Submission to the Australian Government's Climate Change Authority's
Caps and Targets Review

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Prepared by Dr Ian McGregor – UTS Business School, University of Technology, Sydney (UTS)

Introduction

The following is an analysis of Australia's fair share of Global Effort Sharing using the Greenhouse Development Rights model and calculator (Ecoequity, Stockholm Environmental Institute 2009).

The Greenhouse Development Rights calculator which allows calculation of "fair shares" under different global emission budgets and responsibility and capacity weightings is available at:

http://gdrights.org/gdrs-scorecard-calculator-information/calculator-about/

This analysis is based on a global carbon budget aimed at having at least a moderate likelihood of keeping global average temperatures from rising less than 1.5°C above pre-industrial levels.

Australia needs global average temperatures to remain below 1.5°C above pre-industrial levels, as has already been demonstrated by recent severe weather events and by CSIRO research, Australia is extremely vulnerable to the adverse impacts of global warming.

Australia's emission targets to 2020 based on a Global Fair share

Australia's fair share of the level of global mitigations required to move from business-as-usual to a 1.5°C marker pathway is calculated using Responsibility (reflecting cumulative emissions since 1990) and Capacity (proportion of population with a per capita income over US$7500), combined using equal weighting to form a Responsibility and Capacity Index (RCI).

The exact basis of the components can be adjusted but as Australia has both high responsibility and capacity, it would not make much difference to the result which shows Australia's fair share of effort based on this analysis is approximately 2%. This is shown in relation to the global mitigation needed as the level of adaptation support needed cannot be so clearly measured at this stage.

Australia business-as-usual emissions, projected to 2020 = 685 MtCO2e

Global mitigation requirement for a 1.5°C pathway below business-as-usual, projected to 2020 (A) = 26,269 MtCO2e

Australia share of global Responsibility Capacity Index, projected to 2020 (B) 2.0% (This is based on giving an equal weight to be Responsibility and Capacity).

Australia mitigation obligation, projected to 2020 (A × B)

- as tons below business-as-usual 622 MtCO2e
- as percent below business-as-usual 91%
- as per-capita climate tax (assuming global mitigation costs = 1.0% of global GWP - Gross World Product – total global economic activity) - US$740
  (This gives indication that given our relatively high income – Australia can afford to contribute its fair share of the global effort to avoid dangerous climate change.)

Australia's 1990 emissions = 435 MtCO2e

Australia emissions allocation, projected to 2020

- as tons 63 MtCO2e
- as percent of 1990 emissions 14%
- as percent below 1990 emissions 86%

Global Emissions Budget and Fair Shares to 2030

This following table shows a global carbon budget out to 2030 on a 1.5C marker pathway and fair shares of that budget for some major countries, the EU and Australia.

Due to their high capacity and historic responsibility, Australia, US and EU emissions budget buy 2025 are negative so they do not only have to buy emission credits to reduce their share of emissions to zero but also have to finance mitigation and adaptation in other countries to the level represented by their negative emission allowance.

China's emissions under the 1.5C pathway also have to reduce by 2025 from 2020 levels as China by that time represents significant responsibility and capacity, however, India which has lower historic responsibility and capacity shows a small increase in its fair share of emissions to 2030.

By 2025, as shown in the following table, Australia, US and the EU should have negative net emissions. This does not mean that their national emissions will be negative but that they will be responsible for funding substantial emissions reductions in other countries in the developing world who cannot fund their own zero carbon development.

Table 1: Fair Share Allocation Time Series (1.5°C marker pathway) – major countries and EU

	MtCO2e				
Country or Group	2010	2015	2020	2025	2030
(1) World	44,838.7	46,610.7	35,486.0	26,040.7	18,909.0
(13) EU 27	4,734.3	3,348.3	-476.4	-2,868.5	-3,852.2
Australia	543.3	493.1	129.7	-118.8	-224.9
China	10,415.4	13,957.7	15,664.2	15,190.0	12,621.3
India	3,040.9	3,548.7	4,157.5	4,675.2	5,030.1
United States	6,802.2	5,323.5	309.7	-3,077.8	-4,606.3

Table 1 notes: Based on global mitigation 1.5°C marker pathway

Development threshold: $7,500 (only those in world who have per capita income of over $7500 pa (purchasing power parity adjusted) are required to contribute to the global effort to avoid dangerous climate change).

Responsibility weight: 0.5 – Capacity weight: 0.5 – Responsibility and Capacity are equally weighted in the calculation. Responsibility is cumulative since 1990.

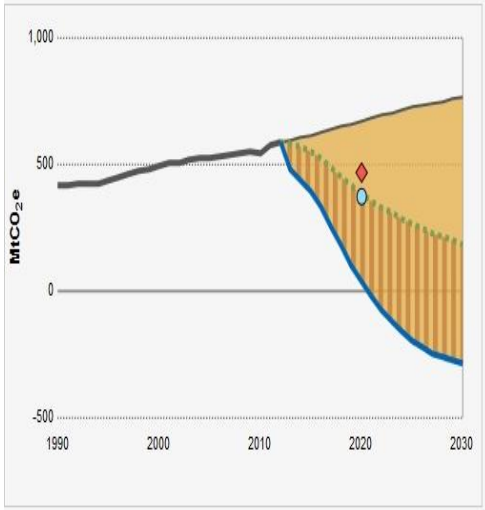
Emissions do not include land-use emissions but do include non-CO2 gases.

Australia's emission targets till 2030 based on a global fair share

The following graph outlines this for Australia as well what proportion might be achieved by domestic emission reductions and what proportion would be achieved by funding emission reductions and adaptation in developing countries. It also shows that even Australia's highest conditional pledge of a 25% reduction by 2020 is far below, Australia's fair share of the global emissions budget. It is a reasonable level to be achieved by domestic emission reductions but as outlined previously, Australia's fair share of a 1.5C pathway is 86% below 1990 levels by 2020.

Country/region report in 2030 for Australia

Global mitigation pathway: 1.5°C marker pathway	**Kyoto adjustment:** all Annex 1	**Development threshold:** $7,500
Luxury threshold: $100,000	**Cap baselines at luxury threshold:** no	**Progressive between thresholds:** no
Responsibility weight: 0.5	**Include land-use emissions:** no	**Include non-CO_2 gases:** yes
Cumulative since: 1990	**Total cost as % GWP:** 1.0%	**Emissions elasticity:** 1.0



Business as Usual
GHG emissions baselines ("BAU") are based on projected emissions growth rates from McKinsey and Co's projections (Version 2.1) applied to the most current available annual emissions data (CO_2 from fossil fuels from CDIAC's 2010 estimates); CO_2 from land use is projected constant at 2005 levels and non-CO_2 GHGs are a constant proportion relative to Fossil CO_2 emissions at 2005 levels.

GDRs "fair share" allocation
National allocation trajectory, as calculated by GDRs for Australia using the specified pathways and parameters. The mitigation implied by this allocation can be either domestic or international – GDRs in itself says nothing about how or where it occurs.

Domestic emissions
An example of an emissions trajectory for Australia that is consistent with the specified pathways and parameters.The actual domestic emissions trajectory would depend on the international cost and mitigation sharing that Australia chooses to participate in. GDRs assigns each country a mitigation obligation. It does not specify how or where that obligation should be discharged.

Domestically-funded mitigation
Mitigation funded by Australia and carried out within its own borders. The fraction of a country's mitigation obligation that is discharged domestically is not specified by GDRs, but is rather a result of the international cost and mitigation sharing arrangements that it chooses to participate in.

Mitigation funded in other countries
Mitigation funded by Australia and carried out within other countries. The fraction of a country's mitigation obligation that is discharged in other countries is not specified by GDRs, but is rather a result of the international cost and mitigation sharing arrangements that it chooses to participate in.

Unconditional Pledge
Emissions consistent with Australia's pledged emission reductions *not* conditional on other countries' actions.

Conditional Pledge
Emissions consistent with Australia's pledged emission reductions conditional on other countries' actions.

Fair share table for Australia for 2030

Australia business-as-usual emissions, projected to 2030 763 MtCO2e

Global mitigation requirement below business-as-usual, projected to 2030 (A) 58,913 MtCO2e

Australia share of global Responsibility Capacity Index, projected to 2030 (B) 1.6%

Australia mitigation obligation, projected to 2030 (A × B)

as tons below business-as-usual 1,048 MtCO2e

as percent below business-as-usual 137%

as per-capita **climate tax** (assuming global mitigation costs = 1.0% of global GWP -Gross World Product – total global economic activity) - US$746

Australia 1990 emissions: 418 MtCO2e

Australia emissions allocation, projected to 2030 as tons -285 MtCO2e (negative emission allocation). 168% below 1990 levels.

Australia needs to contribute substantially to mitigation and adaptation efforts outside Australia because of its high historic responsibility and capacity

What should the Authority consider in assessing Australia's progress against its medium (2020) and long term (2050) emissions reduction targets?

As demonstrated by the output of the Greenhouse Development Rights modeling, Australia has both high historic responsibility and high economic capacity and therefore, based on this, needs to make a much more substantial reductions by 2020 and by 2050 (along with the rest of the world) have reduced emissions to zero, in order to ensure that we have a moderately high likelihood of maintaining global average temperatures at a level below 1.5C above pre-industrial targets. Australia needs to take a leadership role in the global effort to move the world to a 1.5°C pathway and therefore should commit to the high reduction targets indicated by the Greenhouse Development Rights analysis and ensuring that Australia meets these.

References:

Ecoequity, Stockholm Environmental Institute 2008 - The right to development in a climate constrained world – available at:

http://gdrights.org/wp-content/uploads/2009/01/gdrs_longexecsummary.pdf