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<b>Compere:</b>	Quentin Kilian	<b>Speakers:</b>	Ross Garnaut, Climate Change Review Update 2011
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### Transcript:

**QUENTIN KILIAN:** Good morning ladies and gentlemen, and welcome to this very special event this morning. My name is Quentin Kilian and whilst my normal role is that of CEO of the Real Estate Institute of NT, today I have the pleasure of being your MC.

This morning's event is presented by the Department of Business and Employment, along with the Chamber of Commerce NT as part of the Top End living festival.

And before we get under way a few points of housekeeping. First and foremost may I acknowledge the past and present traditional custodians of the land on which we're meeting, the Larrakia people. It's a privilege to be standing on Larrakia country. Mobile phones, as a courtesy to the speaker this morning, can you please turn them off or place them on silent.

For those that may need to relieve themselves this morning, the management has asked that you do use the toilets, and you can find these to your left-hand side as you enter the foyer outside. In the event of an emergency or a really tricky question on carbon pricing, the emergency exits are behind me, and one off to my right-hand side.

This morning's event is being filmed and for those of you that may wish to ask a question later but don't wish to appear on camera, if you can raise your hand and let the Government people know where you are, there is a little blue tag that they'll put on your wrist so the cameras won't pick on you.

At the end of the presentation this morning, our speaker will take questions from the floor but as his time is limited this morning I would ask that you introduce yourself, ask your question, keep it to a single question if you can please - no debate, no speeches - we just need questions this morning. We don't have - time is against us.

So with that out of the way, it's on to the main event. Minister for Business and Employment, Rob Knight, MLA; Darwin City Council Lord Mayor Graeme Sawyer and Alderman John Bailey; Dave Tollner, MLA; Mr Graham Symons, CEO of the Department of the Business and Employment; ladies and gentlemen.

To misquote Shakespeare, to tax or not to tax, that is the question. And it's one that's sparked much debate over the past few months, and one that I'm sure will continue to be the topic of debate for some time to come yet. The topic of this morning's presentation is how will a price on carbon tax impact on your business? Our speaker today is Professor Ross Garnaut, AO, who is a Vice-Chancellor's Fellow and Professorial Fellow in Economics at the University of Melbourne. He's also a Distinguished Professor of Economics at the Australian National University and, separately to his work on the *Climate Change Review - Update*, he's an independent expert adviser to the Multi-Party Climate Change Committee.

Professor Garnaut has held senior roles in business, government and other Australian and international institutions. From 1985 to 1988 Professor Garnaut was the Australian Ambassador to China, and he served as Principal Economic Adviser to Prime Minister Bob Hawke from 1983 to 1985. He's the author or editor alone, or jointly with others, of thirty-seven books and numerous articles in journals and books on international economics, public finance and economic development.

Ladies and gentlemen, I would ask that you welcome to the stage Professor Ross Garnaut.

[Applause]

ROSS GARNAUT:

Minister, Lord Mayor, very good to be in Darwin. And I know this is a place where there's a lot of interest in this question and lots of questions about the issue, so we'll have a chance later on to go through those.

I thought in my introductory remarks I'd talk fairly generally about the reasons why Australia needs to do something to lift its game in reducing carbon emissions, to do its fair share of what's an increasing global effort, and why carbon pricing with tax cuts is the best way to approach this question, the cheapest way, a good deal cheaper than regulatory and other approaches.

So we're going to have to deal with this problem, so I'm very much in favour of doing it in a way that's cheap, that reduces to the lowest possible extent the costs on households and the costs on business. Rather than doing it through regulation, which increases costs on business and on households unnecessarily.

Well, the reason we - it would be very good if we didn't have to worry about this question. It's a nuisance. I wish it were not the case that human activity were increasing the temperature on earth - but unfortunately, that's the reality. That's what the science of physics told us more a hundred years ago would happen if we greatly increased greenhouse gases in the atmosphere, carbon dioxide and others.

And we can now see that the early physics was right. We can now measure it. If you look at the report that I gave to the Prime Minister last Tuesday morning, which is on the website of my review, [garnautreview.org.au](http://garnautreview.org.au), global temperatures have increased every decade since the 1940s, Australia along with them. The accumulative increase now since pre-industrial levels is about 0.7 per cent and the science, the real science - there's a lot of rubbish science around - but the real science, people who have got real qualifications, who have spent their lives working on these issues, who are recognised as having real scientific credentials at the academies and so forth, the academics of science in Australia, in America, in Britain, in Germany, in France, in Italy, in China, in Russia, in Japan, there's no exceptions amongst countries of scientific accomplishment.

People who are the real scientists say that if we keep going the way we're going, we're going to have such large increases in temperature through the remainder of this century, then it will be seriously disruptive to everything we do and it will keep on getting worse after that.

Doing something about it costs a bit. Not much if we do it in the smart way through carbon pricing. A lot if we do it in dumb ways through regulation. But the benefits in terms of foregone disruption of climate later on are very large.

You wouldn't do this if you thought that all that mattered was comfort now and in the next few years. Probably wouldn't do it if you placed absolutely no value on the welfare, wellbeing, of Australians who live from 2050 onwards. If you care much more about yourselves than your grandchildren then you probably won't be interested in doing much about this. But I find that most Australians aren't like that. Most Australians think as much about the welfare of their grandchildren as they do about themselves. Some more.

So that's the basic reason why we've got to do something about it. It's going to be difficult to avoid large increases in temperature anyway. There's probably - the science says that there's probably another more than one degree locked in by the greenhouse gases that have been already put in the atmosphere. There's about a thirty year lag between putting up the greenhouse gases and the appearance of temperature effects.

So the warming we've had so far is a result of emissions that were put up there some time ago. We've been putting them up at a much faster rate in the early twenty-first century, and that will be reflected in warming in later decades.

We've got a chance of holding the temperature increase to about two degrees from pre-industrial levels if the world as a whole takes strong action from now. And every few years' delay in strong action means that the best hope is increasingly high.

The world is actually taking quite a lot of action now. Australia's not doing its fair share but the world as a whole is doing a fair bit. But even what the world is doing wouldn't stop further increases in greenhouse gas concentrations and the International Energy Agency says that, unless we do a lot more than the rest of the world's doing now - a lot, lot, lot more than Australia's doing now - then we'll be heading towards four degrees.

This puts the world in completely unknown territory for human beings. It puts climate into an area that's way outside what it's been through the period in which human civilisation has developed these last ten thousand years at those four degrees.

So there's an eighty-five per cent probability of initiating large scale melting of the Greenland ice sheet and that would add about seven metres to sea level. And there'd be serious effects on Antarctic ground-based ice at that temperature increase. At that sort of temperature increase, the science says that about ninety per cent of coral reefs would be over the critical limits for bleaching.

So they're the reasons why this - we have to address this nuisance. I was hoping when I was asked to review the work that I did a few years ago that something in the science would have given us some hope that we didn't have to move so urgently. But unfortunately all of the recent science confirms or puts us towards the bad end of the range of possibilities.

So you really have to put your head in the sand or have to acknowledge that you don't care much about the welfare of Australians or people elsewhere who live beyond your lives, not to take this issue pretty seriously.

There's going to be no solution unless there's a global solution. Greenhouse gases have the same effect on everyone's temperature whether they're emitted in Australia or Norway or China. So we all have to do our fair share. This is a problem of collective action where everyone's looking at what everyone else is doing and any shirker will affect the environment in which others are making their decisions.

I know it's common to say - I saw it in an editorial in a local paper this morning - that we're not a very big emitter. Well that's true of most countries. Obviously if everyone takes that sort of approach then there won't be any action and we'll all get the worst possible outcome. Lots of problems are like that. There are lots of problems that are only solved through collective action with everyone doing their fair share. Our country wouldn't work very well if we all took that attitude.

The fact that everyone has to work together to get a good solution makes the problem harder to solve and creates a special reason why everyone has to be careful to do their fair share because they'll undermine the efforts of others.

Of all the countries of the developed world my work in the 2008 review showed that Australia was the most vulnerable of all the developed countries. So if any country has to - or has a very strong national interest in taking strong action it's ours. And most people in other countries don't think it's very reasonable that the country that stands most to gain from getting on top of the problem is doing least amongst the developed countries to contribute to a solution.

I also saw in an editorial in this morning's paper that Australia's not a big emitter. Well in fact amongst the developed countries, we're the world champion in emissions per person; over twenty seven tonnes per person. That compares with most European countries, Japan, Korea - all those around ten; the world as a whole, a small fraction of that level; India less than two, China about six.

In total emissions, for a country of such modest population we're no slouch either. Britain's emissions - Britain contributes about one point seven per cent to world emissions. We contribute about one point five per cent. Britain's got three times the population that we have.

The British Government has just taken the decision to reduce by half its greenhouse gas emissions by 2025, although its emissions per person are already very low compared with ours.

There are a couple of countries, China and the United States that are much bigger as emitters than others. But we've got far more emissions per person than either of those. But neither of those can solve the problem through acting on their own either. It's only through the world as a whole deciding to do something about it and everyone doing their fair share that we're going to get a solution.

Some people say well, Australia's got very high emissions because of the structure of its economy. You could say that about a few countries. There's one developed country that has an even higher endowment of fossil fuels per person than we have, that's Norway. And Norway's emissions are a bit over ten tonnes per person compared with twenty seven tonnes for us. Norway like the other Scandinavian countries has had carbon pricing since the early nineties and it shows.

There are about a billion people in the developed world. Half a billion of those have effective carbon prices now. A couple of the big emitters don't; China and the United States in particular. But it's not that they're not doing anything about emissions. They're doing rather a lot. I go through that in my report.

If you want to really dig into these things, look at the final report on the web last Tuesday. It will be coming out as a book with Cambridge University Press soon, but it's all there on the web now. But behind that are lots of detailed papers, ten major papers, which allow you to dig into some of the work that underlies the final report.

So if you're seriously interested I suggest that you go through that. And I document there what Europe's doing; the United States; major developing countries and it adds up to quite a lot.

It's common in Australia for people to think, or to say, that China and the US don't have carbon pricing, so why should we? Well they are doing quite a lot to reduce emissions.

China's made reducing emissions the central feature - or changes in the structure of economy that will reduce emissions - the central feature of its twelfth five year plan as the Premier introduced in March.

It's achieving its reductions in emissions below business as usual through regulatory means; through officials going around and measuring emissions plant by plant, telling those that are not up to scratch to close and telling them that in the meantime they'll have to pay much higher electricity prices, denying high emissions industries the normal export rebate for value added tax, GST, which our exporters get and which other exporters in China that are not high emissions exporters get. And that's having its effect, but it's a more expensive way of doing things than through economy-wide pricing.

The United States is committed to reducing emissions by seventeen per cent on 2005 levels by 2020, which is higher than our current unconditional ambition. And it's also approaching things through regulatory mechanisms through the Environmental Protection Agency. Some states have and others are going to have emissions pricing, but there's no national emissions pricing on the horizon. There are lots of interventions - regulatory interventions at state level too. And as in China the American approach is a more expensive approach than reducing emissions by a similar amount through economy wide pricing.

Amongst all the developed countries of the world we stand out for the modesty of our current unconditional target to reduce emissions by five per cent by 2020. And we stand out even more for the distance we are in the way we're travelling from our target.

The Department of Climate Change has estimated a few months ago based on figures from late last year, that by 2020 under existing policies with the renewable energy target, with all the solar programs and so on, we'll be increasing emissions by twenty four per cent from 2000 levels.

Now both Government and Opposition have committed themselves at least to reducing emissions by five-per-cent so there's a twenty-nine-per-cent gap. There's no other developed country with a similar gap between what's actually happening and what they've promised to do and that's bipartisan opposition and government. And that's despite the fact that our five-per-cent is rather modest compared with what other countries have done.

I'm not saying that Australia should get ahead of the world. That would be completely unrealistic. I know that some Australians have

said that they're worried that carbon pricing will put us out in front of the world. Well, if the person next to you is worried about that, then take his hand and tell him he's got nothing at all to worry about.

Australia is so far behind the world as a whole that there is absolutely nothing to fear about us getting ahead of the world. And it will be quite a big effort for us to catch up. My recommendation is that we try to place ourselves as an average country for the developed world rather than a laggard.

The carbon pricing is the central element of a set of policies to reduce our emissions in the lowest-cost possible way. It's also important that part of the money that's raised through carbon pricing goes to support innovation in low emissions technology that will reduce the cost of transition.

And the combination of those two policies, carbon pricing and support for innovation are the two essential elements of a low cost way of reducing emissions. The carbon pricing is a market based way of reducing emissions.

There are two basic ways we could go about it. One is putting a price on carbon. The other is through government regulation. And we know from a lot of experience that if you put some general incentive structures about and then let the market respond to that, you get responses in lots of ways that the bureaucrats or ministers mightn't have thought of.

Whereas if you do things by regulation, what's done is what catches the attention of the minister or the bureaucrat. And we've got lots of experience about how market based responses are much more effective, much cheaper than responses that are based on regulation.

It means - a market based approach means that instead of ministers and bureaucrats taking decisions on "we'll close this down or put restrictions on this", it means that millions of Australians will be thinking about ways in which they can save money by changing the way they do things.

And even if our ministers and senior bureaucrats are much smarter than the rest of us, millions of our brains will end up achieving more than the brilliant minds of Rob and a few others.

So another difference between carbon pricing and market based systems and regulation, is that government actually collects revenue from carbon pricing and can use that in a number of ways. I've already mentioned the importance of using some of it to support innovation in low emissions technologies.

Some should be used to assist trade exposed industries in any industry in which other countries are not doing as much as Australia. And that can be important in avoiding some unnecessary economic costs. But I suggest that the majority of the revenue be used as tax cuts or go back to households in other ways. And in that way, at least for low and middle income Australians, you can avoid the effects on the standard of living of higher prices for electricity and other energy intensive goods.

You might wonder why bother to put on the carbon price if you're going to give a lot of money back. And the answer is that you retain the incentive to reduce emissions because of the change in relative prices, so goods with a lot of emissions in them will go up in price relative to other goods. So that even if you give money back in tax cuts or in other ways, you retain the incentive to economise on the use of goods and services that contain lots of emissions.

Also just look at the electricity sector because that's usually the sector people have most in mind when they worry about cost of living effects of carbon pricing. Well if you put the carbon price on, you raise the price of electricity, you give tax cuts or other measures to give income back to low and middle income households, electricity prices remain relatively higher than other prices.

So you've got an incentive to reduce consumption, but also every generator of electricity will have an incentive to produce electricity with the least possible emissions because in that way, they don't have to pay as much of the carbon price.

Coal is the most emissions-intensive form of energy that we use. Brown coal or Victorian coal is the most emissions intensive of the coals. Natural gas is much less so in the Territory where the majority of your power generation comes from gas, so the effects won't be so large.

Then renewables and nuclear don't have any emissions at all from the actual generation process. So there will be rather large incentives for electricity generators to produce more electricity from gas and less from coal, more from renewables. And over time, that will have a big effect on the way we produce electricity.

We can contrast that approach with the regulatory approach where the actual economic cost of what you do is much higher if you are doing the same amount. Say we were trying to reduce emissions by five-per-cent by 2000 levels. So by regulation rather than carbon pricing, that's twenty-nine-per-cent reduction from where we would otherwise be in 2020.

Because the carbon pricing encourages people everywhere to look at ways of reducing emissions so that you'll find lower cost ways of doing it than having the ministers and bureaucrats picking this and that and this and that. Apart from anything else, that becomes highly political and that distorts the regulatory decisions that are made.

But in addition and while - in addition to regulation increasing costs more than carbon pricing will increase costs, there's no government revenue for tax cuts or for support for innovation to offset that effect. So there's a double advantage of carbon pricing over regulation.

And remember the alternative is not nothing at all, unless you think Australia should stand outside the efforts that the rest of the world is doing, free ride on the rest of the world. I don't think that's a viable strategy. I don't think the rest of the world would tolerate that for very long.

But even if it was viable, it's not the way Australians like to think of placing their country in the international situation. It's not how we've looked at collective security questions. It's not how we've looked at our place in the world on other things.

I'll just touch upon some other - some areas of concern. It's not such a big issue up here, but in other parts of Australia, there's a lot of concern about jobs lost in manufacturing in particular. And there is no doubt that this is a tough time for Australia - all of Australia's export and import competing industries that are not resources industries. We're going through the most extraordinary boom in resources that this country has ever seen, probably any developed country has ever seen.

And the other side of the resources boom is a very high real exchange rate, the highest it's been since Federation. And that makes life very hard for all other export industries and all import competing industries,

all our manufacturing that's not tied to domestic markets. Very hard for our universities which are big export industries, just about our biggest export industry after coal and one or two other resources these days.

Twenty-five per cent of all the revenue of our major universities comes from exports from foreign students. Very hard for tourism and tourism cops it both ways both from exports to sales to tourists from overseas and because our tourist industry is an import competing industry.

Every Australian tourist takes it to - living in Sydney or Melbourne or Perth, takes a choice between a holiday in the Northern Territory and a holiday in Bali or Thailand. And the very high exchange rate tips that choice. So the resources boom's made life very hard for tourism both because it's been harder to attract any foreign students, made it harder to keep the Australian business because it's cheap for Australians to go overseas. And the high real exchange rate is having that sort of effect on all of our export industries, import competing industries other than resources.

So when you hear about manufacturing being very worried about the carbon pricing - when you analyse it, the real worry is the resources boom. Now I saw the statements by the Mining Industry Council over the weekend that I think it was twenty odd thousand jobs would be lost in the mining industry from carbon pricing. I'd need to have a look at their calculations to see if that's right. But if it were right, it's twenty thousand less of a huge boom, twenty thousand less in a huge boom.

And I'm sure that the structure of the model would show that you save a lot more jobs than that through the real exchange rate not going as high as it otherwise would. You'd save more jobs in tourism, save more jobs in manufacturing.

So you can never in economics look at a partial bit of the story, you've got to look at the story as a whole. And if the Mining Industry Council were right, I don't know if they were right or not then that's good news for the tourism industry and the education industry and for other export and import competing industries.

When you hear the Australian discussion of - Australian expression of anxiety about carbon pricing, you sometimes think well this thing, this ogre must be going to greatly increase the cost of living. Well under my recommendations, the average increase of cost would be less than one per cent of consumer prices for very large numbers of Australians that would be fully compensated by tax cuts or other measures for households.

In a way, it's a change like the GST where you had increases in consumer prices balanced by tax cuts but it's a much smaller change than the GST. It's a change of that kind but it's a small one. We managed to get through the GST transition reasonably well. We'll get through this one more easily.

So finally, how will carbon pricing with support for innovation and the other measures that I've suggested transform the economy? Well we'll see it all happening from the time the new policy is put in place and the prime minister has said that she would like it in place by the middle of next year.

And we'll find that we're getting reductions in emissions in lots and lots of places. It won't just be a few reductions. Consumers will use less energy and other goods and services that embody high levels of emissions. Every producer will think about whether it's more profitable to spend a bit to reduce emissions rather than to have to buy more permits. Natural gas exporters will try harder to find opportunities for

sequestration of the emissions that come naturally with natural gas production. Landowners will think hard about the parts of their properties that would have - would have more value as carbon sinks and they do carrying sheep.

And I should mention that part of my proposal says that a substantial part of the carbon revenue should go to provide incentives for sequestering capturing carbon in soil, trees, landscape and per person the Northern Territory probably has much more opportunity for that than any other part of Australia. And this could be a very big industry for rural Australia.

If all the credits that I recommended be made available to the land sector up till 2020 were taken up, it would add up to another rural industry as big as the Australian wool industry and Northern Territory would have special advantages in that.

You're already doing some of it through the new methods of savanna burning but encouragement of accumulation of carbon in woodlands and savannas could be a very big industry for the Northern Territory.

With carbon pricing, lots of people with clever ideas of doing things in new ways that reduce emissions would find they could fund their projects. And we'd have millions of Australians turning to work to meet the needs of consumers and meet their own needs with fewer emissions.

We don't know in advance exactly where all the big gains will come. It will come from decisions of lots of businesses, lots of individuals. There will be technological breakthroughs that mean that there'll be some large reductions in emissions from sources that now we can't think of. That's what happens in a market economy, that's the miracle of the market economy. Why market economies have done so much better than communist countries with central planning over the period in which we've been able to observe the performance of both of them over the last half century.

I'll leave that for the moment and happy to answer all your questions.

[Applause]

QUENTIN KILIAN: Now as the professor's indicated, we will take questions from the floor. We do have a limited time span of roughly about half an hour for questions. The lovely Evie over here, put your hand up, has the microphone. So if you could put your hand up, Evie will find you and give you the microphone. Again as I said earlier, if you could keep with the questions as we don't have time for statements or debate this morning. So do we have some questions from the floor this morning? We have one over here. Just to make Evie run. Run, Evie, run.

Then between questions, if you'd like to indicate if you have one, we'll make sure that Evie gets across to you with the microphone.

QUESTION: Morning Professor Garnaut. My question I guess is about the R&D side rather than carbon tax, huge support for the carbon tax - agree with everything you said. Are you planning in your recommendations for the R&D side to raise the tax rather than regulation to actually put it back to the marketplace? And when I say that it's in terms of - through tax incentives for research and development rather than actually the bureaucratic system being given a large sum of money and deciding where to invest it?

ROSS GARNAUT: Yes I am. There's a chapter on innovation called innovation nation in the final report. There was a big paper, I think it's the seventh of my update papers on innovation and they're both on the web. I've

suggested that the majority of effort should be - funding should be made available in the form of matching grants. And the most efficient form of that is an augmentation of the existing R&D or the new R&D tax incentives which would come in the form of a tax credit rather than a tax deduction. So that if you don't have taxable income, you would be able to take it out as - cash out the credit. So the idea of that is to let the interests of private investors drive the directions of support for the demonstration plant and commercialisation end of the innovation chain.

QUENTIN KILIAN: Thank you very much for that. Graeme Sawyer, Lord Mayor, you have a question?

GRAEME SAWYER: Yeah thank you for a good talk. The question I've got relates to the issue of giving emerging sections of the economy breaks in the stuff and the risk associated with that then developing carbon intensive ways of [inaudible] which will ultimately be competitive and they'll end up in the long run falling flat.

ROSS GARNAUT: Well I don't think you should give breaks to emerging parts of the economy. I think that everyone should be subject to the incentives that exist to reduce emissions that exist as soon as you put carbon pricing in place. For trade exposed industries, if it were the case that others were not doing as much through regulation or carbon pricing as we were, there's a case for providing some assistance. Because it'll take a few years to work out precisely industry by industry what others are doing, I've gone along with the idea of making some generalised support for trade-exposed industries available in the early years.

But I think that that should be given and can be given in a form which doesn't take away from the incentives for reducing emissions. For example, if, as in the Government's old CPRS, you base the numbers of emissions, free permits, the trade exposed industries on the average of the industry, a percentage of the average, then those who are doing better than average still get that higher average number of permits. Those that are doing worse than the average won't get any more because they're doing worse.

So everyone will have the incentive to reduce emissions even though there's assistance for the trade-exposed industry as a whole. But I think it would be very damaging and costly for the future if we exempted some parts of the economy from the incentives that will be reducing emissions.

QUENTIN KILIAN: Alright. Where's our next question from the floor? This is very rare for a Darwin audience to be this quiet and shy. Surely we've got some more questions? It's very, very rare that we get Professor Garnaut up here so we want one question down the front and another one up the back after that.

QUESTION: Thanks Professor. I'm just interested, do you believe there's a need for some reform around the actual ownership of carbon on whether it freehold land, leasehold land et cetera, et cetera? So that organisations who want to get involved in purchasing offsets can actually be clear about the actual ownership of the carbon that they've purchased?

ROSS GARNAUT: The Government has before the Parliament now, a Carbon Farming Initiative. So it goes quite a long way in defining the rules for eligibility for carbon credits. Now I've gone one step further in my report and I've said wherever there is genuine sequestration of carbon and soils, pastures, woodlands, forests that that should be rewarded at the carbon price. So it'd be quite a strong incentive for all of that.

The rules of the carbon - have you looked at the rules of the Carbon Farming Initiative? I think it actually handles those questions. A member of my team, Anne-Marie, has been working on that and so if you have questions then maybe afterwards she can help you.

QUENTIN KILIAN: And another question from the back there.

QUESTION: Thank you very much Professor Garnaut. I wonder if we could talk specifically about the possible future for waste and power generation in the Northern Territory. We just briefly map out two potential trajectories, you know, Plan A; situation normal; burn natural gas. Plan B; perhaps go to something like fifty per cent of renewal energies. Could you just make some comment, looking forward say twenty-five years, on the potential impact on the Territory's economy?

ROSS GARNAUT: Yeah. Well first of all, the Territory is well placed because now so much comes from natural gas. The way the Australian tax and social security system works, you'll get the same tax cut as Victorians but Victorians will have a bigger increase in power prices. In fact, for lower and middle income Australians, the tax cuts and other adjustments for households on average pay the increase in electricity prices. Your electricity prices will be below average so there'll be a lot of winners here.

Now there'll be less pressure on changing that story in the early years but simply because natural gas is a lower emissions source of power than coal. But the costs of various renewables are coming down quite quickly, most notably in China but also in the United States and elsewhere. And we're going to find that the carbon pricing and the support for innovation in new technologies is going to bring on a lot of renewables.

I would expect the first place where this would happen in the Northern Territory would be communities that are not linked up to the gas - to the grid or to the gas. And there's quite a few of those in the Northern Territory and there'll be quite strong incentives there to focus on the low emission sources of power.

In the United States, there's a lot of focus on combining solar thermal, large-scale solar thermal, using solar energy with gas. So there might be some parts of the Territory where you get that combination. There'll be other parts of the Territory, isolated parts, where straight solar is more efficient. So it's not going to be the same solution everywhere.

But if you look forward over the period that you mentioned for Australia as a whole, the renewables are going to become very much more important and there's going to be different mixes of renewables in different places probably because of the richness of the Territory's gas environment that'll go a little bit more slowly here than in some other places.

QUENTIN KILIAN: We've probably got time for about two more questions from the floor if you've got them this morning. One down the front here.

PAM ROBINSON: Thank you. Pam Robinson. Good to see you here and very good to see you in Darwin as has been said because often Darwin, for all sorts of events to do with climate change and environment, doesn't get actually the national tour. So this is great.

And I'm just wondering, I know you're an economist but I also know that, as a human, you've expressed in many ways the sense of people getting on with it.

ROSS GARNAUT: Yeah.

- PAM ROBINSON: I'm just wondering what your view is on the fact of what's the leap that needs to be done in that my sense is, on an individual basis, people actually know what this is about..
- ROSS GARNAUT: Yeah.
- PAM ROBINSON: ...and agree collectively through leadership to some degree in some quarters. But also I understand the nervousness about funding, but as it's explained, it seems to go away. What do you think is the - what's the psychological thinking that has to be got over to get on with it?
- ROSS GARNAUT: I think the key is actually going to be legislating the scheme. And a month after it's come in, everyone will say, well, what was the fuss all about?
- QUENTIN KILIAN: Short and simple answer. Now just before we head down the back of the room, [inaudible], the Minister has to duck off. So you wanted to say a word?
- ROB KNIGHT: No, I'm right.
- QUENTIN KILIAN: You're right? Okay. So let's go down to the back of the room. There was a gentleman in a blue shirt down there.
- QUESTION: Every tax has its cost. Have you worked out that [inaudible] cost of this proposed tax?
- ROSS GARNAUT: Yes and I had a paper done for the review by a tax expert and it's a lower cost than the income tax. So that if you combine carbon pricing, collect revenue from it and reduce income tax, you actually get a lower cost burden.
- QUESTION: Yeah but I mean as a percentage. When you take a hundred dollars in, what's the bureaucracy cost?
- ROSS GARNAUT: Oh the bureaucracy. That'll be - to be honest I haven't worked that out precisely. But it will be very small because transactions costs are relatively low for this because it's only a couple of thousand companies that will actually have to comply with the tax. It's not like GST where every business has to pay it. So transactions costs will be much lower than the GST. The economic burden of the tax will be much less than the income tax.
- QUESTION: Can I ask, the transfer to the low and middle income that you propose, how much of that is just political solution rather than an economic solution?
- ROSS GARNAUT: Well it depends what you call political but I think most Australians - well it's a reality that low income Australians spend a higher proportion of their income on gas and electricity than average and high income Australians. The difference is quite big. So that if you didn't have that focus on lower income earners then you really would be putting a burden on low and middle income Australians that most of us would think is not the fairest way of doing it.
- QUESTION: But don't you want to change their behaviour?
- ROSS GARNAUT: Yes and as I've already explained, you change their behaviour because the relative price of electricity has gone up. So that if you - if your electricity bill goes up by two hundred dollars because the price of electricity has gone up - your annual electricity bill and you get a two hundred dollar tax cut, you've still got an incentive to use less electricity and spend more money on other things because of the change in relative price. And that's quite a powerful thing.

The international studies show that in the very short-term, if you increase the electricity price by ten per cent, you'll reduce consumption by thirty per cent. Then when - over time that becomes seventy per cent if you're - well - sorry, seven per cent. If you reduce the electricity - increase the electricity price by ten per cent you'll reduce consumption by seven per cent. And that incentive will stay in place even if you're giving a tax cut to compensate for the - for the income effect of the increase in electricity price.

QUENTIN KILIAN: One more question on the floor I think, gentleman here in the purple shirt.

QUESTION: Thanks Professor. [Inaudible]. My concern is that looking at the [inaudible] modelling and treasury modelling against SK and MMA modelling that a cover price up till a lot higher than what we're likely to get over the next you know several years, lock in a lot of gas. And that the - and lock out the opportunity for renewable energy and [inaudible] to bring it down to cost. And particularly the big question marks over the real emission profile of gas and the fact that a lot of it will come from coal seam gas, which has got a lot of other [inaudible] side effects. Do you think that's a bit of an opportunity loss - loss for Australia [inaudible]?

ROSS GARNAUT: Well what matters from a climate change perspective is that we reduce emissions and if we're gradual - got targets that are gradually tightening over time then there is a role for gas as a transitional fuel. So - so the economically lowest cost path goes through a fair bit of use of gas. Now if we were trying to reach very ambitious targets very quickly, then that gas phase would have to be smaller and we'd go more to renewables and the cost to the economy will be greater.

I think we're going to get - once people realise that these things are going to happen, the carbon price is going to be rising over time, targets are going to get tighter you're going to get a lot more focus on the future. People will realise that - that a fossil fuel that's competitive now will be less competitive in the future. That will all be helpful to zero emissions energy.

And part of my package is support for innovation and in the early stages a fair bit of that would be going to the low emissions and zero emissions energy. So it won't be reliant on the carbon pricing alone. So I think we will get the movement in the right direction.

If the world as a whole gradually lifts its - well quickly lifts its ambition, so that we can really do something big about the problem, we should do our fair share - that means we'd have to tighten targets quickly in line with the rest of the world. If that happened then under an emissions trading scheme the carbon price would rise more quickly and you'd get stronger incentives for earlier introduction of renewables rather than gas.

But I think that can happen incrementally. Understand the point you're making but I think this path is a reasonable first step.

QUESTION: It's just that you're locking in for fifty years but you build all those CCGT gas plants.

ROSS GARNAUT: Not necessarily. In fact anyone who makes a decision not to put in a gas generator based on income in thirty or forty or fifty years time, well I think they'd be very nervous about the effects of emission targets and carbon pricing a few decades out. So if that's driving the decision, then they won't make the decision to use fossil fuels. But actually what happens twenty, thirty, forty years out is not terribly important to the initial decision on putting in those plants.

Look, we have to be fairly tough minded and people who put them in have to accept the risk of obsolescence over time.

QUENTIN KILIAN: We probably have time to squeeze in one more question if there's one more for the floor. Gentleman down there was first to put his hand up. That's the fact that I want to see you run across the back of the room this time.

QUESTION: Professor, looking at the marketplace solutions we've got in the Northern Territory a really small population [inaudible] think [inaudible] necessarily over here. Can you sort of enlighten us as to how is it - where you have situations like this, where we don't have economies of scale and certainly see costs are certainly higher over here because of that. Is it going to be just as effective here as it's going to be in southern Australia where you do have larger numbers?

ROSS GARNAUT: I think the market mechanisms will encourage a lot of private decisions that reduce emissions here in the Northern Territory. Just take the effects on electricity prices. Now electricity prices won't go up as much here as in southern Australia because there's less - less coal, very little coal. So - but still they will go up somewhat because of the emissions in natural gas and that will lead to some effect on economisation in the use of electricity. I think here, all of the land-based incentives are going to be very important.

I think we're going to see quite big industries develop and that will be decisions of large numbers of individual land owners or collective land owners. Where there are - where the carbon pricing introduces incentives for innovation I think you will see that happening here as elsewhere.

No I don't see the scale as being an inhibitor to responding to the incentives.

QUENTIN KILIAN: And I did have a lady put her hand up somewhere over here. So we'll make this the last one just down here and - and after this one we will have to wrap it up.

QUESTION: Angie Brown, Professor Garnaut. With small businesses, with a tax there's always a paperwork compliance issue. Will the paperwork be required for small businesses or..?.

ROSS GARNAUT: There'll be - it will only be firms whose emissions are twenty-five thousand tonnes per annum and higher. So nearly all small - small businesses won't have to comply. It's not like the GST.

QUENTIN KILIAN: I will have to wrap things up for this morning as people have to get away. Before we finish up completely there's a couple of guests I would like to invite up and we must thank those sponsors for the event - Nursery Gardening Industry NT, Environment Centre NT, the Chamber of Commerce NT. But to wrap things up this morning can I please invite to the stage Minister Rob Knight to say thank you to our speaker for this morning.

[Applause]

ROB KNIGHT: Professor Garnaut, look, I think on behalf of everybody here, thank you very much for coming to the Northern Territory. I'm glad not only that you've come and presented here this morning, but you're taking a couple of days up here to get to know this part of the world. It's certainly a very different part of the world, not only in the geographic sense and climatic sense, but certainly in the economic sense as well.

And it's really good that you're able to further your understanding of where we are and what perhaps the impacts will be on our economy

with this kind of, once in a lifetime change I suppose, in the economic - our parameters which drive the economy.

So we do look forward to further visits if possible, to better inform us and certainly this morning has been very much, you know, demystifying where we are at. I think Territorians as well as Australians really do want to you know, play their part and we're middle of the pack in the developed world - well I think that's not a bad place to be.

And I guess with the change - as the Power and Water Minister, I think we'll end up with the lowest power prices in Australia the way it's actually going, because we're the second lowest at the moment and with that change it will certainly put us the lowest power prices in Australia.

One of the key things that I really want to look at is those opportunities for our businesses in the Northern Territory and new businesses starting up. I think there will be a whole raft of opportunities for current businesses and for people to start brand new businesses, to expand those and expand our economy here in the Northern Territory.

But thanks very much for coming along and like - like I said, it would be great to come back as this story starts to unfold, as legislation is introduced, as prices are put on and rules are put in place. So thanks very much for coming along. Thanks for your team coming along. And please enjoy your time here.

ROSS GARNAUT: Okay.

[Applause]

ROB KNIGHT: And thanks to the Chamber. George Roussos, thanks very much for being here and Quentin Kilian, thank you very much for stepping in as the MC.

QUENTIN KILIAN: Pleasure Minister.

[Applause]

QUENTIN KILIAN: If nothing else, important working presentation this morning. Certainly asked a few questions, certainly answered a few questions, perhaps even raised a few new questions. But ladies and gentleman thank you very much for your time this morning. I wish you good health, good business and good morning.

[Applause]

- ENDS -

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