Renewable Energy and Economic Advancement in Namibia

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Growth overview

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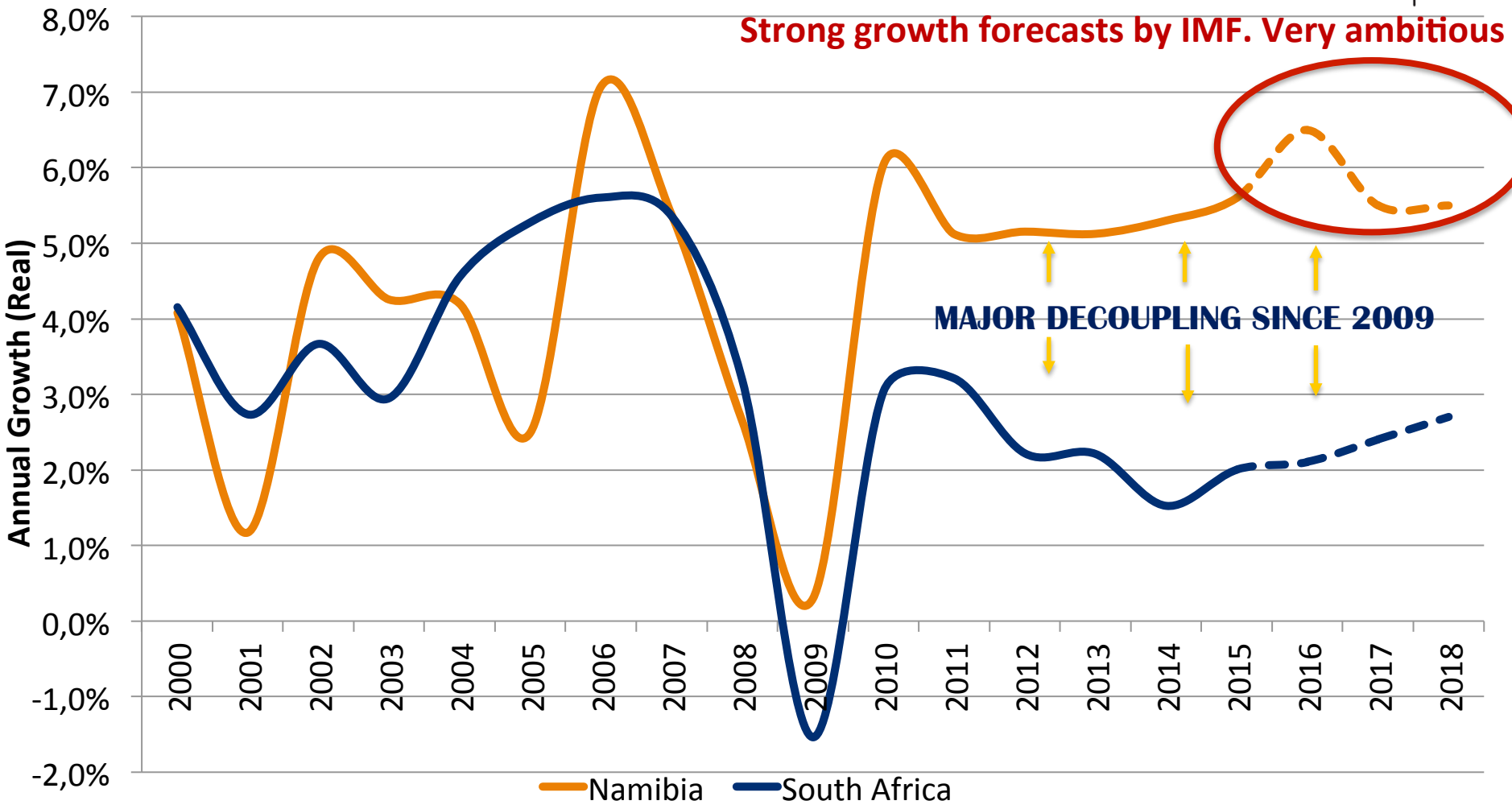

Namibia has made a great deal of socio-economic progress since independence

Social and Economic Progress

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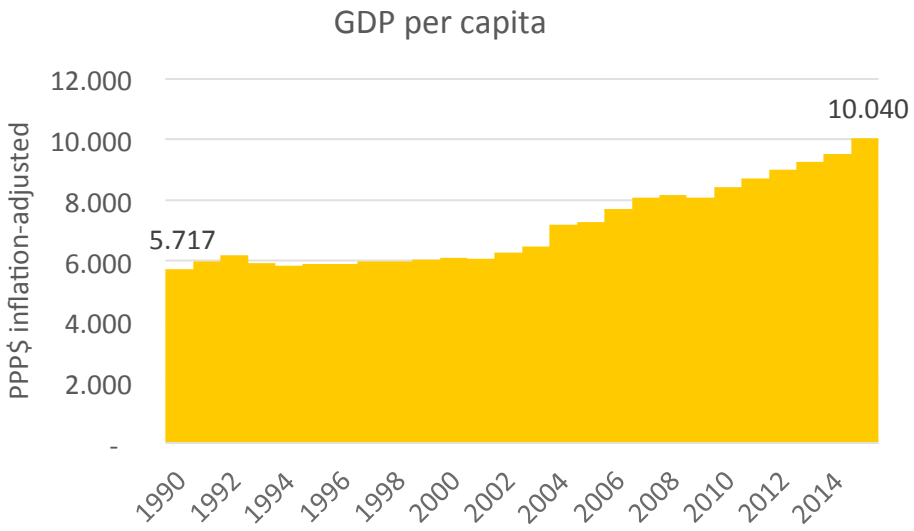

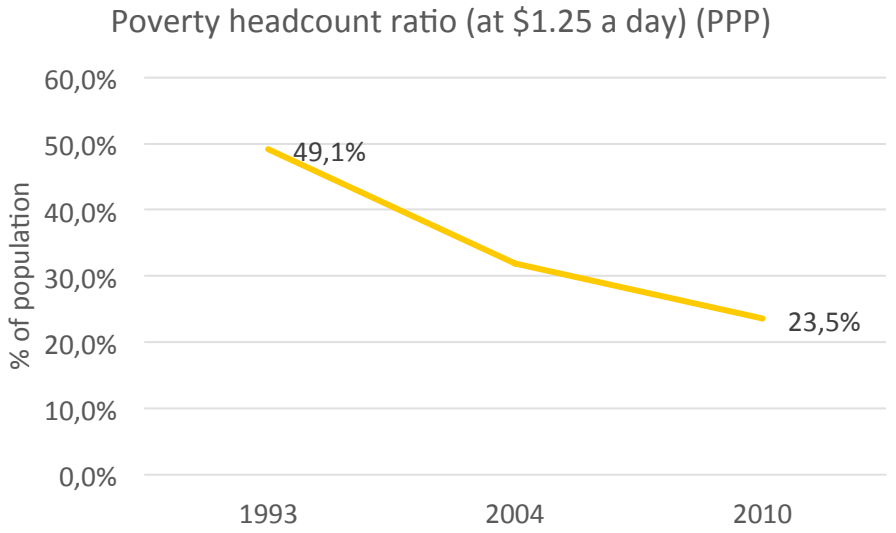

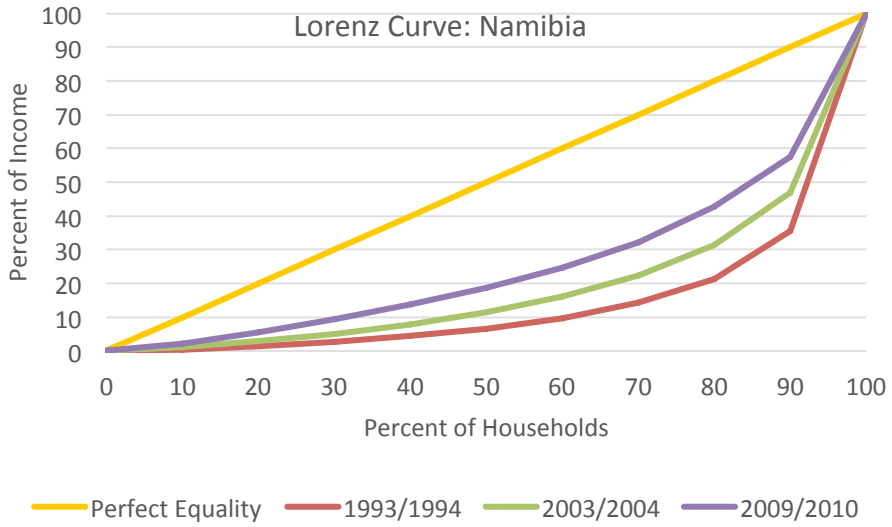

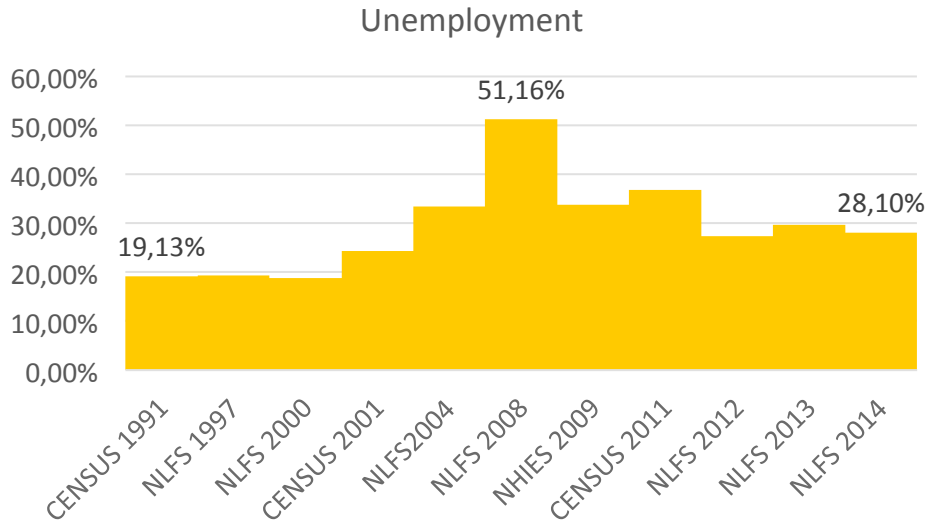

ECONOMIC ADVANCEMENT	**Macro-economic Stability**	HPP03.1: Anchor public debt to 30 percent as a ratio of GDP by the end of the Harambee period
		HPP03.1: Maintain an import coverage of 3 months during the Harambee period
		HPP03.3: Maintain and improve on international credit ratings of BBB minus
	Economic Transformation	HPP04.1:Create a minimum 5,000 new jobs in the manufacturing sector during the Harambee period
		HPP04.2: Increase volumes of locally produced goods supplied to the public and retail sector as per Retail Charter targets
		HPP04.3: A minimum of ten investment projects attracted through investment promotion activities, creating 1,000 jobs during the Harambee period
		HPP04.4: Economic empowerment leading to higher inclusion of disadvantaged groups into formal economy
	Youth Enterprise Development	HPP05.1: Increase access to finance by Micro, Small and Medium Enterprises from 22 percent to 50 percent by 2020
		HPP05.2: Introduce new financial instruments to overcome hurdle of collateralised credit for startups
		HPP05.3: Established SME Development Agency with country wide representation by 2020
		HPP05.4: Establish one hundred and twenty one [121] rural youth enterprises countrywide, each employing between 5-10 youth
	Economic Competitiveness	HPP06: Namibia rated as most competitve economy in Africa by 2020 as measured by World Economic Forum and World Bank

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MANY OF THESE PRIORITIES WILL NOT BE ACHIEVABLE WITHOUT STABLE AND COST EFFECTIVE ENERGY SUPPLY.

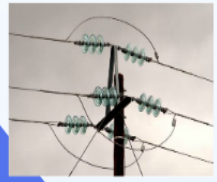
HOWEVER….

History

1972 — Van Eck

- Coal-fired power station
- Commissioned in 1972
- Out of commission since 2012
- After refurbishments, supposed to reach its maximum supply capacity of 120MW at the end of 2015

1976 — Paratus



- Diesel power station
- Built in 1976
- Emergency stand-by generator
- 24MW name-plate capacity
- 12 MW actual generation at present
- Aged infrastructure

1978 — Ruacana

- Hydro power plant
- Commissioned in 1978
- Biggest local energy generation plant with a name-plate capacity of 330 MW
- Refurbishments at plant will increase generation capacity to 347 MW this year
- Supplied 99% of all locally produced energy in 2014
- Generation is highly dependent on the flow of the Kunene River and can drop to 50% during dry months

2012
Ruacana Unit 4 was added, providing an additional 90MW to the plant's name-plate capacity

2012-2015
Van Eck refurbishment bringing turbines back to 120MW

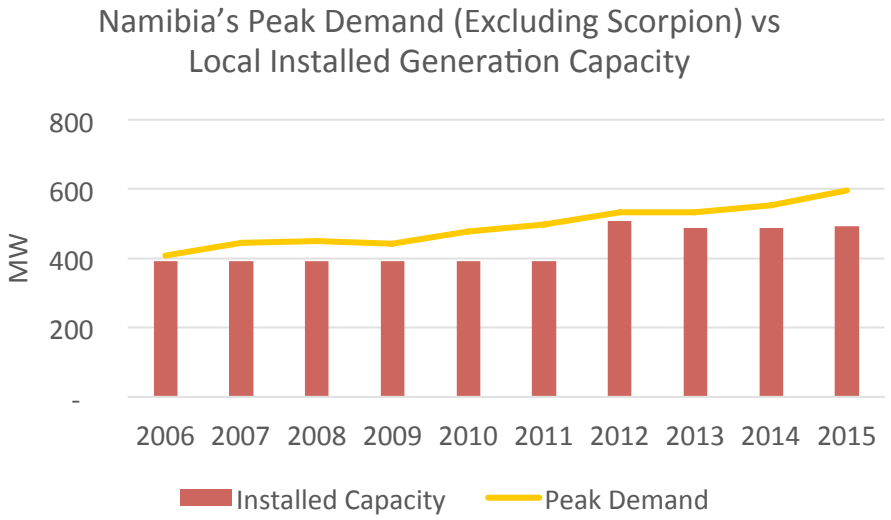
2011 — ANIXAS

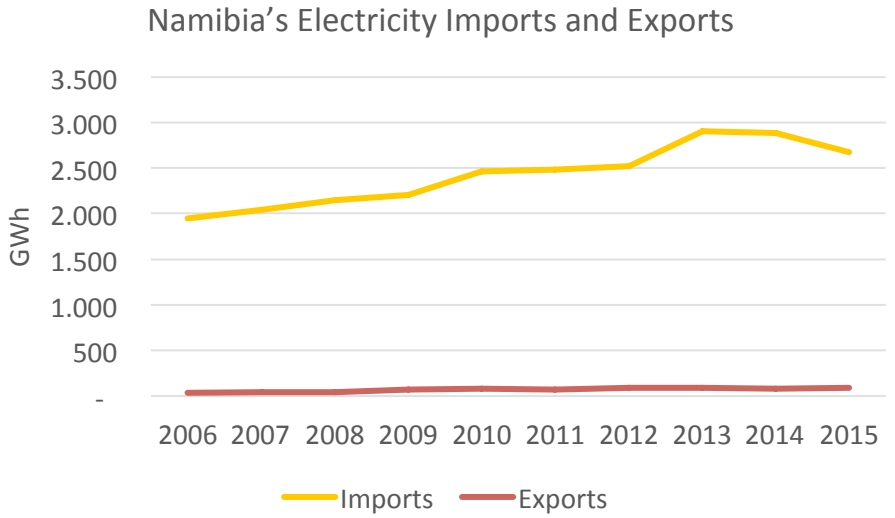
- Diesel power station
- In operation since 2011
- Emergency stand by power plant with 22.5MW capacity
- Adjacent to the Paratus power plant in Walvis Bay

2015 — Omburu

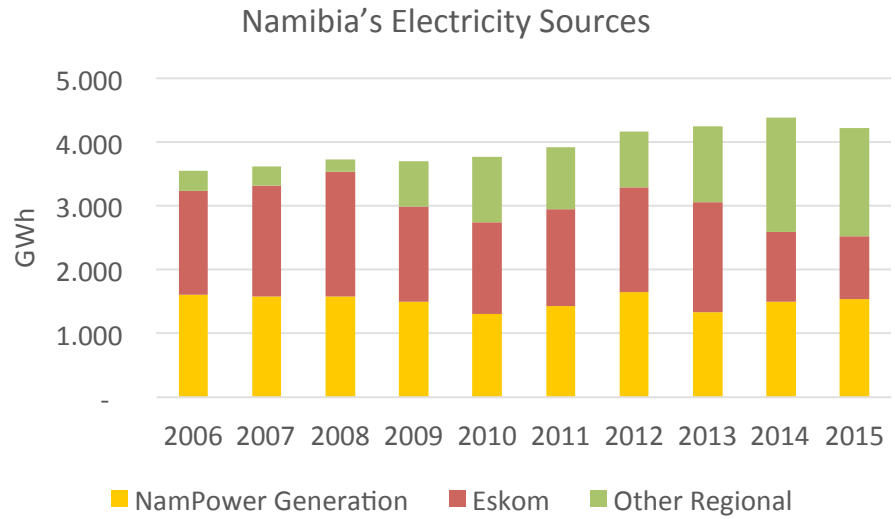
- Solar powered plant
- Commissioned in 2015
- Set-up in four months
- An Independent Power Producers (IPP), owned by the Franco-Namibian company InnoSun
- First multi-million solar power plant in Namibia

Energy supply issues

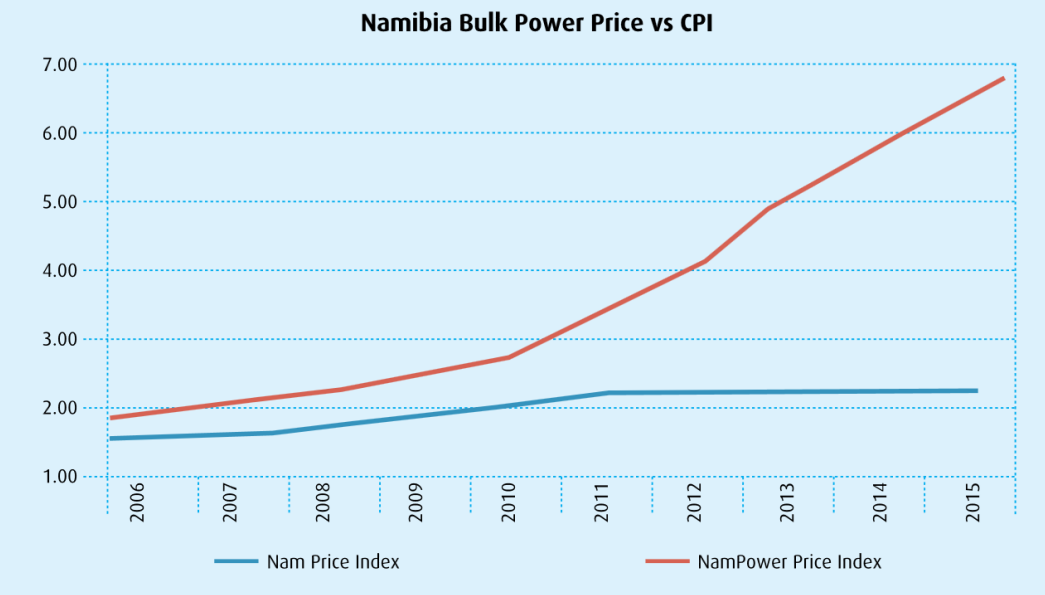




- Namibia imports between N$2.0 and N $2.6 billion worth of electricity from the region.
- Most of these imports used to come from Eskom – priced in ZAR
- Now, most imports are from Zambia (+Zim) priced in USD.

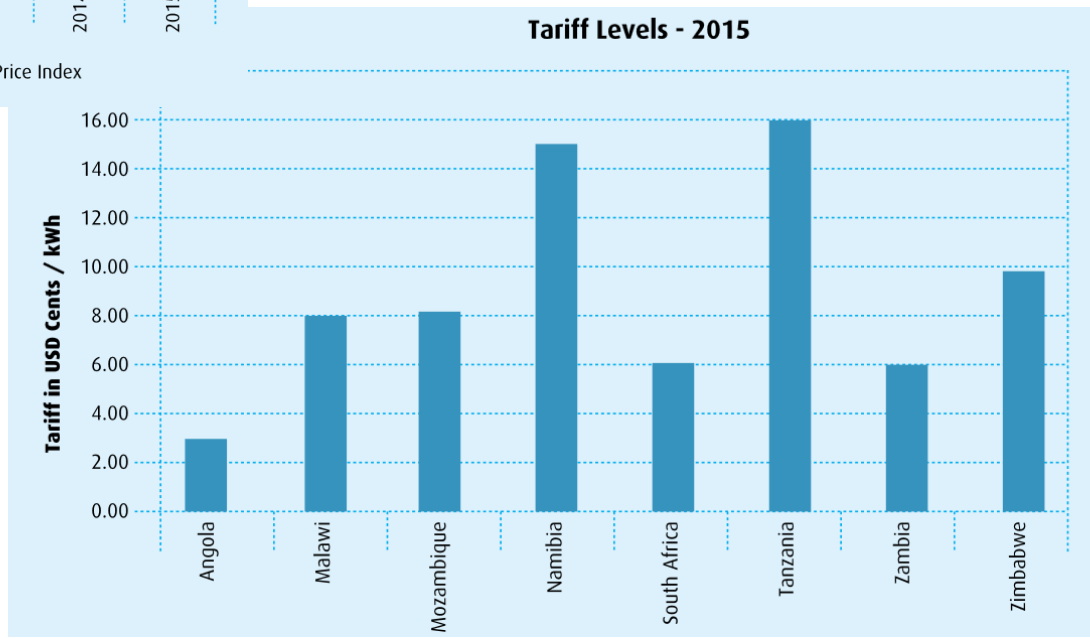


Pricing



- Namibia has relied on the region to keep the lights on and economy growing
- As regional surplus supply has dwindled, Namibia has had to pay up for energy.

- Namibia now has relatively expensive, and seemingly increasingly less reliable energy supply.
- If not addressed, this will make a number of the development objectives hard to achieve.



Government Funding

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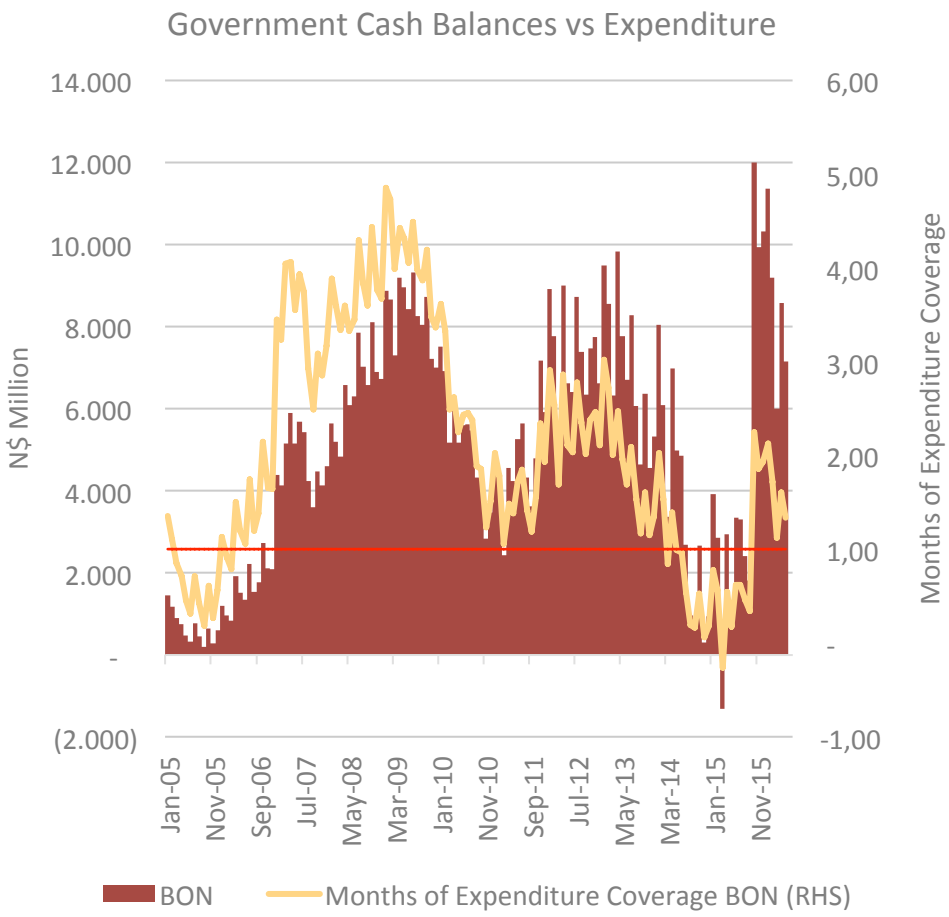

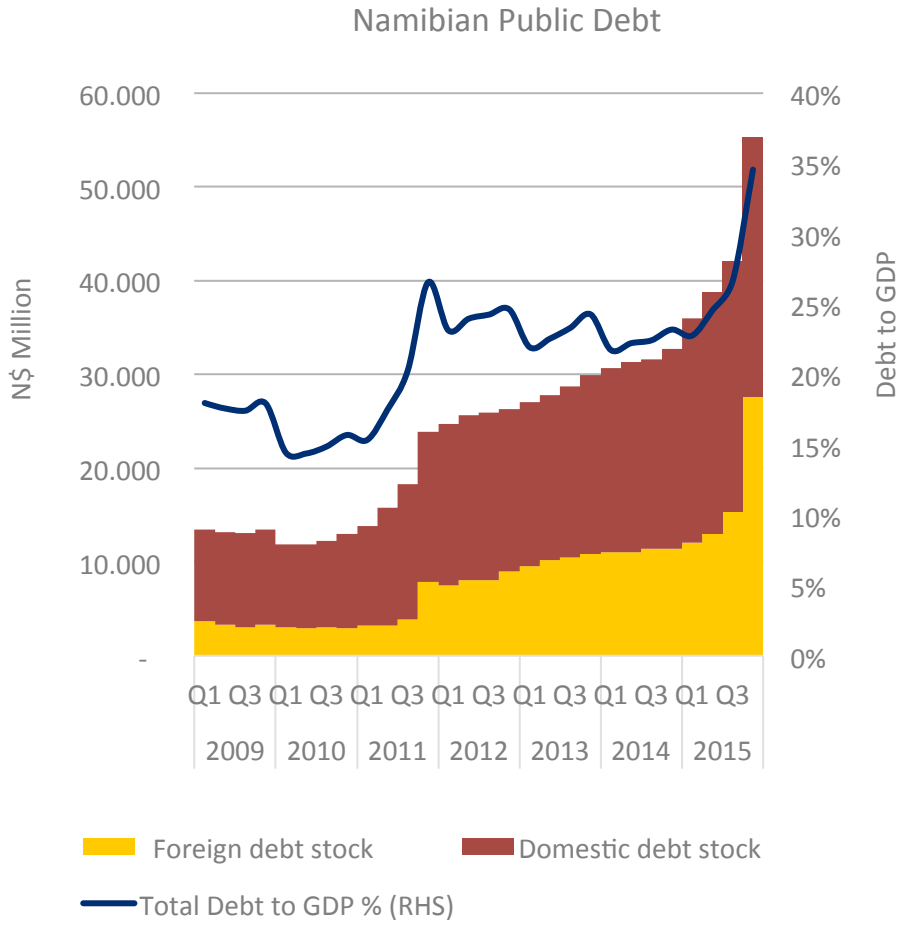

Reserves

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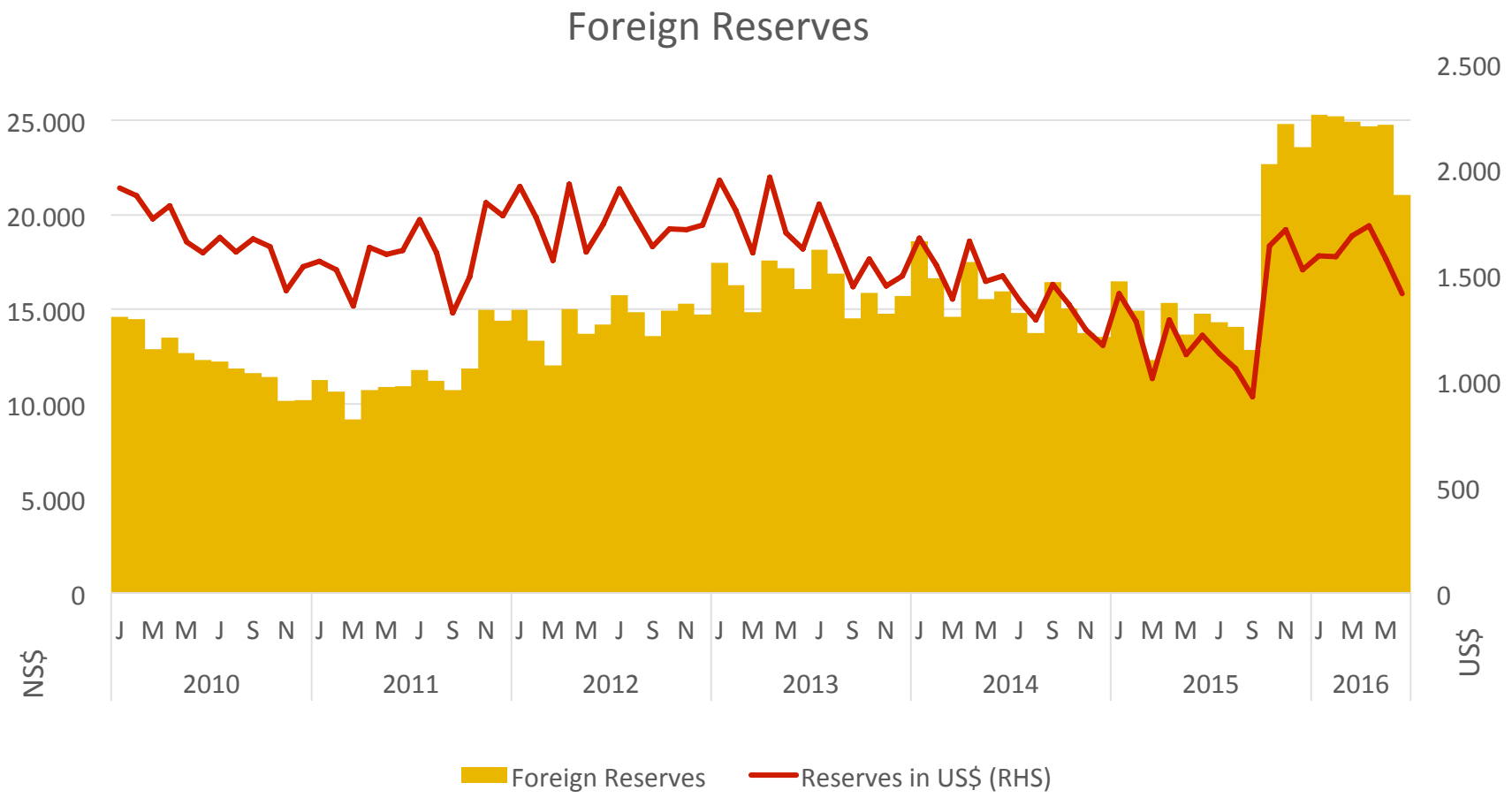

Problems

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We need a domestic, and privately/PPP funded solution to our supply issues in order to:

- Keep the lights on;
- Keep the economy growing, creating jobs and wealth;
- Keep government debt under control;
- Protect our foreign reserves; and
- Keep prices under control

Solutions?

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- We don't have coal….
- We don't have oil…
- We don't have scale for nuclear…
- We have gas (but still under-ground and under-sea)…
- We do have a phenomenal solar resource…
- We do have a phenomenal wind resource…
- We may have a viable biomass resource…