

# The energy mix and industrialisation

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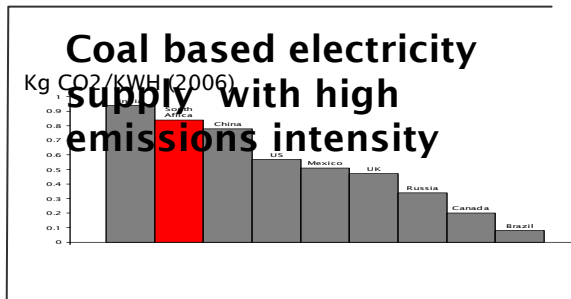
# Why the energy sector?

- Largest infrastructure investment project in the country- R800 bn- significant portion is energy
- One of it's key success measures is solving energy crisis and driving industrial growth and development
- Key mechanism would be leveraging procurement
- Opportunity to open up new industrial sectors- green economy initiatives
- Renewables should be a key part of future energy mix
- New build infrastructure does not include renewables

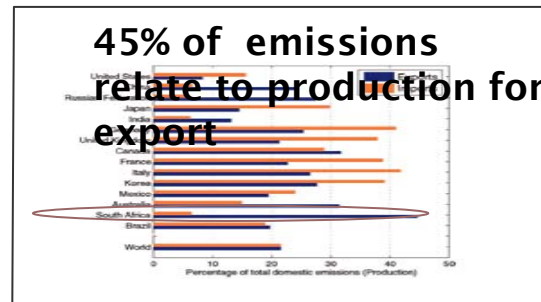
# IRP 2

- Resolving energy mix debate
- Renewables have very strong sentiment against it
- Bias towards large coal and nuclear
- Least cost technology approach rather than portfolio approach
- Lacks vision that takes into account country's carbon footprint

# Current GHG intensive energy supply leave South Africa's exports vulnerable to carbon border measures



International Agency Data Services, 2007, CO<sub>2</sub> Emissions from Fuel Combustion



Peters, G and Hertwich, E (2008) CO<sub>2</sub> Embodied in International Trade with Implications for Global Climate Policy *Industrial Ecology Programme, Norwegian University of Science and Technology.*

Upscaling renewables in South Africa's energy mix would benefit the export competitiveness of current industries, as well as create new industrial opportunities.

15% renewables in the mix would create 40,000 jobs created in renewables sector.

# SARI in brief

- ✓ **A South African Government initiative**, being developed as part of the Inter-Ministerial Task Force on Climate and Energy program, championed by the Ministers of Trade and Industry and Public Enterprise, supported by ministries and departments of energy, planning and environment.
- ✓ **A climate-related economic initiative** resulting from an examination of threats and opportunities to South Africa's economy from climate change and the international policy and market responses to it.
- ✓ Would deliver **more renewables generation faster** at reasonable cost/carbon, and significant economic co-benefits to South Africa in renewables industry and by protecting future exports to carbon sensitive markets.
- ✓ Unlocks potential by use of **international public finance for defined period to support renewables feed in tariff**, enabling more, lowered-risk, private investment in proven opportunities for solar thermal and wind.

## South Africa has a feed in tariff in place to overcome the renewables cost challenge

- South Africa's current electricity tariff is about 35% below full economic cost, and is increasing but with major political fall out.
- Overcoming cost differential between renewables and coal is the key challenge for upscaling renewables development in South Africa.
- In 2009 South Africa put regulations in place to create a Renewables Feed In Tariff (REFIT), to cover the higher cost of renewable energy generation.
- The energy company Eskom has been given the right to enter agreements with independent power providers to feed renewables into South Africa's grid.

But.....

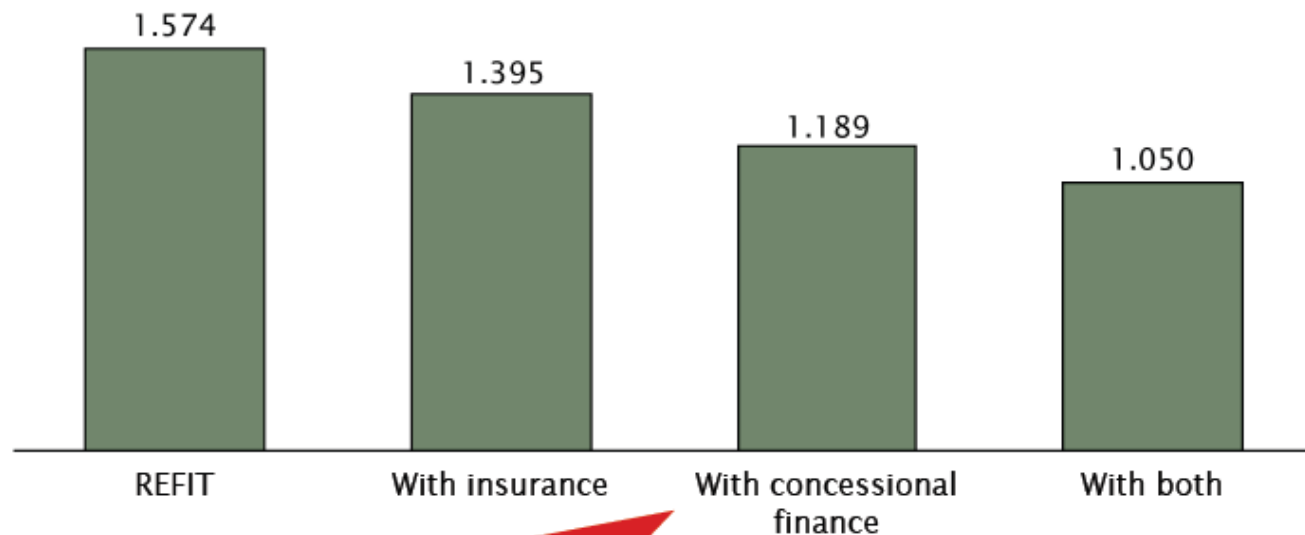
There are significant barriers to implementing the feed-in tariff.

# Overriding challenge

- It's not technical
- We know it's political
- Scaling up needs to be accompanied by cost reduction strategy
- Feed-in may not be enough

## Concessional financing and insurance can have a significant impact: CSP

2011 Levelized cost of electricity for CSP  
2010 R / MWh



NOTE: Still finalizing terms with Silvia. May change significantly



- Run scenarios for:
  - 1.0 Pure commercial finance and grants
  - 2.0 Commercial finance, concessional finance and grants
  - 3.0 Same as 2.0 but including carbon credits to reduce grant needs

# ...significant obstacles to implementation...

## REFIT

High cost REFIT  
Tariff premium  
Low target - 6,000GWH  
by 2013 = 1% of demand

## Domestic public burden

Cost to be covered  
by domestic  
public funding,  
but lacking  
a mechanism

## Consumer contribution

RE spread across all  
consumers. Pressure to  
maintain a low  
cost energy supply.

## International funding

International  
climate finance  
contribution is  
through CDM with  
high transaction  
costs and risk.

High cost of  
REFIT with low  
domestic  
benefits

## Local industrial benefit

Slow development,  
technology-fragmented,  
low domestic learning and  
limited industrial spin-  
offs.

## Private investment

Higher risk and cost of  
capital for private  
investors → high refit  
price needed.

Slow, unsteady  
implementation  
of REFIT

# Localisation potential

Wind	Parabolic trough	Tower	Linear Fresnel
20-30%	20-30%	50-60%	40-70%
<ul style="list-style-type: none"><li>· Low potential for localisation, manufacturing capacity already established globally.</li></ul> <p><i>“We will not enter local manufacturing without at least 500MW-1000MW per year”</i></p> <p>Some localisation of towers, electricals/civils and blades.</p>	<ul style="list-style-type: none"><li>· Some potential for localisation, dependent on scale.</li></ul>	<ul style="list-style-type: none"><li>· Potential for localisation with scale.</li></ul>	<ul style="list-style-type: none"><li>· Strongest contender for localisation.</li><li>· Great adaptability from existing manufacturing capacity, and linkage to automobile industry.</li></ul>

**If South Africa has high and stable demand between 200-500 MW/year development it can attract manufacturer interest.**

# SARI is a proposal to overcome these obstacles.

Cost/GWH

**Falling cost** of REFIT Tariff premium through rapid scale up and learning

Ambitious target for 15% renewables by 2020

Domestic public burden

**Secure national commitment for an affordable level of domestic public funding** from existing carbon levy.

Consumer contribution

**Energy-intensive industry contributes** in return for abatement to claim RE to reduce the GHG intensity of their production

International funding

**International public climate funding covers the gap** on a cash-for-carbon, pay-for-performance model

Lower cost of REFIT with greater domestic benefits

Local industrial benefit

**Increased opportunity for domestic industrial spin-offs** due to large scale development.

Private investment

**Reduced transaction costs and lower risk profile** -> reduced cost of capital -> reduced cost of RE

Rapid, guaranteed implementation of REFIT

...but there are specific funding challenges.

Feed-in tariff subsidy requires **prolonged, guaranteed funding**

Will need a **risk taking innovative public funder** for this novel mechanism. Securing prolonged international public finance will require overcoming resistance in financing treasuries and potentially enabling legislation, or financing instruments that capitalise payments.

Economic co-benefits pre-condition to South Africa's engagement due to domestic incremental costs

International public funder would need to accept that the initiative is **supporting both international climate change mitigation goals, and national sustainable development priorities**. Funder would need to accept the competitive advantage 'windfall' to South Africa as a result of subsidised greening of exports.

Opportunity to combine international **public funding and industrial partnership**.

Securing finance bilaterally from **countries with interest in renewables investment opportunities** would increase benefits of the deal on both sides considerably.

