

Namibia

Energy System Transformation Outlook (ESTO)

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Item 2

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About GET.transform

About GET.transform



European technical assistance programme supporting **national and regional public partners in Africa and Latin America**

- To advance their power sector transformations; and
- To contribute to knowledge sharing and mainstreaming of country and regional experiences.



Long-Term Energy Planning



On-Grid Regulation and Market Development



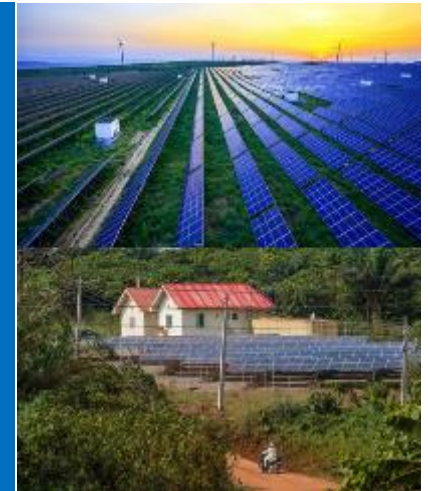
Off-Grid Regulation and Market Development



Renewable Energy Grid Integration

Regulatory and technical ecosystem for power system transformation

Access to sustainable electricity



About GET.transform



Long-term Energy Planning



Developing least-cost, low carbon **capacity expansion and investment plans**, outlining development paths for power generation projects

On-Grid Regulation and Market Development



Supporting **institutional reforms** that allow for new market actors and renewable energy participation: market model design, non-discriminatory grid access, cost-reflective services

Design and management of **solicited auctions** as well as **market-driven mechanisms** for procuring on-grid energy

Off-Grid Regulation and Market Development



Developing **electrification pathways** building on socio-economic development and productive-use policies

Design and management of **award mechanisms** for procuring off-grid energy

Renewable Energy Grid Integration



Updating of **technical power system planning and operational procedures** that enable the operation of renewable energy dominated power systems

Increased quantity and quality of policies, regulations and processes enabling large-scale investment into renewable energy

Visit our global *Activity Navigator*

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Topics



Long-Term Energy Planning



On-Grid Regulation & Market Development



Off-Grid Regulation & Market Development



Renewable Energy Grid Integration

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Foreword



The purpose of the Energy System Transformation Outlook (ESTO) is to document a **high-level summary of the electricity landscape** in Namibia and is the outcome of a high-level overview and assessment that followed a 'review, interview, identify' approach.

The review phase focused on a **desk-top review** of a multitude of publicly available energy and power sector publications.

The interview phase focused on further discussions with the key public sector actors (MME, NamPower, and ECB) to identify potential needs, opportunities and gaps, and culminated in the **public sector actors formally expressing their key priority needs**.

The identify phase focused on **defining potential technical assistance and capacity building projects** that will strongly support a power transition in Namibia, and that GET.transform is well positioned to support. It also provides a starting point for further engagement with the public sector and other donor agencies.

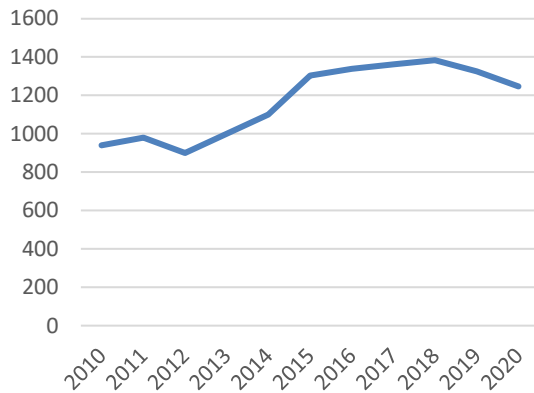
We welcome feedback to enrich our understanding of the power sector and to align support activities with other donors and development agencies.

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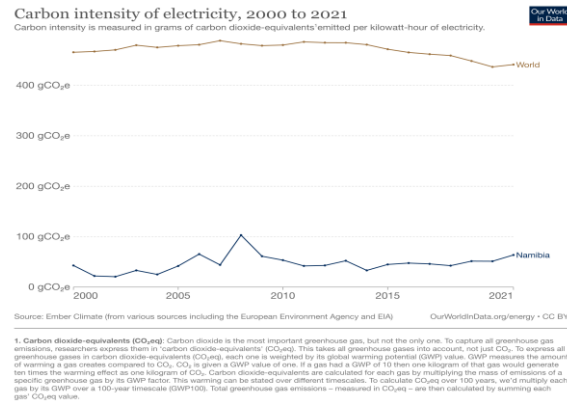
Namibia ESTO

Energy Snapshot

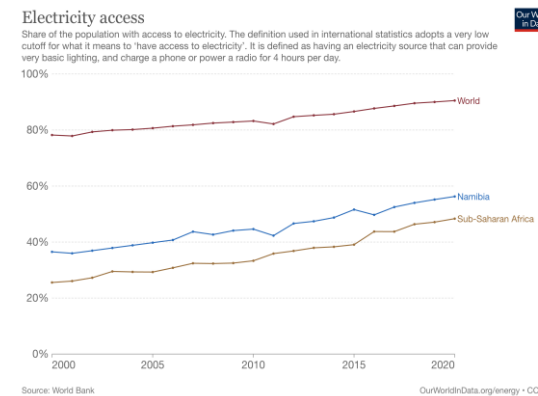
Per capita electricity consumption (kWh/person)



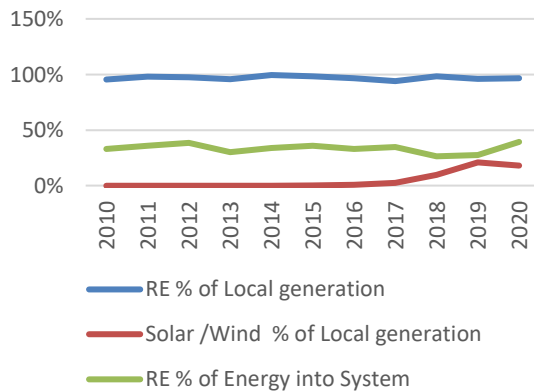
Energy intensity (MJ per 2017 \$. PPP GDP)



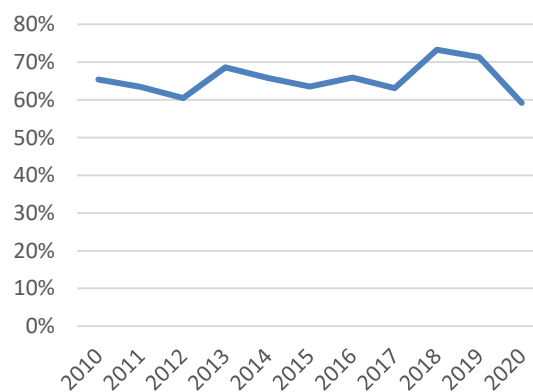
Access to electricity (%)



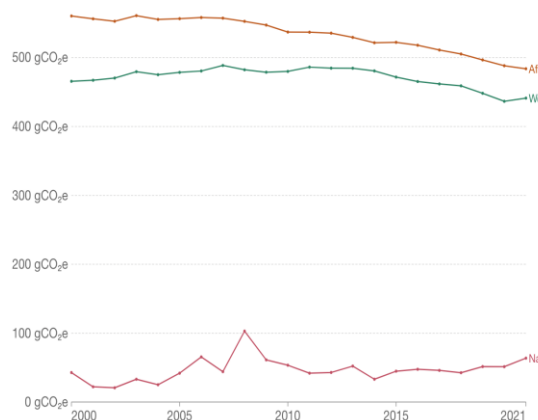
Renewable share of electricity (%)



Net electricity imports (%)



Electricity carbon intensity (grams of CO2eq. per kWh)



Source: Electricity Control Board 2020, OurWorldInData.org and data.worldbank.org.

All non-labelled data range from 2000 - 2020

Key figures

Economy

Population:

2.5 million

GDP per capita (2020 US\$):

4,920.00

GDP (2020):

US\$ 12.3 Billion

NIPDB fact sheet (March 2023)

GDP growth % (2022):

4.2% (Projected)

PPP Investments (Energy)

US\$ 70 million

Worldbank (2018)

Energy

Per capita electricity consumption

1,246 kWh/person

Electricity Control Board 2020

Access to electricity:

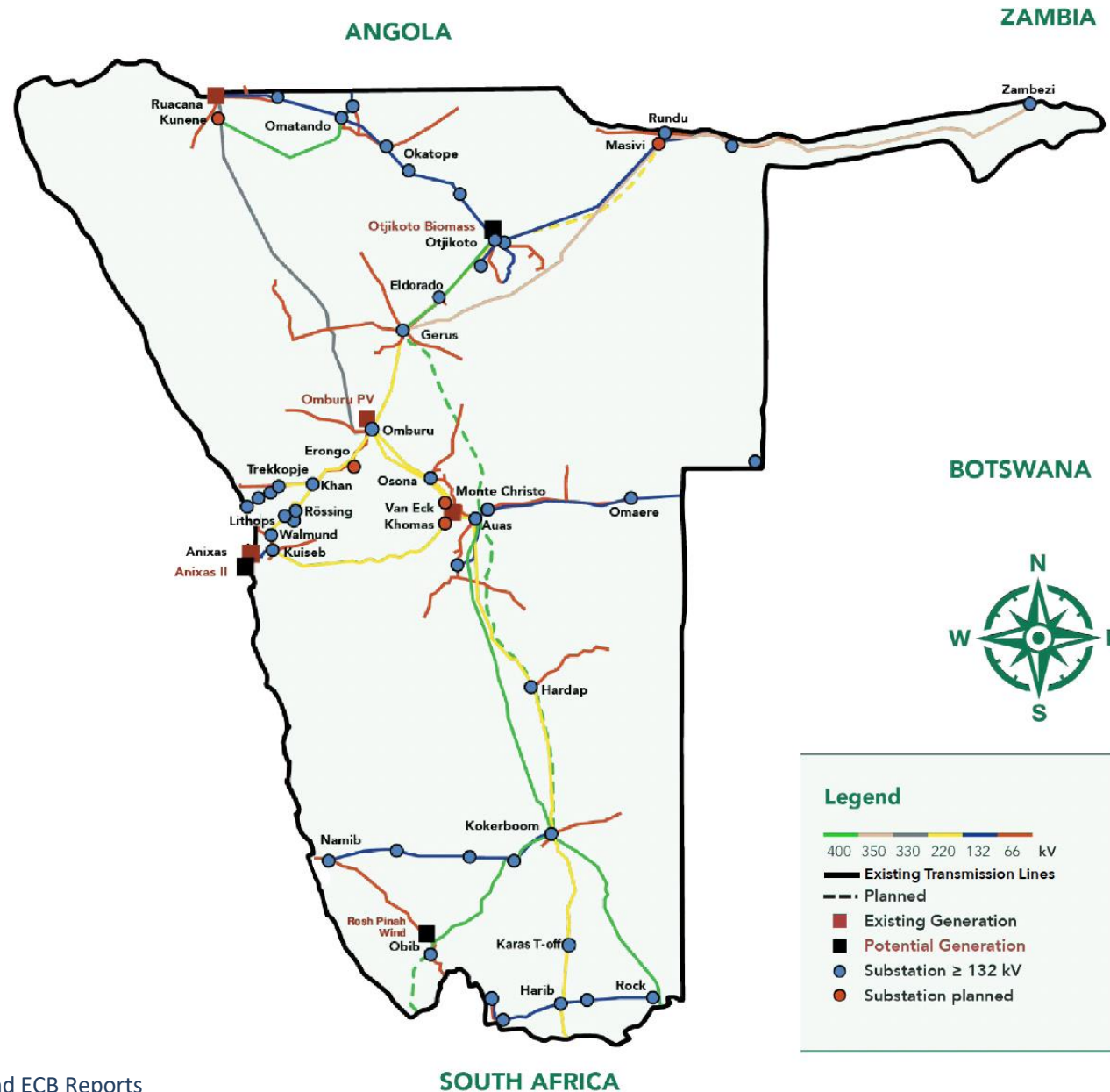
National: 56%

Urban: 72%

Rural: 35%

NIPDB fact sheet (March 2023)

Generation mix & Installed Capacity



Key statistics for Namibia (2021/22)

Electricity demand: 638 MW
 Energy Consumption: 3 983 GWh

Local generation: 1 155.07 GWh
 Imported energy: 2 827.93 GWh

Carbon Intensity: 64 gCO₂e Namibia
Carbon Intensity: 717 gCO₂e RSA
 Source: Our World in Data

Installed capacity:

NamPower

- Hydro - 347 MW
- Diesel / HFO – 22.5 MW
- Solar PV – 20.0 MW
- Coal – 120 MW

IPP - REFIT

- Solar PV – 65 MW
- Wind – 5 MW

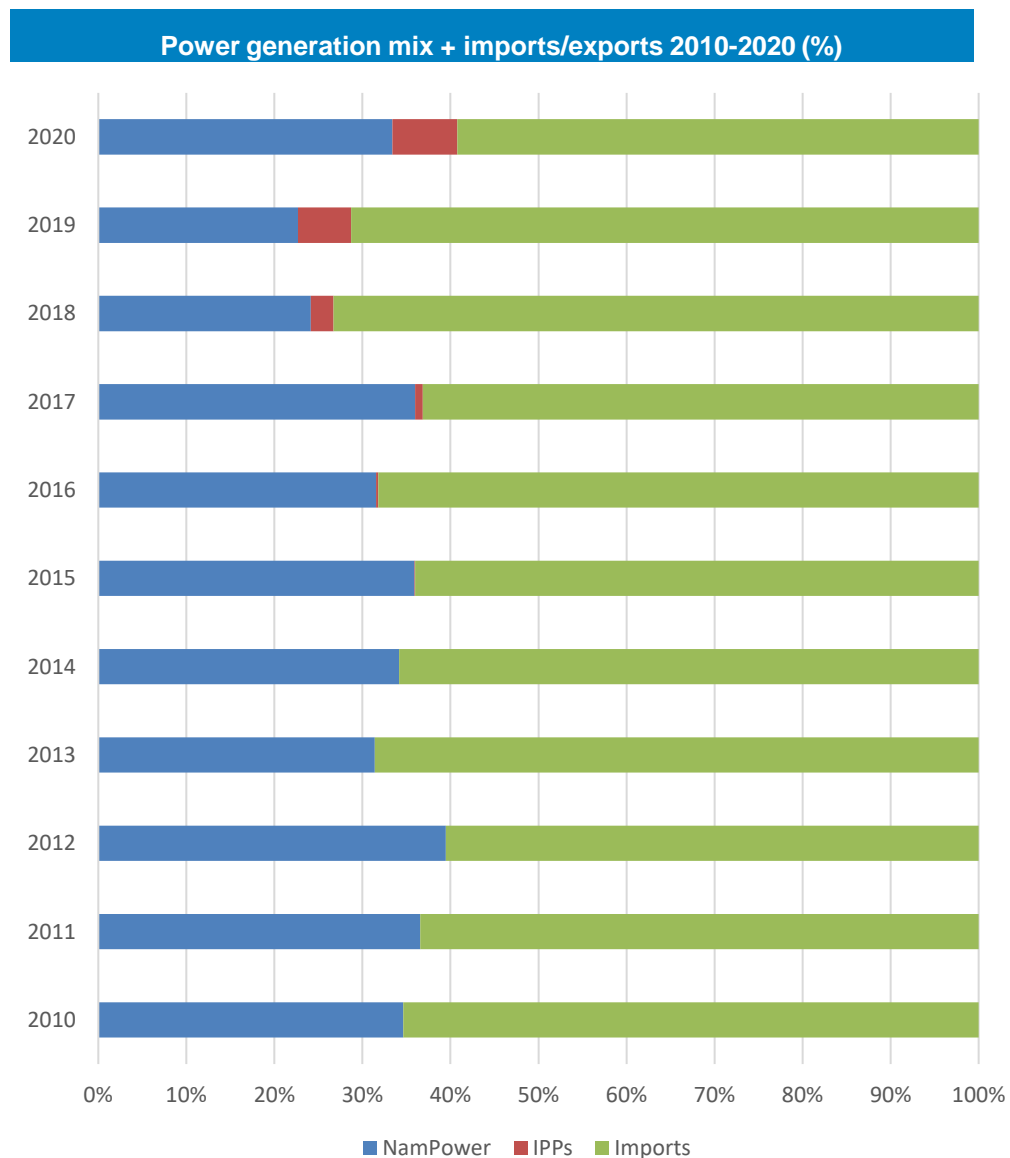
IPP - Hardap ▪ Solar PV – 37 MW

IPP – Greeham 1 ▪ Solar PV – 10 MW

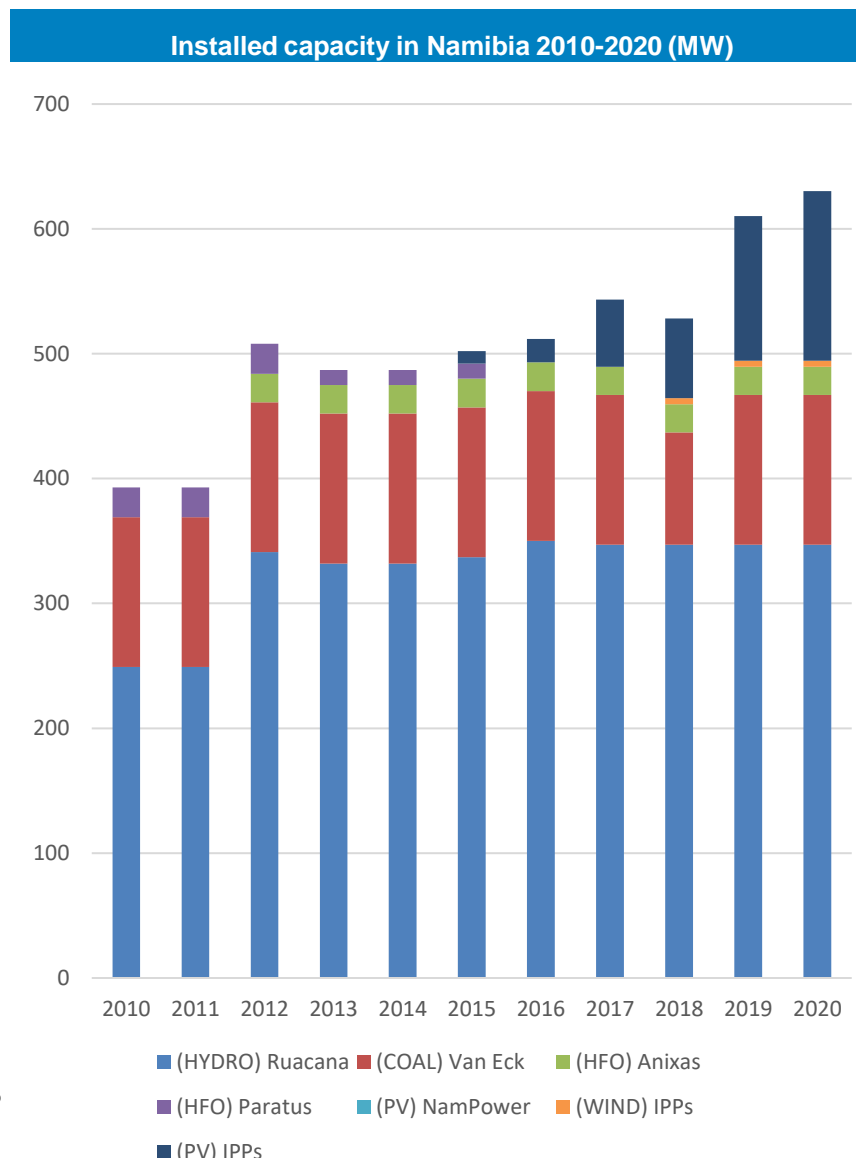
IPP - Greeham 2 ▪ Solar PV – 10 MW

IPP - Omburu ▪ Solar PV – 4.5 MW

Generation mix & Installed Capacity



Source: own elaboration based on NamPower Annual Reports and ECB Stats.



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Key stakeholders in current power supply market

Institution

Description



**Ministry of
Mines & Energy
(MME)**

The Energy Directorate of the Ministry of Mines and Energy (MME) is responsible for the implementation of Energy Policies and **enforces the compliance of legal requirements of energy legislation (Electricity Act, 2007) and regulations as well as researches new and renewable sources of energy and regulations and research new and renewable sources of energy.** The mandate of the Energy Directorate is to ensure an adequate and affordable energy supply in a sustainable manner taking advantage of natural resources in support of the nation's socio-economic development.



**Electricity Control
Board of Namibia
(ECB)**

The Electricity Control Board (ECB) is a statutory regulatory authority established in 2000 under the Electricity Act 2 of 2000; which has subsequently been repealed by the Electricity Act, 4 of 2007; the latter Act expanded the ECB mandate and core responsibilities. **The core mandate of the ECB is to exercise control over the electricity supply industry with the main responsibility of regulating electricity generation, transmission, distribution, supply, import and export in Namibia through setting tariffs and issuance of licenses.**



**Namibia Power
Corporation
(NamPower)**

Namibia Power Corporation (Proprietary) Limited (NamPower) is the national state-owned power utility. NamPower is designated as a commercial public enterprise and as such reports to the Ministry of Public Enterprises (MPE), as per the provisions of the Public Enterprises Governance Act 1 of 2019 ("PEGA Act"), now incorporated with the Ministry of Finance. NamPower also has a reporting obligation to the Ministry of Mines and Energy, as the Government entity responsible for establishing policy in the country's energy sector. **The Company is responsible for generation, transmission, energy trading, and to a lesser extent the distribution of electricity in Namibia.**

**Modified
Single-buyer (MSB)**

Modification of the Single Buyer model is now legislated. MSB will allow electricity consumers and Independent Power Producers (IPPs) to transact with each other directly for the supply of electricity. **NamPower is responsible for the ring-fenced operation of the Modified Single Buyer.**

**Private Sector
self-generators and/or
IPP's**

Key private sector players include Solar (PV) and Wind generators that supply some 140 MW into the national (NamPower) grid through various PPA's.

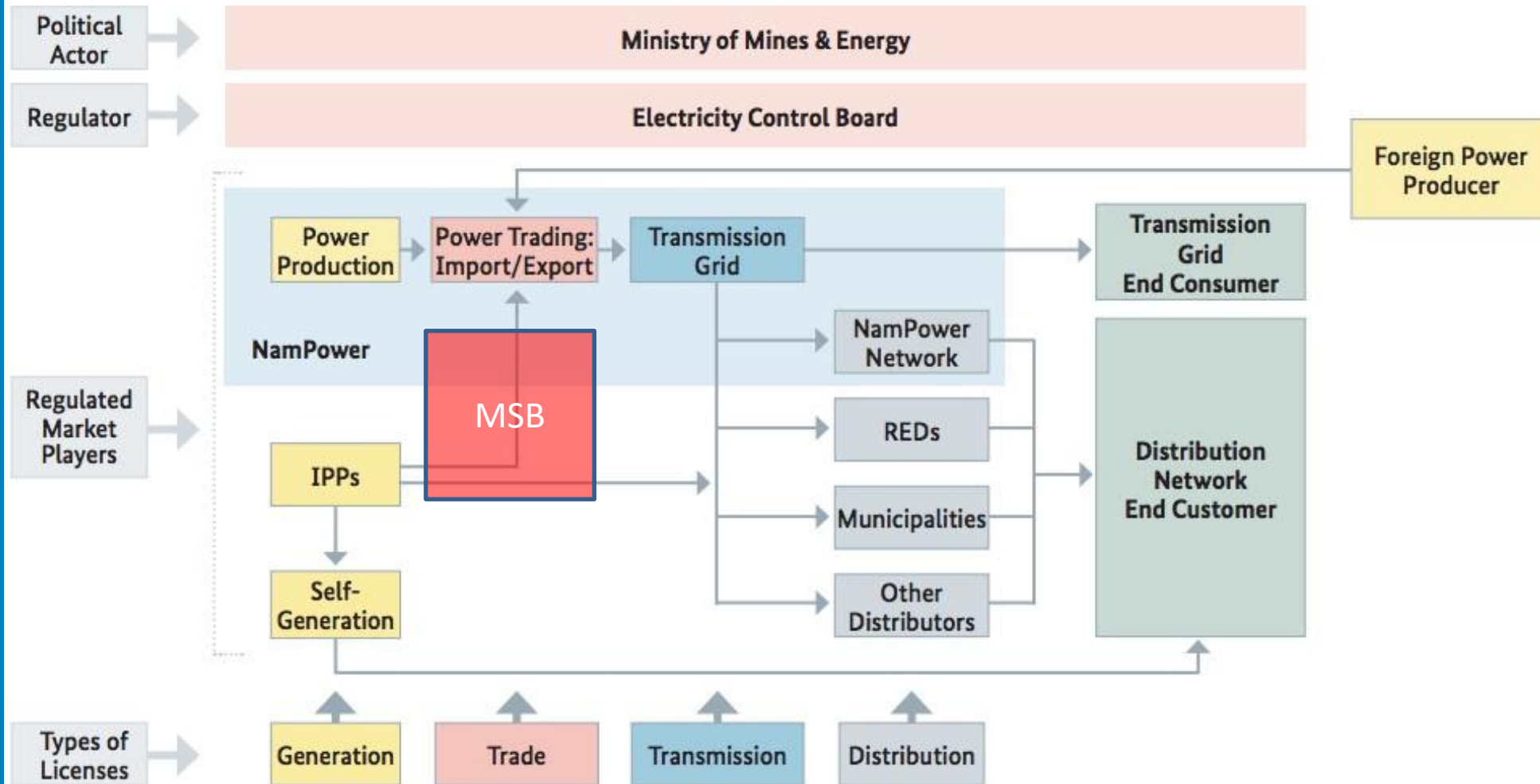


Import Platform

NamPower imports electricity through the **Southern African Power Pool (SAPP)** via its Energy Trading System to complement supply and meet demand.

NAMIBIA envisages being a net exporter [to the SAPP] as opposed to a net importer after the implementation of the planned projects in the near future.

ESI Organogram

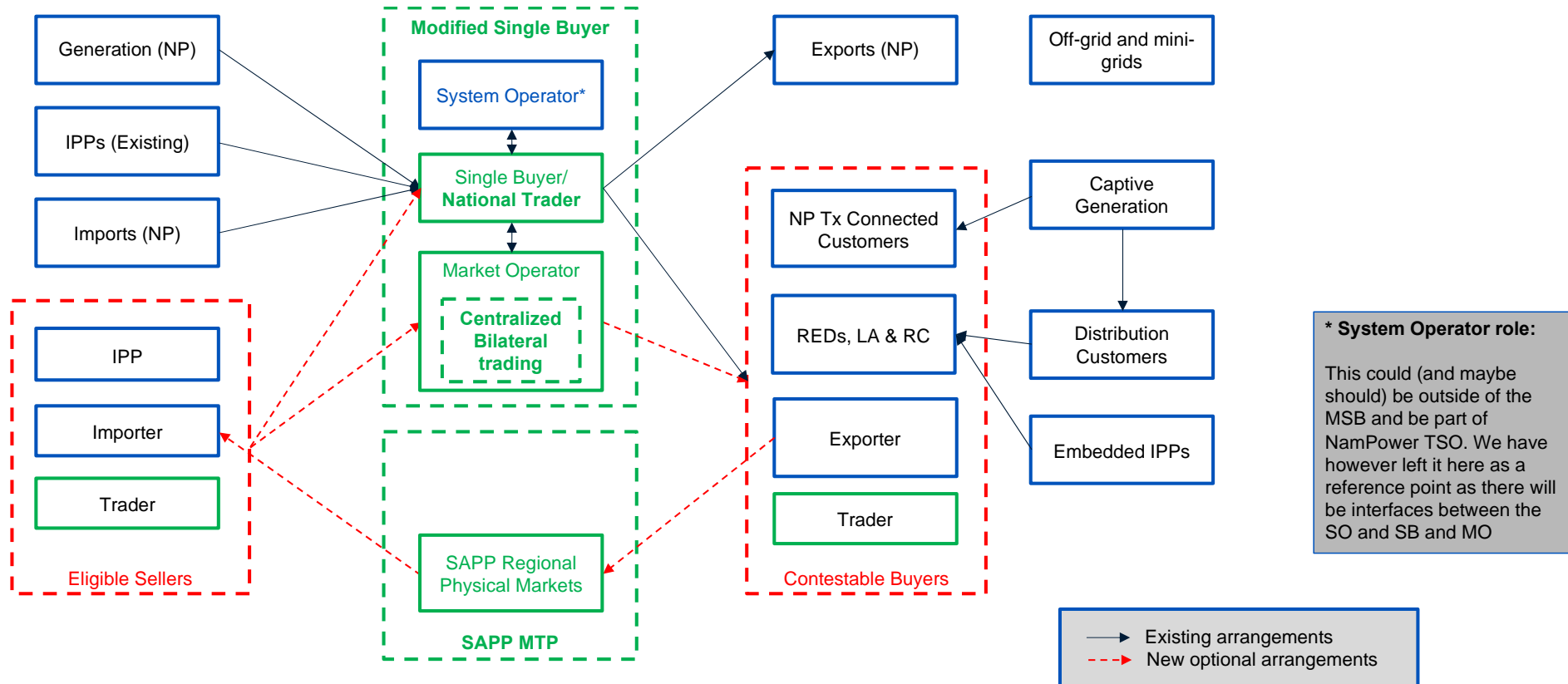


Key takeaways

- The Ministry of Mines and Energy (MME) provides political and policy oversight.
- Regulatory oversight by the Electricity Control Board (ECB) is independent but needs the approval of the Minister (MME) for activation.
- ECB to become the “Energy” regulator once the Energy Bill, 2019 is passed in Parliament.
- Namibia’s Distribution providers can be “off-takers” from IPPs under MSB rules.
- Traders now an active class of licensees.

Modified Single buyer

some more details on MSB Phase 1 a/b

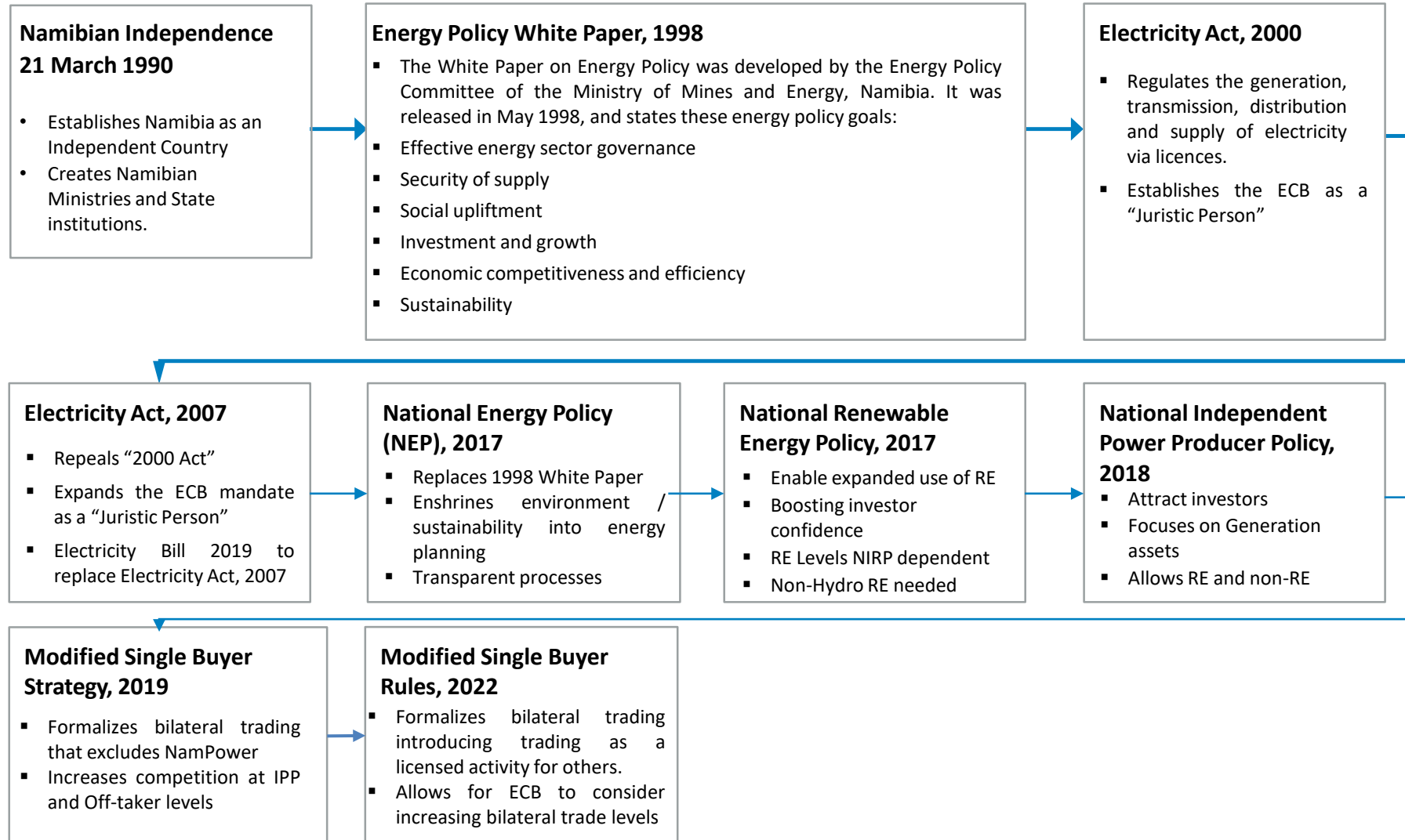


Key takeaways

- The Modified Single-buyer (MSB) provides a further liberated electricity market.
- Phase 1b increases private sector participation by allowing licences to Traders other than NamPower.
- MSB allocation of 683 MW (100%) already at 81% (552 MW...[NamPower Annual Report 2022](#)).
- NamPower still supplier of last resort.

Regulation and Energy Policy instruments

Timeline

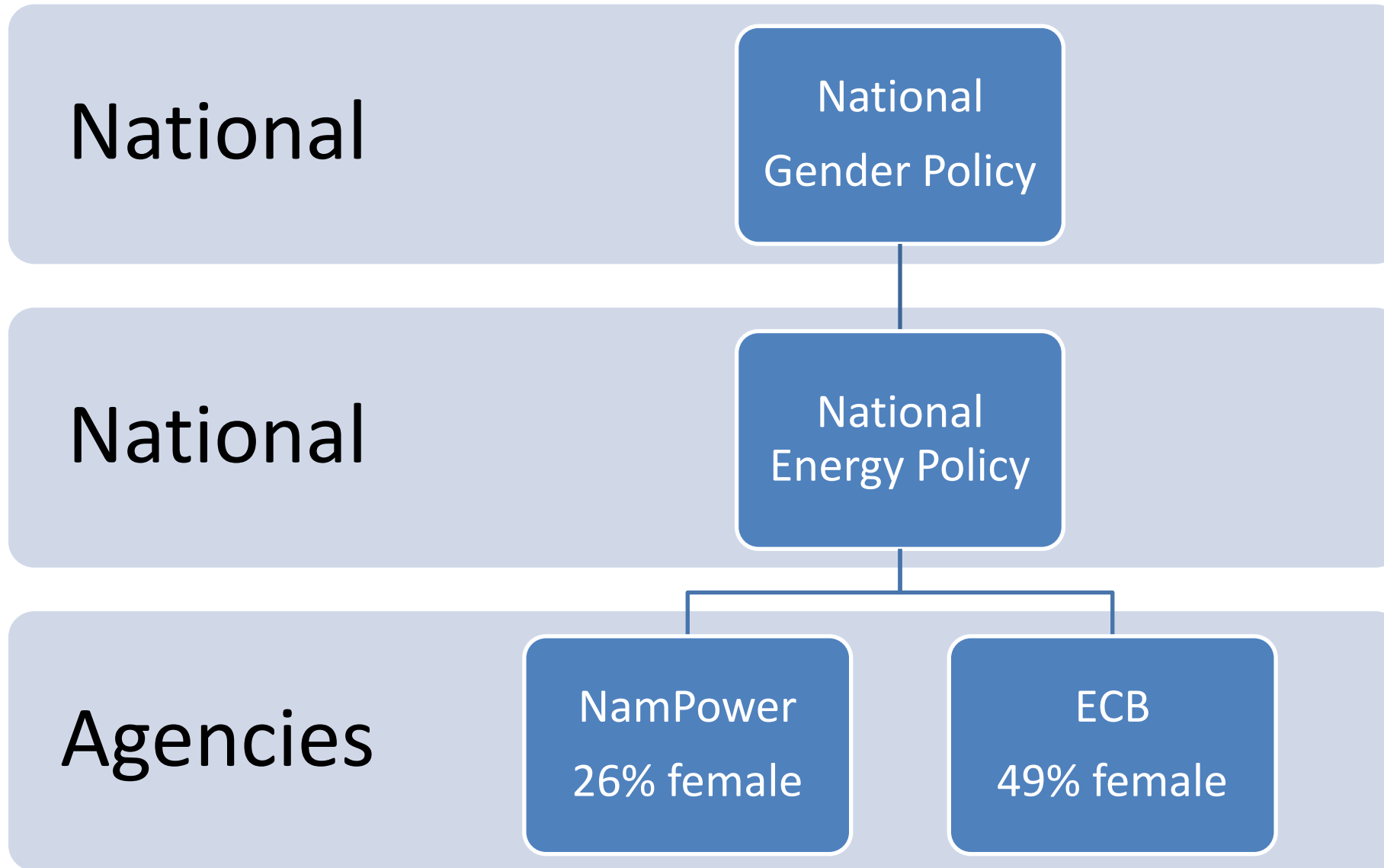


Key takeaways

- Electricity supply in Namibia is cost reflective but with high import levels of electricity.
- Local generation is skewed towards Hydro and the risk factor surrounding dependency on hydro is taking a toll.
- Introduction of the Modified Single-buyer (MSB) is a step in the right direction for private sector participation.
- Namibia’s electricity industry is receptive to private sector investment but has confined this to generation, off-grid and export of electricity.
- Continue developing MSB Market Rules, Electrification, and Off-grid regulations.

Other Policies

Gender

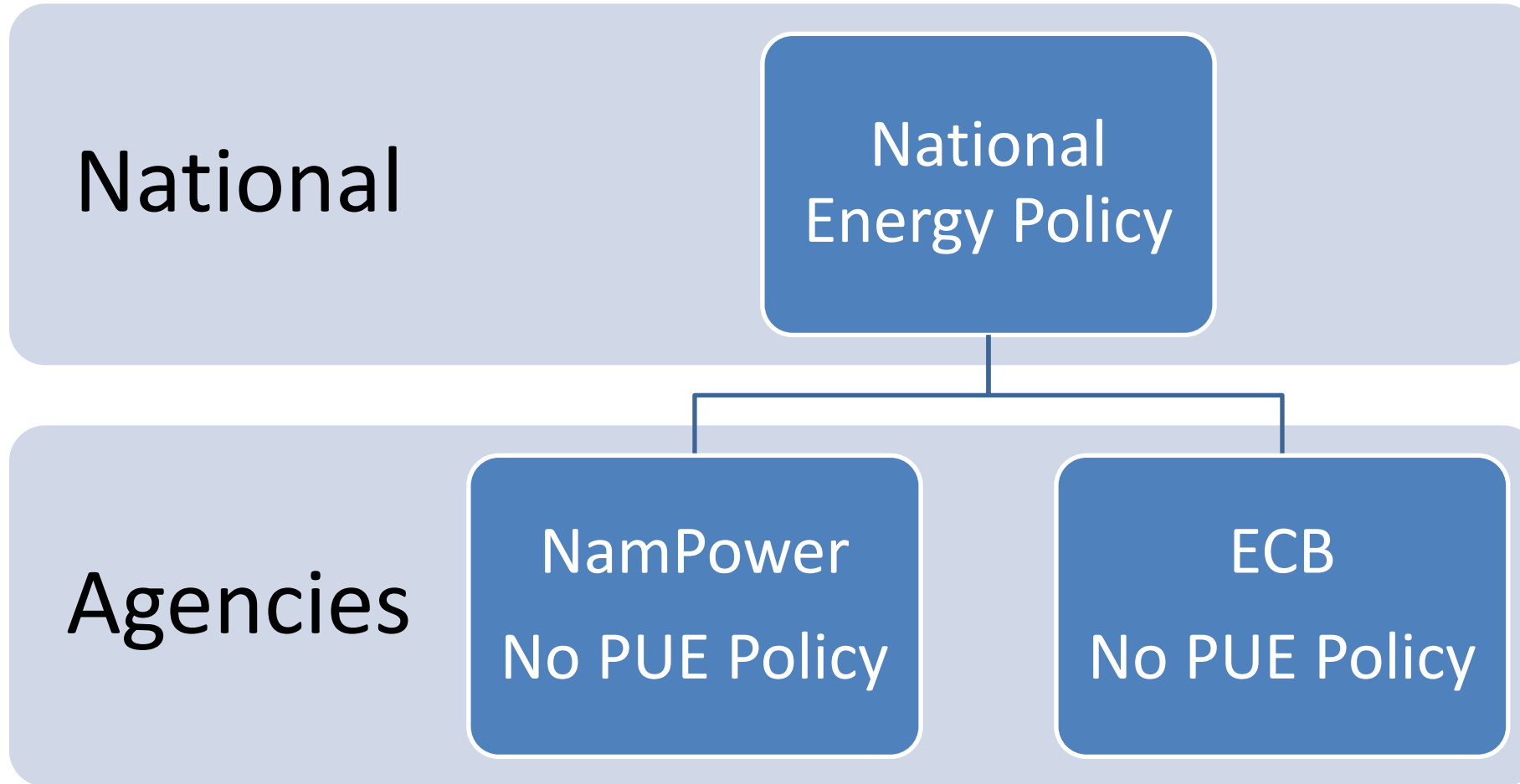


Key takeaways

- National Gender Policy (2010-2020) provides overarching policy direction for gender mainstreaming in all areas of national life. Aligns with International and Regional protocols.
- National Energy Policy seeks to mainstream Gender, promoting equality and equity across the energy sector.
- NamPower is committed to equal employment opportunities and targeting females for promotions, bursaries, and scholarships.
- The ECB seeks a balance of gender and age. Its gender balance is close to the national level of 50%.

Other Policies

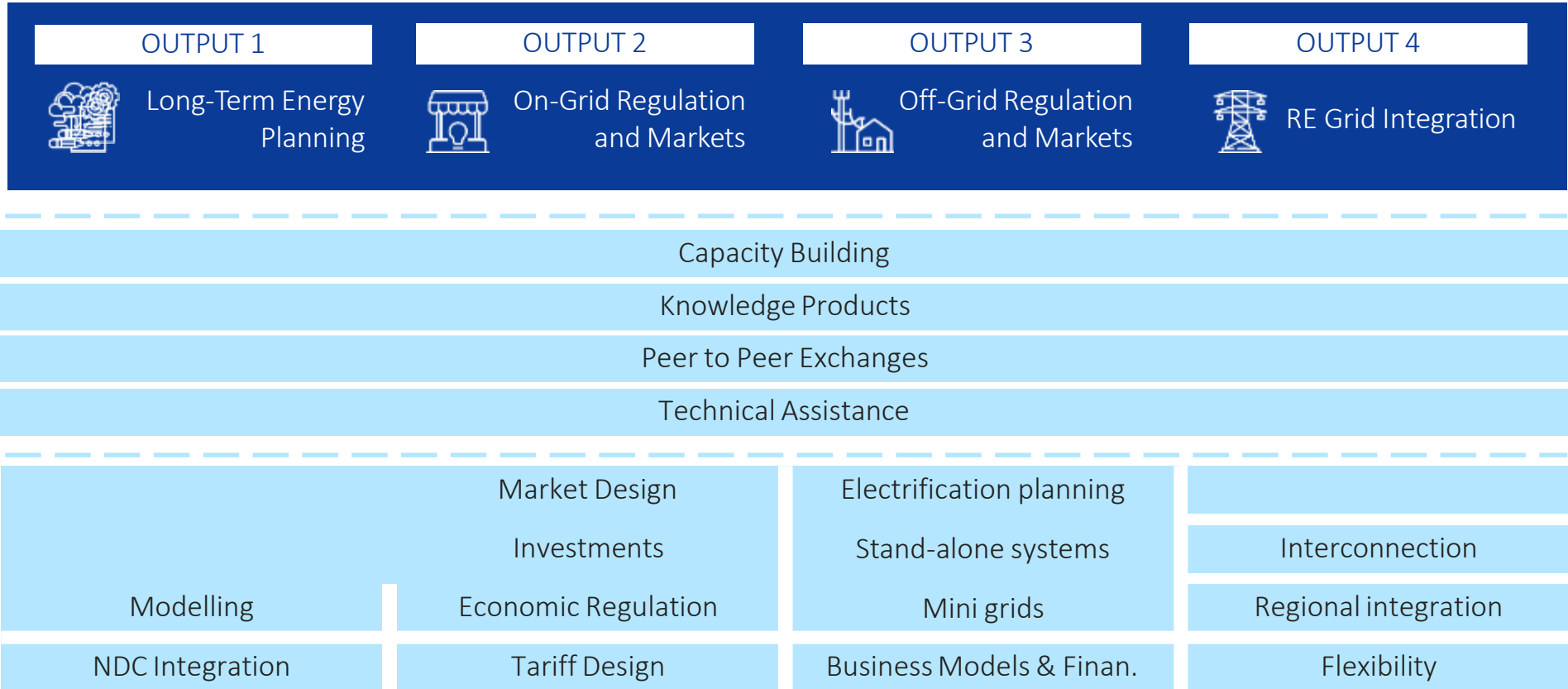
Productive Use



Key takeaways

- National Energy Policy looks at how local energy sources can be developed for productive uses (PUE).
- National Energy Policy Encourages PUE to improve affordability. (*Also enshrined in the National Electrification Policy*).
- National Energy Policy wants incentives for *discovery, development and productive use*. – Bioenergy, Solar and Wind.
- PUE seen as supporting job creation and narrowing inequality.

GET.transform framework



State of play

Long-term Energy Planning	On-grid Markets & Regulation	Off-grid Markets & Regulation	RE Grid Integration	Identified TA opportunities
<p>Energy Planning and Research Division is a division in the Directorate of Energy at MME. It is engaged in conducting research and compiling statistics regarding power generation, transmission, import/export, and distribution of electricity as well as primary energy resource development including renewable sources of energy as the basis for policy advice.</p> <p>5th National Development Plan (NDP 5) The Development Plan noted the need to boost local generation and looked to increase it from 484 MW (2016), to 755 MW in 2022. It also introduced the “promotion” of Independent Power Producers (IPPs). The aim is to discourage monopolies and drive down costs through competition.</p> <p>2017 National Integrated Resource Plan (NIRP) The NIRP is a 20-year development plan for Namibia's Electricity Supply Industry, spanning the period between 2016 and 2035. One of the targets of the NIRP is to meet 75% of energy demand through local generation.</p> <p>This NIRP provides the context for the current (2022-2023) NIRP Update which will cover the period 2022 - 2041.</p> <p>Namibia: Geospatial Least Cost Electrification Plan, 2021 Developed under World Bank support, the Geospatial Least Electrification Plan seeks to identify the state of electrification through a GIS lens. This report focuses on 2019 datasets thus stating that electrification is 50%.</p>	<p>6th National Development Plan (NDP 6) is under development (NDP 5 review)</p> <p>The current electrification status is now 56%</p>		<ul style="list-style-type: none"> <input type="checkbox"/> Assistance with Long-term Energy Planning and NIRP implementation <input type="checkbox"/> Alignment of NIRP implementation and MSB expectations <input type="checkbox"/> Assessment of biomass for purposes of baseload local power generation <input type="checkbox"/> Investigate Hydro / Solar / Wind balancing to increase the share of non-hydro renewables <input type="checkbox"/> Support to data management and correlation of planning and implementation 	

State of play

Long-term Energy Planning	On-grid Markets & Regulation	Off-grid Markets & Regulation	RE Grid Integration	Identified TA opportunities
	<p>Energy Policy, 2017</p> <p>The policy seeks diversity in the market to help with socioeconomic development. It also notes Energy Efficiency (EE) and Demand-side Management (DSM) as tools Namibia can use as buffers for electricity supplies.</p> <p>Energy Storage is highlighted as support to increasing grid stability surrounding increased solar and wind generation into the grid.</p> <p>Electricity Act, 2007 / Energy Bill, 2019</p> <p>The ECB will be ruling on MSB PPA's and Grid Code regulations need to be harmonized.</p> <p>Modified Single Buyer Market Model (MSB) Market Rules, 2023</p> <p>Issued as <i>221219 MSB Rules Government-Gazette No-7983</i>. Operationalizes the Modified Single Buyer and provides for the rules of bilateral transactions. The rules bring Phase 1b into effect (1 July 2021 – 30 June 2026).</p>			<ul style="list-style-type: none"> <input type="checkbox"/> Support a coordination of EE and DSM action <input type="checkbox"/> Integrate EE and DSM into Long-term Energy Planning <input type="checkbox"/> Look at Namibian Grid Codes for cross-border alignment, especially in regard to export PPAs. <input type="checkbox"/> Support to potential Energy Traders

State of play

Long-term Energy Planning	On-grid Markets & Regulation	Off-grid Markets & Regulation	RE Grid Integration	Identified TA opportunities
<p>Off-grid Electrification Policy, 2020 covers minimum standards for households, schools, clinics and Government offices to be considered as having access but needs regulations developed</p> <p>National Electrification Strategy is still to be rolled out.</p>		<ul style="list-style-type: none">• No procurement framework exists specifically for mini-grid or off-grid systems.		<ul style="list-style-type: none"><input type="checkbox"/> Capacity Building on off-grid Renewable Energy markets<input type="checkbox"/> Assist with creating a mini-grid roll-out based on the Electrification Strategy<input type="checkbox"/> Follow up on progress of Electrification Strategy for consent and implementation.

State of play

Long-term Energy Planning	On-grid Markets & Regulation	Off-grid Markets & Regulation	RE Grid Integration	Identified TA opportunities
<p>Several policies and regulations exist that support RE Grid Integration.</p> <ul style="list-style-type: none">• National Energy Policy, 2017• National Renewable energy Policy, 2017• National Independent Power Producer Policy, 2018• Modified Single Buyer Strategy, 2019• Modified Single Buyer Rules, 2022				<ul style="list-style-type: none"><input type="checkbox"/> Capacity Building on Renewable Energy Integration<input type="checkbox"/> Defining the ancillary services market for Namibia<input type="checkbox"/> Capacitation on combined demand/load forecasting with generation (align with Long-term Energy Planning)