Synthetic fuel and chemical producer Sasol and the environment
Sasol at a glance

- an integrated oil and gas company with substantial chemical interests

- world leader in producing liquid fuels from coal and natural gas via Fischer Tropsch Process

- the producer of 29% of South Africa’s fuel synthetically from coal.


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**main operating divisions**

**oil and gas businesses**

- **Mining**: coal mining activities
- **Synfuels**: production of liquid fuels, gases and chemical products
- **Liquid fuels business**: crude oil refining, blending and marketing of fuels and lubricants
- **Gas**: distributes and markets natural and methane-rich gas
- **Synfuels International**: develops and implements international ventures based on Sasol’s F-T technology
- **Petroleum International**: develops & manages international upstream interests in oil and gas exploration and production activities

**main chemical businesses**

- **Olefins & Surfactants**: global supplier of surfactants, surfactant intermediates and feedstocks, related products and comonomers
- **Polymers**: production and marketing of ethylene and propylene monomers, polypropylene, polyethylene and PVC
- **Solvents**: manufactures and markets globally a wide range of oxygenated solvents
- **Nitro**: manufactures and markets ammonia, mining explosives and fertilizers
- **Wax**: operates wax manufacturing, blending and marketing operations

**exported from SA**

- oil & gas: 54%
- chemicals: 46%

**within SA**

- oil & gas: 50%
- chemicals: 50%

- total sales: 100%

**outside SA**

- total sales: 100%

**operating profit**

- oil & gas: 81%
- chemicals: 19%

- total sales: 100%
world-leading technology for the conversion of coal and remote natural gas into value-added synfuels and chemicals
Conversion of synthesis gas to liquid hydrocarbons:

\[ 2H_2 + CO \rightarrow -\text{CH}_2^- + H_2O \]

Sasol Synfuels, Secunda South Africa  
Oryx GTL (QP - Sasol JV), Qatar
Sasol, Sasolburg South Africa

Sasol supplying natural gas to Sasolburg from Mozambique
Environmental and other benefits of FT

- GTL/CTL is a viable alternative fuel that is competitive with crude oil based products

- Able to utilise “low value” natural resources:
  - Remote/stranded natural gas that is often flared
  - Low grade coal that is available in abundant quantities

- FT Diesel is an inherently cleaner fuel
  - Low Sulphur diesel (S < 5ppm)

- CTL Technology very well positioned for applying CO₂ capture and storage
Sustainable Development Challenges
– GRI reporting

- Vision and strategy
- Governance structure and management systems
- Economic performance indicators
- Environmental performance indicators
- Social performance indicators Estimate
- Human rights
- Society
- Product responsibility

Material, energy, water, biodiversity, emissions, effluents and wastes, environmental impacts of products and services
## Environmental performance

### Resource inputs
- Coal, crude oil, natural gas
- Water
- Oxygen
- Energy

### Wastes and emissions
- Greenhouse Gas
- Emissions: (H$_2$S, NOx, SO$_2$, VOC, particulates)
- Effluents
- Ash (from coal)
- Waste: hazardous, non hazardous
Water

- FT process is a significant user (and producer) of water/effluents
- Sasol’s FT plants in South Africa are located in water short regions
- Sasol, through necessity has become a leader in effluent re-use/recycling technology
- Most regions in the world where CTL/GTL ventures are likely to be built are in water short areas
- Many opportunities for optimising water use efficiency
Credible climate change predictions now available for South Africa that predict changing rainfall, temperature and ecosystem responses.

**Source:** Prof Roland Schulze, University of Kwazulu-Natal
POP’s

- Products manufactured - none
- Incinerator emissions – studied, not found
- Transformer oil PCB’s, known, limited exposure, managed
- Malaria control (DDT), SA concern
- Likely new entrants to list?
Mercury from coal processing

- Both a global and local concern

![Map showing anthropogenic emissions of total mercury in 1995 (tonnes) (Pacyna, 2000)]

- Coal processing the largest unregulated source of Mercury emissions
- SA coal low in Mercury, Sasol’s closed gasification process produces no mercury emissions
- Subject of focussed investigation
Concluding remarks

- Sasol is:
  - world leader in producing liquid fuels from coal (CTL) and natural gas (GTL)
  - an integrated oil and gas company with substantial chemical interests

- Environmental performance influenced by feedstock type, process technology, size, product selection

- Many opportunities exists for realizing significant efficiency gains