

Meeting Changing Needs – Namibia’s Electricity Supply Sector

Most electricity consumers take it for granted that lights go on at a flick of a switch. Click, and there is light. Turn, and the stove heats up. Simple. We have come to accept that we can use electricity as and when we need it. Often though, we are not aware of the many complex activities required to generate, transmit and distribute electricity while at the same time ensuring that it is and remains reliable, affordable and accessible.

To be able to use electricity, one has to generate it. In 2010, Namibia has three electricity-generating power stations: Ruacana, Van Eck and Paratus. Ruacana is a hydroelectric power station on the Kunene River with a capacity of 249 MW. Currently, a fourth turbine is installed and will add 92 MW from 2012. As a run-of-river station, Ruacana only generates electricity when the flow in the Kunene River is sufficient; this is not always a given. The coal-fired Van Eck power station on the northern outskirts of Windhoek has a capacity of 120 MW. Commissioned in 1972, it has become expensive to operate on a continuous basis, and is nowadays only used to bridge short-term supply gaps. The same applies to Paratus in Walvis Bay, which is a heavy fuel-oil station with a generating capacity of 24 MW. The new Anixas diesel-powered station at Walvis Bay will add some 22 MW, and serve as an emergency standby plant from 2011.

In 2009, Namibia’s total annual electricity consumption amounted to some 3.6 billion kWh, of which 60% was imported. Ruacana supplied more than 92% of Namibia’s locally-generated electrical energy. To appreciate the national electricity consumption, imagine every one of our 2.1 million citizens having 3 old-fashioned 65 Watt incandescent light bulbs lit up throughout the year; that is the amount of electricity we collectively used in 2009.

Presently, the total installed electrical generation capacity of 393 MW (excluding Ruacana’s 4th turbine and Anixas) is insufficient to meet Namibia’s demand for electricity. To make ends meet, Namibia imports the shortfall, mainly from South Africa and Zimbabwe. Extensive transmission networks link us to across-border suppliers, adding some 600 MW. The newly-built Caprivi Link connects Namibia with Zambia, Zimbabwe and into the eastern parts of the Southern African Power Pool. It will initially contribute some 300 MW to Namibia’s electricity portfolio, and can be upgraded to 600 MW later. The Caprivi Link will reduce Namibia’s dependence on the South African transmission grid by providing a northern alternative for electricity imports and exports.

Namibia’s Ministry of Mines and Energy (MME) is the custodian of the country’s energy sector, and by implication, Namibia’s electricity sector. The Electricity Control Board (ECB) is the electricity sector’s regulator. It sets licence conditions, and defines, oversees and manages the issuance of operating licences. The sector’s other main actors are NamPower, the Regional Electricity Distributors, and a handful of local authorities, municipalities, large power users such as mines, and consumers.

Namibia’s only electricity generating utility, NamPower, has three core businesses, i.e. generation, trading and transmission. The utility also fulfils the role of system operator, tasked to balance electricity supplies with the prevailing demand. All electricity imports and exports, and all wheeling arrangements using the Namibian electricity transmission grid are controlled and managed by NamPower.

The Regional Electricity Distributors (REDs) are responsible for the supply and distribution of electricity to consumers within their respective license areas. In 2010, three REDs are established and fully operational: NORED operates since 2002 and serves the country's north-central regions. Both CENORED and Erongo RED were established in 2005, and distribute electricity in the north-central and the Erongo region respectively. Two additional REDs, i.e. one for the central and one for the southern regions, may be established in future.

The story of Namibia's electricity sector in the two decades following the country's Independence is one of measured change. Key developments that have markedly shaped our electricity sector include the formulation of the White Paper on Energy Policy, the promulgation of the Electricity Act, the creation of the Electricity Control Board, the establishment of the REDs, and the considerable efforts that have gone into rural electrification.

Today, Namibia's electricity sector faces several challenges. Here are a few of the often conflicting imperatives: safeguarding the security of supplies; developing the national generation portfolio; introducing cost-reflective tariffs without throttling the economy; stimulating investments and attracting new sector participants; creating sustainable foundations for the REDs; continuing the electrification of rural Namibia, and developing Namibia's rich renewable energy resources. Tall orders indeed!

Namibia's Vision 2030 envisages the transformation of the country into an industrialised nation, with a viable natural resources-based export sector and skills-based industrial and service sectors using market-oriented production systems. The Vision implies rapid industrialisation, and assumes a Namibian electricity supply industry that can grow sustainably and deliver affordable and reliable electrical energy on demand. This will not happen by itself.

Electricity tariffs play a pivotal role in ensuring that Namibia's changing electricity needs are met. Tariffs determine the viability of an electricity business, and are an important tool to stimulate the productive use of energy. Investments by newcomers hinge on attractive returns and the ease at which the market can be accessed. By 2011/2012, NamPower will have to introduce cost-reflective tariffs, which may create additional opportunities for electricity sector investors.

While some investors have announced their intentions and several conditional generation licenses were issued by the ECB, new entrants to Namibia's electricity sector remain absent. Reasons include our historically low electricity tariffs, structural impediments constraining the sector, the considerable leverage of the country's monopoly generation and transmission provider, an absence of targeted incentives, an as yet untested Independent Power Producer framework, and low population densities and therefore low electrical loads with dispersed populations, particularly in rural areas. However, most sector participants agree that Namibia needs to see new initiatives and investments – so something has to give to enable us to meet our changing needs.

Since Independence, Namibia has made substantial progress in bringing electricity to the furthest corner of the land. Today, most of the lower-hanging fruit in rural electrification have been picked, yet the MME estimates that only some 27% of rural Namibians have access to electricity. Economic considerations prohibit the country's complete electrification using conventional grid electricity. Off-grid technologies powered by renewable energies can provide energy to people in areas far away from the existing national grid. However, sustainable rural energisation models have not yet been formulated for Namibia and offer many opportunities for dynamic entrepreneurial action.

The abundance of Namibia's renewable energy resources, including biomass, solar and wind, and the as yet un-quantified but seemingly plentiful indigenous resources including geothermal, wave and tidal energies constitute a national comparative advantage that need to be exploited more aggressively. Fresh mindsets, focused innovation and new approaches, including public-private partnerships, could drive change and stimulate much-needed development.

Namibia's current domestic electricity generation capacity is inadequate to meet its needs. The country's envisaged socio-economic development pathway and national targets demand that considerable electricity supply sector investments have to be made. How can investments in Namibia's electricity supplies yield sustainable economic and social benefits while limiting environmental costs?

Viewed from a broad economic perspective, a balanced electricity supply mix is likely to be the most efficient and desirable: our future electricity provision needs to promote economic development, create job opportunities and limit adverse environmental impacts. It should aim to reduce our reliance on fossil fuels, and allow for increased self-sufficiency. By increasing the use of renewable energies, Namibia's future electricity supply mix would capitalise on local comparative advantages, ensure local value addition and job creation, and reduce our dependence on energy imports. Expanding the national generation capacity through smaller-scale renewable energy technologies would also enable Namibia to scale up the supply capacity modularly, thus reducing the risk of sunken investments for overcapacity while benefiting from cost-competitive electricity imports as and when they become available in the region. Merely repeating that 'renewable energies are too expensive' ignores the facts as well as the multitude of long-term advantages that the use of indigenous renewable energy resources have for the local economy, society and environment.

Action-orientation guided by clear energy sector policies and well-defined national goals is what Namibia's electricity sector urgently needs: incentivising investments in our electricity infrastructure, encouraging the use of our abundant local renewable and non-renewable energy resources, promoting energy efficiency in public and private endeavours, minimising energy-related foreign exchange dependencies, strengthening regional partnerships and reliable electricity trading arrangements, actively supporting new energy-related industries, and creating local opportunities for energy entrepreneurs is essential. Our country's economic development must be powered by a vibrant electricity supply sector that can provide reliable, affordable and accessible electrical energy. Creating a sustainable energy future for Namibia will unlock numerous exciting opportunities. The time has come.

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