Gas to Liquids – An Ideal Gas Monetisation Option

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One of the greatest energy related challenges the world faces today is how to sustainably satisfy the global increase in energy demand, with minimal negative impact on the environment whilst, at the same time, promoting economic growth. Future fuels will not only need to be more abundant, but also cleaner, which places technology and innovation at the forefront of the global energy mix debate. However, technology will need to be commercially and technically viable, as well as compatible with existing fuel distribution infrastructure and prevailing drive-train technologies.

Gas-to-liquids, or GTL, is ideally placed to deal with these challenges as it converts natural gas into low emissions, high performance liquid fuels such as GTL diesel, naphtha, LPG, jet fuel as well as other premium products. GTL presents a compelling value proposition to resource owners as it creates value and growth opportunities in support of the strategic drive to add value to the world’s abundant natural resources. Furthermore, GTL offers resource owners a technically and commercially viable alternative monetisation option.

Sasol's state-of-the-art, commercially-proven slurry phase hydrocarbon synthesis process forms the basis of the GTL process and enables the production of synthetic fuels from natural gas, delivering a clear, clean fuel that is compatible with existing fuel distribution infrastructure and modern diesel and jet engines.

Domestic production of GTL fuel from abundant gas resources will provide substantial economic, environmental and energy security benefits to the host country. GTL also enables gas to be used as a transportation fuel without the need for expensive modifications to infrastructure and existing engines and therefore allows major gas producers to target the global transport fuels markets.

Sasol has over 60 years experience in the commercial production of synthetic fuels, as more recently demonstrated by our ORYX GTL success story in Qatar, where Sasol, together with its partner, Qatar Petroleum, produce 32 400 barrels/day of superior quality fuels from natural gas. Sasol’s operating experience, technology know-how and project management skills enable us to provide gas resource owners with a lucrative alternative gas monetisation option.
Forward-looking statements

In this document we make certain statements that are not historical facts and relate to analyses and other information which are based on forecasts of future results and estimates of amounts not yet determinable. These statements may also relate to our future prospects, developments and business strategies. Examples of such forward-looking statements include, but are not limited to, statements regarding exchange rate fluctuations, volume growth, increases in market share, total shareholder return and cost reductions. Words such as "believe", "anticipate", “expect”, "intend", "seek", "will", "plan", "could", "may", "endeavour" and "project" and similar expressions are intended to identify such forward-looking statements, but are not the exclusive means of identifying such statements. By their very nature, forward-looking statements involve inherent risks and uncertainties, both general and specific, and there are risks that the predictions, forecasts, projections and other forward-looking statements will not be achieved. If one or more of these risks materialise, or should underlying assumptions prove incorrect, our actual results may differ materially from those anticipated. You should understand that a number of important factors could cause actual results to differ materially from the plans, objectives, expectations, estimates and intentions expressed in such forward-looking statements. These factors are discussed more fully in our most recent annual report under the Securities Exchange Act of 1934 on Form 20-F filed on 28 September 2010 and in other filings with the United States Securities and Exchange Commission. The list of factors discussed therein is not exhaustive; when relying on forward-looking statements to make investment decisions, you should carefully consider both these factors and other uncertainties and events. Forward-looking statements apply only as of the date on which they are made, and we do not undertake any obligation to update or revise any of them, whether as a result of new information, future events or otherwise.
Sasol at a glance

- Sasol is an integrated energy and chemicals company
- The world’s largest producer of synthetic fuels
- World leader in gas-to-liquids (GTL) and coal-to-liquids (CTL) technology
- >60 years’ experience in CTL, GTL and related technology
- Operating and technical expertise
- ~255 engineering and science PhDs
- Strong intellectual property portfolio (372 registered patent families)

1. For the year ended 30 June 2011

- Turnover R142bn\(^1\) (~USD 18bn)
- Market cap R239bn\(^1\) (~USD 31bn)
- Listed on JSE (SOL) and NYSE (SSL)
- Present in 38 countries
- ~34 000 employees world-wide
Sasol’s integrated business model
- converting coal and gas into liquid fuels and chemical products

1. **Open market purchases**
   - Crude oil

2. **Exploration and production of feedstock**
   - Coal
   - Gas
   - Oil

3. **Syngas production**
   - GTL/CTL Technology (LT or HT)

4. **Refining and blending**
   - Fuel components
   - Co-products
   - Chemical feedstock

5. **Marketing of products**
   - New energy
   - Third party producer

6. **Chemical processes**
   - Marketing of products

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The GTL process

Natural Gas Reforming

Slurry Phase Synthesis

Product Upgrading

- Natural gas
- Oxygen

- CH₄
- O₂
- N₂ to atmosphere

- H₂O by-product

- LPG
- GTL kerosene
- GTL paraffins
- GTL waxes
- GTL base oils

- GTL diesel
- GTL naphtha
- Other (optional)

10mcf
1 bcf/d
1 tcf reserve

1 barrel of total products
100 000 bbl/day
100 000 000 bbl of total products

Over 30 years

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GTL diesel – a world class product

- Colourless, clean burning fuel for use in diesel and jet engines
- High cetane number, virtually sulphur and aromatics free
- Convenient and easy to use
- Can be used “pure” or as blend with conventional diesel
- Naphtha a diluent for oil sands bitumen

- Compatible with existing engine technology and distribution infrastructure
- Enables the development of new generation internal combustion engine technologies with improved engine efficiency and further reduction of vehicle pollutant emissions
- Meets Euro 5 specifications

Emissions performance of GTL diesel

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GTL fuels finding widespread application

Demonstration of first passenger flights in September 2010 on fully synthetic jet fuel

In 2006, a Toyota Hilux Raider, drove from Johannesburg to Qatar on GTL diesel only

The oil from the Toyota fuelled by GTL diesel compared to the oil from the Toyota running on normal diesel after the GTL challenge

The US airforce has tested GTL/CTL fuel in B-52s and B-1Bs

5 year fleet trial with 20 buses 125,000 lit. GTL diesel used showing superior properties
GHG emissions and local air quality benefits

Greenhouse gas (GHG) emissions impact, measured on a life cycle basis, is comparable to a modern, efficient petroleum refinery, and has scope for further improvements.

High cetane number and very low levels of sulphur and aromatics in GTL diesel ensure a more efficient and cleaner-burning combustion environment.
GTL Research & Development

- Continued investment in R&D and leading edge innovation remains key
- Sasol has three R&D centers located in South Africa, the Netherlands and Scotland
- R&D facilities employ over 600 people of which 120 are PhD graduates
- In both the High Temperature and Low Temperature hydrocarbon synthesis environments, Sasol has developed new generations of reactor technology
- Budget (FY2011/12): ~ US$ 140 million
Heat exchange reforming development

- Methane Reforming is a key processing step for GTL - converts natural gas / methane into syngas feeding Sasol’s Slurry Phase hydrocarbon synthesis process.

- Sasol and Haldor-Topsøe have a leading position with new technology called heat exchange reforming - Sasol operates a commercial unit in Secunda.

- Sasol and Haldor-Topsøe are studying the application and accelerated commercialization of exchange reforming for new GTL ventures to significantly improve the GTL value proposition.
Heat exchange reforming - impact

• Improved efficiency
  – Overall carbon efficiency: up to 10%
  – CO₂ footprint intensity: up to 30%

• Lower Total Cost of Ownership (TCO)
  – For same oxygen requirement - GTL production capacity: up to 25%
  – Taking advantage of technology benefits and associated economies of scale - capital cost of syngas production
Capacity of GTL reactors increasing

- Develop an intensified slurry phase reactor to increase throughput without increasing shell size
- Reactor development combined with increased catalyst development

Enhanced performance through increased volumetric conversion efficiency
Catalyst developments

- Better cobalt distribution allows improved catalyst activity and stability
- Improvements in alumina support
- Next generation catalyst will lower GTL operating cost by:
  - Improving catalyst productivity
  - Allowing higher reactor intensities
- Catalyst Multiple Regeneration
Sasol GTL: proven alternative to meet growing global energy and chemicals demand

- Abundant gas resources
- Global drive for cleaner transportation fuels and high quality chemicals
- Need for energy security
- Resource monetisation and diversification

Sasol's technology and operating experience

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- In-country, win-win solution
- Transportation fuel security
- Value-adding products
- Job creation
- Forex savings
- GDP growth

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ORYX GTL, Qatar

*in operation and highly successful*

- Joint venture between Qatar Petroleum (51%) and Sasol (49%)
- 32 400 bbl/d design capacity, producing ultra-low sulphur diesel, naphtha and LPG
- Stable operation (80-90% capacity utilisation)
- Instantaneous production record of 36 860 bbl/d achieved
- Production to be increased by 10% through de-bottlenecking
- Investigating the possibility of an expansion

*Highly profitable venture with handsome returns to shareholders*
Escravos GTL, Nigeria

- Sasol, National Nigerian Petroleum Company and Chevron Nigeria Limited – plant under construction

- 32 400 bbl/d design capacity to produce GTL diesel, GTL naphtha and LPG

- Sasol participating interest of 10%

- Although the project is managed by Chevron, Sasol participation remains integral to ensure success

- Completion expected in 2013
Uzbekistan GTL

- Partnership between Sasol (44.5%), Uzbekneftegaz (44.5%) and Petronas (11%)

- The investment agreement signed with the Government of Uzbekistan in Sept 2011

- Nominal 38 000 bbl/d capacity targeting GTL diesel, GTL kerosene and GTL naphtha product slate

- FEED to commence end of 2011, and depending on FID, plant to be operational in the second half this decade

- The GTL plant will be located near the town of Karshi in the southern part of Uzbekistan, and feedstock gas sourced from adjacent Shurtan Gas Chemicals Complex
Shale gas growth in North America supports the favourable natural gas/oil price dynamic

Source: EIA, Annual Energy Outlook 2011

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Canada GTL

• Sasol acquired from Talisman Energy 50% interest in Farrell Creek and Cypress A shale gas assets in the Montney basin in British Columbia

• Montney is one of the most prolific shale gas plays in North America

• Sasol / Talisman partnership covers 108,000 net acres land – circa 20 tcf of contingent resource

• Sasol and Talisman are conducting a feasibility study on the economic viability of a GTL facility in western Canada
United States GTL

- Sasol to commence a feasibility study to evaluate the viability of a GTL plant in Southwest Louisiana
- Slated to be the first plant of its kind in the U.S.A.
- Unlocking the abundant natural gas resource and contributing to local economy with an affordable, reliable and high quality fuel supply
- 48,000 bbl/d and 96,000 bbl/d capacity considered
- The location is Sasol’s existing Lake Charles Chemical Complex
- Currently the world’s first commercial ethylene tetramerization unit under construction at the same site
Economic benefits for all stakeholders

A GTL facility has the potential to create significant macroeconomic benefits in the form of:

• Direct employment of hundreds of people
• Employment of more than several thousands during the construction phase
• Direct capital investment of US$ billions
• Increase in economic growth (GDP)
• Increased fiscal revenue
• Import replacements and foreign exchange savings
• Technically proven gas commercialisation alternative
Sasol GTL: unlocking natural gas resource

• Leading edge, commercial technology that can be implemented immediately

• Energy diversity and security

• Integrated value chain opportunities and synergies (upstream and chemicals)

• Flexibility in transportation fuels industry
  • Fungible products that do not rely on complex contractual chains
  • Commercial alternative to conventional production of diesel and jet fuel
  • Superior quality fuels to meet stringent specifications (Euro 5)

• Environmental footprint on par with modern, efficient petroleum refining, with scope to further improve
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