



## Export Coal & Power Projects in Botswana

November 2013

Business to be driven by low-cost coal



# Overview of AFR's coal projects



## 1. Sese Integrated Power Projects (50-500Mt coal)

- Joint Development Agreement with ACWA Power International
- Multiple 300MW opportunities for domestic and export power

## 2. Mmamabula West Project (2,430Mt)

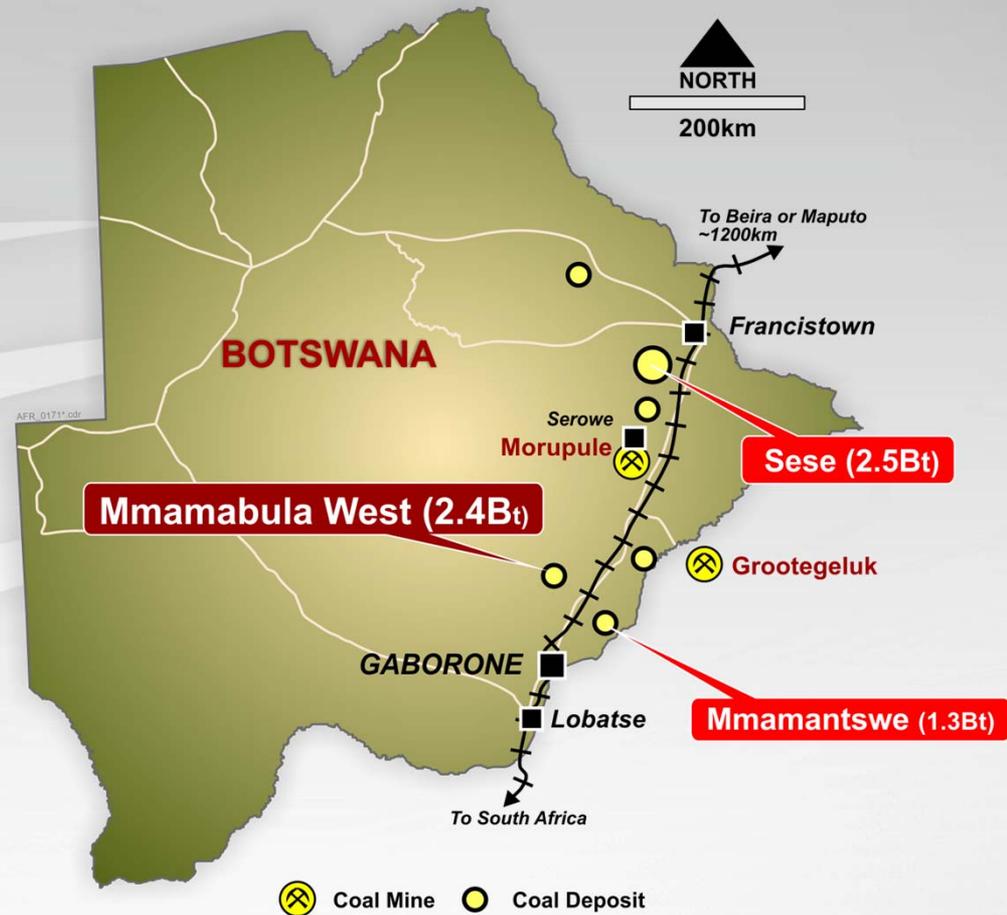
- High-yield export quality project
- Low-cost underground mining

## 3. Sese Export Project (>2,000Mt)

- Large export tonnages possible
- Successful export trial via Maputo

## 4. Mmamantswe Project (1,300Mt)

- 20km from South Africa, the largest regional market for power



# Highlights



- African Energy has developed a portfolio comprising three major coal projects in Botswana containing over 6.2 BT of thermal coal
- AFR and ACWA Power International submitted an Expression of Interest on 2<sup>nd</sup> October for a 300MW power station and associated coal mine at Sese in Botswana
- A Joint Development Agreement with ACWA Power has been executed. Key terms incorporate:
  - ACWA Power will provide the equity required for the 300MW project, and will become the lead developer and operator
  - The financial returns to AFR at financial close and throughout the life of the project have been agreed
  - Collaboration on future projects
- Coal export studies and ESIA underway for the 2.4BT Mmamabula West project

# Capital Structure and management



## CAPITAL STRUCTURE:

431,440,153 Ordinary Fully Paid Shares

\$58M Market Cap (4-Nov-13)

\$4.5M cash (30-Sep-13)

\$5.0M debt

## BOARD MEMBERS:

Chairman (Exec): Mr Alasdair Cooke

Managing Director: Dr Frazer Tabcart

Executive Director: Mr Bill Fry

Non-Exec Director: Mr Philip Clark

Non-Exec Director: Mr Valentine Chitalu

Non-Exec Director: Mr Michael Curnow

Non-Exec Director: Mr Ian Hume

Non-Exec Chairman (Botswana): Mr Blackie Marole

## MAJOR SHAREHOLDERS:

17.3% Sentient

9.0% Management

4.0% Independent Asset Mgmt

4.0% Stacey Radford

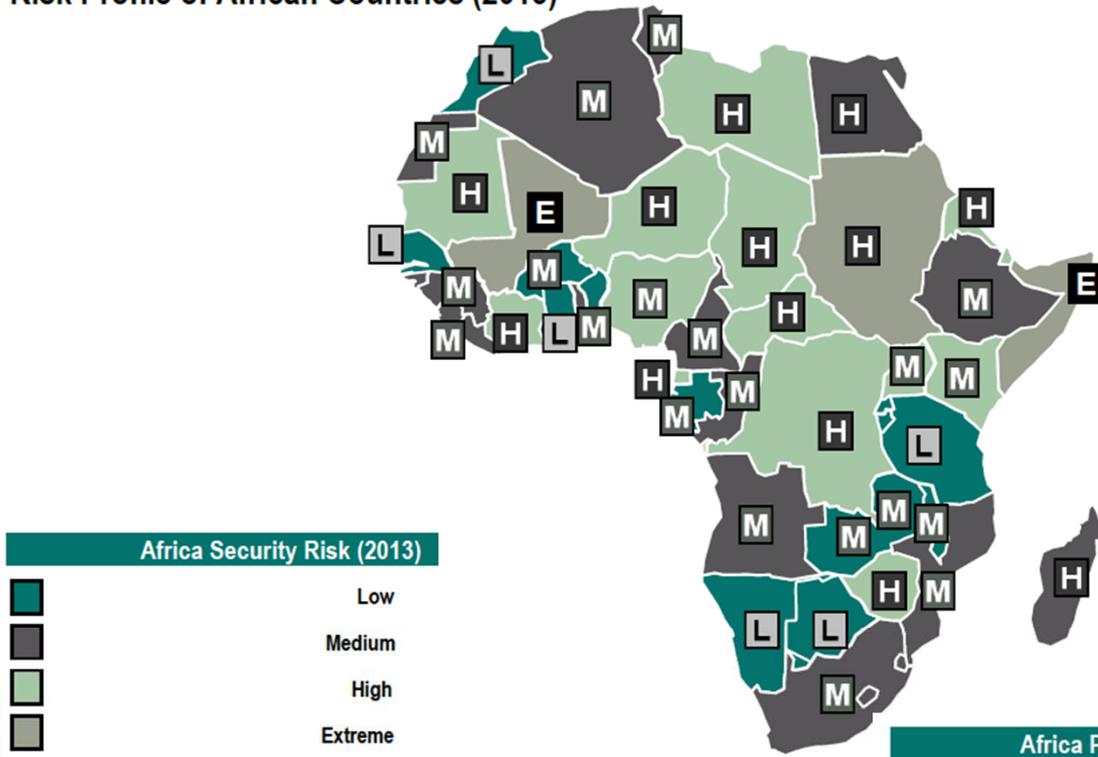
3.7% Republic Investment

51% TOP 20

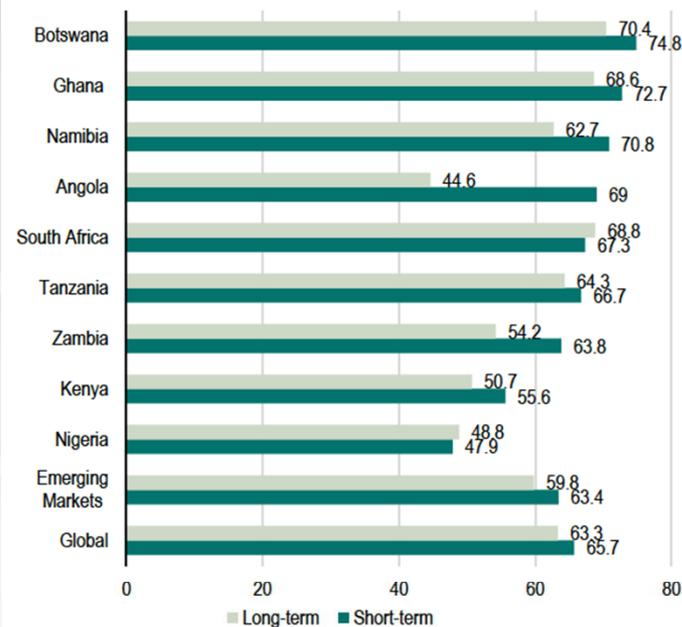
# Botswana: a safe place to invest



Risk Profile of African Countries (2013)



Political Ratings of Key African Economies (2012)



Africa Political Risk (2013)



# Four large markets for Botswana coal



## 1. Domestic power generation

- AFR in a very strong position due to location and low generation cost

## 2. Power generation for export

- Large regional demand in South Africa and to a lesser extent in Zambia, Namibia

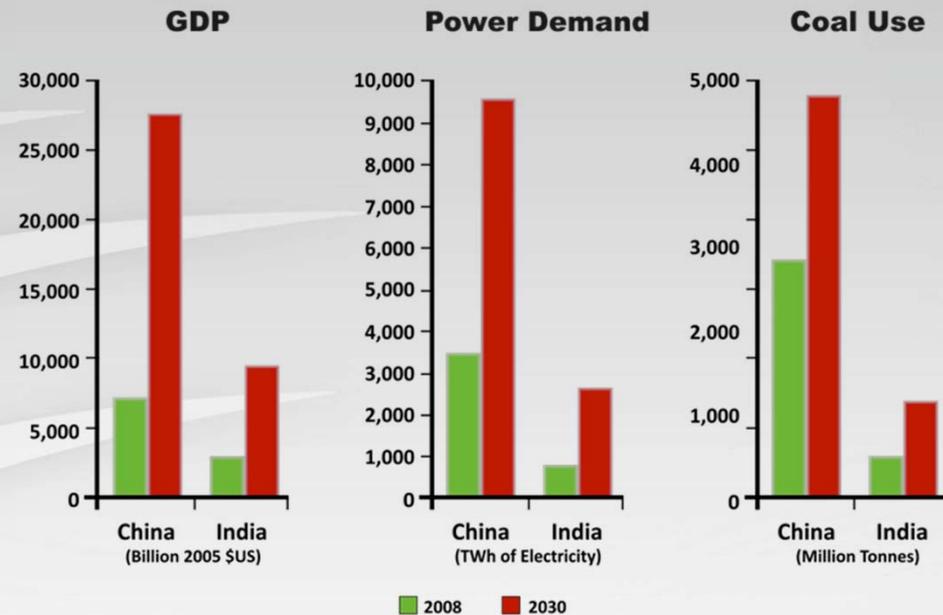
## 3. Regional coal exports for power generation

- To meet expected shortfalls in domestic coal availability in South Africa

## 4. Seaborne global coal market to Asia

- Export via existing rail and port networks to Asian markets

Enormous Growth in GDP Power Use

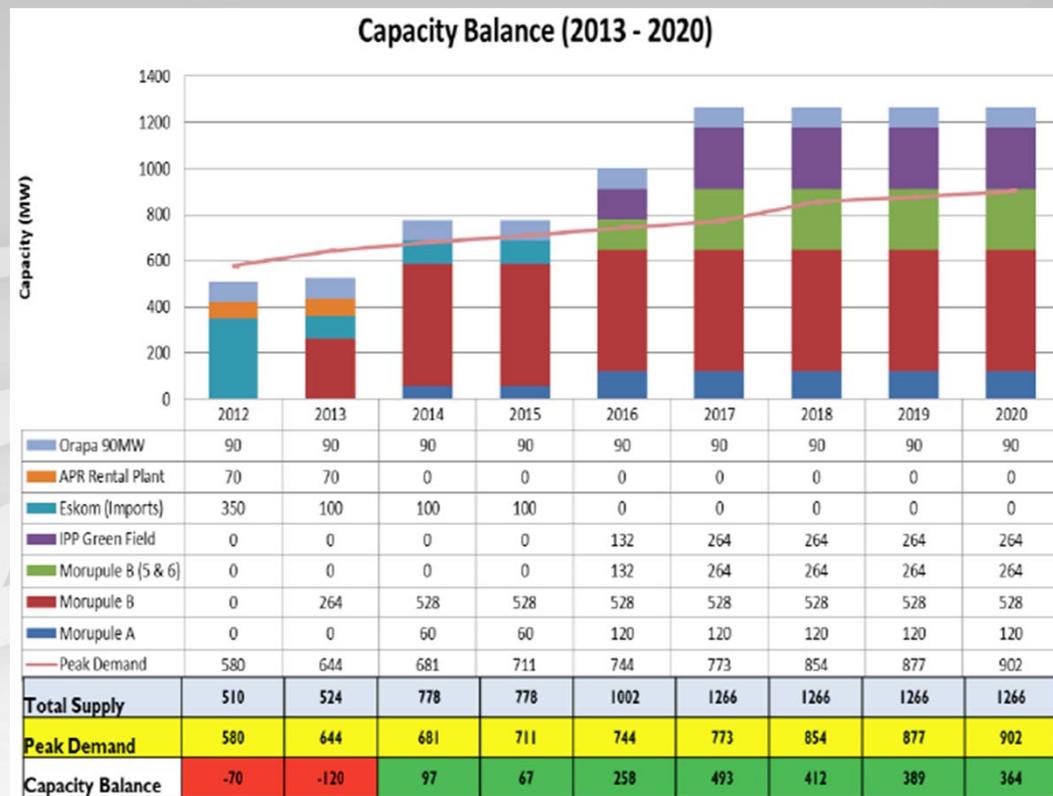


Source: U.S. Energy Information Administration, International Energy Outlook 2010 (GDP; power demand, coal use).

# Domestic power market

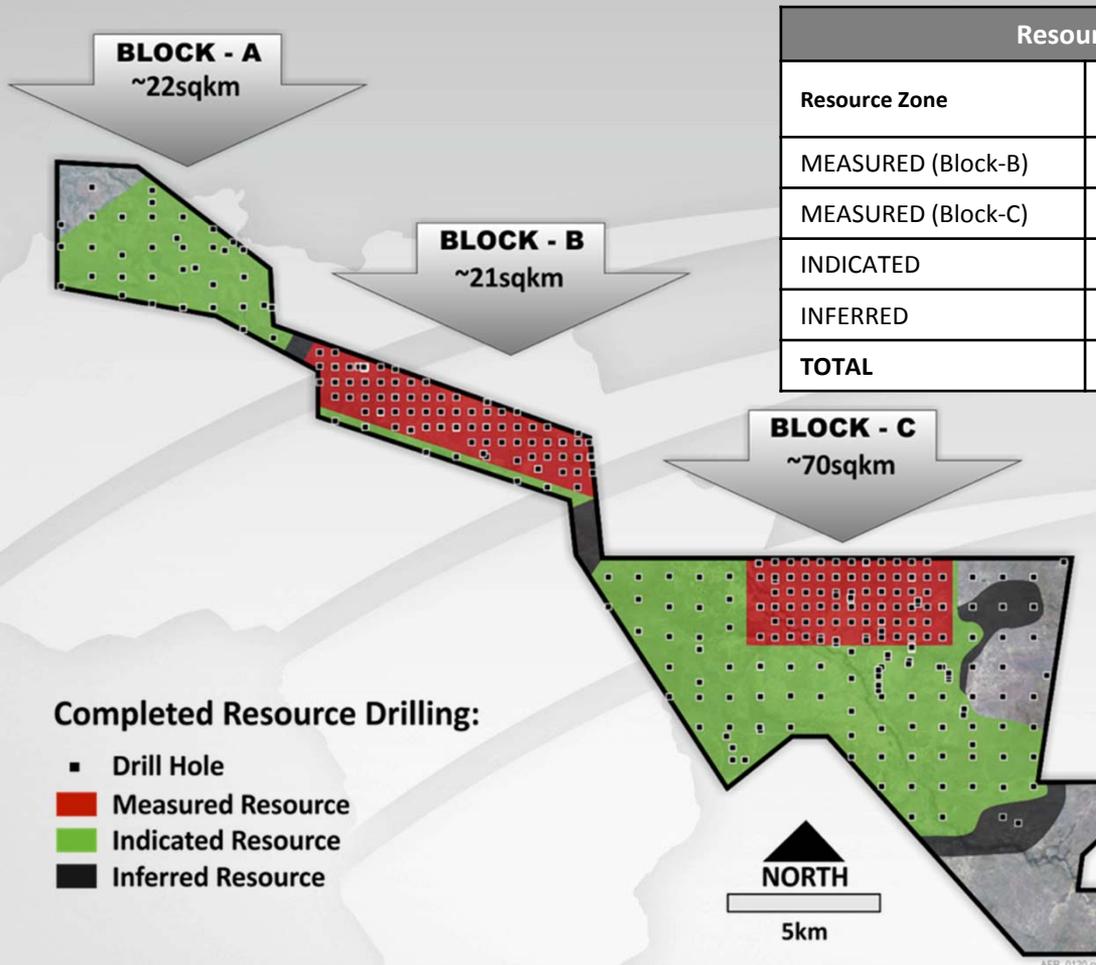


- Botswana 300MW greenfield tender process underway
- Power station to be producing electricity as early as 2016
- Sese is one of only two greenfield projects in Botswana capable of delivering power by end 2016
- AFR and ACWA Power International have formed a bid consortium and executed a Joint Development Agreement
- Expression of Interest (EOI) was submitted on 2<sup>nd</sup> October 2013



Source: Request for Expression of Interest (EOI) from potential Independent Power Producers for the development of a 300MW coal fired power station (greenfield) in Botswana. Ministry of Minerals Energy and Water Resources July 2013

# Sese deposit facts



Resource Summary (Raw coal on an air-dried basis)

Resource Zone	Total Tonnes in situ*	CV (MJ/kg)	CV (kcal/kg)	Ash %	S %
MEASURED (Block-B)	318 Mt	16.0	3,820	34.8	1.7
MEASURED (Block-C)	333 Mt	17.6	4,200	30.2	2.1
INDICATED	1,714 Mt	15.3	3,650	38.9	2.0
INFERRED	152 Mt	15.0	3,600	39.1	2.2
<b>TOTAL</b>	<b>2,517 Mt</b>				

Block-B Resource by Seam (air-dried basis)

Seam	In-Situ Tonnes	CV (MJ/kg)	Ash %	S %
SS	178.5	18.8	26.4	1.8
SSU	33.8	13.7	41.9	1.9
SST	97.4	11.6	47.6	1.2

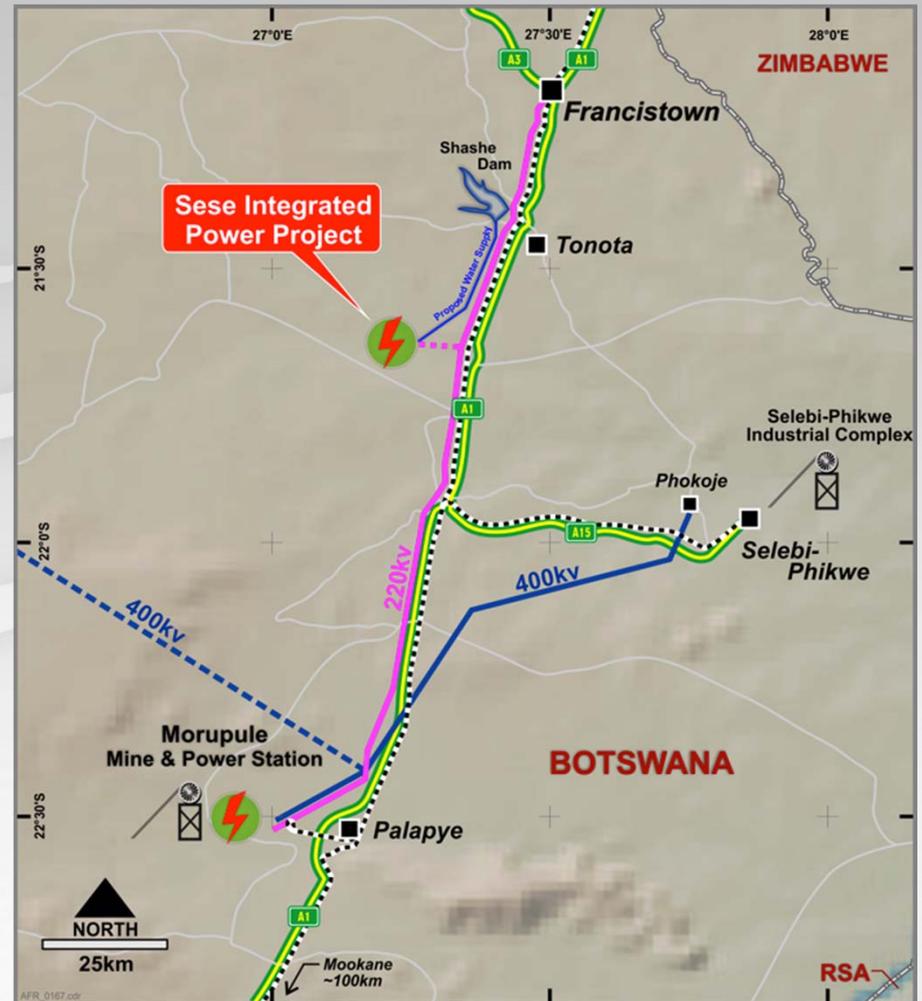
Block-C Resource by Seam (air-dried basis)

Seam	In-Situ Tonnes	CV (MJ/kg)	Ash%	S %
SS	281.6	18.3	28.1	2.2
SSU	17.2	14.9	38.9	1.8
SST	33.1	13.3	42.4	1.0

# Sese Integrated Power Project



- **Sese Integrated Power Project (SIPP)** comprises one or more 300MW CFB power stations plus 1.5Mtpa 'captive' coal mines
- Enough coal for 8 x 300MW projects over 25 years from Block-C Measured
- Low-cost fuel supply due to low strip ratio mining and minimal processing requirements
- Local source of low-cost limestone discovered by AFR <10km from SIPP (sorbent used to reduce SO<sub>2</sub> emissions)
- Water allocation from nearby Shashe Dam approved, final negotiations for abstraction licence underway
- EIA well advanced

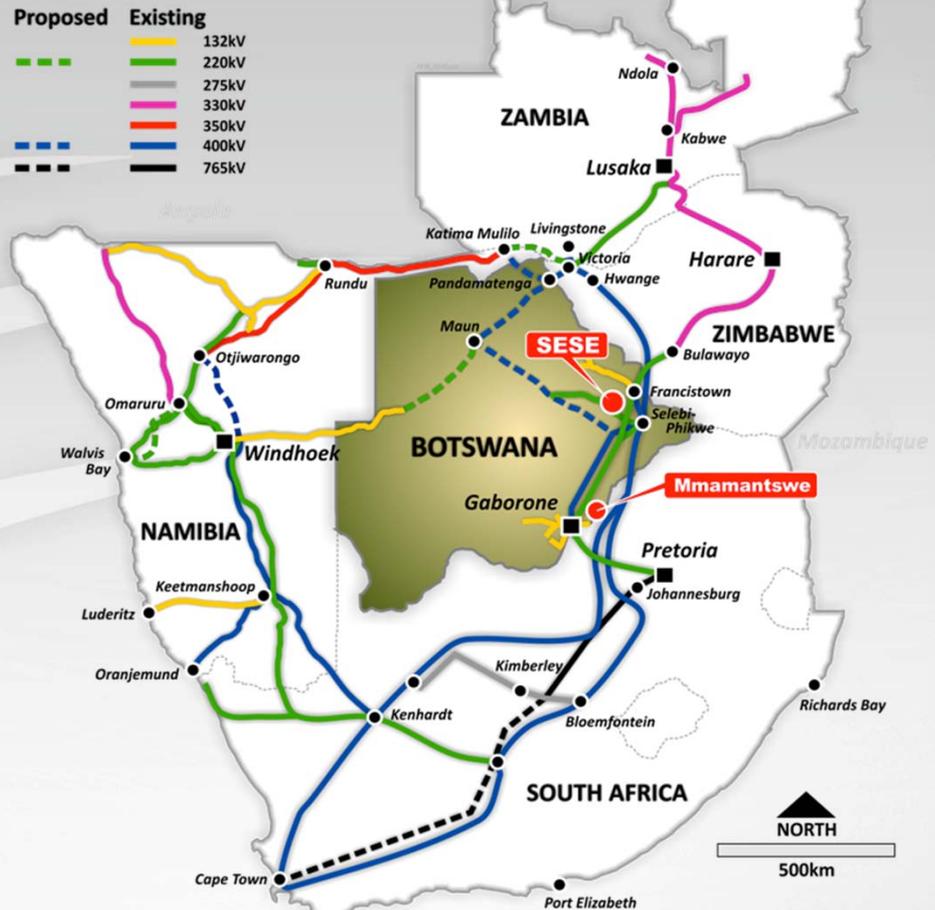


# South African power market (export)



- Integrated Resource Plan (IRP) stipulates an additional 42,500 MW of generational capacity by 2030
- South Africa likely to seek 1,000MW of new coal-fired IPP generation every year for the next 10 years
- AFR has submitted an RFR1 proposal to supply an initial 300MW
- Mmamantswe project ideally located for this market due to proximity to border and key transmission links

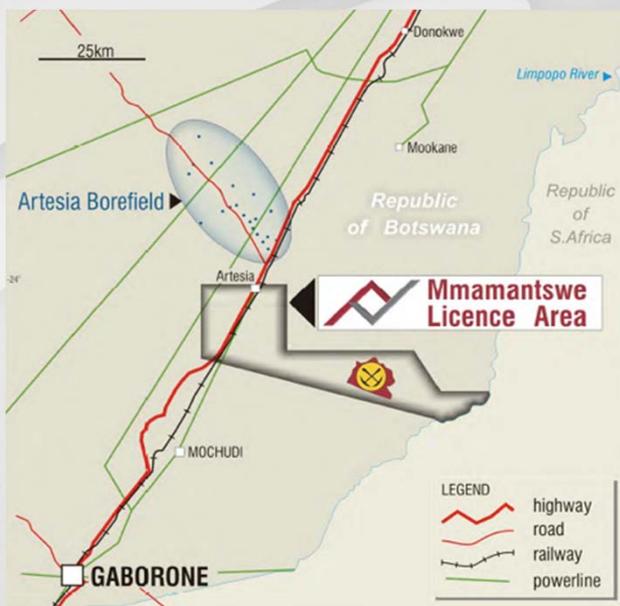
## Southern Africa Power Grid



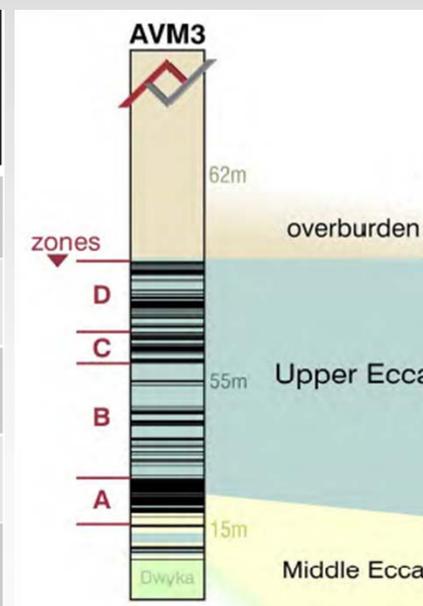
# Mmamantswe project



- Mmamantswe is less than 20km from South Africa
- Indicated resource of 1,296Mt, including 895Mt probable reserve
- 8GL/annum water borefield identified and registered
- Environmental impact assessment approved for 10Mtpa coal and 1000MW power
- Ideal coal for 1200MW mine-mouth power station exporting power to South Africa



MODEL	Indicated Resource <sup>1</sup>	
ZONE D	17.9	Metres
ZONE C	5.6	Metres
ZONE B	14.8	Metres
ZONE A	8.9	Metres
ALL ZONES	1296.2	Million tonnes



# Export markets for energy coal

## CHINA:

China's thermal coal demand will double by 2030, even after accounting for shale-gas ramp-ups

- *Wood Mackenzie, June 2013*

## INDIA:

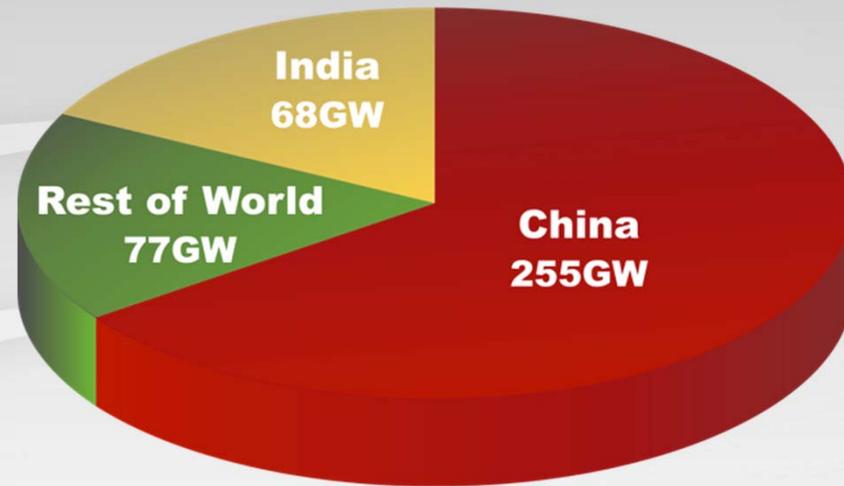
India has now surpassed Japan as the second largest importer of thermal coal at a rate of 130Mtpa

- *Salva Report, May 2013*

## SOUTH AFRICA:

Largest regional market for coal and power with looming shortages of both

## 2011 - 2015 New Coal-Fueled Generating Capacity (GW)



Source: Platts Worldwide Power Plant Database; EIA International Energy Outlook 2010 and Peabody analysis. Growth of global coal-based generation (billion kilowatt hours) based on 2007-2035 EIA data.

# Mmamabula West project



- AFR acquiring the project for \$2.5M subject to certain conditions
- Coal occurs in two 5m thick seams (K-Seam, A-Seam) and is 105m below surface
- 892Mt Indicated Resource plus 1,541Mt Inferred Resource
- A “preferred mining area” covering >25km<sup>2</sup> within the Indicated Resource contains coal which can produce a 6,100kcal/kg (adb) at ~75% yields
- 60km from rail, road, power and AFR owned water bore field
- EIA and feasibility study for a 4Mtpa underground export coal mine underway

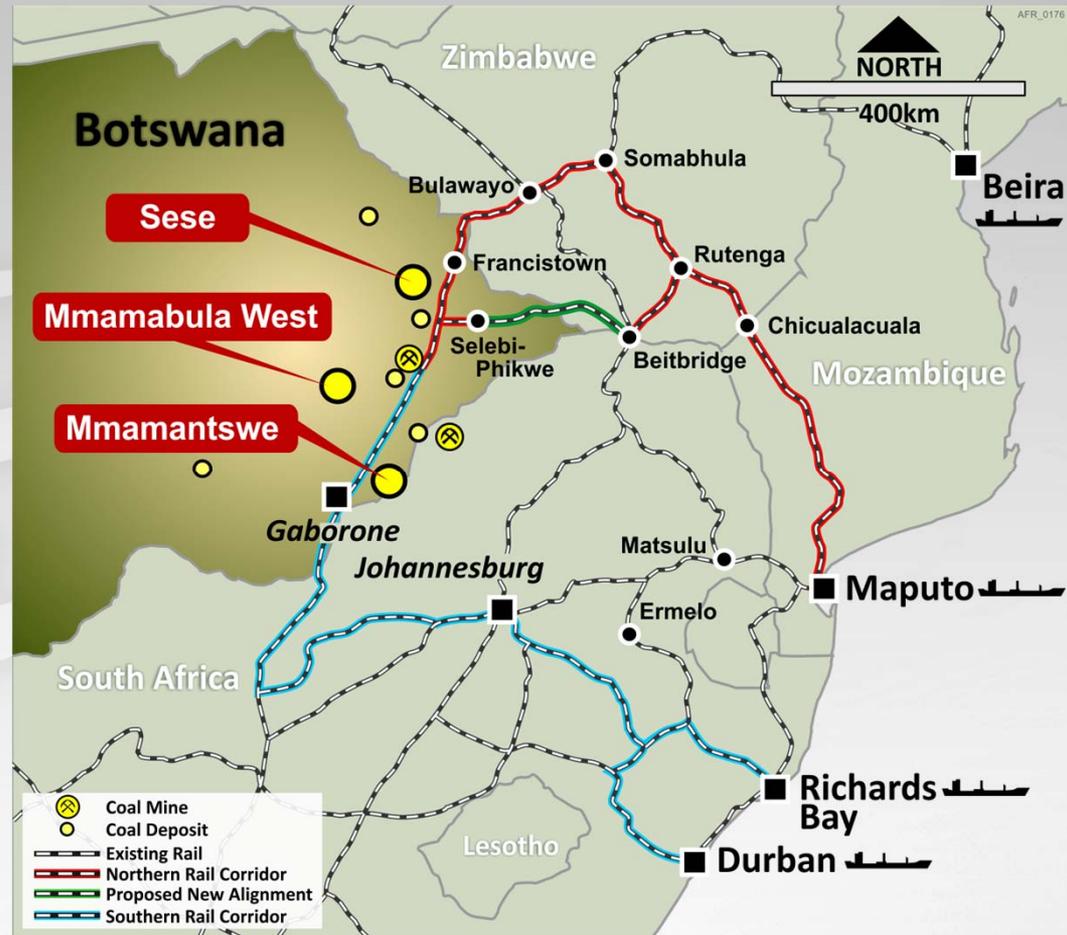
	Av. Seam Thickness	Theoretical Yield %	CV (MJ/kg)	CV (kcal/kg)	Ash %	IM %	VM %	TS %
<b>K-Seam</b>	5.56m	71.79	24.85	5,950	16.66	6.94	30.57	0.76
<b>A-Seam</b>	4.58m	77.38	26.24	6,250	13.09	7.86	26.02	0.41
<b>Average</b>		<b>74.32</b>	<b>25.48</b>	<b>6,100</b>	<b>15.04</b>	<b>7.35</b>	<b>28.52</b>	<b>0.60</b>

Washing yields (adb) at RD 1.7 for the preferred mining area

# Export to Asia; key infrastructure in place



- Maputo is the best short and medium term port option up to 20Mtpa, expansion to >100Mtpa
- Alternative routes through South Africa offer additional capacity (up to 10Mtpa) and create competitive market
- Successful 1600t trial export train to Maputo in Nov 2012 – proof of concept
- Prefeasibility study has determined current and future rail capacity on the Northern Corridor and developed models for affordable capital program and operating costs
- Working with key stakeholders to agree rail tariffs, allocations and port access



# Concluding remarks

- Three major projects, 6.2 BT coal
- Multiple power projects proposed to the governments of Botswana and South Africa using AFR coal
- African Energy is working with ACWA Power to bring these projects to a successful conclusion
- The Mmamabula West project provides a high quality export opportunity
- All necessary infrastructure for coal exports is in place



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