



AUSTRALIA

Economic cost as an indicator for comparable effort

Submission to the AWG-KP and AWG-LCA

This submission addresses the economic costs of mitigation as one of the relevant indicators for comparable effort. It presents results of economic modelling by the Australian Treasury, which was an important input into Australia's decision to reduce emissions by between 5 and 15 per cent on 2000 levels by 2020.

All developed countries should make mitigation commitments that represent a comparable effort, taking account of national circumstances, as part of the post-2012 outcome. Numeric indicators can play a useful role in aiding understanding of comparable effort, including national circumstances, and in assessing the relative ambition of country's mitigation commitments.

It is important that indicators for comparable effort are robust, relevant, impartial and credible. Getting „comparable effort“ right will be crucial to the success of the post-2012 outcome, and is therefore critical to achieving the ultimate objective of the Convention to prevent dangerous anthropogenic interference with the climate system.

A number of factors are relevant to assessing comparability and no single indicator can by itself provide a comprehensive picture of the particular national circumstances of each Party. We note recently published European Council Conclusions, which list indicators such as capacity to pay, emission reduction potential, domestic early action and population trends.¹ With respect to cost metrics, such as capacity to pay and economic costs, Australia notes that the cost of mitigation needs to be considered in the context of a country's capacity to pay, and alongside other relevant indicators. Australia's November 2008 submission to the AWG-LCA and AWG-KP on mitigation identified the aggregate economic cost of meeting national mitigation targets as one important measure.²

Economic cost of mitigation as an indicator of comparable effort

The „economic cost of mitigation“ refers to the overall impact on national economic welfare arising from meeting national mitigation commitments. While impacts vary across sectors within an economy, it is the aggregate (whole-of-

¹ See *Council Conclusions on the further development of the EU position on a comprehensive post-2012 climate agreement* 2928th Environment Council Meeting Brussels, 2 March 2009.

² This submission can be accessed at <http://unfccc.int/resource/docs/2008/awg6/eng/misc04a01.pdf>

economy) costs that are directly relevant to assessing comparability of effort of countries' national-level commitments. Aggregate economic cost reflects the size of a country's structural adjustment task; that is, the effort required by a country to move to a low-carbon economy.

The flexibility mechanisms of the Kyoto Protocol allow countries to meet national commitments through a cost-effective mix of domestic and overseas abatement. In this environment, aggregate economic cost (the cost to the economy as a whole) is more relevant to assessing comparability of effort than marginal cost (the cost of reducing emissions per tonne) of domestic mitigation opportunities. This is because the market can equalise the marginal costs of all participating countries. As a result, countries that have fewer opportunities for low cost domestic mitigation may meet ambitious targets at low cost to the economy as a whole by purchasing credits in the market.

It is also important to note that in a market environment, the overall cost to an economy is a function of both domestic action and transfers from international trade in emission rights. As a result, measures of comparable effort need to capture the effect of international emissions trading. This means that national production or income (GNP/GNI) is more relevant than domestic production (GDP).³

The economic costs of mitigation vary significantly across countries, due to differences in national circumstances, including industry profile, resource endowment and mitigation potential.⁴ The share of energy- and emission-intensive industries in an economy determines the extent of economic restructuring and/or technological transformation required. This may be reflected in the economic cost of meeting a given national commitment.

One way to better reflect comparability of effort is to differentiate national emission reduction commitments according to relative economic costs.

Australia's economic modelling of post-2012 mitigation action

Australia has an established tradition of using quantitative economic analysis as an important input to major policy decisions. In setting its 2020 target range, the Australian Government drew on one of the largest and most complex economic modelling projects undertaken in Australia.⁵ This project, led by the Australian Treasury, contributes to a growing and evolving body of international analysis of comparable effort and cost metrics.⁶ The project investigated the potential economic impacts of reducing emissions over the medium and long term, through analysis spanning global, national and sectoral scales.

³ Australian Government 2008 *Australia's Low Pollution Future – the Economics of Climate Change Mitigation*, p. 18.

⁴ This difference in economic costs is well established in the literature, for example IPCC 2007 *Fourth Assessment Report, Working Group 3 Summary for Policy Makers*, p. 11; Netherlands Environmental Assessment Agency 2008 *Exploring comparable post-2012 reduction efforts for Annex I countries*, p. 61; and, Pew Centre 2008 *Interim results on Modelling post-2012 climate policy scenarios*, available at <http://www.pewclimate.org/post2012modeling>.

⁵ Full and summary versions of the modelling report *Australia's Low Pollution Future – the Economics of Climate Change Mitigation* are available online at <http://www.treasury.gov.au/lowpollutionfuture/>.

⁶ See footnote 4. Other literature on this issue includes (but is not limited to) OECD 2008 *DRAFT Metrics to measure mitigation potential and to compare mitigation effort: exploring the fundamental questions*.

The Treasury used economic models to examine illustrative global mitigation scenarios and a “no-mitigation” reference case, examining the economic costs to various countries and regions. Two of the mitigation scenarios, CPRS -5 and CPRS -15 (CPRS – Carbon Pollution Reduction Scheme), assume a gradually evolving global framework, with national commitments and international emissions trading developing over time. For the purposes of the modelling, it was necessary to make assumptions about country actions. For simplicity, national commitments reflect each country and region making an equal reduction in emissions, relative to the no-mitigation reference case. Atmospheric greenhouse gas concentrations stabilise at 550ppm and 510ppm carbon dioxide-equivalent respectively.

Table 1 below sets out the modelling assumptions and results for some national and regional targets in the CPRS scenarios, and the associated economic costs. The targets are shown as a percentage change relative to both the existing Kyoto Protocol commitments for the first commitment period, and relative to 1990. The economic costs are shown as the percentage change in GNP relative to the no-mitigation reference case. It is important to note that these costs do not include the economic costs of climate change impacts, or the economic benefits of reducing climate change risks. Nor do they in anyway reflect on the suitability of 550ppm or 510ppm as appropriate levels of global ambition.

TABLE 1: Targets and costs: modelling assumptions and results at 2020⁷

	Target		Cost
	<i>percentage of 1990 emissions change from Kyoto commitment</i>	<i>change from 1990</i>	<i>% change from reference GNP</i>
CPRS-5			
Australia	-12	-4	-1.1
Canada	+17	+11	-1.1
Japan	-15	-21	-0.2
United States	n.a.	+5	-0.3
European Union	-27	-34	-0.4
Russia and CIS	-25	-25	-3.6
World			-0.7
CPRS-15			
Australia	-22	-14	-1.6
Canada	+5	-1	-1.5
Japan	-23	-29	-0.4
United States	n.a.	-6	-0.4
European Union	-34	-41	-0.6
Russia and CIS	-33	-33	-5.3
World			-0.9

Differentiation of targets helps reduce cost differences, ensuring greater comparability of national efforts. The analysis shows that Australia faces high economic costs, relative to most other developed countries, due to its large share of emission- and energy-intensive industries and a dominance of low-cost coal in electricity generation. Despite this, Australia is willing to commit to strong

⁷ Sources: KP base year data for 1990 emissions were used except where unavailable; UNFCCC 1990 emissions including LULUCF was used for Belarus and the United States; European Union excludes Bulgaria and Romania, and includes Cyprus and Malta; European Union base year data uses the 23 countries which are in Annex I (ie excludes Cyprus and Malta); the Russia and CIS (Commonwealth of Independent States) target has been calculated using data for the Russian Federation, Belarus and Ukraine only. No target is shown for the United States as it has not ratified the Kyoto Protocol.

action because it recognises that the costs of inaction will be greater than the costs of action. Australia's costs are higher than both Japan's and the European Union's, despite being allocated smaller percentage reductions from 1990 levels in all of the scenarios. These broad results are typical of modelling by other groups. They highlight that while the reduction from 1990 is a convenient common way to express an emission target, it is not necessarily informative about the degree effort required to achieve that target.

If Australia had equal targets to those of Japan and the European Union (in percentage reductions on a 1990 baseline), the cost differences would be even greater. This is also the case for fossil-fuel producing countries like Canada and Russia, which would face comparable or higher economic costs than Australia.

During the course of 2009, Australia intends to provide further input on the matter of comparable effort by all countries, including all advanced economies, as part of a comprehensive, effective and fair post-2012 outcome.