



Sustainable development policies and measures

Concept and methods for a strategic approach
for enhancing the climate regime post-2012



Harald Winkler

Energy Research Centre
University of Cape Town

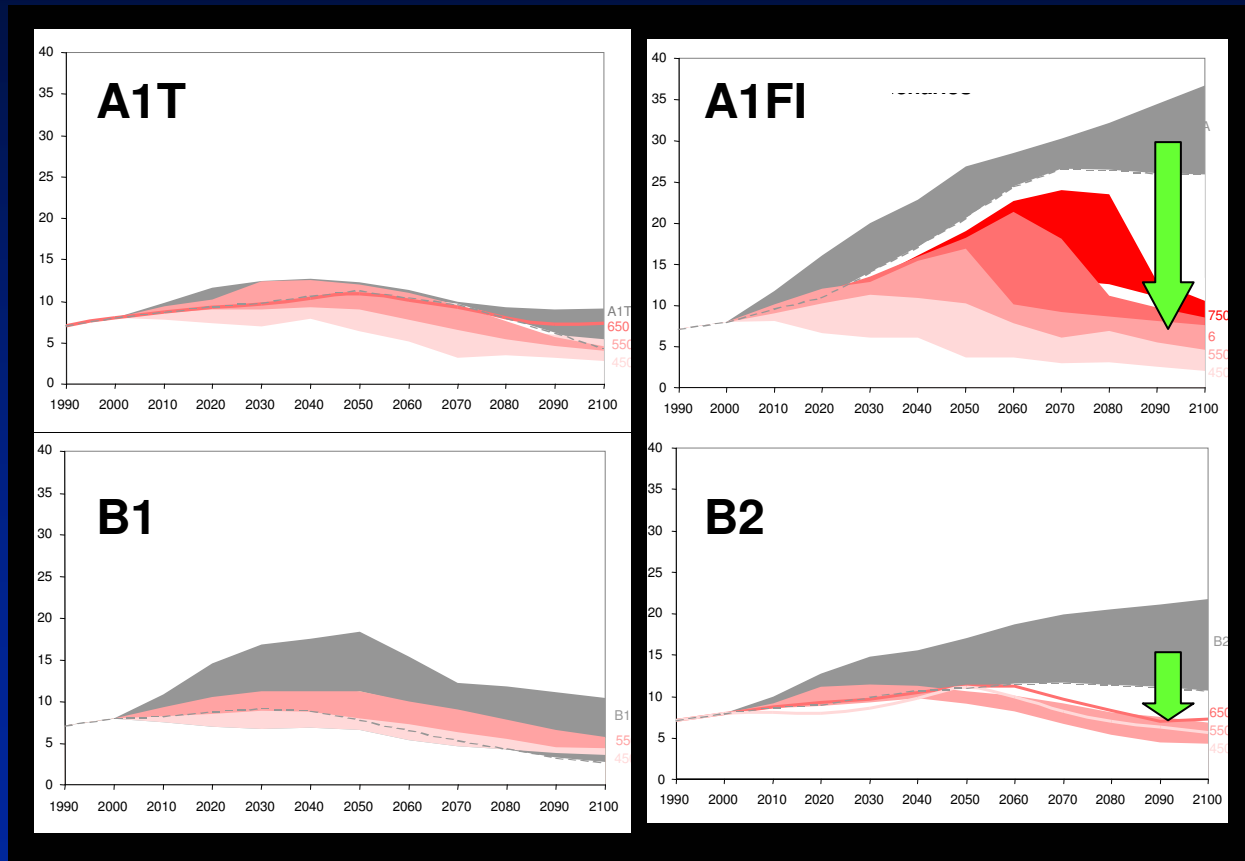
Presentation at the Development and Climate Workshop, 20-22 September 2006, Paris

The concept of SD-PAMs

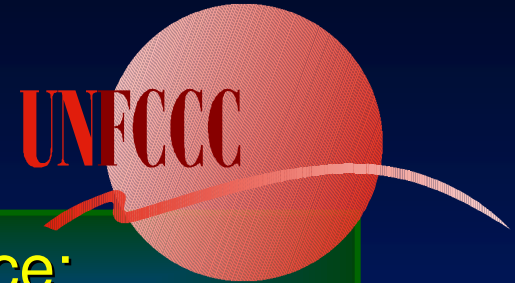
- Sustainable development (SD) policies and measures (PAMs)
 - Any better offers on the acronym?
- Backcast from desired future state of development, not GHG reduction goal or cap
 - define more sustainable paths to meet development objectives
- Tap into the primary motivation for DCs – development
- How to capture the potential of SD co-benefits under the Convention for developing countries?
- Need a new strategic approach to capture the potential under the multi-lateral framework – SD-PAMs is one possible approach

More 'sustainable' development paths make mitigation easier

IPCC Emission Scenarios (grey) versus emissions path needed for stabilisation (red)



The basis of SD-PAMs



Article 2, the oft-forgotten second sentence:

"Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."

Principle in Article 3.4

"The Parties have a right to, and should, promote sustainable development."

Strategic approach

- Build on existing commitments (FCCC Art 4.1, KP 10)
- A commitment to implement SD policies
 - not based on climate target, but choosing a development path that results in lowered emissions
- Large-scale policies and measures, not projects
- Formalise this pledge
 - Could be a list of countries
 - Could be a register of pledged policies and programmes
- Establish methodologies for quantifying benefits of SD-PAMs (both SD and CC)

Steps in applying SD PAMs

1. Country outlines future development objectives
2. Identify PAMs to achieve development objectives more sustainably
 - a. Existing policy not fully implemented; or
 - b. New policies and / or more stringent measures
3. Mobilise investment and implement SD-PAMs
 - a. Could include mutual pledges to mobilise domestic investment
4. Record SD-PAMs in a registry (e.g. maintained by the secretariat)
5. Set up national monitoring system to track implementation of SD-PAMs
6. Review SD-PAMs in SD units, either as part of national communication or a specific review
7. Quantify the changes in GHG emissions from individual PAMs
8. Identify PAMs with synergies or conflicts between SD benefits and GHG limitations
9. Summarise the net impact of a basket of SD-PAMs on development and GHG emissions

Methodologies for quantifying SD-PAMs

- In principle, methodologies needed to quantify
 - Firstly SD benefits
 - Secondly GHG co-benefits
- Existing methodologies have been bottom-up
 - Case studies
 - National energy modeling
- Exploring other methodologies
 - Analysis of efficiencies improvements
 - Analysis in global emission allocation models?

Method 1: Case study - rural electrification in India

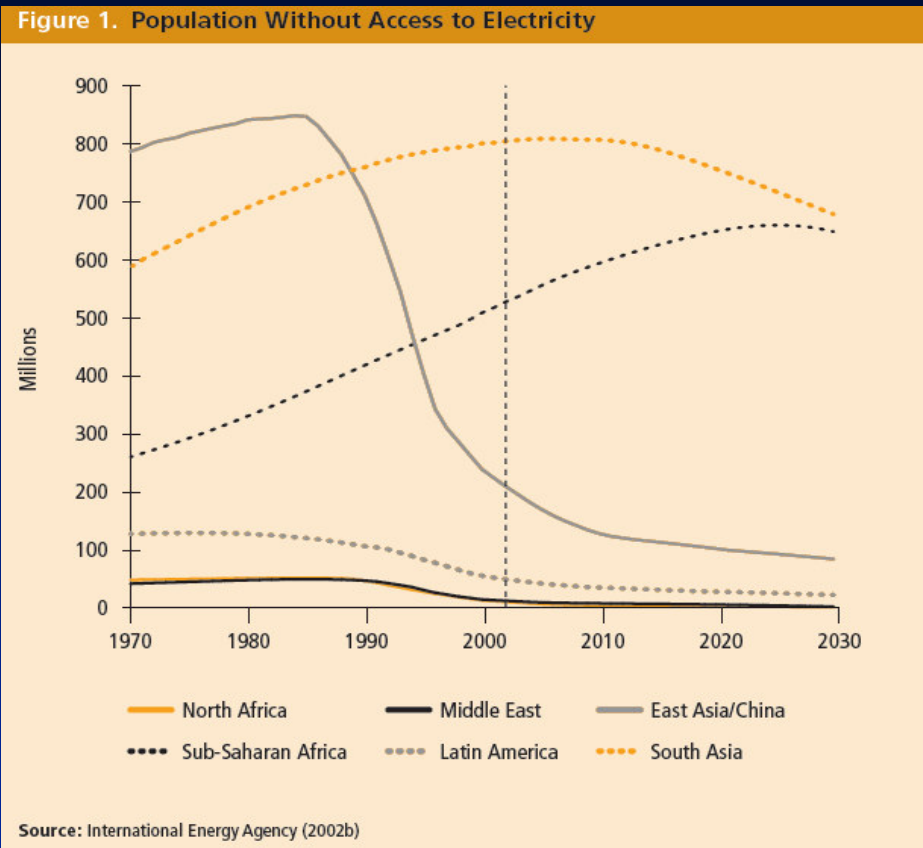
Development challenge:

- 500-600 million people without electricity

Three supply scenarios:

- Grid First
- Diesel First
- Renewables First

Three levels of rural electricity demand



Method 1: Case study - rural electrification in India

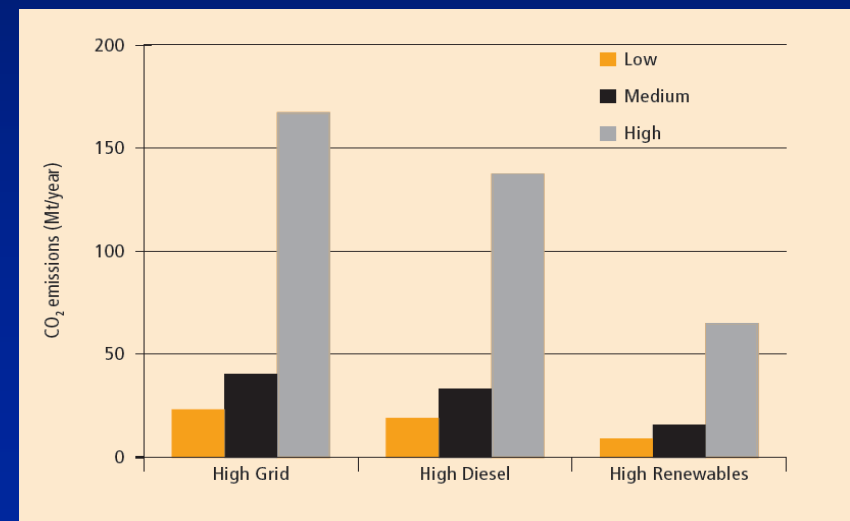
Approaches are evaluated by India's national criteria.

- Grid First offers little hope of meeting electrification goals.
- Diesel First raises significant oil import concerns.
- Renewables First brings benefits but at significant capital cost – can international policy help?

Qualitative assessment of the scenarios

Approach	Grid First	Diesel First	Renewables First
Speed of provision	Low	High	Medium
Quality of supply	Low	High	Medium
Affordability	Medium	Medium	Low/Medium
Security of supply	Medium	Low	High
Climate protection	Low	Low/Medium	High

CO₂ emissions under the scenarios



Method 2: National energy modeling

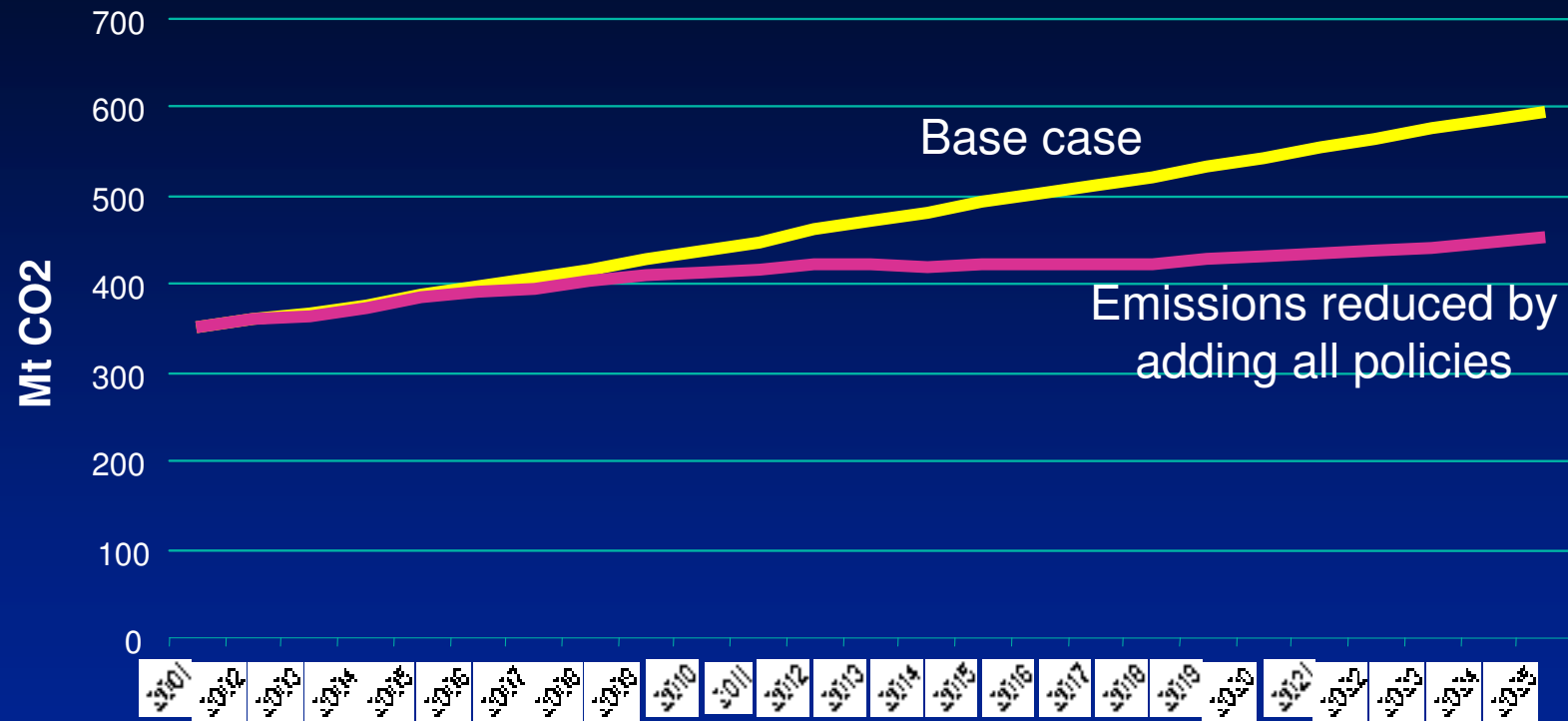
- Use national energy modeling in South Africa
 - Energy emissions four-fifths of total
- Study on Energy policies for sustainable development in South Africa
 - Winkler, H (Ed) 2006, www.erc.uct.ac.za/recentpub
- Combined effect
 - Efficiency in industry, commerce and residential
 - Fuel-switching and cleaner residential fuels
 - Lower-carbon electricity generation
 - Biofuels for transport

Method 2: National energy modeling

- Saves R 15.9 billion in total energy system costs over the period, relative to base case
- Reduction in local air pollutants

Non-methane volatiles	142 375	t NMVOC
Oxides of nitrogen	5 797 285	t Nox
Sulphur dioxide	10 152 000	t SO2
Carbon monoxide	1 324 336	t CO

Avoided CO2 emissions from SA energy policies for SD



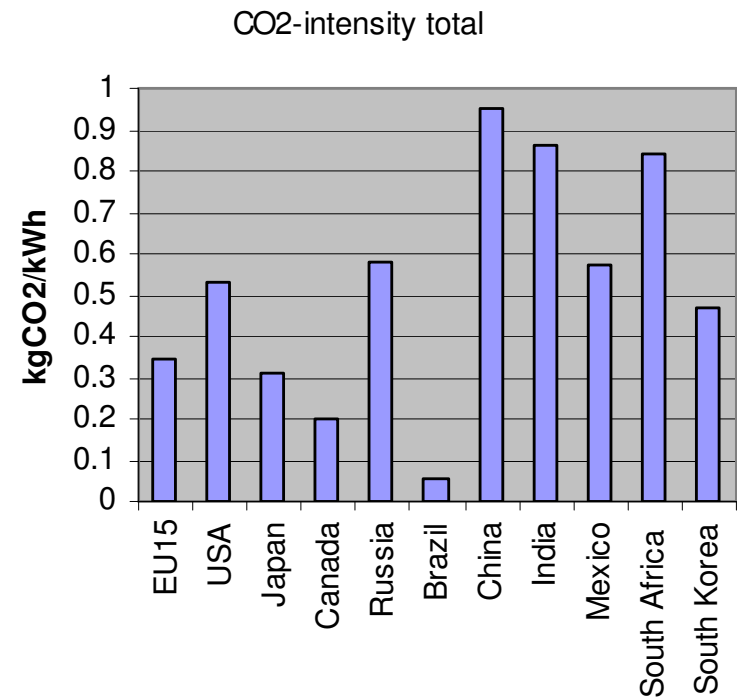
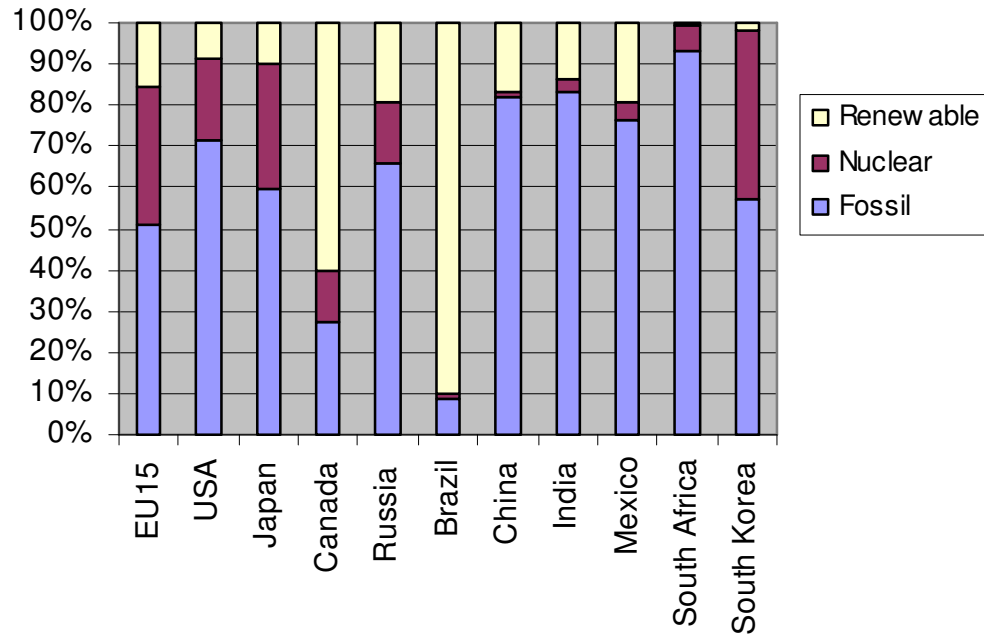
Avoids emissions: 142 Mt CO2 for 2025 (24% < BAU)

Source: Winkler (ed) 2006

Method 3: Analysis of policies by sectoral data

- Using quantitative data, based on available literature
 - Detailed activity data, in tons of product / output by economic sector
 - Value added, in monetary terms by sector
 - Energy use by fuel type by sector
 - Calculation of energy and GHG intensity by sector
- Focus on emissions from the energy sector
 - Mainly CO₂
 - Enabling calculation of all GHG
- Similar set of policies as in method 2

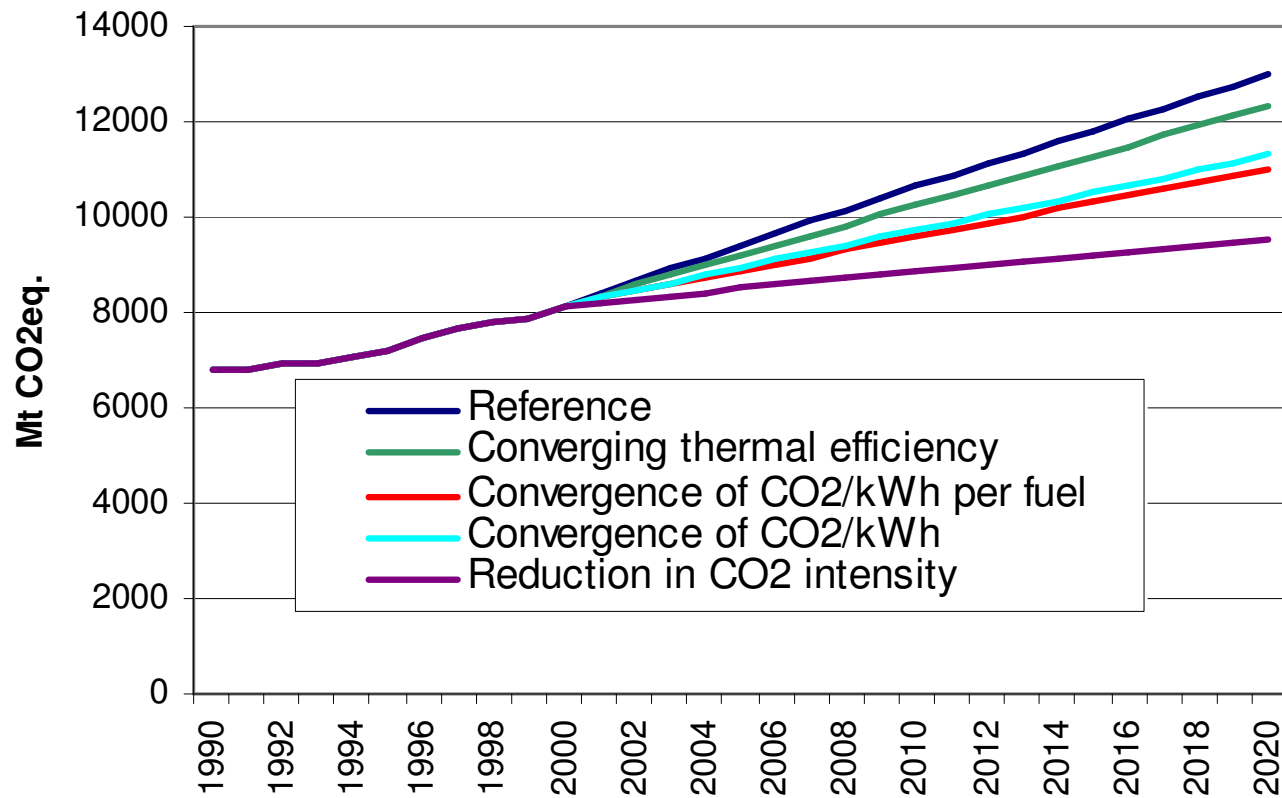
Share in electricity production



Scenarios electricity

Scenario	Condition			
		<i>Aver.</i>	<i>Max</i>	<i>Converg.</i>
Convergence in thermal efficiency				
	Coal	0.34	0.40	0.42
	Oil	0.35	0.44	0.45
	Gas	0.37	0.48	0.54
Convergence in CO ₂ /kWh per fuel		<i>Aver.</i>	<i>Min</i>	<i>Converg.</i>
	Coal	0.96	0.73	0.69
	Oil	0.68	0.39	0.4
	Gas	0.52	0.27	0.28
Convergence in CO ₂ /kWh		Aver.	Min	Converg.
		0.52	0.05	0.45
Reduction on CO ₂ intensity	Reduce by 3% per year			

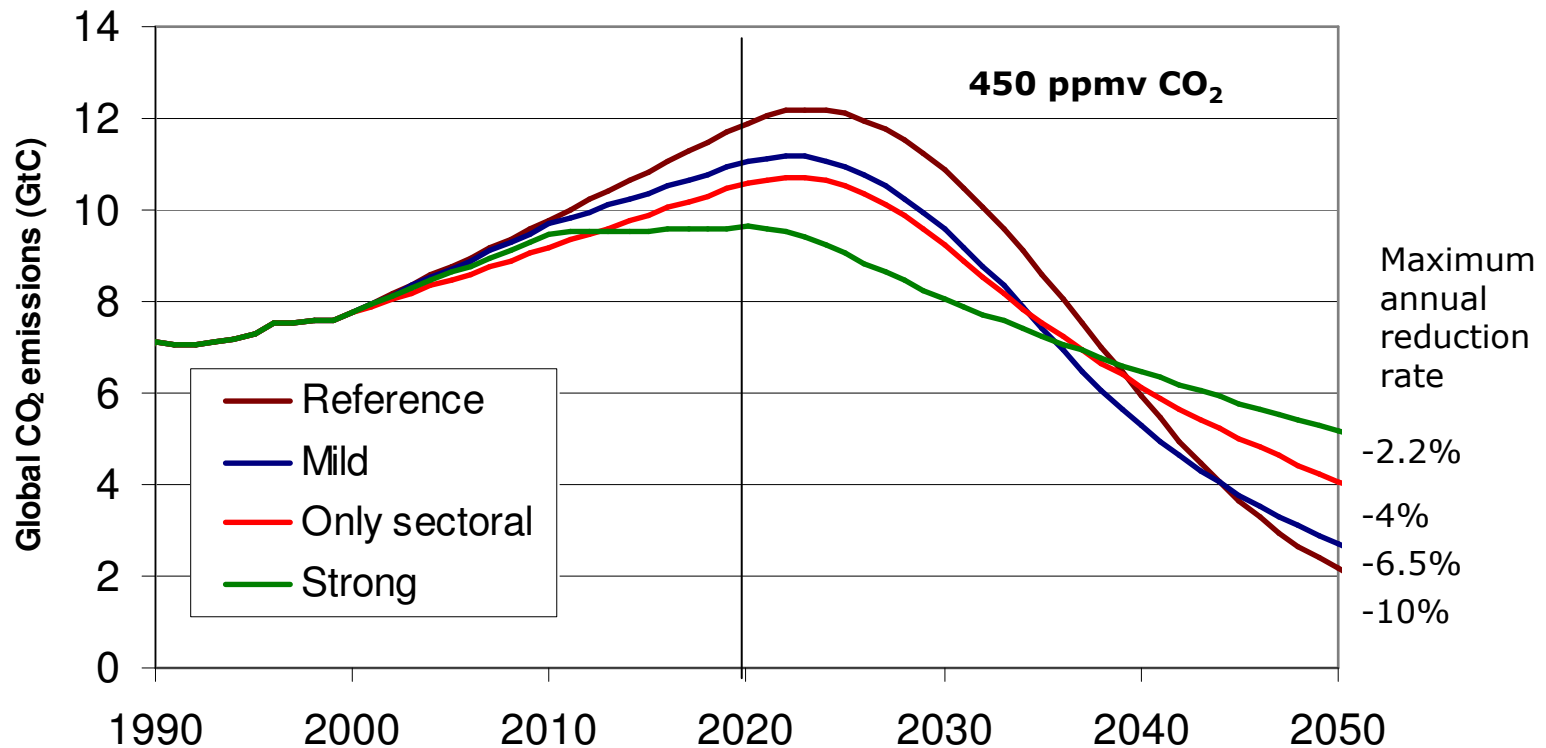
Scenarios electricity



Reductions in the global context

Scenario	Condition	
"Mild"	Annex I excl. USA	-15% below 1990 level in 2020
	USA	+10% above 1990 level in 2020
	Non-Annex I	Reference
"Strong"	Annex I excl. USA	-30% below 1990 level in 2020
	USA	+0% at 1990 level in 2020
	Non-Annex I	Sectoral for electricity, iron & steel and cement
"SD-PAMs"	All countries	Sectoral for electricity, iron & steel and cement

Reductions after 2020 towards 450 ppmv CO₂



Global emission levels necessary to stay below 450 ppmv CO₂ concentration assuming that all greenhouse gases are reduced in the same proportion and that the global trend cannot change be faster than 0.5 percentage points per year using the MAGICC model. For 550 ppmv the difference between the cases is less pronounced (maximum annual reduction rate of 0.6%, 0.9%, 0.9%, 1% for immediate reductions after 2020)

Method 4: Global emission allocation models

- Models set up to allocate a given carbon budget across countries, e.g. FAIR, EVOG
- Top-down approach to analysing climate implications of bottom-up SD-PAMs
 - Mainly to answer questions of effectiveness
- If sufficient policies could be specified for a country, might be able to represent in this model
- Needs further work
 - Including articulating national energy models with international allocation models

Formalising SD-PAMs in the multi-lateral system

- Regular reporting on implementation (Article 12.4)
 - Could be part of national communications ...
 - ... separate reporting perhaps preferable?
- Primary reporting: SD units
 - Also quantify GHG co-benefits (as illustrated in methods)
- Registry of SD-PAMs
 - Could be administered by Secretariat
 - Formal recognition of action taken
- National capacity critical, e.g M&V of energy efficiency

How can SD-PAMs be supported internationally?

- Step 1: Validate SD-PAMs approach
 - COP decision - “register” of countries
 - Allow countries to decide whether to register and how to report
- Step 2: Create supportive processes
 - E.g. CGE develop methodologies
 - E.g. Secretariat compilation and synthesis reports
- Step 3: Develop incentives for implementation
 - Expedited access to climate funding
 - Non-climate funding (IFIs, ECAs, FDI, domestic)
 - Potential to link to carbon markets – later
 - ☞ Otherwise much like policy CDM

SD-PAMs and post-2012

- By itself, does not guarantee environmental outcome (still need quantified mitigation commitments) ...
- ... but important in mobilising action
 - Turn climate from 'threat' to development into genuine opportunity to make development sustainable for DCs
- 'Only' requires a decision by the COP, not a whole new Protocol
- Important as trust-building measure under the Convention
- SD-PAMs, implemented through technology, enabled by finance, in balance with adaptation



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