

# Beyond 2012:

## Towards a New Global Climate Treaty and the Implications for New Zealand

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# Outline

1. The climate stabilization challenge
2. The international climate change policy context
3. Post-2012: key policy issues and options
4. The Bali Climate Change Conference (COP13)  
– aims and outcomes
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7. Looking longer-term
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# The Climate Stabilization Challenge

1. The Earth's atmosphere is a 'natural global commons' or a 'global public good', and thus is subject to the free-rider problem: without clear and enforceable property rights, every country has an incentive to use it as a dumping ground for greenhouse gases and other pollutants. But if enough nations refuse to cooperate, or refuse to take sufficient action, any collective endeavours to mitigate the problem by the remainder of the global community will be put at risk and rendered less effective. In these circumstances, there will be an increased likelihood of a 'tragedy of the commons' (i.e. dangerous global warming).

# The Climate Stabilization Challenge

2. We are dealing with a massive market failure that requires sustained, concerted, global action to address, in the context of huge global inequalities, national self-interest, conflicting evidence and priorities, and weak international institutions
3. The politics of climate change are extremely complicated and challenging – locally, nationally and internationally – arguably more complex than any other problem yet to face humanity; in part, this is because GHG emission reductions impose costs, and some way of sharing these costs has to be negotiated: this raises fundamental issues of (distributive) justice or fairness (both between nations and across generations)

# The Stabilization Challenge

1. CO<sub>2</sub>e concentrations in the atmosphere – now about 430ppm (+/-), 50% above pre-industrial levels, rising at 2ppm p.a., with expected accelerating trend if BAU
2. To stabilize concentrations will require global emission reductions of up to 80% (from current levels); the sooner this level of reductions is achieved, the lower the stabilization level
3. Stabilization of CO<sub>2</sub>e concentrations over the very long-term will require even larger global emission cuts – e.g. up to 98% by around 2200/2300
4. To avoid very damaging, if not 'catastrophic', long-term climate changes the increase in the global mean surface temperature needs to be kept to 2°C (or not much above this) above pre-industrial levels. Already increased 0.8°C, with another 0.6°C-0.7°C to come
5. This means we need to stabilize CO<sub>2</sub>e levels well under 550ppm (see Figure); ideally under 450ppm (but probably unrealistic); The Stern Review recommended 450-550ppm

# The stabilization challenge

6. According to the IPCC (2007), a stabilization target of 445-490ppm CO<sub>2</sub>e will require global CO<sub>2</sub> emissions reductions of 50-85% by 2050 (compared to 2000 levels). To achieve this, will require cuts by Annex 1 Parties of 25-40% by 2020 and 80-95% by 2050 (compared to 1990 levels). Also, global emissions will need to peak by 2020. (But note that it is the cumulative global emissions that matter, not the precise emissions at any particular point in time.)
7. Economic analyses (Stern, 2006; IPCC, 2007) suggest that the costs of effective global action are likely to be relatively modest (around 0.1% of GDP per annum for some decades); the long-term economic (and other) costs of inaction could be very large (with large-scale irreversible damage to key biophysical systems).
8. But there are the political problems of imposing short-term pain for long-term gain and agreeing on burden-sharing arrangements globally

# The stabilization challenge

Dr Jim Hansen (head of NASA's Goddard Institute for Space Studies) et al (2008)

"Humanity today, collectively, must face the uncomfortable fact that industrial civilization itself has become the principal driver of global climate. If we stay our present course, using fossil fuels to feed a growing appetite for energy-intensive life styles, we will soon leave the climate of the Holocene, the world of human history. The eventual response to doubling pre-industrial atmospheric CO<sub>2</sub> likely would be a nearly ice-free planet."

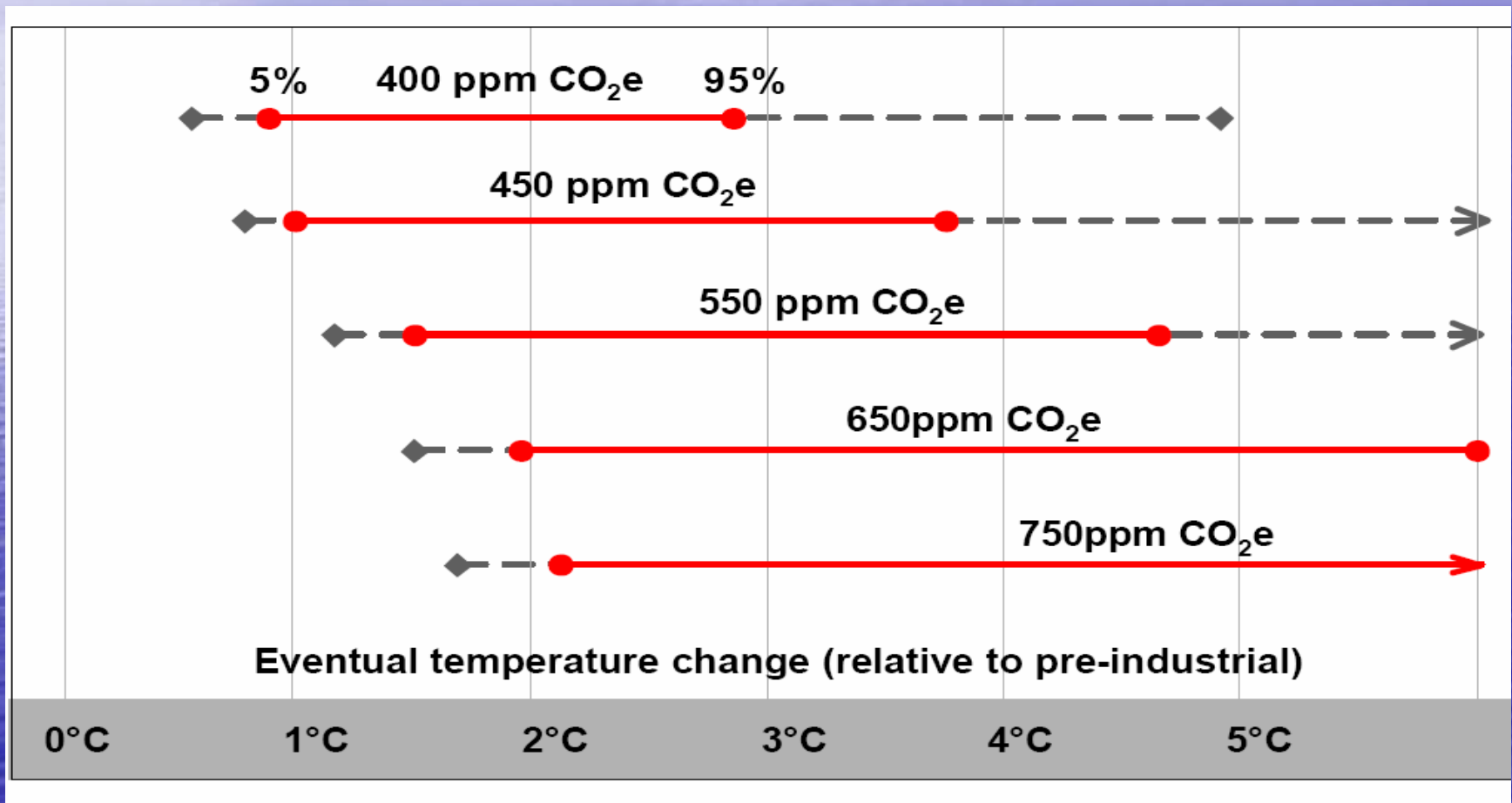
# The stabilization challenge

Dr Jim Hansen et al (2008)

“Continued growth of greenhouse gas emissions, for just another decade, practically eliminates the possibility of near-term return of atmospheric composition beneath the tipping level for catastrophic effects.

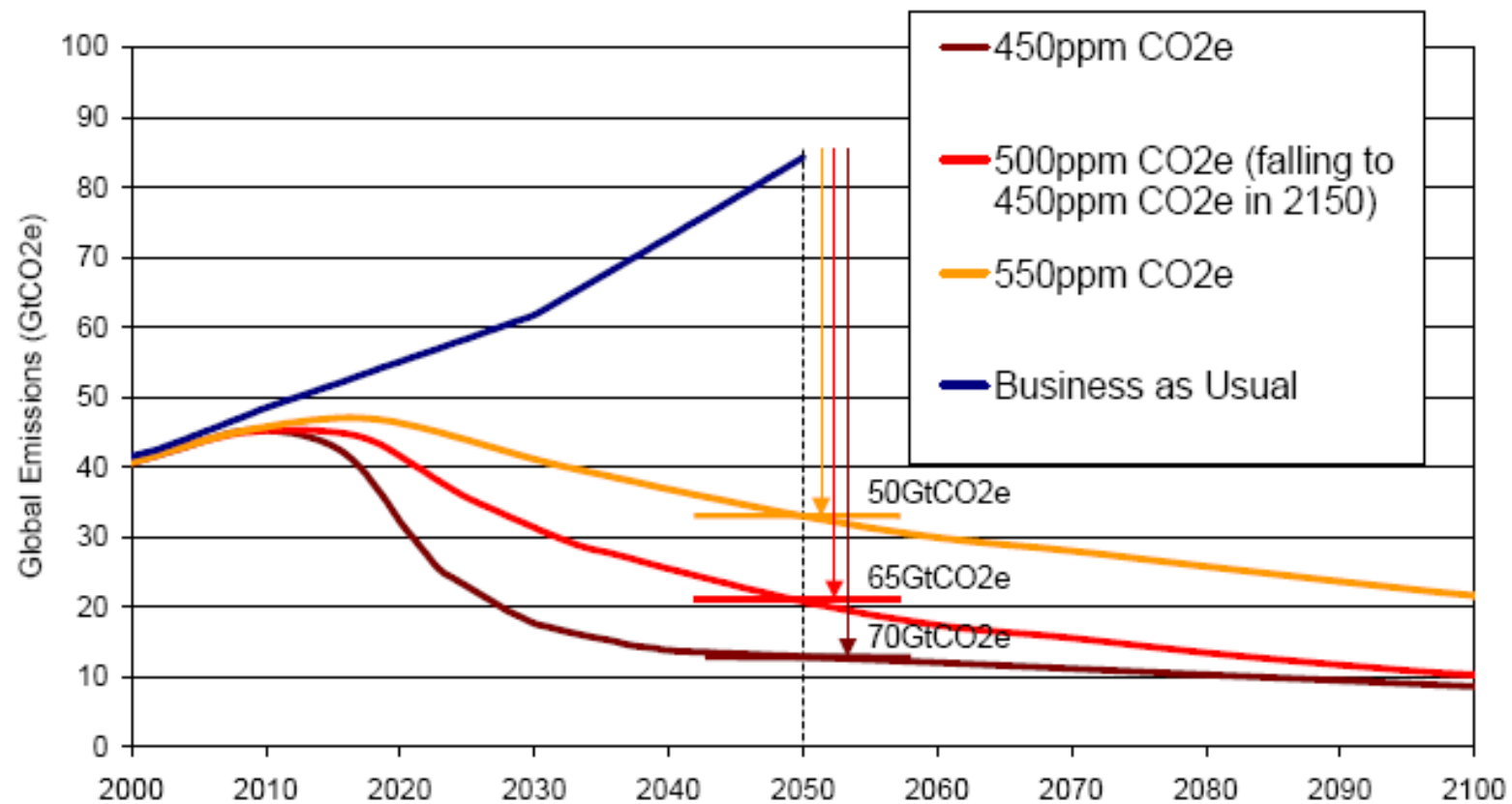
The most difficult task, phase-out over the next 20-25 years of coal use that does not capture CO<sub>2</sub>, is herculean, yet feasible when compared with the efforts that went into World War II. The stakes, for all life on the planet, surpass those of any previous crisis. The greatest danger is continued ignorance and denial, which could make tragic consequences unavoidable.”

# Stabilization targets and temperature implications (from Stern Review)



# Emission paths to stabilization

(from Stern Review)



# The International Policy Context

1. The United Nations Framework Convention on Climate Change
2. The Kyoto Protocol to the UNFCCC

# UNFCCC

1. The United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty, agreed to at the Rio Summit in 1992
2. It entered into force on 21 March 1994
3. It has been ratified by 189 countries (including the US)
4. It sets out various guiding principles (see later slides)
5. Under the Convention, governments:
  - gather and share information on greenhouse gas emissions, national policies and best practices
  - launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
  - cooperate in preparing for adaptation to the impacts of climate change

# UNFCCC

## **Article 2**

### **OBJECTIVE**

The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. 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.

# UNFCCC

## Article 3

### PRINCIPLES

In their actions to achieve the objective of the Convention and to implement its provisions, the Parties shall be guided, *inter alia*, by the following:

1. The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof.
2. The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration.
3. The Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures, taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost. To achieve this, such policies and measures should take into account different socio-economic contexts, be comprehensive, cover all relevant sources, sinks and reservoirs of greenhouse gases and adaptation, and comprise all economic sectors. Efforts to address climate change may be carried out cooperatively by interested Parties.

# The Kyoto Protocol

1. Negotiated during 1995-97 under the UNFCCC
2. Agreed at COP3 in Kyoto, Japan, in December 1997
3. Came into effect in early 2005 (required the support of 55 parties to the UNFCCC and Annex 1 parties representing at least 55% of CO2 emissions in 1990)
4. Ratified by 175 countries, including all 38 Annex 1 countries except US and Australia (problem of national self-interest versus global collective action – free rider problem); yet US strongly supported Kyoto in 1997

# The Kyoto Protocol - Aims

1. Internalize a global externality
2. Slow the rate of GHG emissions growth globally
3. Establish an effective and efficient carbon market
4. Developed countries take responsibility in the first instance (given their historic contribution to the problem)
5. Encourage sustainable growth in the developing world
6. Provide a robust policy platform for significant emissions cuts beyond 2012

# The Kyoto Protocol – Key Features

1. Industrialized countries (Annex 1) agreed to fixed and binding targets for GHG emissions for the first commitment period (CP1), 2008-12
2. Targets specify emission limitations or reductions relative to a base year (mostly 1990)
3. Aggregate reduction of 5% reduction for Annex 1 countries relative to 1990 levels: the EU agreed to 92%; the US 93%; Canada 94%; NZ 100%; Australia 108%
4. Agreement covers 6 GHGs
5. Agreement covers land-use, land-use change and forestry (LULUCF)
6. National 'responsibility' targets and cap and trade
7. To be compliant at the end of 2012, each country must have enough units in its compliance account to equal its emissions over 2008-12
8. Various kinds of Kyoto compliant emission units (or legal tender)
9. Supplementarity and flexibility mechanisms – Clean Development Mechanism (CDM) and Joint Implementation (JI)
10. Monitoring, review and compliance

# The Kyoto Protocol - Issues

1. Progress to date: in 2004 total gross emissions of the 36 Annex 1 countries that ratified KP were 10.7% lower than initial assigned amount for one year (for the period 2008-12); only 3% lower if Russian Federation is excluded; also excludes LULUCF
2. Criticisms:
  - Failure to include developing countries (but this was agreed to by all countries in 1995 on equity grounds)
  - Damage to industrialized countries (but largely handled via competitiveness at risk policies)
  - Leakage – incentive for carbon-intensive industries to relocate to developing countries (but provision of 'flexible mechanisms' and technology transfer)
  - Ineffectiveness in reducing emissions (but provides potentially lasting market-based framework; had to start somewhere, however inadequate)

# Post 2012 – The Context

1. The Kyoto Protocol's first commitment period (CP1) expires at the end of 2012 (but KP will continue unless replaced)
2. It is likely that many further commitment periods will be needed over the coming century, with each one having ever more stringent emission-reduction targets and embracing an ever larger grouping of nations
3. A second, tougher, commitment period is needed for post 2012 (- 2020?); to avoid disruption to global carbon markets and investment flows, CP2 needs to be negotiated by early 2010 (since it will take 2-3 years to ratify and take effect)
4. For various environmental, economic and political reasons, CP2 needs to include (in some way) the major emerging economies, as well as the developed world

# Post 2012 – The Problems

1. Developing countries are critical of the lack of action by developed countries thus far to reduce emissions, and unwilling to take on legally-binding international commitments. But action by developed countries alone will not be enough to achieve ambitious reduction targets, because they now produce less than 50% of global emissions
2. The position of the US (and until recently Australia) on the KP has been a roadblock to progress; but the US is slowly moving to accept the need for a top-down, multilateral approach (i.e. extending Kyoto or negotiating a new climate treaty)

# Post 2012 – The Problems

3. There is major disagreement between key countries – EU, US, China, India, etc. – over the nature, shape, stringency and duration of a new treaty, and burden sharing (including the role of developing countries)
4. There are many complex technical and policy issues to resolve – especially in relation to land use, land use change and forestry (LULUCF)
5. There is very little time to resolve these issues
6. There are enforcement/compliance issues – what if a major country (e.g. Canada) fails to fulfill its international obligations?

# Criteria for a new top-down deal

1. Respects UNFCCC objectives and principles
2. Environmentally effective – re. stabilization targets
3. Economically efficient
4. Broadly-based participation
5. Differentiated responsibilities – fair burden-sharing arrangements
6. Flexible (takes into account national circumstances)
7. Politically manageable
8. Integrated with sustainable development

# Bali Conference (COP13): Outcomes

1. Agreement on a twin-track, two-year negotiation process, one under the Convention, the other under the KP, plus Article 9 review, with the aim of producing a comprehensive package on post-2012 issues at COP 15 and COP/MOP 5 in Copenhagen (December 2009)
  - Establishment of a new Ad Hoc Working Group on Long-Term Cooperative Action under the Convention
  - Continuation of the Ad Hoc Working Group on Further Commitments for Annex 1 Parties under the KP (under Article 3.9)
  - Also, second review of the KP (under Article 9 of KP)

# Bali Conference (COP13): Outcomes

## 2. Ad Hoc Working Group on Long-Term Cooperative Action under the Convention

- Aim to secure enhanced national/international action on mitigation, adaptation, technology development and transfer, and provision of financial resources
- Enhanced action on mitigation includes:
  - “measurable, reportable and verifiable nationally appropriate mitigation commitments or actions, including quantified emission limitation and reduction objectives, by all developed country Parties, while ensuring the comparability of efforts among them, taking into account differences in their national circumstances”; and
  - “nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner”

# Bali Conference (COP13): Outcomes

## 3. Ad Hoc Working Group on Further Commitments ...

- Very detailed and demanding work programme agreed to
- Issues will include:
  - Means for reaching emission reduction targets
  - LULUCF rules
  - Possible approaches for targeting sectoral emissions
  - Analysis of mitigation potential, effectiveness, efficiency, costs and benefits of current and future policies, etc.
  - The overall scale of emission reductions required
  - The allocation of the mitigation effort required
  - Agreement on new commitments by Annex 1 countries
  - Duration of the next commitment period(s)

# Bali Conference (COP13): Outcomes

4. Overall level of ambition – emission reduction targets for 2020 and 2050
- Original 'non-paper' draft from co-chairs of Convention Dialogue: Annex 1 countries "as a group to reduce emissions in a range of 25-40% below 1990 levels by 2020 ... global emissions ... need to peak in the next 10 to 15 years and be reduced to very low levels, well below half of levels in 2000 by 2050"
    - ❖ No explicit reference to the contribution of developing countries, but implicit in reference to peaking
    - ❖ Rejected by the US and some other developed countries (Bali should not decide the 'destination')
  - Final text: "Recognizing that deep cuts in global emissions will be required to achieve the ultimate objective of the Convention and emphasizing the urgency to address climate change as indicated in the" IPCC AR4
    - ❖ But note that the conclusions adopted by the AWG on Further Commitments included acceptance of wording close to the original draft – so 25-40% cuts by 2020 remain the guideline for Annex 1 countries (as agreed in Vienna in August 2007)

# Burden Sharing – Effort Sharing

1. UNFCCC embraces the principle of “common but differentiated responsibilities and respective capabilities”; but on what basis should we differentiate between countries? Is there a case for equal per capita emission allowances and, if not now, then when?
2. Possible principles:
  - Equal sharing of the burden (objections)
  - Historical contribution/responsibility (based on total accumulated emissions – but from when?)
  - Current contribution/responsibility (e.g. as measured by emissions per capita)
  - Capability (e.g. as measured by per capita income)
  - Mitigation potential
  - Need (note distinction between ‘survival’ and ‘luxury’ emissions)
  - Comparable effort (but what is comparable? equal?)

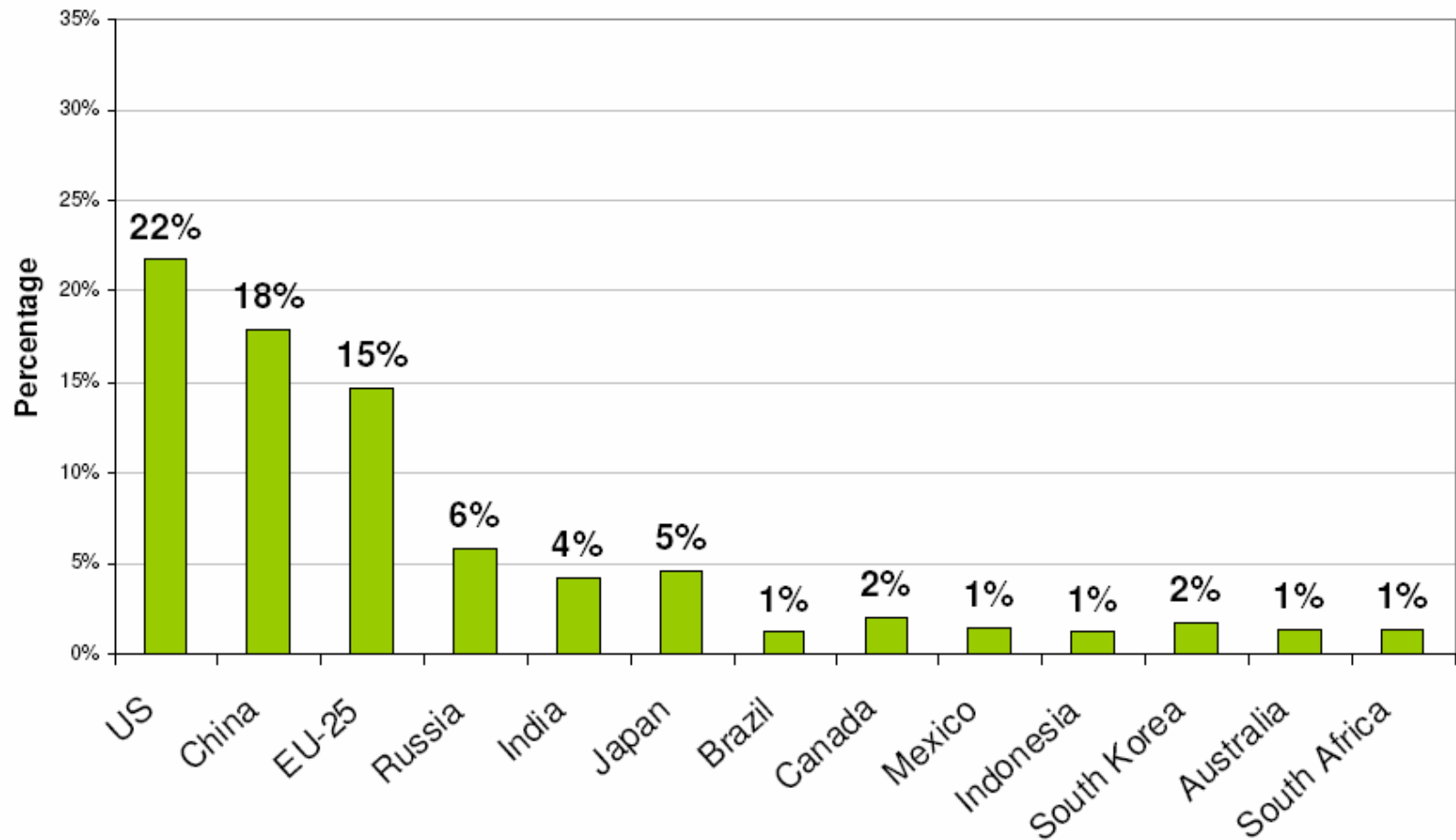
# Competing Models and Approaches

Various models have been advanced for differentiating between countries, of varying levels of complexity – e.g.

- Contraction and convergence
- Contraction and differentiated convergence
- Multi-staged approach
- Multi-sector convergence
- Responsibility for global warming (Brazilian proposal)

All have strengths and weaknesses

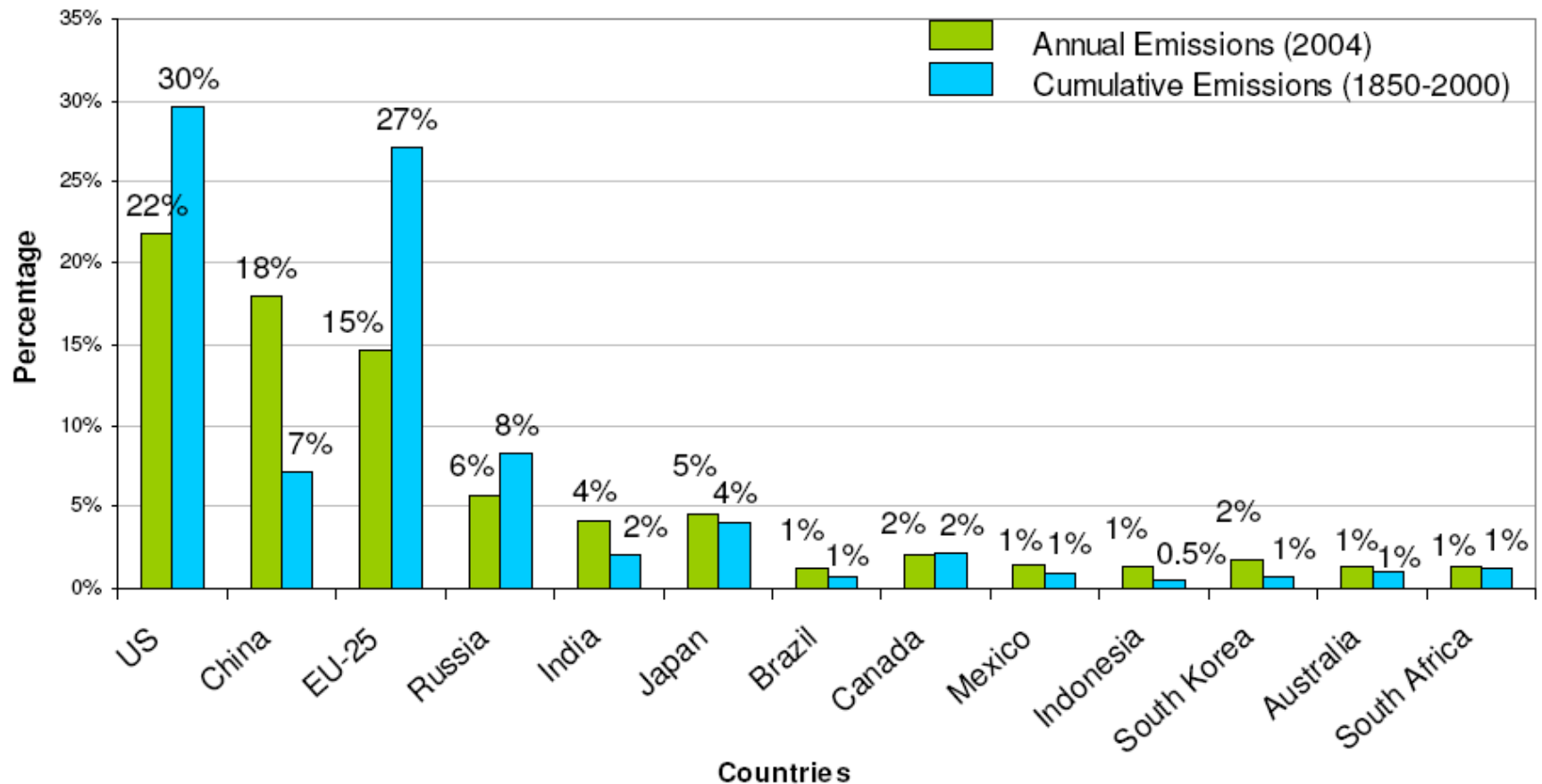
## Annual CO<sub>2</sub> Emissions\* (2004)



\*Energy-related CO<sub>2</sub> gases only

Source: IEA (2006) CO<sub>2</sub> Emissions from Fossil Fuel Combustion .

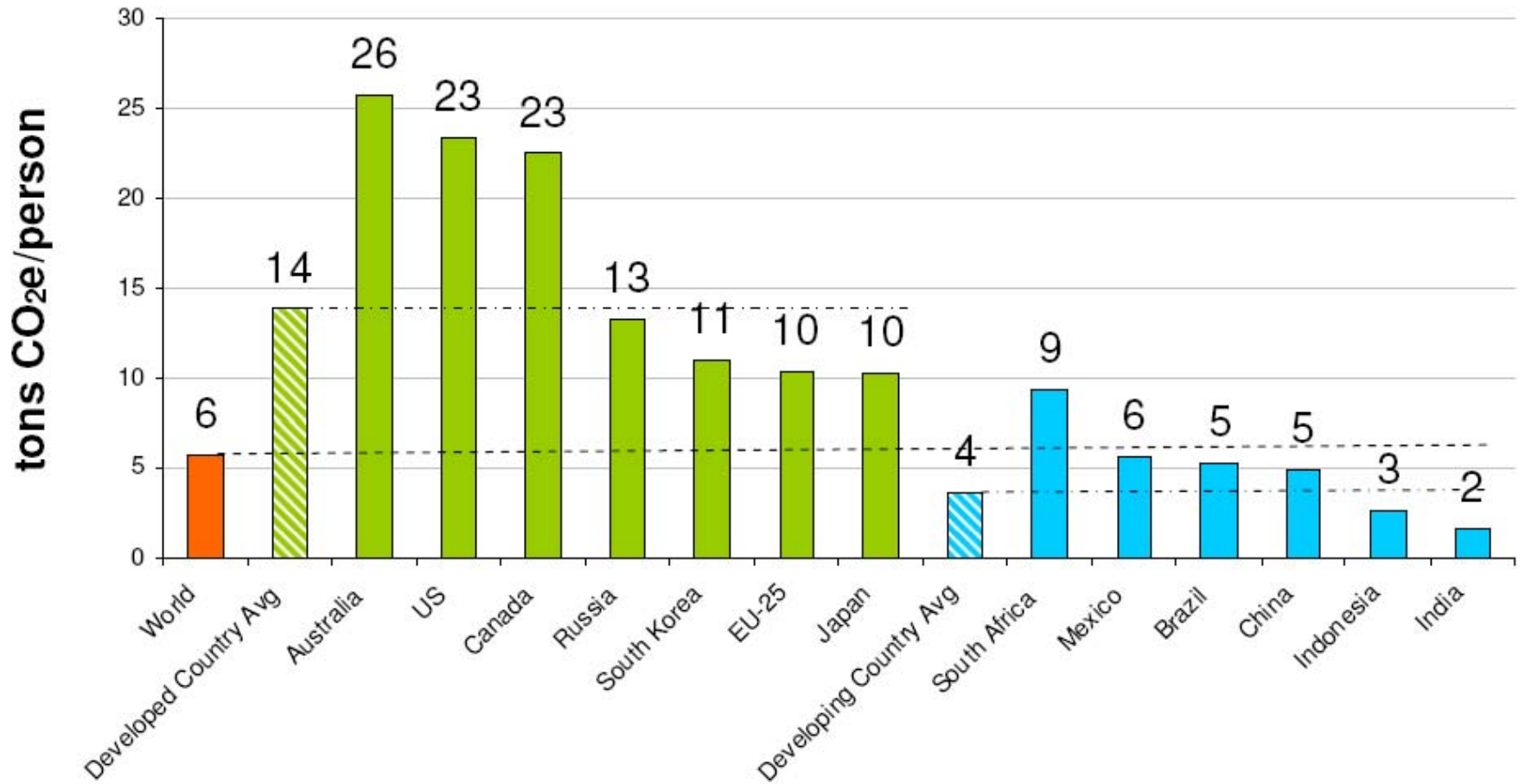
## Comparison: Annual\* & Cumulative\*\* CO<sub>2</sub> Emissions



Source: \* Annual Emissions for the year 2004 from IEA (2006) CO<sub>2</sub> Emissions from Fossil Fuel Combustion

\*\* Cumulative Emissions from 1850-2000, CAIT WRI

## Per Capita GHG Emissions (2004)



Source: IEA (2006) CO<sub>2</sub> Emissions from Fossil Fuel Combustion and EPA (2006) Global Anthropogenic Non-CO<sub>2</sub>; Greenhouse Gas Emissions: 1990 – 2020

# Prospects for Copenhagen (COP 15) December 2009

What will influence the outcome in Copenhagen?

1. Evolving scientific knowledge and climate impacts (perception of risks, etc.)
2. Public opinion in key economies
3. The position(s) adopted by global business
4. The negotiating position of the US
5. The negotiating position of the major emerging economies

# Prospects for Copenhagen and a post-2012 deal

1. Failure: No new multilateral agreement, nor an agreement to extend CP1
2. Delay: No new multilateral agreement for post-2012, but an agreement to extend CP1 for several years
3. A 'soft' agreement: a new multilateral agreement, but only 'soft' targets and caps for second commitment period
4. A 'hard' agreement: a new multilateral agreement with stringent 'responsibility' targets for Annex 1 Parties and significant 'policy commitments' for major non-Annex 1 Parties

# The possible shape of a multilateral climate treaty for post-2012

1. Broad agreement on long-term stabilization targets, and the medium-term implications of these
2. Annex 1 countries take on relatively stringent binding emissions reduction targets for 2013-2020/25 (i.e. 'responsibility' targets) (10-30% reductions on 1990 levels needed)
3. Non-Annex 1 countries agree to various no-lose policy actions and other measures (e.g. renewables targets, carbon intensity targets, sectoral benchmarks, reduced deforestation, etc.). Such measures need to be measurable, reportable and verifiable (otherwise they will not be credible).
4. Kyoto-type flexibility measures – global carbon market, improved CDM, etc.

# The possible shape of a multilateral climate treaty for post-2012

5. Strong action to reduce deforestation and build carbon sinks
6. High priority to adaptation, with significant funding for developing countries
7. New measures to encourage technology development, transfer and deployment
8. Sectoral agreements for specific energy-intensive industries
9. Such measures can be supplemented by 'bottom-up', bilateral and regional deals covering various matters

# What if there is no post-2012 multilateral treaty?

A bottom-up approach will be developed:

- Likely to be ad hoc, iterative and only modestly effective
- Will include mitigation measures by nations, sub-national governments, communities, etc.
- The EU is likely to press ahead with its 20% reduction target and negotiate bilateral and other agreements; trade sanctions against countries refusing to act are likely
- Other bilateral and regional agreements are possible
- A global carbon market is likely to emerge gradually

# Looking Longer-Term

1. Further multilateral deals will be required; these will be driven by the evolving scientific evidence, business pressure and public opinion
2. The distinction between Annex 1 and non-Annex 1 will need to be revisited
3. In the long-term, something like 'contraction and convergence' (with equal per capita GHG allocations) will probably be necessary, in the context of greater clarity over the relevant temperature and stabilization targets

# Implications for New Zealand

1. The next multilateral climate change agreement will have major economic implications for NZ; realistically, NZ will need to ratify such an agreement
2. NZ needs to be fully involved in the formal and informal 2008-09 negotiating process to have any influence on the outcomes
3. NZ needs to consider the key policy risks and opportunities, be pro-active, and focus on priority areas (e.g. LULUCF rules)
4. International policy decisions will drive key domestic policy decisions (including the ETS emissions cap)
5. Key questions include: what NZ should argue for re. overall Annex 1 targets, non-Annex 1 contributions, criteria for burden sharing, NZ's 'responsibility' target for CP2, the longer-term evolution of the international policy framework, etc.

# Conclusions

1. The most recent, reliable scientific evidence suggests that the risks of inaction are potentially huge in scope, scale and duration
2. Overall, the costs of mitigation are likely to be modest relative to the costs of inaction
3. There is a strong ethical case for taking a precautionary approach – especially given the potential for catastrophic and irreversible impacts on major planetary systems (insurance principle)
4. A robust post-2012 multilateral climate treaty is highly desirable, but will be very difficult to negotiate