Funding Clean Power Projects
Clean Power Africa, CTICC
4-5 September 2012
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Section 1:
Introduction to Standard Bank
Standard Bank - Natural partner in Africa

Most comprehensive network in Sub-Saharan Africa

- Nearly 150 years of experience in Africa
- Largest bank in Africa
  - Over 40,000 employees in Africa
  - Over 8,000 bank branches
- Growth on the continent is a key strategic focus area
- Market Capitalisation - USD 23.5 billion (7 May 2012)
- Investment banking presence across the region and in key markets strengthened by recent acquisitions:
  - IBTC Chartered Bank, Nigeria
  - CFC Bank, Kenya
  - Opening fully in Angola
  - Recently opened in South Sudan

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (2022)</th>
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</thead>
<tbody>
<tr>
<td>Angola</td>
<td>29.5 million</td>
</tr>
<tr>
<td>Botswana</td>
<td>12.6 million</td>
</tr>
<tr>
<td>DRC</td>
<td>9.9 million</td>
</tr>
<tr>
<td>Ghana</td>
<td>30.5 million</td>
</tr>
<tr>
<td>Kenya</td>
<td>58.3 million</td>
</tr>
<tr>
<td>Lesotho</td>
<td>1.9 million</td>
</tr>
<tr>
<td>Malawi</td>
<td>16.3 million</td>
</tr>
<tr>
<td>Mauritius</td>
<td>1.3 million</td>
</tr>
<tr>
<td>Mozambique</td>
<td>25.5 million</td>
</tr>
<tr>
<td>Namibia</td>
<td>2.1 million</td>
</tr>
<tr>
<td>South Africa</td>
<td>58.5 million</td>
</tr>
<tr>
<td>South Sudan</td>
<td>12.5 million</td>
</tr>
<tr>
<td>Swaziland</td>
<td>1.4 million</td>
</tr>
<tr>
<td>Tanzania</td>
<td>6.0 million</td>
</tr>
</tbody>
</table>

Source: CIA World Factbook

Standard Bank

On-the-ground presence in 18 African countries

Unrivalled knowledge of sub-Saharan Africa through on ground presence

Strong product teams in Johannesburg, Lagos, Nairobi and London

Recently opened in South Sudan

CFC Bank, Kenya

IBTC Chartered Bank, Nigeria

On-the-ground presence in 18 African countries

Market Capitalisation - USD 23.5 billion (7 May 2012)

Investment banking presence across the region and in key markets strengthened by recent acquisitions:

- IBTC Chartered Bank, Nigeria
- CFC Bank, Kenya
- Opening fully in Angola
- Recently opened in South Sudan
Section 2:

Contextualisation of the opportunities on the continent
Africa has a rich mineral endowment...

Relatively under-explored and under-exploited with South Africa being the exception

It is relatively cheaper to invest in mining companies in Africa as equities research shows that African mining companies trade at a lower premium to NPV than mining companies from other jurisdictions

However development costs in infrastructure can be prohibitive

Historically gold and diamond mining has predominated across Africa due to the high value/unit weight for these commodities:
- low barriers to entry in terms of mining and infrastructure requirements
- simple technology that limits capex requirements
- low labour costs has favoured low capital intensity and limited mechanisation, however costs are rising sharply especially in SA

Stable and mature mining environment in South Africa, with the other countries slowly appreciating the need for stable countries to encourage investment

(1) Major known mineral resources
Source: Standard Bank, Raw Materials Group
Democracy

- The region has evolved from a few elected governments to near complete democracy today.
- There have been positive changes in the socio-political environment across the entire region.

Elected governments in 1986

Elected governments in 2009
BRIC-Africa trade

Sources: International Monetary Fund, Standard Bank Group
Installed capacity and net consumption

**Electricity Installed Capacity – Africa (2007)**

- South Africa: 43 billion kWh
- Nigeria: 5.90 billion kWh
- Congo (Kinshasa): 2 billion kWh
- Mozambique: 2 billion kWh
- Zimbabwe: 2 billion kWh
- Ghana: 2 billion kWh
- Zambia: 2 billion kWh
- Kenya: 1 billion kWh
- Cote d'Ivoire (Ivory Coast): 1 billion kWh

**Electricity Installed Capacity – World (2007)**

- United States: 995 billion kWh
- Russia: 221 billion kWh
- Germany: 133 billion kWh
- France: 117 billion kWh
- Canada: 125 billion kWh
- Brazil: 100 billion kWh
- Nigeria: 5.90 billion kWh

**Electricity Net Consumption – Africa (2007)**

- South Africa: 215 billion kWh
- Nigeria: 19.21 billion kWh
- Zimbabwe: 11 billion kWh
- Mozambique: 10 billion kWh
- Zambia: 9 billion kWh
- Congo (Kinshasa): 6 billion kWh
- Ghana: 6 billion kWh
- Kenya: 5 billion kWh
- Cote d'Ivoire (Ivory Coast): 3 billion kWh

**Electricity Net Consumption – World (2007)**

- United States: 3,924 billion kWh
- Russia: 840 billion kWh
- Germany: 547 billion kWh
- Canada: 536 billion kWh
- France: 447 billion kWh
- Brazil: 403 billion kWh
- Nigeria: 19.21 billion kWh
Electricity consumption per capita

### Electricity Consumption per capita

<table>
<thead>
<tr>
<th>Country</th>
<th>Consumption (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>4,155.92</td>
</tr>
<tr>
<td>China</td>
<td>3,252.28</td>
</tr>
<tr>
<td>Russia</td>
<td>913.51</td>
</tr>
<tr>
<td>India</td>
<td>645.25</td>
</tr>
<tr>
<td>Brazil</td>
<td>428.50</td>
</tr>
<tr>
<td>Nigeria</td>
<td>19.12</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>12.74</td>
</tr>
<tr>
<td>Mozambique</td>
<td>10.33</td>
</tr>
<tr>
<td>Zambia</td>
<td>7.60</td>
</tr>
<tr>
<td>Ghana</td>
<td>6.25</td>
</tr>
<tr>
<td>Kenya</td>
<td>6.02</td>
</tr>
<tr>
<td>Namibia</td>
<td>3.83</td>
</tr>
<tr>
<td>Tanzania</td>
<td>3.56</td>
</tr>
<tr>
<td>Botswana</td>
<td>2.89</td>
</tr>
<tr>
<td>Uganda</td>
<td>NA</td>
</tr>
</tbody>
</table>

### National/rural electrification rates in SSA (%)

- South Africa: 80%
- Ghana: 65%
- Cote d'Ivoire: 50%
- Nigeria: 40%
- Botswana: 20%
- Senegal: 15%
- Zimbabwe: 10%
- Comoros: 5%
- Gabon: 4%
- Namibia: 3%
- Ethiopia: 2%
- Angola: 1%
- Benin: 1%
- Guinea: 1%
- Togo: 1%
- Madagascar: 1%
- Zambia: 1%
- Mauritania: 1%
- Mali: 1%
- Lesotho: 1%
- Ethiopia: 1%
- Kenya: 1%
- Mozambique: 1%
- Guinea-Bissau: 1%
- Tanzania: 1%
- Burkina Faso: 1%
- Somalia: 1%
- Niger: 1%
- Malawi 1%
- Uganda: 1%
- Gambia, The: 1%
- Sierra Leone: 1%
- Rwanda: 1%
- Chad: 1%
- Liberia: 1%
- Burundi: 1%
Tariffs – Private Power is Competitive

Key points

SA electricity tariffs are increasing at a fast rate from a low base...

... Note the central IRP projections exclude the introduction of Carbon Taxes (dealt with as a scenario although scheduled to be imposed from 2012)...

Tariff Paths: IRP 2010 vs. Medupi/Kusile vs. Selected RE Technologies

- Eskom National Blended Tariff (as per Policy-Adjusted Scenario) + Carbon Tax
- Eskom National Blended Tariff (as per Policy-Adjusted Scenario)
- Onshore Wind (BD2 average price)
- Kusile + Environmental Levy + Carbon Tax
- Kusile + Environmental Levy
- Medupi + Environmental Levy + Carbon Tax
- Medupi + Environmental Levy
- Solar PV (BD2 average price)
- Cogeneration - Woodchips
Section 3.1:

The Funding Market for Renewable Energy Projects in South Africa
(i) Renewable Energy projects in SA

Key points

Local Market conditions

SOUTH AFRICA’S LOCAL LENDING MARKET

- Local lending market is well established and understands Project Finance
- Long tenors are possible
- While the Renewables Sector is a new one, there is already an established PPP market with Standardised Documentation and Market Precedent
- Liquidity costs are relatively high and are likely to increase in the short to medium term, in many instances fuelled by the considerable market activity being generate by the REIPP procurement process.
- Ultimately the ability of local banks to continue to lend into this market will be driven by their ability to distribute what debt they have lent into the projects that have closed in BD1 and BD2
- The cost of swapping USD or EUR and layering onto that PRI is generally more expensive than borrowing directly from local banks
Types of funding sources

(i) Renewable Energy projects in SA

Key points

The requirement for a ZAR tariff has in many respects dictated that the primary source of funding is from the local South African banks

Types of funding sources

SENIOR DEBT AND MEZZANINE FUNDING

- Vanilla commercial bank Senior debt funding from the Big 5 commercial banks. Typical terms include
  - Construction plus 15 years (leaving a 5 yr tail on the PPA), with a couple of sweeps on longer tenors
  - Margin – Libor plus bank costs, plus liquids, plus credit margin
  - Standard PF covenants
- Mezz has been provided on various deals and generally constitutes 5-10% of the total funding package

BEE FUNDING

- This is generally available from the IDC and DBSA, but Standard Bank is providing BEE finance on a few of its deals
- Considerations to qualify for DBSA debt
  - Broad Based
  - Previously enriched BEE partners will qualify for less
  - Active shareholders will be given preference (e.g. engineers or O&M contractors who are also shareholders)
- Considerations to qualify for IDC debt
  - Tower manufacture (wind) and panel assembly (PV)
  - Broad Based
(i) Renewable Energy projects in SA

Key points

Distribution of debt

SECONDARY MARKET CONSIDERATIONS

- A number of challenges have presented themselves from a distribution perspective, including but not limited to

  - Traditional channels of distribution include NBFI’s who have not been in a position to nor had appetite to take construction risk
  - Including them in the financing packages before financial close has been challenging as they have rigid/fixed debt drawdown requirements
  - The nature of their business has dictated that these organisations do not like to get refinanced and would rather see loans run to term
  - State owned pension funds have expressed interest in taking assets in the secondary market
  - DFI’s from Europe have expressed considerable interest in the market, but have battled to get comfortable with the FX risk associated with lending in EUR/USD and getting repaid in ZAR

- The impact of Basel III is proving to be punitive and in many instances the tenor of hedges is too long for local banks to handle without it becoming unreasonably expensive.

- This in turn is limiting the foreign DFI’s from coming into this market
The Basel III framework proposes significant changes to the banking industry in terms of Capital and Liquidity management.

- Strengthen global capital framework
- Capital conservation buffer
- Counter-cyclical buffer
- Leverage ratio
- Improve risk coverage
- Improve quality, consistency, transparency of capital base
- Global liquidity standard
- Liquidity coverage ratio
- Net stable funding ratio

Components of the Basel III framework
Baseline III sets out standards for five main areas: capital, risk coverage, liquidity, leverage and cyclicality

**Overview of Basel III rules**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Key components</th>
</tr>
</thead>
</table>
| 1 Tier 1 Capital | Tier 1 capital to become mostly common shares and retained earnings  
• Limited recognition of Net DTAs, minority interests, pension assets/liabilities, unrealised gains/losses, MSRs, unconsolidated investments in FIs.  
• 250% risk-weighting on portion of these exposures not qualifying as capital.  
• Minimum Common Equity Tier one ratio of 9% (includes conservation buffer), minimum Tier 1 ratio of 10.5%, total capital requirement of 12.5%. These ratios exclude countercyclical buffer, D-SIB add-on and Pillar 2b add-on. |
| 2 Risk Coverage (CCR) | Stricter capital requirements for counterparty credit risk arising from derivatives, repos, securities financing  
• Capital incentives to move OTC derivative exposures to CCP – 2% risk-weighting on CCP exposures  
• CVA capital charge for mark to market losses associated with decrease in creditworthiness of counterparty  
• Increase in CCR for trades with other financials through asset value of correlation parameter change  
• Use of stressed expected positive exposure EPE  
• New charges for wrong way risk |
| 3 Liquidity | Long term structural Net Stable Funding Ratio requirement  
30-day Liquidity Coverage Ratio required in single currency  
• LCR must be monitored in all significant currencies where aggregate liabilities >5% of total liabilities  
• Defined set of monitoring metrics to assist supervisors in identifying bank/system-wide trends |
| 4 Leverage | Gross leverage (non risk based) ratio employed to constrain build up of leverage, safeguards against “gaming” of risk-based requirements, reduce model risk  
• Minimum Tier 1 leverage ratio of 4% from Jan 2013  
• OBS included at 100% CCF |
| 5 Cyclicality | Counter-cyclical framework to encourage building of capital buffers  
• Capital conservation buffer of 2.5%  
• Additional countercyclical Tier 1 buffer of 0-2.5% to be determined by national regulators, based on overall ratio of credit to GDP  
• Forward-looking provisioning to capture actual losses and reduce pro-cyclicity |

Source: Basel III: A global regulatory framework for more resilient banks and banking systems (BCBS 189), Basel III: International framework for liquidity risk measurement, standards and monitoring (BCBS 188)
Section 3.2:

The Funding Market for Clean Energy Projects on the rest of the continent
(ii) Clean Energy Projects on the rest of the continent

A brief history of IPP’s on the continent and some of the challenges experienced

The list below is not exhaustive, but it does provide a summary of some of the reasons why IPPs have experienced problems, or have not taken off at all:

- Flawed processes – corruption? IPTL
- The lack of an enabling regulatory structure – IPSA
  - Projects developed without appropriate cost recovery/pass through mechanism’s being put in place
  - Government does not have an appropriate legal basis on which to enter into a PPA (South Africa)
- Cross currency challenges – dollar borrowings and a local currency revenue stream – Kelvin, IPTL, IPSA
- Cash collection on the electricity distribution side – this is affecting the fundability of projects in many countries
  - Tanzania, Kenya, Uganda, South Africa (and its neighbours)
- A lack of funding or liquidity – South Africa, Mozambique, DRC
- A lack of skilled human resource capable of negotiating the PPA’s and Financing Documents
  - Often utilities get tied down negotiating the principles surrounding the “sacred cows”
(ii) Clean Energy Projects on the rest of the continent

Key points

Issues that have made it difficult to lend to projects on the continent

- Currency availability, convertibility and transferability
  - investors requirement for EUR/USD flows when the host utility is earn the majority of its revenue in local currency?
  - Investors requirement to have revenues offshore (on X-Border IPP’s)?
  - In the instance of cross currency risk, who bears this risk? Should the project enter into the relevant hedging arrangements itself?

- Events of default leading to lump-sum termination payments
  - In what circumstances should the host government pay termination lump sums?
  - Should the host government pay when there is a force majeure event?

- Why do investors insist upon there being a sovereign guarantee underpinning PPA’s with the private sector?
  - Creditworthiness of the offtaker?
  - Is an implicit government guarantee from the state (who owns the utility) not sufficient for banks? Why do banks/investors need an explicit government guarantee?

- Cost of funding
  - Increasing in the light of legislation and in the context of the Global Financial Crisis?
Section 4:

Case Study – The Mozambique Tete Corridor
Mozambique Electricity Exports – the issues

- The most logical route to market for all the power to be generated in the Tete region is down the existing HV DC line owned by Cahora Bassa and the Songo/Bindura transmission line.
- In the longer term this is not going to be sufficient to evacuate all of the thermal and hydro generation potential in the region.
- Financial close on the STE backbone is therefore going to be key to unlocking the full potential of the planned electricity projects in the region:
  - Moatize 300-1800MW?
  - Benga 300-1800MW?
  - Hydro Cahora Bassa North Bank – 1800MW
  - Hydro Mphanda Nkuwa – 1500MW
- The World Bank Group is playing an important role in ensuring that the Backbone goes ahead.
- It is the belief of Standard Bank that the Backbone could be built in a cost effective manner if the various IPPs listed above work collectively to extract the full economies of scale that a larger transmission line might be in a position to attract.
- Will this cost be borne by the Projects, or by all projects on a pro-rata basis? US$2.4bn?
- Similarly, if the transmission line is built on a pro-rata basis, then would the project on project risks affect the viability of the individual deals?
An overview of the Tete IPP Issues

Challenges in the region

- There are a number of challenges facing the various Tete IPP’s. In no particular order, these are:
  - The transmission constraint in the Tete region means that potentially Rio Tinto, Vale, [Jindal], Hydro Cahora Bassa (North Bank) and Hydro Mphanda Nkuwa are all competing for the same limited transmission capacity
  - Potential offtakers of the power are limited
    - Tete MineCo own use needs are significantly lower than the potential generation capacity of the IPPs
    - EDM is not in a position to take on the role of sole offtaker
    - ZESA is difficult to bank at present
    - Escom (Malawi) – needs 300MW, but it is currently technically insolvent
    - Eskom (South Africa) – with the exception of HCB it has been unable to conclude any inward cross-border PPA’s with IPPs
    - Members of the Energy Intensive User Group (EIUG) in South Africa are looking to cover their power conservation program (PCP) obligations
    - Other private customers (MineCo’s in Zimbabwe and/or Malawi)?
  - The two most logical anchor customers are (i) members of the EIUG, and (ii) Eskom, however in order for this to be a success, due consideration needs to be given to the various issues going on in South Africa from a regulatory and legislative perspective

Key points

- Perhaps the biggest obstacle is the lack of a clear offtaker for the power
- Transmission distances are significant
An overview of the Tete IPP issues (cont’d)

Key points

Competing projects

- The current lack of clarity of the IRP2012 means that many of the issues are as yet not bottomed out:
  - There is a lack of clarity over the number of MWs that South Africa intends importing from its neighbours (10-15% of the countries Reserve Margin)
  - There is also a lack of clarity over how IPP’s might gain access to the national transmission network in South Africa to transport power to private offtakers. The legislation provides for 3rd party access, but with the creation of an independent Single Buyer Office (SBO), it will mean that all power bought and sold in South Africa will have to go through the SBO
  - If the Tete IPPs do succeed in getting the right to wheel power through the grid then how is Eskom going to calculate “Use of System” charges for its transmission network?
- There are other competing coal fired IPP’s under development in South Africa that will conceivably not be subject to the same cross-border regulation as the Tete IPPs?
- For the Tete IPPs to be allowed to sell power into South Africa they will need to be registered on the Integrated Resource Plan #2 (IRP2) as we understand that the national regulator (NERSA) and the SBO will insist on all imports to be registered on the IRP2012 or they will be subjected to a special ministerial decree before they will be considered in-country
Power Purchase Agreement and Transmission issues

**Key points**

- **The currency of tariff is perhaps the biggest obstacle to projects closing on the continent**

**PPA and TX challenges**

- In our view, the most important components of the Tete IPP - PPAs are likely to be:
  - Price per kWh – the additional transmission cost from the IPPs to the Apollo substation (on the HV DC line) is critical from a competing project perspective as the IPPs will potentially have to compete on an all-in tariff basis at the Apollo substation, whereas IPPs within South Africa’s borders will be delivering power into the grid at the busbar at the plant.
  - Tariff indexation over the life of the PPA (linked to coal/crude prices, or just simply to an inflationary index).
  - Currency of tariff - USD/EUR/ZAR? The size of the Projects and the likely cost of the CESUL backbone will dictate that a significant portion of the funding is going to have to come in the form of EUR/USD as opposed to ZAR. For power sales into South Africa this is going to be important as it only buys power in ZAR and therefore the EUR/USD component will have to be hedged (thereby making the power less economically attractive).

- A major risk concerning wheeling is the performance of the grid (owner and/or operator). All PPAs will be entered into between the buyer and the seller, but these will be required to cross-reference to the wheeling agreement with the grid owner and / or operator.

- The wheeling issues on the Tete IPPs can be analysed in two parts:
  - Wheeling from the Power Plant to the substation at Apollo.
  - Wheeling from the Apollo substation to the point of offtake.
The global credit squeeze

Key points

The currency of tariff is perhaps the biggest obstacle to projects closing on the continent

The GFC

- One of the difficulties faced by any developer of a project in excess of US$500m is that it is going to have to secure funding from a number of different sources, given the relative paucity of appetite from commercial banks active around the world just now.

- There are at least 7 mega deals currently under development in the Tete region of Mozambique (including the port and rail deals) and most of them will require some form of limited recourse funding (i.e. a structured funding solution).

- Commercial banks are going to be unable to meet the funding needs of these projects, and so development finance institutions (DFIs) and export credit agencies (ECAs) will in all likelihood provide the remainder.

- With projects such as STE (US$2.4bn) and Mphanda Nkuwa (US$4bn) it will be a question of marshalling the entire pool of liquidity that is active in the region.

- This problem is compounded by the fact that for example STE should [in ideal circumstances] be developed jointly by the likes of HCB, Mphanda Nkuwa, Rio Tinto and Vale.

- It is conceivable that the traditional sources/pools of liquidity will have to be supplemented by non-traditional sources of funding. This might include:
  - A RBCT solution with MineCo’s funding rail, barging and port infrastructure.
  - Chinese, Indian and Korean sources of funding.
  - Indirect funding in the form of “subsidies” from the likes of the Government of Mozambique who may for example agree to forfeit royalties from the sale of power on STE - i.e. win the war but lose the battle!
Section 5

Funding case study – Morupule B (Botswana)
A Case study – Morupule B

The challenge facing BPC

- The main focus of this section is how to deal with the funding challenges that a limited recourse project financing will face in an African country. These include:
  - Liquidity constraints
  - The need for long tenors
  - The Borrowing currency may be both local currency and FX
  - There may or may not be cross-border issues

- Discuss these challenges in the context of the Morupule B project which adequately addressed the funding challenges the project faced

- Consider how lessons learnt from Morupule B could be applied in the future to meet the funding requirements of projects in the region?
Morupule B Power Plant – funding structure (cont)

The GFC

- Standard Bank partnered with ICBC to provide a tailor made solution to BPC for the financing of the USD1.6bn power project.
- The development of the project was key to BPC’s long term strategy to be energy self sufficient.
- China National Electric (CNEEC) was the appointed EPC contractor to build the 600MW power station. CNEEC is one of ICBC’s top tier clients.
- ICBC and Standard Bank were the lead arrangers of the funding package which included the following:
  - USD 825m Export Finance Facility to be guaranteed by Sinosure (year 1 – 15) and the World Bank IBRD (year 16 – 20)
  - USD 140m Bridge Facility pending Sinosure and other approvals being forthcoming.
- The US$825m Export Finance Facility will effectively be provided in fixed rate Botswana Pula through an innovative interest rate and currency risk hedge provided by Standard Bank for the full duration of the 20 year facility.
- ICBC and the Standard Bank Group provided a single joint proposal to BPC.
- Standard Bank’s on the ground presence in Botswana as well as the specialist input from Global Markets, DCM and Project and Export Finance helped secure the mandate for the bank.
Morupule B Power Plant – funding structure

Ministry of Finance Guarantee

Standard Bank

US$140m Guarantee

Bridge

ICBC

US$140m

Bridge 9 month

BPC

US$825m

20 year loan

Currency Basis Risk hedging

ICBC

15 year Political/Commercial cover

16 – 20 year

World Bank Partial Credit Guarantee

Sinosure Guarantee

BPC

World Bank Partial Credit Guarantee

Sinosure Guarantee

Standard Bank

Source: Standard Bank