

Australia's 2030 emissions target: preliminary analysis and international comparisons

Frank Jotzo, Crawford School of Public Policy, Australian National University

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Summary

Australia's proposed emissions target is a 26% to 28% reduction in national emissions compared to 2005 levels. This initial analysis provides a comparison with the post-2020 targets of the United States, EU, Canada and Japan. It translates targets into several metrics, including per capita emissions and emissions intensity of the economy.

- Australia's 2030 target falls far short of what would be a commensurate Australian contribution to the internationally agreed 2 degree goal. Most other developed countries' targets also fall short, but generally by less than Australia's target.
- In contrast to most other major developed countries, Australia currently has no credible plan announced of how the target could be achieved.
 - To achieve reductions in domestic emissions will require significant and sustained policy effort. For reductions to be achieved cost-effectively, a consistent, broad-based policy effort is needed. Investors need to regain trust.
 - The target announcement opens the door for stronger action domestically, and will force a renewed debate about policy instruments.
- Internationally, the target is likely to be perceived as falling short in its ambition relative to Australia's opportunities to cut emissions. But it does not fall catastrophically short, and is not an active obstruction of the international process.
- Australia's target is relatively weak in comparison with other developed countries, across a number of dimensions. But it is not out of the ballpark of the pledges other major developed countries have made.
 - A full analysis would include modelling of the economic effects of Australia's emissions target including a detailed representation of different ways of meeting it, in comparison to other countries' targets.
 - However such modelling is not available, and in practice assessments of adequacy of countries' targets are rarely based on modeled economic costs.
- Australia's target for *absolute emissions* is weaker than the United States' and the EU's, slightly weaker than Canada's and slightly stronger than Japan's.
 - However, the annual rate of emissions reductions to meet the target steps up during the 2020s, to 1.9% per year (for a 28% reduction). This is slightly higher than the comparator countries, except the US which are targeting a reduction of 2.8% per year during the first half of the 2020s.
- In *per capita* terms, Australia's target implies a halving of per capita emissions over a 25-year timespan, a similar reduction rate as expected in the US and Canada, and a much faster reduction than in the EU and Japan where population is stagnating.
 - Emissions levels per capita however are the highest among all major countries. Per capita emissions would remain higher than the main comparator countries at 2030 under the targets, assuming population growth continues at the rates observed over the last decade.
- The emissions intensity of Australia's economy (ratio of emissions to GDP) is also the highest among the comparator countries and – given assumptions about future GDP growth – is expected to remain highest alongside Canada.
 - The targeted rate of reduction in emissions intensity reductions through the 2020s however is rapid at over 4% reduction per year, on par with annual targeted reductions in the United States and China.

The target relative to the 2 degree goal

Australia's national interest is in strong global climate change mitigation. As spelt out in the issues paper by the government's UNFCCC task force, "a strong and effective global agreement, that addresses carbon leakage and delivers environmental benefit, is in Australia's national interest." The context is the goal to limit global temperature increase to two degrees, a goal supported by the world community and re-iterated by the Australian government.

The adequacy of national targets in the global context of strong climate action can be judged in many different dimensions. There is strong justification for deriving it from principles. A principled approach can consist of defining a global carbon budget, then apportioning Australia's share of the global carbon budget on the basis of considerations such as equity and capacity, and defining a trajectory of emissions through time that is in line with the budget.

This approach was taken by the Climate Change Authority, in its Targets and Progress Review (2014), which had Australia's emissions levels reduced by 40 to 60% at 2030 (relative to 2000). The modelling done for Australia's Deep Decarbonisation Pathways study (ClimateWorks and ANU 2014), with an emissions budget over time compatible with the Authority's analysis, showed a halving in Australia's emissions at 2030 compared to 2005.

In this light the announced target clearly falls short of a commensurate contribution to the global effort under a 2 degree scenario.

Most other developed countries' targets also fall short, yet generally by less than Australia's target.¹

Policy frameworks for achieving a reduction target

The target announcement raises the question how a reduction target could be achieved. Most analyses suggest that significant policy action will be needed to achieve reductions in absolute reductions in Australia, in the face of an underlying growth trend.

The present policy framework is not geared to deliver on the target. The Renewable Energy Target has been slashed, and the Emissions Reductions Fund (ERF) in its present form will only have a marginal effect, at a big cost to the taxpayer. It is far-fetched for the ERF subsidy mechanism to achieve significant absolute emissions reductions, and there have not been any announcements about new policies.

Broad-based, consistent policy approaches such as emissions trading can achieve emissions reductions at least cost. Composite policy approaches that do not have carbon pricing at their core can also deliver outcomes, but at higher cost.

The costs of achieving emissions cuts and ultimately decarbonisation are likely to be lower than thought. It has been a frequent experience that low carbon technologies become better and cheaper fast than expected, and economic change is not as painful as feared. By contrast, perpetuating investments in fossil fuel assets such as new coal mines risks locking into industrial structures that will turn out to be obsolete in a world that acts strongly on climate change.

¹ Relevant analyses can for example be found at Carbontracker.org.

International expectations and perceptions

If Australia is to avoid being an obstacle to the international climate change action, the post-2020 target needs to be a meaningful contribution to the global effort, underpinned by a credible blueprint for how to achieve emissions reductions in Australia.

International expectations of Australia's actions will take into account that Australia is among the richest countries in the world and the highest per capita emitter among the major countries. It is also well understood that Australia has better opportunities to cut emissions than many other countries, because Australia's energy system still relies heavily on coal, there are large and relatively low-cost opportunities for renewable energy, and energy efficiency is often still low.

In addition, Australia has a particularly strong interest in strong global climate change action, because of the continent's exposure to climate change impacts and the vulnerability of countries in the region.

These considerations argue for a relatively strong target for Australia. Despite expectations having been lowered through the recent political discourse in Australia about climate change policy, the benchmark is high for other countries accepting Australia's pledge as an adequate one.

That said, the target is likely to put Australia at the table in the international climate negotiations leading into the Paris conference. It will likely be seen as a relatively weak commitment, however it is also likely not to be seen as an active obstruction of progress in the climate negotiations.

Quantitative comparisons with other countries' targets

The closest international comparison for Australia's emissions target among developed countries are the United States and Canada. All three are high-emitting countries, have relatively high population growth rates and tend to have relatively high GDP growth rates. All three rely heavily on fossil fuels for their energy systems, and Australia and Canada have comparatively high levels of emissions intensity (ratio of emissions to GDP).

The EU and Japan by contrast have much lower emissions levels per person and per unit of GDP, which in turn means lesser opportunities to reduce emissions.

Indicators at 2012

	Total national emissions (MtCO ₂ -equivalent)	Emissions per capita (tCO ₂ -eq/person)	Emissions intensity (kgCO ₂ -eq/\$ of GDP, in US\$2005PPP)
Australia	559	24	0.64
US	5,546	18	0.39
Canada	739	21	0.57
EU-28	4,241	8	0.30
Japan	1,268	10	0.32

See below for data sources.

Absolute emissions

Australia's target in direct comparison is significantly weaker than that of the United States (if extrapolating the US target to 2030) and the EU, slightly weaker than Canada's, and slightly stronger than Japan's.²

² For the purpose of this analysis, the upper end of the target ranges is assumed for Australia and the United States (a 28% reduction target at 2030 and 2025 respectively, relative to 2005).

The 2005 base year is particularly favourable for Australia, because it was the high water mark in Australia's greenhouse gas emissions.³ Comparison of future targets to this high 2005 level yield relatively higher percentage reductions. Conversely, the targeted reduction at 2030 is a lesser reduction when compared to either 2012 or 2000 levels (a 19% reduction in either case).

The targeted annual rate in Australia's emissions reductions steps up to 1.9% per year during the 2020s compared to the historical average of 1.2% per year from 2005 to 2014 (same number for 2005 to 2012).

By contrast the required annual rate of reduction to meet the currently endorsed 5% reduction target at 2020 (compared to 2000 levels; this is equivalent to a 13% reduction compared to 2005 levels) is well below 1% per year.

By comparison, the US are targeting an annual reduction of 2.8% per year during the first half of the 2020s. However, Australia's targeted annual reduction through the 2020s is higher than that of Canada, the EU and Japan.

Targeted absolute emissions at 2030, relative to different base years

	2030/2005	2030/2012	2030/2000	2030/1990
Australia	-28%	-22%	-22%	-22%
US	-38%	-30%	-39%	-28%
Canada	-30%	-25%	-18%	6%
EU-28	-34%	-24%	-33%	-40%
Japan	-25%	-26%	-25%	-19%

US target extrapolated from upper range of 2025 target (28% reduction at 2025 relative to 2005) by assuming same annual rate of reduction targeted from 2020 to 2025. Historical emissions data from WRI CAIT (see below), except for Australia where government provided data is used.

Targeted annual change in absolute emissions

	2005-2012	2012-20	2020-30
Australia	-1.2%	-0.7%	-1.9%
US	-1.6%	-0.9%	-2.8%
Canada	-0.9%	-1.5%	-1.7%
EU-28	-2.0%	-1.5%	-1.5%
Japan	0.1%	-2.1%	-1.3%

US targeted rate from 2020-2025.

Per capita emissions

A striking feature of Australia's target is that because of relatively high population growth, the targeted annual percentage reduction in per capita emissions is the largest among the comparator countries, together with the United States. Assuming population growth continues at average rates observed during 2000 to 2012, the target would result in a halving of per capita emissions levels from 2005 to 2030.

However, Australia has the highest per capita emissions among the major countries, and would continue to have the highest per capita emissions at 2030, under the targets.

³ Australia's total national emissions are reported by Australia's government as 608.7 MtCO₂-equivalent in the financial year 2004-05 (taken here as 2005), compared to 558.8 Mt in 1999-2000, 559.4 Mt in 2011-12 and 547.7 Mt in 2013-14. The peak was at 614.1 Mt in 2005-06. Source: Australian Government 2015, 'Australia's emissions projections 2014-15', Department of Environment.

Australia's per capita emissions are now more than double those in the EU and Japan's and would be around double those countries' in 2030 still.

A significant share of these comparatively high per capita emissions is due to emissions intensive activities for export, including mining, minerals and metals processing and agriculture. However, process improvements and the decline in Australia's competitiveness in some traditional energy intensive manufacturing industries will make it possible to reduce emissions also from export-oriented activities.

Per capita emissions levels, actual and implicit in targets

	2005	2012	2020 targeted	2030 targeted
Australia	30	24	20	14
US	21	18	15	11
Canada	24	21	17	13
EU-28	10	8	7	6
Japan	10	10	8	7

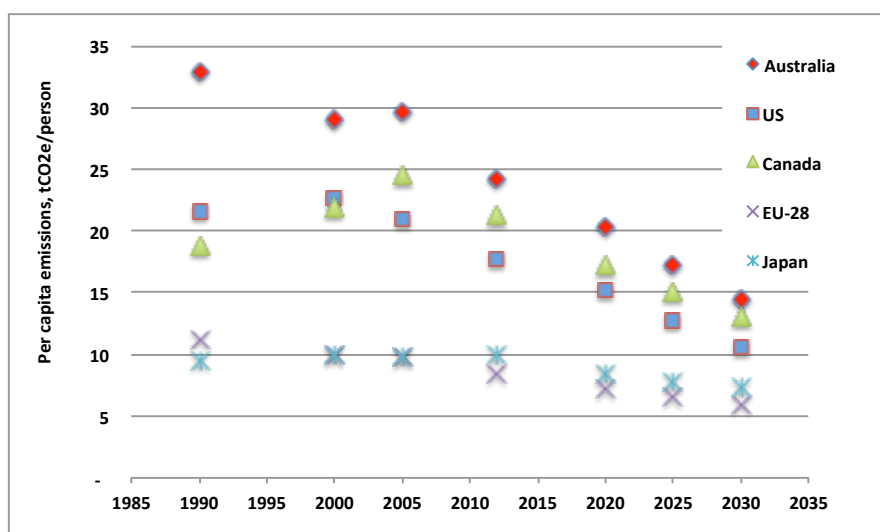
Assumptions about population growth: future annual growth rates same as from 2000-2012. US 2030 value assumed continued reduction at 2020-25 annual rate.

Annual changes in per capita emissions, actual and implicit in targets

	2005-2012	2012-20 targeted	2020-30 targeted
Australia	-2.9%	-2.2%	-3.4%
US	-2.5%	-1.8%	-3.7%
Canada	-2.0%	-2.5%	-2.7%
EU-28	-2.3%	-1.8%	-1.9%
Japan	0.1%	-2.1%	-1.3%

Assumptions about population growth: future annual growth rates same as from 2000-2012. US targeted rate 2020-2025.

Per capita emissions levels, actual and implicit in targets



Assumptions about population growth: future annual growth rates same as from 2000-2012. US 2030 value assumed continued reduction at 2020-25 annual rate.

Emissions intensity

A similar picture as for per capita emissions emerges for the comparison of emissions intensity, the ratio of emissions to GDP.

The emissions intensity of Australia's economy is the highest among the comparator countries, on the basis of purchasing power parity adjusted GDP. Given assumptions about future GDP growth, it is expected to remain highest alongside Canada's.

The targeted rate of reduction in emissions intensity reductions through the 2020s however is rapid at over 4% reduction per year, on par with annual targeted reductions in the United States. This targeted rate is also closely similar to China's. China has pledged a 60 to 65% reduction in emissions intensity from 2005 to 2030, equating to 3.6% to 4.1% per year.

Emissions intensity levels, actual and implicit in targets

	2005	2012	2020 targeted	2030 targeted
Australia	0.85	0.64	0.50	0.32
US	0.48	0.39	0.31	0.19
Canada	0.68	0.57	0.42	0.27
EU-28	0.37	0.30	0.23	0.17
Japan	0.32	0.32	0.25	0.19

Assumptions about GDP growth: see below. US 2030 value assumed continued emissions reduction at 2020-25 annual rate.

Annual changes in emissions intensity, actual and implicit in targets

	2005-2012	2012-20 targeted	2020-30 targeted
Australia	-3.9%	-3.1%	-4.3%
US	-2.8%	-2.7%	-4.6%
Canada	-2.4%	-3.9%	-4.1%
EU-28	-2.8%	-3.2%	-3.3%
Japan	-0.3%	-3.1%	-2.4%

Assumptions about GDP growth: see below. US 2030 value assumed continued emissions reduction at 2020-25 annual rate.

Data and assumptions

Emissions data:

World Resources Institute CAIT database of Annex I emissions for all countries except Australia. Australia: Australian Government 2015, 'Australia's emissions projections 2014-15', Department of Environment.

Population data and assumptions:

Historical data from IEA Carbon Dioxide Indicators database.

Assumption: annual population growth rates post-2012 equal to average annual growth rates during 2000-2012.

GDP data and assumptions:

Analysis uses purchasing-power parity adjusted GDP in US\$.

Historical data from IEA Carbon Dioxide Indicators database.

Assumptions: annual GDP growth rates from 2012-20 according to IMF World Economic Outlook (April 2015); annual GDP growth rates from 2020 onwards according to IEA World Energy Outlook assumptions, except Australia and Canada where a 2.5%pa growth rate is assumed.

Frank Jotzo

Associate Professor | Deputy Director, Crawford School of Public Policy | Director, Centre for Climate Economics and Policy | Australian National University

frank.jotzo@anu.edu.au

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