

Energy Policy, Climate Change and Targets

Jonathan Boston
Institute of Policy Studies
Victoria University of Wellington

20 March 2007

Outline

1. The nature of targets
2. Types of targets
3. Targets, energy policy and climate change
4. Advantages and disadvantages of targets
5. Overseas practice and lessons
6. Setting targets for NZ – relevant policy considerations
7. Data collection, analysis and modelling issues
8. A way forward for NZ

The Nature of Targets

1. Targets are used in many different areas of public policy, including monetary policy, health care, education, energy, etc. for a range of purposes
2. They are used at multiple levels – international, national, regional, local, sectoral, organizational, individual
3. They are usually expressed in precise quantitative terms, and are typically more exacting than 'goals' or 'objectives'

The Nature of Targets

4. Targets are used for many different reasons:

- To give a sense of purpose and direction/signalling
- To provide a focus for attention/effort (and associated budget allocations)
- To provide a challenge/motivation
- To influence or change attitudes and behaviours (including other countries)
- To provide certainty
- To enhance policy effectiveness and enable policy enforcement (e.g. via specific quantity caps/limits/quotas or quality standards)
- To provide a tangible measure for assessing performance or progress towards an agreed goal
- To enhance accountability
- For political reasons – e.g. to indicate that the government is 'doing something'

Types of Targets

1. Targets can take many different forms and can be applied in many different ways:
 - Binding/mandatory v non-binding targets (also non lose, non-binding, one-way targets)
 - Kyoto-type flexible, binding 'responsibility' targets v more inflexible, absolute targets
 - Realistic v aspirational
 - Target ranges/corridors v fixed point
 - Periodicity – can be highly variable
 - Milestones – sometimes relevant

Targets, energy policy and Climate Change

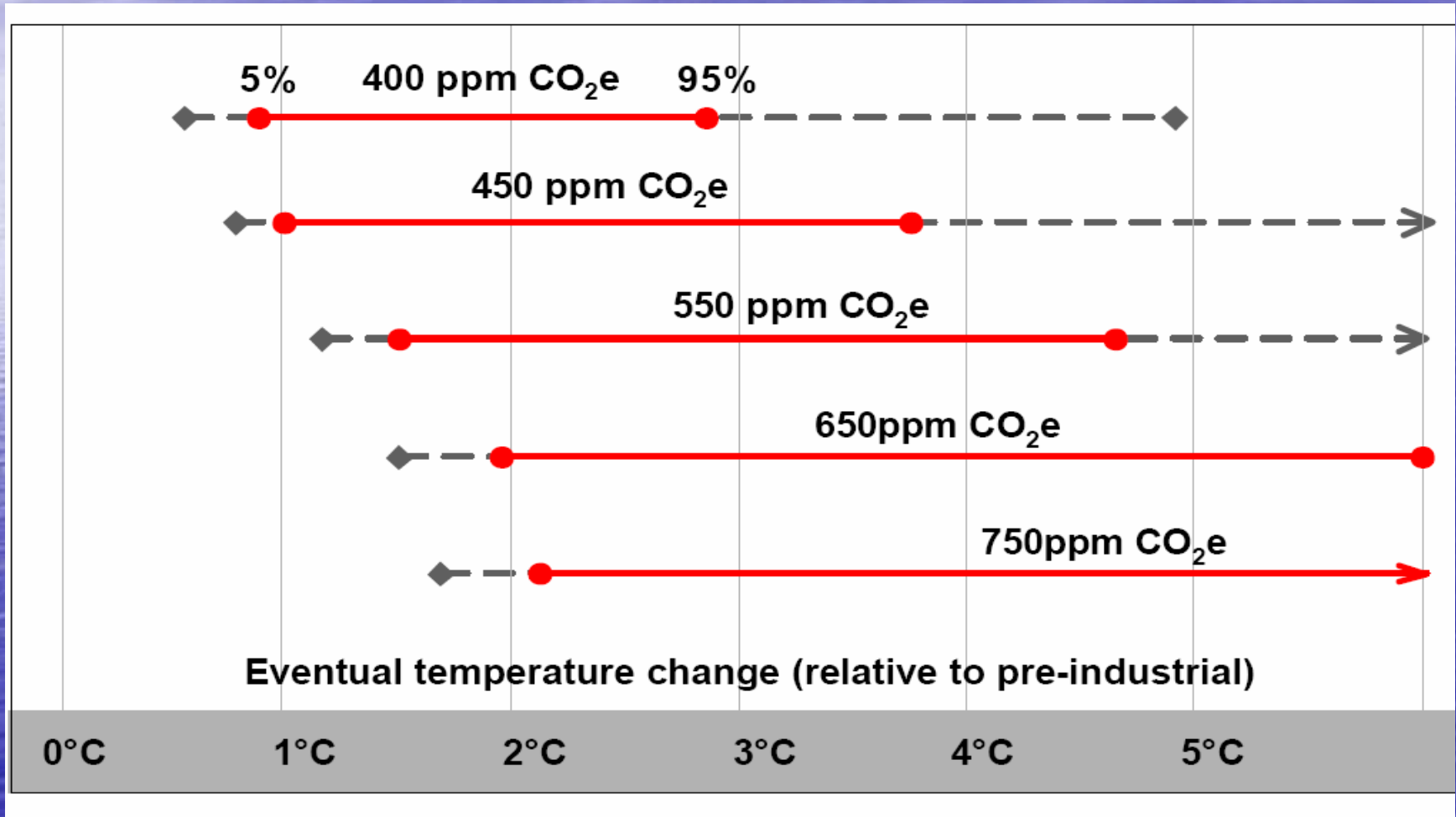
1. What is the goal? Harm minimization, limiting negative climate impacts, avoiding 'dangerous' climate change ... ?
2. In relation to energy and climate change, targets can be applied to a range of measures:
 - Temperature – e.g. EU 2°C cap/guard rail
 - Greenhouse gas concentrations – stabilisation targets – e.g. 450-550 ppm CO₂e (Stern), and longer-term concentration reduction targets – e.g. back to 300-350 ppm CO₂e
 - Greenhouse gas emissions – national or sectoral reduction targets (CO₂e or individual Kyoto GHGs; gross and net)

Targets, energy policy and Climate Change

Other options:

- Technology-oriented targets: e.g. renewable electricity generation as a % of total (most EU countries have such targets, and there has been a mandatory renewable energy target in Australia since 2001, applied to large wholesale purchasers of electricity)
- Energy intensity per unit of GDP: e.g. China's 11th 5 year plan commits to a 20% reduction in energy intensity of GDP from 2005 to 2010; US federal objective to reduce GHG emission intensity level by 18% on 2002 levels by 2012
- Targets can be applied to particular sectors or organizations, and to various other measures – transport emissions, energy emissions, quantity of waste, etc.
- Targets can also take the form of a particular standard – e.g. vehicle fuel efficiency – under a European Commission plan, by 2012 new cars will be limited to 120 grams of CO₂ per kilometer (192 grams per mile); in 2004, average emissions were 163 grams per kilometer.

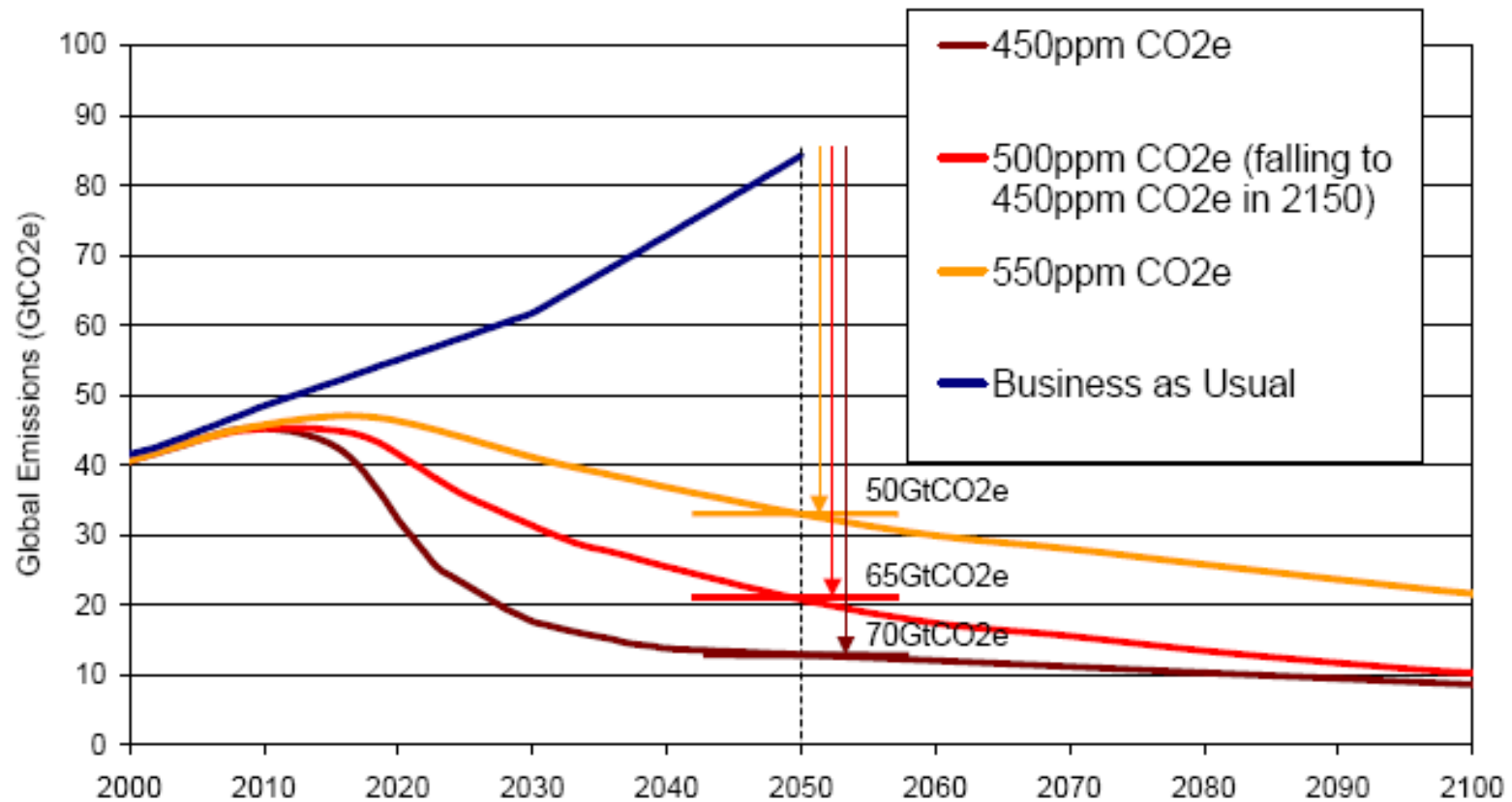
Stabilisation targets and temperature implications (Stern Review)



Temperature projections at different stabilisation levels (Stern Review)

Stabilisation level (ppm CO ₂ equivalent)	Temperature increase at equilibrium relative to pre-industrial (°C)		
	IPCC TAR 2001 (Wigley and Raper)	Hadley Centre Ensemble	Eleven Studies
400	0.8 – 2.4	1.3 – 2.8	0.6 – 4.9
450	1.0 – 3.1	1.7 – 3.7	0.8 – 6.4
500	1.3 – 3.8	2.0 – 4.5	1.0 – 7.9
550	1.5 – 4.4	2.4 – 5.3	1.2 – 9.1
650	1.8 – 5.5	2.9 – 6.6	1.5 – 11.4
750	2.2 – 6.4	3.4 – 7.7	1.7 – 13.3
1000	2.8 – 8.3	4.4 – 9.9	2.2 – 17.1

Emission paths to stabilisation (Stern Review)



Advantages and Disadvantages of targets

1. The pros and cons depend on the policy context and the nature of the target (see slide 4 for list of possible advantages)
2. In some cases, targets are essential for policy effectiveness (e.g. a carbon emissions trading scheme is more difficult to operate without a fixed quantity cap or target)
3. Types of problems and disadvantages:
 - Inadequate clarity – open to varying interpretations
 - Inadequate stringency
 - Limited coverage (generating ineffective and inefficient outcomes)
 - Goal displacement
 - Lack of robust monitoring & compliance provisions
 - Excessive inflexibility/rigidity may generating inefficiency
 - Excessive flexibility may generate uncertainty and non-compliance
 - Choice of the wrong target (e.g. the target and policy goals are disconnected)
 - Conflicting targets
 - Political opposition (and resultant abandonment/modification)

Overseas experience and lessons

1. Many countries and states/provinces/opposition parties (e.g. Labor in Australia) now have targets (and often multiple targets)
2. See Stern Review summary for 10 largest economies
3. The UK has a raft of energy/climate change targets; many apply to individual government agencies – and cover transport emissions, electricity emissions, energy efficiency improvements, waste, recycling, sustainability in new builds and major refurbishments, etc.; performance is monitored annually by the Sustainable Development Commission
4. The EU has recently agreed new targets for 2020: emission cuts of 20%, renewable energy sources to supply 20% of power; biofuels to supply 10% of transport fuels
5. Technology-oriented targets – can be linked to specific actions, but correlation with GHG concentrations and climate impacts may be uncertain, and may only cover some climate-relevant activities

Setting targets for NZ

1. Current NZ targets

- Few precise targets relative to many other OCED countries
- Kyoto 'responsibility' target – GHG emission reduction target for CP1 (2008-12) = 1990 emission levels in net terms
- Biofuels target – 3.4% of liquid fuels to be sourced from biological products by 2012
- Suggestion that the agricultural sector should consider the possibility of reducing methane and nitrous oxide emissions by at least 20% by 2012, as compared with the business-as-usual emission levels
- PM's long-term, aspirational goal of 'carbon neutrality' (zero net emissions), but no milestones yet

Setting targets for NZ

2. Relevant considerations in setting any targets:
 - Current international obligations
 - Likely future international obligations
 - Ambition level
 - National interest considerations – good international citizen, economic impact, etc.
 - Clarity (including the nature of any relevant baselines)
 - Technical feasibility
 - Policy effectiveness/enforcement mechanisms
 - Adequacy
 - Relative utility in relation to achieving desired objectives
 - Political acceptability and durability
 - Dual or multiple targets need to be consistent and reinforcing
 - Need regular monitoring and reporting

Data and related issues

1. What data collection, analysis and modelling capabilities are needed so that targets are appropriately set and measured?
2. Which agency/agencies should be responsible for monitoring and reporting? (note role of the Sustainable Development Commission in the UK)

A Way Forward for NZ

1. NZ should publicly embrace the EU 2°C cap, and related GHG concentration stabilisation target (e.g. 450ppm CO₂e)
2. NZ should set a long-term (i.e. 2050) national emissions reduction target (non-binding, at least initially) consistent with (1), taking into account our high per capita emission levels, but also the technical difficulties in relation to agricultural emissions. If global CO₂e emissions must be reduced by about 80% by 2050 from 1990 levels to achieve (1), then it would be unrealistic for NZ to have a lower target than this
3. Indicative decadal milestones should be announced to achieve the agreed long-term target
4. We should anticipate a post-2012 national-level 'responsibility' target (as part of a further international agreement), possibly around 20% below 1990 levels by 2020

A Way Forward for NZ

5. Need a policy mix that will enable the achievement of such targets (or acknowledges the need to purchase credits)
6. Medium-to-longer term technology-oriented targets (such as renewable energy/electricity targets), other sectoral targets, and government agency targets have merit, but need to be consistent with other objectives, including allocative efficiency
7. Sectoral emissions reduction pathways need to be aligned with economy-wide targets and pathways
8. Need regular reporting and independent monitoring/auditing