

What should be Australia's emissions reduction target?

The Climate Change Authority released an [Issues Paper](#) as part of its first review of the caps and targets that Australia should adopt for 2020 and toward its long-term emission reduction goal. The recommendations of this review will be the most important step in Australia's climate change policy since the carbon price was introduced last July. The Authority will be seeking input from a wide range of sources. Ultimately, these firm caps and targets will determine the environmental and economic impacts of Australia's response to climate change.

At this public event, hosted by Grattan Institute, the CEO of the Climate Change Authority, Anthea Harris introduced the [Issues Paper](#). Professor Ross Garnaut outlined his expectations of such caps and targets in the context of caps and targets set in other countries and how they can contribute to an effective response to the challenge of climate change. They were joined in conversation by Grattan Institute Energy Program Director, Tony Wood.

Speakers: **Ms Anthea Harris, Chief Executive Officer, Climate Change Authority**
 Professor Ross Garnaut, Economist
 Mr Tony Wood, Energy Program Director, Grattan Institute

TONY WOOD: Good evening. My name is Tony Wood and I'm the Program Director for Energy at Grattan Institute. We are very pleased to be hosting in conjunction with the Climate Change Authority this evening's discussion and we'll be doing a couple more of these, again in conjunction with the Authority, over the next week or so. In addition to that, Anthea and her team will be undertaking a wide range of consultation. But tonight the intention is to really provide an opportunity to hear a little bit from Anthea about the actual [Issues Paper](#) that was put out on the 23rd of April and to discuss a little on what that might look like and then with Ross from his perspective, and then to focus on what are the issues that you might like to raise.

When we at Grattan look at this issue we tend to look very much at the hard economic side of things in terms of are we putting an appropriate economic cost on greenhouse gas emissions? So we go to things like *The Economist* and we see things in *The Economist* only a few weeks ago that say "There is no plausible scenario in which carbon emissions remain unchecked and the climate does not warm above today's temperature". Well, alternatively the World Bank last November said "Present emission trends put the world plausibly on a path towards four degrees Centigrade, this is despite the fact that the global community has committed itself to holding warming below two degrees Centigrade to prevent dangerous climate change". So I think this inconsistency that we see around the world, and you could argue arguably in Australia as well, helps frame some of the challenges that exist in relation to the way that we think about caps and targets. You'll also be given a bit of a lesson tonight in semantics, so you'll all go away understanding what's the difference between a target and a gap, and you might want to use that to teach your children at some point.

I'd like to introduce Anthea, she will provide an overview of the [Issues Paper](#) and touch upon I'm sure some of the key themes that have flavoured that paper, and then Ross will talk a little about it from his perspective. And I'll introduce Ross very briefly, but of course I think everybody in the room would know that Ross did a lot of work both in 2008 and in 2011 in an update in which he wrote at length about some of the challenges and issues about how caps and targets should be set in the context of climate change policy and Australia's response to climate change challenge. After that we might have a very short discussion amongst the three of us in which I'll try and address a couple of what I think are some of the key questions from my perspective and see if we can bring those out, and then open it up to the audience and the objective is to finish pretty much around seven o'clock.

Anthea Harris is the Chief Executive Officer of the Climate Change Authority. Anthea's worked in both the public and the private sector for quite a number of years, in fact I suspect most of

this millennium or most of this century she's been working on climate change in some way, shape or form. She was previously Chief Advisor to the Climate Change Strategy & Markets Division within the Department of Climate Change & Energy Efficiency and took over as the inaugural Chief Executive of the Climate Change Authority. This is the Authority's first review of Australia's emissions reduction target and so the whole playing field is open, both to the Authority but also for those of you who wish to provide some input to their thinking. The Authority will cover a few broad topics and has got a particular perspective that I'm sure Anthea will lay out to you. So without any further introduction, I'll hand over to Anthea Harris.

ANDREA HARRIS: Good evening everyone and thank you very much to Tony and the Grattan Institute for hosting this event this evening, and thank you all very much for coming along this evening. First of all, I'm just going to give you a brief outline about the Climate Change Authority because we're a new body and not all of you will know exactly who we are. So we were established on the 1st of July, we've got our own Act of Parliament. We're an independent statutory authority, so while my staff are all public servants, we are an independent body. We report to the Minister for Climate Change, but the Minister isn't allowed to direct us in terms of the conduct or the content of our review.

Our Authority has nine members and here they are here. So our Chair is Bernie Fraser, so Head of the Reserve Bank and before that ex-Head of Treasury. Next along the line is Professor Ian Chubb, so Ian Chubb is the Chief Scientist for Australia. Next is Lynne Williams, so Lynne Williams is a Victorian, she is an economist, long background in both Victorian public service and in academia. Next along the line we have John Marley who really comes from a heavy industry background, so particularly in the aluminium sector. Then we have John Quiggin, so Professor John Quiggin is another economist, so he's based up at the University of Queensland. Then we have Heather Ridout, many of you will remember Heather as the former Head of the Australian Industry Group. Next we have Clive Hamilton, Clive has written a lot about a number of issues including climate change and he is the former Founder and Head of the Australian Institute. Next along with have Elana Reuben who has a very strong background, particularly in superannuation, and finally we have Professor David Karoly who is a climate change scientist. By design and certainly according to the criteria in our legislation, this is a very mixed group. As I've said before, I defy anybody to look at this group of people and look at any particular recommendation that the Authority might make and say "Well, they would say that, wouldn't they?" It's a very diverse group by design and I can assure that they had the sorts of lively discussions that you would expect a group with that make-up to have.

Just a little bit about our work program. We've only put out one report so far and that was our review of the Renewable Energy Target and we put that out in December last year. So now we don't have to put out any final reports until February next year, technically that's two reports: the Caps & Targets Review and a report on progress towards meeting out targets. We're actually going to be rolling those two reviews into one actual report. And in 2014 we also need to conduct a review of the Carbon Farming Initiative which is Australia's domestic offsets program and, if the government doesn't accept our recommendation that we actually change the legislative timetable, we will be doing another review of the Renewable Energy Target in 2014. In 2015 we do another progress report on progress towards meeting our targets, we do that every year. And then in 2016 we're due to do a review of the whole Clean Energy Act including the Carbon Pricing Mechanism and all of its arrangements, another progress report, another review on caps and targets – this is an annual evolving thing – and, again, if the legislation is not amended, another review of the Renewable Energy Target. So we have scheduled reviews for all of the major mitigation policies, the government can also ask us to do any other reviews that they would like and, in addition to that, we can conduct our own research.

So after that little background on who we are, I'll tell you a bit more about the Caps & Targets Review. Basically, under the Carbon Pricing Mechanism we need to set caps – the Emissions Trading Scheme doesn't work unless you actually have caps, limits on emissions that are covered by the Emissions Trading Scheme - and we need to recommend caps that get you out to 2020. Now, you can't think about what the caps for the Emissions Trading Scheme should be, which covers about 60% of Australia's emissions, without thinking about where you want emissions for the whole country to be by 2020. So we need to recommend a 2020 target for emissions reductions for Australia. We also need to recommend a path to get there: there's no

point just having a point-in-time target, we need to recommend the shape of the path to get there and that's called in the legislation the "indicative national emissions trajectory" – there's a piece of jargon for you. We also need to recommend a carbon budget. Now, the legislation defines a carbon budget as "an amount of greenhouse gas emissions emitted over a period of time" but it doesn't tell you what the period of time is. So we have to think about what's a sensible period of time for us to recommend a carbon budget? Is it just to 2020 or some period longer than that?

Just to be very clear, this review is all about Australia's targets, so its level of ambition. How much of a contribution are we going to make to the global effort to reduce greenhouse gas emissions? It's not a review of the mitigation policies that we have in place. It's not a review of the Carbon Pricing Mechanism. It's certainly not a review of some sort of comparative assessment of a Carbon Pricing Mechanism compared with a direct action policy. It's certainly not those things. It's not a policy review; it's a review of targets, in some sense for the national debate. It's a good idea that we're having a review about these things right now. We've had a lot of debates about policy, often probably engendering perhaps more heat than light. It's a good opportunity to focus on why are we having any of those policies? What kind of contribution do we want to make? What goals do we want to set for ourselves in terms of emissions reductions?

Now, when we're thinking about Australia's emissions reductions we're not working in a complete vacuum. Our legislation, the Clean Energy Act, also refers to the government's commitment to reduce greenhouse gas emissions by at least 80% compared with 2000 levels by 2050. So that's really one of the objects of the Act. For the purposes of this review, we're taking that as an anchor point for our review. The government has also committed Australia to reducing its emissions by at least 5% compared with 2000 levels by 2020 and it's made an international commitment that that's its minimum offer. So regardless of anything else that happens in the rest of the world or what other countries do, we will need to reduce our emissions, we've said that we would reduce our emissions, by at least that much. The government has also said that it might do more than 5%, it's also said that it would take our recommendations into account before finally deciding whether it would do more than 5%. And the government's also previously set out, in fact as may be, international undertakings about some conditions under which it might do more than 5%. In particular, it's got a target range that goes from 5% to 15% under certain circumstances, mostly relating to the strength of international action, or perhaps 25% basically under circumstances of very strong international action.

That existing target range and the government's conditions that it has set on the target range are something that we need to take into account in our review, but the government's own range and the conditions that it has set are not binding on us. So we'll take it into account, but our job is not solely just to interpret the government's existing target range and its conditions. Just to give you a little bit of a sense of what those targets might look like. The blue solid line there is how our emissions have actually been tracking along and then those three green lines refer to the government's targets that it's already set. So the endpoint where they all converge at 2050 is the 80% reduction, so you can see a long way away from where emissions currently are, and those three points at 2020 are a 5%, a 15% and a 25%. So that's just to give you a bit of a picture of the scale of what the government has already said it might potentially contemplate.

Now, as promised by Tony, here's your lesson in terminology for the evening. When we talk about a target we're talking about a single point. So a 2020 target is the number, so is it a 5% reduction, is it a 25% reduction for emissions in a single year at 2020? The trajectory to get there is the shape of the line between where our emissions are now and where our emissions should be in 2020. We've drawn there for simplicity a straight line; it doesn't have to be a straight line. Because the Carbon Pricing Mechanisms, the Emissions Trading Scheme, doesn't cover all of our national emissions, it covers about 60% of our emissions, the cap, the limit on emissions in the covered sectors, is a different thing from the national target and from the national trajectory. So it's a subset of that and basically what we need to do is to leave room for the sectors that aren't covered by the Carbon Pricing Mechanism, for example agriculture, it's not covered by the scheme and we need to leave room for those uncovered sector emissions.

So, I'll now talk about the key matters that we're going to be considering in the review.

What should be Australia's emissions reduction target?

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p.3

First of all, we take one of our starting points as being that it is in Australia's national interests to support global action to limit global warming to no more than two degrees. Now, this is reflected in our legislation and it follows from work that Professor Garnaut has previously done which made the case, it was really a cost-benefit analysis, was it in Australia's interests to take action to support global action to achieve that outcome and came up with the resounding answer of yes, it was. That's now in our legislation; we're taking that as given. So we are not conducting another Garnaut Review trying to make the case that any action to try to limit global warming to no more than two degrees in is our interests; we're taking that as a given.

So from there we need to think about okay, well if that's the case, what is the latest science telling us about what's the size of the task from a global perspective? We need to look at the science. We need to have a look at well, if that's what the world needs to do, how do we think about what our share of that global task might be? We have to look at what other countries are doing, what's the scale and pace of international action? We of course need to look very closely at what we think the economic and social implications are for everything that we do. We take all of that into account and make recommendations about targets and then we have to make recommendations about the caps that would match those recommendations on targets.

So just turning briefly to climate change science. Just briefly, really stating the obvious which is that if the whole world wants to achieve a particular outcome in terms of reducing greenhouse gas emissions you can think of a global carbon budget, so we've only got a certain number of tons that the world can emit if we're going to try and achieve a particular probability of achieving a particular temperature outcome. Now this slide is just making the obvious point which is that the later the world leaves it for emissions to peak and then start to decline, then the rate of reductions that we have to make afterwards becomes very steep indeed, and you might get to the point where global emissions might have to be zero. So that means, for example, if you've still got emissions from agriculture, for example, then you need to be offsetting all of those emissions through sequestration of some kind. So it's just making the obvious point, if you go through your weekly budget very quickly you have to make steep cuts later; it's the same for a global carbon budget. The longer we leave things to turn around global perspective, the more rapidly emissions reductions have to occur and we do have to think very seriously about whether that's actually plausible. Is it ever a good time to think right, yes, we can now do emissions reductions of, say, something in the order of 10% a year every year for the next couple of decades? Are we ever going to be at a point where we think that's plausible?

So once we think about global carbon budgets we need to think about what our fair share of that global carbon budget might be and people have thought about different ways of how you might think about that part. So if the world's got only a certain number of tons that it can continue to emit, how many can we have? And, of course, we're not saying that anybody is going to sit down, no Grand Master of the Universe is going to sit down and actually divide up the emission rights and actually allocate rights on that basis and those would be binding. But we want to make recommendations to the government, we would like the government to accept those recommendations and take them into international negotiations, and when the government goes into international negotiations they'll need to feel like whatever we've recommended is defensible.

So that brings people to think about all sorts of ways of thinking, including the work that Professor Garnaut has previously done, about how you might think about what's fair and reasonable in this respect. So some people look at things like capability: how wealthy are you as a country; what kind of institutional background do you have; are you going to be capable of making these emissions reductions? Responsibility, particularly historical responsibility, so if you were responsible in the past for having accounted for a large proportion of the emissions that are already up in the atmosphere, should you be required to reduce your emissions more quickly? Equality, so thinking about all the people in the world, should everyone in the world have equal rights to emit per capita? That might be a bit difficult now, they're very different now, should that be right now or at some point in the future? Should we actually converge towards equal per capita rights at some point and, if so, how? And finally access to sustainable development. Many of these methodologies will think about particularly the very poorest countries in the world, making sure that they can develop and perhaps not on the same

development path that we took, but they'd have some room there so that they can achieve a reasonable standard of living.

Turning then briefly to international action. We will consider what's going on in the rest of the world and be thinking about what that means for how we calibrate what Australia should be doing. We will of course have a look at what countries have pledged to do and under the Copenhagen Accord more than 90 countries have made pledges under that system. They're not technically binding pledges, but nonetheless neither is ours; we are going to make binding pledges under the Kyoto Protocol. So over 90 countries have made pledges in that which accounts for more than 80% of global emissions. We will be looking at those and we will also be looking at what policies countries have on the ground, so what policies countries have to actually reduce their emissions.

Once we look at all of those, we need to think about who are comparable to us, what measures are we using to think about who's comparable? Are we looking at standards of living? Are we looking at economies that look like ours? Are we looking at economies who are our trading partners, our competitors? All of those sorts of things we need to take into account when we're thinking about what we do with information about what other countries are actually doing.

So the final thing that we'll be thinking about when recommending targets is the economic and social implications of whatever targets we might recommend. So we need to think about what our targets might mean in relation to prices, carbon prices, and that's actually not as simple as it sounds. You might think that if we have a more ambitious target, a stricter target, then you would automatically think that the carbon price to achieve that must be higher. But our Emissions Trading Scheme is linked to international carbon markets and so it's not necessarily the case that if we have a stricter target then we necessarily have a higher carbon price. And so the impacts that come from the level of the carbon price might not be different if we have a different level of cap. We'll of course be looking at the usual set of indicators, about what happens to GDP, what happens to gross national income, what happens to different sectors within the economy, what happens to employment, all of those sorts of things, what happens to electricity prices, we will be looking at that normal full set of economic indicators. We won't be looking at, as I said before, whether it's a good idea at all to take action on climate change, we'll be really looking at whether Australia should be doing 5% or something more than that.

So finally we'll need to bring all of that together and make recommendations about targets and caps, but we also want to have a think about life after 2020. So we definitely need to make a whole lot of recommendations to get us to 2020, but then we think about well, we'd like to provide guidance for what happens after 2020. And we've left that open. That's actually a big question and we're asking for comment on what form of guidance people would find most useful. Would it be sensible to set a carbon budget for Australia out to 2020, for example? Would it make more sense to set shorter blocks of carbon budgets like they do in the UK for example, they set a series of five year carbon budgets and they're currently out to 2027? Would it make sense for us to set ranges of possible future targets? Some of you might remember a concept called Gateways from previous policy design proposals where there were ranges of targets that would apply under different circumstances. Or would it make sense to set particular targets, point-in-time targets, for intermediate steps along the way to 2050? Would it make sense, would it be helpful to set a 2030 target, for example? So we're asking for people's views about that.

Now as I said earlier, technically we're actually doing two reviews at the moment and the other review that's going to be actually within the same set of covers as the Caps & Targets Review is the report on progress towards meeting our targets. As part of that progress report we're going to be having a look at both the past and the future. So we want to have a good look at the past and have a look in particular in the electricity industry what's been going on. We can see that electricity demand has been falling and most people agree on the set of factors that's been causing that, but I'm not sure that everybody agrees on the scale of the contributions of those factors. How much of the reduction in demand that we have seen is because of increase in prices? How much has been because of a fall-off in demand from the manufacturing sector, for example? How much of it has been because of energy efficiency policies? So we're going to attempt to put some numbers on all of those things.

We're also going to be having a look at what's happened to emissions intensity in the electricity supply. Again, that has been coming down, there's a range of possible reasons why that's the case and so we want to have a look at those. We also want to have a look for the economy as a whole, what's been driving trends in the emissions intensity of the whole economy. And then for the future, we need to think about what progress means, what progress might look like. So we want to think about potential milestones along the way. We don't have an engineering view that we can predetermine everything that needs to happen for the economy to meet its 2050 emissions reduction target, but there will be some things that we might want to have a look at. For example, big technology, things like carbon capture and storage: are there some milestones that we need to be looking for? For example, if we haven't seen projects that look like X by date of Y, do we start to worry? So there are some things like that that we need to have a look at so we can have a think about what progress actually means. What are we looking for?

And finally, we want to be having a look at what are the benefits and the potential risks of relying on international carbon markets to help meet your targets? So under the design of our Emissions Trading Scheme companies can purchase international units, there's been a lot of discussion in the press about that particularly with the current low prices in the European Union. So if those prices were to continue, which is highly uncertain, would that mean that Australia actually just did a lot of purchasing abatement from overseas and actually not much emissions reduction on our shores? Does that matter? We're looking for peoples' views on what are potentially the benefits and the potential risks associated with that approach.

Finally, just a reminder of our timeline. So we've put out our [Issues Paper](#), I encourage you all to have a look. We'd love you to make a submission, they're due on the 30th of May. We intend to put out our draft report in October this year and submissions will close in November, and we'll put out our final report in February next year. And there's a link to our [website](#) and we do hope to hear from you. Thank you.

TONY WOOD: Okay, I think someone's going to be pretty tired in a few months' time by the sound of things. In the notes that I've been given it says that Ross Garnaut is an economist. Maybe I should just leave it there, but I won't. Many of you would know that Ross has made a significant contribution to this area but always from the perspective of the economist. The work that Ross did in previous governments on trade policy very much coming from that background and Ross continues to work and write in that area. He was Ambassador to China, as many of you would know, and of course was the author of the Garnaut Climate Change Review in 2008 and the update in 2011. There are very few people who are in a better position to comment on some of the issues that have been brought out in the way the Climate Change Authority has approached the issues and so, again, I'd just like to ask you to welcome Ross Garnaut.

ROSS GARNAUT: Thanks Tony. First I'd like to say how pleased I am that the Climate Authority is up and about and doing its work. It's well-structured, in fact the institutional arrangements around the Clean Energy Act are well-structured to allow Australia to do its fair share in an increasing global effort to reduce emissions and to adjust with minimum stress the ambition of what we do and how we do it in line with changing international efforts. And the Climate Authority is a very important institution right at the centre of that. I know that it's well-staffed and I'm pleased, Anthea, that you've made such a good start.

The paper that the Climate Authority has put out for us to comment on contains some data on what's happened to emissions over the past 20 years. We're used to flagellating ourselves and worrying ourselves to death, but it needs to be noted that some good things are happening. We have changed the trajectory of emissions over the last few years. Back in the time of the Kyoto negotiation in 1997 the government was insisting that our first target be for an increase of 8% in emissions over a decade or so, even after we had received huge credit for increasing restrictions on land clearance. So the trajectory for everything else was for very rapid increases and those very rapid increases happened. We saw stationary energy emissions, of which electricity is the major component, rise from 195million tons in 1990 to a peak at just below 300million tons in 2009, and then it did reach a peak and has eased a bit since then to 288million tons. It's a significant reduction, not a huge one, but it's a start and it's a change of trajectory.

Even more interesting from my perspective is the change in trajectory over the last year or so in what we call “fugitive emissions”, emissions associated with release of methane from coal mining and release of a range of gases with LNG production. These have been increasing very rapidly with the growth of the coal and LNG industries, but over the last year they’ve turned down. As Anthea said, a lot of work has to be done to work out all of the reasons that are contributing to that, but we should recognise that there’s been a significant change. There’s also been a significant change internationally. Look at our total emissions and you see a kink in the curve, a change from an upwards slope to a downwards slope in 2006.

In the United States President George W Bush recognised that the United States would need to do something about the greenhouse issue and in 2007 called a conference of what he called “major economies” and announced for the first time that the United States would put a cap on emissions, or at least a notional cap. He talked about emissions reaching a peak in 2025 and then starting to decline. Well, we now know, we can see in the statistics, that United States’ emission reached a peak in 2007, the year in which he was talking, and since then have fallen about 10% from that peak. The first time the United States made a formal commitment to the international community was notionally at the Copenhagen conference and then formally in Cancun at the end of 2010 President Obama committed the United States to reducing emissions by 17% from 2005 levels by 2020. At the time that was treated with some derision. President Obama’s legislation to introduce an Emissions Trading Scheme had been filibustered in the Senate, there was pessimism about strong action.

But soon after the defeat of the Emissions Trading Scheme in the Senate I had a long conversation with the Secretary for Energy, Steven Chu, an eminent physicist, Nobel Laureate, who really was the intellectual force in the cabinet in thinking through how the United States would respond to the greenhouse gas issue. And he said to me “We’re very disappointed that the Emissions Trading Scheme didn’t get through. We’re putting it on the table as a serious domestic political commitment, a commitment to reduce emissions by 17% between 2005 and 2020. We would have liked to have done that in a cheap and efficient way through an Emissions Trading Scheme, but if we can’t do it, if the Senate’s blocked us from doing it in a cheap and efficient way, we’ll do it in a more expensive and less efficient way”. And he then spent a long time going through with me all the regulatory measures that the United States would introduce to achieve its target and one after another they are doing that, at a Federal level through the Environmental Protection Agency. Also at state level there’s a great proliferation of regulations, also significant has been the harassment of coal generation of power with all sorts of new hurdles being introduced at local government/state government level.

And in the last few years those other factors, which are all big factors in reducing American emissions, we’ve seen the introduction of a number of regional Emissions Trading Schemes and we’ve also seen a contribution from what I called in my second review the “gas revolution” in the United States. Gas has become very much cheaper and is rapidly replacing coal-based power generation in the United States. Some Australians look at that and say “Well, sure, America’s reducing its emissions but that’s just from the cheap gas”. Well, the cheap gas is a policy decision. We could have done the same thing; we could have had cheap gas. In fact, proportionately we’ve had a bigger expansion of gas reserves than the United States. Also in Australia, largely but not only unconventional gas, in our case mainly coal-seam gas, in the United States it’s mainly shale gas. We chose to allow unrestricted export of gas and that was a good economic decision. The United States chose to place very severe restrictions on exports of gas. So in Australia, on the east coast of Australia, Queensland, New South Wales, Victoria, South Australia, the growth of the gas export industry has actually increased prices because the export plants are expected to buy up reserves for export. In the United States the restrictions on exports led to lower prices. So the lower prices in the United States for gas, is a policy choice, a very expensive one. It means that they’re not getting the investment in LNG that we’ve had, they’re not getting the taxes from LNG production that we’re getting. It’s just one of the expensive ways that they’re reducing emissions.

But the upshot in the United States is that they’re well on track to reach that -17% by 2020. Already there’s been a reduction from 2005 of about 12% and there’s strong momentum and the introduction of the Californian Emission Trading Scheme at the beginning of this year is just one

of the factors that will increase the momentum. In the European Union, which earlier had been at the forefront of global ambition for emission reduction led largely due to women with scientific backgrounds: Margaret Thatcher and, at a later stage, Angela Merkel, Merkel a professor of physics who, like Steven Chu, actually understands the science of the issue. And the European Union announced early on ambitious targets to reduce emissions by 20% on 1990 levels by 2020 and to go to -30% if the rest of the world was making a large enough effort to warrant that. Well, the European Union too is ahead of targets, unfortunately helped by slow growth in the European Union as a whole, recession in some member states of the European Union, that helps. But it's a much bigger economy in Europe than in the year of the base level of the target, so -20% involves a big reduction in emissions intensity of economic activity. Why emissions prices are so low in Europe is that reaching that target is turning out to be very cheap in current circumstances, partly because of slower growth but over the period in which emissions are being reduced, not negative growth by no means. But there are a whole lot of other interventionist policies that are forcing the pace on emissions reduction. Several countries have quite high carbon taxes in addition to the European Emission Trading Scheme. At the European and at the national level you have feed-in tariffs and other incentives for low emissions energy production. Lots of regulatory intervention, as there is in the United States, and that means that the carbon pricing doesn't have to do much work but they're well on track to achieve that -20%.

In terms of quantities of emissions reductions from business as usual, the change is biggest in China. I've written about that quite a lot elsewhere, there's some material on my website, it would take too long to go through that, but their target was truly ambitious and they are meeting it through a wide range of activities. One element of which is substantial structural change in the Chinese economy driven by a number of objectives, one of which is environmental, others of which are concern for expansion of the role of services in the economy and more equitable income distribution. The tendency through all of the major emitting countries, and I can include Australia in that group, to be on target to meet or exceed their emissions reduction targets and to do that at costs that are lower than had originally been anticipated in my view creates an opportunity for a concerted tightening of targets around the world as a whole. And I've suggested to a meeting of a working group of the ONFCCC that that is something that the world should be working towards for the Paris meeting of the conference of the parties in 2015.

I've taken too long, but briefly to answer Anthea's questions about what the targets should be. I think at the moment things are converging on -17% by 2020 for Australia. A number around that came out of calculations I did after the Cancun meeting at the beginning of 2011 where I addressed the question in a rough and ready way of "If everyone is moving towards convergence to equal per capita entitlements to emissions in the middle of the 21st century, if that's the broad direction we're heading and given the efforts that other countries have committed to make at Cancun, what will be a comparable effort for Australia?" And I concluded then, I haven't done the sums since, that something like -16% or -17% was right.

Australia, the United States and Canada stand out in the world as three developed countries with very high emissions per capita and economic structures to generate high emissions, but also with very high population growth. So it turns out that those three countries will need to reduce total emissions by a proportion that's not very different from the other developed countries because if the end point is going to be something like equal per capita entitlements, stronger immigration and population growth will be balanced by the higher starting point. Canada has not set targets of its own, it's said it will match the United States. I think there will be a fair momentum of pressure towards Australia matching the United States and it will be hard to provide reasons why that's not the case. And we've broadly met the conditions that the government put down for a -15% reduction, so I think we're converging towards -17% now and a commitment to go further in line with the United States if the United States goes further in the context of a concerted international tightening of ambition.

Thank you.

TONY WOOD: I guess one of the things that interested me when I read the [Issues Paper](#), Anthea, was the context in which this review is taking place and I wonder to what extent you'll be able to take the perspective you suggested in looking at this broadly in terms of how Australia should assess its targets, but when you come to the caps how you will need to

What should be Australia's emissions reduction target?

separate the work from the current political position where while there may very well be bipartisan support for the 5% target, whether there'll be bipartisan support for a 17% target remains to be seen. But in terms of the caps, to what extent do you think your work will be constrained at all, if any, by the political situation where you've got two different mechanisms being proposed? I know your job isn't to comment on the mechanism, but how do you avoid getting involved in that?

ANDREA HARRIS: Well, while the legislation remains we don't have a choice, we're obliged to recommend caps and you can't think about those caps without thinking about a target. And of course if we didn't have an Emissions Trading Scheme the cap leg of that becomes irrelevant, but the target doesn't. No matter what your domestic policy framework looks like, Australia still has to make a decision about what its 2020 target should be, what the pathway should be to get there. It has to think about this. Australia's going to be signing on for a second commitment period under the Kyoto Protocol, it has to come back and make its final offer on what its target is going to be for that. So, regardless of what the domestic policies are, I think these recommendations are important.

TONY WOOD: Ross, I guess the thing that interested me is you referred to the effectiveness or otherwise of the European ETS and your comments about Steven Chu's description of cheap and efficient. A couple of weeks ago when the European price went through, again, another further collapse *The Wall Street Journal* said something along the lines of "One of the great policy bubbles of our time has been cap and trade but on Tuesday it may have popped for good. The European parliament refused to save the EU's failing program which is the true believer equivalent of the Pope renouncing celibacy". I guess I'm interested to know, what's your view there and should we be actually moving away from market-based mechanisms in view of the collapse of the carbon price as we think about our approach to the way we might achieve our targets?

ROSS GARNAUT: *The Wall Street Journal* was once a respectable journal of record; it would not once have said that sort of thing. The European discussion a couple of weeks ago was very important, but we need to understand what it was about. There were proposals on the table not for changing the European targets, but changing the schedule at which emissions permits were being put out to auction. Now some people who voted against the measure thought that playing around with the schedule and not with the targets was not an appropriate thing to do. My own view is that the low price in Europe simply is a reflection of the fact they've found it easier and cheaper to reach their targets than they anticipated. Global targets as committed at Cancun in the Cancun conference of the parties of the United Nations are not strong enough to get us to two degrees. And so the fact that we are reaching the Cancun targets relatively easily at relatively low cost creates an opportunity to strengthen targets. And so my view is much more important than playing around with the auctioning schedules, which is what the European parliament vote was about, what we need is Europe being given the circumstances in which it can move to its conditional target of -30%. Europe will not do that alone, just as we will not change our targets alone, just as the United States will not change its target alone. I think there needs to be focused discussion between now and 2015 - the Paris meeting will be very important for these things - so that we can have a concerted tightening of targets. That is what will on a sustainable basis raise European prices and raise our prices with it.

I'll just make one other point briefly. The fact that at the moment we've got a substantial carbon price, we're not doing as much on a whole lot of other instruments is but we've got a higher carbon price, from 2015 we will have the same carbon price as Europe. There is genuine uncertainty if you look at the realities about the carbon price beyond 2015 in Europe, if there was that tightening of targets it could be much higher. And a business in Australia making investments now that will determine the way it produces goods and services in five years, 10 years, 15 years' time, has to take into account the fact that the world, including Europe and Australia, may be tightening targets, the carbon price may be much higher than it is now. And that will determine the shape of plant that is built more powerfully than today's carbon price.

TONY WOOD: Okay, thanks Ross. As I said at the outset, the intention this evening is to hopefully give you an understanding of the perspectives that relate to the [Issues Paper](#), to encourage those of you who are prepared to do so to make submissions to the Climate Change

Authority and you'll be given the timetable. But for the next few minutes or so I'd be interested to see what questions or comments might arise from the audience in relation to the description that Anthea has been putting out and Ross's response.

AUDIENCE: I know even during Professor Garnaut's review the science was changing very quickly and that arctic ice started to melt much faster, and even in the course of that review there were people saying that maybe we should be aiming for 350 parts per million, below where we are now, which effectively then gives you really a zero carbon budget and a pressure to get to zero emissions as fast as you can so as to minimise the overshoot. So I know that Bill McKinnon's coming out soon too with basically a similar message saying I think that even if you want to stay under two degrees you have to look at quite large changes like leaving four-fifths of the already discovered coal and gas in the ground. It's a level and a scale and a scope of change that really is not part of the political debate. So I was a bit sad to not see much emphasis on the science and particularly the changing science and the changing views about the carbon budget as setting any sort of parameter for the recommendations you might make. I'm wondering if there's still scope to put that in?

ANDREA HARRIS: You've actually just given me a wonderful entre to say that actually we did have a session for our Authority members. We've got a number of distinguished scientists to talk about exactly those issues and we've got a summary of those proceedings that we'll be putting on our website very soon we hope. So yes, it is something that we are looking at and so watch this space for our website and we'll be putting out a bit more information about that soon.

AUDIENCE: An issue which has been criticised from both sides of the argument is the treatment of international traded credits. How are you going to make that transparent in setting targets, because people say "Oh well, such-and-such a target is meaningless because half of that's coming from other countries"? And secondly, are you going to forecast or reforecast the business as usual case, because that's fundamental to deciding future policy changes and yet a lot of people are forming the view that the relative high rate of growth that was being predicted five years ago if we did nothing is actually not likely to emerge and that the ability to get a 5% reduction may be in fact closer than had been anticipated?

ANDREA HARRIS: So thank you for that. Yes, we certainly will be looking at a revised prediction of what we think would be happening just with the existing policies in place or with no carbon price at all. So we'll certainly have that new BAU arrangement and we'll certainly be looking at things like, for example, everybody's views about electricity demand, for example, wildly changed from what they were even just a few short years ago. So yes, we will be certainly doing that.

In relation to expectations about international trade and how many international units we think might be contributing to our targets, I suppose there's a number of important points to make. First of all, our legislation. When we're recommending targets our legislation talks about those as being net targets, so they are net of trade. Second of all, we're taking the existing arrangements for how the carbon pricing mechanism works as given. This isn't a review of those rules. Those are the rules and so we'll make estimates of for any particular target how much of the abatement would be contributed domestically and how much would be bought off-shore. The one thing I would say about that is I bet we underestimate how much abatement we do on-shore. Whenever you do this kind of modelling you're inevitably really cautious and don't want to say, you know, we always end up finding more abatement than we think. So there's my tip, that we'll find more abatement than we model. Thirdly, we will be looking in that progress report, part of the report, about what does all of that mean? What are the benefits and what are the risks? Fourthly, I would say that I think there are a lot of arguments that you can make either way.

Of course, first of all the environment doesn't care where the emissions reductions come from. Second of all, you could say if it's cheaper for us to buy it from somewhere else, if you're confident that it's a genuine emissions reduction, does it matter? Thirdly, are you prepared to be more ambitious with your emissions reduction goals if you can trade? Fourthly, I suppose contrary to some of those points is, does that bring any risks? Are you confident that you're getting enough domestic transformation in your own economy? Or are you worried that at some

point the tap might get shut off in terms of access to international markets or there might be a sudden change and a spike in the price of those international units and your economy is not prepared? So all those sorts of issues, they're some of the things that we want to be looking at in the review, but we won't be making recommendations in this report about should you change the rules in the scheme. This isn't the scheme review.

AUDIENCE: You said that you won't be considering policies and measures, but it seems to me that the policies and measures determine what the target actually means, like, with the international linking being a key example of that. So it seems to me that you can't consider one without the other and I wondered if you considered that? Secondly, you said that you'll take into account the existing conditions for raising Australia's target and the ranges associated with that, but you also said you're not bound by that. So what do you mean by that exactly?

ANDREA HARRIS: Okay, so to your first point, we'll be making our assessment of what we think the economic implications and the social implications are of achieving a particular target. You're right in the sense that we have to assume some of the particular measures in place, so we'll be looking at the existing arrangements in place and assuming those policies are all still carrying on when we're conducting our analysis. You've also highlighted that it's probably a slightly awkward time to be thinking about making those base assumptions about what those policies might be, but until such time as they change they form the background. When we've got a new background we have a new background and we'll proceed on that basis.

Now your second point in relation to the target conditions. It's really just one of the list of the factors. So we must take into account economic and social implications, we must take into account a whole raft of things. One of the things we must take into account, according to our legislation, is any international commitments that the government has given or undertakings. The target range is actually inscribed in the Cancun agreement, so it is an undertaking that the Australian government has made so we must take it into account. But it's one of the list of things, so it's just one of a number of things for us to take into account rather than giving you the answer, go off and interpret those conditions and that's it. So we have a look at that and we take that into account, one of the conditions we think -5, more than -5, 15, whatever you think about that, but then that's not all we need to take into account.

AUDIENCE: So could you recommend targets deeper than 25% by 2020?

ANDREA HARRIS: Yes.

AUDIENCE: I'm interested in the trajectory of the effort involved and whether we're in a stage where the reductions are coming from low-hanging fruit, if you like, and the effort's going to be greater later to get to those 80% cuts? Or whether we haven't formed a view on that, or whether it means that instead what's going to happen is going to reach structural and technological changes or scale changes that mean actually the effort gets easier? And, if you have formed a view on that, what your thinking is in terms of the intergenerational equity around that?

ANDREA HARRIS: I'll have one go and then I think Ross, I might get you to have another go and give you an opinion on this. Of course we don't know, so we make projections about the future and when particular technologies might show up, if we haven't got them now, or how much they might cost in the future. And all of those things of course affect what you think the costs are now compared with what you think the costs might be in the future. Of course, when we're predicting those sorts of things for decades in advance, of course they're just estimates and they will be wrong, it's just a matter of wrong in which direction?

So one thing I would say is, just picking up on what Ross has been saying, is that to-date every time, if you look around the world, when we have set these targets and when there's been any kind of attempt to actually meet targets that people have set, which of course by far the bulk of countries have actually been meeting the targets that they have set themselves, actually it's turned out to be easier than anyone predicted in the past. So we've been finding that to-date. Whether we continue to find that in the future we shall see. I think banking on the ability to make very steep reductions in the future, it must be a risky course. It means you're assuming that yes, new technologies will appear or existing technologies will become much faster. Now, even if that

happened you've still got those structural adjustment issues to contend with. That means you're potentially shutting a whole bunch of existing industries down and replacing them with these new technologies. Now the idea, even if those new technologies are cheap, that that's ever going to be a painless process and the idea that everyone says "Oh yeah, that's fine, just proceed" I just find that a bit questionable.

ROSS GARNAUT: Yes, I think there's lots to be reassured about in rates of technological progress in this area. Between the 2008 modelling for my review and then the 2011 update it was clear that the costs of low emissions technologies had fallen a good deal more quickly than we had anticipated, and that's kept on happening and dramatically so. And it's happening through two types of developments. So there are developments at the frontier of science and technology and that takes longer, but a lot of the work is very promising. Just one, the United States' Department of Energy has put a lot of effort into development of algae as a basis for biosequestration and a source of biofuels. The science on that and the movement towards early stage commercialisation are very promising. The other way in which things are improving rapidly, and more rapidly than anticipated, is improvements in manufacturing technology where the basic technology is known, but as capital goods come to be made at scale and firms become more experienced at making them, costs are coming down very rapidly. Photovoltaic panels have come down something like 80% in price in the last five years or so in the basic cost of production of the panels, mostly through large-scale production in China. And that has dramatically changed what's possible. It has made putting photovoltaic on your roof competitive with purchasing power from the grid, admittedly helped by our hopelessly inefficient price regulation for poles and wires. But, be that as it may, the rapid reduction in cost of photovoltaics is part of the story.

Similar things happening in wind, although wind is not such a new technology, just large-scale manufacturing of the units. It's happening with nuclear, with China developing nuclear plants on a scale in terms of numbers of plants under construction that's never occurred before. So for the first time we're moving from batched construction of major components to continuous production of major components, and the cost is coming down very rapidly. So we're going to have a much wider suite of competitively priced sources of energy. All of the ones I've mentioned are mainly in the electricity sector, although biofuel extends into transport. Movement on electrification of transport is much more rapid than anticipated, for example, in my modelling in 2008. China has recently made a major commitment to the numbers of electric cars that it will have on the road by 2020. That will provide a scale of production that will radically bring down the cost of the cars and the batteries, combined with more efficient systems for supplying electricity, charging your battery in the middle of the night when electricity has very little value, and combined with decarbonisation of the electricity system, we're going to have a low cost, low emissions transport system much earlier than we'd anticipated a few years ago.

TONY WOOD: Okay, if any of you have concluded that Anthea Harris is both an astute and well-experienced Chief Executive of the Climate Change Authority and Ross Garnaut is the most glass half-full economist almost in the world, then you'll be absolutely right.

The final thing I just want to do is wrap up this evening. We've been very privileged to have both Anthea and Ross here. On the 4th of May, only last week, *The Economist*, again commenting on a piece of work put out by the Grantham Institute Climate Tracker, concluded that either governments are not serious about climate change or fossil fuel firms are over-valued. But in particular in relation to this topic tonight it said "As long as governments are ambivalent about emissions targets it seems fruitless to demand more of companies and markets". Anthea's challenge therefore is to make sure that the Australian government no longer stays ambivalent about targets. You've got until the 30th of May to put in your submissions so I would urge you to do so, and thank both Anthea and Ross.

End of recording