

GLOBAL ACTION AND AUSTRALIA'S ROLE

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As the evidence of the risks posed by climate change has become clearer, there has been a strong trend to increasing global action to reduce greenhouse gas emissions—99 countries, covering over 80 per cent of global emissions, have 2020 emissions reduction goals.

Countries are implementing a range of policies to meet these goals, including renewable energy targets, emissions trading schemes, tax incentives for improved energy efficiency, and fuel economy and electricity generation emissions standards.

More needs to be done to keep warming below 2 degrees and avoid the worst impacts of climate change, but there are promising signs. The level of action has steadily increased over the last 20 years and accelerated recently. The two largest emitters of greenhouse gases—China and the United States—are both stepping up their actions to reduce emissions and these measures could have a significant impact on global emissions.

The next few years will be a critical time as countries decide whether to strengthen their 2020 emissions reduction goals under the UNFCCC (due 2014) and negotiate a new post-2020 climate agreement (due 2015). Australia will be expected to indicate whether it will strengthen its 2020 target in 2014 and put forward a post-2020 target in 2015 as part of these processes.

Australia has made an international commitment to reduce emissions by 5–25 per cent, compared to 2000 levels, by 2020. At the time the commitment was made, the government announced conditions for moving up the range. The Authority's analysis shows that the conditions for moving beyond 5 per cent have been met. Whether the conditions for 15 per cent have been met is unclear—some elements have been met; others are marginal. The conditions for a 25 per cent target have not been met.

While the Authority has taken the government's conditions into account, it is also required to examine a broader range of considerations. In the international context, the Authority has also considered how Australian action compares to that of other key countries and its ability to positively or negatively influence action.

Australia is a high-emitting, highly developed country with strong capacity to address climate change. An Australian 2020 target of 15 per cent plus carryover would be broadly comparable with the current actions of other key countries considered in this Review, including the United States.

A stronger Australian target could have a positive influence on the actions of other countries by demonstrating that emissions-intensive economies can pursue and achieve ambitious targets. Conversely, other countries could use weak Australian action as a reason to delay stronger climate measures.

Action by all countries is needed to meet the global emissions budget (Chapter 3) and avoid the worst impacts of climate change. In particular, major emitting economies like Australia need to do more. Chapter 4 assesses the level of global action to reduce greenhouse gas emissions. It then considers how the international context should be factored into Australia's emissions reduction goals.

In the Authority's consultations, many stakeholders highlighted the importance of compiling information in as much detail as possible on international actions to reduce emissions. Analysing international action, both in aggregate and with relevant specifics, will be an important part of any future reviews.

4.1 GLOBAL ACTION TO REDUCE GREENHOUSE GAS EMISSIONS

Global action is complex—some countries are taking ambitious action now; some are doing less—and the pattern is likely to vary over time. In such circumstances, broad trends are a better indicator than the isolated actions of any individual country at a particular point in time (Box 4.1). This section assesses global trends in climate action, including 2020 targets, climate policies and measures, action in the United States and China, and action beyond 2020.

BOX 4.1: ASSESSING GLOBAL ACTION

The Authority considers that trends in emissions reduction targets and policies provide the best picture of global action.

The Authority has used a set of 'key countries' to illustrate global trends in climate action. These countries, listed in Table 4.1, include Australia's neighbours, trading partners and countries with similar development levels. They are used for the Authority's analysis of targets and actions, domestic policies and as a comparison point for assessing Australia's emissions reduction goals. Given their significant effect on climate change, the Authority has focused particular attention on the actions of China and the United States, which together constitute over one-third of global emissions.

In assessing global trends in climate action, the Authority has considered targets and commitments to future action, and domestic policies and measures to reduce emissions. Both are important. Targets provide a useful indication of countries' intentions; however, by their nature, they are aspirational. They can only be met if they are backed by policies and measures that make emissions reductions happen. Targets and policies are mutually supportive—targets can help drive the implementation of climate change policies, while successful policies can make stronger targets more achievable.

The Authority has focused its analysis on emissions reduction outcomes—it has not discriminated on the basis of the form of a commitment (legally binding or not) or where it is inscribed (internationally or domestically). The Authority has therefore taken into account progress under the UNFCCC, and has also looked beyond—to domestic action and other international forums. More information about the UNFCCC is in Appendix B, along with information on other international initiatives.

Recently, there has been much attention on the fact the UNFCCC has not yet agreed on a new treaty with legally binding emissions reduction commitments by all countries. 'Legally binding' agreements may provide greater assurance that countries will meet their commitments but they are not the only indicator of action. As well as working towards a new climate agreement to apply from 2020, the UNFCCC has made significant progress to record countries' 2020 emissions reduction goals and create systems to increase transparency. All of this, while not legally binding, helps create confidence that other countries are taking their goals seriously and acting on climate change. Ultimately, emissions reductions matter more than legal form.

Primary sources of information about global action include the United Nations, the World Resources Institute and the Australian Government. In some cases, the Authority has used different data sets for the international analysis than in other chapters of this report, to allow for consistent data sets over a wider range of countries. Appendix B provides further details.

4.1.1 2020 EMISSIONS REDUCTION TARGETS

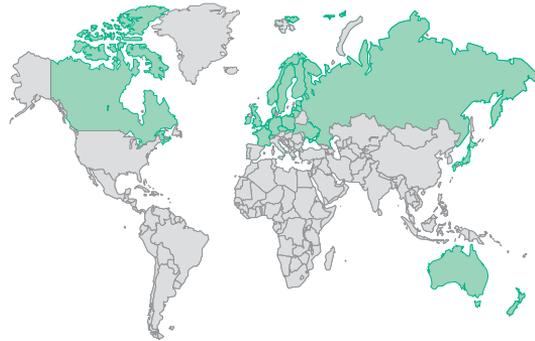
The number of countries with climate change targets has grown rapidly over time—99 countries, including Australia, have committed to 2020 emissions reduction targets and actions under the UNFCCC. These countries account for over 80 per cent of global emissions and 90 per cent of the global economy (Figure 4.1).

FIGURE 4.1: COUNTRIES WITH INTERNATIONAL EMISSIONS GOALS UNDER THE UNFCCC

1990 - NO COUNTRIES



1997 - 37 COUNTRIES



2013 - 99 COUNTRIES



Source: Climate Change Authority analysis of UNFCCC 2011, UNFCCC 2013a, Kyoto Protocol commitments

Many countries have included these pledges in domestic legislation and national planning documents, as part of the process of backing international pledges with domestic policies. Some countries; for example, Germany and the United Kingdom, have taken on a higher domestic target than is reflected in their international pledge, so looking at pledges alone may underestimate the extent of global climate action. Table 4.1 shows the international and domestic 2020 targets of key countries.

TABLE 4.1: 2020 EMISSIONS REDUCTION TARGETS OF KEY COUNTRIES

	Australia	International: 5 per cent, up to 15 per cent or 25 per cent relative to 2000 (5 per cent unconditional).
	China	International: Lower carbon dioxide emissions per unit of GDP by 40–45 per cent relative to 2005. Domestic: China’s 2020 target has been incorporated in its medium- and long-term economic and social development plans as a binding target. China has an interim carbon intensity target under its 12th Five-Year Plan (2011–2015).
	United States	International: In the range of 17 per cent relative to 2005. Domestic: This goal is included in President Obama’s 2013 Climate Action Plan.
	European Union (28 member states)	International: 20 per cent relative to 1990. Conditional target of 30 per cent relative to 1990. Domestic: Many EU countries have climate targets included in legislation or national plans. The EU also has agreed to a formal ‘burden-sharing arrangement’ for some of its collective climate targets.
	India	International: reduction in emissions intensity (emissions per unit of GDP) by 20–25 per cent relative to 2005 (excluding agriculture).
	Japan	International: 3.8 per cent relative to 2005.
	Germany	International: 20 per cent relative to 1990, as part of EU target. Domestic: The German Government has legislated a national target of 40 per cent reduction by 2020 relative to 1990.
	Indonesia	International: 26 per cent relative to business-as-usual. Domestic: Indonesia’s National Action Plan for Greenhouse Gas Emission Reduction states it could reduce emissions by up to 41 per cent by 2020 relative to business-as-usual with international support.
	Canada	International: 17 per cent relative to 2005. Note Canada has withdrawn from the Kyoto Protocol, but maintains this target under the UNFCCC.
	Republic of Korea	International: 30 per cent relative to business-as-usual. Domestic: The 2020 goal is included in Korea’s 2010 Framework Act on Low Carbon, Green Growth.
	United Kingdom	International: 20 per cent relative to 1990, as part of EU targets. Domestic: The UK has a domestic 2020 target of 34 per cent below 1990 levels. It also has a series of binding carbon budgets under its Climate Change Act for the period 2008–2027. The 2027 carbon budget represents emissions reduction of 50 per cent relative to 1990.
	South Africa	International: 34 per cent relative to business-as-usual and 42 per cent relative to business-as-usual by 2025. Domestic: The 2020 goal is referred to in South Africa’s 2011 National Climate Change Response.
	New Zealand	International: Unconditional target of 5 per cent relative to 1990. Conditional target of 10–20 per cent relative to 1990.
	Norway	International: 30 per cent relative to 1990. Conditional target of 40 per cent relative to 1990.

Note: Many countries’ targets are conditional on the extent of climate action in other countries. Domestic action outlined in this table covers targets included in domestic legislation, national planning documents and other official government plans.

Sources: International emissions reduction targets from UNFCCC 2011 and UNFCCC 2013a; domestic targets from country websites.

It is too early to definitively say whether countries will meet their 2020 targets. Many are in the process of implementing policies for which the actual mitigation effect is not yet known (for example, the Republic of Korea’s legislated carbon price and South Africa’s carbon tax). Other countries, including Norway, have also announced an intention to use fast-acting policies closer to 2020, such as the planned purchase of international emissions reductions. A country’s energy mix can also change rapidly for non-climate-centred reasons and make it either harder or easier to achieve a given target. For example, Japan’s 2011 nuclear disaster and the United States gas boom—as well as policy choices that limited US gas exports, ensuring lower domestic gas prices and lower emissions because of switching to gas from coal—affected their emissions. Finally, ambition of targets is linked to achievability. Countries with strong targets may be less likely to achieve them, although they may still reduce their emissions significantly.

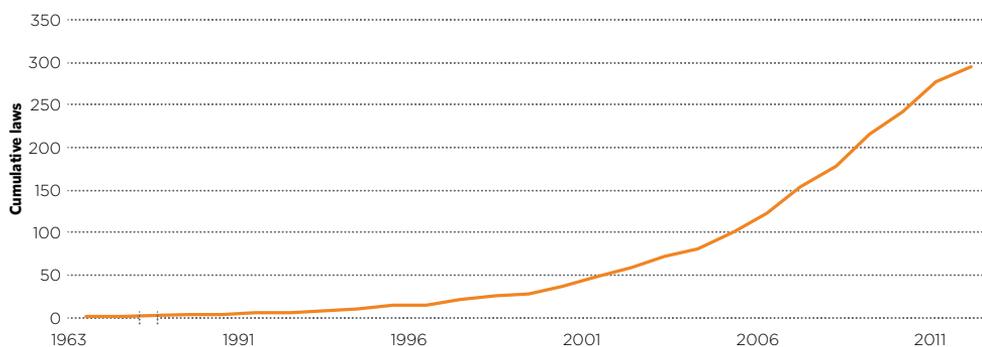
With those important caveats, it is clear that countries are generally taking their targets seriously and implementing policies to meet them. There is also heartening precedent—most countries that have first commitment period targets listed in Annex B of the Kyoto Protocol appear to be on track to comply (two exceptions are the United States, which did not ratify the Kyoto Protocol, and Canada, which withdrew from the Protocol in 2012).

Importantly, the United States and China, the world’s top two emitters, are both capable of meeting or exceeding their 2020 targets. The World Resources Institute assessed US policy in 2013, and concluded it could meet its target without new legislation by using existing powers of the sort being employed by President Obama (WRI 2013a). The US Government, in its 2014 Climate Action Report, concluded that the target is achievable (Department of State 2014). Similarly, recent analysis concludes that China is on track to reduce its carbon intensity by more than its 2020 target (PBL 2013). Chinese officials reported in November 2013 that China would make every effort to meet the more ambitious end of its target range and it was considering new targets, including potentially an absolute cap on emissions for its next Five-Year Plan (2016–20) (Li Gao, 2013).

4.2 COUNTRIES’ DOMESTIC POLICIES AND MEASURES

Countries are putting in place policies and measures to reduce their emissions and meet their targets. Domestic action has increased over time. GLOBE notes that in 2012 there was a total of 286 climate change-related laws in the 33 countries studied (GLOBE International 2013)—see Figure 4.2.

FIGURE 4.2: TOTAL CLIMATE CHANGE LAWS IN GLOBE COUNTRY STUDIES, 1963–2012



Source: GLOBE 2013

All the major emitting economies now have policies and measures to support their 2020 emissions reduction targets. Policies include incentives for renewable energy, energy efficiency standards, emissions trading schemes and emissions performance standards in electricity generation and transport. Approaches vary from country to country depending on development levels, economic structure and the targeted sector or desired response.

Countries usually adopt multiple overlapping climate policies, including some mix of energy supply policies, energy demand policies, sector-specific measures such as transport standards, and carbon pricing. The International Energy Agency (IEA) collates a database of climate policies and measures covering all the countries in the Authority’s key countries set except Indonesia. This database records that there were 858 climate policies and measures in place in 2013 across the Authority’s key countries (IEA 2013a).

Table 4.2 describes the climate actions of key countries in different areas. Most countries, including China and the United States, have policies in all these areas. An expanded version of this table is in Appendix B.

TABLE 4.2: POLICIES AND MEASURES OF KEY COUNTRIES EXAMINED BY THE AUTHORITY

POLICY AREA	EXAMPLE OF POLICIES	COVERAGE
Energy supply	Renewable energy targets, feed-in tariffs	All key countries have energy supply policies in place
Energy demand	Appliance and building energy efficiency standards	All key countries have energy demand policies in place
Transport	Mandatory vehicle emissions, pollution or fuel efficiency standards; incentives for renewable fuel production	Nearly all key countries other than Australia and New Zealand have some form of mandatory vehicle standards; more than half have greenhouse gas emissions standards
Carbon pricing	Taxes or emissions trading schemes	Most key countries have policies in place at national or sub-national level; others including the Republic of Korea and South Africa are planning to introduce policies in 2015

4.2.1 CLIMATE CHANGE ACTION IN CHINA AND THE UNITED STATES

The two countries with the largest impact on global climate change action are China and the United States. Together, they were responsible for over 37 per cent of the world’s emissions in 2009.

Both countries are acting on climate change and stepping up their efforts, including working together. In June 2013, President Obama and President Xi reached a bilateral deal to phase down the consumption and production of hydrofluorocarbons—potent greenhouse gases used in refrigeration and air conditioning—under the Montreal Protocol. In July 2013, China and the United States announced renewed cooperation in areas ranging from carbon capture and storage demonstration to energy efficiency and data collection.

ACTION IN CHINA

China has a 2020 target of 40–45 per cent reduction in carbon intensity relative to 2005—that is, it aims to reduce CO₂ emissions by 40–45 per cent per unit of GDP. Based on Treasury modelling, the Authority estimates that China’s target range is between 14 and 22 per cent below business-as-usual emissions intensity, which would imply a reduction from business-as-usual of about 2.6–3.9 Gt CO₂ in 2020.

China’s economy is developing and a large percentage of its population still lives in poverty, without access to sanitation or clean water. As living standards improve, its emissions will grow. In 2013, China indicated it was considering an absolute cap on emissions in its 13th Five-Year Plan (2016–20). If this cap is put in place, it will be a global climate milestone.

China is investing in renewable energy, imposing stringent energy performance standards and establishing emissions trading schemes. Box 4.2 provides a snapshot of China’s climate change action.

BOX 4.2: CHINA’S CLIMATE CHANGE ACTIONS

 World’s largest investor in renewable energy (US\$67 billion in China in 2012).

 Proposed scaling down of coal use, including non-binding caps on consumption and production.

 Closed nearly 500 smaller and less-efficient coal power plants by 2010.

 Emissions trading schemes operating in Shenzhen, Beijing, Shanghai, Guangdong and Tianjin, and planned for two other provinces and municipalities. To be followed by a national scheme.



Wind turbines in China (Getty Images)

China has integrated climate change as a core part of its economic planning. Its climate targets are included in its central economic policy document for 2011–15, the 12th Five-Year Plan. This contains targets for energy intensity (energy consumption per unit of GDP—16 per cent reduction by 2015 relative to 2010 levels) and CO₂ emissions per unit of GDP (17 per cent reduction by 2015 relative to 2010 levels). Achieving these targets would put China on track to meet its international commitments.

China has shown its ability to set and achieve environmental targets. Between 2006 and 2010, it reduced its energy intensity by 19.1 per cent from 2005 levels (Network for Climate and Energy Information 2012), and replaced nearly 500 small and inefficient power plants with modern and less emissions-intensive facilities.

China is a world leader in renewable and low-carbon energy. In 2012, US\$67 billion in renewable energy was invested in China, more than a quarter of the world total (REN21 2013). It also has the world's largest installed renewable generation capacity at 90 GW (excluding hydropower). This compares with the 54 GW capacity of Australia's entire electricity grid (BREE 2013b, p. 33). In 2013, China added more capacity from renewables, including hydropower, than from fossil fuels (National Energy Administration 2013).

Partly in response to severe air pollution, China has announced a target of capping coal consumption at four billion tonnes of coal equivalent per year, with a parallel cap on domestic coal production of 3.9 billion tonnes in 2015. Although these caps are non-binding, they clearly signal China's intention to address its energy use and environmental problems. In 2013, the IEA revised its global coal demand outlook downwards in response to China's policy choices—reflecting both China's importance to global coal and the seriousness of its policy efforts (IEA 2013b). China is also tightening its fuel economy standards for passenger vehicles, exceeding the US standards for some types of vehicles. The standards are set nationally but are being implemented at different times around the country—Beijing tightened its standards in 2013 in line with Shanghai and Guangzhou. Australia has no binding fuel economy standards.

China is implementing market mechanisms to reduce its emissions in seven regions, to be followed by a national emissions trading scheme after 2015.

ACTION IN THE UNITED STATES

The United States has a UNFCCC 2020 target of 17 per cent reductions on 2005 levels. US emissions have fallen in recent years. According to WRI analysis (2013a), the main factors behind this trend include:

- falling energy demand, including because of lower economic activity
- lower transportation emissions, in part because of tighter vehicle emissions standards
- partial replacement of coal power with gas power and renewable energy.

Both Australia and the United States have discovered large amounts of natural gas that can be extracted using contemporary technology such as fracking. Unlike Australia, US policy choices limited the export of natural gas (Garnaut 2013). This helped keep US domestic gas prices lower, and encouraged fuel switching to gas away from more emissions-intensive coal. This has meant the gas boom has had a noticeable impact on US emissions.

The United States, however, will need to do more to meet its 2020 emissions reduction target. Although US energy emissions are predicted to remain static, other sources of emissions are rising, including industrial gases and methane from natural gas extraction.

Momentum for stronger action is building and the United States is taking its 2020 target seriously. President Obama announced a new Climate Action Plan in June 2013, which aims to reduce US emissions, prepare for the domestic impacts of climate change and increase international climate cooperation. It uses the President's executive powers to increase regulations on new and existing power plants, accelerate renewable energy development on public land, and direct federal agencies to use more renewable energy and improve their energy efficiency. The combined effect of these measures could be significant—for example, the power plant regulations could prevent the construction of new coal-fired power plants without carbon capture and storage technology. A recent US Government report confirmed that concerted efforts to implement the Climate Action Plan would cause energy sector and methane emissions to fall by 2020 (Department of State 2014).

Transportation makes up nearly one-third of total US emissions, and strict vehicle fuel economy and emissions standards introduced in 2011 will deliver large emissions reductions. The US Government estimated the standards would save 6,000 Mt CO₂-e between 2011 and 2025, more than 10 times Australia's 2012 total emissions. The US Energy Information Administration (2013) estimates there are already two million hybrid vehicles in the United States, and an additional nine million 'alternative fuel' vehicles capable of using electricity, ethanol, liquid petroleum gas or natural gas.

The United States has been at the forefront of investment in renewable energy for the past decade. Renewable energy investment in the United States totalled US\$36 billion in 2012. It is a close second to China in renewable capacity, with 86 GW installed (REN21 2013).

BOX 4.3: US CLIMATE CHANGE ACTIONS



World's second largest investor in renewable energy after China—nearly half the electric capacity added in 2012 was renewable.



Proposed stringent regulations of new and existing coal power plants.



Emissions trading schemes operating in 10 states.



Stringent vehicle emissions standards, estimated to save 6,000 Mt CO₂-e between 2011 and 2025.



President Barack Obama delivers remarks on climate change, at Georgetown University in Washington, D.C., 25 June, 2013. (Official White House Photo by Lawrence Jackson)

SUB-NATIONAL ACTION IN THE UNITED STATES AND CHINA

Many US states and Chinese provinces are significant economic entities in their own right and some are taking strong action to reduce their emissions.

China commenced pilot emissions trading schemes in Shenzhen, Beijing, Shanghai, Guangdong and Tianjin in 2013. More than 1,500 liable entities are expected to participate in these five regions, and the total annual emissions of the regions are more than 970 Mt, about one-and-a-half times Australia's. Another two schemes are proposed to start in Hubei and Chongqing. These seven areas make up one-third of China's economy and use about one-fifth of its energy (DIICCS RTE 2013).

Much action on climate change in the United States is happening at state and local level—29 states have adopted greenhouse gas reduction targets or limits, with varying stringency, while nine north-eastern states have had an emissions trading scheme for their power sectors since 2009 (the Regional Greenhouse Gas Initiative). California has a separate emissions trading scheme that began in 2013 and linked to the Canadian province of Quebec in January 2014. The scheme will eventually cover most of California's emissions, which comprise about 7 per cent of total US emissions—equivalent to about 80 per cent of Australia's annual emissions. The states of Oregon and Washington are also considering introducing carbon pricing.

The United States and China are also cooperating on climate change at sub-national levels. The US state of California and the Chinese municipality of Shenzhen are working together on air quality. Both regions have emissions trading schemes in place and have agreed to share policy design and early experiences from these schemes.

TABLE 4.3: COMPARING SUB-NATIONAL AREAS TO COUNTRIES

IF THIS AREA WITH CARBON PRICING WAS A COUNTRY ITS EMISSIONS WOULD BE ABOUT THE SAME AS
 California (440 Mt)	 Spain (410 Mt)
 The nine Regional Greenhouse Gas Initiative states (470 Mt)	 Poland and Greece combined (490 Mt)
 Guangdong (510 Mt)	 Italy (510 Mt)
 Shanghai (240 Mt)	 Singapore (230 Mt)
 Beijing (100 Mt)	 Chile (100 Mt)

Notes: Total emissions from the region—carbon pricing covers a subset of these emissions. Data from year 2010 except Beijing (2011), excluding land use. Regional Greenhouse Gas Initiative states are Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont.

Sources: WRI 2013b CAIT for US state and country emissions; World Bank 2013 for China sub-national emissions

4.2.2 2020 AND BEYOND

While there is a clear trend to increased climate action, more needs to be done, up to and beyond 2020, to limit warming to below 2 degrees.

The UNEP Emissions Gap report (published annually) is one of the most comprehensive studies aggregating countries’ 2020 pledges. The report estimates the gap between the level of projected global greenhouse gas emissions with current 2020 pledges, and the level climate science recommends gives a likely chance of limiting warming to below 2 degrees (defined by UNEP as a 67 per cent chance).

The 2013 Emissions Gap report finds that the emissions gap for 2 degrees is 8-12 Gt CO₂-e. This is equivalent to about 14-24 times Australia’s annual emissions.

Importantly, the report finds that it is technically feasible to limit temperature increases to below 2 degrees with either greater pre-2020 action or post-2020 action. However, it notes that increasing action post-2020 will be more difficult, costly and risky than acting earlier, including because of the lock-in of emissions-intensive infrastructure (UNEP 2013).

Countries are beginning to plan emissions reductions after 2020 in the context of the emissions gap, including an international framework for post-2020 climate action. This framework is due to be negotiated by 2015 and to come into effect in 2020. Countries including Australia are expected to begin putting forward post-2020 goals in the UNFCCC by the first quarter of 2015.

In light of this timeline, many countries have begun internal policy processes to consider medium-term targets such as 2025 or 2030. Several countries have also set domestic 2050 goals to guide their progress, including the EU, the UK, New Zealand, Mexico, Japan and Norway. Table 4.4 sets out current post-2020 goals in key countries. More countries are expected to announce post-2020 goals as international and domestic processes advance.

TABLE 4.4: POST-2020 EMISSIONS REDUCTION TARGETS OF SELECTED KEY COUNTRIES

COUNTRY	POST-2020 DOMESTIC TARGET IN PLACE	ADDITIONAL TARGETS UNDER CONSIDERATION
 Australia	2050 Target of 80 per cent below 2000 levels (in current legislation)	
 United States	2050 In 2009, President Obama committed to a goal of 83 per cent below 2005 levels	
 European Union (28 member states)	2050 80–95 per cent below 1990 levels	Considering 2030 targets, with a decision expected in March 2014 Roadmap to 2050 planning document contains reduction targets of 40 per cent by 2030 and 60 per cent by 2040, both relative to 1990 levels
 Japan	2050 80 per cent below 1990 levels included in its Fourth Basic Environment Plan	
 Germany	2050 Germany contributes to the EU 2050 targets and has adopted the EU goal of 80–95 per cent in its energy blueprint	Considering 2030 targets with EU, decision expected March 2014 Legislation passed in 2010 sets out a road map to 2050, with indicative targets below 1990 levels—40 per cent by 2020, 55 per cent by 2030, 70 per cent by 2040 and 80–95 per cent in 2050
 United Kingdom	2050 The UK contributes to the EU 2050 targets of 80 per cent below 1990 levels The UK's goal is supported by legislated carbon budgets from 2008 to 2027. The 2027 carbon budget represents emissions 50 per cent below 1990 levels	Considering 2030 targets with EU, decision expected in March 2014
 South Africa	2025 42 per cent below business-as-usual levels set in South Africa's National Climate Change Response	South Africa has a 'peak, plateau and decline' strategy, where its emissions peak between 2020 and 2025, plateau for about 10 years and then fall
 New Zealand	2050 50 per cent below 1990 levels	
 Norway	2050 Carbon neutrality (reduce global greenhouse gas emissions by the equivalent of 100 per cent of its own emissions)	If an ambitious global climate agreement is achieved, in which other developed countries also take on extensive obligations, Norway has stated it will undertake to achieve carbon neutrality by 2030

Note: Many countries' targets are conditional on the extent of climate action in other countries. Key countries not in this table have not yet announced post-2020 goals.

Sources: UNFCCC 2011 and 2013, and country websites

4.3 LINKING GLOBAL ACTION TO AUSTRALIA

Australian action both before and after 2020 is part of a broader international response.

In considering recommendations for Australia's 2020 emissions reduction goals, the Authority has considered:

- Australia's existing international undertaking to reduce emissions and the government's conditions for moving beyond 5 per cent
- Australia's relative development level and where different Australian 2020 targets sit on the international spectrum, placing Australia's action in context
- how Australian action can influence other countries.

4.3.1 AUSTRALIA'S INTERNATIONAL UNDERTAKINGS AND 2020 TARGET CONDITIONS

Australia has made an international undertaking to reduce its emissions by 5–25 per cent by 2020 relative to 2000 levels. The 5 per cent target is unconditional, and a policy has been set for when Australia might move beyond 5 per cent—to 15 or 25 per cent. The policy conditions are set out in Box 4.4.

The Authority considers that the conditions for moving beyond 5 per cent have been met. Whether the conditions for 15 per cent have been met is unclear—some elements have been met; others are marginal. The conditions for a 25 per cent target have not been met. A clause-by-clause breakdown of the conditions is at Appendix B. Importantly, the target conditions are only one aspect of the Authority's considerations.

A common misconception that the Authority encountered in its consultations is that the target conditions require a legally binding international agreement. The conditions for moving beyond 5 per cent do not refer to the form of international action, binding or otherwise. The Authority's interpretation of the conditions for the 15 or 25 per cent target is that they require coordinated international action but that the element of an 'international agreement' could take a range of forms, not all of which would be legally binding. While a new treaty could meet the conditions, a set of UNFCCC decisions or some other agreement that delivers the results referred to in the conditions could also satisfy them.

BOX 4.4: AUSTRALIA'S 2020 TARGET POLICY**Reduce emissions by 5 per cent relative to 2000 levels**

Conditions: None

Reduce emissions beyond 5 per cent

Conditions: The government will not increase Australia's emissions reduction target above 5 per cent until:

- the level of global ambition becomes sufficiently clear, including both the specific targets of advanced economies and the verifiable emissions reduction actions of China and India;
- the credibility of those commitments and actions is established for example, by way of a robust global agreement or commitments to verifiable domestic action on the part of the major emitters including the United States, India and China; and
- there is clarity on the assumptions for emissions accounting and access to markets.

Reduce emissions by 15 per cent compared to 2000 levels

Conditions: International agreement where major developing economies commit to restrain emissions substantially and advanced economies take on commitments comparable to Australia's. In practice, this implies:

- global action on track to stabilisation between 510–540 ppm CO₂-e;
- advanced economy reductions in aggregate in the range of 15–25 per cent below 1990 levels;
- substantive measurable, reportable and verifiable commitments and actions by major developing economies in the context of a strong international financing and technology cooperation framework, but which may not deliver significant emissions reduction until after 2020;
- progress towards inclusion of forests (reduced emissions from deforestation and forest degradation in developing countries) and the land sector, deeper and broader carbon markets and low-carbon development pathways.

Reduce emissions by 25 per cent relative to 2000 levels (up to 5 percentage points through government purchase)

Conditions: Comprehensive global action capable of stabilising CO₂-e concentrations at 450 ppm CO₂-e or lower. This requires a clear pathway to achieving an early global peak in total emissions, with major developing economies slowing the growth and then reducing their emissions, advanced economies taking on reductions and commitments comparable to Australia's, and access to the full range of international abatement opportunities through a broad and functioning international market in carbon credits. This would involve:

- comprehensive coverage of gases, sources and sectors with inclusion of forests (reduced emissions from deforestation and forest degradation in developing countries) and the land sector (including soil carbon initiatives (for example, biochar) if scientifically demonstrated) in the agreement;

- clear global trajectory, where the sum of all economies' commitments is consistent with 450 ppm CO₂-e or lower, and with a nominated early deadline year for peak global emissions not later than 2020;
- advanced economy reductions, in aggregate, of at least 25 per cent below 1990 levels by 2020;
- major developing economy commitments that slow emissions growth and then reduce their absolute level of emissions over time, with a collective reduction of at least 20 per cent below business-as-usual by 2020 and a nomination of a peaking year for individual major developing economies;
- global action which mobilises greater financial resources, including from major developing economies, and results in fully functional global carbon markets.

Note: 'Advanced economies' refers to Annex I Parties to the UNFCCC and at least some other high-middle income economies; 'major developing economies' refers to non-Annex I members of the Major Economies Forum.

Source: Commonwealth of Australia 2013

CONDITIONS FOR BEYOND 5 PER CENT

In the Authority's view, the conditions for moving beyond 5 per cent have been met:

- Since the target conditions were set, there has been significant process 'clarifying the level of global ambition', with all major emitting economies putting forward 2020 emissions reduction goals under the UNFCCC.
- A robust international framework for measuring, reporting and verifying targets and actions was established in 2011 at the Durban Climate Conference.
- A clear framework for markets and accounting has been established for second commitment period targets under the Kyoto Protocol. For targets outside the Protocol, countries will set out their rules for accounting and markets in biennial reports, due to begin 1 January 2014.

A number of submissions to the Targets and Progress Review stated the conditions for moving beyond 5 per cent had not been met. Organisations with this view were the Australian Industry Greenhouse Network, the Australian Petroleum Production & Exploration Association, the Business Council of Australia and the Cement Industry Foundation. The main reason given was that major developing economies had not yet committed to restrain emissions substantially and advanced economies had not yet taken on commitments comparable to Australia's. The Authority's view is that major developing countries and advanced economics are acting to restrain their emissions, and it has provided evidence to support this position in this chapter. Regardless, this is not one of the conditions for moving beyond 5 per cent. Unlike the conditions for moving to 15 or 25 per cent, there is no requirement in the 'beyond 5 per cent' conditions for major developing economies to commit to restrain emissions substantially or advanced economies to take on commitments comparable to Australia's.

CONDITIONS FOR 15 PER CENT

Whether the conditions for moving to a 15 per cent target are fulfilled is less clear. Different readers legitimately might come to different conclusions about whether these conditions are met. Some elements are met; for example, there has been strong progress developing a global framework, including targets by all major emitting economies; measuring, reporting and verifying emissions; and taking action on finance and technology for developing countries.

Some elements are marginal, including global action on track to stabilisation between 510 and 540 ppm. Studies generally estimate that the level of global effort is on track to stabilisation at about 550 ppm (Project Catalyst 2010); however, there is significant uncertainty surrounding these estimates. First, there is uncertainty about the exact level of emissions reductions implied by the UNFCCC 2020 pledges (UNEP 2013). Second, the stabilisation outcome depends on the shape of the world's long-term emissions trajectory; this means it is difficult to relate 2020 emissions levels to particular stabilisation outcomes without making significant assumptions about action after 2020 (Rogelj and Meinshausen 2010). Given the degree of uncertainty, stabilisation between 510 and 540 ppm cannot be ruled out.

The condition regarding aggregate advanced economy action is also marginal. Recent analytical work estimates aggregate Annex I Party action to be 12-18 per cent below 1990 levels by 2020 (compared with the 15-25 per cent reductions listed in the conditions) (den Elzen et al. 2012, p. 9). There is uncertainty regarding these estimates, which could pull the aggregate up or down.

CONDITIONS FOR 25 PER CENT

In the Authority's view, the conditions for 25 per cent have not been met at this time. In particular, while stabilisation of greenhouse gas concentrations at about 450 ppm remains technically feasible, most studies do not consider that the current 2020 pledges are on track. The aggregation of Annex I targets, even under the most favourable assumptions, is unlikely to be 'at least 25 per cent' reductions on 1990 levels.

These conditions have been long-standing Australian policy and have provided guidance to stakeholders about the likely Australian target. The Authority, however, is legislatively required to take into account a broader range of factors beyond these conditions, including estimates of the global greenhouse gas emissions budget, economic efficiency, equity and the level of global action to reduce greenhouse gas emissions. Therefore, while the assessment of the target conditions is an important factor in the Authority's deliberations, it is only one input to its recommendations about Australia's appropriate 2020 target.

In the international context, the Authority has also taken into account how different Australian targets compare with the 2020 targets put forward by other countries, and Australia's ability to influence other countries' climate actions. These matters are discussed in the next section.

4.3.2 AUSTRALIA'S PLACE IN THE WORLD

Australia is prosperous compared with most countries. It has the 12th highest GDP per person in the world and a high standard of living, ranking second of 186 countries on the UNDP's human development index.

Australia is also a high-emitting country in absolute and per person terms. Australia has the highest emissions per person of all developed countries and is responsible for about 1.3 per cent of the world's emissions of greenhouse gases. While this may sound like a small proportion of the global total, Australia is the 15th highest emitter of greenhouse gases in the world (of 186 countries: WRI 2013b). Some of this reflects Australia's relatively high share of fossil fuels in its energy supply. In 2011-12, coal represented nearly 60 per cent of Australia's total primary energy supply (BREE 2013a) compared with an OECD average of 20 per cent (IEA 2012). Australia is one of only 19 countries that emits more than 1 per cent of the world's emissions. Combined, emissions from these 19 countries account for more than two-thirds of the world's total emissions.

In the Authority's consultations, many stakeholders suggested that these factors mean Australia should show 'climate leadership', or be at the front end of international action. Against this, some submissions considered Australia had certain characteristics that argued against stronger action and cited potential impacts on Australia's competitiveness and the high cost of reducing emissions in Australia.

As discussed in other parts of the Review (chapters 10 and 12), most studies—both Australian and international—find that Australia has relatively high costs of emissions reductions. These findings are important, but need to be balanced against three factors:

- the magnitude of the costs may be ameliorated by access to international emissions reduction units
- emissions reduction costs—and their distribution across households and industry—depend heavily on policy design. Policies can be designed to help households and moderate the costs on businesses
- while Australia's costs may be relatively high, it also has relatively high development levels and therefore greater capacity to meet them.

An analysis of Australia's place in the world shows that it has high emissions—and the capacity and prosperity to reduce them. Comparing its targets and actions to much poorer countries, including China and India, can be useful for a policy design process or when considering issues of carbon leakage. However, in terms of overall ambition, it would not be fair to expect these countries to take the same action as Australia because they are significantly poorer and have dramatically different capacities to implement policy and respond to climate change. Table 4.5 describes emissions and development data for each country.

TABLE 4.5: COMPARING AUSTRALIA'S EMISSIONS AND CAPACITY TO ACT**AUSTRALIA'S EMISSIONS**

Per cent of global emissions: 1.3 (15th in the world in 2009)

Emissions per person: 25 tonnes of CO₂-e (11th in the world in 2009, highest of any developed country)

AUSTRALIA'S DEVELOPMENT AND ECONOMY

Human development index ranking: 2

GDP (\$Int, PPP): \$961 billion (18th in the world)

GDP (\$Int, PPP) per person: \$41,954 (9th in the world)

AUSTRALIA'S EMISSIONS AND DEVELOPMENT COMPARED TO KEY COUNTRIES

	Per cent of global emissions	Emissions per person (t CO ₂ -e)	Human development index* (rank: 1=highest)
 Australia	1.3	25.1	2
 China	22.1	7.1	101
 United States	15.3	21.2	3
 European Union (28 member states)	10.9	9.2	From 4 (the Netherlands) to 57 (Bulgaria)
 India	5.5	1.9	136
 Japan	2.8	9.5	10
 Germany	2.1	10.9	5
 Indonesia	1.9	3.3	121
 Canada	1.6	19.9	11
 Republic of Korea	1.4	12.5	12
 United Kingdom	1.4	9.3	26
 South Africa	1.3	11.2	121
 New Zealand	0.2	16.6	6
 Norway	0.1	11.2	1

Note: The United Nations human development index is a composite measurement of development that combines indicators of life expectancy, education and income; PPP is purchasing power parity, used when comparing GDP across countries.

Sources: Emissions data from WRI 2013b, year 2009, excluding land use; GDP data from IMF 2013; population data from ABS

4.3.3 COMPARING AUSTRALIA'S TARGET RANGE TO OTHER COUNTRIES' TARGETS

In considering an appropriate 2020 target for Australia, it is relevant to consider how different Australian targets compare with the 2020 targets put forward by other countries.

To assist with this analysis, the Authority has considered Australian targets of 5, 15 and 25 per cent relative to targets of key countries. The countries include those with similar levels of development to Australia, major emitting economies and Australia's major trading partners and neighbours.

These countries have put forward targets in different forms with different reference years, which makes them difficult to compare. To facilitate comparison, the Authority has translated the 2020 targets of key countries to the same four key measures on a 2005 base year:

- absolute emissions reductions or limitations
- emissions intensity implied by 2020 targets
- deviations from business-as-usual
- per person emissions implied by 2020 targets.

Each measure provides a different way of looking at the target range. Absolute emissions give a direct assessment of the overall emissions reduction levels. Reductions in emissions intensity demonstrate a country's intended rate of economic decarbonisation. Deviations from business-as-usual give a comparative measure of the effect of targets on emissions and the effectiveness of climate change policies. Per person emissions removes the effect of population growth and links to the contraction and convergence and equity discussions in Chapter 8.

All of these measures have different limitations, and the metric of deviations from business-as-usual is particularly difficult, as it relies on contestable assumptions. The methodology and limitations are explained in Appendix B.

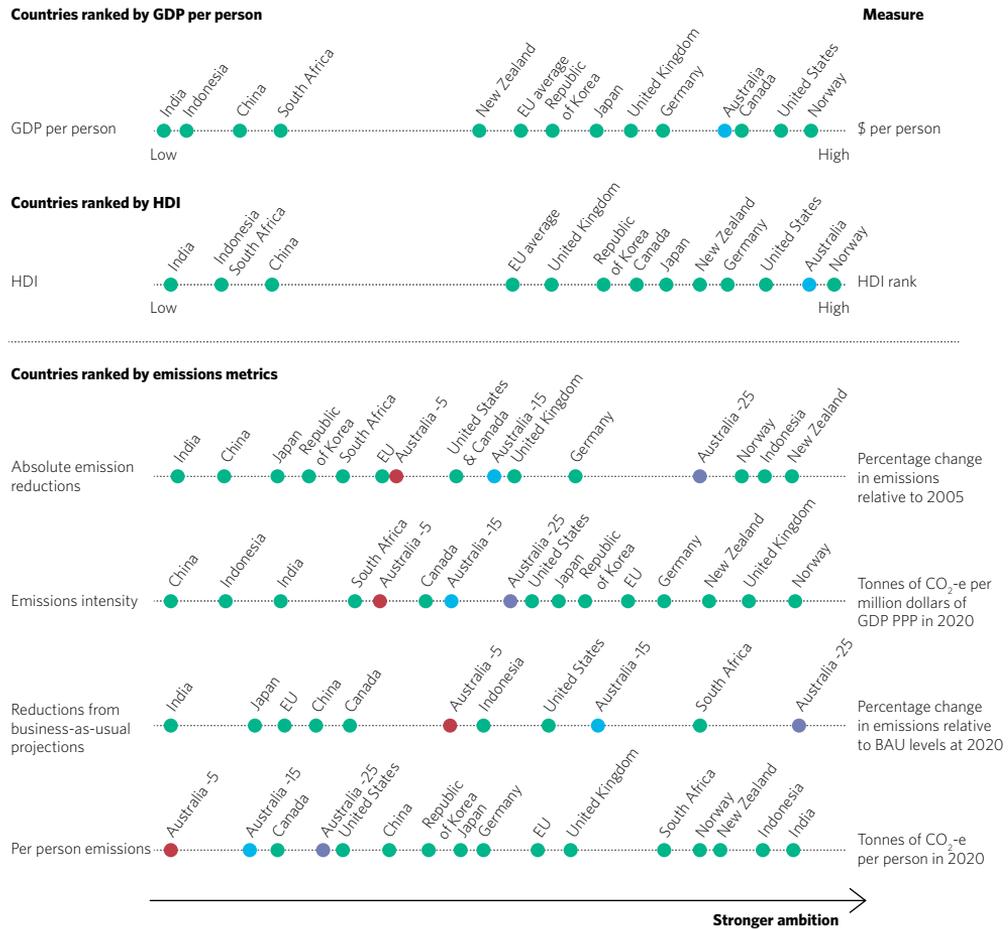
Since each of the four measures provides different information about countries' targets, it is important to look at the whole picture rather than any one measure in isolation. However, even this does not capture all relevant factors. For example, none of the above measures takes into account a country's development level, its previous action or its historical emissions levels. This analysis cannot capture the full international context over time and should therefore be used as a starting point for considering comparability rather than as a definitive formula.

Comparing different countries' targets is complicated by different base years. For example, the US target is a 17 per cent reduction by 2020 compared with 2005 levels. Australia's target range is expressed relative to 2000. To think about an Australian target that matches the US target, a matching base year is needed. In 2020, the US target requires its emissions to be 20 per cent lower than its emissions in 2000. Therefore, a matching target for Australia on this basis would be 20 per cent. Conversely, if Australia was to reduce its emissions by 17 per cent compared with its own 2005 level emissions, this equates to a 10 per cent reduction compared with 2000 level emissions.

With the above caveats, Figure 4.3 summarises the Authority's analysis of how targets of 5, 15 and 25 per cent rank relative to other countries' targets on the four measures. It also includes where Australia sits on the development metrics of GDP per person and human development index.

Several stakeholders suggested the relative cost of abatement as an important comparative measure. This is analysed separately in Chapter 8.

FIGURE 4.3: SUMMARY OF AUSTRALIA'S CAPACITY AND POSITION ON DIFFERENT METRICS



Source: As for figures B.1-B.4 in Appendix B.

Australia’s 2020 target range, particularly the 5 per cent target, does not look comparable to these key countries when measured by emissions per person and emissions intensity. The same target range looks more ambitious when assessed against deviations from business-as-usual. The variability of the conclusions indicates the difficulty of ‘calibrating’ Australian effort directly to a country or group of countries.

At a very general level, this analysis shows that Australia’s 5 per cent target is at the weaker end of the group against most metrics. The Authority’s recommended target is broadly comparable to the action of other countries, including the United States. It is not singularly ambitious on any metric. On most metrics, it is weaker than the targets of climate leaders, including Norway. Therefore, the Authority considers its recommended target of 15 per cent plus carryover to be a defensible contribution to the global climate change effort, broadly similar to the actions of other countries with similar capacity and wealth.

4.4 AUSTRALIA'S INFLUENCE

Countries do not make decisions about climate targets and policies in a vacuum; they are influenced by the level of global action and the policies and targets of their neighbours, trading partners and countries with similar economies.

Influence can be positive—encouraging greater action—or negative; countries could use the absence of action in another country as a reason to delay further action or defer existing commitments.

Australia is a small but important part of the global picture on climate change. While Australian influence on global efforts should not be overstated, there are certain ways Australia can influence other countries. First, it has strategic roles in international groups. In the UNFCCC, Australia chairs the Umbrella Group—one of the major negotiating blocs that includes the United States, Russia, Canada, Japan and Norway. Australia is also a founding member of the Cartagena Dialogue for Progressive Action; an influential group of developed and developing countries committed to working together to resolve negotiating deadlocks and drive progress in the UNFCCC. Australia's role in these groups means its actions are more likely to be noticed by other countries. Outside the UNFCCC, Australia is active in complementary initiatives that ensure its views are heard in a range of forums (see Appendix B for a list of these initiatives).

Second, Australia also has some influence because of its particular circumstances—it is an emissions-intensive economy with a relatively high cost of emissions reduction. If a country in these circumstances chooses a stronger target—and achieves it—it is likely to have a disproportionate effect spurring action from others. Conversely, Australia is a highly developed country with a high capacity to act. If Australia fails to take strong action, other, poorer countries are more likely to characterise climate change action as unaffordable and unachievable. Demonstrating that a high-emitting and fossil fuel-dependent economy can successfully cut emissions and achieve a strong target may be one of the most effective ways Australia can influence other countries.

Third, Australia can have influence by demonstrating that climate policies can be effective. Countries observe and copy the successful policies of other countries. Successful Australian demonstration can be seen across a range of policies including plain packaging for cigarettes (now being considered or introduced in Ireland, Canada, India, New Zealand, Turkey and the EU) and the Renewable Energy Target (RET), with similar models adopted in the UK and some US states. The demonstration effect of robust climate policies is likely to increase other countries' confidence that they can adopt effective policies, and take on stronger targets in the future.

Timing should also not be overlooked. Australia is uniquely placed to influence global climate action over the next few years. The international climate change framework is in a developmental phase, and many countries are putting in place new policies and looking for examples to model. These factors are likely to mean that action now will be especially influential. Australia's current international roles—chairing the G20 in 2014 and its position on the United Nations Security Council—mean Australian action in the next few years is likely to be noticed by more countries.

Australian influence on collective action can be positive or negative at this critical time. On the positive side, a stronger Australian target underpinned by robust policy is likely to support a sense that countries are serious and committed to achieving their targets. This may help encourage countries to stand by their commitments or do more. Drawing back from our international commitments is likely to have a negative influence; an effect heightened by Australia's high level of development. And, in some ways, negative action can be more influential in collective forums than positive action—the US failure to ratify the Kyoto Protocol and Canada's subsequent withdrawal has received far more attention than the approximately 36 countries that look likely to comply with or exceed their first commitment period targets.

CONCLUSIONS

- C.4** There is a significant trend to increased global action to reduce greenhouse gas emissions. All the major emitting economies, including China and the United States, have 2020 emissions reduction goals backed by domestic policies and measures. This trend will need to continue and accelerate if the world is to keep warming below 2 degrees.
- C.5** The Authority's analysis of the government's target conditions show that the conditions for moving beyond 5 per cent have been met. Whether the conditions for 15 per cent have been met is unclear—some elements have been met; others are marginal. The conditions for a 25 per cent target have not been met at this time. While the Authority has taken these conditions into account, it is also required to examine a broader range of considerations.
- C.6** Considering a range of measures, an Australian 5 per cent target lags behind the targets of key countries considered in this Review. A stronger 2020 target of 15 per cent plus carryover is broadly comparable with other countries' targets, including that of the United States. This is especially the case given Australia's high level of development, relative wealth and governance capacity.