Mossel Bay
GTL Refinery Sustainability

Presented to
The Portfolio Committee on Energy:
Parliament of RSA

8 March 2011
Background to PetroSA

- South Africa’s national oil company, established in 2002*
- Employs ~ 1800 people directly
- Owns the world’s 2nd largest GTL refinery, business spans petroleum value chain
- Produces ~ 5% of South Africa’s fuel needs
- Produces eco-friendly diesel, gasoline, kerosene and specialty products
- Produced ~70 million barrels of crude from domestic oil fields
- Produced ~ 1tcf of natural gas, from domestic gas fields
- Have assets in 3 different countries in Africa: Nigeria, Equatorial Guinea & Namibia
- Has also been trading via offices in Rotterdam & Houston (Houston office recently closed)

* Following the merger of Soekor E & P and Mossgas Pty Ltd
PetroSA Mandate

- Operate as a commercial entity and create value for the shareholder
  - pay tax and dividends

- Advance national objectives in the petroleum industry
  - Spearhead industry transformation

- Complement & promote Government policy & strategic
  - Advance energy goals and Government objectives set out in various policy instruments e.g:
    - Medium Term Strategic Framework 2009-2014
Local production of finished petroleum products should be manufactured from indigenous raw materials

Climate change to be considered in energy planning

Adopt global fuels specs

30% of all crude consumed in SA should be procured through PetroSA, and SA, through its NOC should acquire its own crude vessel

Oil Industry to provide substantial commercial strategic stock cover, to prevent future supply crises
Our Core Business

- Exploration and production of oil and natural gas
- Participation in, and acquisition of local as well as international upstream petroleum ventures;
- Production of synthetic fuels from offshore gas
- Development of domestic refining & liquid fuels logistical infrastructure; and
- Marketing and trading of oil and petrochemicals
PetroSA’s primary focus is on:
securing gas for the Mossel Bay GTL Refinery,
increased operational effectiveness and cost efficiency.
Why is the sustenance of the GTL Refinery in Mossel Bay important?

- The GTL Refinery is the main revenue generator for PetroSA
- PetroSA employs ~1800 people directly
- The company is the largest employer in the Southern Cape
- Helps sustain the local economy.
- Sustains at least 5000 indirect jobs in the Southern Cape
- Contributes towards security of supply of liquid fuels
- Has given rise to globally recognised technology
- Beneficiates local resources
- Produces clean fuels essential for people’s health
- Contributes towards poverty alleviation and transformation
The feedstock challenge

- The GTL refinery has over almost 20 years in existence relied on domestic feedstock.
- These domestic gas resources are in small pockets.
- Every few years we have had to develop new gas fields to extend the refinery’s productive life.
- Currently a field development project that could extend the GTL Refinery operations until at least 2020 is being finalised.
GTL Refinery Sustainability

Our approach has four legs:

- Optimisation of current producing fields
  - Producing gas at reduced rates to prolong commercial operations
  - Access un-swept gas close to existing producing wells (this includes resuscitating dead wells)

- F-O Field Development, including further appraisal in Block 9, focussing on known discoveries for tie-back to the F-A platform

- Other domestic gas resources, e.g. West Coast

- Liquefied Natural Gas
Historical Interventions to Sustain the GTL refinery

**F-A Fields**
- ~100 km Offshore M-Bay
- Prod start: Apr 1992 (Satellites: Jun 1997)
- Plateau: ~200 MMscf/d maintained until Jun 2000
- Need to commission neighbouring gas in **E-M Fields**

**E-M Fields**
- Prod start: Sep 2000
- Distance to F-A: 50 km East
- Plateau: ~200 MMscf/d maintained until 2006
- Then what: Need for **South Coast Gas Development**

**South Coast Gas Development**
- Commissioned: Sep 2007
- Plateau back to ~200 MMscf/d

**F-O Field Development: Planned next phase**
- Target production start date is April 2013
In-principle FID granted by Board, FEED underway, production expected by 2013 to at least 2020

- Prolongs commercial operations at the GTL Refinery
- Allows for other feedstock options to be explored and advanced
The strategy is to also tie-back other discovered gas accumulations to the F-A platform.
Further Exploration
West Coast - South Africa

**BLOCK 1 (ER)**
Area: 19 899 km²
PETROSA* 100%

**BLOCK 5/6 (TCP)**
Area: 90 497 km²
PETROSA* 100%

**BLOCK 3A/4A (ER)**
Area: 19 130 km²
- BHP Billiton* 60%
- PETROSA 30%
- Sasol 10%

**BLOCK 2A (PR)**
Area: 2A - 4959 km²,
- Forest Expl. Int.* 53.2%
- PETROSA 24%
- Anschutz 22.8%

**BLOCK 2C (ER)**
2C – 6112 km²
- Forest Expl. Int.* 53.2%
- PETROSA 24%
- Anschutz 22.8%

ER - Exploration Right; PR – Production Right;
TCP – Technical Cooperation Permit
Block 2A

- Production Right for Ibhubesi Gas Field signed – 26 Aug 2009
  - Forest Oil is operator, with 53.2% stake, PetroSA 24%, Anchutz 22.8%)

- GDMP (Gas Development Marketing Period)
  - A 5 year period during which work programme is suspended to allow JV to:
  - Prove additional reserves through 3D seismic acquisition, and appraisal drilling
  - Find a market for gas, negotiate and sign Gas Sales Agreement
  - Assess feasibility of gas infrastructure

- Proven plus probable reserves not enough to justify piping to Mossel Bay GTL Refinery, lack of infrastructure yields unfavourable economics.
Growth/Security of Supply
Upstream Strategy & Goals

Strategy

Achieve reserve and production growth through exploration, development and targeted acquisitions, focusing on provinces with a high reserves potential

Goals

- To expand and diversify PetroSA’s portfolio
- Target: 380 - 600MMbbl by 2020

Focus

- Focus on Africa (e.g. Equatorial Guinea, Angola, Egypt, Nigeria, Ghana, DRC)
- Mainly through acquisitions
- Value maximisation through portfolio rationalisation and risk optimisation
- Partnerships: Other NOCs, IOCs etc
International Upstream
Block Q, Equatorial Guinea Locality Map

**Basin:** Douala Basin

**BLOCK Q AREA:** 2167 km²

**PARTICIPATION:** PetroSA EG 75%  GEPetrol 25%

**OPERATOR:** PetroSA (Technical Operator)  GEPetrol (Administrative Operator)

**WATER DEPTH:** 900–1900 meters

**SOURCE ROCKS:** Albian and Turonian

**RESERVOIR:** Both Tertiary and Cretaceous plays
Block Q cont…

- Situated in proven oil region
- Prospective resources > 1.5 billion barrels in place
- PetroSA to divest up to 40% equity in Block Q
  - Divestment process initiated, details currently being worked-out

- Current Work Programme:
  - Drill one exploration well (completed in March 2010)
  - Acquire ~1000 sq km 3D seismic data (completed)
  - Process and interpret 3D seismic (ongoing)

- Work Programme in the next 1-year exploration period:
  - Drill a 2\(^{nd}\) exploration well
Venezuela

- The signing of an MOU by the SA and Venezuelan Governments in 2008 led to:
  - The signing of a co-operation agreement between PetroSA and PDVSA
  - This paved the way for PetroSA to participate in exploration activities in Venezuela’s Orinoco Oil Belt.

- A Joint Study agreement between PetroSA & PDVSA led to 2 projects:
  - Resource quantification and reserve certification of Boyaca 4 heavy oil in Orinoco belt
  - 2\textsuperscript{nd} project is a joint investigation into the feasibility of revitalising mature fields
Project Mthombo
Liquid Fuels Industry in South Africa

- With no investment in refining capacity, SA will import ~ 180,000 bpd of fuels by 2020
- High concentration in Durban, as crude (75%) & product (40%) import hub poses a security of supply risk
- SA lagging far behind on clean fuels standards
- Existing crude oil refineries ageing, they cannot produce clean fuels without further investments
- Clean Fuels investment estimated by SAPIA at R40 billion – excluding capacity upgrades.
- Investment by IOC’s in their refineries most unlikely, unless heavily subsidized by Government
Liquid Fuels Industry in South Africa

- Increasing product imports - not a sustainable solution
- Future of existing refineries unclear
- High concentration of crude (≈70%) and product imports in Durban area
- One pipeline to major inland market
- Investment by IOC’s in their refineries is most unlikely unless heavily subsidized by Government

Global recession has led to wave of refinery rationalisations - SA may be impacted!
A growing Supply Gap

RSA-BLNS Demand Vs. Supply

Source: PetroSA analysis of PFC Energy data
Actual demand growth show a strong tendency towards diesel
- Diesel average growth 4.8%
- Gasoline average growth 1.2%
- Mthombo forecasts inline with trends over the past decade
  - Assumed Diesel growth 4.5%
  - Assumed Gasoline growth 1%
- Diesel expected to continue to grow strongly driven by demand in agricultural and industrial sectors

Source: PetroSA analysis of PFC Energy data
Coega is an ideal location for the refinery

- Modern deep water harbour
- Centre of world’s main trade routes
- Developing world-class infrastructure
- Supporting industries in the IDZ
- Diversify supply points
- Decongest Durban supply area
- Pipeline to Gauteng under consideration
- Economically attractive to ship to Cape Town
- Can leverage export tax incentives

The Petroleum Oil and Gas Corporation of South Africa (Pty) Ltd Reg. No. 1970/008130/07
Mthombo Satisfies Key Strategic Drivers

- Security of supply of clean fuels
  - Diversification and Efficiency
  - Implementation of the ESMP – import minimisation strategy
  - Cost effective and sustainable implementation of clean fuels in SA
- Project Economics: a commercially viable project
- Industrial Development Platform
  - Unlocking growth potential and diversification of Eastern Cape economy: a phased petrochemical hub
  - Decent and sustainable Job creation in a world class asset
  - Development of local skills & suppliers of services and goods
- SADC integration through regional beneficiation
  - Crude processing and product off-take
Coega refinery has many benefits for South Africa

**Security of supply implications**
- Reduces reliance on imports
- New central distribution hub improves SA's supply logistics
- Relieves Durban congestion
- Diversifies crude sourcing

**Macro-economic benefits**
- Creates 27 500 construction and 18 500 operational jobs
- Unlocks region growth potential e.g. car industry; petro-chemicals
- Significant balance of payment savings
- Develops skills and technology
- Attracts foreign investors

**Commercially Viable**
- Lowest cost producer in Sub-Sahara
- Highest clean fuel standards
- Minimum environmental impact
- Full conversion to distillates
- Globally competitive against imports

**Socio-economic benefits**
- Alleviation of poverty
- CSDP has significant industrial impact
- BBBEE opportunities
- Builds confidence in future
- Commitment to regional development
Conclusions

- PetroSA’s primary focus is to secure gas for the GTL Refinery in Mossel Bay.
- The GTL Refinery is the main revenue source for the organisation, and serves as a platform upon which the company can grow.
- The Refinery is a major employer in the South Cape, and have a huge impact on the local economy.
- Concerted effort and government support needed to ensure more active exploration, appraisal and development in offshore SA.
  - Development of sub-sea infrastructure (pipeline etc) a pre-requisite for further beneficiation of domestic hydrocarbon resources.
Thank You
BACK-UP SLIDES
Key Strategic Initiatives
Strategic Fit

SUSTAINABILITY

F-O Field Development
- To supplement declining indigenous gas reserves from FA-EM and SCG fields
- Ensures sustained operations for additional 5-8 years (depending on approved development plan and production profile)
- Beneficiation of local resources in proximity to existing production infrastructure

Cost Optimization
- To drive cost improvements and efficiencies
- To increase cost consciousness across organization
Key Strategic Initiatives
Strategic Fit cont…

GROWTH

Mthombo/Upstream Reserves Growth: Supports government security of supply imperatives
- Provides diversified and new revenue stream
- Grows PetroSA market share
- Addresses cleaner fuels challenge – Euro V specifications
- Socio-economic impact, poverty alleviation, jobs, positive effect on balance of payments etc.

Downstream Retail Market Entry
- Provides infrastructure for GTL & Mthombo product off-take
- Allows capture of retail margin & value chain optimisation
- Enhances revenue stream

Sub-Saharan Africa Market Penetration
- Enables growth through imports and placement of finished products in Sub-Saharan Africa markets

Technology
- Enables growth through GTL technology development & commercialisation
Key Strategic Initiatives
Strategic Fit cont…

TRANSFORMATION

- Advances our mandate to transform petroleum industry!
- Assists in redressing socio-economic imbalances of the past
  - Empower & advance women within the company
  - Attract people living with disabilities
  - Transform organisational processes & systems in support of growth (GMF)

SHEQ

- Advances the country’s efforts towards cleaner fuels (Euro 4 & 5 specs)
- Active participation in national efforts towards reduction of GHG emissions
- Integrated SHEQ management system for the organization