



Federal Ministry  
for Economic Affairs  
and Energy



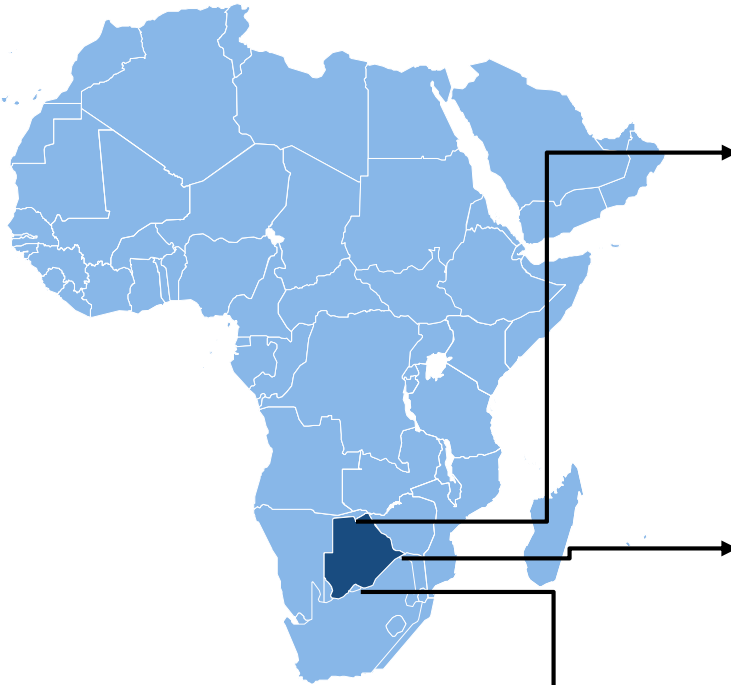
MITTELSTAND  
**GLOBAL**  
EXPORTINITIATIVE ENERGIE

# Project Development Programme (PDP)

## Renewable Energies in Botswana

Facilitator

# 1. Overview Botswana



## General Facts

- The size of France with a population of only 2.2. mio.
- Two-thirds of the rural population having access to electricity.
- Sitting on coal reserves of around 200 billion tonnes.
- Current installed capacity of 893MW (peak demand of 610MW).
- .... still heavily on power from expensive back-up diesel plants and electricity imports (1.2TWh in 2015-16)!

## Energy market – Status Quo

- Strongly subsidized electricity tariffs (Avg. € 0,069/ kWh).
- Only 460MW of effective capacity available (incl. 2 expensive diesel power plants)
- IPPs are allowed, but no regulatory framework in place.
- Low awareness of international companies and investors.

## Outlook

- BPC to raise tariffs to be cost reflective in the next 5 years.
- New Energy Regulator (BERA) to facilitate framework.
- General commitment towards Renewable Energies, trying to implement first projects in the short and medium term.

## 2. Regional Overview

### Namibia

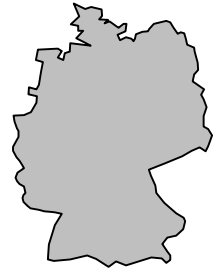
- GDP = 10,8 bn. US\$
- 2.3 Mio. citizens
- GDP per capita: 4,656 US\$
- GDP growth rate (2012-2016): **4.68%**

### South Africa

- GDP = 294,8 bn. US\$
- 55.9 Mio. Citizens
- GDP per capita: 5,274 US\$
- GDP growth rate (2012-2016): **1.6 %**

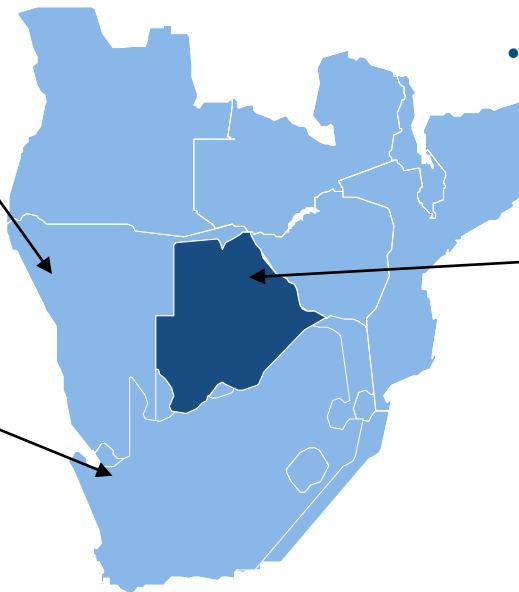
### Germany

- GDP = 3,478 bn. US\$
- 83 Mio. Citizens
- GDP per capita: 41,900 US\$
- GDP growth rate (2012-2016): **1.3 %**



### Botswana

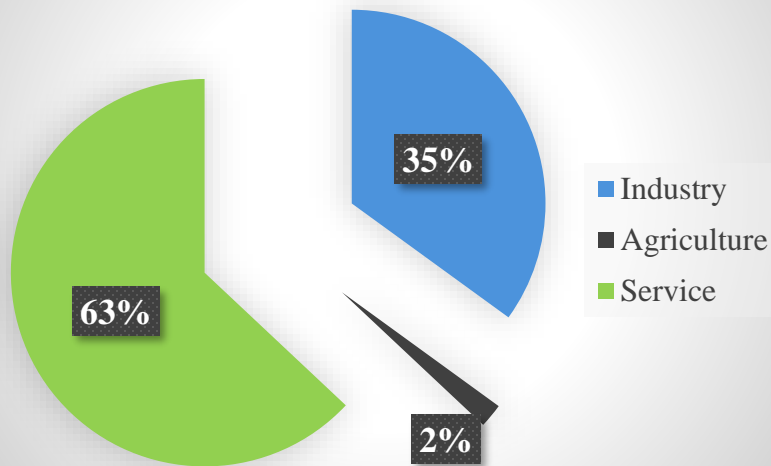
- GDP = 15,5 bn. US\$
- 2.25 Mio. Citizens
- GDP per capita: 7,013 US\$
- GDP growth rate (2012-2016): **4.5 %**



### 3. Economy of Botswana

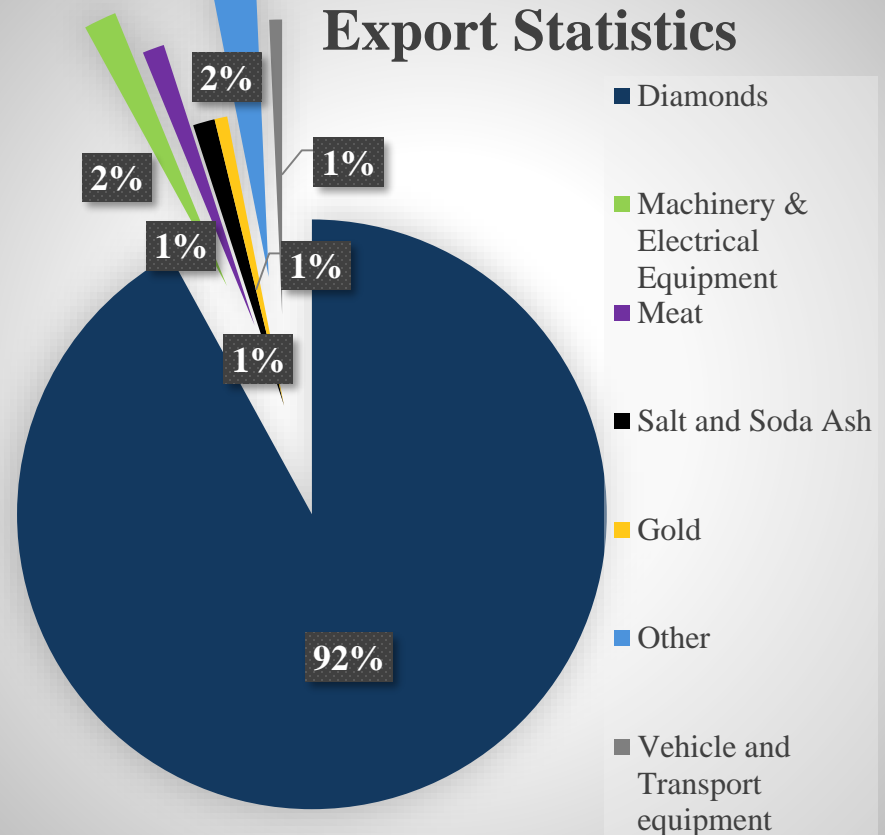
**Industrial Growth Rate 2017: 3 %**  
CIA, World Factbook

#### GDP BY SECTOR



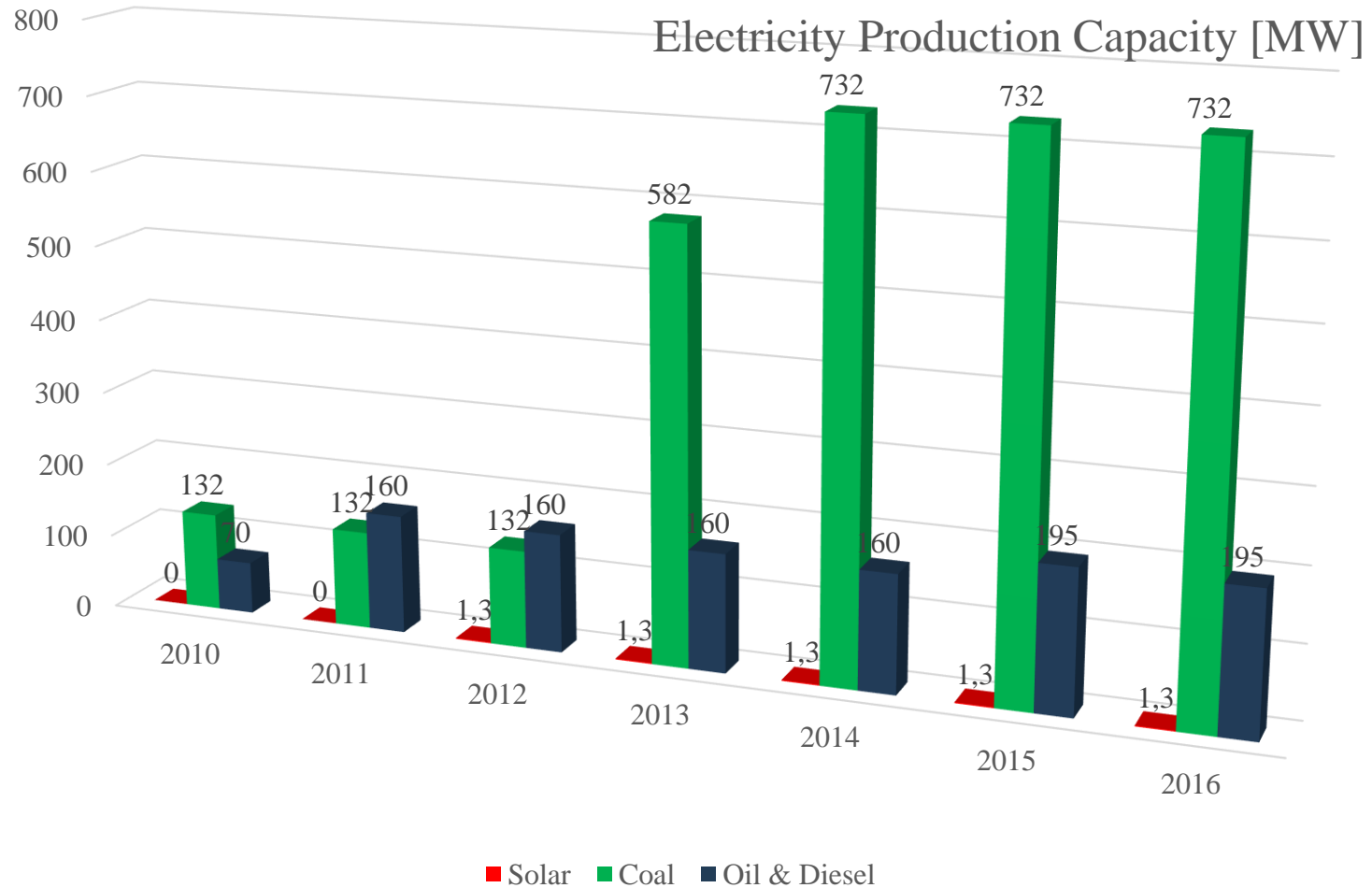
Status: 2017  
Source: World Bank

#### Export Statistics



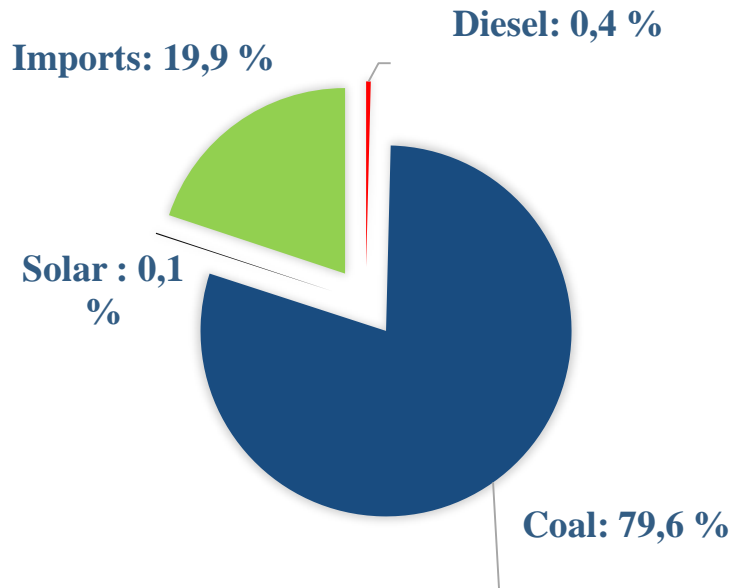
Status: 2018,  
Source: Statistics Botswana

## 4. Energy Market

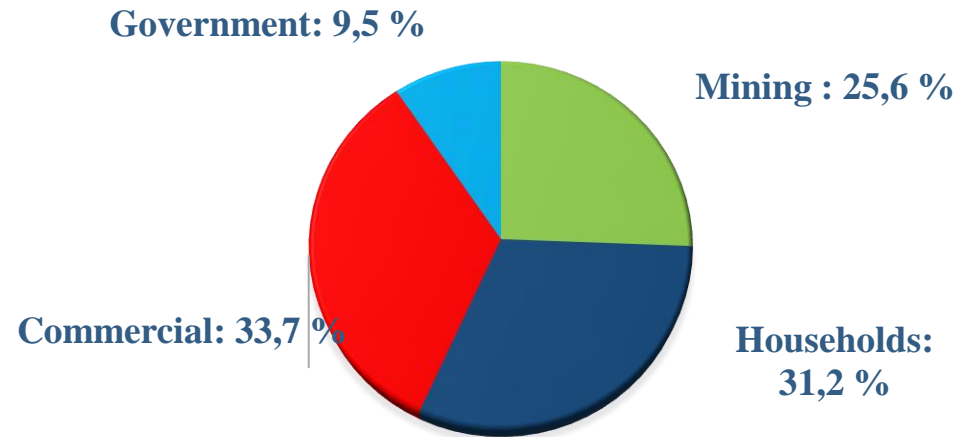


## 4. Energy Market

**BPC ELECTRICITY MIX**



**ELECTRICITY CONSUMPTION BY SECTOR**



Status: 2017

Source: BPC Annual Report 2017

Source: Statistics Botswana 2018

# 5. Renewable Energy Projects

## 12 x 1 MW solar plants near village

- Shave peak demand
- 1st PPA signed for Tumuela Village (German company).

## Power Storage Solutions

- BPC is seeking for partners to join R&D

## Embedded Generation

- Identification of sectors with interesting energy consumption.
- Cold chain, Airports, public buildings, etc.

## Electric Boat Concept Kasane

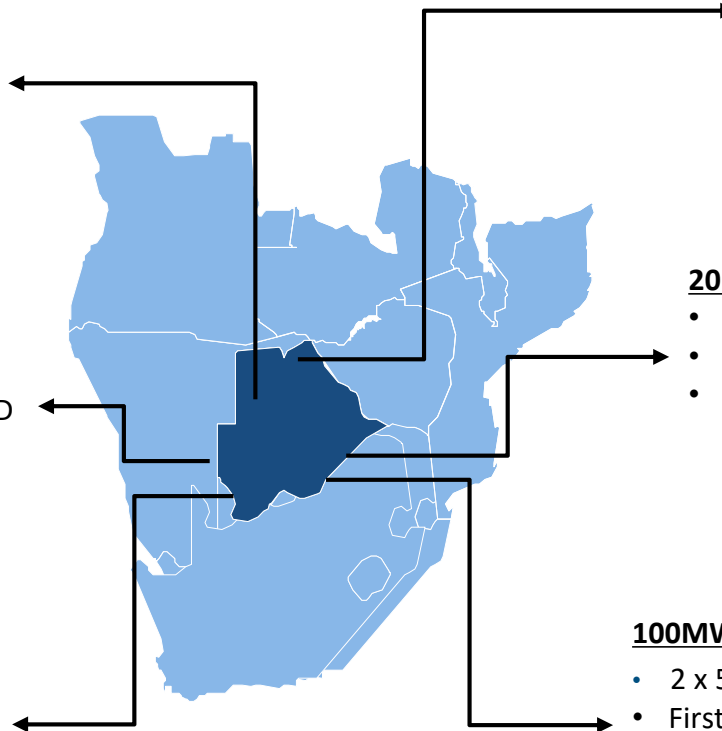
- Kasane – Kazungula Redevelopment Plan.
- Roll Out (200 boats) and Okavango Delta.

## 20 Mini Grids

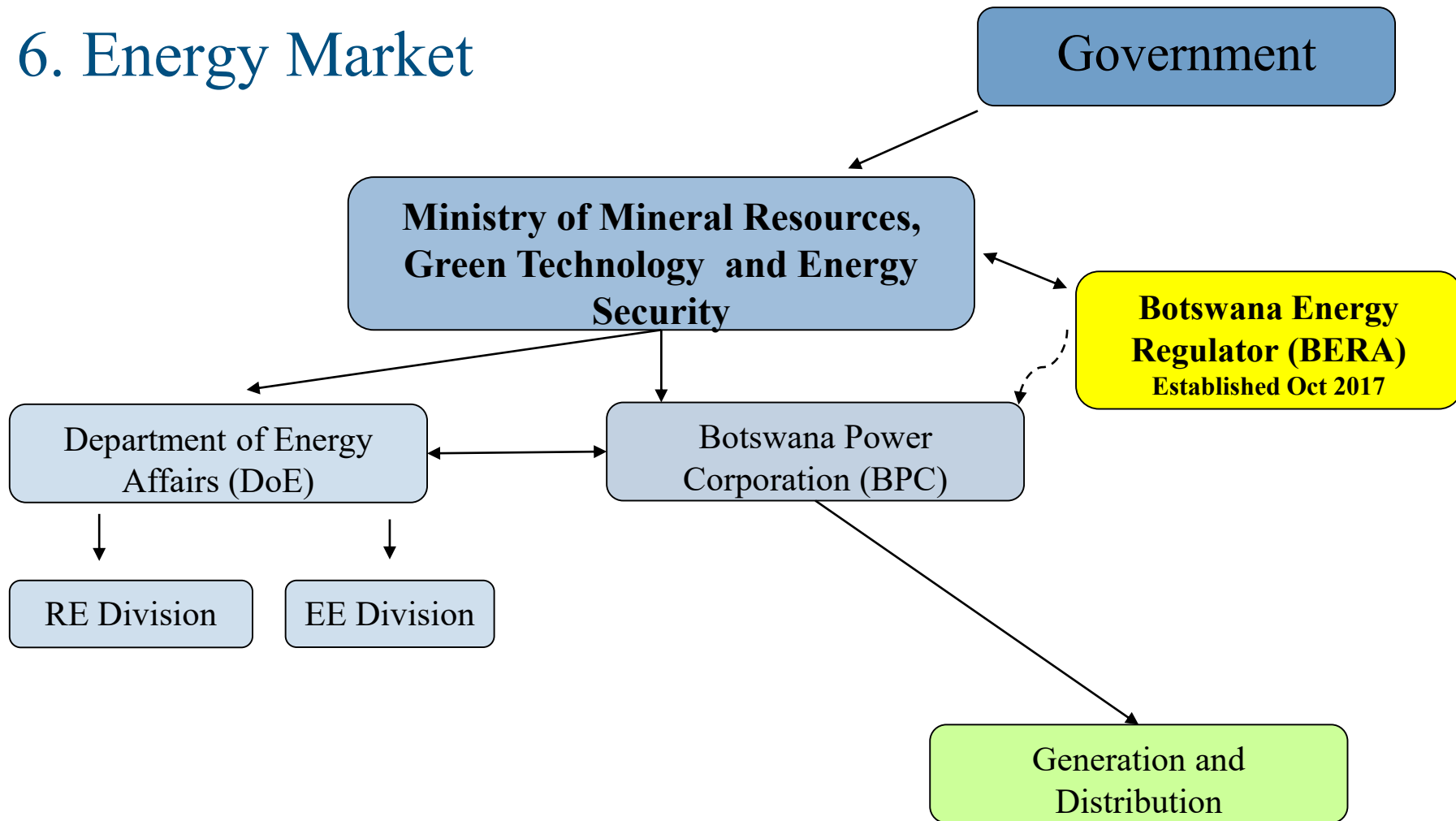
- 155 EOIs.
- Technical and economic feasibility?
- First mini grid already awarded (German company)

## 100MW PV Plant

- 2 x 50MW
- First shortlist of about 10 companies
- Tender in December 2017
- Breaking ground by March 2018



## 6. Energy Market



# 6. Energy Market

## Forecast Supply –Demand balance (2019-2027)

Source	2019	2020	2021	2022	2023	2024	2025	2026	2027
Morupule A	116	116	116	116	116	116	116	116	116
Morupule B	390	390	390	520	520	520	520	520	520
Diesel Emergency	160	160	160	90	90	90	90	90	90
Solar 100MW	100	100	100	100	100	100	100	100	100
Imports	150	150	150	150	150	150	150	150	150
Total Supply	916	916	916	976	976	976	976	976	976
Peak Demand	641	671	701	734	768	803	840	878	919

# 7. Electricity Tariffs

Category	Energy Charge		Demand Charge* Per kWh
	up to 200kWh	more than 200kWh	
Domestic	0.076	0.10	Nil
	<b>Up to 500kWh</b>	<b>More than 500kWh</b>	
Small Business	0.09	0.13	Nil
Medium Business	0.06	0.07	19.50
Large Business	0.05	0.06	18.50
Government	Nil	0.2	Nil
Water Pumping	Nil	0.14	Nil

\*The charge payable is calculated from the actual demand supplied or from 80% of the peak demand recorded in the previous 12 months, whichever is greater

**Prices in [USD ¢ / kWh]**  
**1 USD = BWP 10**

## 8. New Projects



- Airport Junction Shopping Centre, Gaborone (2018). Approximately 2MW PV installed – German Product: SMA
- BPC has issued a Request for Proposal relating to the development, financing, construction, operation and maintenance of 12 solar PV power projects. The tender will seek IPPs and BPC will facilitate the procurement process on behalf of its parent ministry and Botswana Energy Regulatory Authority (BERA). (closing date 26/05/2019)



# Thank you for your attention!

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