



Energy and poverty

IEF Seminar

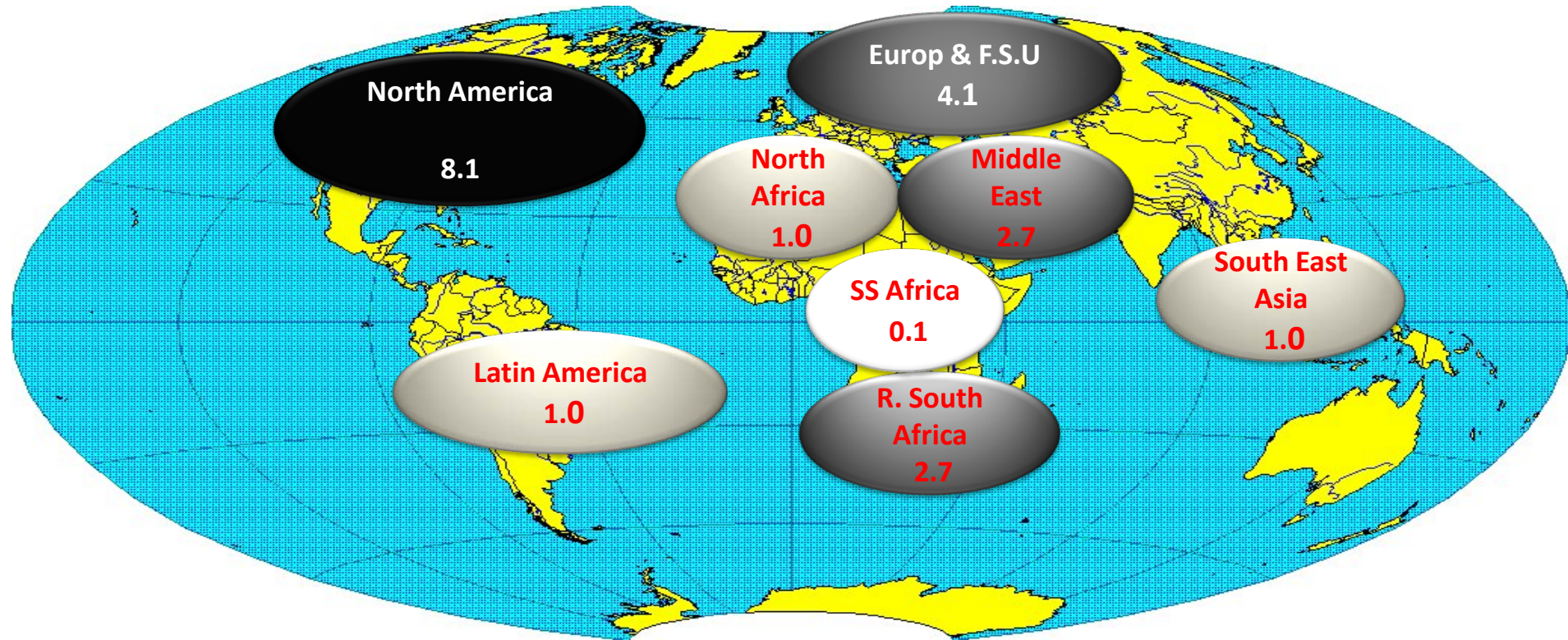
December, 8 and 9

Jean-Pierre FAVENNEC

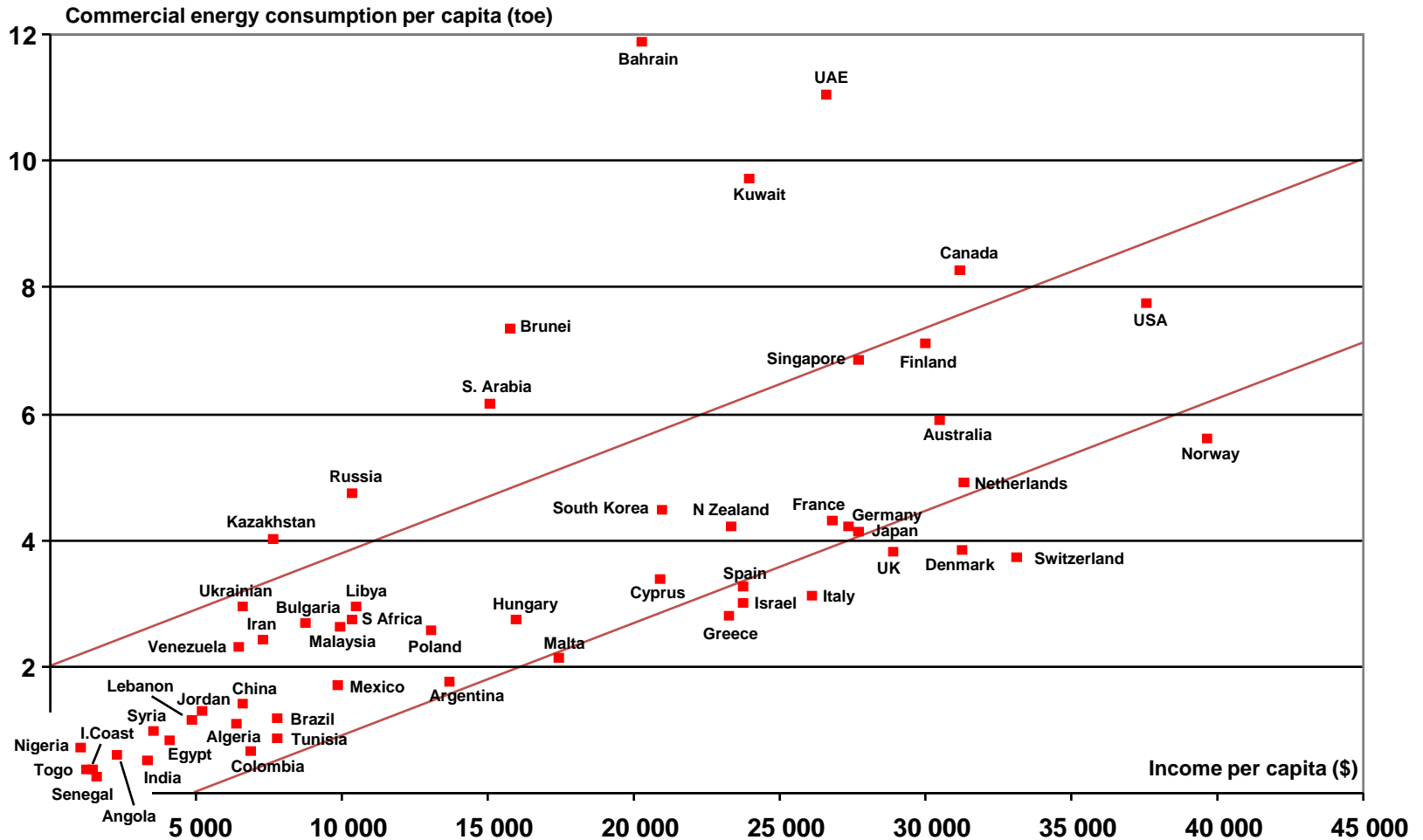
President

***Association for the Development
of Energy in Africa***

World energy consumption (toe/capita)

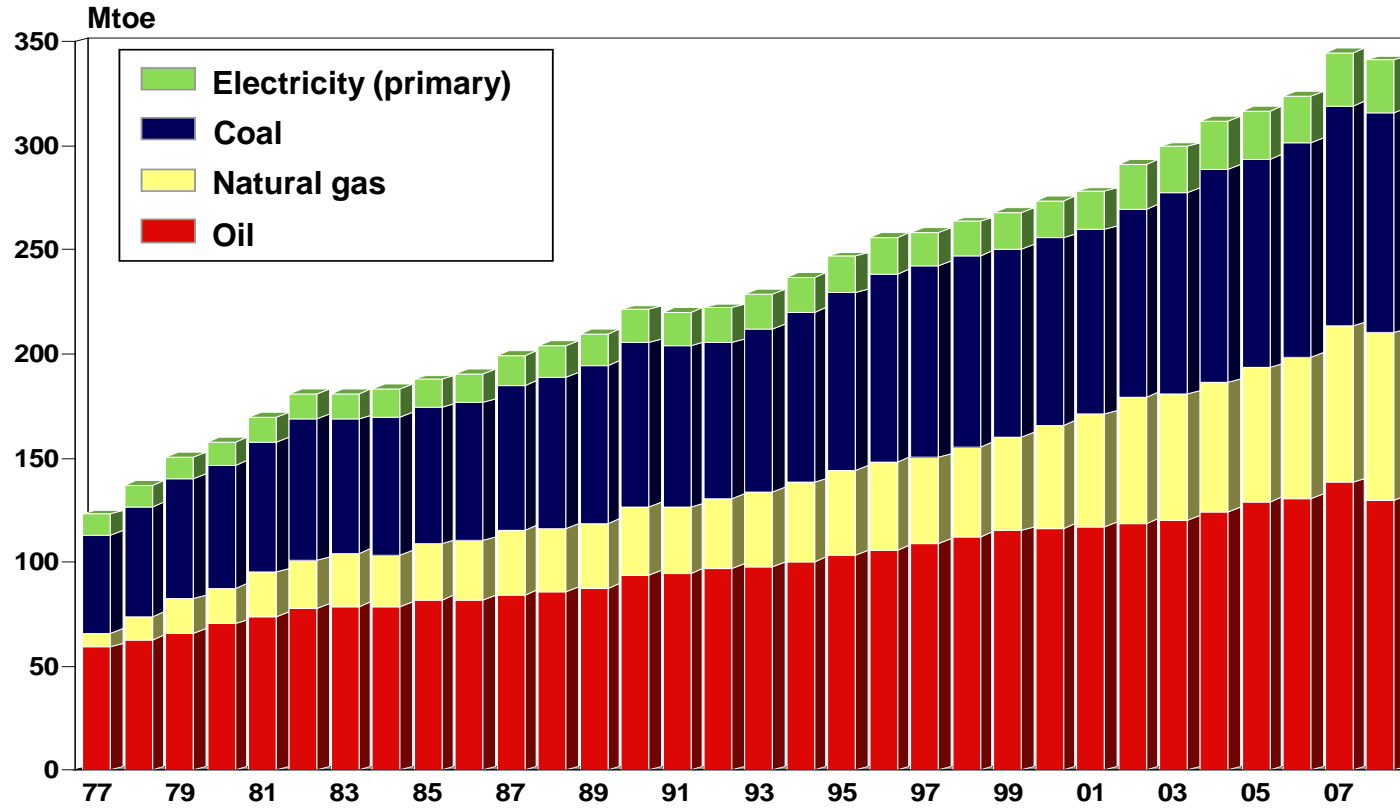


Commercial energy consumption and income in 2006





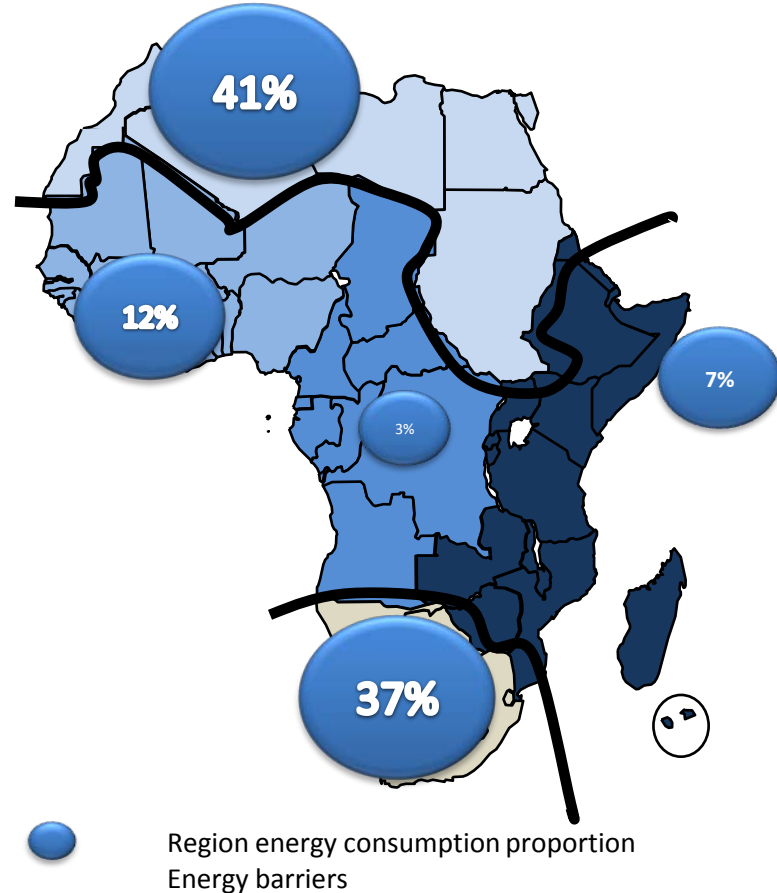
Energy consumption in Africa



The energy divides

North and South Africa: two specific areas

- Divide between Africa and the rest of the world (**15%** of world population for 3% of world energy consumption)
- Divide between North Africa-South Africa and the rest of Africa
- Divide between urban and rural areas: Urban areas look like energy spots



Introduction to Africa oil industry

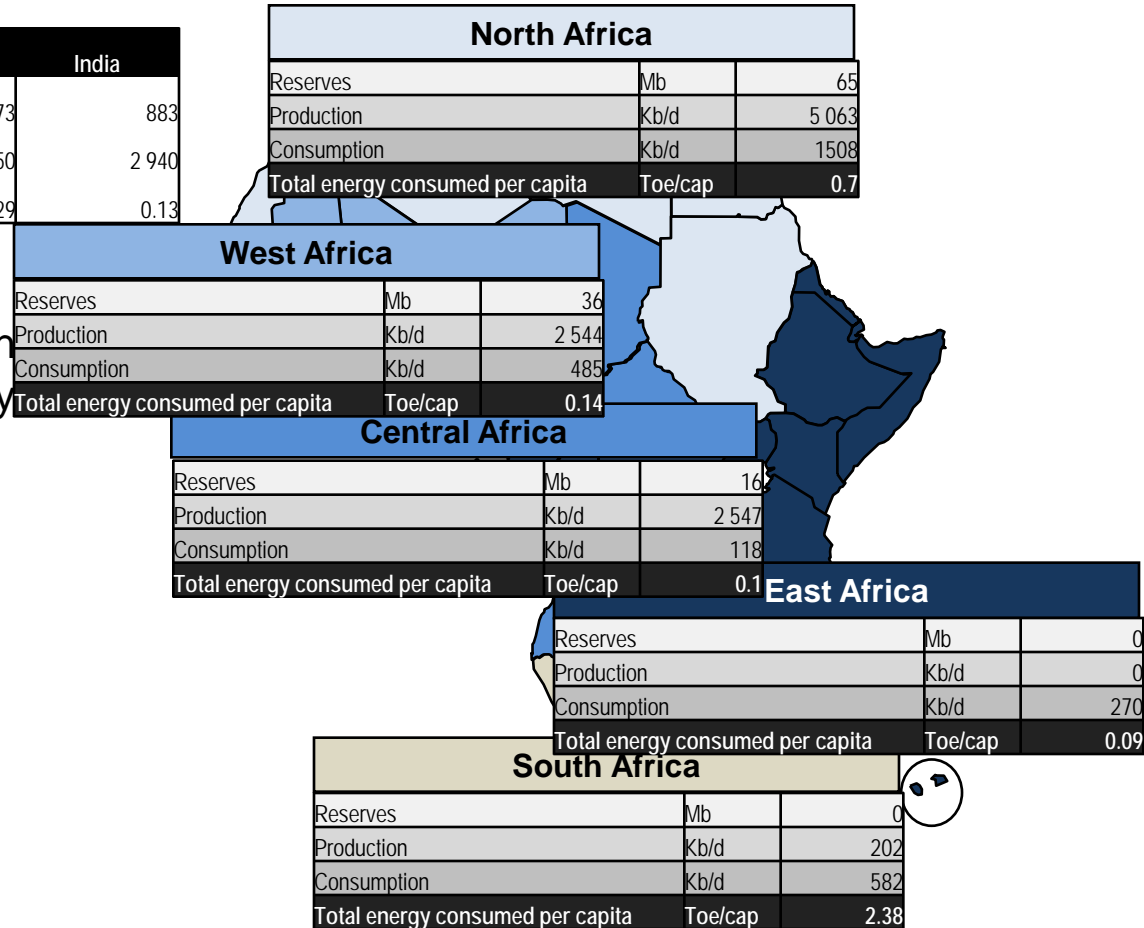
Oil production, consumption and export

		Africa	China	India
Production	(Kb/d)	10 871	3 973	883
Consumption	(Kb/d)	3 078	7 850	2 940
Consumption per capita	(T/cap)	0.16	0.29	0.13

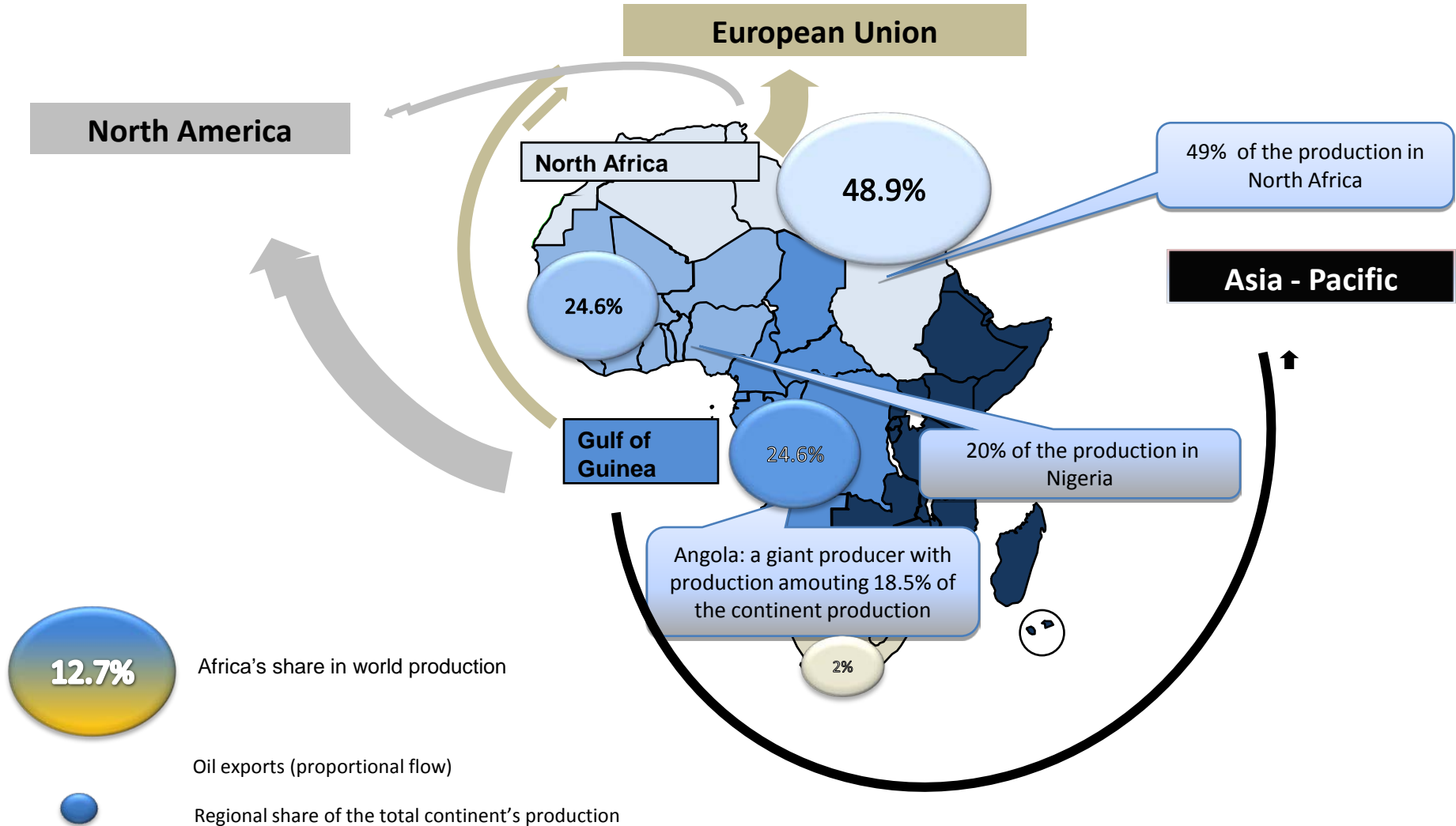
▪ Even though Africa, China and India have a comparable population profile, they show different oil industry pattern

▪ Two situations in Africa: Oil producing regions (North Africa, Gulf of Guinea) and NOPAC*

*Non Oil Producing African Countries



Africa: a strategic oil producer



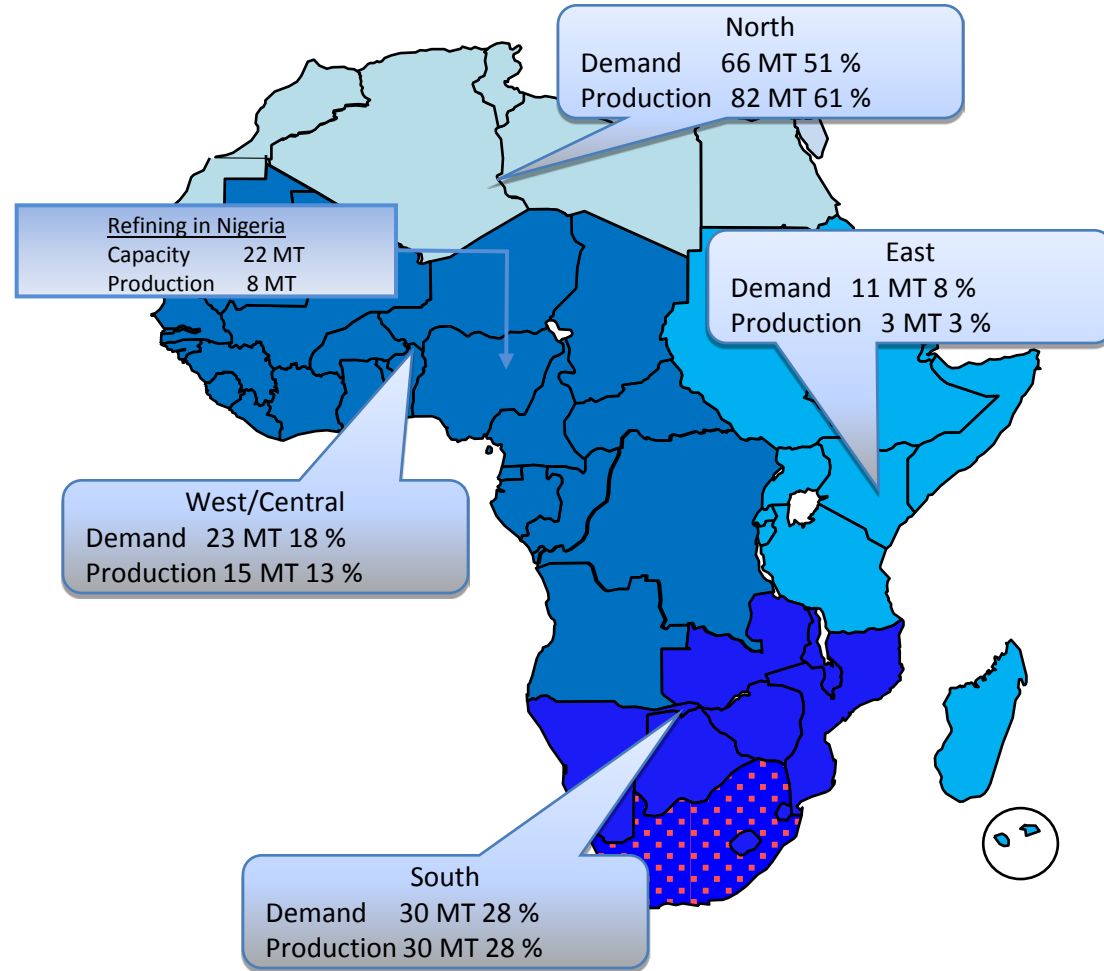
Refining and petroleum products trading in Africa

■ Upstream:

- Limited refining infrastructure
- Existing refineries are very often obsolete
- African refineries are crippled by costs due to their low capacities

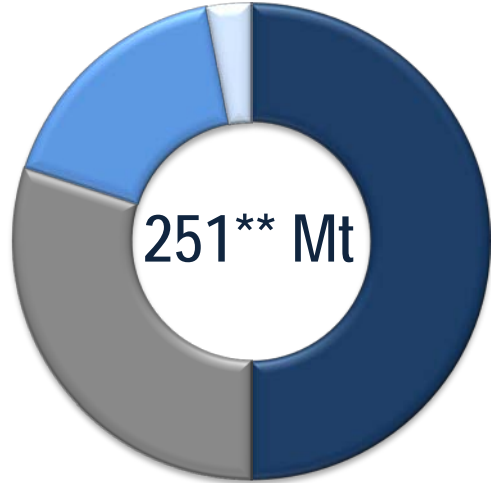
■ Downstream:

- The low consumption forces a slow and costly distribution by road
- Costs are high and the prices are subsidized.



Coal: Production and consumption

Consumption of the Coal produced in 2008*



■ ESKOM (50 %)
■ Exports (30 %)
■ Sasol (17 %)
■ Others*** (2 %)

South Africa Coal Figures

- ✓ Primary energy mix proportion: 82.6 %
- ✓ Proved reserves: 54 Bt
- ✓ Production : 251 Mt
- ✓ R/P ratio: > 200 years
- ✓ ESKOM Number of coal-fired power stations : 13 out of 20
- ✓ SA coal-based electricity proportion: 90 %
- ✓ Liquid from coal/ Total liquid: 1/3

Production and consumption of coal in South Africa have grown steadily over the past 25 years at an average annual rate of 2.7 percent

Source: **SACMA (South Africa Collieries Managers Association) /Presentation « ESKOM recovery plan » by Koos Jordan, June 2009

Sasol Annual report (produces 43 Mt pa for gasification)

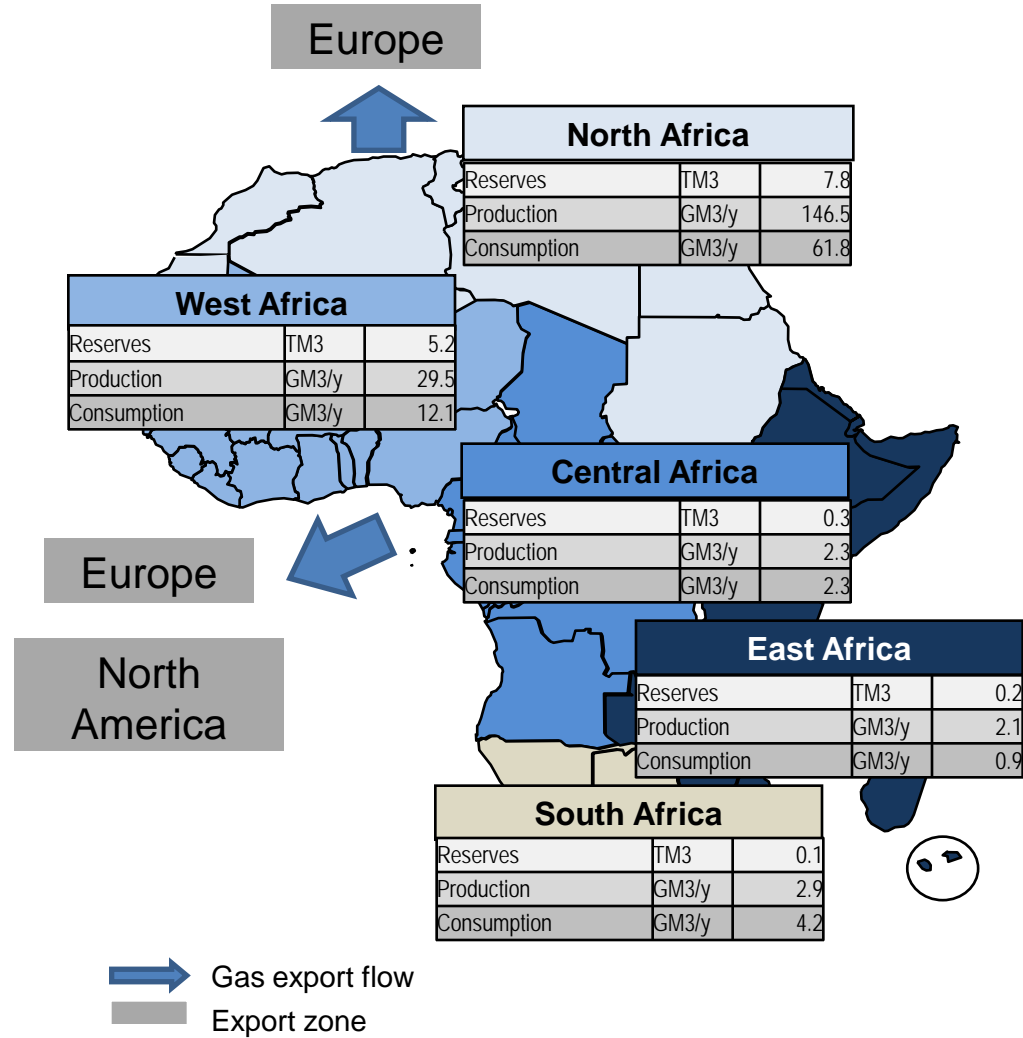
* The production in 2008 was 251 Mt but the actual consumption in 2008 was 266 Mt as 15 Mt of dumps were used

*** Others include Households, Metallurgical, Transport,

Natural Gas in Africa

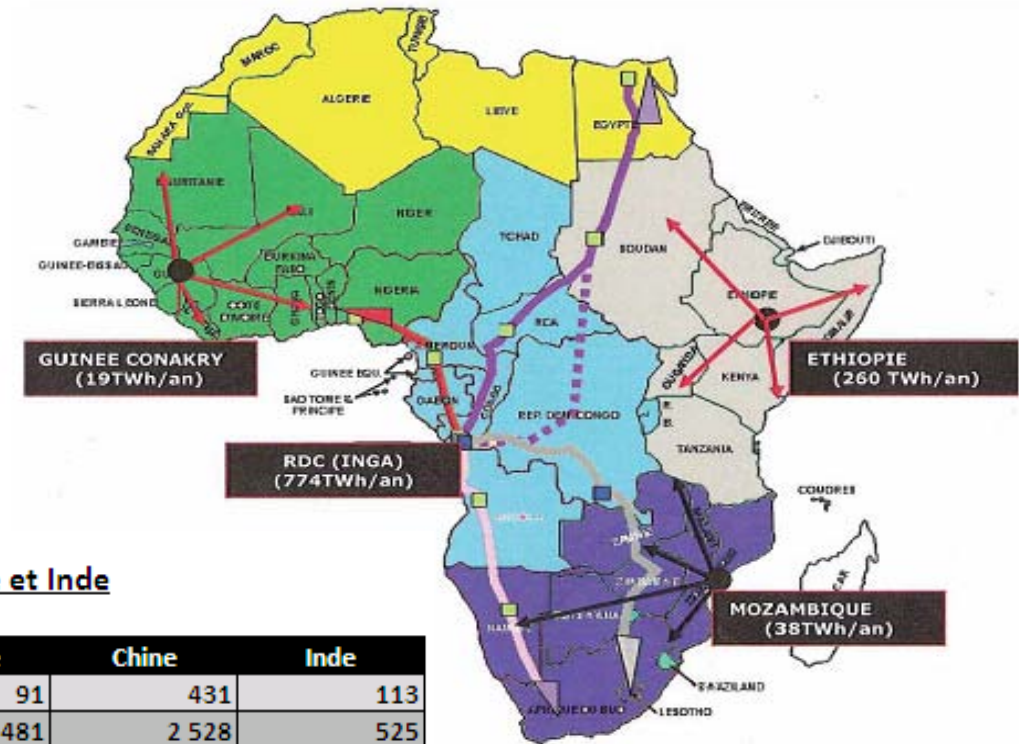
Gas consumption and production in Africa

- Africa is an important gas producer (7.9 % of world reserve and 7% of world production)
- Nevertheless all the regions don't display the same gas profile:
 - West and North Africa are the main gas producing areas
 - South Africa is a net gas importer



Hydroelectricity in Africa

Potential



Comparaison: Afrique, Chine et Inde

		Afrique	Chine	Inde
Production d'hydroélectricité	TWh/an	91	431	113
Consommation électrique	TWh/an	481	2 528	525
Consommation électrique par habitant	KWh/h	483	1 888	450

✓ **Large consumption of biomass (wood, residues ...)**

- ✓ desertification
- ✓ health problems
- ✓ time lost by women and children

✓ **Lack of electricity**

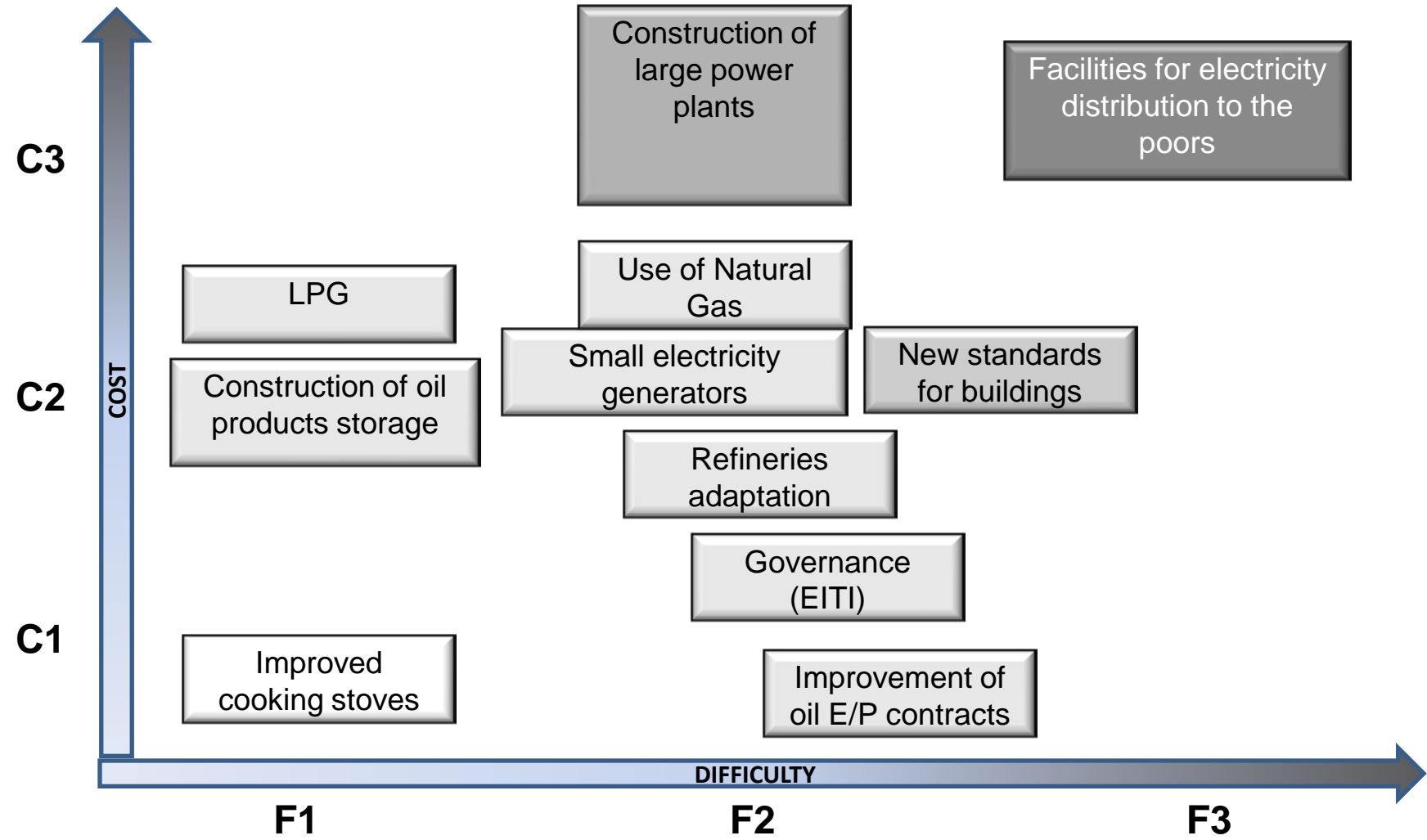
- ✓ in towns (outages, blackouts)
- ✓ in rural areas

✓ **Need for better availability of oil products**

- ✓ storage tanks
- ✓ roads !!

✓ **Are renewables a solution ?**

Recommendations



- ✓ **interconnections of grids will allow better use of power generation capacities**
- ✓ **cooperation for refining facilities can allow savings**

- ✓ **lack of education before the independence**
- ✓ **lack of skilled manpower**
- ✓ **need for education/training**
- ✓ **The African Institute for Energy, Environment and Sustainable Development**

THANK YOU FOR YOUR ATTENTION

- ✓ [BP Statistical Review of World Energy 2009](#)
- ✓ PetroSA Annual Report 2008, [Operations Review](#)
- ✓ United States Energy Information Agency (EIA.DOE), [Country Analysis Briefs/ South Africa](#)
- ✓ SACMA (South Africa Collieries Managers Association), [Presentation ESKOM Recovery Plan](#) by Koos Jordan
- ✓ [Sasol 2009 Annual Review](#)
- ✓ Department of Minerals and Energy (dme.gov.za), [Electricity](#)
- ✓ Journal Energy for Africa, N°5 – May 2008, Energy in South Africa by Jean Pierre FAVENNEC
- ✓ ESKOM, [Power Stations and pumped storage scheme](#)
- ✓ SAPIA (South Africa Petroleum Industry Association), [Annual Report 2008](#)
- ✓ [What future for Coal in South Africa ?](#), by Doug Low, August 12 2008
- ✓ [The future of Coal in ESKOM'S Energy mix](#), by Rob Lines, January 2007
- ✓ South Africa Oil & Gas Report, Q3 2009, [Oil demand in South Africa is forecast to rise from an estimated 551,000b/d in 2008 to 570,000b/d in 2013](#)
- ✓ [PBMR \(Pebble Bed Modular Reactor\) Website](#)