

Chapter 19: Energy Law and Policy in Namibia

Detlof von Oertzen

1 Introduction to Namibia's Energy Industry

Namibia's energy industry comprises of formalised and regulated downstream liquid fuels and electricity subsectors, as well as upstream oil and gas subsectors. Less developed downstream gas and thermal energy subsectors exist as well. The electricity and thermal energy sectors are increasingly benefitting from the country's considerable renewable energy endowments.¹

1.1 The Liquid Fuels Sector

Namibia imports all liquid fuels. The liquid fuels sector comprises of the upstream (i.e. exploration), midstream (i.e. storage and transportation) and downstream (i.e. distribution and supply) subsectors. Downstream, the liquid fuels sector is dominated by large multi-national entities, noting that the state-owned National Petroleum Corporation of Namibia (Namcor) is gradually increasing its share in the liquid fuels distribution business.²

1.2 The Electricity Sector

The electricity sector has a well-developed legal and regulatory framework that is implemented by the country's electricity regulatory authority, i.e. the Electricity Control Board.³

The state-owned electricity utility NamPower owns and operates the country's transmission networks, which connects various regional markets to Namibia and facilitates the active trade of electricity.⁴ In mid-2020, NamPower's total installed generating capacity amounts to 489.5 MW, as well as an interconnection capacity to regional suppliers of 300 MW.⁵

1 von Oertzen (2019).

2 See <http://namcor.com.na>, accessed 1 July 2020.

3 See <https://www.ecb.org.na/>, accessed 1 July 2020.

4 See <https://www.nampower.com.na/>, accessed 1 July 2020.

5 See <https://bit.ly/33l3gRg>, accessed 15 February 2022.

Three Regional Electricity Distribution companies (REDs), local and regional authorities and other entities distribute and supply electricity to end-users. Since 2015, Independent Power Producers commenced operations, and more are to enter the electricity sector in future.⁶ Chapter 20 summarises the key features that characterise the country's electricity sector.

1.3 The Upstream Oil and Gas Sectors

Over the past years, upstream oil and gas exploration have resulted in considerable geological data and information.⁷ However, in mid-2020, the only commercially exploitable discovery remains the Kudu gas field, located some 170 km off the country's south-western coast.⁸

1.4 The Renewable Energy Sector

Namibia's indigenous renewable energy resources, including solar, wind and biomass (specifically in the form of encroacher bush species) are available in abundance.⁹ In addition, the Kunene River on the northern border with Angola, and to a lesser degree the Okavango River and the Orange River that forms the country's southern border with South Africa, offer additional hydropower potentials.¹⁰ Regional imports, in addition to hydropower from Ruacana in the Kunene River and solar photovoltaic generation, and some minor wind power, feed the country's electricity sector.¹¹ The use of biomass as required to meet select thermal energy requirements of domestic end-users, for charcoal production, power production,¹² as animal fodder and the replacement of liquid fossil fuels, is steadily increasing.¹³

Intermittent renewable energies, i.e. those that are non-continuous or only occur at certain times of the day or in a given year, are already in use and are expected to further contribute to the country's electricity supply side.¹⁴ Examples include the hydropower resources in the country's perennial yet highly variable rivers, most notably the

6 von Oertzen (2019).

7 See <http://www.mme.gov.na/petroleum/upstream/>, accessed 1 July 2020.

8 von Oertzen (2009).

9 von Oertzen (2015).

10 von Oertzen (2019).

11 von Oertzen (2014c).

12 Hager *et al.* (2007).

13 von Oertzen (2014a).

14 von Oertzen (2018b).

Kunene River, as well as the solar and wind resources, all of which are not permanently available to generate electricity.¹⁵

2 Energy-related Regional and International Developments

2.1 Energy Security

Energy is the foundation of many of the most important economic activities and is a prerequisite for national development. Energy consumption data gathered over the past decades show that a steady increase of energy supplies is needed to sustain growing populations and secure lifestyles. This realisation implies that energy security is essential and of critical importance to all nations.¹⁶

The International Energy Agency (IEA) defines energy security as “the uninterrupted availability of energy sources at an affordable price”.¹⁷ The IEA further states that energy security has long-term implications that relate to “timely investments to supply energy in line with economic developments and environmental needs. On the other hand, short-term energy security focuses on the ability of the energy system to react promptly to sudden changes in the supply-demand balance”.¹⁸

Energy security plays an important role at the crossroads of national security, economic security and environmental security. For this reason, energy security is high on the agenda of most national and international actors and entities and is considered to be one of the principal means to overcome poverty and establish a more sustainable economic future for all.

The need for energy security and the near-continuous growth of energy over the past decades is associated with a variety of manifestations and impacts. Increasingly, there is consensus on the negative impacts associated with an ever-expanding energy industry. The negative impacts associated with the exploitation and degradation of ecosystem services, especially those derived from the land, water and air, and the energy sector’s growing footprint on the global environment, is a major international challenge. Indeed, the scale, scope and use of finite resources associated with the energy industry are increasingly affecting the availability of arable land, potable water, and fresh air, and their long-term productive potentials. Of particular concern is the unfettered consumption of fossil fuels and its multitude of negative environmental impacts, including those associated with global particulate and gaseous emissions, the degradation of land, displacement of people and many others.

15 von Oertzen (2015).

16 See Ruppel / Althusmann (2016).

17 International Energy Agency, see <http://www.iea.org/topics/energysecurity/>, accessed 22 August 2020.

18 Ibid.

2.2 Energy and Climate Change

In light of the adverse impacts on the environment brought about by the energy industry, including energy-related carbon dioxide, methane and particulate emissions from the use of fossil fuels, it is broadly acknowledged that future energy supplies must be substantially decarbonised. Indeed, the international debate about climate change now places the fundamental link between establishing clean energy supplies and economic development into centre-stage.¹⁹

There is broad consensus that climate change is one of the most significant challenges of the 21st century. Climate change poses risks to man-made and natural systems, imposing pressure on ecosystems and ecosystem services that all life depends on.²⁰ The risks and impacts associated with climate change can be reduced in parts by advancing adaptation and mitigation measures.

Energy technologies play a particularly important role in mitigating climate change. Greenhouse gas (GHG) emissions resulting from the provision of energy services are significantly contributing to the steady increase of atmospheric GHG concentrations. Indeed, global anthropogenic GHG emissions are significantly attributable to the use of fossil fuels. Options for lowering GHG emissions from the use of energy, while continuing to satisfy the global demand for energy, include the deployment of energy efficiency measures and technologies, switching from fossil fuelled energy systems to clean energy systems, by carbon capture and storage and the use of low-GHG emitting energy supplies powered by renewable energies. The nexus between climate change and energy security has been a focus of Intergovernmental Panel on Climate Change (IPCC), suggesting that²¹

most climate policies intersect with other societal goals, either positively or negatively, creating the possibility of ‘co-benefits’ or ‘adverse side-effects’. Since the publication of AR4 a substantial literature has emerged looking at how countries that engage in mitigation also address other goals, such as local environmental protection or energy security, as a ‘co-benefit’ and conversely. This multi-objective perspective is important because it helps to identify areas where political, administrative, stakeholder, and other support for policies that advance multiple goals will be robust. Moreover, in many societies the presence of multiple objectives may make it easier for governments to sustain the political support needed for mitigation. Measuring the net effect on social welfare requires examining the interaction between climate policies and pre-existing other policies.

The driving forces towards the formulation and enactment of climate policy are not singularly based on the concern about climate change. This can be seen from the efforts of many governments that address the issue of climate change in the context of other national objectives, such as the alleviation of poverty, national development and the achievement of energy security. A common strategy for countries wanting to reduce

19 Ruppel (2011b).

20 Adger *et al.* (2014:760).

21 Stocker *et al.* (2013).

their dependence on fossil fuels is to bolster their climate-related efforts by promoting renewable energy supply systems and the uptake of energy efficiency technologies. In Namibia too, an overview of how this effort could be structured has been the topic of intense debate.²²

Most international actors recognise that the deployment of renewable energies is an important means to mitigate the impacts of climate change.²³ While fossil fuels remain the principal ingredient used by the global economy's engine today,²⁴ renewable energy systems are increasingly recognised to be the guarantors to future-proof energy supplies while also limiting global climate change. Of note are renewable energy supply systems utilising wind power, solar energy, hydropower, geothermal energy, biomass and wave energy, all of which can contribute to mitigate climate change.

The IPCC's views on the deployment of renewable energy supplies include the following:²⁵

On a global basis, it is estimated that renewable energies (RE) accounted for 12.9% of the total 492 EJ of primary energy supply in 2008. The largest RE contributor was biomass (10.2%), with the majority (roughly 60%) of the biomass fuel used in traditional cooking and heating applications in developing countries but with rapidly increasing use of modern biomass as well. Hydropower represented 2.3%, whereas other RE sources accounted for 0.4%. In 2008, RE contributed approximately 19% of global electricity supply (16% hydropower, 3% other RE), biofuels contributed 2% of global road transport fuel supply, and traditional biomass (17%), modern biomass (8%), solar thermal and geothermal energy (2%) together fuelled 27% of the total global demand for heat. The contribution of RE to primary energy supply varies substantially by country and region. Scenarios of future low greenhouse gas futures consider RE and RE in combination with nuclear, and coal and natural gas with carbon capture and storage.

While the RE share of global energy consumption is still relatively small, deployment of RE has been increasing rapidly in recent years. Of the approximately 300 GW of new electricity generating capacity added globally over the two-year period from 2008 to 2009, 140 GW came from RE additions. Collectively, developing countries hosted 53% of global RE power generation capacity in 2009. Under most conditions, increasing the share of RE in the energy mix will require policies to stimulate changes in the energy system. Government policy, the declining cost of many RE technologies, changes in the prices of fossil fuels and other factors have supported the continuing increase in the use of RE. These developments suggest the possibility that RE could play a much more prominent role in both developed and developing countries over the coming decades.

22 von Oertzen (2014b); von Oertzen (2015).

23 UNFCCC (2014); Former Executive Secretary of the UNFCCC, Christiana Figueres, on the occasion of the Investor Summit on Climate Risk in January 2014, urging investors to consider green investments.

24 REN21 (2020).

25 IPCC (2011:9).

2.3 International Regulatory Framework

Energy security is critical to keep economies competitive, to enhance sustainable development, to power national development and reduce poverty. In light of these imperatives it is surprising to note that a global energy security system does not exist. This is likely a reflection of many of the disjoint international efforts on a variety of topics, including sustainable development, environmental protection, trade, investment and many others. The global energy governance regime is fragmented, and many of its intrinsic components are separately and individually managed, often in a disjointed manner. Many instances of inter-state cooperation interrelate and create a normative patchwork of practices, with adverse implications for the global energy economy and associated energy security. Often, this is directly attributable to the singular pursuit of national interests, as well as the plurality of institutions and agreements.²⁶

Many international organisations are operating in the energy arena, including the International Energy Agency (IEA), the Organization of the Petroleum Exporting Countries (OPEC), the Gas Exporting Countries Forum (GECF), the International Energy Forum (IEF), the World Trade Organization (WTO), and the International Renewable Energy Agency (IRENA).

A large number of international agreements promote the accelerated deployment and uptake of renewable energy supplies that form an important ingredient of designing a sustainable energy framework for the future. Among them are the Sustainable Development Goals (SDGs) and the United Nations Sustainable Energy for All Initiative. The latter aims to ensure universal access to modern energy services (over one billion people worldwide lack access to electricity), to double energy efficiency (global energy-related carbon dioxide emissions could rise 20% by 2035; equipment maintenance, thermostat settings, and upgrades to reduce emissions by up to 50%), and to double the renewable energy share in the overall global energy mix by 2030 (global energy demand will grow up to 33% from 2010 to 2035).²⁷

Relevant legal instruments include the UN Charter, setting out a foundation for international agreements of relevance to energy-related matters by providing, for example, for the preservation of sovereignty over domestic matters, including the management of natural resources and especially of energy-related resources.²⁸ In addition, there are many other international agreements, such as the Energy Charter Treaty (i.e. a multilateral framework for energy cooperation)²⁹ and the legal regime put forward by the World Trade Organisation.³⁰

26 Ibid.

27 Sustainable Energy for All; see <http://www.se4all.org>, accessed 25 August 2020.

28 See <http://www.energycharter.org/>, accessed 25 August 2020.

29 See <https://www.energycharter.org/process/energy-charter-treaty-1994/energy-charter-treaty/>, accessed 20 August 2020.

30 Bougette *et al.* (2014).

The United Nations Framework Convention on Climate Change (UNFCCC) aims to prevent dangerous human interference with the world's climate system, thus working at the coalface between climate change and energy.³¹ The UNFCCC, as adopted in 1992, recognises that for developing countries to progress towards sustainable social and economic development,³²

their energy consumption will need to grow taking into account the possibilities for achieving greater energy efficiency and for controlling greenhouse gas emissions in general, including through the application of new technologies on terms which make such an application economically and socially beneficial.

Within the framework of the Kyoto Protocol, the enhancement of energy efficiency has been stipulated as a means for countries to achieve tangible limitations and a steady reduction of national GHG emissions. Amongst others, this highlights the need for further research, promotion, development and the increased use of renewable energies.³³ Today, many of the activities advanced by the UNFCCC are intimately related to renewable energies and the upscaling of the deployment of renewable energy and energy efficient technologies to address climate change mitigation.³⁴

In this context it is of importance to mention the global SDGs that were adopted by 193 United Nations members in September 2015. Goal 7 of the seventeen individual SDGs addresses the topic of energy. The pronouncement of Goal 7 states: "Ensure access to affordable, reliable, sustainable, and modern energy for all", and proposing the following energy-related targets:³⁵

- 7.1 By 2030, ensure universal access to affordable, reliable and modern energy services
- 7.2 By 2030, increase substantially the share of renewable energy in the global energy mix
- 7.3 By 2030, double the global rate of improvement in energy efficiency
- 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology
- 7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.

31 United Nations Framework Convention on Climate Change; see <https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change>, accessed 20 August 2020.

32 Preamble of the UNFCCC.

33 Kyoto Protocol, Article 2; see https://unfccc.int/kyoto_protocol, accessed 20 August 2020.

34 IPCC; <https://www.ipcc.ch/reports/>, accessed 20 August 2020.

35 See <https://www.un.org/sustainabledevelopment/energy/>, accessed 20 August 2020.

2.4 Regional Regulatory Framework – the SADC Region

The Southern African Development Community (SADC) recognises that energy-related challenges cannot be resolved by national government alone and require a regional emphasis as well. Regional integration is a key driver to further expand opportunities for renewable energies as well as energy efficient technologies.

The SADC region's main energy-related challenges include:³⁶

- 32% of rural areas in the region have access to energy;
- some 50% of the region's residents have access to electricity;
- electricity shortages continue to strain the region, and power projects intended to address these shortages lag behind their implementation deadlines, often due to a lack of funding;
- the migration to cost reflective tariffs is slow;
- an absence of regulatory frameworks required to attract international investments and promote financing in the energy sector;
- coal-fired electricity provides some 62% of the total electricity requirement in Southern Africa, thereby being a contributing factor to global warming;
- Infrastructure development efforts remain weak, and foreign commitments continue to inhibit the use of the region's considerable fossil fuel resources; and
- pricing and infrastructure hurdles such as grid connections, manufacturing, and quality testing impede development of the region's renewable energy potential.

Adverse environmental and health impacts due to the continued use of fossil fuels are widespread. On the other hand, the region is abundantly endowed with renewable energy resources, but these are not yet a major contributor to the total electricity needs, except for hydropower that accounts for about one-fifth of the SADC's total energy generation.³⁷

The African Development Bank suggests that the SADC region has the potential to become a "gold mine" for renewable energy, due to abundant solar and wind resources.³⁸ However, the presence of a resource does not imply that it is put to use, and to date, many challenges remain:³⁹

- High upfront costs of most renewable energy systems;

36 Southern African Development Community; see <https://www.sadc.int/themes/infrastructure/>, accessed 25 August 2020.

37 Ibid.

38 Ngwawi (2015).

39 See <http://www.sadc.int/themes/infrastructure/en/hydropower/>, accessed 25 August 2020.

- high percentage of imported renewable energy equipment, implying that these technologies remain critically exposed to the whims of foreign currency fluctuations;
- limited local manufacturing capacity for renewable energy technologies exist;
- limited capacity to connect intermittent renewable energy projects to the grid;
- lack of appropriate renewable energy testing facilities and limited standards;
- research, development, and the production of renewable energy technologies do not yet benefit from targeted localisation strategies;
- guidelines for assessing the impacts and benefits of incentives targeting renewable energy projects remain absent;
- the procurement of renewable energy systems remains largely non-standardised; and
- reliable data on the uptake and use of renewable energy technologies is scarce, further inhibiting progress and fact-based decision-making.

SADC has emphasised the need to enhance energy security, amongst others by developing and implementing targeted renewable energy policies based on the SADC's legal and institutional frameworks. Generally, the implementation of energy-related policies has been slow. However, some advances have been made, particularly in the electricity sector. To date, nine member states are interconnected to the Southern African Power Pool, thereby contributing to the gradual establishment of a more competitive common market for electricity across the region.⁴⁰ In addition, SADC has established the Regional Electricity Regulatory Association of Southern Africa that aims to further harmonise the region's electricity-related policies and regulatory frameworks.⁴¹

2.4.1 Regional Indicative Strategic Development Plan

The SADC Regional Indicative Strategic Development Plan (RISDP) was originally adopted in 2003, setting infrastructure development targets (including for energy) for the period from 2004 to 2018. RISDP envisaged six energy related targets, including that 70% of rural communities within southern Africa should have access to modern forms of energy supplies by 2018.⁴²

Between 2014 and 2015, a task force comprising the SADC Secretariat, all member states and key stakeholders developed and finalised the Revised RISDP 2015-2020 and its Implementation Framework and Indicative Costs. In 2015, the SADC Summit

40 Southern African Power Pool; see <http://www.sapp.co.zw>, accessed 25 August 2020.

41 Regional Electricity Regulatory Association of Southern Africa; see <http://icer-regulators.net/icer-members/regional-electricity-regulators-association-of-southern-africa/>, accessed 22 August 2020.

42 SADC (2003:68).

approved the Revised RISDP and Implementation Framework for the period between 2015 and 2020.⁴³

2.4.2 Regional Energy Access Strategy and Action Plan

In 2010, the Regional Energy Access Strategy and Action Plan (REASAP)⁴⁴ was approved, setting goals for improving access to modern forms of energy. The REASAP envisages the development of a Renewable Energy and Action Plan (RESAP), suggesting a number of targets for renewable energy for the period 2020-2030, including for 175 MW of biomass power and 500 MW of solar power by 2020.⁴⁵ In mid-2020 it must be noted that these targets were not met.

The SADC Renewable Energy Strategy and Action Plan 2015 to 2020 (RESAP I) aimed to encourage the region to achieve a renewable energy mix of at least 32% by 2020, which should rise to 35% by 2030.⁴⁶ It is noted that the targets fell short of those that select SADC countries had set for themselves. In 2015, the establishment of the SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) was approved by SADC energy ministers, and the Centre has since been operationalised with Namibia being the host country.

2.4.3 SADC Energy Sector Plan

In 2012, the Energy Sector Plan⁴⁷ was developed as part of the SADC Regional Infrastructure Development Master Plan (RIDMP). The RIDMP aims to lay down regional infrastructure requirements and conditions to facilitate the realisation of key infrastructure developments in the energy, water, transport, tourism, meteorology and telecommunications sectors by 2027. The RIDMP proposes that “additional capacity beyond 2027 should be based on a combination of hydro, wind and solar. Apart from hydro-power, SADC estimates that the major renewable energy capacity addition will be from wind energy, followed by solar PV, CSP and biomass.”⁴⁸

43 See <http://www.gov.za/speeches/34th-meeting-sadc-energy-ministers-24-jul-2015-0000>, accessed 21 August 2020.

44 See http://www.sadc.int/files/5713/5791/7436/EUEI_PDF_SADC_Regional_Energy_Access_Strategy_Mar_2010_EN.pdf, accessed 25 August 2020.

45 REN21 (2020).

46 See <https://www.sadc.int/themes/infrastructure/>, accessed 25 August 2020.

47 See http://www.sadc.int/files/5413/5293/3528/Regional_Infrastructure_Development_Master_Plan_Energy_Sector_Plan.pdf, accessed 25 August 2020.

48 REN21 (2020).

2.5 Support Mechanisms for the Deployment of Renewable Energies

Many countries have established support mechanisms for the further development of their renewable energy resources. However, a common characteristic is that their success remains critically dependent on the political will to implement these, and the sustained commitment to provide tangible support to such endeavours.⁴⁹

A variety of approaches are used to support the deployment and use of renewable energy systems. Amongst others, the following main support mechanisms are currently favoured:

- Targeted legislation and associated regulatory support mechanisms;
- support funding, tariffs and tax incentives. Financial support to renewables may include capital grants, subsidies for preferential purchase prices, targeted low-interest loans and others. Tariff mechanisms include preferential feed-in tariffs,⁵⁰ premiums on electricity prices and tariff-related premiums applied as part of the bidding process;
- power purchase agreements with supporting clauses for renewables;
- capacity-driven approaches, including bidding processes and quota systems;⁵¹
- reserving specific market shares for renewables by declaring (voluntary or mandatory) renewable energy targets;
- removing subsidies from non-renewable fuels, payments by polluters and the institution of emission caps; as well as
- various indirect support measures, including research funding, training and others.

A selection of these support measures is further elaborated below.

2.5.1 Targeted Legislation and Regulatory Support

Legislation and regulatory effort are required to ensure that relevant renewable energy support mechanisms are in place. These must be developed with due care and necessitate a special focus to ensure that measures do not undermine the viability of electricity supply industry actors while ensuring that end-user electricity prices are not adversely affected.

49 Lüdemann (2012:315).

50 UNEP (2012:14).

51 Ibid:10.

2.5.2 Feed-in Tariffs

Feed-in tariffs are a common support mechanism used in many developing countries.⁵² They are a tariff-based incentive that obliges entities to procure electricity at a fixed purchase price for a fixed term.⁵³ These tariffs are usually based on the specific cost of supply, thereby taking the technology used to generate the supplies into account and may also include components such as technology-related incentives and consumer incentives.⁵⁴

Feed-in tariffs are used to set the price at which electricity exporters sell their outputs. A criticism of such tariffs is that the fixed price level is not determined by market forces but is essentially established and guaranteed by law. This constitutes a deliberate interference with the market and may lead to the promotion of supply systems that would possibly not be competitive. Despite such reservations, feed-in tariffs are considered to be a reasonably efficient and effective support mechanism to promote the uptake and development of renewable energy supply systems.⁵⁵ This is particularly evident where tariffs are underpinned by a legal framework that speaks to ensuring that investments are incentivised, and that investment certainty is guaranteed.

Feed-in tariffs have the advantage that they create certainty from the perspective of investors, by allowing a guaranteed payment for electricity from renewable sources that are fed into the grid. Certainty promotes investments and enhances the appetite to consider generation projects. Economists often argue that feed-in tariff are the most efficient and effective support scheme to incentivise investments, including in renewable energy technologies. This is manifested by the number of countries that use feed-in tariffs, particularly driving investments in global wind and photovoltaic capacity.⁵⁶

Namibia's Renewable Energy Feed-in Tariff has seen the operationalisation of 13 photovoltaic and one wind power project with a capacity of 5 MW each. Feed-in tariffs are technology-specific, i.e. different for electricity generated by solar, wind and biomass.⁵⁷

2.5.3 Power Purchase Agreements

Power Purchase Agreements (PPAs) are used to codify the agreement between the party offering a supply and the party taking supplies. Amongst others, PPAs specify the price of electricity, price escalations, minimum and maximum capacity to be added

52 Ruppel / Ruppel-Schlichting (2015:90).

53 Bjork *et al.* (2011:36).

54 Ibid:28.

55 See <https://www.eurosolar.de/en/>, accessed 21 August 2020.

56 *Etango* (2013:21).

57 Ngatjiheue (2015b).

to the grid and many other details. Often, PPAs include targeted incentive designs, such as time-of-use feed-in tariffs as set (or agreed to) by the regulatory authority. PPAs may also define the framework of agreements between parties using procurement mechanisms other than direct negotiations or competitive bidding. In such cases, the regulator approves the framework contract and issues standard model agreements for use by the parties.⁵⁸ A common challenge of PPAs is that power producers may – in time – be faced by changing market conditions while having to remain bound by the contract conditions as stipulated in the PPA.⁵⁹ Utilities may find themselves in the same situation: for example, tariff escalations that are tied to the consumer price index may no longer be considered realistic in the medium or long term, resulting in excessive year-on-year tariff escalations.

2.5.4 Capacity-driven Approaches

Capacity-driven approaches depend on the establishment and operation of an electricity market and include bidding processes and tradable quotas.⁶⁰ These approaches aim to oblige electricity suppliers to provide a given quantity of electrical energy generated by renewable energy systems.

2.5.4.1 Competitive Bidding

Competitive renewable energy bidding entails auctions amongst electricity producers using renewable energy supply systems. These auctions imply the supply of a specified quota of electrical energy generated from renewable energy power systems, with the provider of the lowest asking price being the contract recipient. For example, the European Commission Guidelines present auctions as a standard procedure used to allocate and support renewable energy systems when receiving state support funding for environmental protection and energy.⁶¹

Competitive bidding has established a good record of delivering electricity from renewable energy systems to the grid, noting that such bidding is often accompanied by intense competition to achieve the lowest prices. Challenges associated with competitive bidding include that not all projects that are selected will eventually be implemented, as the rate of project realisation is almost always below the initial target. For participants in competitive bids, the associated risks are higher than is the case in open

58 Bjork *et al.* (2011:42).

59 Roedern (2012:2).

60 Lüdemann (2012).

61 EC (2014).

feed-in schemes, because a proposed project may not be selected, and bidders may incur costs or face penalties when they are unable to implement a project that has been selected. Also, a sufficient number of bidders must participate, otherwise an auction will not produce a competitive result. In addition, auctions may incentivise market players to game the system, which may result in driving up costs. This is especially true for market players that can exercise some market power, which is of particular relevance for large market players that are better established and hold a more favourable position than their smaller competitors.⁶²

2.5.4.2 Tradable Quotas

In tradable quota approaches, a given percentage of energy is generated from renewable energy supply systems. Quotas are usually set by government and allocated to select operators. Operators decide whether or not to fulfil a given quota or whether to trade the quota by paying another entity to supply the allocated amount of energy.⁶³ The rationale of the tradable quota approach is that the cost of supply (by way of a renewable energy supply system) is kept low, which in turn minimises the price of electricity that is paid by end-users. However, tradable quota systems have been criticised for mainly favouring the deployment of least-cost supply options rather than a mix of supply options required to achieve maximally resilient energy supplies.

3 Energy-related Laws and Policies in Namibia

This section provides a brief overview to Namibia's main energy-related laws and policies.

3.1 The Petroleum Products and Energy Act (1990)

The Petroleum Products and Energy Act No. 13 of 1990, and its various subsequent amendments,⁶⁴ regulate the country's downstream petroleum industry. The Act states that the Minister of Mines and Energy may make regulations relating to the conducting of business in respect of petroleum products application of health, hygiene, safety and environmental standards.⁶⁵ In 1991, regulations relating to the purchase, sale, supply,

⁶² De Vos / Klessman (2014).

⁶³ Ringel (2006:8).

⁶⁴ see <https://bit.ly/3xzV7Sx>, accessed 20 June 2021.

⁶⁵ Section 2A(b)(ii) of the Petroleum Products and Energy Act.

acquisition, storage, transportation, recovery and re-refinement of used mineral oil were published.⁶⁶ Amongst others, the Regulations prohibit the disposal, contamination, usage and possession, storage and transportation in certain containers, of used mineral oil without the necessary authorisation.⁶⁷

3.2 The Petroleum Exploration and Production Act (1991)

The Petroleum Exploration and Production Act No. 2 of 1991 regulates the country's upstream petroleum industry. The Act provides for the reconnaissance, exploration, production, disposal of, and the exercise of control over, petroleum and provides for matters incidental thereto.⁶⁸

3.2.1 License Application

An application for a reconnaissance or exploration licence, or the renewal of such a licence, must set out an estimate of the effect which the proposed operations may have on the environment.⁶⁹ Applications for production licences require an estimation of the likely impact that the production operations will have on the environment, and must also set out how the applicant intends to control or limit the potential effect of the production operations on the environment.⁷⁰

Upon receipt of an application for, or the renewal or transfer of, petroleum licences, the Minister may require the applicant to carry out or cause to be carried out such environmental impact studies as may be specified in such notice and to furnish the Minister, within such period as may be specified in the notice, with such proposals, by way of alteration to or in addition to proposals set out in the application, as may be so specified.⁷¹ The same also applies to applications for the approval for the granting, cession or assignment of interest in a petroleum licence, or an application to be joined as a joint holder of the licence.

66 General Notice 112 in Government Gazette 281 of 21 October 1991.

67 Ibid: Regulation 3.

68 Section 1 of the Act defines *petroleum* as "any liquid or solid hydrocarbon or combustible gas existing in a natural condition in the earth's crust and includes any such liquid or solid hydrocarbon or combustible gas which has in any manner been returned to such natural condition, but shall not include coal, bituminous shales or other stratified deposits from which oil can be obtained by destructive distillation, or gas arising from marsh or other surface deposits."

69 Sections 24(1)(c)(iii), 25(1)(c)(iii), 32(1)(c)(iii) and 33(1)(c)(iii) of the Petroleum Exploration and Production Act.

70 Ibid: Section 46(2)(i)(vii).

71 Ibid: Section 12(2)(b).

The Minister may refuse to grant an application for a petroleum licence, for example if the application indicates that the operations to be undertaken will have adverse effects on the environment. An applicant is only required to estimate impacts on the environment, even if they are substantial, and the legislation makes provision that a licence may still be granted.

The Act regulates the obligations of holders of petroleum licences in respect of the environment in some detail. The Minister of Mines and Energy may, having due regard to good practices, give directions to the holder of a licence in respect of the prevention of the spillage of substances (including water and drilling fluid) extracted from a well drilled for purposes or in connection with reconnaissance operations, exploration operations or production operations, or substances used in relation to the drilling of such a well.⁷²

3.2.2 Environmental Obligations

The Act imposes various obligations relating to the environment on the holder of exploration and production licences. Such a holder has an obligation to carry out exploration and production operations in the exploration or production area in accordance with good oilfield practices.⁷³ The holder must also control the flow and prevent the waste, escape or spilling in the exploration area of petroleum, water or any gas.⁷⁴ Further, the holder must prevent the waste or spilling in the exploration or production area of substance (including water and drilling fluid) extracted from a well drilled for purposes of or in connection with exploration or production operations or used in relation to the drilling of such a well.⁷⁵ The holder must prevent damage to petroleum-bearing strata in any area outside the exploration area⁷⁶ and prevent petroleum reservoirs in the exploration and production area or water sources from being connected with each other.⁷⁷

The holder of an exploration or production licence must prevent water or any other substance entering any petroleum reservoir through the wells in the exploration area, except if required by, and in accordance with, good oilfield practices.⁷⁸ The holder must also prevent the pollution of any aquifer, estuary, harbour, lake, reservoir, river,

⁷² Ibid: Section 21(1)(d).

⁷³ Ibid: Section 38(1)(a).

⁷⁴ Ibid: Section 38(2)(a).

⁷⁵ Ibid: Section 38(2)(b).

⁷⁶ Ibid: Section 38(2)(c).

⁷⁷ Ibid: Section 38(2)(d).

⁷⁸ Ibid: Section 38(2)(e).

spring, stream, borehole and all other areas of water by the spilling of petroleum, drilling fluid, chemical additive, any gas or any waste product or effluent.⁷⁹

Prior to the drilling of any well, the holder must furnish the Petroleum Commissioner with a report containing particulars of the technique to be employed, an estimate of the time to be taken, the material to be used and the safety measures to be employed in the drilling of such well.⁸⁰ The holder may not flare any combustible gas, except for purposes of testing such gas, or for operational reasons, or with the approval of the Minister and in accordance with such terms and conditions as may be determined by the Minister.⁸¹ Finally, a holder may not abandon, close or plug a well without the approval of the Minister.⁸²

The Minister may, in consultation with the Minister of Fisheries and Marine Resources and the Minister of Environment, Forestry and Tourism, exempt holders of exploration or production licences from above provisions.⁸³ The Minister may determine the period for which and the conditions subject to which the exemption is granted.⁸⁴

When in the course of production operations carried out under a production licence any petroleum or other substances are spilled or any pollution is caused, the holder of such production licence must report it to the Minister of Mines and Energy. This must be done as soon as possible, and the holder must take, at its own costs, all such steps as may be necessary in accordance with good oilfield practices or otherwise as may be necessary to remedy it.⁸⁵ If the holder fails to do so, the Minister may order the holder to take such necessary steps to remedy the spilling, pollution or damage or loss. This must be done by means of written notice addressed to the holder. If the holder fails to comply with the directions of the Minister, the Minister may cause the necessary steps to be taken to remedy such spilling, pollution or damage or loss. All costs incurred by the Minister must be recovered from the holder by the Minister through a competent court.⁸⁶

3.2.3 Environmental Impact Assessment

If the Minister has reason to believe that any works or installations erected by the company or any operations carried out by the company are endangering or may

79 Ibid: Section 38(2)(f).

80 Ibid: Section 38(2)(g).

81 Ibid: Section 38(2)(h).

82 Ibid: Section 38(2)(i).

83 Ibid: Section 38(2A)(a).

84 Ibid: Section 38(2A)(a).

85 Ibid: Section 71(1).

86 Ibid: Section 71(2).

endanger persons or any property of any other person or is causing pollution or is harming wildlife or the environment to a degree which the Minister deems unacceptable, the Minister may require the company to take reasonable remedial measures within such reasonable period as may be determined by the Minister and to take reasonable and appropriate steps to repair any damage to the environment. If deemed necessary, the Minister may require the company to discontinue or amend operations.

The company must cause a person or persons, approved by the Minister on account of their special knowledge of environmental matters, to carry out two environmental impact assessment studies. These studies must be carried out to determine the prevailing situation relating to the environment, human beings, wildlife or marine life in the licence area and in the adjoining or neighbouring areas at the time of the studies.⁸⁷

3.2.4 Health and Safety

In 1999, regulations relating to the health, safety and welfare of persons employed, and protection of other persons, property, the environment and natural resources in, at or in the vicinity of exploration and production areas ('Petroleum Regulations') were published.⁸⁸ These Regulations were made by the Minister of Mines and Energy, acting in consultation with the Minister of Fisheries and Marine Resources and the Minister of Environment, Forestry and Tourism. The Petroleum Regulations regulate, *inter alia*, electricity, fires and explosions, transport (including transport of hazardous substances), subsea operations, emergency preparedness (including pollution by spilling of petroleum) and safety zones.

If the Minister has reason to believe that any works or installations erected by the company or any operations carried out by the company are endangering or may endanger persons or any property of any other person, the Minister may require the company to take reasonable remedial measures within such reasonable period as may be determined by the Minister. The Minister may furthermore require the holder to take reasonable and appropriate steps to repair any damage to the environment. This also applies in respect of any works, installations or operations which the Minister has reason to believe is causing pollution or is harming wildlife or the environment. If the Minister deems it necessary, he or she may require the company to discontinue petroleum operations in whole or in part until the company has taken such remedial measures or has repaired any damage.

⁸⁷ Clause 11.7(a) of the Model Petroleum Agreement.

⁸⁸ GN 190 of GG 2188 of 23 September 1999.

3.2.5 Closure, Decommissioning and Rehabilitation

Closure, decommissioning, and rehabilitation are dealt with primarily under the Petroleum Act and the petroleum agreement. An application for a production licence must, apart from what has been stated above, contain a proposed programme of production operations and of the processing of petroleum in question. This program must include separate decommissioning plans⁸⁹ in respect of the production area and any area outside such production area where activities in connection with the production operations in such production area are being carried out. More specifically, it must set out to the satisfaction of the Minister (acting in consultation with the Minister of Environment, Forestry and Tourism, the Minister of Fisheries and Marine Resources and the Minister of Finance), the measures proposed to be taken after cessation of such production operations to remove or otherwise deal with all installations, equipment, pipelines and other facilities, whether on-shore or off-shore, erected or used for purposes of such operations and to rehabilitate land disturbed by way of such operations.⁹⁰

The holder of a production licence must review, and if necessary, revise the decommissioning plan. This must be done one year before the estimated date on which 50% of the estimated recoverable reserves of petroleum in the production area would have been produced. The Minister may, in consultation with the Minister of Environment, Forestry and Tourism, the Minister of Fisheries and Marine Resources and the Minister of Finance, approve the reviewed or revised decommissioning plan or refer it back to the holder of the production licence concerned to make such amendments as the Minister may deem necessary.⁹¹

Other than the general provisions in the Petroleum Act, it is also a term and condition of an exploration licence that the holder thereof remove from the exploration area, or otherwise deal with, as directed by the Minister in consultation with the Minister of Environment, Forestry and Tourism, the Minister of Fisheries and Marine Resources and the Minister of Finance, all installations, equipment, pipelines and other facilities, whether on-shore or off-shore, not used or intended to be used in connection with such exploration operations.⁹² The same condition is not listed for the holder of a production licence.

89 The Model Petroleum Agreement defines ‘decommissioning plan’ as “the package of measures proposed by the Company pursuant to s.46(2)(viA) of the Petroleum Act to be taken after cessation of production operations to remove or otherwise deal with all installations, equipment, pipelines and other facilities, whether on shore or off shore, erected or used for purposes of such operations and to rehabilitate land disturbed by way of such operations, reviewed pursuant to s.68A(1) and either approved or revised by the Minister pursuant to s.68A(2) or 68A(3) of the Petroleum Act”. See Clause 1.1(n) of the Model Petroleum Agreement.

90 Section 42(2)(i)(vi) of the Petroleum Exploration and Production Act.

91 Ibid: Section 68A(2).

92 Ibid: Section 38(1)(d).

3.2.6 Petroleum Agreement between the Parties

The Act also requires that, before an exploration licence is issued, an applicant must enter into a Petroleum Agreement with the state.⁹³ A Model Petroleum Agreement was first published in 1998 and has since been updated several times.⁹⁴ The Petroleum Agreement is entered into between the applicant and the Minister of Mines and Energy. While the aforementioned Agreement provides a framework for a typical Petroleum Agreement that is entered into by the parties, the terms of each Petroleum Agreement depend on negotiations between the parties.

Clause 11 of the Model Petroleum Agreement deals with environmental protection. In terms of this clause, the company must conduct its petroleum operations in a manner likely to conserve the natural resources of Namibia and protect the environment.⁹⁵ The company must employ the best available techniques in accordance with good oilfield practices⁹⁶ for the prevention of environmental damage⁹⁷ to which its petroleum operations might contribute and for the minimisation of the effect of such operations on adjoining or neighbouring lands.⁹⁸ The company must also implement the proposals contained in its development plan regarding the prevention of pollution, the treatment of wastes, the safeguarding of natural resources and the progressive reclamation and rehabilitation of lands disturbed by petroleum operations.⁹⁹

The company undertakes, for purposes of the Model Petroleum Agreement, to take all reasonable, necessary and adequate steps in accordance with good oilfield practices to minimise environmental damage to the licence area and adjoining or neighbouring lands.¹⁰⁰ If the company fails to comply with this provision, or contravenes any law on the prevention of environmental damage, and such failure or contravention results in environmental damage, the company must take all necessary and reasonable measures to remedy such failure or contravention and the effects thereof.¹⁰¹ These measures and methods must be determined in timely consultation with the Minister upon the commencement of petroleum operations or whenever there is a significant change in the scope or method of carrying out petroleum operations. Also, the company must notify the Minister in writing of the nature of the measures and methods finally determined

93 Ibid: Section 13.

94 See GRN (2007c).

95 Ibid: Clause 11.2(a).

96 'Good oilfield practices' means "any practices which are generally applied by persons involved in the exploration or production of petroleum in other countries of the world as good, safe, efficient and necessary in the carrying out of exploration operations or production operations", see Clause 1 of the Model Petroleum Agreement and Section 1 of the Petroleum Act.

97 'Environmental damage' includes "any damage or injury to, or destruction of, soil or water or any plant or animal life, whether in the sea or in any other water or on, in or under land."

98 Clause 11.2(b) of the Petroleum Model Agreement.

99 Ibid: Clause 11.2(c).

100 Ibid: Clause 11.3.

101 Ibid: Clause 11.4.

by the company and must cause such measures and methods to be reviewed from time to time in view of prevailing circumstances.¹⁰²

Environmental impact studies are to be carried out in order to establish what the effect will be on the environment in consequence of the petroleum operations to be made under the Model Petroleum Agreement.¹⁰³ The procedure applicable to environmental impact studies, including the phases in which these are to be carried out, are described in the Model Petroleum Agreement.¹⁰⁴

Furthermore, the company's obligations in respect of the environment in every phase of its operations are determined in the Model Petroleum Agreement, including the company's duty to report to the Minister of Mines and Energy at various stages of its operations and the company's duty to establish a trust fund for purpose of decommissioning.¹⁰⁵ The company must also ensure that

- petroleum operations are carried out in an environmentally acceptable and safe manner consistent with good oilfield practices and that such operations are properly monitored;
- the pertinent completed environmental impact assessment studies are made available to its employees and contractors to develop adequate awareness of the measures and methods of environmental protection to be used as part of the operations;¹⁰⁶ and
- any agreement entered into between the company and its contractors relating to its petroleum operations shall include the terms set out in the Model Petroleum Agreement and any established measures and methods for the implementation of the company's obligations in relation to the environment under the Model Petroleum Agreement.¹⁰⁷

3.3 The White Paper on Energy Policy (1998)

In May 1998, the Ministry of Mines and Energy's Energy Policy Committee released the White Paper on Energy Policy of Namibia.¹⁰⁸ The Policy's principal goals are effective governance; security of supply; social upliftment; investment and growth; economic competitiveness and efficiency; and sustainability. The Policy comprises of four parts, namely: Part 1 describes the broader context in which the Policy was developed; Part 2 focuses on the country's energy demand, with special emphasis on the needs of

102 Ibid: Clause 11.6.

103 Ibid: Clause 11.7(b).

104 Ibid: Clause 11.8 to clause 11.10.

105 Ibid: Clause 11.12 to Clause 11.17.

106 GRN (1995b).

107 Ibid: Clause 11.11.

108 GRN (1998a).

urban, rural and peri-urban households; Part 3 spells out the policies relating to the supply of energy, and Part 4 deals with cross-cutting issues. In 2017, Cabinet promulgated the National Energy Policy,¹⁰⁹ which replaces the White Paper on Energy Policy.

3.4 The Atomic Energy and Radiation Protection Act (2005)

The Atomic Energy and Radiation Protection Act No. 5 of 2005 was passed by Parliament in May 2005.¹¹⁰ The Act came into operation on 16 January 2012 and is intended to

provide for adequate protection of the environment and of people in current and future generations against harmful effects of radiation by controlling and regulating the production, processing, handling, use, holding, storage, transport and disposal of radiation sources and radioactive materials, and controlling and regulating prescribed non-ionising radiation sources.

The Act also establishes the Atomic Energy Board as well as the National Radiation Protection Authority. In 2012, the Radiation Protection and Waste Disposal Regulations were released, thereby guiding the National Radiation Protection Authority, which is headed by the Director-General, and operates under the Ministry of Health and Social Services.¹¹¹

In 2009, the Atomic Energy Board, as envisaged in the Act, was established, and today serves as national advisory body on all matters relating to radiation protection. As the secretariat to the Board, the National Radiation Protection Authority – amongst others – informs the Board about the extent of radiation exposure in the country; inspects any radiation source or nuclear material to assess radiation safety conditions; and to establish and maintain a register of radioactive materials in Namibia.

Licences are generally required for the possession, import and disposal of radiation sources or nuclear material, and every radiation source must be registered. The application process for such licencing follows a prescribed procedure. As part of the application process, an applicant must include the results of all assessments, including environmental impact assessments, and studies that have been carried out in respect of the practice concerned, as well as reports of those assessments and studies when the application is for disposal of radioactive waste or storage of radioactive sources for long periods. Before issuing a licence, the Director-General must consider the need to protect the environment and to conserve natural resources.

109 See Section 8 in this Chapter below for further details.

110 See Introduction to the Atomic Energy and Radiation Protection Act at <http://extwprlegs1.fao.org/docs/pdf/nam78312.pdf>, accessed 2 July 2020.

111 See <http://www.mhss.gov.na/atomic>, accessed 2 July 2020.

Licence holders have several duties regarding the environment.¹¹² A holder must, for example, keep records and compile reports relating to radiation protection or radiation safety standards required to be observed under the Act. A holder must also prepare in consultation with the Board, radiation safety rules and within a practice or for the use, handling, storage, transportation, or disposal of radiation sources or nuclear material produced or prepared by the licence holder. Also, a licence holder is primarily responsible for the safety and security of radiation sources and nuclear materials. The Act authorises the Director-General to take immediate action to discontinue activities if he or she is satisfied that the holder is not complying with any condition of an authorisation, and where immediate action is required to prevent irreversible damage to animal or plant life or the environment. If the holder fails to do so, the Director-General may take the necessary steps at the cost of the holder.

The Act makes it an offence for any person to intentionally or negligently operate, store, transport, dispose of or abandon any radiation source in such a manner that any human being may be subject to a dangerous amount of radiation or that a substantial amount of radiation or radioactive material may be released into the environment. On conviction, a person may be liable to a maximum fine of N\$ 200,000 or to imprisonment for a maximum period of ten years or both such fine and imprisonment.

3.5 The SADC Protocol on Energy (2006)

The Southern African Development Community (SADC) Protocol on Energy of 2006¹¹³ states, as one of its general principles, that member states must ensure that the development and use of energy is environmentally sound.¹¹⁴ Various guidelines for cooperation between member states are set forth in an annexure to the Protocol, emphasising the sustainable development of energy. However, despite the more than two decades that the Protocol has been in place, very little has been achieved in giving effect to the Protocol's objectives. The Protocol entered into force in April 1996, primarily to develop a coordinated approach towards the development of energy and energy pooling, to ensure security and reliability of energy supply and the minimisation of costs. According to the general principles, SADC member states are encouraged to:¹¹⁵

112 Sections 29(2), 30, 31 and 32 of the Atomic Energy and Radiation Protection Act. Section 30 obliges a licensee to appoint a Radiation Safety Officer. Section 31 obliges a licensee to provide notice of intended termination of operations, while Section 32 obliges a licensee to give notice of accidents.

113 SADC (2006).

114 Ibid: Article 2(8).

115 Ibid: Article 2.

1. Use energy to support economic growth and development, alleviation of poverty and the improvement of the standard and quality of life throughout the Region.
2. Use energy to promote collective self-reliance among member states.
3. Ensure that the development and use of energy takes cognisance of the gender realities of the Region.
4. Encourage the development and transfer of science and technology related to energy through the promotion of research and development and the evolution and use of comparable methods and standards.
5. Fully accept the responsibility to share the costs associated with institutional mechanisms created for the effective implementation of this Protocol.
6. Settle all disputes peacefully, amicably and in accordance with procedures set forth hereunder in Article 12.
7. Promote and encourage the direct participation of citizens and communities in the development and use of energy.
8. Ensure that the development and use of energy is environmentally sound.
9. Create a conducive environment for the private sector to participate fully in energy development in the Region.
10. Ensure that sectoral and sub-sectoral regional energy policies and programmes shall be in harmony with the overall policies and programmes of SADC and with the strategies and programmes of other SADC sectors.

The Protocol includes a set of objectives for the energy cooperation within SADC:¹¹⁶

1. Strive to harmonise national and regional energy policies, strategies and programmes on matters of common interest based on equity, balance and mutual benefit.
2. Co-operate in the development of energy and energy pooling to ensure security and reliability of energy supply and the minimisation of costs.
3. Co-operate in the development and utilisation of energy in the Region in the following sub-sectors: wood fuel, petroleum and natural gas, electricity, coal, new and renewable energy sources, energy efficiency and conservation and other cross-cutting themes of interest to Member States.
4. Strive to ensure the provision of reliable, continued and sustainable energy services in the most efficient and cost-effective manner.
5. Promote joint development of human resources and organisational capacity building in the energy sector.
6. Co-operate in the research, development, adaptation, dissemination and transfer of low-cost energy technologies.
7. Strive to achieve standardisation in appropriate energy development and application including the use of common methods and other techniques.

Annex 1 of the Protocol sets forth guidelines for cooperation for promoting renewable energy production and use.¹¹⁷ Substantive provisions are made with regard to specific subsectors, including electricity, wood fuel, renewable energy and energy efficiency. Strategies include developing financing mechanisms, enhancing tax regimes, reducing

¹¹⁶ Ibid: Article 3.

¹¹⁷ Ibid: Article 3; and Article 10.

the energy intensity in industry, and involving utilities in energy efficiency schemes. However, while the Protocol and its Annex provide a guide for programming, they do not specify implementation mechanisms, nor do they set quantitative targets or establish how achievements are to be monitored.¹¹⁸

3.6 The Draft Gas Bill (2001)

The Ministry of Mines and Energy drafted the Gas Bill of 2001¹¹⁹ to

promote the establishment of a gas transportation and distribution network in Namibia for the purposes of domestic supply and for export; to establish a framework of licensing for the gas industry and a national gas regulator to monitor the performance of licence conditions and promote reliability of service; to ensure safety, efficiency and environmental responsibility in the transportation and distribution of natural gas; to facilitate investment in pipeline infrastructure by private, public, municipal and mixed owned enterprises; to promote a competitive market in gas in the long term, and to stimulate cross-border trade in gas between Namibia and its neighbours.

The Bill recognises the importance of environmental protection in that it states that:¹²⁰

- (1) All infrastructure facilities established and operated in connection with a gas supply network shall operate in accordance with the applicable laws with respect to the protection of the environment.
- (2) No pipeline infrastructure shall be laid without an environmental impact assessment first taking place and the results assessed, in accordance with the Environmental Management Act 1998, the Pollution Control and Waste Management Act and the Parks and Wildlife Management Act, where appropriate, including the Petroleum (Exploration and Production) Act, 1991: Regulations relating to the health, safety and welfare of persons employed, and protection of other persons, property, the environment and natural resources, in at or in the vicinity of exploration and production areas.
- (3) Provision shall be made for the proper restoration of the operating environment to its natural condition, with plans for pipeline decommissioning being submitted according to the environmental laws and the appropriate regulations.

The Energy Bill envisages that the to-be-established Energy Regulatory Authority will also be the regulator of the gas sector.¹²¹ Once this Bill is finalised and enacted, the newly created Energy Regulator will be responsible to make recommendations to the Minister of Mines and Energy, to *inter alia*,

- grant licences for gas transportation, storage, distribution and marketing;
- monitor and approve of gas transportation, storage and distribution tariffs and charges;
- approve tariffs and charges to gas distributors and customers who do not have choice of suppliers;

118 REN21 (2020).

119 GRN (2001g).

120 Ibid: Section 38.

121 GRN (2018b).

- assist the Minister of Mines and Energy in the preparation of gas supply regulations;
- monitor the operation of the gas system; and
- settle disputes at the request of a licensee or any interested party.

As the Draft Bill dates back to June 2001, it seems unlikely that it is yet to be promulgated.

3.7 Vision 2030 (2004)

Namibia's national development goals and ambitions are guided by Vision 2030,¹²² as adopted in 2004. Vision 2030 foresees the provision of secure and affordable energy to the country's developing economy and its people; it provides the overall long-term development goals for the country; and it subscribes to the principle of sustainable development. Specifically, for the year 2030, Vision 2030 envisages "a prosperous and industrialised Namibia, developed by her human resources, enjoying peace, harmony and political stability."¹²³

Relating to energy, Vision 2030 envisages Namibia to be "largely self-sufficient with reliable and competitively priced energy, meeting industry demands, plus some export of energy."¹²⁴ Relating to access to electricity, Vision 2030 states that all schools are to be provided with "electricity where the necessary infrastructure will be supplied by 2006."¹²⁵

3.8 The Electricity Act (2007)

The Electricity Act No. 4 of 2007 provides for the establishment of the Electricity Control Board, and details the Board's roles and responsibilities, and the conditions and requirements for licenced activities taking place in the country's electricity sector. Electricity may only be generated, transmitted, traded or distributed in compliance with the requirements of any other law, in particular those relating to health, safety and the environment.¹²⁶

When considering an application for the issue, renewal or amendment of a licence, the Electricity Control Board in making its recommendations to the Minister of Mines and Energy, must give due consideration to matters or activities that may adversely

122 GRN (2004a).

123 Ibid: 38.

124 Ibid: 86.

125 Ibid: 91.

126 Section 18(4)(b) of the Electricity Act.

affect, or result in damage to the environment.¹²⁷ To this end, the Minister of Mines and Energy may request an applicant to submit an environmental impact assessment indicating the extent of any potential damage to or pollution of the environment, as well as the steps proposed to be taken by the applicant to prevent or minimise such damage or pollution, and to restore the environment generally and in terms of existing environmental legislation.¹²⁸

All installations for the provision of electricity, including any alterations or extensions thereto, and all other electricity practices and activities by licensees, customers and other persons, must be conducted with due compliance with the requirements of applicable laws, in particular laws relating to health, safety and environmental standards.¹²⁹

The Act establishes the Electricity Control Board as a juristic person, as the electricity sector's regulatory authority, with the following responsibilities:

- Control and regulate the provisions, use and consumption of electricity;
- oversee the functioning and development of the electricity industry and security of supply;
- ensure the efficient provision of electricity;
- ensure a competitive environment in the country's electricity industry with such restrictions as may be necessary for the security of supply and public interest; and
- promote private sector investments in the electricity industry.

The Act stipulates that the above activities are to be undertaken in accordance with Government policy. The Act lays the foundation for the licensing of electricity-related activities, including for the generation, trading, transmission, supply, distribution, import and export of electricity which necessitate separate licences. Exemptions apply when using plant with a capacity of less than 500 kilovolt-ampere (kVA), as a standby supply for own use, or the distribution of electricity for own use (if the demand is less than 500 kVA).

Of critical importance are the Electricity Control Board's responsibilities vis-à-vis recommending the issue, transfer, amendment, renewal, suspension and cancellation of licences, and the approval of the conditions on which electricity may be provided by licensees, for consideration and the ultimate approval/rejection by the Minister of Mines and Energy.

The Electricity Control Board, with prior approval of the Minister of Mines and Energy, may also develop rules/codes relating to the establishment, operation and administration of the electricity market, as well as those of licensed entities and otherwise affected persons. These include, amongst others, safety and grid codes, system security

127 Ibid: Section 21(1).

128 Ibid: Section 21(2)(a).

129 Ibid: Section 33(1)(a).

and network connection rules and those governing the pricing and metering of electricity. The Electricity Control Board is funded through the ‘ECB Levy’, which is imposed on every kWh of electrical energy “provided or consumed at any point in Namibia or upon any licensee.”

The Electricity Act is expected to be repealed once the Namibia Energy Regulatory Authority Act¹³⁰ is promulgated.

3.9 National Connection Charge Policy (2014)

The National Connection Charge Policy of 2014¹³¹ establishes a standardised approach to dealing with power network connections and connection charges for customers and generators. The Policy provides guidance to network licensees on the development of connection agreements and aims to ensure the integration of the licensees’ regulated revenue requirements and connection agreements.

The Policy rests on the principles of equality, efficiency and simplicity. Its objectives include identifying relevant parties to whom the Policy applies; establishing connection charge principles; describing how new connections or upgrades to existing supply arrangements are to be made; identifying the costs that are to be recovered via connection charges; formulating a standard methodology for determining connection charges; and defining a governance structure to deal with network connection matters.

4 Nuclear Fuel Cycle Policy (2014)

The Nuclear Fuel Cycle Policy of 2014¹³² expresses the Government’s aspiration to investigate the multiple potential benefits associated with the conversion and use of the country’s uranium resources. The Policy covers the complete nuclear fuel cycle, from the exploration of uranium resources, mining, ore processing, mine closure and rehabilitation, conversion, enrichment, fuel fabrication, nuclear power generation, radioactive waste and spent fuel management. Activities associated with these separate value chain elements include transportation, handling, possession, transfers, storage, import and export of nuclear or radioactive materials, as well as the temporary cessation of activities and the decommissioning of facilities used in the nuclear fuel cycle, all of which are associated with considerable changes to the natural environment.

130 See Section 12 in this Chapter below for further details.

131 GRN (2014f).

132 GRN (2014g).

5 Net Metering Rules (2016)

The Net Metering Rules¹³³ were developed under the Electricity Act of 2007,¹³⁴ and promulgated in 2016. The Rules aim to

- foster the generation of additional power for grid feed-in to reduce investment requirements of licensees and Independent Power Producers;
- allow end-users to reduce their electricity imports from distribution networks by way of self-generation and to provide for electricity exports to distribution networks (up to the level of imports from the network); and
- promote sustainable renewable energy sources, small scale investments, value addition and electricity market development, and contribute to reduce unemployment.

The Rules stipulate that all distribution licensees must offer net metering to customer-generators, subject to applicable laws, regulations, and rules. It is noted that all renewable energy technologies are, in principle, eligible for net metering. In addition, all distribution customers are allowed to install net metered facilities, subject to the provisions of the Electricity Act of 2007 and the various rules, regulations, and stipulations under the Act. Net metered consumers are not required to obtain a generation licence, and the generation capacities of net metered facilities are limited by the rating of the electricity connection when converted to kVA, and they must be less than or equal to 500 kVA. Distribution licensees must connect net metered consumers on a first-come first-serve basis until network-specific limits are reached. Licensees must provide electricity services at rates and charges identical to those of similar end-users. No monetary compensation is paid for electrical energy fed into a distribution network. Instead, electricity exports are credited at the distributor's avoided electrical energy cost and are used to offset future electricity imports by the net metered customer.

The Rules enable grid-connected electricity users to legally feed electrical energy into the distribution grid. In this way, prosumers (end-users who are both producers and consumers of electricity) can inject excess electrical energy into the grid and draw from the grid when own supplies are insufficient. This enables electricity end-users to generate some of their own electricity requirements, using their own generation plant, for example a roof-mounted solar photovoltaic generator, and use grid supplies when self-supply capacities are insufficient.

133 ECB (2016).

134 See Section 3.8 in this Chapter above.

6 Fifth National Development Plan (2017)

Namibia's Fifth National Development Plan (NDP 5)¹³⁵ is the country's national development plan for the period 2017/18 to 2021/22. The topic of energy is introduced under the header "expansion and modernisation of physical infrastructure" and focuses on electricity-related aspects only. The Plan envisages that by 2022, Namibia has a sustainable mix of locally generated energy capacity of 755 MW to support household and industry development.

Regarding Namibia's electrification rate, the NDP 5 suggests that national electrification is to be increased from the baseline value of 34% in 2015 to 50% by 2021/22. It is noted that this goal will be unattainable, given the limited amount of funds made available for electrification efforts and the slow pace of implementation. The NDP 5 identifies four distinct electricity-related strategies, namely

- expand bulk transmission and distribution infrastructure;
- harness indigenous resources for generating energy;
- promote the entrance of Independent Power Producers; and
- reform the current power market structure;

all of which have contributed to further development in the country's electricity sector since.

7 Harambee Prosperity Plan (2016)

The Harambee Prosperity Plan¹³⁶ is an action plan towards prosperity for all. The Plan aims to accelerate development in clearly defined priority areas, thereby complementing the 5-yearly National Development Plans. Relating to electricity, the Plan sets the following goals:

- Increase local electricity generating capacity from 400 MW to 600 MW;
- provide electricity to all schools and health facilities by 2020; and
- increase the rural electrification rate from 34% in 2015 to 50% by 2020.

The Plan identifies the following electricity-related strategies:

- Update the White Paper on Energy Policy (1998) and finalise the National Integrated Resource Plan before 2016;
- review the single buyer model by the end of 2016;
- increase emphasis on renewable energy solutions;
- promote short-term diesel generation project;
- continue the rural electrification drive during the Harambee period to increase the rural electrification rate from 34% in 2015 to 50% by 2020;

135 GRN (2017a).

136 GRN (2016a).

- ensure that all schools and health facilities will be electrified in the Harambee period;
- benefit from a 300 MW standby arrangement with Eskom;
- promote electricity savings and offer energy audits to industry and households; and
- focus on long-term electricity security of supply, including by concluding feasibility studies on Kudu and the Baynes hydropower project, which were envisaged to be finalised by March 2017.

8 National Energy Policy (2017)

The National Energy Policy of 2017¹³⁷ defines Government's strategic intent relating to the energy industry. The Policy recognises the pivotal role that energy plays in national development and its essential roles as driver and lubricant of continued socio-economic upliftment, in line with the country's international climate-related commitments, including the Intended Nationally Determined Contributions to the United Nations Framework Convention on Climate Change.¹³⁸

The Policy emphasises the critical role that the discovery, development and beneficial use of Namibia's plentiful indigenous energy resources play. The Policy identifies the following national energy subsectors: the formalised electricity, upstream oil and gas and downstream liquid fuels subsectors and the less formalised downstream gas and thermal energy subsectors. The Policy recognises that the country's energy sector is dominated by liquid fossil fuels, accounting for some 58% of all energy consumed in Namibia in 2014, while the use of electricity and biomass accounted for some 20% of the country's total energy use each, with the remainder in the form of coal and liquid petroleum gas.

The Policy quantifies the growth of the country's energy consumption in the decade prior to its compilation: the energy sector as a whole grew by some 3% per annum, while electricity consumption increased by an average annual rate of some 4.1% during the same period. In contrast, the economy grew by an average of 5.5% per annum prior to 2017.

As an expression of the Government's energy-related intent, the Policy 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." The Policy's principal goals, in relation to all forms of energy, are to a) 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

137 GRN (2017b).

138 GRN (2015b).

energy; and d) incentivise the discovery, development and productive use of diverse energy resources.

In relation to the electricity sector, the Policy's main objectives are to:

- Enhance security of supply through effective and economic use of locally available energy resources while also leveraging regional opportunities;
- develop the transmission infrastructure so that capability and coverage are improved, growing demand can be met, and regional trade of electricity is enhanced;
- assure the continued economic viability and cost effectiveness of the distribution grid and its associated sector;
- support economically efficient levels of imports and exports of electricity, and to maximise the opportunities offered by regional protocols and organisations;
- consistently apply fair and transparent regulation to provide a firm, predictable and transparent regulatory framework for the country's electricity sector;
- align the Namibian electricity market model to best serve prevailing needs;
- apply demand side and energy efficiency measures systematically and consistently throughout the country's electricity supply chain; and to
- prepare for the integration of energy storage technologies into the electricity system.

9 National Renewable Energy Policy (2017)

The National Renewable Energy Policy of 2017¹³⁹ is the Government's guide to the development of the country's renewable energy sector. Central to the Policy is the intent to scale up the use and contributions derived from local renewable energy sources, noting that Namibia's greenhouse gas mitigation actions are – amongst others – dependant on the future of the country's energy industry.¹⁴⁰

Amongst others, the Policy is to “enable access to modern, clean, environmentally sustainable, and affordable energy services for all Namibian inhabitants”, to meet Namibia's “short-term 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 puts forward the following goals:

- Enhance energy security by leveraging renewable resources;
- optimise the renewable energy contribution to the country's electricity mix;
- increase access to affordable energy services for income generation and poverty reduction;

139 GRN (2017d).

140 von Oertzen (2008).

- ensure transparency of regulatory mechanisms and governance;
- promote grid-connected and off-grid renewable energy development;
- prioritise renewable energy development beyond the electricity sector;
- pursue climate-resilient energy sector development through renewable energy; and
- accelerate the development and deployment of energy storage to facilitate renewable energy expansion; and
- ensure that renewable energies support the country's accelerated industrial growth and competitiveness.

The Policy applies to on- and off-grid energy supplies in urban and rural areas, recognising:

- The renewable energy procurement mechanism that differentiates electricity supply systems by their generating capacity, and the application of the Net Metering Rules for installations with a capacity that is less or equal to 500 kVA;
- the Renewable Energy Feed-in Tariff (REFIT) for electricity supplies with a generating capacity above 500 kVA and smaller than 5 MW, including from solar photovoltaic, wind, biomass and concentrating solar power plant; as well as
- the competitive auctions for electricity projects that have a capacity of more than 5 MW.

The Policy stipulates that projects resulting in grid-connected assets are to be governed by the provisions of the National Independent Power Producer Policy,¹⁴¹ while off-grid projects are to be undertaken based on the framework introduced in the Policy. The Policy also suggests that the modified single buyer market framework is to “enable off-grid solutions”, while updates of the National Integrated Resource Plan are to “include guidance on off-grid solutions”.¹⁴²

10 National Independent Power Producer Policy (2018)

The National Independent Power Producer Policy of 2018¹⁴³ expresses Government's intent and commitment to broaden private-sector participation in the electricity sector. The Policy builds on an initial Independent Power Producer market framework that was developed in the early 2000's, aiming at investments in new electricity generation capacity.¹⁴⁴

¹⁴¹ See Section 10 in this Chapter below.

¹⁴² GRN (2016b).

¹⁴³ GRN (2018d).

¹⁴⁴ See <https://bit.ly/3GSyhK5>, accessed 15 February 2022.

The Policy's departure point is the realisation that even modest economic growth necessitates significant additional electricity-related investments. The National Integrated Resource Plan of 2016 quantified these investment requirements to be in the range between N\$ 90 and 97 billion in the period 2016 to 2035, which are needed to meet the future demand for electrical energy.¹⁴⁵ Investments of such an order of magnitude in a single sector of the economy can evidently not be funded by the Government alone. This implies that private investors are the Policy's intended target group for investments in both the grid-connected and off-grid electricity markets.

The Policy includes the following overarching policy themes:

- Creating an enabling environment for Independent Power Producer deployment;
- developing a market framework for the introduction of competition in the Namibian electricity supply industry;
- streamlining the process and requirements for entry of Independent Power Producers;
- ensuring financial viability and sustainability of the Independent Power Producers; and
- ensuring equitable energy resource use and efficient and sustainable power sector development.

Of note is the pronouncement made in policy statement 1, namely that:

All Independent Power Producers shall be afforded equal access to the Namibian power generation market under a clear policy framework and a market structure and shall operate under the same fair and transparent rules and regulations.

The Policy distinguishes and classifies Independent Power Producer projects into small-scale projects (less than 5 MW); medium-sized undertakings (greater 5 MW and up to 100 MW), and large projects having a generation capacity exceeding 100 MW.

11 Draft Electricity Bill (2018)

In mid-2020, the Draft Electricity Bill of 2018¹⁴⁶ was close to being finalised. The Bill is the draft version of the to-be-promulgated new Electricity Act, and is the result of the Ministry of Mines and Energy's desire to split the current Electricity Act No. 4 of 2007 into two separate parts, namely an updated Electricity Act to replace the erstwhile Electricity Act of 2007,¹⁴⁷ and the Namibia Energy Regulatory Authority Act, which is to define the basis of the to-be-established national energy regulatory authority.¹⁴⁸

¹⁴⁵ GRN (2016b).

¹⁴⁶ GRN (2018e).

¹⁴⁷ See Section 3.8 in this Chapter above.

¹⁴⁸ See Section 12 in this Chapter below.

The Bill is the draft version of an updated and yet to-be-promulgated Electricity Act. It also confirms and strengthens the role of the regulatory authority by

- establishing a national regulatory framework for the country's electricity industry;
- establishing a licensing system for the generation, transmission, distribution, supply, trading, storage, import and export of electricity as well as requiring licences for system operators and market operators (including the issue, renewal, transfer, amendment, cancellation and suspension of licences);
- providing for the powers and obligations of licensees; and
- regulating tariffs and providing for incidental matters.

The Bill also stipulates that the Minister of Mines and Energy, in consultation with the regulatory authority, is to ensure the preparation and implementation of the National Integrated Resource Plan that expresses the Government's long-term ambition in terms of the optimal resource mix to be used to ensure that the electricity supply is efficient, cost-effective and secure.¹⁴⁹

Also, the Bill states that the Minister of the Ministry of Mines and Energy may, in accordance with the National Energy Policy, the National Renewable Energy Policy and the National Integrated Resource Plan, determine the manner and procedures in which new capacity, including ancillary services, are to be sourced and allocated to entities such as the state-owned power utility NamPower and Independent Power Producers.

The Bill stipulates that authorising licences are required to generate, transmit, distribute and supply electricity, for trading, storage, import and export of electricity, and the market operator.

Separate licences are required for each of the above activities, however excluding

- electricity generation where a connection to the transmission or distribution system is not available, and where the plant has an installed capacity of less than or equal to 500 kVA or such higher or lower installed capacity as may be notified by the regulator, and the electricity is exclusively used for own consumption or by others occupying residential accommodation on the same premises;
- standby supplies for own use provided the plant is not connected to the transmission/distribution system;
- electricity generation from renewable energy sources where such plant is connected to a distribution system and has an installed capacity of less than or equal to 500 kVA or such higher or lower installed capacity as notified by the regulator in the Gazette;

149 GRN (2016b).

- for low-voltage distribution and supply by a person in residential accommodation;
- certain high-density residential housing developments; and
- by those controlling certain types of shopping centres, industrial developments or business complexes;
- or when exempted by the regulatory authority.

Importantly, the additions to the Bill relate to the following specific circumstances

- the transfer of assets and liabilities between licensees in the event of changes of a licensee or through restructuring;
- local government charges on the sale of electricity, i.e. surcharges;
- electricity support levies; and
- ministerial oversight of critical decisions that are to be taken by the regulator.

12 Draft Namibia Energy Regulatory Authority Bill (2018)

In mid-2020, the Draft Namibia Energy Regulatory Authority Bill of 2018¹⁵⁰ was almost complete and is the draft version of the to-be-promulgated Namibia Energy Regulatory Authority Act. The Bill's main purpose is the establishment of the Namibia Energy Regulatory Authority. This to-be-established entity is to be the regulatory authority for the country's energy sector. The Bill describes the regulator's functions and duties, and makes provision for related incidental matters. It extends the Electricity Control Board's current mandate and authority to beyond the electricity sector, to include downstream gas and petroleum, including pipelines and storage facilities, renewable energies and energy efficiency.

The Bill envisages the to-be-established regulatory functions to include

- exercising regulatory supervision over the energy sectors;
- administering licencing, regulating tariffs and other charges;
- promoting energy sources and access to energy;
- enforcing compliance with the Act and its stipulations;
- promoting the efficient functioning and development of the sector and security of supply, including the making of rules;
- promoting private sector investments; and
- advising the Minister on any matter relating to energy and carrying out such investigations as may be necessary.

In addition to defining the authority's constitution, mandate, function and related administrative matters, the Bill also includes the following important aspects:

- It authorises the to-be-established Authority to impose a regulatory levy;

150 GRN (2018f).

- it details an enforcement regime that includes directives, enforceable undertakings and administrative penalties;
- it provides the basis for the establishment of an energy tribunal; and
- it endows the to-be-established Authority with effective powers to initiate and execute investigations.

13 Draft Off-Grid Electrification Policy (2019)

The departure point of the Draft Off-Grid Electrification Policy of 2019¹⁵¹ is the realisation that, since Namibia's Independence in 1990, most efforts to increase access to electricity have focused on the expansion of the existing electricity distribution grid. However, despite the considerable efforts to enhance access to electricity, more than half of the country's households remain without access to electrical energy. While most larger localities have access to grid electricity, those areas that remain without access to modern electricity services are characterised by low population densities and often low energy consumption rates. These aspects reduce the cost effectiveness of grid expansions, and thereby render the provision of new grid services unattractive to electricity distribution companies.

Yet, numerous contemporary off-grid electrification methods offer opportunities to provide access to electricity services in areas where it is not economically justifiable to extend the grid. This is the Off-Grid Electrification Policy's trigger point: it spells out the Government's intent, direction, and undertakings regarding the adoption of off-grid electricity access options which are to be undertaken as part of ongoing national electrification efforts. Specifically, the Policy spells out that Government will adopt minimum standards for the supply of modern electricity services. Only if these minimum standards are met will households and institutions be considered to have access to electricity

- for domestic users, this minimum standard provides for lighting, the use of small appliance and the ability to operate a small refrigerator; and
- for schools, clinics and Government offices not connected to the grid, a minimum off-grid electricity service standard ensures that basic entity-relevant services can be provided.

The Policy envisions to contribute to the creation of universal access to electricity services throughout Namibia. It is to create enabling conditions for existing and new electricity service providers to enhance access to electricity by providing off-grid electrification services to end-users. The Policy's main goals are to

151 GRN (2019a).

- promote off-grid access to electricity as an important and economically efficient method to complement efforts to provide access to grid electricity;
- create cost-effective, affordable, reliable and equitable access to electricity for all Namibians; and
- create an environment that enables and facilitates private sector participation in future electrification endeavours.

The Policy is built on seven main pillars, i.e.:

- Foundational aspects regarding the provision of off-grid electricity services;
- identifying the key enabling conditions and mechanism;
- pronouncing itself on off-grid electrification businesses and business models;
- recognising funding, incentives and investor-friendly conditions as key requirements to initiate off-grid electrification efforts in the country;
- addressing the institutional, governance and ownership considerations of off-grid electrification;
- spelling out the principles underpinning tariffs, cost recovery and subsidies for off-grid electrification; and
- recognising that grid encroachment and the compatibility of grid and off-grid systems are of importance in future national electrification efforts.

14 Draft Smart Grid Policy (2019)

The Draft Smart Grid Policy of 2019¹⁵² is based on the rationale that Namibia has significant potentials to further increase the generation of electricity, especially from its world-class solar and wind resources. However, both these resources are intermittent in nature, which implies that challenges may arise when further scaling up their integration into the national power system. Integration can be achieved by smartening and modernising the grid, which (amongst others) will also increase its capacity to absorb additional intermittent generators, both at utility scale as well as at the scale of individual electricity consumers.

The Policy spells out the Government's intent, direction and undertakings regarding the promotion and facilitation of smartening the national grid. It envisions the grid to better support local, decentralised generation and the use of storage options, regional integration and to retain electricity end-users by offering efficient, cost-effective and reliable grid services. The Policy's main goals are to

- provide an enabling framework for smart grid activities;
- develop new value propositions for grid users;

152 GRN (2019b).

- improve the management, control, communication and reporting capabilities of the national grid; and
- ensure that smart grid investments minimise the cost of grid services and ensure its continued viability.

The Policy is constructed around six main themes, focusing on

- smart grid planning, prioritisation and coordination;
- funding, pilot projects, research and resource allocation to promote the smart grid;
- enabling smart grid communication while ensuring data and cyber-security for the grid;
- the empowerment of grid users to ensure that the benefits are shared as widely as possible;
- smart grid asset ownership, licensing and operation; and
- the regulatory treatment of the smart grid and its applications.

15 Draft National Electrification Policy (2020)

In mid-2020, a first draft version of the National Electrification Policy¹⁵³ has been compiled and is being discussed with stakeholders. The Policy renews the Government of Namibia's commitment to actively lead, support and promote the country's continued electrification.¹⁵⁴

To date, having access to electricity is understood to mean being provided with grid or grid-equivalent services. However, in view of the rapid emergence of off-grid power supply options, a focus on grid-delivered electricity services is no longer considered adequate, noting that a large variety of grid-independent power supply options exist that may provide access to electricity.¹⁵⁵

The Policy is centred around a set of key Government ambitions, namely that

- electrification approaches providing services in urban and rural areas are harmonised;
- the Government commits to actively lead, support, and promote national electrification;
- electrification efforts are tangible, specific, and guided by realism, and align with national development ambitions, goals and priorities; and
- broadening access to electricity services by innovative funding and delivery.

153 At the time of writing, the National Electrification Policy is being developed. This implies that the content of this subsection is subject to additions and amendments as the Draft Policy is discussed with stakeholders.

154 GRN (2020).

155 von Oertzen (2019).

The Policy recognises that continued electrification efforts must follow a principle-centred approach, underpinned by holistic planning, funding and implementation. It furthermore emphasises the importance of such efforts being important for Namibia to achieve national developmental objectives, and be appropriate, fit-for-purpose and meet minimum service standards at lowest life cycle cost. The Policy recognises that cost recovery plays a vital role in determining the best possible electrification funding option, and supporting low-income consumers as well as productive uses of electricity. It also states that cross-subsidisation must be economically justified, and be prioritised to ensure that the economic benefit associated with electrification is maximised.

The Policy objectives are to

- affirm the Government's commitment to create universal access to electricity;
- support existing and new role players to enhance access to electricity for all;
- establish a development-focused planning and prioritisation framework for all national electrification efforts that minimises costs while reaching the maximum number of end-users in the shortest possible time;
- support the development of a responsive institutional framework to implement programmes and projects through which universal access to electricity can be achieved;
- strengthen the regulatory framework for electrification undertakings by developing and implementing legal and institutional changes for the implementation of light-handed, cost-effective and principle-centred regulations, licensing, tariffs and standards;
- align national development objectives with tariff structures, incentives, and subsidies;
- ensure socially acceptable electricity service tariffs and charges that balance the upfront and on-going costs of providing services with the end-users' ability to pay;
- create new opportunities to optimise service delivery through a multi-stakeholder approach to the provision of electrification services, including increasing the involvement of the private sector;
- support the widening of existing and new funding approaches for electrification;
- foster long-term investment certainty, predictability and sector-wide growth, underpinned by needs, aspirations, capabilities and local resource endowments;
- facilitate and support existing and new business models to enhance electrification;
- ensure technology neutrality in all electrification programmes and projects; and

- ensure that existing and new electrification initiatives are effectively communicated, follow transparency of process, and are readily and speedily implemented.

The Draft Policy contains eleven principal themes, framed as a policy statement on the commitment to electrification; institutional anchoring and private sector participation; electrification planning and prioritisation; funding; tariffs, charges and subsidies; minimum standards; off-grid electrification; customer awareness, communication and expectation management; capacity development; data collection and reporting; and other essential matters.

The Policy was expected to be finalised during 2021 and its implementation to be enabled by a National Electrification Funding Portfolio, developed in parallel with the Policy.¹⁵⁶

156 GRN (2020d).

