of IPP program governance, past IPP transactions, national electricity strategies and generation plans including desired IPP technology mix, details on tariff mechanisms such as feed in tariffs, metrics around the potential size of the IPP market, IPP solicitation, qualification and evaluation processes and criteria, current PPA forms and processes for negotiation.

(c) A review of other international donors' work with IPP procurement programs in order to explore potential areas of collaboration.

Before this, we provide a little information on Namibia's economic profile.

BACKGROUND

Economy & Population

Namibia is a middle-income ($9,490 GNI per capita in PPP dollar in 2013)[1], mid-sized economy (2.2M people in 2014).[2] The largest contributor to the country's GDP is the services industry, specifically the tourism industry and the recent expansion in government services in health and education. Historically, the mining industry, specifically centered on diamond mining as well as uranium extraction, drove the economy. In 1978, nearly 47% of Namibia's GDP came from this industry, but it had decreased to around 11% by 2012.[3] Namibia has achieved high urban electrification rates estimated at around 98%, although the present grid network reaches a far smaller percentage of the rural population, estimated at around 30-40%.[4] Towns are the most populated areas of Namibia (particularly those of the north), especially within informal settlements and established apartment blocks. In these areas, densities are typically above 50,000 people per square kilometer, equivalent to each person occupying an area of less than 20 square meters. In contrast, there is one person per 20 million square meters in some areas of Namibia (Figure 1). This trend is expected to continue as rural residents have been moving to towns to seek regular income and better social services. The country's urban population has grown annually at between 4-5% over the past few decades, while rural populations have only grown at between 1-2% per year in most areas.

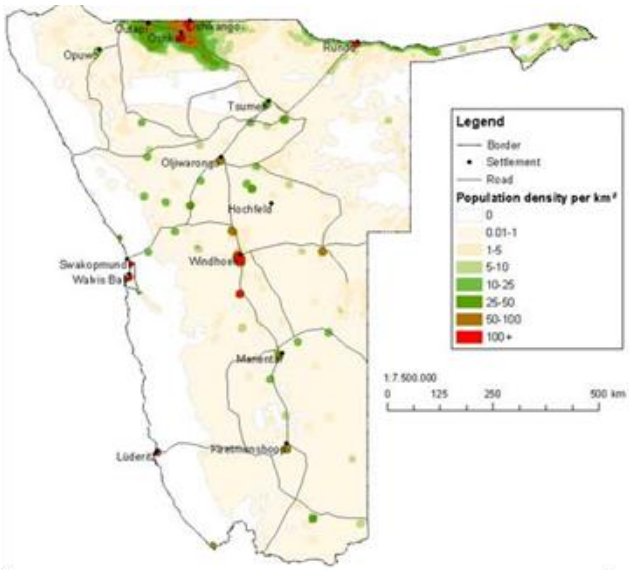

Figure 1: Population Density of Namibia
Source: University of Cologne

The Namibian economy grew at around 5% per year between 2010 and 2013.[5] With the demands for increased urbanization, the energy intensive mining sector, and the limited increase in domestic electricity generation capacity, Namibia is reliant on South Africa for nearly 60% of its electricity. Between 2002 and 2011, electricity demand grew at a compound annual growth rate of approximately 6% per year, while domestic generation has remained largely flat. The vast majority of demand is accounted for by the cities, where the largest portion of citizens with access to electricity live[6].

Electricity Sector: Key Participants & Structure

Key Participants

Namibia's Ministry of Mines & Energy (MME) regulates minerals and energy resources, as well as manages mining, petroleum and geothermal industries. The MME is in charge of collecting royalties, and ensuring that safety, health and environmental standards are

[1] http://data.worldbank.org/data-catalog/GNI-per-capita-Atlas-and-PPP-table
[2] https://www.cia.gov/library/publications/the-world-factbook/rankorder/2119rank.html#wa
[3] http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/2014-2018_-_Namibia_Country_Strategy_Paper.pdf
[4] http://www.naruc.org/international/Documents/NAMIBIA%20Case%20Study.pdf
[5] International Monetary Fund, World Economic Outlook Database, October 2014
[6] http://databank.worldbank.org/data/views/reports/tableview.aspx

consistent with the relevant State and Commonwealth legislation, regulations and policies.[7] Within the Ministry, the Energy Directorate is responsible for the enforcement of the White Paper on Energy Policy of 1998, a document established by the MME with the aim to achieve security of energy supply, social betterment, effective governance, investment and growth, economic competitiveness, economic efficiency and sustainability. The Directorate is broken into three divisions: (1) Electricity, (2) Renewable Energy, and (3) National Energy Fund. The Electricity division is in charge of restructuring the regulatory authority[8], the Electricity Control Board (ECB).

ECB is a legal regulatory authority established through the creation of the Electricity Act of 2000, which was replaced by the Electricity Act of 2007. The Electricity Act expanded the ECB's regulatory mandate and core responsibilities. The ECB is responsible for regulating the electricity supply industry, including electricity generation, transmission, distribution, supply, and import and export, through setting tariffs and issuance of licenses.

NamPower is the state-owned and vertically integrated electricity generator, trader, and transmission entity. The company owns and operates the majority of all Namibia's transmission and generation assets, as well as some distribution facilities. In addition to generation, the company also owns shares in the regional electricity distributors.

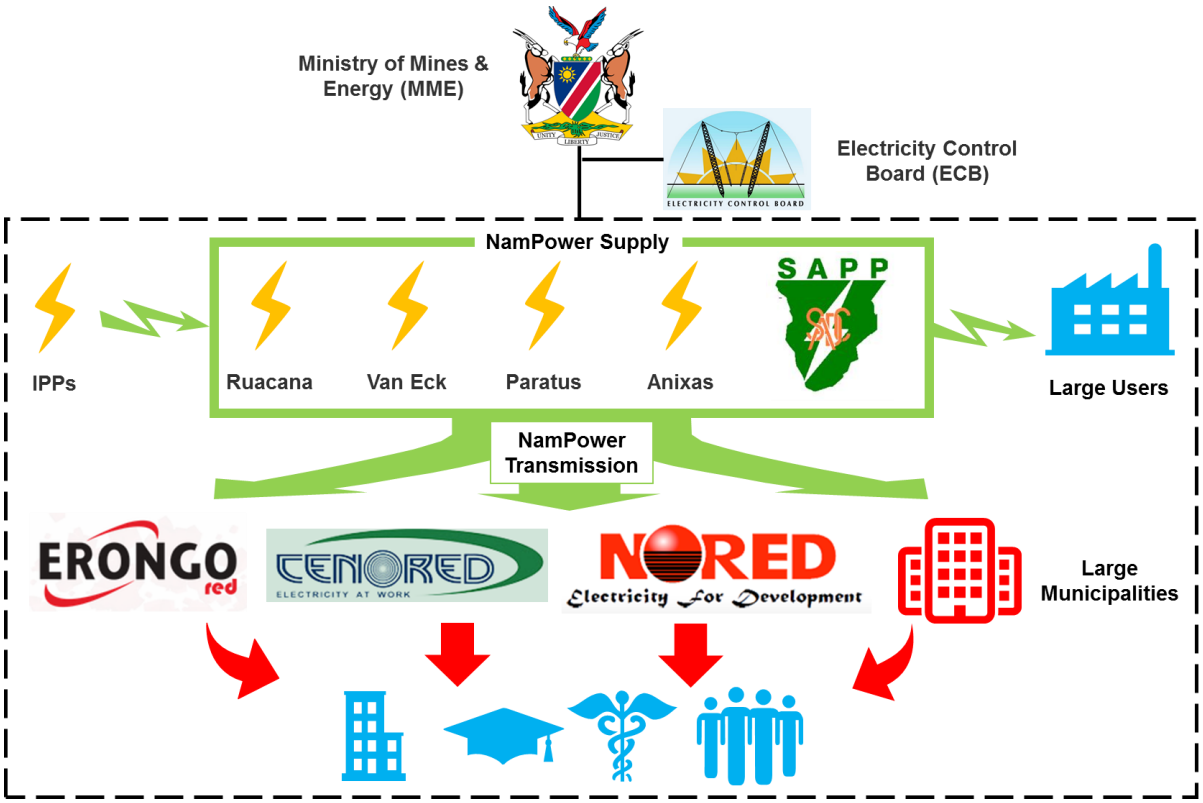

Figure 2: Diagram of Electricity Industry Set Up in Namibia

Electricity Industry Structure

The generation and trading of electricity in Namibia are fully managed by NamPower, as the single buyer. All independent power producers (IPP) that would like to sell electricity into the grid have to do so through NamPower under a power purchase agreement (PPA).

[7] http://www.mme.gov.na/about-us/
[8] http://www.mme.gov.na/directorates/energies/

Name	Size (MW)	Type	Status
Ruacana Hydropower Station	330	Hydro	Operating, Owned by NamPower
Van Eck	120	Coal	Operating 1/4 Capacity, Owned by NamPower
Paratus	17	Diesel	Operating, Owned by NamPower
Anixas	22.5	Diesel	Operating, Owned by NamPower

Table 1: NamPower's Major Generation Assets

The Ruacana Hydropower station is the largest generation asset in the Namibian power supply system, producing 99% of the electricity generated domestically in the 2013-2014 period.[9] [10] A fourth unit has been recently commissioned increasing its capacity from 240 MW to 330 MW. However, Ruacana is a run-of-river plant and the variations in Southern Angola's rainfall limit its performance. It is therefore operated as a base load plant during the rainy season (February to May) and for peak load the rest of the year.

In 1973, Van Eck, a 120 MW coal-fired electricity generation plant, was commissioned. Largely inefficient generation and complicated maintenance make running the Van Eck plant impractical. These constraints have resulted in a rehabilitation project for the plant during FY 2014, which has successfully brought one boiler back online generating 30 MW.[11] Increasing the complications with the plant's operations, the coal necessary to run Van Eck is not produced domestically but imported, resulting in more costly generation. The diesel fired Paratus (17 MW) and Anixas (22.5 MW) power plants complete NamPower's portfolio, the latter having been commissioned fairly recently in November 2011.[12] Anixas generated the remaining 1% of power not produced by the Ruacana plant during the 2013-2014 period.[13]

In terms of renewable energy (RE) generation in Namibia, a license must be issued to an RE producer, and then a PPA has to be negotiated with NamPower acting as the single buyer and grid operator. The ECB has issued several licenses for RE generation to interested independent power producers (IPP). As of 2012, the ECB had issued licenses for 44 MW of RE generation capacity, and has received an estimated 886 MW of new solar license applications.[14] To date, we believe a single, small PV unit has been commissioned.

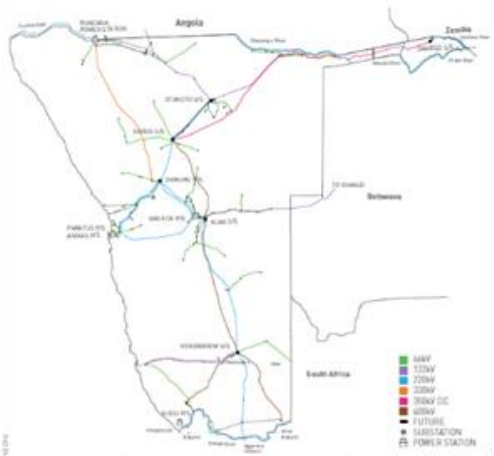

Figure 3: NamPower Transmission Assets
Source: NamPower Annual Report 2014

The transmission system is owned and managed by NamPower which is the single buyer in Namibia. NamPower has had a history of successful transmission, and prides itself on being "known for innovation, customer focus, and proactive management"[15]. NamPower has a number of capital improvements outlined in its Transmission Master Plan 2012, the more near term projects focus on strengthening and upgrading current lines. There

[9] http://www.irena.org/DocumentDownloads/events/2013/October/IRP%20NAMIBIA%20Muyambo%2020130927.pdf
[10] http://www.ecb.org.na/download.php?fl_id=119
[11] http://allafrica.com/stories/201506010344.html
[12] http://www.reegle.info/policy-and-regulatory-overviews/NA
[13] http://www.ecb.org.na/download.php?fl_id=119
[14] http://www.irena.org/DocumentDownloads/events/2013/October/IRP%20NAMIBIA%20Muyambo%2020130927.pdf
[15] http://www.nampower.com.na/public/docs/annual-reports/NamPower%20Annual%20Report%202014.pdf

has been little growth in the number of transmission and distribution lines in NamPower's network since 2011.

Power distribution is carried out by a number of different entities. This includes several larger Regional Electricity Distributors (REDs) that were formed by the merging of services of multiple smaller electricity distributors from various municipalities and town councils. These individual institutions are now shareholders in the REDs. As the country's capital city, the City of Windhoek Municipality manages the largest amount of electricity distribution. The next largest portion of distribution is operated by the three regional REDs, namely Northern RED (covering the northern areas of the country), Erongo RED (covering the central coastal region), and CENORED (covering the area between Erongo RED and Northern RED). Of the three distribution companies, CENORED appears to suffer the most difficulty meeting benchmarks, and its operations are characterized by higher energy losses (of 15%[16]) and lower efficiencies than its peers. Two other REDs have been proposed and have been licensed, but there have been difficulties converting local distribution to REDs. The remaining distribution (largely outside of the REDs' geographic coverage) is fragmented and managed by smaller municipalities, village authorities, farmer schemes, NamPower, and smaller companies including the South African owned Southern Electricity Company[17].

New Energy Sector Projects

Generation

NamPower is developing the 800 MW Combined Cycle Gas Turbine (CCGT) Kudu Power Station. If the Kudu Power Station can be commissioned, it will be the first CCGT power station in Southern Africa of that magnitude, and will be the single largest project in Namibia to date[18]. The project would represent a significant increase in Namibia's power generation composition, and as a result has led to the utility stating a lack of interest in long term power purchase agreements due to the anticipated oversupply the Kudu project will provide in the region.[19]

The Van Eck power station is undergoing a rehabilitation to bring the high operational costs of the old power plant down, and bringing 90MW of base load into the Namibian power sector. 30MW have already been rehabilitated at the plant, and the remainder of the plant rehabilitation should finish in late 2015, bringing an additional 90MW online. [20]Also as an upgrade to current capacity, the Ruacana hydro power station is undergoing an increase in capacity to 347MW. [21]

There are a significant number of smaller, renewable projects at varying stages of development, the largest component of which being a wind farm, in the south west of the country. Diaz Power is the developer, and is expected to begin commercial operation after signing a conditional license for a 44 MW development.[22] [23] Additionally, there is a smaller 20-30 MW solar plant passing through the approval process, being developed by Greenam. This project has faced delays for various reasons.[24] Both projects are designed to operate as IPPs.

[16] http://www.ecb.org.na/wp-content/uploads/2013/11/ECB-Annual-Report-2013.pdf
[17] http://www.ecb.org.na/wp-content/uploads/2013/11/ECB-Annual-Report-2013.pdf
[18] http://www.nampower.com.na/public/docs/kudu/KP%20Macro%20Economic%20%20Study%20final%2025%20July%202011.pdf
[19] http://allafrica.com/stories/201505071117.html
[20] http://allafrica.com/stories/201506010344.html
[21] http://www.nampower.com.na/Page.aspx?p=185
[22] http://observer24.com.na/business/2137-namibia-to-utilise-wind-energy
[23] http://www.ecb.org.na/download.php?fl_id=119
[24] http://www.informante.web.na/ruacana-helps-struggling-nampower.13847

Electricity Market/Tariff Structure

The average electricity tariff in Namibia is between $0.086/kWh – $0.102/kWh. Tariffs for generation, transmission and distribution in Namibia are determined separately.

Tariffs for generation in Namibia are determined using a "cost plus" methodology. The approach adds the revenue requirement of a utility plus a regulated return. All allowable costs of the utilities to cover the cost of supply including primary energy, energy imports, bulk electricity purchases, operating and maintenance costs, overheads, asset-related costs, and investment costs, are included in the utility's revenue requirement. Namibia imports over 60% of its electricity requirements, at a higher cost than bulk local supply. Therefore the end-user tariff is substantially determined by imports, the cost of which the ECB has no influence over until NamPower submits a request for tariff adjustments.

Transmission and distribution tariffs are not determined through cost reflective tariffs, but through a revenue-requirement method as a mechanism in order to phase in cost reflective tariffs. The utility has also begun the development of a grid code for the Namibian electricity industry to identify technical requirements for connection to the electricity grid by third parties such as IPPs and independent distribution entities.[25]

In addition to generation tariffs, Namibia has instituted Local Authority Surcharges, which are transmission tariffs established to provide financial support to Local Authorities and Regional Councils after the two groups passed the electricity supply function to the newly formed REDs. The Local Authority Surcharge is a fixed dollar amount per year that is added to the electricity tariffs and collected by the REDs on behalf of the relevant Local Authorities and Regional Councils.

The ECB embarked on a project to develop REFITs for all renewable energy technologies in 2011 which will soon open up the process to IPPs, utilities and other government departments. The REFIT program is establishing the rationale for an appropriate cost-plus-return structure for RE developments that will adequately incentivize the private sector to develop these resources. Additionally, some select projects are being used to test the Model Transaction with appropriate Model PPA and associated regulations .[26] The REFIT program's message to the private developers is "if you build it, we are obligated to buy it at the pre-determined price".[27] Below are the proposed REFIT tariffs:

Type	MW						
	0.5	0.75	1	2	3	4	5
Biomass	$ 0.19	$ 0.18	$ 0.17	$ 0.15	$ 0.13	$ 0.12	$ 0.11
Wind	$ 0.17	$ 0.16	$ 0.14	$ 0.13	$ 0.12	$ 0.11	$ 0.11
Solar	$ 0.29	$ 0.28	$ 0.28	$ 0.26	$ 0.24	$ 0.23	$ 0.23

Table 2: REFIT Tariff Proposal[28]

Namibia Utility Financial and Operational Position

NamPower has been performing strongly over the past few years despite the challenges the company faces with increasing reliance on imports, record high peak demand, and increasing direct cost of supply relative to allowable increases in its selling price. NamPower is pushing for cost reflective tariffs, but it is required to petition the ECB to increase tariffs to cover the financial obligations of providing service. In the coming FY 2015/16, the ECB raised tariffs by 72% of NamPower's request, citing long term goals to keep down the cost of living and economic production in Namibia.[29] As such, the lower tariff may result in negative

[25] PMRC ENERGY SERIES: PROMOTING ENERGY INVESTMENT THROUGH COST REFLECTIVE TARIFFS 2014
[26] RENEWABLE ENERGY FEED-IN TARIFF (REFIT) FOR NAMIBIA (2014)
[27] http://www.ecb.org.na/wp-content/uploads/2014/04/Namibia-Draft-REFIT-Rules-APRIL-2014.pdf

[28] http://www.ecb.org.na/wp-content/uploads/2014/04/Namibia-Draft-REFIT-Rules-APRIL-2014.pdf
[29] http://allafrica.com/stories/201505071263.html

free cash flow at Nampower, and an increase in debt in FY16.[30] In the period of 2013 to 2014, NamPower's sales remained flat, largely attributed to efficiencies implemented in the mining sector as well as increased adoption of distributed solar in areas that they provide power. Revenue increased over the same period, but the gross margin decreased from 50% to 46%, illustrating the increasing cost of electricity which rose 48% in 2013 and 30% in 2014.

In terms of transmission, NamPower has a history of strong performance in electricity transmission. The company has set goals to upgrade the entire national transmission network and install over 700 km of new lines, although NamPower has noted they are currently deficient in meeting this goal. This is of particular concern as the company has also outlined goals to increase rural electrification, as well as commission a number IPP solar and wind farms.[31]

NamPower has successful collections and limits its credit risk successfully. The vast majority of the utility's credit risk in supplying electricity rests with the REDs (63%) and mining companies (23%), leaving very little risk on end use customers. Trade and other receivables over 30 days overdue are reported at less than 1%[32].

Namibia and Regional Interconnection

Namibia's participation in the regional power market is also through NamPower. NamPower has long participated in regional power transactions in order to diversify sources of supply, and keep tariffs low. NamPower is the only entity that can trade regional power in the country.

NamPower has long had bilateral contracts with a number of utilities in the SADC region, particularly ESKOM of South Africa. During the dry season, the utility imports around 80% of its power requirements from the surrounding countries. Most recently, NamPower signed a new 15 year 80 MW PPA with the Zimbabwe Power Company to replace an initial PPA signed in 2006. Under the old agreements, NamPower and the Zimbabwean utility would rehabilitate the Hwange Power Station in Zimbabwe. NamPower procured USD40 million in funds and in return, ZESA was to provide 150 MW[33] of power to Namibia for 8 years.

The partners developing the Kudu Gas Power Plant include NamPower with the majority ownership, as well as CEC Africa, a wholly owned subsidiary of CEC, the Zambia based power transmission and distribution company. NamPower will sign a PPA with Kudu Power and will be the off-taker of all the power from the Kudu Power Station[34]. Of the 800 MW produced by Kudu Power, 400 MW will be for consumption in Namibia and 300 MW will be sold to CEC through a Power Export Agreement (PXA) and the remaining 100 MW is expected to be exported to South Africa through a similar PXA arrangement. The table below shows NamPower's regional trading partners[35].

Utility	Agreement	Duration	Capacity
Eskom (South Africa)	Supplementary Power Supply (PS) Agreement	Year on Year	Up to 200 MW (interruptible)
Eskom (South Africa)	Bilateral PS Agreement	10 Years (Signed 2006, expires 2016)	Up to 300 MW (Mainly Off Peak)

[30] http://www.nampower.com.na/public/docs/investor-relations/Fitch%20NamPower%202015%20Report.pdf
[31] http://www.nampower.com.na/public/docs/annual- reports/NamPower%20Annual%20Report%202014.pdf
[32] http://www.nampower.com.na/public/docs/annual- reports/NamPower%20Annual%20Report%202014.pdf
[33] http://constructioninsightmagazine.com/electricity-in-short-supply-and-expensive-nampower-md/
[34] http://www.nampower.com.na/public/docs/kudu/Kudu%20Power%20Project%20-%20Update%20Presentation%20-%20September%202014.pdf
[35] NamPower Electricity Supply Update, www.nampower.com.na

Utility	Agreement	Duration	Capacity
ZESA (Zimbabwe)	Power Supply Agreement	15 Years (Effective April 2015)	80 MW (Firm)
ZESCO (Zambia)	Power Purchase Agreement	10 years (Signed 2009, Expires 2019)	50MW (Firm)
Aggreko (Mozambique)	Power Purchase Agreement (Profiled Firm Supply)	2.5 Years with Option to Extend (Effective June 2013)	90 MW (Mid Merit)

Table 3: NamPower's Regional Trading Partners

Cross Border Transmission Lines

As mentioned above, Namibia imports approximately 80% of its power from surrounding countries during the dry season. Additionally, because of the deal with the Zimbabwean utility, NamPower imports approximately 30% of its power from Zimbabwe alone. Several existing and planned cross border transmission lines will enable the import of power, and once Kudu is complete, the export of power from Namibia to South Africa and Zambia.

The Caprivi Interconnect is the only major transmission network development between north and west SAPP in the last 15 years[36]. The project consisted of the construction of a 200 MW (upgradeable to 600 MW) HVDC transmission connection from Zambia to the Namibian electricity network, interconnecting the northern and western parts of the SAPP network. The line reinforces the electricity transmission interconnection between Zambia, Namibia and South Africa and provides a reliable route for electricity exports and imports while supporting a competitive regional power market. The 970 km new transmission line starts in the north-eastern tip of Namibia and ends in central Namibia[37].

The highest priority project connecting to Namibia is the ZIZABONA regional interconnect which will connect and reinforce the power systems of Zimbabwe-Zambia-Botswana-Namibia. The ZIZABONA project will allow these four countries to export and import more power and trade with each other and with the wider SAPP area[38].

Another priority project is the Kudu Transmission Integration project. Project planning and preparation is at an advanced stage and will integrate the Kudu Transmission station into the NamPower Transmission Network and the Eskom transmission network. The project is anticipated to include two 400 kV feeders to the Eskom network and a 400kV feeder to the NamPower network as well as other deep connection upgrades to the NamPower network, depending on executed PPAs.

IPP PROCUREMENT PROGRAM

IPP Strategy

The ECB is considering implementing a "Modified Single Buyer Model" rather than continue with NamPower as Namibia's only electricity buyer. The new model would allow IPPs to sell electricity to large power users, such as Regional Electricity Distributors (REDs), Local Authorities and Mines, as well as NamPower. All power exports would still be required to first be sold to NamPower before leaving the Namibian grid. The Cabinet of the Government of the Republic of Namibia (GRN) has approved the restructuring from single buyer to modified single buyer of the Electricity Supply Industry (ESI). The main thrust of the program is to

[36] Project Completion Report, EU-Africa Infrastructure Trust Fund
[37] http://www.eu-africa-infrastructure-tf.net/activities/grants/caprivi-interconnector.htm
[38] http://www.sapp.co.zw/docs/120712_ZIZABONA%20Presentation%20to%20IRT_Final.pdf

improve service delivery and financial viability of the industry. This model has fallen behind in its development due to vague “structural changes” that are required by the ECB to convert into a multi-sector energy regulator[39].

One of the key reform initiatives in the recent past has been the establishment of a number of financially viable REDs through the consolidation of the current fragmented distribution industry. A Restructuring Study completed by the MME in 1998 recommended that Namibia be divided into five areas and that a single electricity distributor be established in each area that has sole responsibility for electricity distribution in that area. Prior to the establishment there were over 70 different distribution licenses in Namibia[40]. There are currently 3 REDs and two others have been proposed[41].

In general, NamPower is hesitant to invest in major generation initiatives as the anticipation of 800 MW capacity addition after the construction of the Kudu Power plant creates a short term rather than long term demand for power. Thus, NamPower is pursuing “Short-Term-Critical-Supply Initiatives” rather than longer term PPA agreements with IPPs.[42] This has created a large market for smaller, more distributed renewable energy projects, which have benefitted from the REFIT tariff.

In 2006, U.S. Trade and Development Agency provided technical assistance on the creation of an IPP framework for Namibia which provides model PPAs for IPPs, suggestions for improving the market for IPPs, and regulatory and legal guidance around structuring a successful sector for private investment. NamPower prominently displays this document as its guiding document for IPP development, although the document is now almost 10 years out of date. Additionally, many of the market conditions which the document was designed around have changed dramatically.

Current IPP Environment

Below is a list of the licensed IPP producers in Namibia as of ECB’s list of licensed IPPs[43]. All IPPs require progress reports in monthly instalments to ECB.

The Xaris Power Plant is targeted for commissioning in July 2015, and would provide 300 MW of generation capacity from imported natural gas. NamPower could take up 30% equity in the power plant, and will enter into a long-term PPA with Xaris for transmission of all power generated. Namibia has a significantly short supply of water, so the water supplied to the plant would be delivered from an off shore reverse osmosis plant, which will desalinate the water prior to being used in the turbines. In order to complete the PPA, a decrease in load was agreed upon once the Kudu Plant is finished with construction. [44]

The Arandis Power proposal is unique in its construction, as the PV component in the proposal to NamPower does not connect directly to the national power grid, but the power flow is managed by the power station’s internal control room to decrease the power output from the heavy fuel oil generators. It is anticipated that this function will reduce the fuel bill of the power station and therefore bring down the overall cost of electricity for NamPower and the country. NamPower and Arandis have negotiated a 20 year PPA, and it is anticipated the power station will take 22 months to construct. The project also includes the construction of a brand new connection substation and a short power line which will both be donated to NamPower after commissioning.[45]

[39] http://www.ecb.org.na/wp-content/uploads/2013/11/ECB-Annual-Report-2013.pdf
[40] http://www.ecb.org.na/download.php?fl_id=119
[41] www.ecb.org.na/download.php?fl_id=127
[42] http://www.nampower.com.na/Page.aspx?p=165
43 http://www.ecb.org.na/images/docs/Licensing/licenses-issued/List%20of%20Independent%20Power%20Producer%20(IPP)%20licensees.pdf
[44] http://www.namibiansun.com/business/xaris-energy-plant-commissioned-in-july.77031
[45] http://www.republikein.com.na/sakenuus/unique-solar-hibrid-power-plant-namibia.222560

Traditional Energy – Fossil Fuels

Name	Type	Size (MW)	Status
Xaris Energy	Gas	300	Commissioning in 7/15 NP uptake
Arandis Power Station	Heavy Fuel (and Solar)	70 + 50	Awaiting final agreement[46], NP uptake

Table 4: Fossil Fuel IPP projects

Renewables

There are a variety of renewable generation projects in an assortment of stages of development in Namibia. Below are the 10 largest projects currently with active licenses in the country. [47] From the chart, it is clear that solar is in large demand in Namibia, particularly through the REFIT program, partially due to the fact solar has the highest REFIT tariff. Projects not mentioned below but included in the table are largely absent from the public domain.

Diaz Wind Power is a joint venture between United Africa Group, Sojitz Corporation, and KOMIPO poised to generate 44 MW in the Spergebiet National park at a cost of around $150 million. [48] NamPower negotiated Power Purchase Agreements and Transmission Connection Agreements in 2014 with Diaz Wind Power[49], but there has not been any mention of the project since. It was expected that commercial operation would begin in 2014, but neither NamPower nor any of the members of the joint venture have confirmed the commissioning.[50]

The GreeNam Electricity project is a collection of three separate 10 MW solar plants, all of which were in the process of negotiating a PPA with NamPower, as of April 2014. GreeNam has requested certain “political risk” protection in their Implementation Agreement, which is noted by NamPower, but NamPower has left the details vague.[51]

The Sertum Energy project is currently in the scoping phase undergoing an environmental impact assessment, and discussing PPA agreements with local mines. The program is being led by a joint effort from Sertum Energy and Sintec (an Italian focus PV developer). The project is being considered under the REFIT program, but is largely still speculative at this point. [52]

The final project with publically available information is the Omburu Solar Photovoltaic Park. The developer, InnoSun Energy Holding, part of French wind developer InnoVent, commissioned the project in mid June 2015. The project is Namibia’s first utility-scale PV project (4.5 MW), and has negotiated a PPA between InnoSun and NamPower.[53] The electricity generated by Omburu is transmitted along a 1.2 km line and provided to the Omburu transmission substation where it is sold to NamPower.[54]

Name	Type	Size (MW)	Status

[46] http://allafrica.com/stories/201406061409.html
[47] http://www.ecb.org.na/images/docs/Licensing/licenses-issued/List%20of%20Independent%20Power%20Producer%20(IPP)%20licensees.pdf
[48] http://naseemabutler.wix.com/unitedafricagroup#!projects/c1tsl
[49] http://www.ecb.org.na/images/docs/Annual%20Reports/ECB_Annual_Report_2014.pdf
[50] http://ppi-re.worldbank.org/data/project/uag-diaz-wind-farm-6485
[51] http://www.nampower.com.na/public/docs/media/Media%20Briefing%2015%20April%202014%20final2.pdf
[52] http://sintecweb.wix.com/sintec#!projects/cjg9
[53] http://www.pv-magazine.com/news/details/beitrag/innosun--delta-electronics-partner-on-major-pv-project-in-namibia_100019470/#axzz3c9uswGTC
[54] http://www.namibian.com.na/indexx.php?id=26657&page_type=story_detail

Diaz Wind Power (Pty) Ltd	Wind	44	Commercial Operation to Start, NP uptake
GreeNam Electricity (Pty) Ltd	Solar	30	Commercial Operation to Start, NP Uptake
Sertum Energy	Solar	27	REFIT
Paramount Infrastructure Investment	Conc. Solar	22	REFIT
OKA Investment	Solar	20	REFIT
Ark Industries Namibia (Pty) Ltd	Biogas	16	Progress Report Due, REFIT
Namibia Solar World	Solar	5	REFIT
NamEnergy Solar	Solar	5	REFIT
Momentous Energy	Solar	5	REFIT
OMBURU Solar PV Park	Solar	4.5	Operational (5/15/15)

Table 5: Renewable IPP projects

Legal & Organizational Structure around Power Purchase

The IPP and Investment Market Framework outlines the legal and regulatory framework for PPAs for IPPs, and the Guidelines for Independent Power Producers outlines the operational requirements for establishing an IPP. The ECB has the authority to approve all power purchase agreements entered into by electricity industry participants. Currently, NamPower is the single purchasing entity from all IPPs. An issued Electricity Generation Licenses must be renewed annually[55].

The Electricity Act of 2000 was the foundational legislation for the establishment of the independent regulator, the ECB. The Electricity Act of 2000 also laid out the first licensing regime for electricity industry operators. After identifying a significant number of issues in the Electricity Act of 2000, the Electricity Act of 2007 made substantial updates, providing a structure for setting technical codes, market rules, pricing and other features to protect private investment. The new act also supported the transferal of assets to the REDs from municipalities, while giving full regulatory authority to the ECB for distribution. With the new legislation, the ECB requires that the generation, trading, transmission, supply, distribution, importing or exporting of electricity be carried out only by parties in possession of a license[56].

In addition to the Electricity Acts, the Foreign Investment Act of 1990 established the rights and duties of foreign investors. With regards to IPP investments, the most relevant provisions of the Act establish no need for a local investor along with straightforward expropriation provisions.

The central document governing business practices within the sector is the Competition Act of 2003 which discusses the execution of market exchange principles and identifies criminally preventive business practices. In terms of IPP investments the act governs the relationship between transactional entities, forbids price fixing, and prevents the cartelization of industrial sectors.

In an attempt to increase governance, oversight, and performance within the country's state-owned enterprises, the Namibian government passed the State-owned Enterprises Bill of

[55] http://www.drfn.info/docs/cbend/reports/CBEND_IPP_Handbook.pdf
[56] http://www.gsb.uct.ac.za/files/Namibia.pdf

2006.[57] The newly established Governing Council mandates governance and performance agreements, annual business and financial plans, and performance agreements of management staff[58].

Review

Strengths

There have been **a number of recent successes in Namibia**, both from the traditional and RE perspective. Two large IPPs have reached PPA agreements with NamPower and are expected to reach commissioning. The first IPP to set up a photovoltaic power plant in Namibia successfully began operations in May 2015. Additionally, Namibia has released guidance on a seemingly popular REFIT program among developers, as there are a number of substantial RE projects receiving licensing from NamPower.

NamPower is **strong financially, and well respected** in the region. With its largely transparent discussion of its operations and significant engagement with the private sector on a variety of projects, NamPower is far better positioned to engage the private sector than many Southern African utilities in future loss reduction efforts.

Improvement Areas

It is clear to all members of the electricity sector that Namibia is in need of significant investment to meet the growing demand for electricity domestically.

The **current single buyer model** where IPPs are forced to sell all power to NamPower is much less investor oriented then a Modified Single Buyer Model which has yet to be implemented by Namibia. In the Modified Single Buyer Model, IPPs would have the option to sell to REDs or large customers, yet would still be restricted to sell power nationally.

NamPower's **IPP framework** is founded on a document that **is nearly 10 years old**, and may no longer accurately reflect the legal, regulatory, and economic environment in which NamPower currently finds itself existing. Updates to best practices from previous IPPs in Namibia, updates to current regulatory and legal frameworks, and adjustments to draft PPAs may be warranted.

Namibia has placed a **significant amount of risk in the success of the Kudu Gas project**, especially since NamPower seems to be delaying other projects in the anticipation of the large increase in capacity coming from the project. While there are some "Short-Term-Critical-Supply Initiatives" that are bearing fruit, such as the Van Eck rehabilitation, the sum total of all these projects will fall short of the anticipated Kudu production.

Optimal RE generation developments are distributed widely geographically within Namibia in addition to significant differences in population density. Currently, the REFIT proposal provides that all projects be constructed within a reasonable distance (10 km currently) of each other if they are to be allowed to take advantage of the project. Off-grid or micro-grid RE could support small farming areas and communities, but appear to be unsupported by the REFIT program. Namibia must design a cohesive strategy to supporting distributed RE IPP developments.

DONOR IPP / GENERATION INITIATIVES

USAID

USAID's Africa Infrastructure Program is providing capacity-building and transaction support services to the Electricity Control Board (ECB) of Namibia to establish the framework and

[57] Namibia IPP and Investment Market Framework Technical Assistance
[58] http://www.oecd.org/daf/ca/corporategovernanceofstate-ownedenterprises/44787207.pdf

enabling environment to attract private capital.[59] Through this platform, USAID has been working to develop a renewable energy feed-in tariff (REFIT) for Namibia requested by the Electricity Control Board (ECB) of Namibia. The program has worked to propose Renewable Energy Feed-in Tariffs (REFITs) along with accompanying regulations in order to create an environment beneficial to organizing Independent Private Producers (IPPs) and their investors into Namibia's electricity sector[60]. The final report has been submitted for this project, and the recommendations are currently being used by the Namibian government. The government is in the process of soliciting responses from various developers in the industry, and adapting the recommendations to suit the needs of developers. Ass of 2014, the tariffs are intended to provide an acceptable return on equity which is retained to be 16% Nominal ROE After Tax, and the ECB has broken down tariffs built on the calculations and assumptions from the USAID project[61]. The final stage of the project will provide transaction advisory services to the associated agencies in Namibia, ECB, and the utility, NamPower, for each to process a model project under the REFIT program[62].

World Bank

The Electricity Control Board of Namibia and the World Bank worked on the National Integrated Resource Plan (NIRP) for Namibia. The NIRP recommends new generating projects that should proceed in the next 10 years and provides perspectives for the following decade. This plan should map out the medium and long term development plans for the generation, trading, and transmission of grid electricity in Namibia. MME has mandated the ECB to take the lead to manage the NIRP development process on behalf of the Ministry[63]. The electricity aspect was completed in 2012, and has made significant predictions on future generation, capacity needs, and load types. It is unknown how these predictions have driven changes in the MME.

[59] www.ecb.org.na/wp-content/uploads/.../REFIT-Report-Final-Draft.doc
[60] http://www.ecb.org.na/wp-content/uploads/2014/04/Namibia-Draft-REFIT-Rules-APRIL-2014.pdf
[61] http://www.ecb.org.na/wp-content/uploads/2014/04/Namibia-Draft-REFIT-Rules-APRIL-2014.pdf
[62] https://www.fbo.gov/index?s=opportunity&mode=form&id=97a225a5efdce0e16d374ae4acf3e8a5&tab=core&_cview=0
[63] http://www.ecb.org.na/pdf/nirp/Task%202%20Final%20Load%20Forecast%20Report.pdf

SOURCES

USAID Country page

DOS Country page

World Bank country programs

IFC country programs

Utility company websites – investor decks

EIA

Legal reviews

Local government agency websites