



climate change **risks** and **opportunities**

Protea Hotel Balalaika Sandton

14 August 2009

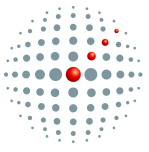


Climate Change Risks and Opportunities for the South African Economy

Stakeholder Workshop

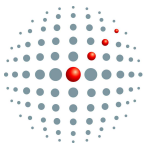
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Agenda

- 08:30 – 09:00** **Morning Tea and Coffee**
- 09:00 – 09:10** **Welcome by Camco (Jonathan Curren, Director: Camco South Africa)**
- 09:10 – 09:20** **Introductory Address (John Smith, British High Commission)**
- 09:20 – 10:05** **Scene Setting: Climate Change – Emerging Economic Risks and Opportunities**
- 10:05 – 10:45** **Case Study Discussion: Food Miles, Carbon Regulation**
- 10:45 – 11:00** **Mid Morning Tea**
- 11:00 – 11:40** **Case Study Discussion: Aviation, Tourism**
- 11:40 – 13:00** **Group Breakout Sessions – Economic Risks and Opportunities**
- 13:00 – 13:40** **Lunch**
- 13:40 – 14:40** **Group Breakout Sessions Continue**
- 14:40 – 15:20** **Group Feedback**
- 15:20 – 15:30** **Way Forward and Closing Remarks**
- 15:30** **Tea and Closure**



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Climate Change – Emerging Economic Risks and Opportunities

Alex McNamara, Camco

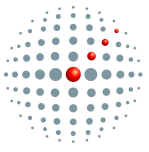
Mauna Loa Observatory, Hawaii



Source: NOAA

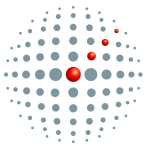


Source: NOAA



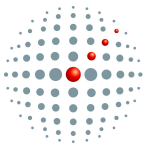
Climate Change Comes to the Fore

- **1827** Jean-Baptiste Fourier uses the term 'greenhouse' to describe an atmospheric effect that would warm the Earth
- **1957** First continuous monitoring of CO₂ levels in the atmosphere commences (Mauna Loa Observatory)
- **1988** Intergovernmental Panel on Climate Change (IPCC) established
- **1992** United Nations Framework Convention on Climate Change (UNFCCC) signed by 154 nations as part of the Rio Earth Summit
- **2005** Kyoto Protocol comes into force. Includes binding emissions cuts for industrialised nations



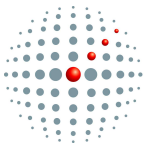
Climate Change Comes to the Fore

- **2005** European Union Greenhouse Gas Emissions Trading System (EU ETS) is formed, the largest emissions trading scheme in the world
- **2007** IPCC releases its 4th Assessment Report, which provides further evidence of human induced climate change
- **2008** The Carbon Disclosure Project (CDP) reaches its sixth year, supported by 385 investors with US\$57 trillion of assets under management
- **2009** G8 Summit in Italy focuses on two key issues: the economic downturn and Climate Change



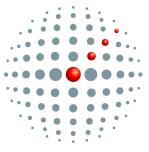
What Does It All Mean?

- Climate change has risen from a 'fringe' issue to one of the most pressing challenges of the 21st Century
- Overwhelming consensus from key elements of society – politicians, scientists, civil society, the media and ordinary citizens
- Leadership driven by the EU has been given fresh impetus by political changes in Australia and the US
- Even those organisations that remain sceptical cannot ignore that climate change is an issue that affects them in one way or another, due to its increasingly 'mainstream' status



What Does It All Mean?

- Climate change concerns now pervade a number of areas of life - from consumer choices, company strategy and reporting, the growth of new markets and technological development, through to regulatory reforms
- Climate change is a key local, national and global issue, which is inextricably linked to the achievement of economic growth and sustainable development
- Climate change is not just an 'environmental' issue, but has important economic implications
- The climate challenge has only just begun – so most of the economic ramifications are still to be understood, conceptualised and realised

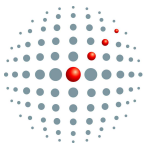


Where Are We Now?

- Climate change has not fallen off the radar even in a severe economic recession. On the contrary, many major economies are looking to 'green' led investment to support their economic recovery
- Much attention is now placed on the future of global commitments and compliance in reducing greenhouse emissions, in the lead up to the Copenhagen Summit in December 2009
- Key developing countries, such as India, China, Mexico, Brazil and South Africa are being placed under increasing pressure to address their emissions

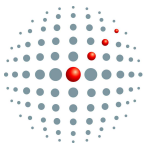
Within this context, we need to think about the economic risks and opportunities presented by climate change...





What Do We Mean By 'Economic Risk'?

- ***Risks from climate change of a commercial or economic nature, about which comparatively less is known for South Africa***
- A certain amount of research has been conducted on risks from climate change related to direct physical impacts
- Examples of physical risks from climate change include temperature increases, the intensified occurrence of flooding and drought, reduced water availability, coastal damage and sea level rise
- It is critical that these risks are identified and addressed, including for vulnerable sectors such as agriculture, utilities and coastal areas

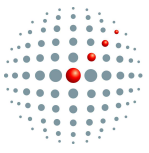


What Do We Mean By 'Economic Risk'?

- Nevertheless, there are ***additional, secondary risks*** brought about by climate change that have received limited attention, and about which less is known for South Africa
- These risks relate to how governments and society, both nationally and abroad, respond to the climate challenge
- Many of these local, national and global responses have a bearing on how economies develop and thrive, as well as how companies report, operate and innovate
- These risks are of a ***purely commercial or economic nature***, and form the focus of today's discussions

“Climate change presents a unique challenge for economics: it is the greatest and widest-ranging market failure ever seen.”

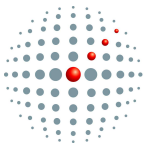
Sir Nicholas Stern,
Stern Review on the Economics of Climate Change (2006)



What Are the Economic Risks From Climate Change?

Climate Change Regulation:

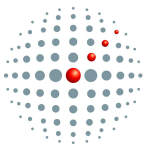
- Governments are increasingly regulating for climate change – at the state, national and international level
- This regulation includes the use of command and control measures, as well as market based mechanisms (e.g. taxing of emissions, emissions trading)
- Within a globalised economy, this regulatory action could have a significant bearing on different sectors of South Africa's economy
- International emission reduction commitments are already influencing economic development in industrialised nations



What Are the Economic Risks From Climate Change?

Climate Change Regulation:

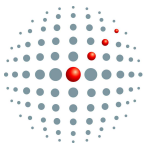
- Businesses themselves have pushed for climate regulation:
 - The US Climate Action Partnership (USCAP) includes a number of major companies calling for a binding emissions cap of 80% below 2005 levels by 2050 in the United States
 - Major corporations such as GE, Duke Energy and Walmart have also testified in support of mandatory greenhouse gas (GHG) controls in the US
- South Africa is in the process of implementing a 2c/kwh levy on non-renewable electricity, the country's first carbon tax
- Regulation has important financial, legal, administrative and strategic implications



What Are the Economic Risks From Climate Change?

Consumer Preferences / Trade

- Consumers are increasingly concerned about the carbon footprint of products and services they purchase. This applies particularly to imported goods
- Markets are shifting to offer an increased variety of low carbon alternatives
- Climate change specifications could act as technical barriers to trade
- Border Tax Adjustments – taxation imposed on imports by countries with carbon taxes in place



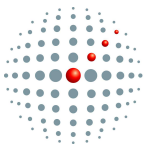
What Are the Economic Risks From Climate Change?

Supply Chain

- Many companies are 'greening' their supply chains in an effort to reduce their carbon footprint
- Carbon related costs can also be passed down within supply chains, increasing operational costs for particular sectors

Company Branding and Reputation

- Customers, clients and employees are increasingly concerned about the climate credentials of different companies
- An element of company brand and reputation is at stake, as is the attraction of skilled professionals

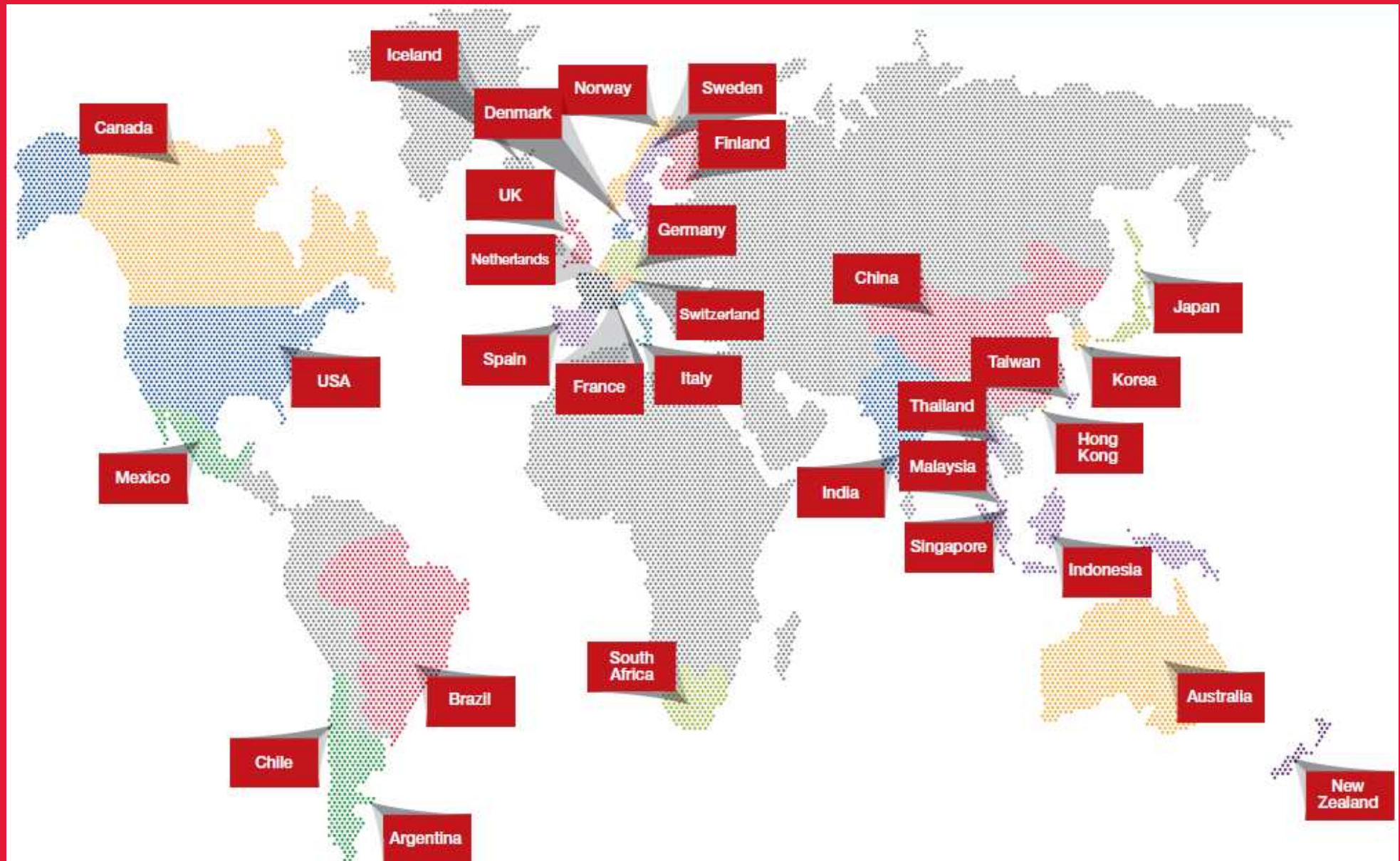


What Are the Economic Risks From Climate Change?

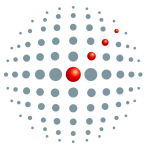
Investor Concerns

- Investors now require major companies across the globe to report on their greenhouse gas (GHG) emissions, and how they are tackling their climate change liabilities
- The Carbon Disclosure Project (CDP) is in its 7th year of investor led action on climate change, growing in size and scope each year
- The ‘Carbon Principles’ have recently been adopted in the US by major banking entities, in a bid to manage carbon risks from power generation
- In the US, certain companies have also faced legal action as a result of their emissions. Litigation, although unsuccessful to date, has focused on utilities and is viewed as a precursor to increased regulation

The Carbon Disclosure Project (CDP) – Global Coverage 2008



Source: CDP Report 2008: JSE Top 100 (2008)



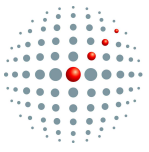
Key Economic Risks From Climate Change

Relate to:

- Regulation
- Consumer Preferences / Trade
- Supply Chain
- Investor Concerns
- Reputation and Branding
- Litigation

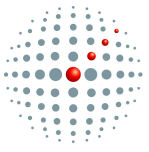
“[A corporate focus on reducing greenhouse gases] will save money for our customers, make us a more efficient business, and help position us to compete effectively in a carbon-constrained world.”

Lee Scott, CEO: Wal-Mart



What Do We Mean By ‘Economic Opportunity’?

- ***Opportunities from climate change of a commercial or economic nature***
- Opportunities brought about pressure on governments, business, civil society and ordinary citizens to address climate change
- Technologies, markets, infrastructure, products and services that are supported or thrive in a low carbon society
- Initiatives that are given added impetus in an effort to reduce emissions



What Are the Economic Opportunities From Climate Change?

New Or Expanded Markets

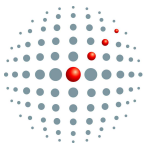
- Development / maturation of existing markets
- Growth of entirely new industries and service offerings

Consumer Preferences

- Opportunities for product or service differentiation based on climate friendly approaches

Investor Relations

- Opportunities to improve access to capital or attract new investors based on company emission reduction initiatives or programmes



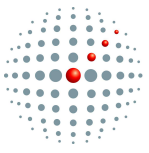
What Are the Economic Opportunities From Climate Change?

Carbon Markets

- Opportunities to generate or trade carbon credits from emission reduction projects
- Includes compliance and voluntary carbon market

Utilising National and International Support Mechanisms

- Opportunities to utilise international donor funding, as well as international and national mechanisms in support of low carbon development



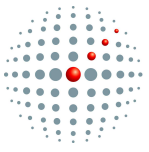
What Are the Economic Opportunities From Climate Change?

Environmental Goods and Services

- A range of environmental and professional services provided in support of a low carbon transition
- Development of sequestered carbon as an environmental good, with a recognised or tradable value
- Opportunities to benefit from alternative carbon markets through the generation of carbon offsets from land use improvements and other carbon sequestration initiatives

Infrastructure Development

- Development of low carbon infrastructure that has strong socio-economic benefits (e.g. effective public transport)



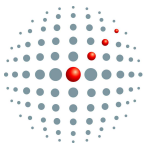
What Are the Economic Opportunities From Climate Change?

Efficiencies and Competitiveness

- Enhanced efficiencies, cost reductions and improved competitiveness for commerce and industry
- Benefits for poverty alleviation and social equity from enhanced efficiencies

Reputation and Branding

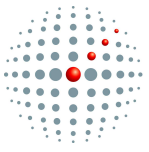
- Improved brand image and market differentiation based on organisation climate change credentials



Key Economic Opportunities From Climate Change

Relate to:

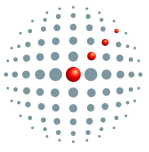
- New or Expanded Markets
- Consumer Preferences
- Investor Relations
- Carbon Markets
- National and International Support Mechanisms
- Environmental Goods and Services
- Infrastructure Development
- Efficiencies and Competitiveness
- Reputation and Branding



Illustrative High Risk Sectors

- Oil and Gas (including synfuels production)
- Utilities
- Mining and Cement
- Chemicals
- Aviation
- Tourism
- Transport
- Food and Beverages

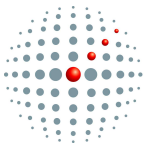
Other Notables: Automotive, Construction, Insurance, Building and Real Estate, Manufacturing, Retail, Financial Sector



Illustrative High Opportunity Sectors

- Energy and Power Generation
- Agriculture
- Forestry
- Professional Services
- Manufacturing
- Transport
- Financial Sector

- Other Notables: Telecommunications, Chemicals, Retail, Tourism, Automotive, Building and Real Estate



South Africa in Focus

- South Africa is comparatively vulnerable:
 - We are a significant global emitter (12th highest emitter globally)
 - Have amongst the highest emissions per capita in the world
 - Are reliant on an inefficient coal based economy
 - Have designed our cities for private car use, and not affordable public transport
 - Make use of advanced but energy sapping fossil fuel technologies, such as the coal-to-liquids programme, and have a number of energy intensive industries

Top 20 Global CO₂ Emitters (2006)

	Country	Total Emissions (Million metric tons of CO ₂)	Per Capita Emissions (Tons/capita)
1.	China	6017.69	4.58
2.	United States	5902.75	19.78
3.	Russia	1704.36	12.00
4.	India	1293.17	1.16
5.	Japan	1246.76	9.78
6.	Germany	857.60	10.40
7.	Canada	614.33	18.81
8.	United Kingdom	585.71	9.66
9.	South Korea	514.53	10.53
10.	Iran	471.48	7.25
11.	Italy	468.19	8.05
12.	South Africa	443.58	10.04
13.	Mexico	435.60	4.05
14.	Saudi Arabia	424.08	15.70
15.	France	417.75	6.60
16.	Australia	417.06	20.58
17.	Brazil	377.24	2.01
18.	Spain	372.61	9.22
19.	Ukraine	328.72	7.05
20.	Poland	303.42	7.87

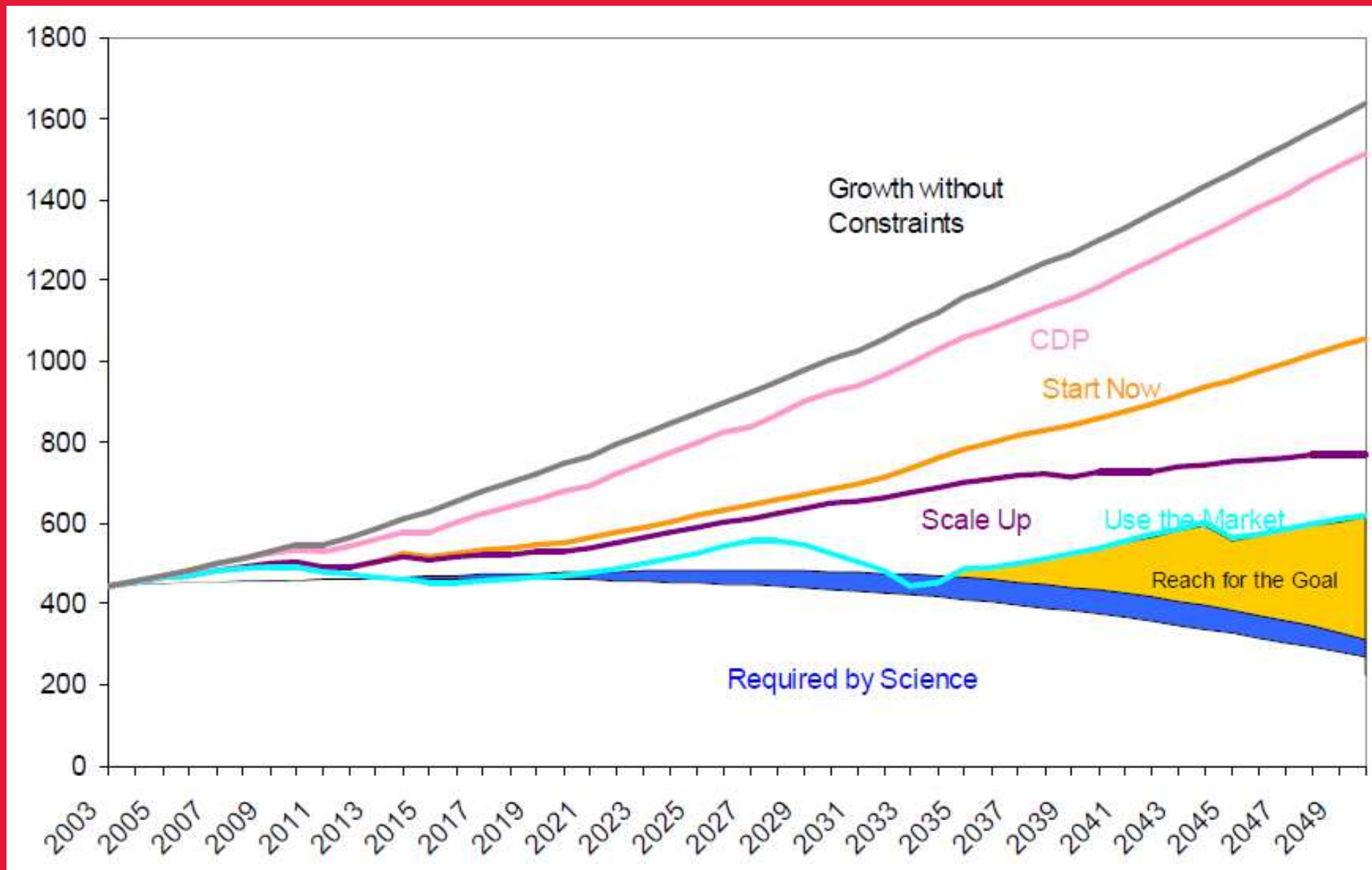
Source: EIA (2006) International Energy Annual

“Growing without carbon constraints may be good for South Africa’s economic growth, but will result in rapidly increasing emissions.

A four-fold increase in emissions by 2050 is likely to be unacceptable to the international community and is a high-risk approach on other grounds, such as rising oil prices, carbon constraints in trade and advancing impacts.”

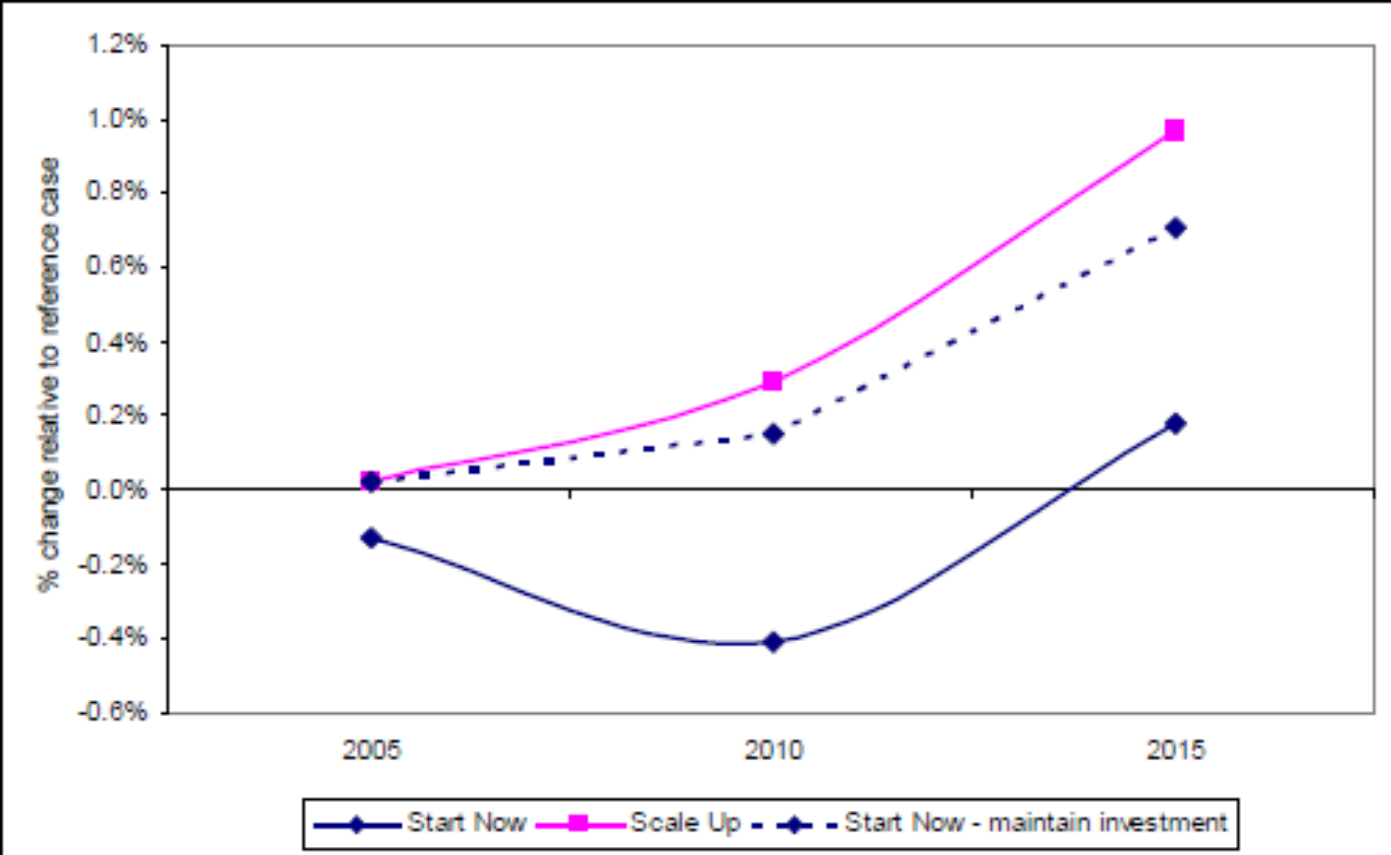
- DEAT (2007) Long Term Mitigation Scenarios (LTMS)

The Long Term Mitigation Scenarios for South Africa



Source: DEAT (2007) LTMS

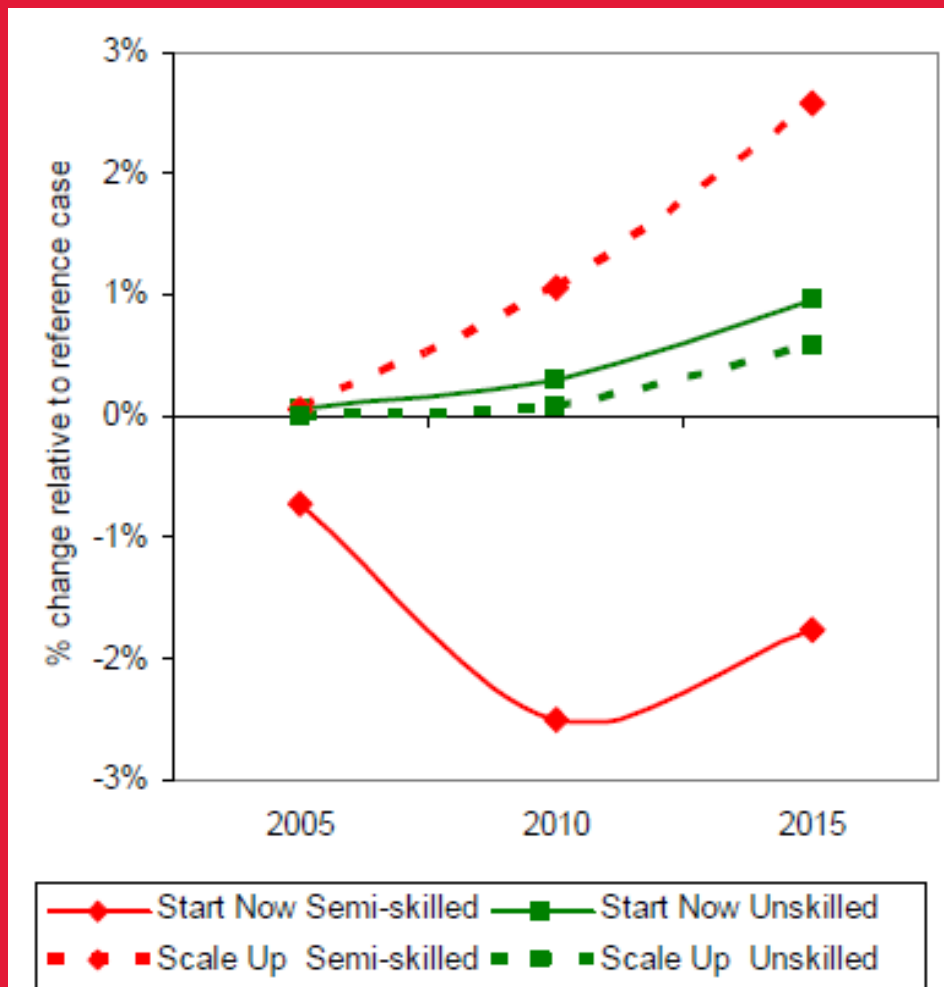
GDP Effects of the 'Start Now' and 'Scale Up' Scenarios



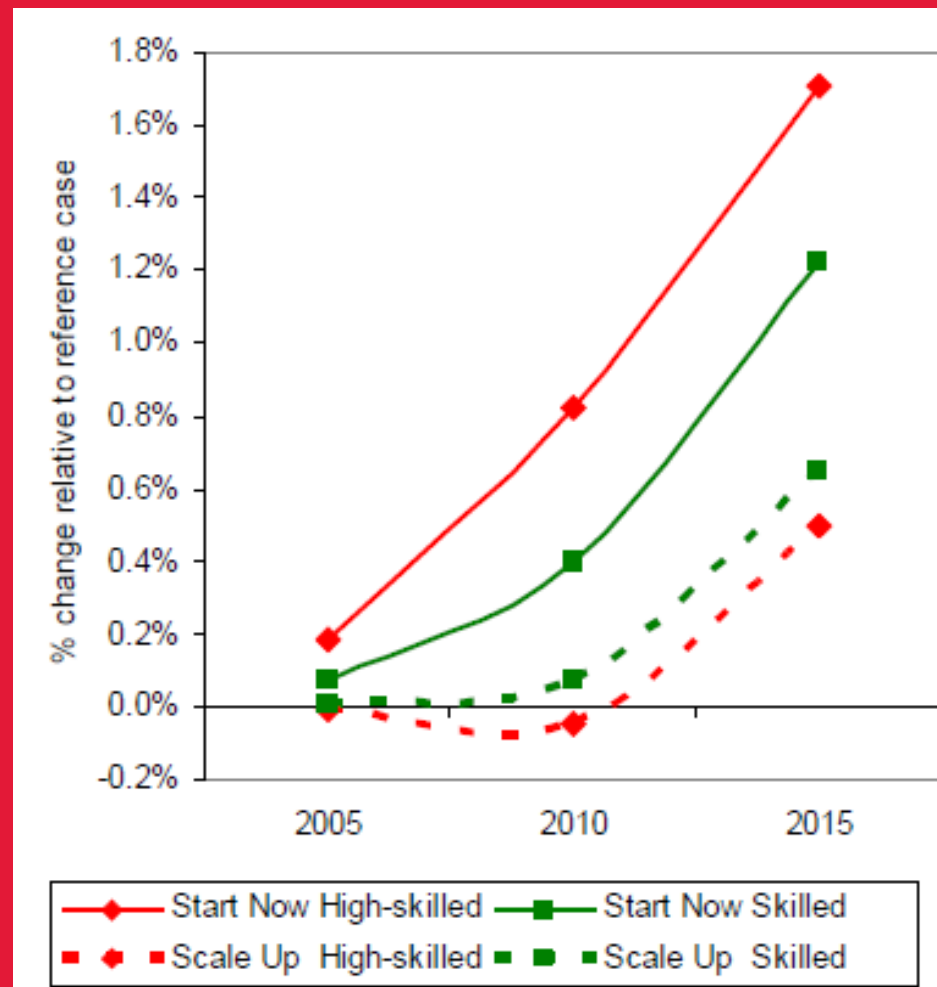
Source: DEAT (2007) LTMS

Employment and Wage Effects of the 'Start Now' and Scale Up' Scenarios

Employment

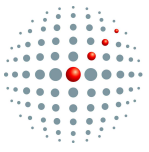


Wage Affect



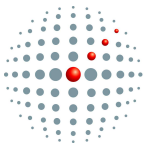
“Cabinet has sent a clear signal that emissions need to peak at the latest by 2020-25, then plateau for about a decade, and then start to decline up to mid-century.”

- Minister van Schalkwyk,
Former Minister of Environmental Affairs
and Tourism



Summary

- Climate change is an increasingly important **economic** issue, outside of concerns regarding direct physical impacts
- Addressing emissions offers both **costs and benefits**, with a number of measures resulting in **net economic gains**
- There are **significant economic risks associated with a 'business-as-usual' growth path** for South Africa, many of which are yet to be explored in detail or accounted for



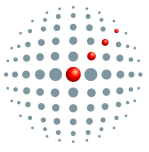
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Case Study: Food Miles, Climate Change and Market Access

The Response of the South African
Agricultural Sector

Norma Tregurtha



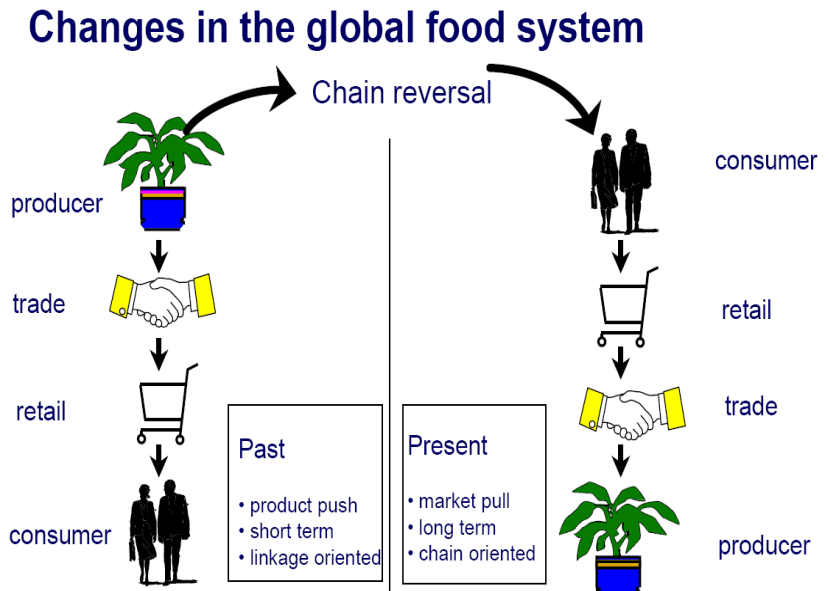
Changes in Global Food Market – Last 15 Years

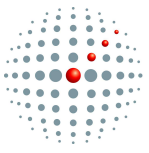
Changes

- Global increase in the supply of food – bio technology
- Increase in the trade of agricultural products
- Rise of supermarkets
- Changing nature of consumer demand
- Climate change and increased production risk

Impact of changes

- Increased concentration and consolidation in the food sector both in terms of market share and number of firms.
- Chain reversal – a shift in the balance of power away from producers towards consumers
- Food markets have become increasingly competitive and biased in favour of larger producers and more complex in terms of product offering and skills requirements.
- Producers have effectively become “standards takers”
- Climate change issues have emerged as a major consumer concern





UK Debate on Food Miles and Climate Change



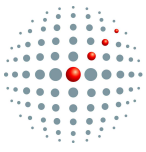
- What are food miles/air miles?
- Parameters of the debate: food miles versus fair miles
- Response of supermarkets
- Possible solutions being put forward by UK suppliers and consumers

Plan A: Create a more level playing field through:

- ✓ developing equitable off-set programmes
- ✓ fair labelling of products
- ✓ support the shift towards less carbon intensive transport and production processes

Plan B: Refrain from consuming non-seasonal, imported products





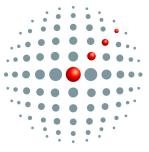
South African Fruit and Wine Exports – Dependence on UK Markets



Annually the country exports \pm 2,2 million tons of fruit and \pm 316 millions litres of wine

Between 10% and 50 % of fruit and wine exports are destined for the UK

Food Miles and climate change issues are not something the industry can ignore if they are to continue to enjoy market access to the UK

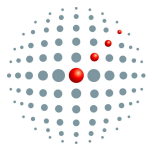


Response of the Sector to Climate Change Issues

1. Colors (in conjunction with the Carbon Trust)

- **Background**
- **Objectives: Detailed Life Cycle Assessment (LCA) of its fruit export supply-chain from farm to retail-shelf.**
- **Achievements:**
 - Full LCA study concluded for all commodity groups supplied into the UK according to the Carbon Trust's PAS 2050 LCA Methodology.
 - Full Certification of the results by the Carbon Trust in January 2009.
 - Colors now has the measured basis to drive its carbon reduction strategy which has now commenced.

Colors



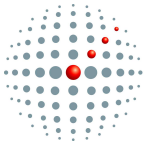
Response of the Sector to Climate Change

Issues cont.

2. Confronting Climate Change in the South African Fruit and Wine Industry



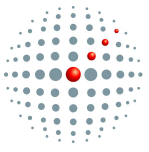
- **Background to the project**
- **Objectives: collective industry response aimed at:**
 - i. Measuring the carbon footprint of the South African fruit and wine sectors
 - ii. Establishing how these sectors measure up against international carbon emission standards
 - iii. Formulating and implementing a carbon reduction plan with effective mitigation and adaptation strategies to meet the challenge of climate change
- **Achievements to date:**
 - i. Preparation and dissemination of a climate change information review and report
 - ii. Development of a standardised web-based industry carbon footprinting protocol & tool for the fruit and wine industry (due for public release in October)



Way Forward

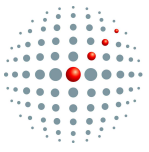
Case Study: Carbon Regulation

Alex McNamara, Camco



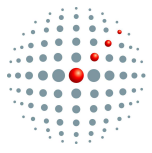
Externalities and Carbon Emissions

- Since the industrial revolution, the atmosphere has effectively served as a free dumping ground for greenhouse gases (GHGs)
- The release of GHGs is associated with an environmental cost, climate change, which acts as a negative externality
- To address this market failure, two main market based instruments have been put forward: **carbon taxes** and **emission trading schemes**
- Both approaches have advantages and disadvantages



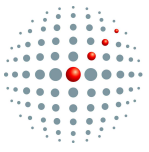
What Is a Carbon Tax?

- A carbon tax is a type of Pigovian Tax
 - A Pigovian Tax is a tax levied on a market activity to correct the market outcome, in the case of a negative externality
- A carbon tax imposes a cost proportionate to carbon output
- As a result, heavy carbon emitters, such as coal-fired power plants, will be taxed more heavily
- Ordinarily a carbon tax is per tonne of CO₂ equivalent (Global Warming Potential)



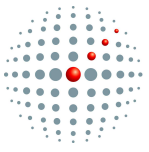
Carbon Tax Advantages

- Provides a more predictable trajectory for energy prices
- Taxation reaches not only industries or countries, but also individual consumers and other sectors, such as transportation
- Taxation would not be subject to private or special interests
- Implementation costs are low and implementation fairly simple, relative to emissions trading
- The revenue from carbon taxes can be used to offset other taxes
- Taxes can be re-invested into the same industry that was taxed, promoting energy efficiency or other mitigation efforts



Carbon Tax Disadvantages

- A carbon tax is a price-based instrument, not a quantity-based one. People might still pay the tax and pollute - there is no guarantee on actually reducing emissions.
- In order to achieve the emission reductions required, taxes may need to be very high, and in general taxes are politically contentious.
- Carbon taxes may unfairly disadvantage certain social groups or those that lack alternatives



Emissions Trading Basics

- Also known as ‘cap and trade’
- Government sets a cap on total emissions
- Government chooses sectors of the economy in the trading system
- Emission allowances are distributed or auctioned
 - Generally 1 tonne CO₂eq = 1 allowance
- Emission sources must hold (or surrender) allowances equal to their emissions
- Those who are able to reduce emissions beyond their allocation can sell excess permits for revenue
- The price for a tonne of carbon emissions will be determined by supply and demand
- Essentially industries are paying for the right to pollute

Emissions Trading Example

Figure 1

Command and Control

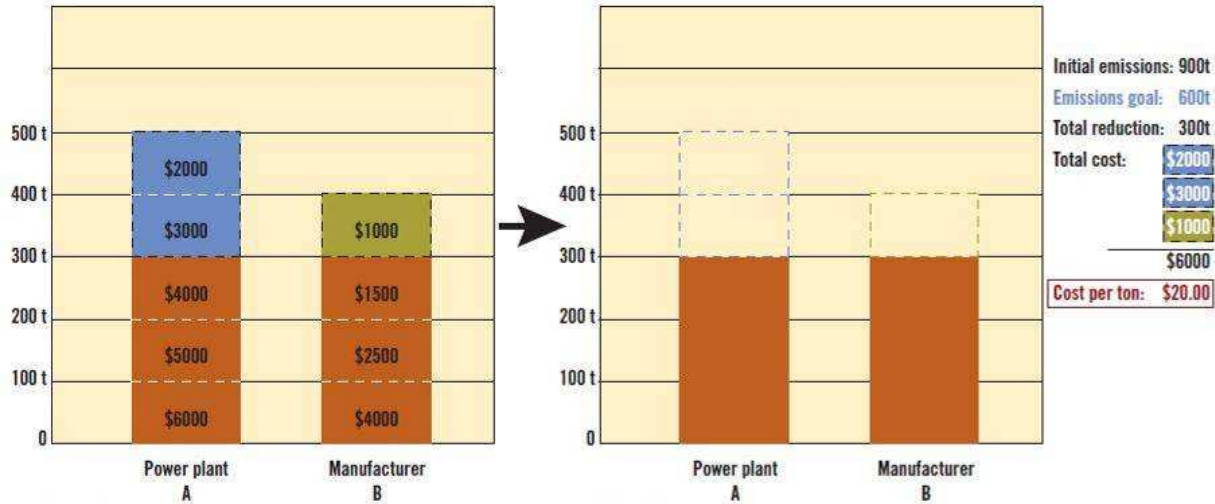


Figure 1a

Figure 1b

Figure 2

Cap and Trade

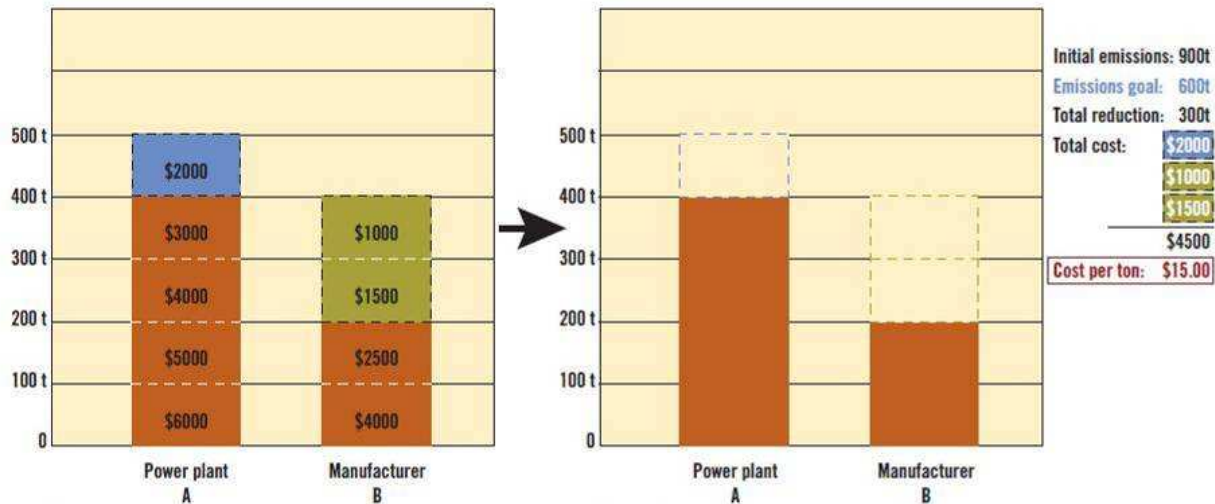
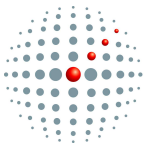


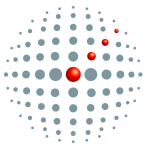
Figure 2a

Figure 2b



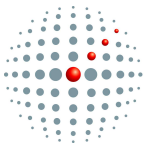
Emission Trading Advantages

- Combines a regulatory approach with the flexibility and innovation of private markets
 - Emitters are given flexibility and control
- Rewards innovation and investment in new technology
 - An incentive to go beyond minimum requirements
- Common price signal ensures that reductions take place where they are least costly
 - Achieves environmental goals at least cost
- Overall cap on emissions ensures environmental objective is achieved



Emission Trading Disadvantages

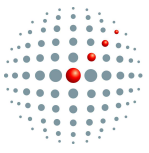
- Requires fairly complex monitoring, reporting, verification and compliance infrastructure
- May result in increased local concentrations of emissions
- Price is uncertain – determined by market
- Allocation of target/allowances is highly contentious



Economic Impact of a Carbon Tax

- The table below provides an indication of the impact of a range of potential carbon prices on electricity costs in South Africa

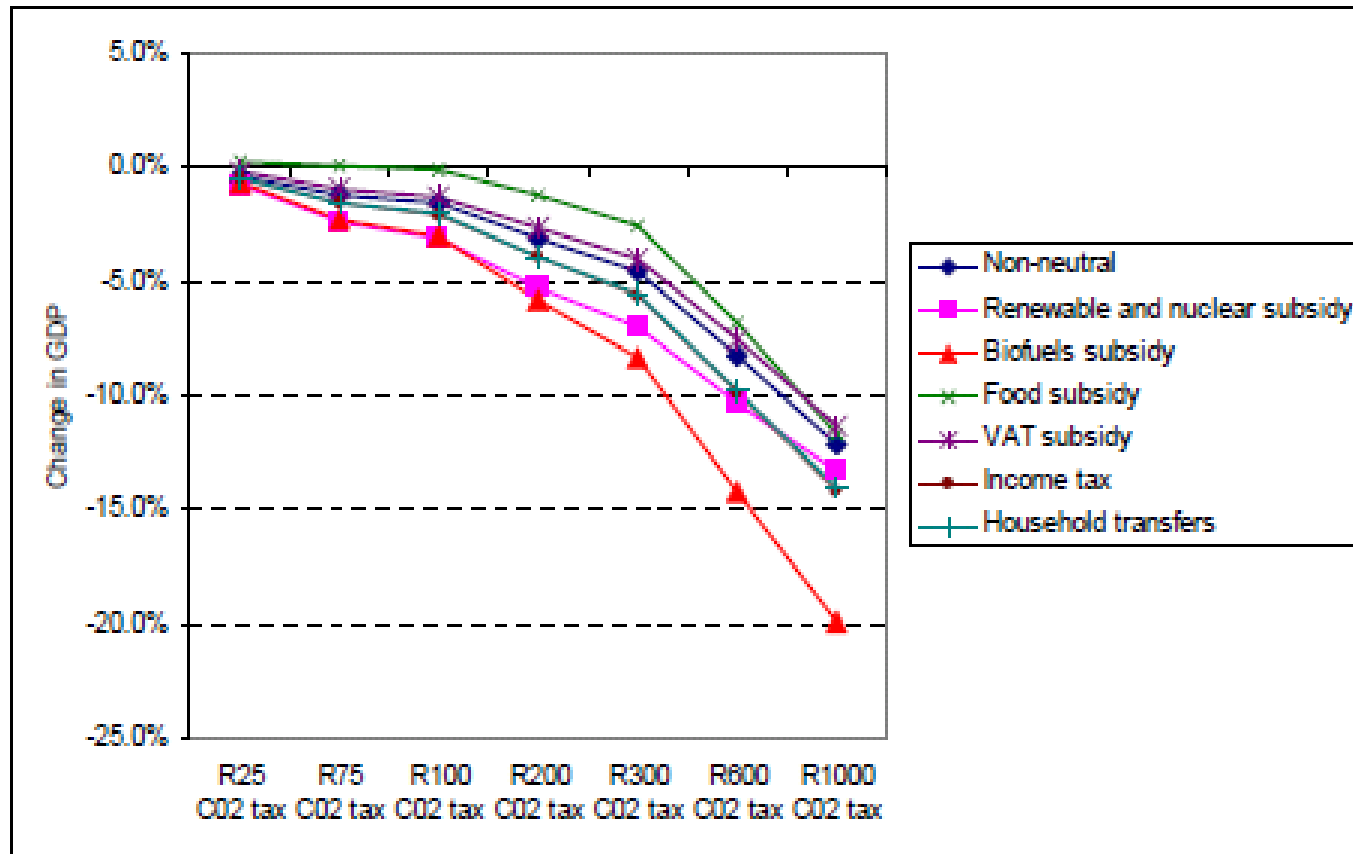
Marginal Carbon Cost (R/tonne)	Electricity Price Increase (R/kWh)	% Increase
16	0.016	8%
40	0.04	20%
80	0.08	41%
160	0.16	82%
240	0.24	122%
320	0.33	163%
400	0.40	204%



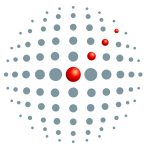
Economic Impact of a Carbon Tax

- Even recycling carbon tax revenues to subsidise other tax liabilities has a negative effect on South African GDP

Carbon Tax Simulations: GDP Effects Under Alternative Revenue Recycling Options

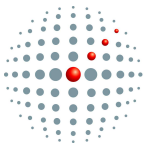


Source: DEAT (2007) LTMS



Economic Impact of a Carbon Tax

- For a R100 carbon tax:
 - Sasol's Secunda Plant could have a tax bill of approximately R7 billion
 - Eskom's operations would incur an additional R23 billion, more than half its R40 billion revenues
- GDP may fall by anything between 2% and 7% for a R250 carbon tax
- GDP may fall by anything between 9% and 17% for a R750 carbon tax



Agenda

- 08:30 – 09:00** Morning Tea and Coffee
- 09:00 – 09:10** Welcome by Camco (Jonathan Curren, Director: Camco South Africa)
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Case Study: Aviation

Myriam Velia, TIPS

Aviation & Climate Change

Myriam Velia



Background

■ Air transport

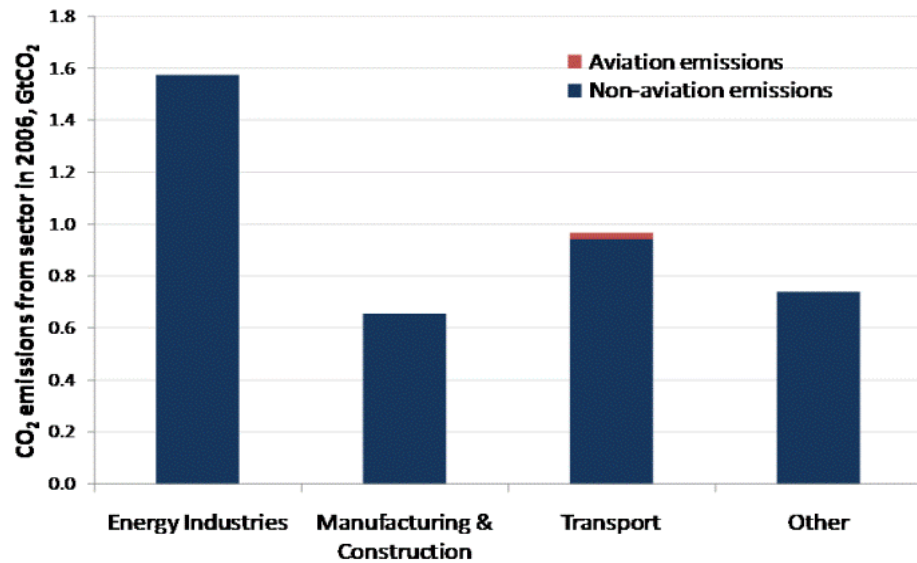
- Small employer
 - 11000 → 20000 employees in SA, so that in SA possibly ¼ a fourth of those employed in African airlines across Africa;
 - 200 employment per aircraft;
 - Small direct to indirect employment linkages excluding tourism but larger aircraft to airport site employment linkages.
- Yet, important for growth & tourism;
- Large revenues but issues of profitability

■ African & SA context

- ↑ air traffic in Africa in excess of international performance was forecasted prior to the crisis but generally inter-continental air traffic expansion below that of intra-continental air traffic expansion;
- Still, poor performance by international standards – barriers to entry & exit + competitiveness issues
 - ⇒ Africa: 3% of global passenger traffic & 1.8% of global freight traffic. EU:31% & North America: 32% of passenger traffic
 - ⇒ 75% of traffic in Africa with non-African airlines;
- Tourists on the continent: from Europe, 65% of revenue passenger kilometres, & 15% for Africa.
- Dominance of few countries, including SA – in top 5 for traffic & air links with the EU (UK & Germany).
- Busiest airports on the continent in SA. Joburg: 1 of 3 main hubs in Africa (Joburg, Nairobi & Addis Ababa excl. North Africa).
- SAA the most important carrier in terms of passenger traffic;

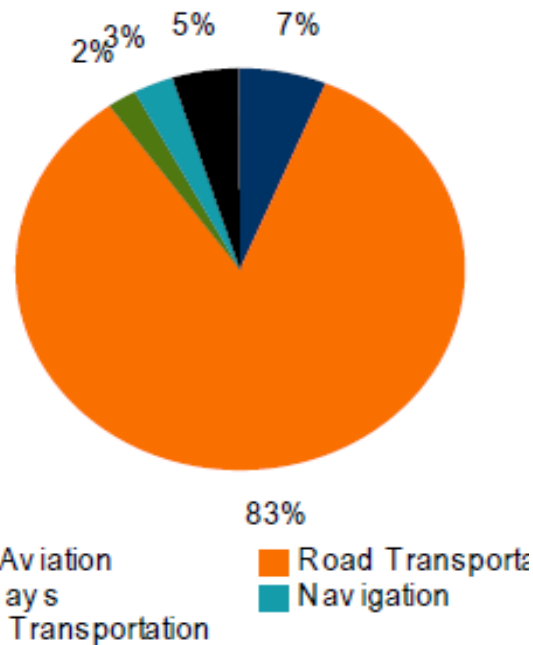
Aviation & climate change

CO₂ Emissions from Miscellaneous Economic Sectors (2006 in GtCO₂)



Source: Climatico (2009)

Transport Emissions (2005)



Source: UNFCCC –
for Annex 1 Countries

- Aviation “small” contributor to CO₂ emissions, 3% of total ...
- But, EU has extended its Emission Trading Scheme (ETS) to include aviation
 - ↑ aviation-related CO₂ emissions - between 1990 and 2003, ↑ by 4.3% p.a., equivalent to 70% cumulated ↑;
 - ↑ to continue with CO₂ emissions set to double between 2006 and 2020.
 - With EU efforts to ↓ emissions ⇒ emissions from aviation would reach 8% of all emissions by 2020
 - ⇒ aviation had to be included + in line with Kyoto Protocol commitments/interventions in the context of no ICAO intervention
- Includes non-EU operators
 - “Narrowing the scope only to flights within the EU would cover less than 40% of the emissions from flights departing from the EU. It would also favour long-haul over short-haul flights, thus contradicting the strategy’s environmental objectives” ⇒ **EU aviation directive published in Jan 2009.**

The EU directive

■ General Scheme

- Mandatory cap & trade approach that applies to a range of aviation activities – incl. freight air transport, private jet etc. for planes above a certain size.
- Allowance to “emit” capped with % free allowance + % of allowance to be auctioned; 1 allowance = 1 CO₂ ton.
 - As soon as the scheme effective, 15% of the allowances would be auction, 85% free.
- Cap lowered over time
 - ⇒ incentives for service suppliers to switch to more climate friendly methods;
 - ⇒ Growing proportion of total allowances to be auctioned over time – all auctionable by 2020.
- Benchmark method that allows older airlines/airlines less efficient with their emissions not to be penalized by the scheme
- Monitoring & responsibility of a EU Member State, the UK in the case of SAA;
- Fully operational from 2012 using a benchmark model that incorporates 2010 & 2004-2006 data;

The EU directive

■ Value of allowance?

- Variations - currently valued at 30 Euros but starts at 10 Euros will depend on auction mechanism & modalities; varies with route etc. (Current carbon spot price is at about 14 Euros per ton of CO₂.)
- Adequate forecasting of past air transport activities & future air transport growth;
- Abilities to use projects that form the basis of certified emission reduction certificates (as per the Kyoto protocol's CDM & JI projects) for 15% of airline emissions but subject to some uncertainties with forthcoming climate change negotiations
- Introduces uncertainty;

The EU directive: consequences & responses

■ Consequences - Threats

- Adds uncertainty;
- Favours financially strong airlines able to invest in more fuel efficient aircrafts (e.g. wide body specifically);
- Favours re-routing (shorter distances to the EU) & the formation of new hub or expansion of hubs currently closer to the EU (& resulting increase in travelling time/lower cost trade-off and ↑ in emissions outside of the EU?);
- Increase costs to airlines – data provision system, monitoring;
- Increase cost to passengers but ability to pass costs onto consumers? Consumer responses?
Again variations: +9 Euros per passenger per return flight; +1.5 to +3.5 Euros per passenger ⇔ +3.1% and 1.4% respectively to an average ticket price for a low cost & for a main airline
⇒ **low cost but Impact on tourism?** (in terms of destinations & levels) in parallel to efforts by governments to develop tourism within borders;
- Other? US challenge to the EU decision over the lack of consultation and comment that cap & trade scheme is a threat to innovation:
 - High fuel costs: the biggest incentive in the search for fuel efficiency;
 - cap & trade mechanism adds costs and thus disrupts particular dedicated research projects &/or will divert investments (with more general negative economic consequences). This is problem is associated with the lack of guarantee that the proceeds from auctioning will be dedicated to aviation fuel efficiency improvements;

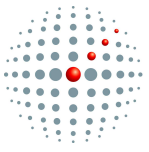
The EU directive: consequences & responses

■ Opportunities:

- Enhances additional investments opportunities in CDM/JI projects; these would allow a “discount” of 1.5 Euros/ton.
- Favours more efficient air transport service suppliers + re-organisation of plane use and space;
 - Tapping onto newer fleet [SAA]
 - Drive for operational & organisation efficiencies [SAA – deadline being met in a context of stringent UK requirement];
 - Partnerships [SAA – Star Alliance programme];
- Innovation incentives:
 - At least towards cleaner fuel possible [SAA but use of CTL, 50% mixed with commercial fuels – CTL appears to worse emissions] ⇒ biofuels developments;
 - Generates innovation around airline engines & parts [SA has some advantages in aerospace parts production]

Case Study: Tourism

Alex McNamara, Camco



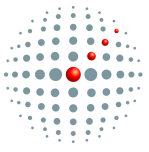
The Travel and Tourism Industry

Globally:

- Responsible for over 230 million jobs and over 10% of GDP
- A key foreign exchange earner for developing countries
- ‘Experiential’ tourism: nature, heritage, cultural, adventure tourism etc. expected to grow rapidly in coming decades
- Significant growth projected for ecotourism and concurrent increase in eco-resorts/hotels

South Africa:

- Tourism an important and growing economic sector. From 4.6% of GDP in 1993 to 8.3% in 2006
- Approximately 6-7% of foreign visitors are business related tourists



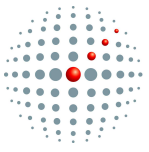
The Travel and Tourism Industry

Emissions:

- Globally, 5% of all anthropogenic GHG emissions are derived from tourism, with approx. 3% of this from aviation
- Estimated that global tourism sector emissions (excluding aviation) to grow at 2.5% per annum until 2035
- Tourism related emissions primarily located in two key areas: transportation and accommodation

Environmental Concerns

- Sector as a whole increasingly exposed to risks and opportunities from growing environmental awareness, with climate change a key concern
- Concerns regarding aviation emissions and rise of localised travel, but sustainable tourism also viewed as key growth area for the future
- The sector is awake to these risks, and has begun to respond



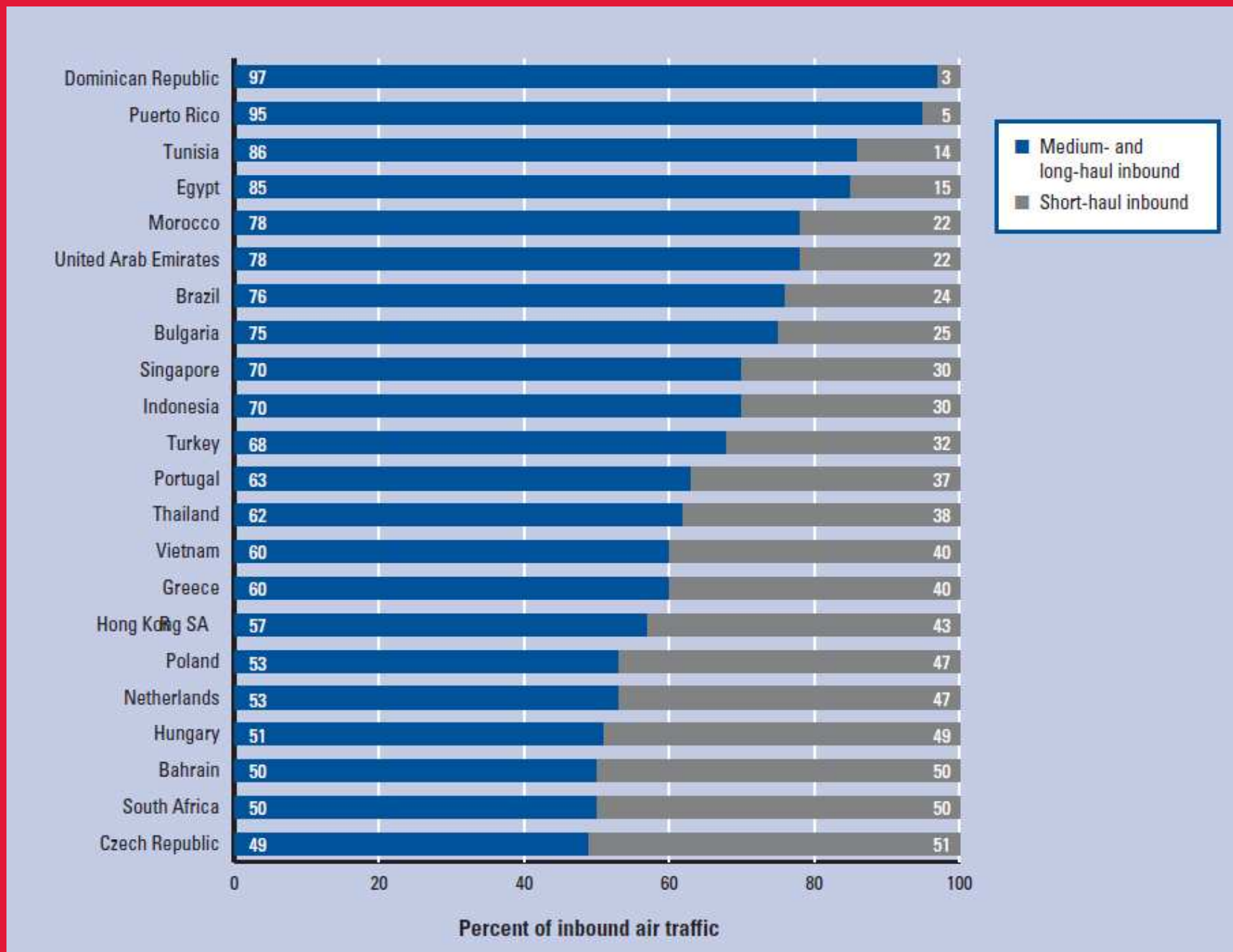
International Response

- World Tourism Organization (UNWTO): Second International Conference on Climate Change and Tourism– Davos Declaration
- Minister’s Summit on Tourism and Climate Change, London 2007
- UNWTO General Assembly - Resolution on Tourism and Climate Change
 - Climate change and tourism have strong interrelationship - need for a rapid response
 - Sector needs a long term strategy to progressively reduce GHG emissions
 - Policies needed to encourage sustainable tourism and travel patterns
 - Emphasise tourism’s role in poverty alleviation and achievement of the MDGs
 - Entire industry must play a role, and not place disproportionate burden on one area, such as aviation
 - Mitigation to focus on transport and accommodation

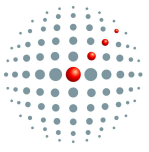
Resolution on Tourism and Climate Change
(UNWTO General Assembly) November 2007:

“There should be no discrimination against developing countries by creating obstacles to their economic development and in particular of those developing countries located at long distance from tourists generating markets.”

Countries most dependent on long-haul inbound air traffic

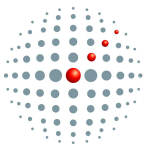


Source: WEF (2009) Travel & Tourism Competitiveness Report 2009



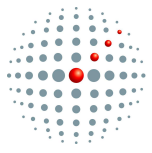
Emerging Mitigation Options

- Encourage modal-shift from cars to mass-transit systems (buses and rail)
- Introduction of cleaner fuels and enhanced vehicle fuel efficiency
- Acceleration of fleet renewal and fuel efficient planes
- Promotion of low carbon fuels in the aviation sector, based on a life-cycle emissions basis
- Removal of infrastructure inefficiencies in airspace and air-traffic management
- Integration of aviation into an international change agreement at a global sector level (to avoid conflicting national and regional initiatives)



Emerging Mitigation Options

- Hotel refurbishment for maximum energy efficiency
- Accelerated deployment of renewable energy in accommodation
- Improvements in cruise ship fuel efficiency
- Removal of mass-transit inefficiencies (particularly from airports)
- Establish consensus on global and regional standards and metrics for measuring emissions
- Leveraging funding to finance sector infrastructure upgrade
- Reducing costs throughout the tourism value chain
- Protection and conservation of carbon sinks



Opportunities

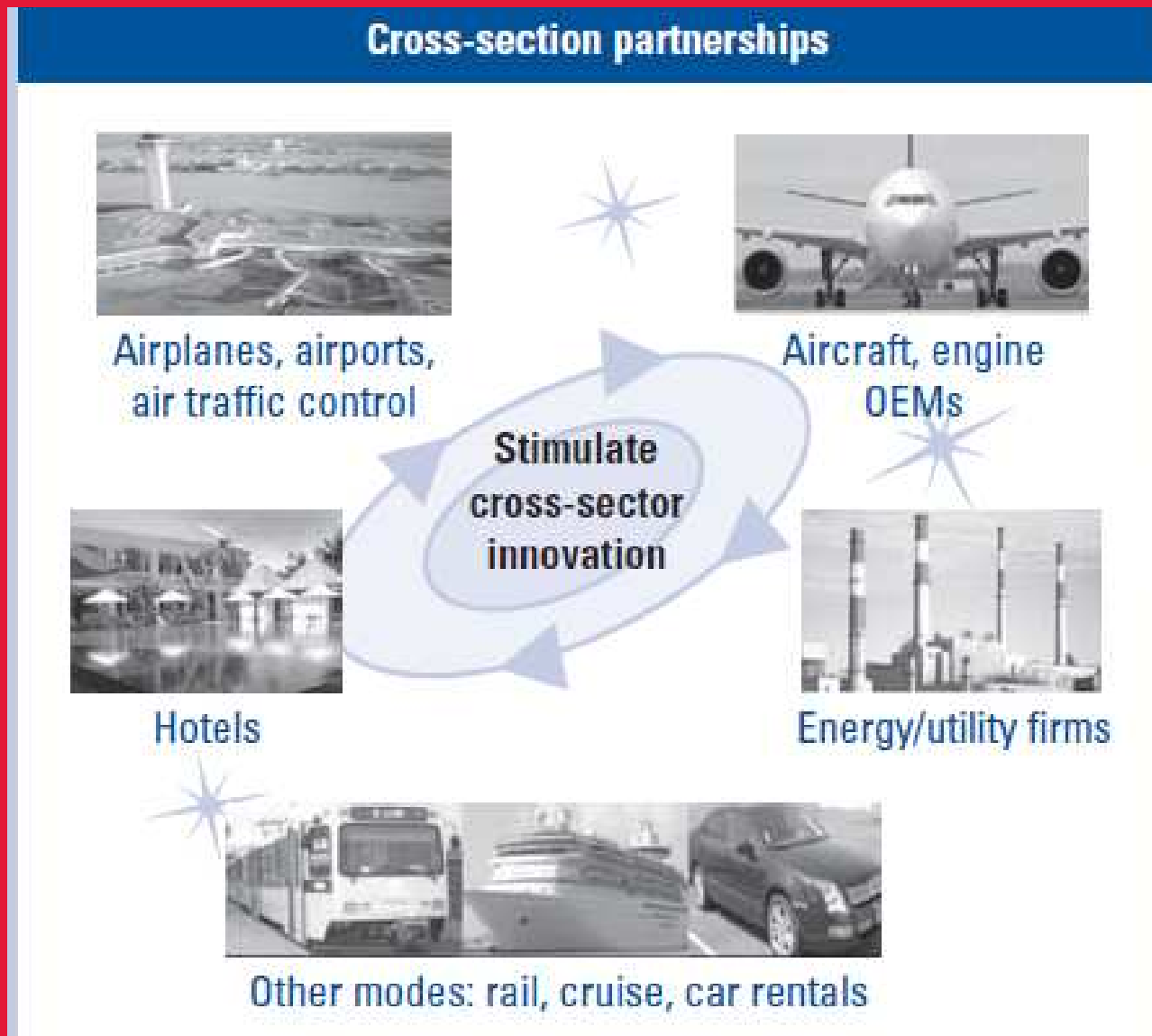
- Establishment of effective public transport and non-motorised transport has strong social, environmental *and* tourism benefits
- Enrique Peñalosa: “Tourism is pedestrian.”



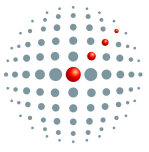
Source: Peñalosa, E. (2004)

- Development of premium tourism services
- Cross-industry partnerships to convert ‘green tourism’ into a co-ordinated mass industry (hospitality, aviation, transport, energy, NGOs etc.)

Low Carbon Partnerships for the Travel and Tourism Sector



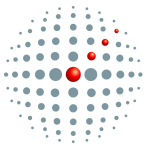
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Agenda

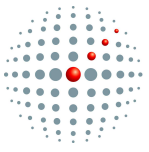
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15:30	Tea and Closure

Group Breakout Sessions



Process

- Attendees to be divided into **3 groups**
- Each group will look at **a different theme before and after lunch**
- Participants welcome to attend whichever 2 themes they choose
- Groups will provide short feedback once all the breakout sessions have been completed



Themes

First Session: 11:40am – 13:00pm

Group 1

- ***Theme 1: Transport and Aviation***

- Key Question:

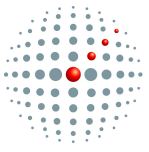
What risks and opportunities does climate change present for the South African transport sector, and how should we begin to tackle these issues?

Group 2

- ***Theme 2: Carbon Regulation***

- Key Question:

What are the risks and opportunities of an anticipated carbon tax regime in South Africa, and are there alternatives?



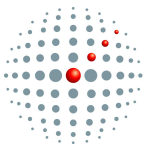
Themes

First Session: 11:40am – 13:00pm

Group 3

- ***Theme 3: Trade and Exports***
- Key Question:

What risks and opportunities are presented by 'air miles' and the demand for low carbon goods for South African manufacturing and exports?



Themes

Second Session: 13:40pm – 14:40pm

Group 1

- ***Theme 4: Research, Innovation, Skills and Technology***

- Key Question:

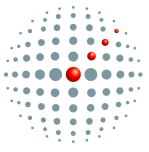
What research, innovation, skills and technology are required to develop a prosperous, low carbon society in South Africa? Do we have areas of competitive advantage we can exploit?

Group 2

- ***Theme 5: Environmental Services, Land Use and Carbon Sequestration***

- Key Question:

What opportunities are presented for trade in environmental services by climate change, including through land use improvements and carbon sequestration?



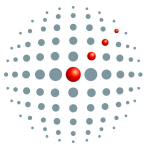
Themes

Second Session: 13:40pm – 14:40pm

Group 3

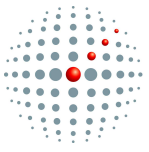
- ***Theme 6: Renewable Energy and Energy Efficiency***
- Key Question:

What are the opportunities presented by renewable energy and energy efficiency for South Africa, and how can we best exploit this?



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climatechange **risks** and **opportunities**