



Status and Opportunities for Solar Energy Development in Namibia and Botswana

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Alten Energías Renovables Overview

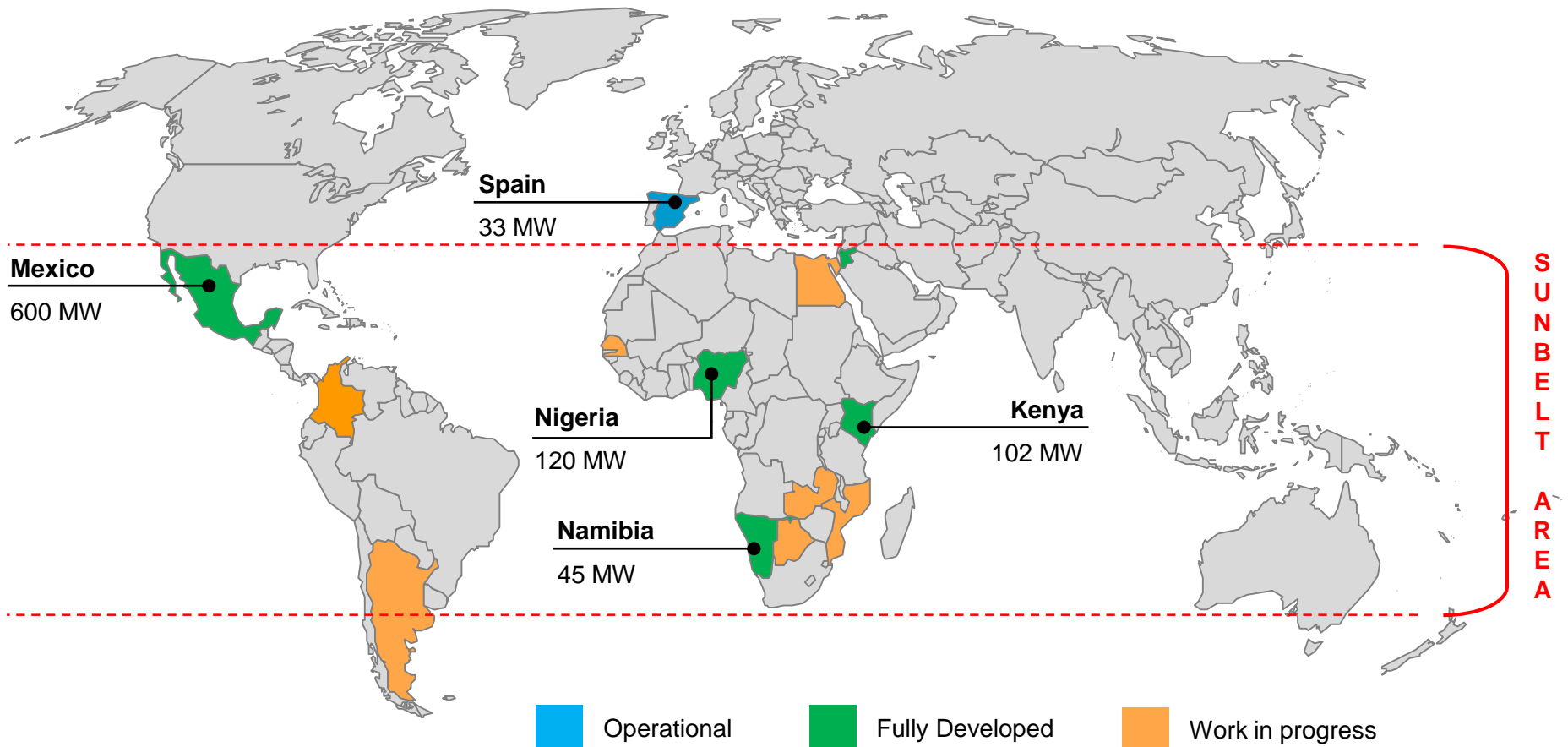
OVERVIEW

- Founded in 2006 by Carlos and Luis Castellanos, Alten Energías Renovables (“Alten”) is a solar PV energy Independent Power Producer (IPP) with a highly experienced and focused management team dedicated to develop, invest and operate high-performance, low risk PV projects
- Alten developed 6 PV plants in Spain with a total investment above US\$330m, being 83% project finance debt and the remaining 17% equity provided by Alten shareholders
- In January 2013, Alten incorporated Mr. Juan Laso as Deputy President and initiated an ambitious international project focused in two geographical areas: America (mainly México) and Sub-Saharan Africa
- PV projects under development exceed 1,000 MW. The business plan contemplates the development of 500 MW in 5 years (Plan 5/500), with a total investment of ~ \$1.1bn
- Alten provides full value chain service: development, construction management, debt financing negotiation, equity financing and operation and management
- Alten also participates in local renewables associations in the countries where is present what provides the Company with strong relationships with public institutions and an excellent positioning in the market
 - In Mexico, Alten is member of CESPEDS⁽¹⁾ (Comisión de Estudios del Sector Privado para el Desarrollo Sustentable) and ASOLMEX (Mexican Association of Photovoltaic Solar Energy)

(1) Sustainable development vehicle of the “Consejo Coordinador Empresarial” (CCE) (www.cce.org.mx/cespedes/)

Alten International footprint

- Alten developed and built solar assets in Spain and fully developed projects with in Mexico, Kenya, Nigeria and Namibia pending financial close
- Alten is expanding its activities in Africa and Latam



Namibia – Macro Overview

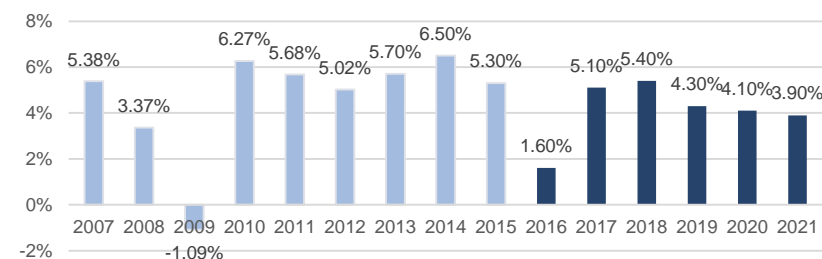
COUNTRY FACTSHEETS

COUNTRY	■ Republic of Namibia
CAPITAL	■ Windhoek
POPULATION	■ 2.4 million (2016)
GOVERNMENT	■ Unitary presidential
HEAD OF GOVERNMENT	■ Hage Geingob (President)
CURRENCY	■ Namibian dollar (NAD)
EXCHANGE RATE (US\$)	■ 14.217
EASE OF DOING BUSINESS RANKING	■ 108 (of 190); 10 in Sub-Saharan Africa (of 47)
HUMAN DEVELOPMENT INDEX RANKING	■ 126 (of 188)

- After easing in 2013, economic growth is expected to be stronger this year, supported by an improved external environment
- Namibia's fourth National Development Plan (NDP4) was launched in 2012 and is designated for the five-year period up to FY 2016-17
- The plan prioritized the transport, tourism, manufacturing and agricultural sectors
- Namibia's imports are mainly from South Africa. Both countries are part of the Southern African Custom Union
- Namibia is the sixth-largest uranium producer in the world

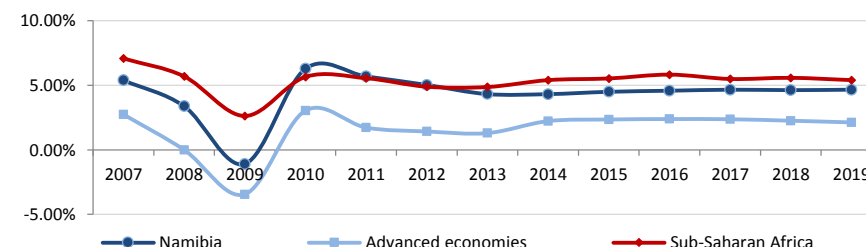
NAMIBIA / ECONOMIC INDICATORS

GDP GROWTH (% YoY)



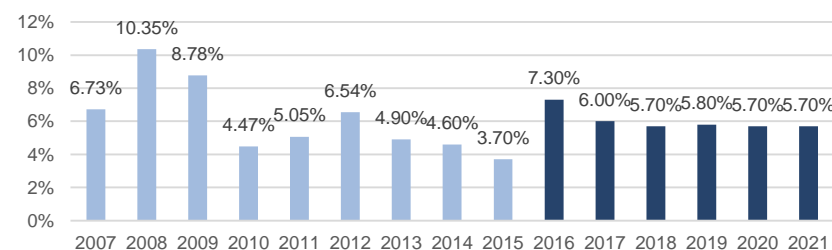
Source: International Monetary Fund ; World Bank

GDP GROWTH BY AREA (% YoY)



Source: International Monetary Fund ; World Bank

Change in CPI (% YoY)



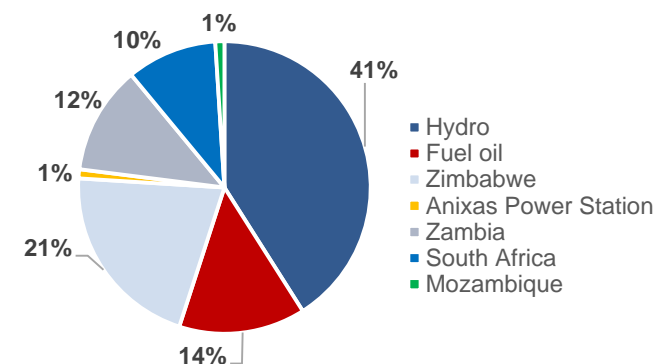
Source: International Monetary Fund ; World Bank

Namibia – Electricity and Renewable Sector Overview

Electricity Sector Snapshot

- Power in Namibia is generated and supplied by Namibia Power Corporation (NamPower)
- Electricity Control Board (ECB) is a regulatory authority with the main responsibility of regulating generation, transmission, distribution, supply, import and export in Namibia through setting tariffs and issuance of licenses
- Structure of regional distribution companies (REDS).
 - Cenored / Erongo Red / Nored / SouthernRed (Future)
- Namibia imports most of its electricity from surrounding countries (about 60% via the Southern African Power Pool arrangement)
- About 47% of the population currently have access to electricity
- Dramatic increase of consumer electricity prices due the increase of oil price and lack of rains in the region.
- Current power capacity: Ruacana – Hydro (350 MW), Van Eck – Coal (120 MW) and Anixas – Diesel (22.5 MW)

TOTAL SUPPLY MIX



Source: NamPower Annual Report 2015



PV Framework

- ReFIT Program – 14 projects of 5 MW each one with a high ariff.
- Tender Process for a 37 MW project conducted by NamPower.
- Stable framework for self-consumption installations of small capacity and new opportunities:
 - Current regulatory scheme allow direct sells of energy to qualified/large consumers by IPPs
 - It opens a wide range of opportunities, specially in Namibian mining sector where there are an amount of big intensive-energy-consumer mining developments
- Namibia has one of the best solar resources in the world with an average high direct insolation of 2,200 kWh/m2/a and minimum diffuse irradiation impact.

Namibia Conclusions

Key Points

- Up to 60% of the electricity is imported from SADC Region.
- Reliable and strong power network.
- One of the **highest solar irradiation levels** in the world: equivalent to Chile or Peru.
- Good experience with solar and its integration to the grid.
- Local industry quite well developed:
 - HV/MV Installators, Civil Works, Solar Specialists.
 - Third biggest seaport in Africa: Walvis Bay
- Professional utility with very high standards in terms of quality of materials and technical design
- **Clear framework**: land act, generation licence. PDNs.
- Next steps: power plants in the range of 5-15 MW each.
- According to NamPower annual report of 2017, the Namibian Utility is willing to cooperate with new solar IPPs, based on certain hypothesis:
 - Competitive tariff in the range of 4-6 cUSD/kWh
 - **No sovereign guarantee** – NamPower has a BBB- rating by Fitch.
 - **No risk currency exposure**

Botswana – Macro Overview

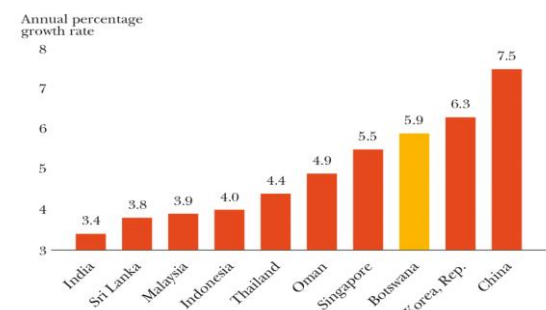
COUNTRY FACTSHEETS

COUNTRY	■ Republic of Botswana
CAPITAL	■ Gaborone
POPULATION	■ 2.3 million (2016)
GOVERNMENT	■ Unitary parliamentary republic
HEAD OF GOVERNMENT	■ Mokgweetsi Masisi (President)
CURRENCY	■ Pula (BWP)
EXCHANGE RATE (US\$)	■ 10.43
EASE OF DOING BUSINESS RANKING	■ 81 (of 190);
HUMAN DEVELOPMENT INDEX RANKING	■ 108 (of 188)

- Currency of Botswana is one of the strongest currencies in Africa.
- National Development Plan 11 was launched in 2017 to cover from 2017 to 2023.
- This NDP 11 is focused on developing a complete ICT strategy for the future and improve ease of doing business ratio to strength the foreign investment in the country.
- Botswana economy is based in mining (diamonds and copper), tourism and agriculture
- Botswana tax and financial sector is quite well developed and sophisticated compared with some of their neighbors.

BOTSWANA / ECONOMIC - DEMOCRACY INDICATORS

GDP GROWTH (1966 – 2014)



Source: The World Bank (2015)

Note: Only countries with a full data set from 1966 to 2014 are included, except for Oman which is missing the latest 2014 figure.

Source: World Bank

CORRUPTION INDEX (2016)

RANK	COUNTRY/TERRITORY	SCORE	23	Chile	70	RANK	COUNTRY/TERRITORY	SCORE	66	Sao Tome and Principe	42
1	Denmark	91	23	Estonia	70	44	Rwanda	54	66	The FYR of Macedonia	42
2	Finland	90	23	France	70	45	Jordan	53	66	Turkey	42
3	Sweden	89	23	United Arab Emirates	70	45	Mauritius	53	69	Bulgaria	41
4	New Zealand	88				45	Namibia	53	69	Jamaica	41
5	Netherlands	87	27	Bhutan	65	48	Georgia	52	71	Serbia	40
6	Norway	87	28	Botswana	63	48	Saudi Arabia	52	72	El Salvador	39
7	Switzerland	86	28	Portugal	63	50	Bahrain	51	72	Mongolia	39
8	Singapore	85	30	Poland	62	50	Croatia	51	72	Panama	39
9	Canada	83	30	Taiwan	62	50	Hungary	51	72	Trinidad and Tobago	39
10	Germany	81	32	Cyprus	61	50	Slovakia	51	76	Bosnia and Herzegovina	38
10	Luxembourg	81	32	Israel	61	54	Malaysia	50	76	Brazil	38
10	United Kingdom	81	32	Lithuania	61	55	Kuwait	49	76	Burkina Faso	38
13	Australia	79	35	Slovenia	60	56	Cuba	47	76	India	38
13	Iceland	79	36	Spain	58	56	Ghana	47	76	Thailand	38
15	Belgium	77	37	Czech Republic	56	58	Greece	46	76	Tunisia	38
16	Austria	76	37	Korea (South)	56	58	Romania	46	76	Zambia	38
16	United States	76	37	Malta	56	60	Oman	45	76	Benin	37
18	Hong Kong	75	40	Cape Verde	55	61	Italy	44	83	China	37
18	Ireland	75	40	Costa Rica	55	61	Lesotho	44			
18	Japan	75	40	Latvia	55	61	Montenegro	44			
21	Uruguay	74	40	Seychelles	55	61	Senegal	44			
22	Qatar	71				61	South Africa	44			

Source: Transparency international (2016)

Botswana – Electricity and Renewable Sector Overview

Electricity Sector Snapshot

- Power in Botswana is generated and supplied by Botswana Power Corporation (BPC).
- Ministry of Energy, Minerals and Water Resources is responsible for managing the electricity policy of the country.
- There is no regulatory agency in the country managing all the issues related with the electricity management. During 2018, is expected the incorporation of the Botswana Energy Regulatory Authority (BERA) that will manage the discussions with IPPs.
- Despite this year, Botswana will produce near of 75% of its consumption in the near future., last year 40% of the electricity was imported from surrounding countries).
- About 53% of the population currently have access to electricity, this percentage growths in urban areas to reach almost 75%.
- Current capacity: Morupule B – Coal (600 MW), Morupule A – Coal (132 MW) + Diesel Emergency groups
- A private power plant owned by Jindal Steel is expected to start operations during 2018/2019.



PV Framework

- A stable framework for stand alone installations has been developed.
- Mining sector is one of the most important business in Botswana, and has an important need of electricity supply.
 - A 100 MW Request for EOI was launched two years ago by BPC to supply one of the most important mines in the country.
- NPD 11 contemplates a new impulse for solar energy in the country, combined with coal and other technologies.
- There are several new plans to upgrade the grid of the country, these new plans will allow future developments of solar PV.

Botswana Conclusions

Key Points

- **One of the fewer new markets in the world.**
- Up to 40% of the electricity is imported from SADC Region.
- Strong network development expected for the coming years including North West Transmission Grid Connection.
- Lower irradiation levels compared with Namibia, but stronger financial sector.
- Lack of experience with solar and its integration to the grid. Grid code should be reviewed to implement new renewable developments.
- Mining corporations will drive part of the development:
 - Storage will be a must.
 - Tougher PPAs.
- **Today, there is no clear framework for the development of utility scale projects.**
- According to Botswana Power Corporation annual report of 2017, BPC is willing to get 100 MW of Solar PV connected in the grid on the coming year.
 - First projects – Better tariffs.
 - **No clarity on sovereign guarantee approach.**
 - **No risk currency exposure.**



Thanks for your time!

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