



*WORLD CLASS MINERALS AND ENERGY SECTORS THROUGH SUSTAINABLE DEVELOPMENT*

# CHALLENGES OF CCS DEPLOYMENT SOUTH AFRICA

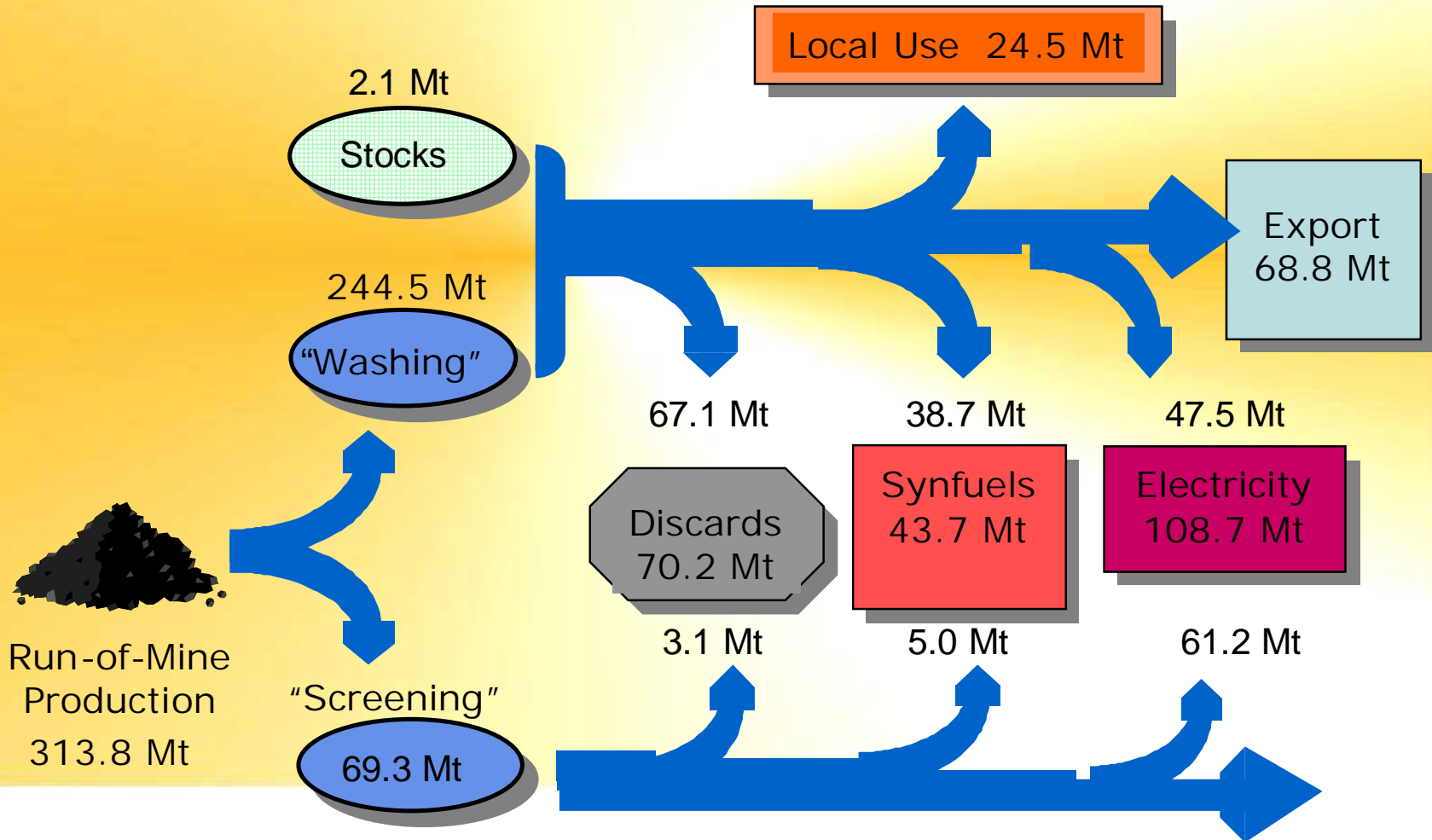
DEPARTMENT OF MINERALS AND ENERGY



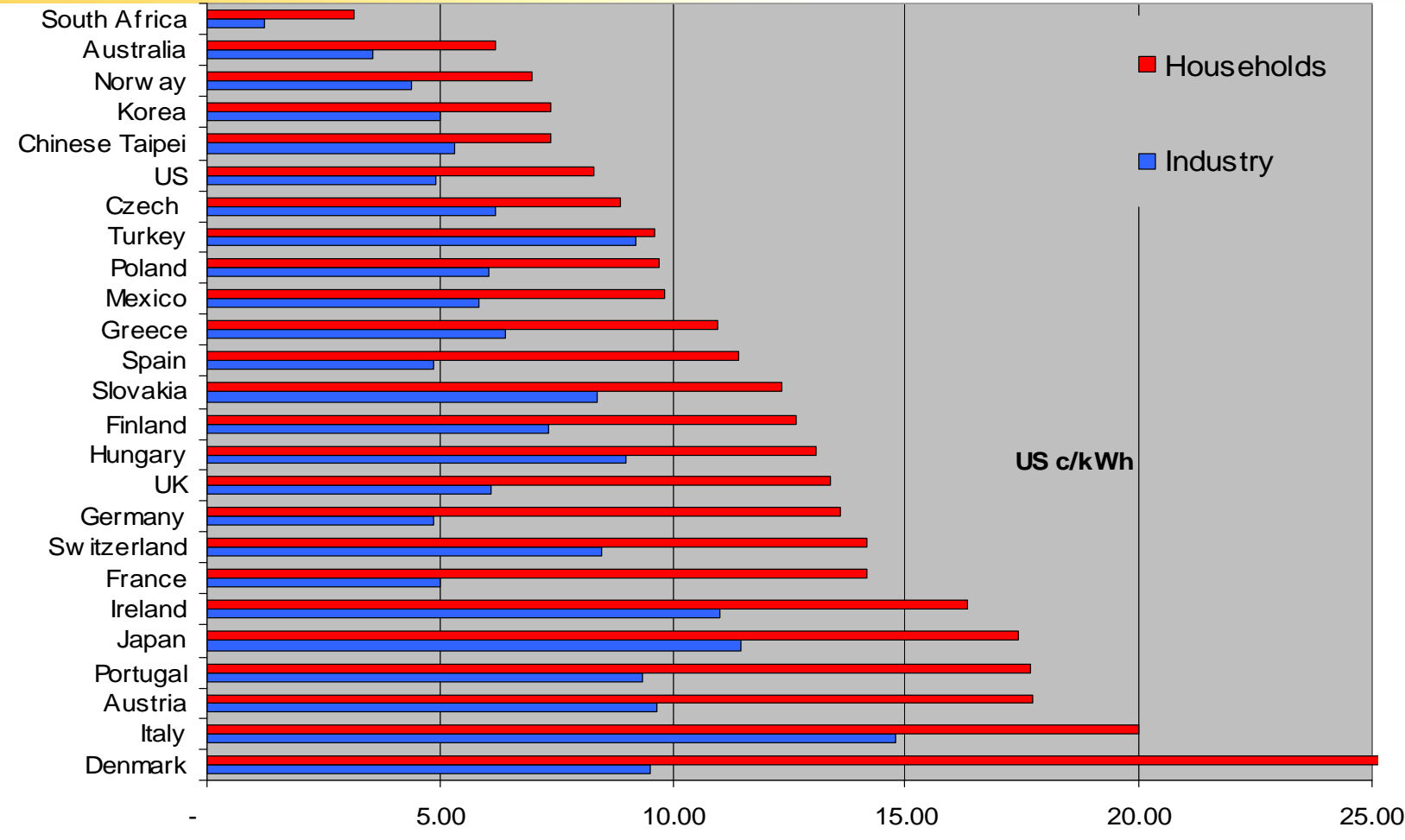
**the dme**

Department:  
Minerals and Energy  
**REPUBLIC OF SOUTH AFRICA**

# SOUTH AFRICA'S COAL CHAIN 2006



# COST OF ELECTRICITY WORLDWIDE



The extremely low cost of electricity in South Africa gives the country a significant competitive advantage in terms of energy intensive industries





# HIGHEST CO<sub>2</sub> EMITTING POWER PLANTS IN THE WORLD (>20 MTONNES OF CO<sub>2</sub>)

Highest CO<sub>2</sub> Emitting Power **Plants** in the World



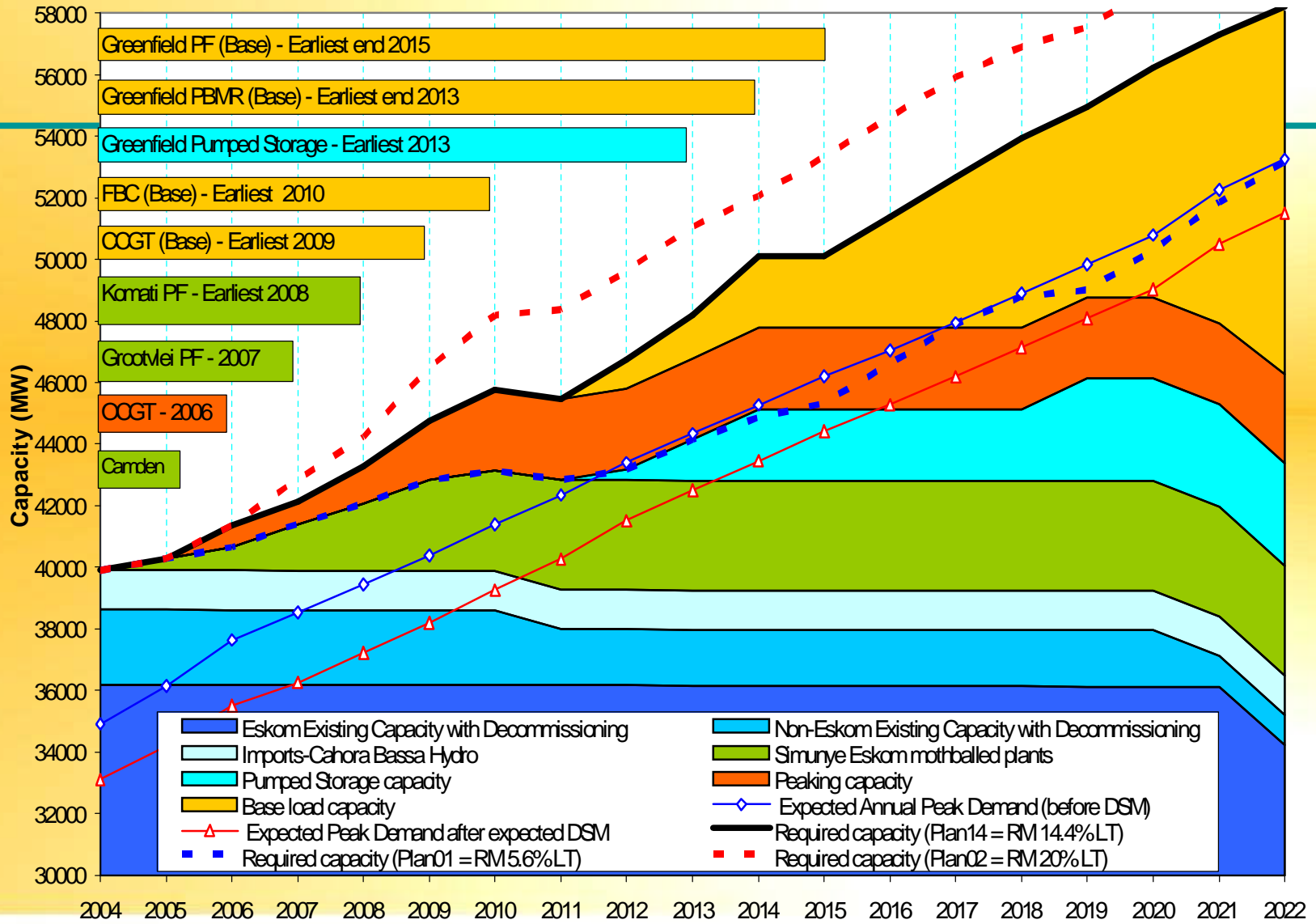
***5 of the highest CO<sub>2</sub> Emitting Power plants in the World are located in South Africa***





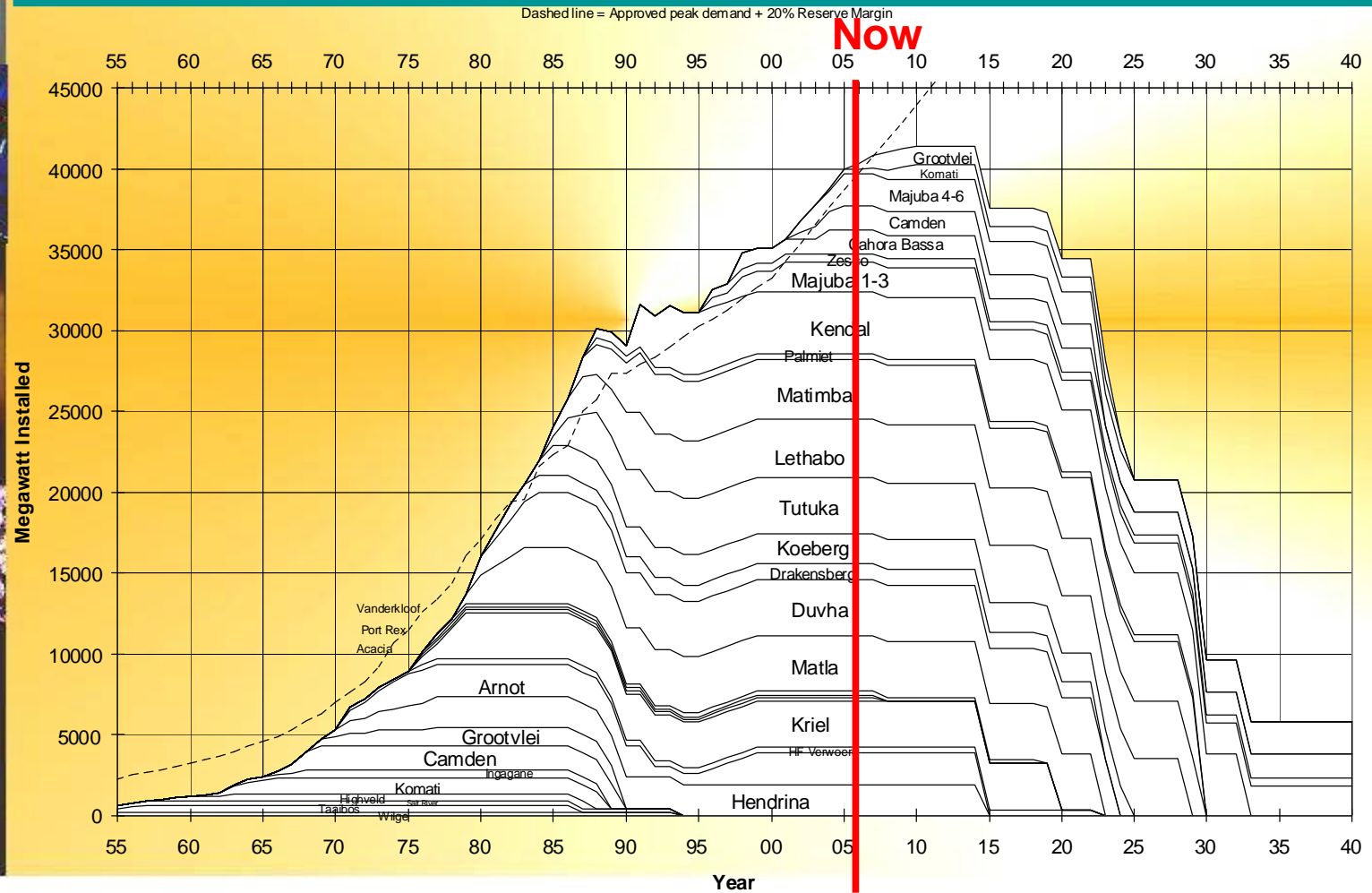


## NIRP2 Stage 2 Capacity outlook 2004 to 2022



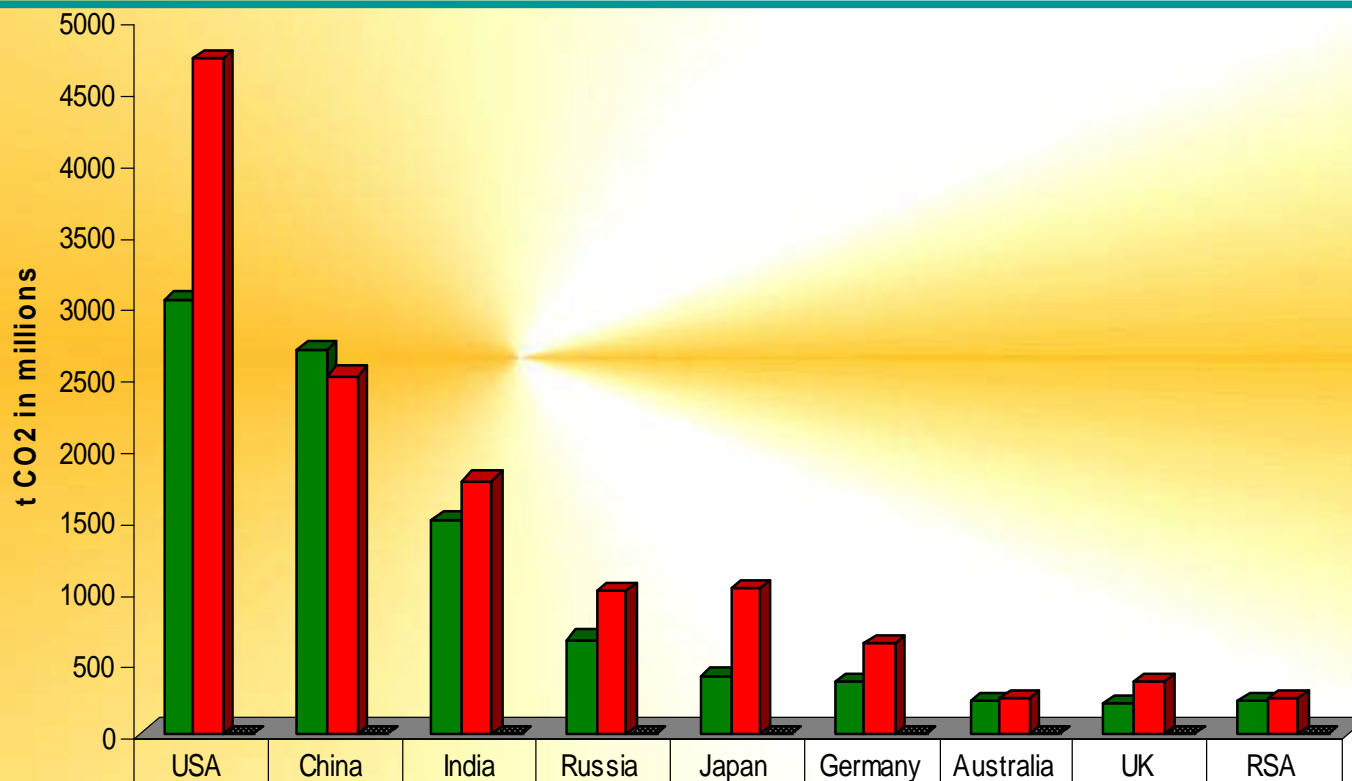
# EXISTING PLANT – AGE

Eskom's Installed profile



*Most stations at mid life refurbishment point.*

## RELATIVE tCO<sub>2</sub> EMISSIONS BY POWER PLANTS



■ t CO <sub>2</sub>	3030	2680	1490	661	400	356	226	212	222
■ MGWh Energy	4720	2500	1770	989	1020	625	246	362	246
■ CO <sub>2</sub> per MGWh	0.642	1.072	0.842	0.668	0.392	0.570	0.919	0.586	0.902



# • SASOL



the dme

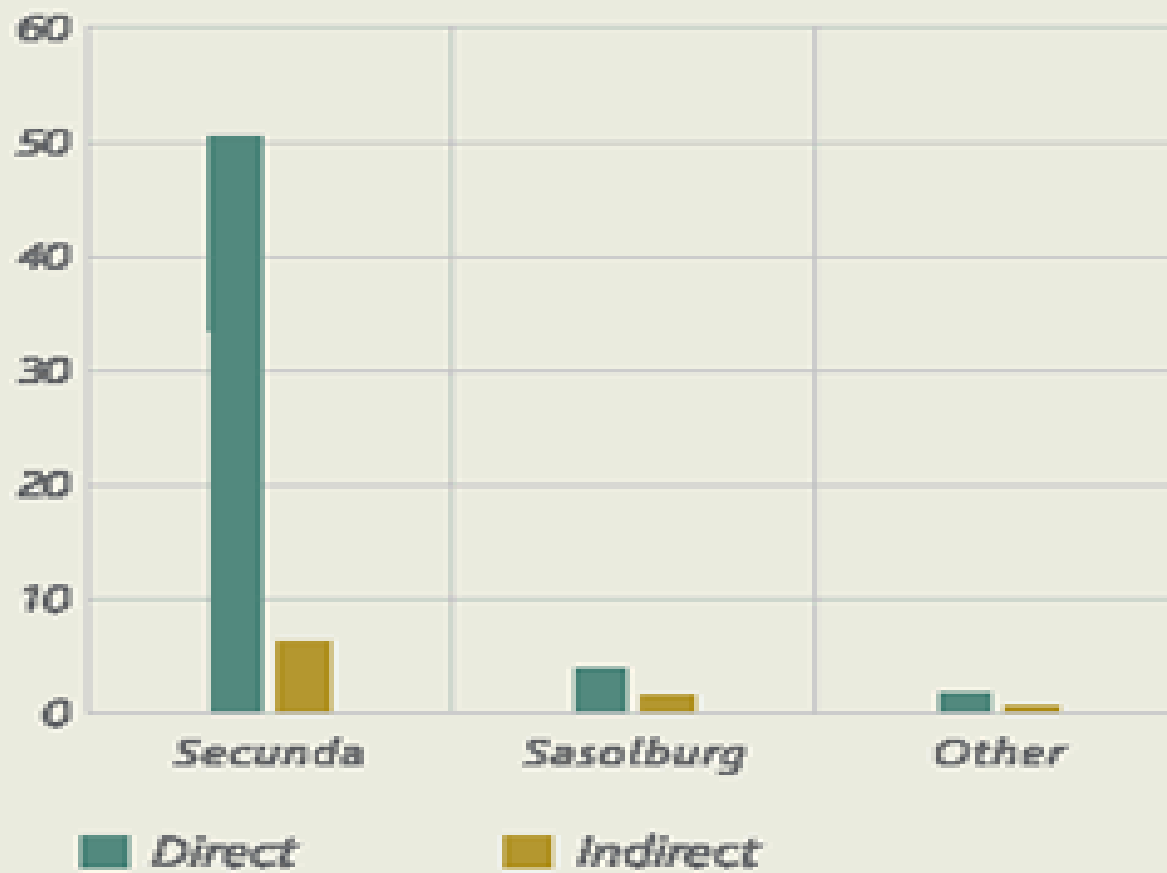
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# SASOL SECUNDA PLANT RSA





### Site-specific CO<sub>2</sub> emissions for 2007 (million tonnes)





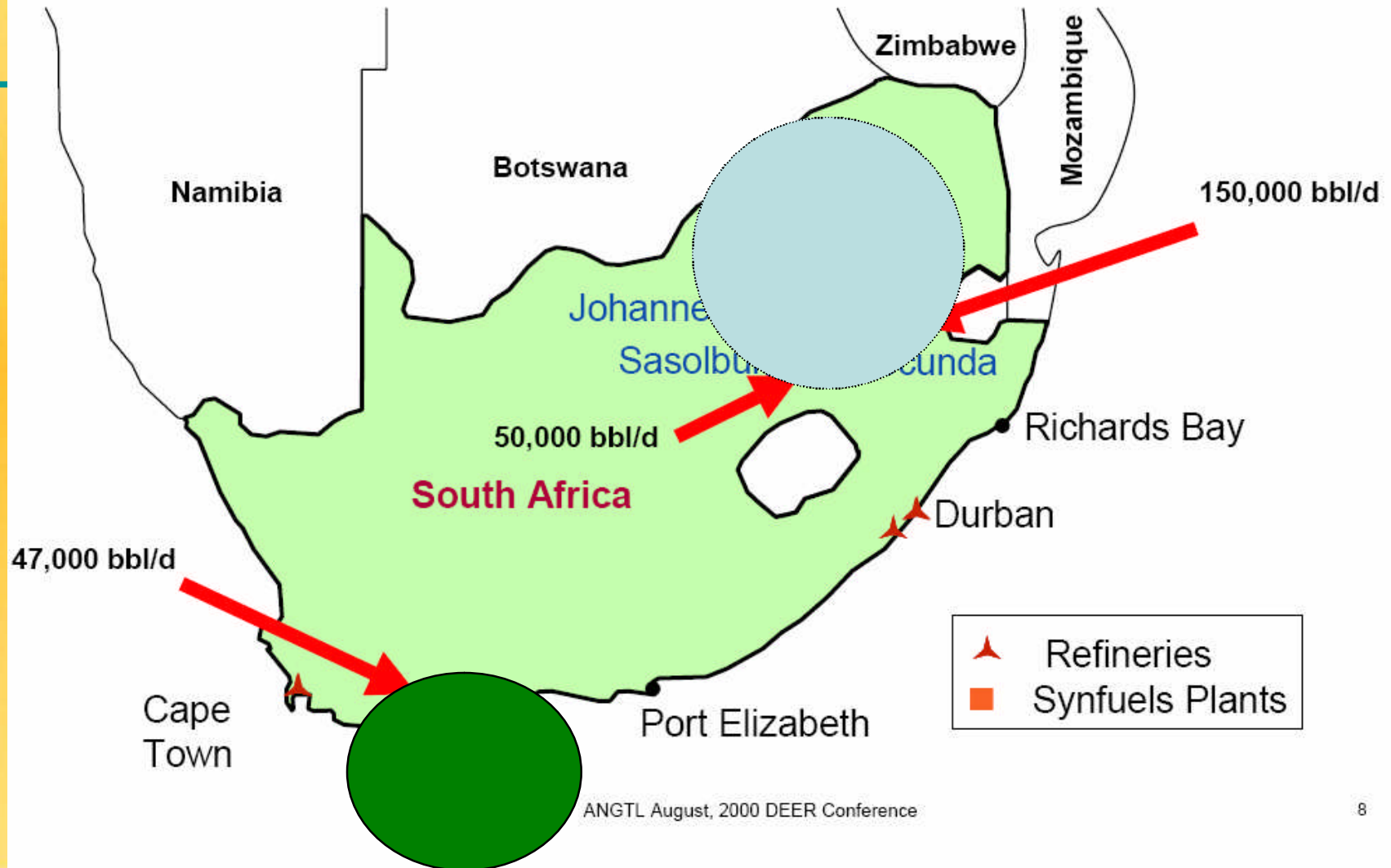
# CHALLENGES

**Location of the powers plants relative  
to CO2 geological storage sites**

**Transport infrastructural  
cost**



# FUEL PRODUCTION IN SOUTH AFRICA



**Location of the powers plants relative to CO2 geological sites-**



# PRELIMINARY WORK

- **Study commissioned in 2004:** Yes CO2 STORAGE POTENTIAL SA
- **CCS Atlas Project** to identify the Storage sites, Capacity and characterization in progress
- **Public Outreach**
  - Media
  - Workshops
- **Capacity building**
  - Membership planned: IEA Greenhouse Gas Research and Development Program
  - Capacity building in school: students send for training (Supported by CSLF and IEA), sustainability through tertiary education training
  - USA supported CCS capacity building – CSLF (SASOL, AngloCoal, Eskom, PetroSA, Council for GeoSciences, DME)
- **System of Innovation:** Establishment of chairs (SANERI)
  - Clean Coal Technologies
  - Hydrogen Economy
  - Carbon Capture and Storage (next)





# CHALLENGES.....

- REGULATORY GAPS ANALYSIS AND LINKAGE TO INTERNATIONAL STANDARDS
- CAPACITY BUILDING:  
**CO2 GEOLOGICAL STORAGE CAPACITY AND CHARACTERISATION- COLLABORATION SUPPORT**
- COST OF CO2 SEQUESTRATION
- PUBLIC OUTREACH
- CCS DEMO PLANT IN ONE OF THE EMERGING ECONOMIES
- PRIORITIES  
ENERGY SECURITY  
SOCIAL OBLIGATION

