

Australia and California: The climate action conversation

Action to reduce greenhouse gas emissions in the US and China means that Australian climate change policy thinking is increasingly linked to the global scene. In North America, state-level action to implement emissions trading, reduce transport emissions and increase renewable energy has influenced national policy, and helps build momentum for global action.

Mary Nichols, Chairman of the California Air Resources Board has implemented broad climate action in California, including emissions trading. During this seminar we will hear about the successful launch of the California carbon market as well as other major climate policies California has led, and how they intersect with emerging national US policy. Professor Ross Garnaut will join the conversation to discuss the global perspective and the relevance of California's climate action for Australian policy makers. Grattan Institute's Energy Program Director, Tony Wood, will chair this event.

Speakers: Mary Nichols, Chairman of the California Air Resources Board.
Ross Garnaut, Professor of Economics, The University of Melbourne.

Chair: Tony Wood, Energy Program Director, Grattan Institute.

TONY WOOD: My name is Tony Wood and I'm the Energy Program Director at the Grattan Institute. Welcome to all of you. Firstly, I should make the point that our seminar is being held this evening on the traditional lands of the Kulin nation and I wish to acknowledge them as traditional owners and pay my respects to their elders past and present, and elders from other communities who may be here this evening.

This morning I was in Sydney and I met with Minister Tony de Brum from the Republic of the Marshall Islands. Now, they've got an interesting challenge: their crops are failing; the average height of the country above sea level is 2m; right now the top half of the country is in severe drought and the bottom half of the country is subject to severe flooding. And he made this comment very clearly at a lunch I was at today, that for them climate change is here and it's real and it's happening, and he's trying to go around the world as a representative of his country telling people that message. And for me, that really brought home what we're trying to talk about this evening because action is starting to happen on climate change. We're seeing in the United States President Obama's announcements recently and I'm sure most people in this room would be aware of what he said. And we've also seen in China real action being taken on climate change. I was there last week and anyone who's been to China recently would know how bad the air pollution is, that's one thing that's driving them to do something about reducing their dependence on fossil fuels. Secondly, they are seriously starting to put a lid on coal production and consumption and, as many of you would also know, they've also begun their pilot schemes for Emissions Trading.

So there's some really interesting stuff going on. And in Australia it seemed up until quite recently that climate change wasn't even going to get on the agenda for the coming election, but about a month ago all that changed. And in some ways quite subtly but in some ways I think quite fundamentally, because where now Prime Minister Rudd announced what on the surface of it would appear to be a relatively small change, and that is basically moving to a floating carbon price one year earlier than we would have anyway and linking one year earlier with the European Emissions Trading Scheme. In one sense that was quite a small change, but in another sense I think people recognise that now Prime Minister Rudd was looking to address what was almost certainly one of the biggest mistakes of his term previously as Prime Minister and that maybe this great moral challenge needed to be addressed more substantively, and as a consequence I think we're now going to see a much more substantive debate around climate

change policy in this country, recognising that both sides of politics have the same target. And so when you think about that, one of the big issues is linkage and that issue of linkage brings me to the topic for this evening and particularly brings me to talk a little bit about introducing Mary Nichols, I'll also then introduce Ross Garnaut. Each of them will make some comments, I'll ask them one or two questions depending on our timing, and then we'll open up to you, because we'll try and have a conversation here this evening.

Now when I did a quick Google search on Mary Nichols I found that she was born in 1845, her death was attributed to the notorious unidentified killer Jack the Ripper and she was one of five women mutilated in London in 1888. Now that's in fact the first entry in Wikipedia if you Google Mary Nichols. It also turns out that this Mary Nichols has been described as the Thomas Edison of environmentalism. Earlier this year Time magazine released the top 100 list of the most influential people in the world of whom 14 are lawyers, and of those lawyers one of them is Mary Nichols, but two of them are named Obama both living in the White House and another is the President of China. So it's pretty amazing company that we're joined by this evening. Mary, for the third time – and there's something in baseball about three strikes, Mary – but for the third time she is the Head of the California Resources Board where she's been a fierce champion of cutting edge technology to change California, to change the United States and, ultimately, to change the world. They've been implementing in California now for a little while broad climate action and particularly now Emissions Trading. I think they've had three auctions already, so that process is working, it's starting to do things, the price is starting to be more visible and the sort of things you'd hope from that sort of market are emerging. And so this evening Mary's going to talk a little bit about that scheme and we've encouraged her to talk specifically about how that then might be opened up to a greater conversation with countries like Australia as to how something like a multilateral as opposed to some sort of global scheme might work.

And then from Ross' background – to many of you in this room I'm sure Ross needs very little introduction. Ross is one of the most noted economists in this country. He worked particularly with Prime Minister Bob Hawke on trade policy and knows a lot about, therefore, the way these sorts of trading mechanisms can work globally. He had time as Ambassador to China and therefore is equally able to speak about some of the stresses and struggles that the Chinese are undertaking as they think about this, and more recently, as you'd know and I had the opportunity of working with Ross in 2008, he's the author of the Garnaut Climate Change Review and is regularly now consulted by just about every key decision maker in this country around issues to do with climate change policy.

So it's a great opportunity to hear from both of them and I'll begin by asking Mary if she'd like to begin the conversation with some thoughts about how she perceives this and then we'll pass over to Ross. Thanks Mary.

MARY NICHOLS: Thank you. Good evening everyone, it's a great pleasure to be here and I want to especially thank the Grattan Institute for hosting this event. This is a really exciting time in the world of climate action. There are now dozens of states, countries, provinces and regions across the globe with programs in place to cut carbon emissions and many others are moving in this direction. Collectively those of us, states and provinces, and a few brave countries that are working on this issue, are really at the forefront of the global effort to address climate change. Of course, at the same time that we can be excited about our progress, we're also beginning to see the devastating consequences of the warming that's already taking place. So it's not as though we're acting in anticipation of at least the start of this devastating effect. As I think people in Australia are aware in your own country; in the United States 2012 was the warmest year ever recorded in the United States' history and extreme weather events, such as floods and hurricanes, tsunamis and wild fires were again at historically high levels last year. And of course you also experience similar effects. Many parts of the United States are also still reeling from one of the worst droughts in our nation's history and, perhaps more tellingly, and I'm sure we're going to hear more about this from Ross later, the economic costs of these events is already beginning to mount up and it's already staggering. So it's increasingly becoming clear

that without significant and, at least to some degree, concerted action to ratchet down on greenhouse gas emissions, this problem is only going to be compounded.

Our program in California builds on decades of leadership in programs that were designed to cut pollution. That is we began back in the early 1960s really to address the problem of air pollution which had become all too apparent starting in Los Angeles as a result of the growth in population, even greater growth in vehicles and fuels and industry, and uncontrolled burning that went on in those days, as well as the use of very high sulphur fuels to generate electricity. And so the public became increasingly sick of the number of days when you could barely see across the street, much less to the mountains that surround our beautiful city and so serious efforts began to address the problem. And our climate program builds both institutionally and philosophically on that experience. The experience that we had was one of setting very high standards, allowing industry a great deal of flexibility in how to meet those standards, but also insisting that they do meet them despite often times of ferocious political opposition. And then, as we move forward, if we really ran up against a road block in terms of inability to meet the standards because of complete lack of technology being available we might adjust a little bit on the time deadlines, but not on the stringency of the standards. And we're taking pretty much the same approach when it comes to global warming and we're seeing some of the same kinds of results because the fact is that California cut emissions of air pollutants by 99% twice over. That is, the emissions that are allowable in our state today are 1% or slightly less of what they were when we first started doing this work in the 1960s. The mountains can be seen most days of the year. The air, while it doesn't always meet increasingly stringent standards for public health, nevertheless is many times cleaner than it was. But, at the same time, our population has grown, our number of vehicles has grown even faster, and our economy has grown even faster than that.

Since we began our efforts on global warming we have also seen an amazing growth in clean technology jobs in California and we have seen investments grow even faster in the clean-tech sector. In 2011 alone investment exceeded \$3.7billion which was more than the combined total of investment in clean technology businesses for the entire rest of the United States. And this is not an accident; in fact it's directly related to the existence of AB32, our global climate law. AB32 was passed in 2006 and it mandated in the state of California a reduction in greenhouse gas emissions to 1990 levels by 2020, so the same goal that was set by the Kyoto Treaty. Subsequent to that, Governor Schwarzenegger and then Governor Brown reiterated this and enacted an Executive Order which has the force of law which sets a 2050 goal of an 80% reduction in greenhouse gas emissions. Our program is built on a base of mandatory standards and regulations, many of which were already in place and have been delivering results for years, others of which have just come into effect in the last few years including a low carbon fuel standard that requires cuts in the life cycle carbon content of motor vehicle fuels by 10% - which is actually a very aggressive goal given the lack of cleaner liquid fuels for vehicles - and other measures that mandate efficiency in appliances and buildings and manufacturing processes and so forth. All of these regulations have as their goal not only to reduce the greenhouse gas emissions, but also to save consumers billions of dollars in fuel and energy costs.

So the Cap & Trade Program, that's the main topic of conversation here, already builds on this major base of reductions and it establishes an economy-wide cap on carbon pollution and sends a clear market signal that investments in cleaner, more efficient ways of doing business will be rewarded. And, as you've heard, the program is running smoothly, that is we've had three auctions, the auctions were successful, the process worked in a very straightforward way, and we're now in the process of beginning to link our system with the same equivalent set of requirements in the Canadian province of Quebec beginning in January 2014. The kind of linkage that we have with Quebec is what we would call a full and complete linkage. That is, an allowance issued in California is exactly the same as an allowance issued in Quebec. The reason for that is that our caps are of the same stringency; we have equivalent requirements for how the allowances can be utilised; we allow the same amount of offsets in our systems, no more and no less; and we will be using the same auction platform to auction. Some things are different, for example we allocated the vast majority of our allowances freely to the roughly 400

entities that were required to participate in our system. In Quebec they intend to auction most of their allowances. That is a detail which we don't believe affects the value of the allowances themselves. The programs cover the largest sources of emissions including refineries, electricity generators and, because in California we are a major importer of electricity, not only hydro power from the North West but also coal-fired power from Nevada and Arizona, Utah, we take responsibility for the imported electricity, the carbon that's generated as a result of that as well. Starting in 2015 our program will also cover transportation fuels and natural gas which is used primarily for heating, although to some extent is used in industry as well.

We designed our program over a period of years with extensive input from a range of academic, policy design and economic experts, and we also spent a great deal of time and had intensive contact with representatives of the EU Environmental Trading System to learn about how to avoid the problems that they experienced with over-allocation and misallocation that occurred as a result of not having a good information base about what was actually being emitted by whom. We addressed that problem by having several years' worth of mandatory reporting data that we built on before we allocated the allowances. There are a number of key principles that were included and, by the way, I should also say that there was extensive contact with the industries and businesses that are covered by this program. That is, in California we do business as a regulatory agency through a process which is almost amazingly open and transparent, including large numbers of workshops that we hold on every proposed regulation or change in regulations, and really a gigantic record that was amassed as a result of both the number of different advisory committees on specific topics and also a web process by which people submitted thousands of comments and suggestions which were responded to as well.

There are a few basic principles which I do want to highlight about our program. I think the most important one is environmental integrity. The reason why we chose to use a Cap & Trade system, as opposed to Carbon Taxes or fees, as the market element of our system as a way of setting a carbon price is that we believe that we have the ability to set a hard and declining cap and that that was what we needed in order to ensure that the program as a whole would meet our emissions reduction targets. However, the market sets the price under our program. We did allow a price floor to be put in for the auction allowances but in theory allowances that are allocated for free, which is what 90% of the allowances are, could trade at a much lower rate. As a practical matter, the trading price at the moment is \$13.60 today, although the closing price at our last auction was around \$14, so very, very close to each other.

The program was also designed in an effort to minimise leakage. Although California is a very large economy, the 10th largest in the world and the largest in the United States, the fact is that we're concerned about businesses shifting their operations or actually shifting themselves and their jobs to places outside of California. And so we built into the system extra allowances for the emissions-intensive trade exposed industries and provided for transition assistance for some that might have a difficulty in becoming competitive while they were trying to find ways to reduce their emissions. So we're very clear that that's one of the goals of the program is not to drive businesses out of California. And we also designed the program to try to protect consumers, and the way we did that was to not only allocate emissions allowances for free to our electric utilities, which was the sector that we were most concerned about having run-up in prices, but also the entity that regulates the prices and the overall operations of electric utilities, our Public Utilities Commission (PUC) is responsible for deciding how the value of those allowances is to be used. So we gave the electric utilities that serve customers their allowances for free, but we required them to consign those allowances to auction and then use the revenue from those allowances for the benefit of their consumers. The PUC has constructed a system whereby they are making sure that rates of various classes of customers, particularly residential customers and small businesses, are protected under this system and they're also actually requiring that there be a small rebate to consumers and small businesses that actually will show up on their electricity bills.

So, as a result of all of this we're on track to meet our 2020 targets and we're starting to work on what comes next, after 2020. But we've also faced our share of challenges in getting these

programs up and running, including court challenges, all of which we've won so far, and challenges in things like developing a sufficient supply of truly high quality offsets that we would allow to be used. But maybe the most important challenge that we've faced is one that is from outside of California, which is that we never intended this program to be unique. In fact, we distinctly prefer not to be operating our own closed system for carbon reduction; we really want to be part of a larger market. And so we're very excited that the President in his announcement recently of his own Executive Action to move forward on climate in the absence of any legislative movement in Congress, included a very explicit recognition of the states, such as California and the North Eastern states, that have moved ahead with market-based programs and a directive to the US Environmental Protection Agency (EPA) to develop a regulation for existing electrical generating facilities that takes into account the work that's already been done by states and gives us credit for the work that we've already done. We believe that the process of developing this new regulation at EPA is going to provide a tremendous opportunity for the federal government to create a set of incentives – carrots and sticks – for other states that haven't yet taken action to take more aggressive action to deal with emissions from their own power sectors, which tend to be much more emissions-intensive than California's, so will help to bring other states up to our level. And, as states begin to look at the option of either following a very draconian one-size-fits-all federal regulation or potentially joining with other states in some form of an Emissions Trading System, that even states that today would never dream of adopting a Cap & Trade System are going to be looking in a much more creative way at possibilities for getting involved. Obviously this is going to take a period of not just days or weeks, but months and years as this all unfolds, but the conversations are already beginning. And of course, businesses, including the utilities in California and the North East, are very actively engaged in this conversation and are very eager to see a Cap & Trade Program be utilised as the principal vehicle for achieving meaningful reductions in greenhouse gas emissions.

What does this mean in terms of linkage with other places? Well, not much at this point. To be perfectly clear, we are not here pursuing an immediate linkage with Australia in terms of trading emissions credits or emissions allowances back and forth. What we are seeking with Australia, in particular because of the thinking that has already taken place here on so many of the same topics but also with other places as well, is to develop a coalition of states and provinces and countries that understand the benefits of Emissions Trading; that have worked through many of the technical issues and the economic issues that are involved; and that are willing to cooperate with each other in trying to ratch up the quality and quantity of efforts that are going on around the globe. So we believe that we can partner with Australia, not only sharing information with each other about how our systems can work better, including things like tracking and monitoring and even enforcement of our requirements where there are companies that operate on a global level, but also that we can share in the task of involving other countries and states as well.

So that's why I'm here, is to pursue some of these conversations and we're very excited about the opportunity and very happy to have been invited to be part of this effort. And with that, I will sit down and allow someone else to have the platform. Thank you.

ROSS GARNAUT: Thank you Mary for that very interesting exposition of what California's doing and I'm used to learning from California about these things. When I was working on the first Climate Change Review for Prime Minister Rudd back in 2007, actually with Andrew Dyer, who was then the Victorian government's representative in the Western States of the United States, I went to Sacramento and learnt about a lot of things that California was doing then directly to intervene in regulation to reduce emissions. And the list of things that was being done was impressive but, for an economist, deeply intrusive and I actually wondered how they were getting away with a lot of things they were doing. Regulations in fine detail of emissions standards for building, for appliances, for cars. The Californians had a great confidence that if they put limits on emissions then Detroit or Nagoya would just have to make cars that met them and it was a large enough market for that to happen, that Australia isn't used to having quite that leverage. But the influence of California in energy saving, in basic standards for many energy-intensive activities has been extensive because California's been out in front, that has

influenced what manufacturers have had to do and that has influenced the products that are being sold into other markets. And in Sacramento I was told to expect that California also would be leading the way in the United States on an Emissions Trading Scheme. It was explained to me that, although the Obama legislation then hadn't faced the Senate, in fact we didn't have an Obama government at that stage; there was just talk of what would happen if the Democrats came to power. But we were told that the US always dragged its heels on everything important, California will get working and the United States will follow, and Mary's told us this evening about how that actually is working.

In my original report, the 2008 Climate Change Review, you'll see on page 416 a chart that I picked up in Sacramento on that visit and it really relates to the story that Mary's told about the controls on air pollutants that were introduced when people in Los Angeles and San Francisco became mad as hell about air quality in the early 1970s. That's when a whole lot of controls were introduced and, despite all the population growth, despite the economic growth, as shown in that chart there's been very little growth in energy use per person since the early '70s, while in the rest of the United States energy use has kept on growing, as it did in Australia. And that was an example of how regulation related to air pollutants and energy use could have a powerful effect. I was a bit concerned about the cost of all of these measures, being a miserable economist, and I'd be asking the senior officers of the Californian administration, including the people working directly to Governor Schwarzenegger on these matters, and they thought it was very strange to be asking what it cost to reduce emissions to the extent that was being done for cars or buildings. It was just obvious that you had to do it and so you just did it, so why was I so concerned about the cost? But the reason why California is following through with price-based systems and Emission Trading Scheme is that will eventually be a lower cost way of achieving what California was already making some progress towards through regulatory action.

Mary, you've probably picked up that Australia's targets are not dissimilar actually to California's; we share the commitment to 80% reduction of emissions by 2050. Our short term targets include an unconditional and a conditional target: we've said that whatever the rest of the world does we'll reduce emissions by 5% from 2000 levels, and if the rest of the world is taking comparable action then we will reduce our emissions on 2011 levels by 25% by 2020. There's a bit of a tendency in some of the discussion to just focus on the -5%, but our policy, as declared to the United Nations, it's a formal commitment of Australia, is that our target is somewhere in the range of 5% to 25% with the degree of ambition being determined by what is happening in the rest of the world. So it's very important for us to keep an eye on what's happening in the rest of the world because that will determine the emissions reductions that we have committed ourselves to and, as Mary mentioned in relation to North America and as Tony mentioned in relation to the world, a lot is happening.

Look, more is happening than I anticipated a few years ago. In the update of my review in 2011 I did talk about the important commitments that had just been made by the United States' administration to reduce emissions by 17% on 2005 levels by 2020 and the important commitment in China to reduce the emissions intensity of production by from 40% to 45%. But at that stage there were legitimate questions to be asked about how these commitments, these big commitments were going to be implemented. And in my discussions with President Obama's Minister for Energy, Steven Chu, I raised these questions and this was a sharp question in the light of the Senate's filibustering of the legislation. It was passed by the House of Representatives in the first couple of years of the Obama administration for an Emissions Trading Scheme, but it was filibustered in the Senate. It wasn't defeated, but it couldn't be passed - that unique American institution of the filibuster - and so America didn't have an Emissions Trading Scheme. So I said, "You've got this strong commitment to -17% by 2020, how are you going to reach it?" Steven Chu, who actually knows something about these things - he won a Nobel Prize for physics and he was brought into Obama's cabinet to make progress on these issues. I think he lives in California doesn't he? Yeah, and he said, "Don't worry Ross, we wanted to get the reductions in an efficient and low-cost way through an Emissions Trading Scheme, but we've been stopped in doing that. We're going to get there anyway. We'll get there through a less efficiency and higher cost way" and then he proceeded to describe to me the

program of regulatory action that the administration would seek to implement to make progress. And I note that a lot of the elements of what we talked about a couple of years ago appeared in that statement of the President just a few weeks ago, including regulation on generation of power, limits on emissions per megawatt hour of power produced that effectively ban coal-powered generation without capture of the emissions. It's already taken into effect for new generators and will progressively be introduced for established generators.

So these are important and exciting developments in the United States. It's clear now, as it wasn't clear two years ago, that the United States is on track to meet its -17% and that is going to require Australia to move from its -5%. That is our policy, that is what we've committed to the United Nations and Greg Hunt, the Opposition spokesman for climate change, said at a meeting, again, that Tony helped to host at the University of Melbourne a few weeks ago, he reaffirmed the Opposition's commitment to the target, not just of -5% but somewhere in the range of -5% to -25% depending on what the rest of the world was doing. The rest of the world's doing a lot. I think that it will be very hard for Australians honestly, after the review of the targets, to do less than the United States is doing. And that -17% by 2020 from 2005 levels corresponds to roughly -16% from 2000 levels. I'm hopeful that at the Paris meeting of the UNFCCC all countries will decide to go even further and we will need to go further even than we would currently expect to if the United States, China, Europe, Japan are going further.

There are a lot of challenges shared by the United States, Canada and Australia in reducing emissions and so I'm particularly interested in what Mary told us about the linking to Quebec. Bringing Canada along with what the United States is doing is very important. These three countries are the three developed countries who've got really high emissions per person. We're the three really carbon-intensive economies of the developed world and because we've got such large established carbon-intensive industries we've got very powerful political interests resisting emissions reduction. The challenges are quite similar in these three countries and I think we can learn a lot from each other. At an earlier stage of history Canada was taking action in some ways ahead of Australia and the United States, at the moment they're behind but they have given a commitment to the United Nations that they will match the United States' efforts. And so through that process Canada and the United States, Quebec and California, I'm hopeful that we can make sure that the third of the three carbon-intensive countries stays in the tent because this has to be a global effort and if one country is dragging its chain it becomes an excuse for lots of others to do so and for interests who are opposing reduction in emissions in other countries, in Europe or Japan or China, to point to the laggard and that becomes a drag on everyone's effort. So I think that it's very important for Australia, Canada and the United States to keep close on these issues and make sure that none of us is a laggard.

So your visit is very welcome Mary, we need to understand what you're doing, how you're doing it. You indicated you're interested in learning from what we're doing as well. I think that we can learn a lot from each other and it's great to have you here.

TONY WOOD: A couple of issues that I was interested in that might have come out and maybe didn't, and just to try and push both Mary and Ross a little because I am interested in this question of linkage, because the most recent announcement, as I said before, by Prime Minister Rudd really focused on this question of linkage. There are many people who thought that linkage with the EU scheme was a really bad idea, that the EU scheme is broken and the trading doesn't work as a result of what they've seen in the EU, and there are others who think that we should like the EU because it's going to give us really cheap permits and those who want lower costs obviously would seek to do that. And so I guess what I'm interested in from both Mary and Ross would be - What are the prospects? I take your point that you haven't yet started the process, but I know there were discussions with the EU some while ago about linkage. I'd just be interested to think about what would your thoughts be about what would have to happen to move down that path towards linkage and would this be something you see as one of the next steps in the multilateral arrangements that might emerge, rather than a single global agreement? I know, Ross, you've got some thoughts in the same areas.

MARY NICHOLS: First of all, we were asked a number of times by international journals and the trade press that covers emissions trading to intervene or opine on what the Europeans should do about the over-supply and very low price of their emissions. And we're not experts in how the European Commission works and we did not want to wade into what was already a very contentious issue over there.

So what we've said, and I think this reflects our general position, is that we respect the fact that the Europeans are struggling to make their system work in a time when they're having very serious challenges in their own economies. We would certainly consider linking with them or anybody else when they're ready to rethink about this issue but, from our perspective and from theirs, the fact that our carbon price is considerably higher than theirs is a deterrent and is a deterrent on both sides. I think there's a desire to find out whether there are ways to get closer together and certainly the more developed countries of the world, all of us who have somewhat similar kinds of economies ought to find it easier to link with each other than, say, the developed countries with the developing world. But there are still some serious reasons why that may not happen.

What I think is important to realise though is that you don't have to have full linkage or total trading in order to still benefit from some kinds of partial linkage and there could be ways in which there could be tradeable permits, for example, for certain kinds of industries or where we could have sector-based trading among, let's say, the cement industry worldwide where there would be an agreement to cap emissions from a particular type of manufacturing activity that is very trade-exposed and emissions-intensive where you could see that there'd be real benefits to people engaging in that kind of linkage. So I think that I don't want to be discouraging the notion of linkage, but I do think this kind of one world trading system where we all are trading in shares is probably a long way off.

TONY WOOD: Ross, what's your thought?

ROSS GARNAUT: Well, first I agree with the last comment that a single global system is a long way off and for quite a while there'll be quite a few countries that don't have Emissions Trading Schemes, although increasingly countries are taking them on. In both of my reports I favoured the idea of international linkages but I didn't specifically recommend a linkage with Europe, but then when Minister Combet negotiated that and announced it I supported that. And the reason I didn't specifically recommend it at the time, well there are two reasons: one, Europeans weren't all that keen on linking with us at the time, until they saw more about how we were going to manage it and they were a bit worried that we'd be a bit soft on things; and secondly, at the time, even at the time of my update report, the European price was much higher than the Australian. I floated the idea with the Climate Change Committee of the Business Council of Australia and they thought this was an absolutely horrible idea linking with European because the European price was higher. Well, a lot of those same companies now think it's a great idea. But we have linked and we will still be linked when the European price rises again and that's something that we have to keep in mind, that the European price is determined on a market, it's a very big market; it's affected by supply and demand, that will change over time; it would be surprising if you don't see periodic tightening of the target in Europe, every tightening of the target will lead to higher prices; and one day we'll have a return to higher levels of employment and more healthy economic activity in Europe - one hates to think of the consequences for human civilisation if Europe remains in its current misery forever - and higher levels of employment and economic activity will raise the carbon price.

In the meantime, it's very important to keep in mind that the carbon price in all countries, including Australia, is only one of the instruments of climate change mitigation. Now, an economist has no hesitation in saying the costs of reaching any given target will be lower if we do it through an economy-wide carbon price than if we do it through a whole lot of different policies, but the reality is at the moment we have a whole load of different policies. In Europe there are a whole lot of policies that are having powerful effects in reducing emissions that don't depend on carbon pricing. Most countries in Europe have quite high feed-in tariffs, very high for

exotic technologies like solar-thermal and set at different levels for different technologies. Some countries in Europe have a Carbon Tax, a fixed price, as well as the Emissions Trading Scheme. Britain has a variable Carbon Tax that makes sure the price remains at a certain minimum level, which happens to be above what the fixed carbon price in Australia is at the moment and from which it will be reduced next year if European prices are not high. The more countries do through other instruments, the lower the carbon price and that's because emissions are being reduced anyway and so you don't need such a big disincentive through the carbon price.

Does that make the carbon price redundant? No, it doesn't because the carbon price applies to a lot of industries that would not automatically be picked up by these specific measures. For example, in Australia the big growth area of emissions is fugitive emissions: the methane that's emitted as you open up a coal mine vented into the atmosphere; or the carbon dioxide that's vented from a natural gas field as you extract the tradeable natural gas. If you didn't have a carbon price then a lot of companies won't think twice about simply venting that in the atmosphere, but if it's measured and you have to pay for every ton it sets people thinking about it. So that's one reason the carbon price is very important, even if other instruments are doing the main lifting.

The second reason is that as targets become more restrictive, and if we're going to cure the global warming problem then countries like Australia and the United States are going to have to actually reduce emissions by about 90% by 2050 if we're going to reach that two degree target. And it's inconceivable I think that we could reach those sorts of emissions reductions with lots of different interventions, different things for different industries, different sectors of the economy. So as the world takes stronger and stronger action, as emissions reductions targets become more ambitious, the carbon price will rise and the carbon price will then take over the main burden of reducing emissions from the other instruments.

A very practical example of that in Australia is the Renewable Energy Target. At the moment in the electricity sector we're seeing quite rapid decarbonisation, a rate of reduction of emissions beyond anything that came out of my own and the Treasury modelling on emissions reduction. That's because we're seeing lots of energy efficiency improvements, reduction in energy use, and the Renewable Energy Target is forcing a certain quanta of zero emissions renewable energy into that market, although the total market is shrinking. And so the rate of reduction in emissions is, in the electricity sector, quite rapid. I think there's been something like a 9% reduction so far in emissions in the electricity sector since carbon pricing was introduced and that's a combination of what's happening on energy efficiency, on the Renewable Energy Target and the Emissions Trading Scheme. It's the interaction of all those things.

Now, if the carbon price was rising over time, and now we're linked with Europe it will be the joint European-Australian carbon price, if that is rising over time there'll come a price, and on the old modelling I did it would be a price of \$30 or \$40 in the mid-20s, where the carbon price is more important than the Renewable Energy Target and the importance of the Renewable Energy Target will just drop away. And so over time, as targets become tighter as the carbon price rises, the more efficient general pricing mechanisms will become more important relative to the other instruments.

TONY WOOD: Okay. Why don't we see what questions and what comments you guys have got?

AUDIENCE: A couple of questions on linkages. Firstly Mary Nichols, you said that you weren't here to discuss the option of linking with Australia. I'm just wondering why not, I guess, why couldn't we have some sort of partial linking of credits, for example? Why is it not appropriate at this time to explore that? And a question for Ross, I think in your report you talked about the possibility of linking with Indonesia. I was just wondering how your thinking has evolved on that score?

MARY NICHOLS: Well, I can't say that at the moment it would seem to be a very good time to be discussing linkage with Australia when the future of the program is in question, at least it's been raised as an election issue. And I have heard many different versions of what's likely to happen in the election, but I'm certainly not about to intervene in that process.

So I would say that it's really terrific to have heard as much as I have since I've been here about how the program is moving forward and what an effective job is being done. One of the things that I did do while I was here, yesterday actually, was to sign a Memorandum of Understanding with the Carbon Regulator. And as a regulatory agency, my organisation, the California Resources Board, and the Carbon Regulator already have had a lot of very specific detailed conversations about how to run a carbon trading system and we wanted to memorialise that and also to give ourselves the ability to actually create a formal work program for further cooperation. And that's going to happen and we're very enthusiastic about that. We're very impressed – I can't say too strongly how impressed we are by the professionalism, the expertise, the knowledge of the people that we're working with here, our counterparts in Australia. They're great colleagues and we feel it's a great boost to our program that we have a country to work with whose economy, or at least the number of sources and the size of the program, is very similar in size to ours.

So Quebec is a good partner too, they're a lot closer to us than Australia, but they're considerably smaller; the size of their economy and the number of sources is much smaller. So Australia is a bigger partner and therefore very valuable to have but, aside from any questions of politics, the philosophy behind the program, as Ross described it, and the approach are just different enough that I think to go to a full linkage discussion would be very difficult. We would just need to have to go through, I think, a number of steps if we were really going to try to create a common market in emissions allowances. And frankly, although that's of great interest to traders and people who have an interest in the trading scheme per se, if our goal in California is really just to reduce carbon – first our own and then other people's – I'm not sure that that would be the most effective way to do it. So it would be a lot of work and I'm not sure we'd get much for it.

TONY WOOD: Ross, Indonesia?

ROSS GARNAUT: Yes. My work showed that from now on most of the growth in emissions in the world is in developing countries, almost all of it actually now that growth has slowed down so much in the developed world. So what happens in the major developing countries is tremendously important and we've got to take an interest in that. At that time Indonesia in absolute terms, absolute amounts of emissions, was third in the world behind the United States and China and that's especially because of the huge reduction in forests, but also because of rapidly growing use of coal for power generation. And the Indonesian government has been very interested in playing a serious part in the global effort to reduce emissions. The current President hosted the Bali meeting and since then he and his senior Ministers have been really serious about these issues. They're hard issues for Indonesia - they're hard for any country, but they're particularly hard for a developing country – and the Indonesian government has sought Australian technical assistance on a whole range of things. There was some very useful work done by Australians at the invitation of the Indonesian Department of Finance and other Ministries in Indonesia. And so I start from the position that what happens in the developing countries in general and in our close neighbour Indonesia in particular is very important to the global effort.

I made it clear in my report that I didn't see adoption of an Emissions Trading Scheme as the most suitable path for developing countries, the administration was very difficult. So what I had in mind as possible linkages in countries like Indonesia is those countries adopting a credible and ambitious target and if they did better than the target they would be able to sell surplus permits to us. And if they didn't meet the target well, there is a difficulty in enforcing against developing countries penalties, but you'd certainly have powerful incentives for them to meet or do better than their targets. They wouldn't be able to trade, of course, if they weren't meeting

and exceeding their targets. None of this would work unless you had high quality measurement and administration of the system and I said in the report that it would be necessary to have an international administration of the system, so you had a common system of administration and measurement. And I thought that it was feasible to think of developing an international system in which we could be confident that the sorts of standards that we're applying in Australia were applied in measurement in other countries. If we together agreed to all be part of that I still think that's a reasonable ambition, but recognising that the political steps within Indonesia are manifold and difficult. But when there is interest in our neighbour, Indonesia, in that sort of cooperation I think we should respond strongly.

AUDIENCE: A question to you Mary is if China is successful in bringing a national Emissions Trading Scheme in a 2015 to 2020 period, what does that mean in terms of the positioning for your market-based approach and, for Ross, a similar question in an Australian context as well?

MARY NICHOLS: Well, I think the fact that China is already proceeding towards the launch of real and active Emissions Trading Programs with these seven pilots, it sends a very important signal to those who say nothing is going on and that nothing will happen until China takes action. So the first and most important thing is that it is a real gesture of serious effort on their part and that helps take away the argument that is often used by opponents of climate action in California, and I understand here as well, that we're all alone and nobody else is doing it, so that's important. From our perspective, the conversations that we've had and the collaboration that we're now having with China at the provincial and national level is helping to assure us and them – and hopefully eventually, again, the rest of the world – that the emissions reductions that they are looking for will really happen, that they're real and credible. And that's a big issue for China because in the past they've been criticised for the quality of the data and the reality of the emissions data, so that's very important too.

Right now, as was described earlier, China's goals are not to set a firm cap; they are intensity-based goals and they're still ambitious, but they're not willing to take on the same kind of obligation that countries that signed the Kyoto Treaty are in terms of absolute reductions. But I think the experience of running these pilots, as they call them - and from what I can best tell, they're not treating these as experiments, they're treating them as building blocks to a national program – based on my recent discussions with the leaders in Shenzhen and Guangdong, they're already looking ahead to the next steps beyond these intensity-based programs. This is like the first step forward and there's a lot going on there also in terms of policy development to reduce carbon in their operations. They're still of course building plenty of coal plants as well, so how they're going to reconcile all of that and deal with the threats to growth in their own country is something beyond certainly what I could predict. But I think from, again just looking at it from the California perspective, the fact that they're beginning to understand the linkage between not just energy policy and climate policy, but the terrible urban air pollution that they're experiencing and the climate problem is in some ways the most important step of all. Because if you can gather together the political and the economic value of trying to reduce the numbers of premature deaths and illnesses, cancers and others, that they're experiencing as a result of the air pollution and the loss to their economy from people who aren't willing to live anymore in some of these extremely polluted places, with the need to do something about global warming, maybe you have enough incentives to really take meaningful action.

ROSS GARNAUT: Yes, I think the what's happening in China is really important, in fact in quantitative terms it's the most important thing that's happening in the world on climate change. Mary, China is building more coal-based power stations, but it's closing much more than it's building and I think that's a really important fact that we in the West haven't properly absorbed yet. Chinese policy since about 2011, and it goes back the commitment that Premier Wen Jiabao made first at the Copenhagen meeting and then formalised at the Cancun meeting of the UNFCCC, to put on the table China's commitment to reduce the emissions intensity of production by 40% to 45% by 2020 from 2005 levels. That actually did involve, if it were to be implemented, a very big change in the structure of the Chinese economy. Such a big change that I know that leading officials advising the Premier said "Don't do it because we don't know

how we will achieve that ambitious outcome” but the Premier did it anyway and the rest of the world didn’t quite notice in Copenhagen what a big thing China had put on the table, which is a diplomatic failure of China and of the rest of us.

But China is a big ship to turnaround and the new policies were embodied in the five-year plan that began in 2011, 2011-2015, called the 12th Five-Year Plan, and in 2011 you didn’t see so much change in the numbers. But you see big change from 2012 and I think it’s very important that we notice the change. China is now the largest source of emissions of greenhouse gases in the world and it has been one of the most rapidly growing, up until 2011 it was one of the most rapidly growing. So what happens there really matters and as they have put in place a whole lot of policies, we’re seeing a quite dramatic change in trajectory. The biggest source of emissions in China is coal, China uses about half of the coal used in the world, and through the first 10 years of this century the rate of growth of Chinese coal use was in double-digits. Now, that is part of the story of the Australian resources boom. We were a very big beneficiary in income terms from that, although not in climate terms, and many people just projected into the future that China would keep on doing it like that.

And I’ve got a lot of respect for the Opposition’s climate change spokesman Greg Hunt, but in the presentation he made to the Grattan Institute event at the University of Melbourne he said that Chinese coal consumption is now 4billion, it will be 7billion by – I forget the date, but 27billion tons per annum of coal. And once that would have been a reasonable extrapolation on what had been happening, but in 2011 total coal use was up around 4billion with the biggest use being in burning for electricity. In 2012, the first year the new policies began to bite, then there was almost no growth in thermal electricity production. Total electricity growth was 5.7%. The biggest single element of growth was hydro, second biggest wind, the third nuclear, the fourth solar, and the most rapidly growing of those was wind which in 2012 became as big as nuclear, as nuclear had been larger in earlier years. There was almost no growth at all in thermal and within thermal, because they were closing down inefficient plants and replacing them with much more emissions’ efficient plants, what are called in the world hyper-supercritical plants, they were getting an annual reduction of about 2.5% per annum in the amount of coal being used for each megawatt hour of electricity. So total thermal generation static; efficiency improvements reducing the amount of coal per unit of electricity, 2.5% per annum; and from a very low base the beginnings of quite rapid growth in gas use, which if it continues will eat further into coal consumption. So coal use for electricity actually declined a little bit in 2012.

Now, we just last week got the figures for the first half of 2013. They show that Chinese coal production fell by 3.7%. Imports grew a little bit, including imports for Australia, and that’s because they were closing down a lot of their low-quality coal, but when you take the slightly in numbers in tons increased important against this rather large reduction in local production of coal, then total coal consumption, not just for power, for steel, for industry, fell a bit over 3% in the first six months of this year compared with the first six months of next year. So the really good news is that China won’t be using anything like 7million tons and there’s just a chance that that 2011 number will be as high as it gets. Now, that is a dramatic story.

Now China’s achieving that through a whole lot of instruments. A lot of regulation, like California, only much more intrusive even than California; you’ve got officials from the National Development Forum Commission going round to plants measuring emissions intensity, if it exceeds certain standards they say “We’ll be back in three months and if you’re not meeting the standards you’re closed” and they close them. All of our power plants in the Latrobe Valley would have been closed if they were in China, given the standards that are being enforced. Tough and nasty and maybe undemocratic, but they’re actually doing it. There’s the experiment with the Emissions Trading Scheme, there’s all sorts of subsidies for technological innovation. So you’re getting innovation, experiments with carbon capture and storage, experiments with new forms of solar, new forms of solar-thermal, with new forms of biological sequestration. Very big commitments.

So the interventions are manifold and they're having an accumulative effect that's large. The Emissions Trading Scheme, the economists advising government hope that this will be an important part of the story one day, but at this stage it's experimental and the way the Chinese work on reform policy, they try something out in some provinces and some regions. The Emissions Trading Schemes are being tried out in two provinces and seven cities with a total population about a quarter of a billion. Some of the details differ in different cities and provinces so they can see what's working and what isn't, and over time they'll extend the things that are working and stop the things that are not. In addition, the Ministry of Finance for some time had favoured a Carbon Tax. They think that a Carbon Tax has got the advantage that loose-moralled officials won't be handed out free permits and they'll be getting the revenue from it. And it's very likely that China in the end will have a Carbon Tax and an Emissions Trading Scheme, and a whole lot of regulation.

That's the world we're heading towards. It's premature to think of linking these early stage Emissions Trading Schemes with Australia, we have to watch and see how it develops, but I think we should watch and see how it develops and a basis may emerge for productive linking. And today, of course, that wouldn't be only our decision; it would be our decision and Europe's decision, in which case you would have built quite a big system of Emissions Trading.

TONY WOOD: I'm sorry, we have well gone past the finish time. Any of you who've got some urgent questions might want to trip Mary or Ross before they try and depart and garner some questions from them. It only leaves me to firstly thank you for joining us this evening, hopefully you've had exposure, because there's been a lot of debate in Australia that suggests that it's Australia and Europe, and in fact I think you've understood surely, if you didn't before, that it's not; there are many things happening, not all the same. Also thank the State Library, our own people including Angela Henderson who's here this evening for helping organise this evening, and finally could I ask you to please join me in thanking Mary Nichols and Ross Garnaut.

End of recording