



27 April 2015

Department of Prime Minister and Cabinet
Australian Government

E: www.dpmc.gov.au/taskforces/unfccc

Dear Sir/Madam,

Setting Australia's post-2020 target for greenhouse gas emissions

Origin Energy Limited (Origin) welcomes the opportunity to make a submission to the Australian Government's review of post-2020 targets for greenhouse gas emissions.

Origin recognises that climate change is a global challenge and unequivocally supports measures to progressively reduce carbon emissions. We support Australia making an equitable contribution to this global effort, that the level of this effort be comparable to our most relevant trading partners and that it take account of the nature of the Australian economy.

Key points

Origin has the following key points to highlight:

- **Measures of "comparative effort"** - we recommend the use of appropriate metrics, such as carbon dioxide equivalent (CO₂-e) per unit of gross domestic product (GDP), as a key measure when comparing the relative "effort" of national emissions reduction targets.
- **The United States' 2025 target as a guide** - applying this concept of comparable effort based on a reduction of emissions intensity to the announced US 2025 target, we have estimated an approximate equivalent range for Australia, as an indicative guide.
- **National circumstances** - consideration of the above range should also include reference to Australia's national circumstances, including the significance of its resources sector and its contribution to reducing global emissions through the export of low emissions fuels such as natural gas.
- **Future emission reduction policies** - for the electricity sector this could include a well designed market mechanism, which remains our long term preference. This could take various forms, including a baseline and credit scheme, and can be designed in a way which promotes a cost effective and equitable transition to lower emissions intensive generation. Such a mechanism could be complemented by other regulation which promotes the orderly retirement of older, highly emissions intensive plant and encourages the sustainable deployment of new renewable sources without excessive subsidy.
- **2030 targets:** the energy sector involves long term investments and would benefit from the Government providing guidance over a range of longer term targets such as to 2030 or beyond and developing a robust policy framework to meet these goals.
- **International units** - we support access to genuine international emission reductions as a cost effective means of meeting national targets.

Announced post 2020 targets

In the past year, a number of significant announcements have been made relating to longer term emission reduction pledges. Importantly, this includes announcements from the “big three” emitters:

- China intends to peak emissions by 2030 (or earlier);
- the United States has announced a 26-28% reduction on 2005 levels by 2025; and
- the European Union has pledged a 40% reduction on 1990 levels by 2030.

Other nations to recently announce targets include:

- Mexico intends to peak absolute emissions by 2026 and has expressed its 2030 target as a 25% reduction against business-as-usual estimations;
- Russia has announced a 2030 target of 25-30% reduction on 1990 levels.

Australia, as an advanced, wealthy nation has a responsibility to play its part in putting forward credible targets which promote strong global action at the Paris conference at the end of this year.

Issues Paper approach to target setting

The Issues Paper cites two key aspects to consider when undertaking this review of Australia's post 2020 emission reduction targets. These are considering:

- Australia's national circumstances; and
- the scope and nature of other countries targets.

Origin broadly agrees with this approach and the focus of this submission is on examining both key aspects.

Other approaches

In its *Targets and Progress Review Final Report 2014* the Climate Change Authority outlined a principled approach to estimating a carbon budget for Australia, and an associated range of targets for the post 2020 period. Essentially, this approach is to start with the commonly accepted target of keeping warming to two degrees Celsius above pre-industrial levels and estimate a worldwide budget over a given time period to have a reasonable chance of meeting this target. The Authority then allocated a portion of this global budget to Australia (which can be done in a number of different ways) to arrive at a budget for Australia over the period to 2050 and a range of targets consistent with this budget. The relevant 2030 target was a minimum reduction of 40% on 2000 levels. The Authority has recently published their *Special Review Draft Report: Australia's future emissions reduction targets*, in which they recommend a 2025 target of a 30% reduction on 2000 levels. They state that this equates to about a 36% reduction on 2005 levels.

Whilst Origin agrees in principle with a logical top-down approach, we would call your attention to the more pragmatic, bottom-up, and potentially less-aspirational national target setting of the international negotiation process. We believe it is important for the review to take this into account when recommending emission reduction targets for Australia, and not lock Australia into an excessive target that is inconsistent with broader international action. A more appropriate approach would be to reference Australia's target setting to actions by other countries, noting that all economies are different, and that emissions reductions must also be balanced with ongoing growth and social development. We note that the issues paper includes specific reference to Australia's national circumstances including the significance of the resource and agricultural sectors. Particular consideration should be directed to Australia's position as an exporter of energy and resources.

Measures of comparative effort

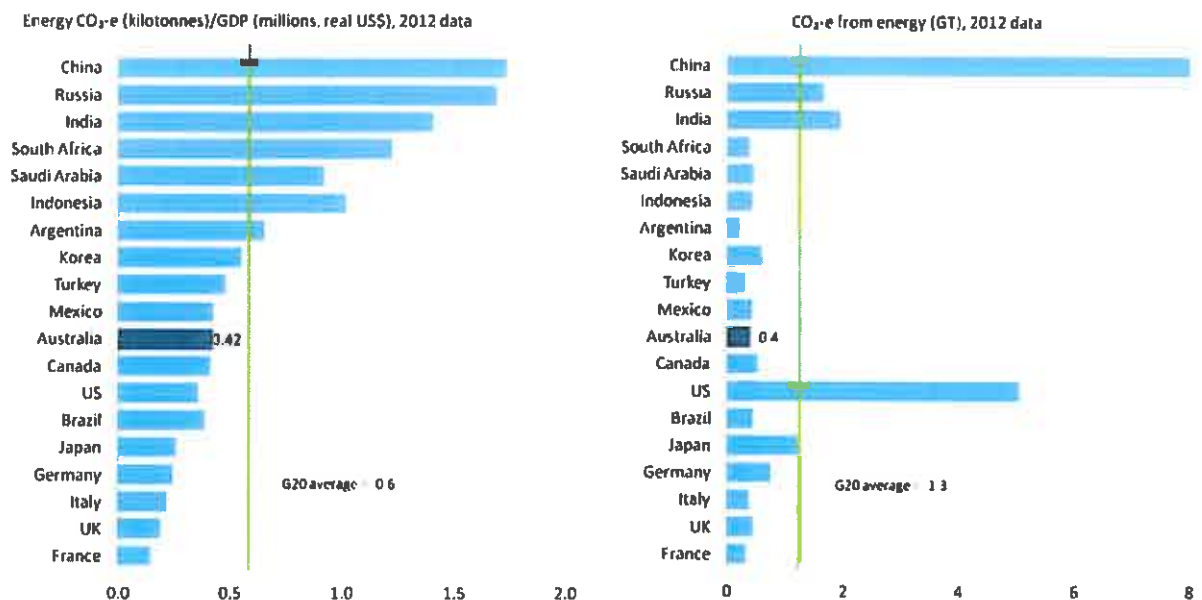
Whilst overall national targets are often expressed as a reduction against a particular base year, the difficulty or level of “effort” required for each nation to achieve such a target can be measured in different ways.

In 2014, Origin commissioned Deloitte Access Economics (DAE) to compare Australia’s greenhouse gas emissions against other nations in the G20. It stated that national emissions comparisons are commonly cited on the basis of a carbon dioxide equivalent (CO₂-e) per capita metric, which has the benefit of being a simple and easy to understand scaled measure. However, this measure has some shortcomings and the report examined the use of CO₂-e per unit of Gross Domestic Product (GDP) as the normalising factor when making comparisons between countries. Ideally, countries should seek to reduce carbon emissions while maintaining economic growth, by reducing the emissions intensity of their economies. Historically, there has been a close link between GDP and emissions, however, in some countries this link is in the early stages of decoupling.

The report compared Australia’s CO₂-e to other G20 countries. The G20 countries represent 66% of the global population, 85% of global GDP and 76% of global carbon emissions and therefore represent a substantial benchmark sample. The report shows that Australia’s performance as measured in carbon emissions per unit of GDP is better than the G20 average. Subsequent to the publishing of the report, Deloitte updated the analysis with 2012 data, shown below.

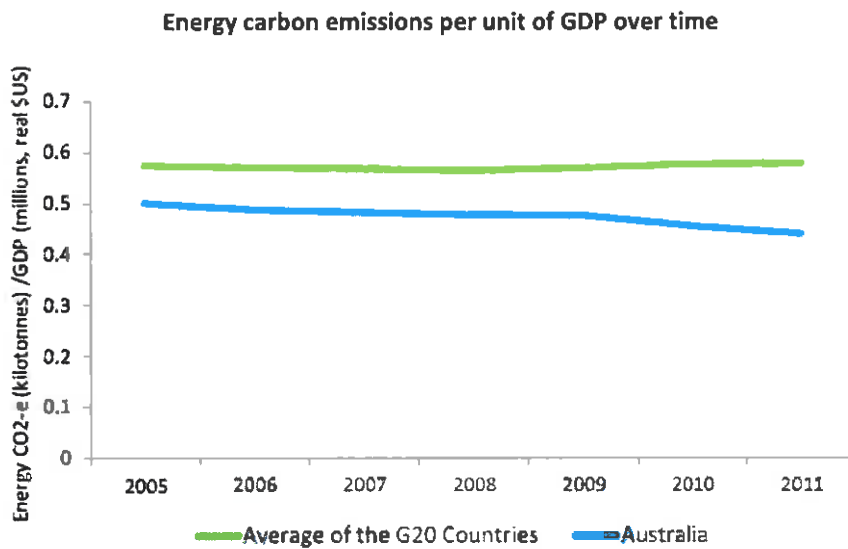
We note that the issues paper acknowledges the importance of reducing Australia’s emission intensity and that this has fallen by about 50% since 1990.

Carbon emissions per unit of GDP – where Australia sits in the G20



Source: World Resources Institute data, IEA data, Deloitte analysis.

Further, over time, Australia’s emissions intensity has reduced, and at a faster rate than the G20 average.



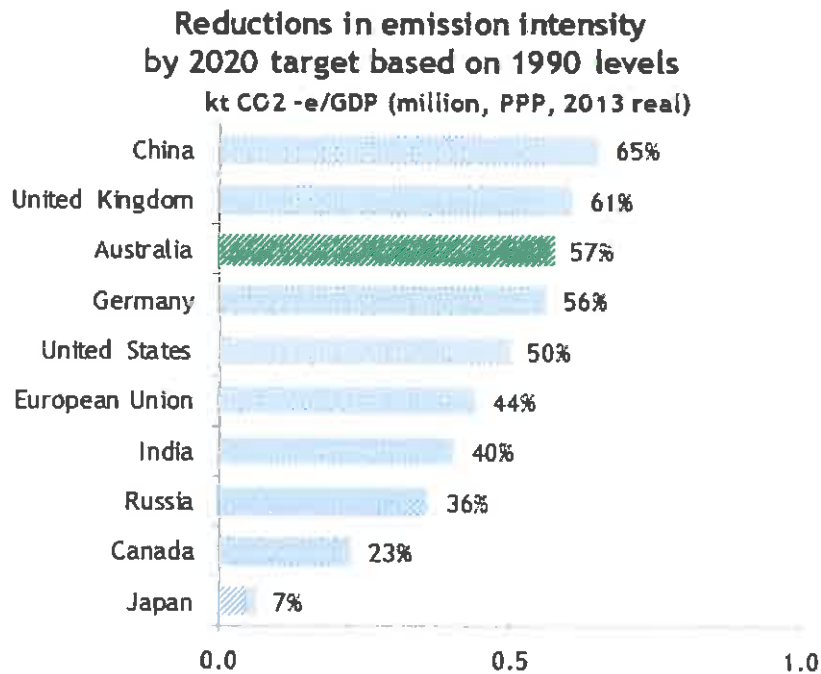
Source: IEA data, Deloitte analysis

Applying emissions metrics to national 2020 targets

As stated above, countries should seek to reduce carbon emissions while maintaining economic growth, by reducing the emissions intensity of their economies. This reduction in carbon intensity can be considered as a key indicator of the level of comparative “effort” implied by various targets. For example, Origin has applied the Deloitte analysis to a sub-group of G20 and other nations to estimate the reduction in emission intensity required to reach their respective national 2020 emission reduction targets.

The chart below indicates that Australia’s target is slightly more onerous than that of the US for 2020, when considering this metric. This is despite the fact that the US target is expressed as a 17% reduction on 2005 levels; whilst a similar baseline of 2005 levels equates to a 12% reduction by 2020 for Australia.

Whilst we acknowledge that emissions per unit of GDP is unlikely to be accepted as the only measure of comparative effort, it could be used as one of a number of key comparators in order to articulate a given absolute emission reduction target for Australia for the post 2020 period. Assumptions would need to be made about economic indicators such as economic growth and exchange rates.



Source: Deloitte, Origin analysis

Comparing to the US 2025 target

Of the recently announced “big three” pledges, it is the United States which is most directly relevant to Australia. The US is a developed and wealthy nation with large energy resources and large potential energy exports. By comparison - China’s target is to peak emissions rather than reduce them, whilst the EU is a collection of nations with many different types of economic structures and varying rates of growth - these factors make meaningful comparisons on long term emissions reductions targets more difficult.

The US pledge for 2025 is a 26-28% reduction on 2005 levels. What improvement in emissions intensity does this target imply?

There are different ways to estimate the reduction in carbon intensity required. For example, in the comparisons of 2020 targets above, 1990 has been used as the common base year in order to compare all the countries involved, particularly the EU which uses a 1990 baseline. If an effort baseline of 2005 is used for the US then we estimate this would require an improvement in emissions intensity over the period 2005-25 of about 50%. If however, the effort is measured from today (using 2014 data) then an improvement of 40% is required, over the 2014-2025 period for the US.

A similar level of “effort” for Australia implies absolute targets¹ of:

- about a 15% reduction on 2005 levels, if effort is compared from 2005 (Scenario 1); or
- about a 23% reduction on 2005 levels, if effort is compared from today’s (2014) levels (Scenario 2).

The approximate absolute targets that this represents are estimated in the table below and the change in carbon intensity is shown in the chart further below.

¹ These should be considered as a guide only and specific consideration should also be made of Australia’s particular national circumstances (see below).

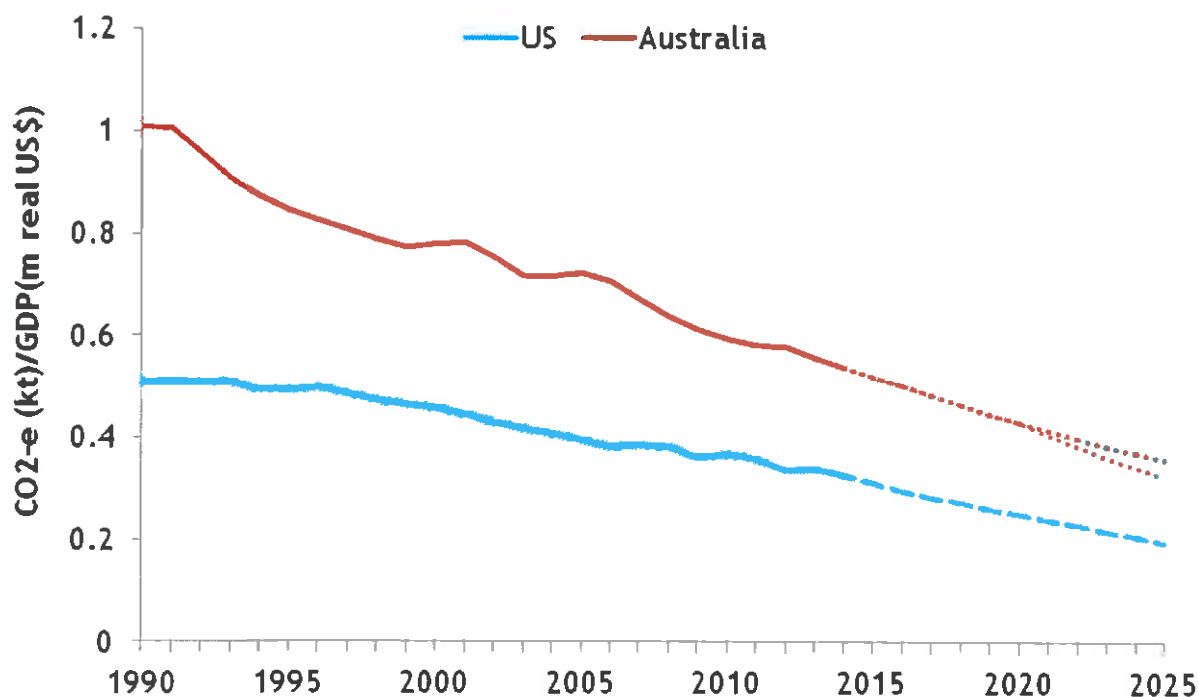
The US and Australia: Historical emissions, 2020 and 2025 targets (Mt CO₂-e)

	2000	2005	2020	2025
US	6415	6223	5165 (pledged)	4605 (announced)
Australia	586	635	557 (pledged)	542-489 (estimate)

Note:

- 2020 targets as pledged through UNFCCC process (US target of a 17% reduction on 2005 levels; Australian target of a 5% reduction on 2005 levels, which is approximately a 12% reduction on 2005 levels).
- US 2025 target of a 26% reduction on 2005 levels.

Carbon Intensity - History and Implied Targets (based on GDP PPP, 2013 real)



Source: Origin analysis using data from Department of Environment (Australia), US Environmental Protection Authority and International Monetary Fund.

Key assumptions used in these estimations include:

- a 26% reduction on 2005 levels by 2025 as the US target;
- emissions data includes emissions from the land use, land use change and forestry sector;
- economic growth projections based on International Monetary Fund data (2013 dollars, PPP) to the period 2020 and then extrapolated until 2025.

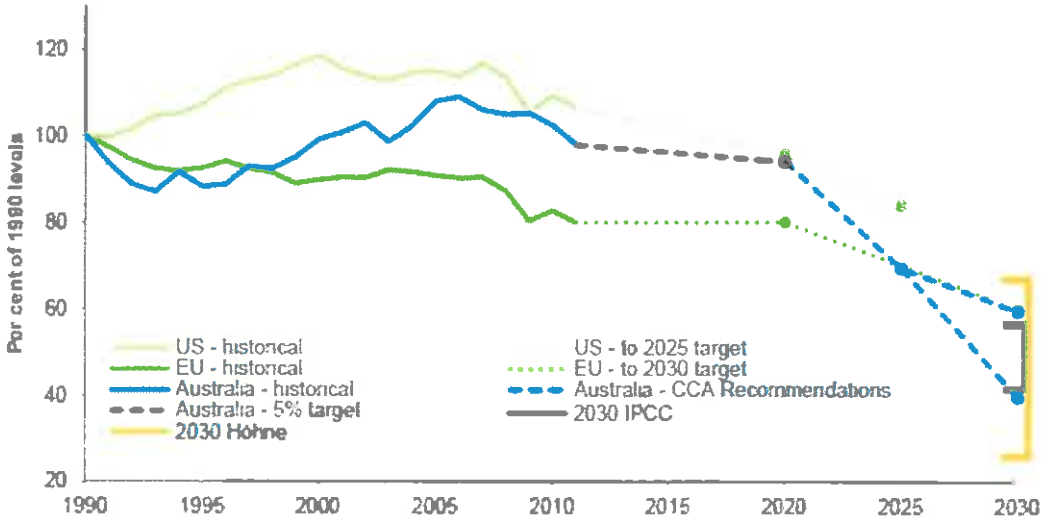
One relevant question from the range portrayed above is why the effort for Australia is higher under Scenario 2, compared to Scenario 1. The explanation is that the implied emission intensity cut of the new US target is about 50% by 2025, on the 2005 levels. By the CO₂-e/GDP measure, Australia appears to outperform the US in the period between 2005 and 2014, achieving about a 25% reduction in intensity compared to about 18% for the US (largely due to higher GDP growth). So taking this historical outperformance into account, the remaining task for Australia will be relatively easier to match the 50% intensity reduction target to 2025 in Scenario 1; and comparably more difficult in Scenario 2 which ignores the performance difference between 2005 and 2014.

We believe this analysis provides a useful *starting point or guide* for a potential target range for Australia to consider for a 2025 target. However, we must emphasise that this is a guide only - as can be seen from above, the estimated targets can vary depending on a range of factors such as the base year chosen and assumptions about economic growth. Further, we have only compared

Australia against one relevant nation, and only on one metric. There are other relevant factors that should be taken into account, including the nature of the Australian economy and its role as a significant exporter of energy products such as natural gas. These factors will influence the cost that the nation faces when trying to achieve a given emission reduction target.

As noted above, the Climate Change Authority has recently recommended a target for 2025 of a 36% reduction on 2005 levels. The Authority's draft report included the following chart, which shows the emissions trends and targets of the US, EU and Australia. Compared to the US in particular, the proposed 2025 and 2030 targets for Australia appear inconsistent with the general trend portrayed.

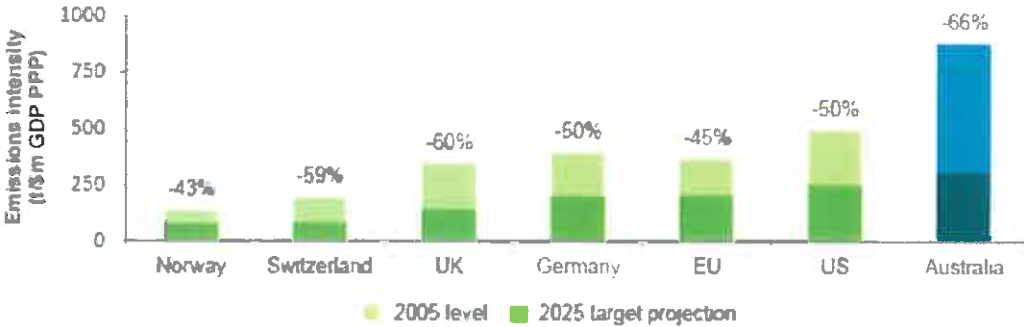
Figure 7 Countries' emissions trajectories to the 2 degree goal



Note: Australia trajectory shows historical emissions, a 5 per cent 2020 target, a 36 per cent 2025 target, and the trajectory range to 2030. Hohne illustrated range at 2030 of 33-74 per cent reductions from 1990 levels corresponds to published estimate of 37-75 per cent reductions from 2010 levels. IPCC illustrated range at 2030 is a straight line interpolation between IPCC estimates of required reductions of 25-40 per cent from 1990 levels by 2020, and 80-95 per cent by 2050, for Annex I (developed) countries, as part of global action to give an even chance of stabilising temperatures at two degrees.
 Source: See Figure 3 Hohne range (Hohne et al 2014) IPCC range (IPCC 2007a)

Extract from: Climate Change Authority (2015) *Special Review Draft Report: Australia's future emission reduction targets*, p 19.

Further, the Authority included a number of benchmarks to compare the level of effort implied by various 2025 targets. The following extract indicates that on the metric of emissions per unit of GDP, the proposed 2025 target for Australia was far more onerous than for any other nation analysed.



Extract from: Climate Change Authority (2015) *Special Review Draft Report: Australia's future emission reduction targets*, p 15.

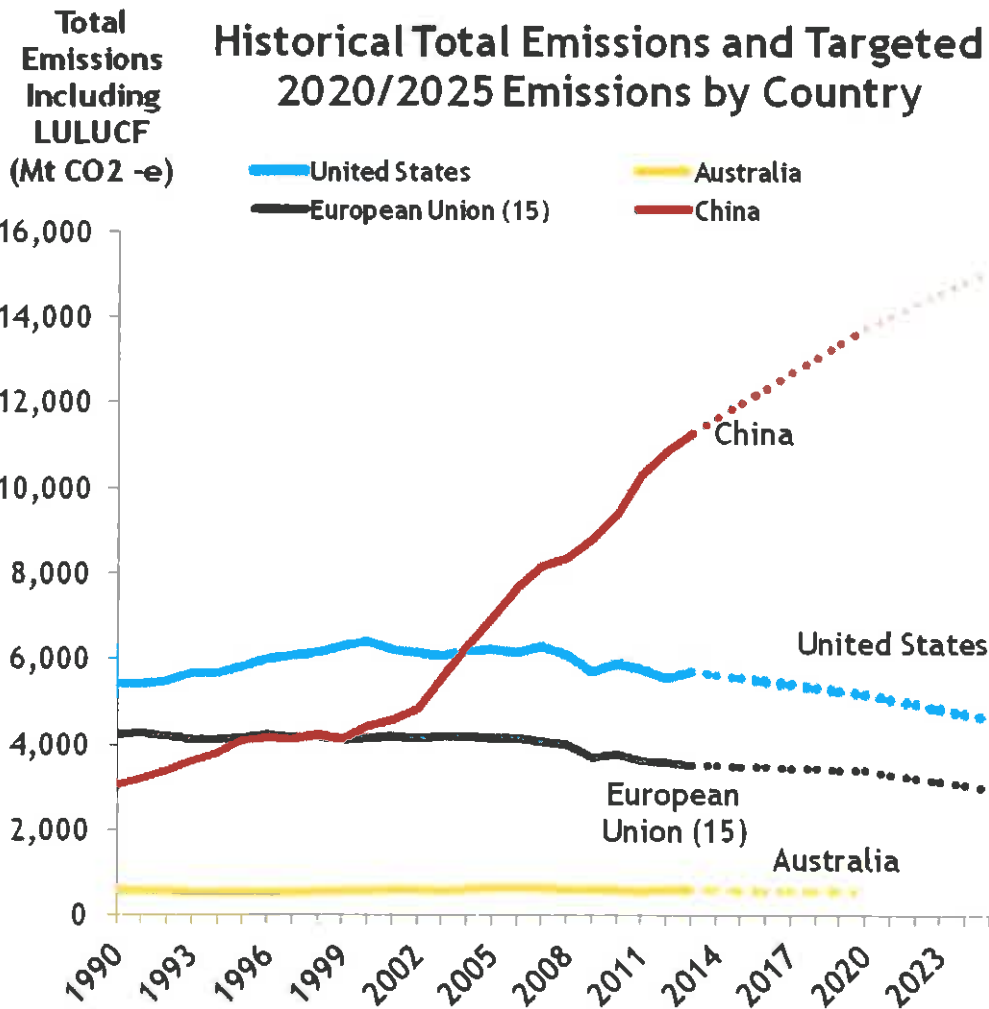
Considering national circumstances

In the Issues Paper the Government highlights the importance of each nation setting targets that represent a fair and appropriate contribution to tackling climate change in light of their particular national circumstances. Regarding Australia, the paper notes that compared to other developed economy, Australia's resource and agricultural industries represent a significantly larger share of national economic output and that this affects the intensity of Australia's exports and the economy more generally. As an example, when considering the chart above it is clear that Australia's emissions intensity, whilst improving, is coming off a higher base than the US. This is largely due to the structure of the Australian economy.

Australia's targets have generally been expressed as net targets which take into account imports (and exports if they occur) of units of international emissions reductions. Whilst this has generally been limited to consideration of clearly defined imports such as Kyoto units, Origin suggests the review consider other ways Australia contributes to emissions reductions internationally. For example, when Australia produces LNG it increases emissions in Australia but generally abates carbon emissions in the country that imports the LNG, when the fuel is used to replace coal for electricity generation. LNG is currently around the 5th largest export earner for Australia but it is likely to move past coal and become our 2nd largest export over the next few years as current projects are commissioned.

Many developed economies are de-industrialising and importing an increasing proportion of their emissions embedded in finished goods. This explains a proportion of the significant emissions reduction that has been achieved in much of Europe in recent years. Australia's economy continues to generate a significant and in some cases increasing proportion of economic wealth from emissions intensive energy and resource exports. When setting targets consideration should also be given to carbon emissions on a consumption basis as well as the usually used productive basis.

The chart below puts in context the absolute emissions levels of Australia, compared to the "big three" emitters. As can be seen, Australia's emission levels are relatively small when compared to the other three, and it follows that a given reduction in Australia's 2025 target (or longer term targets) will have little significance for overall global emissions. In contrast, Australia can make a difference to overall global emissions by exporting low emissions fuel sources to rapidly growing economies like China, and potentially India and other nations as well.



Source: Origin analysis using data from Department of Environment (Australia), US Environmental Protection Authority, European Environment Agency and World Resources Institute.

Future emission reduction policies

The issues paper requests comment on what further policies, complementary to the Australian Government's direct action approach, should be considered to achieve Australia's post 2020 targets. Whilst the historical focus has been on designing one key economy wide scheme, Origin suggests that with the benefit of recent experiences it may be worth stepping back and considering each main source of emissions and the policy (or mix of policies) that are most cost effective at mitigating emissions in that sector.

In the long-term, Origin continues its support for a well-designed market mechanism of some form for the electricity generation sector - whether this is a baseline and credit scheme or some other form. This could be complemented by:

- regulation which promotes the orderly retirement of old, highly emissions intensive plant;
- emissions performance standards for new plant; and
- sustainable policy which encourages the commercial deployment of renewable generation sources without excessive subsidy.

Origin suggests that separate, specific consultation on long-term electricity sector policy will be essential.

The practical domestic policies required to meet a given target, and their associated costs are a highly relevant factor when comparing emission reduction targets across nations. Taking the US as an example, some may argue that the US is already on a trend to achieve their 2025 target with US emissions having already fallen about 10% from 2005 levels. This is largely due to technological development which has caused a shift to lower emissions fuel sources for electricity generation. Similarly, China's 2030 target to peak emissions could be considered as a business-as-usual scenario.

However, when policies required to achieve deep cuts in Australian emissions are analysed, such as structural reform of the electricity sector, it is generally acknowledged that this involves relatively high abatement costs. A recent estimate of the abatement cost curve for Australia for the period to 2030 is shown below. In summary, in order to confidently set national emission reduction targets it is important that policymakers understand the potential costs of the domestic policies required to achieve these targets.

Guidance on long-term targets

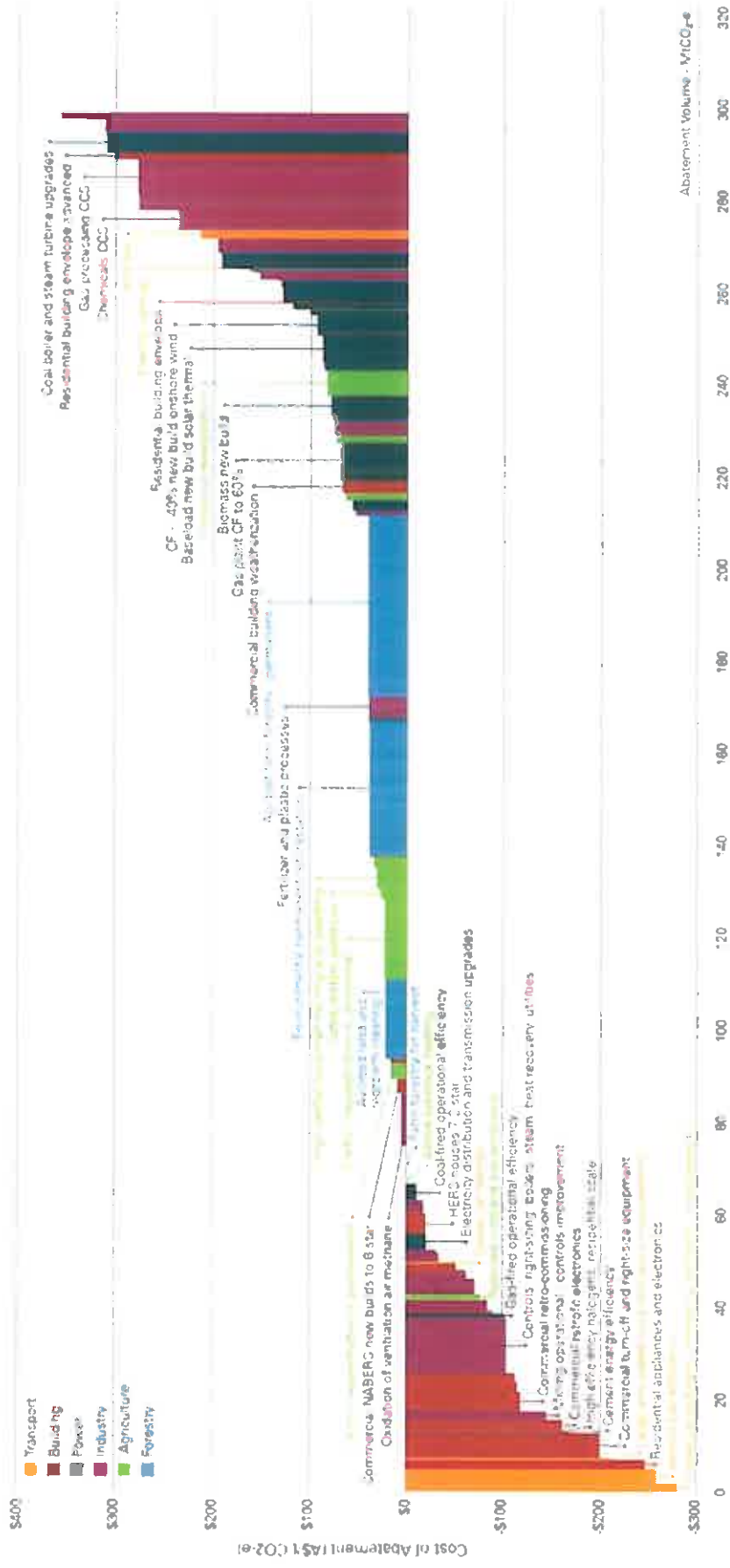
It is important to note that many of the low cost abatement options listed in the following 2030 abatement curve will take time to implement and some do not need subsidies or policy intervention for take-up. Also in many sectors abatement in 2030 is likely to be cheaper than abatement in 2020 as technology improves and assets are replaced.

For example, the replacement of appliances with newer, more efficient ones in the household usually occurs when an old one fails. Similar examples exist in other sectors too when capital stock is upgraded. We caution against the use of subsidies to accelerate these abatement opportunities. Rather, we would prefer consistent, stable policy settings with long-term aims that will encourage the progressive uptake of these opportunities at lowest cost.

Whilst the focus has recently been on 2020 and 2025 targets, Origin suggests that it would be helpful if the Government was able to provide guidance on the range of desired targets over the longer term, including 2030 and beyond. Delaying abatement is likely to be at lower overall costs in some circumstances.

The energy sector in particular involves investments with long-term horizons, and requires efficient policy settings that encourage the sustainable transition to lower emissions intensive sources over time. Also the energy sector requires very little new investment out to 2025 but beyond this period as demand grows and assets reach the end of their economic and technical life, significant investment will be required.

Figure 2 – Australian 2030 carbon abatement cost curve



Source: Reputex (2015)

International emission reductions

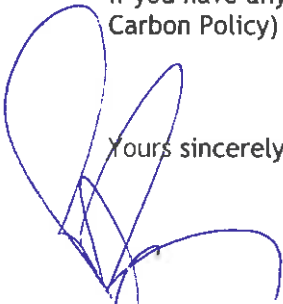
Origin understands that the focus of the Government's Direct Action policy is on reducing domestic emissions. However, we believe it would be prudent to encourage the use of international emission reductions in some form, as a low cost means of reducing emissions.

In its *Targets and Progress Review Final Report 2014* the Climate Change Authority made a strong recommendation to allow access to genuine international emission reductions as a cost effective means of meeting national targets. Whether this involves the Government setting up a fund to purchase such units or more direct access by Australian firms, we believe it is prudent to retain the flexibility provided by using international permits.

To counter concerns around the credibility of international offset projects strict qualitative criteria could be placed on the types of units that could be allowed for Australian purposes. Quantitative limits on the amount of permits purchased could also be used as a further safeguard, and as a way of limiting concerns about the outflow of Australian funds. Direct links with other schemes would not be necessary in the first instance. Rather, international units could be a form of third party offset. This would mitigate the policy risk faced by Australian purchasers of international units.

If you have any questions regarding this submission please contact Matthew Kaspura (Manager Carbon Policy) on (02) 8345 5287.

Yours sincerely,



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