

**Speech Topic:** Agribusiness breakfast

**Compere:** Brent Finlay

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**Speakers:** Professor Ross Garnaut

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**Transcript:**

**BRENT FINLAY:** Good morning again, ladies and gentlemen. I hope everybody enjoyed their breakfast. The Eggs Benedict were very good, and also the fruit salad as well.

Also, people would have seen, on their placemat there's a plug for our conference – 'What Will We Eat?' - and we hope that people can find time in September to come to the AgForce conference. We promise you that will be a very interesting and thought provoking conference. It's what will we eat, about global food security and also, more importantly, what will we produce into the future. We hope you can come. It's at Twin Waters, so we're encouraging people, if they do come - and this is the message I'm putting right around the bush, is - come, come to the conference and then have a holiday; shout yourself a holiday. It's a good venue for that.

It's a delight today to have Professor Ross Garnaut with us to talk about, I guess, the carbon debate, in a room full of agriculture. One of the concerns that a lot of people have, as I travel around the state, is what's going to happen? What is a carbon tax going to do to agriculture? What's it going to do to the economy of Australia?

There's a few other issues around at the moment, and I guess Professor Garnaut - a small issue out of Indonesia's taken the carbon debate off the front pages for a while. As a major beef producing state, we certainly wish it hadn't done that, but anyway, that's what we have to deal with now.

There's a lot of concern out there, in the bush, about impacts of the resources industry on farmers; trying to find the balance between resources, industry and agriculture. The carbon debate is also a live debate and people are very concerned about that.

So it will be great to hear your presentation today, and what you think will actually be in the carbon tax; where agriculture will sit within that; it would be good to hear.

So, without any further ado, I would like to introduce Professor Ross Garnaut.

[Applause]

**ROSS GARNAUT:** Thanks Brent. Very good to be here in Queensland. I've spent quite a lot of my time connected to the ag. sector. My wife and I had sold our - the property that we'd run in south-west slopes of New South Wales; grain and sheep property - run for over 20 years - just in January. A rather sad occasion, but it didn't really work now that we've shifted to Melbourne.

I'm still very interested in the sector. I was, for seven years on the board of the International Food Policy Research Institute; the last four years as chairman. That's the world's main research group, working on global food issues. And kept in touch with the ag. issues there and before that, for half a dozen years, chairman of the Australian Centre

for International Agricultural Research - ACIAR - which most of you would know. So I bring a lot of - a pretty well developed interest to the land side of the carbon issue.

I've got a chapter in the final report - final report on the web - also available now as a book from Cambridge University Press - a chapter on the land sector; pointing out the rather complex ways in which the rural sector will be affected by climate change and by its mitigation.

And the backdrop to all of that is, due to global economic developments, life for agriculture, Australian agriculture, in the first half of this century was set to be very different from life in the second half of the last one. We got used to constantly falling farmers' terms of trade through the second half of last century here; falling food prices and agriculture raw material prices relative to other prices, and that really put a squeeze on farming.

Fortunately - and, I suppose, partly as a result of that, we saw exceptional productivity growth in the farming sector, which allowed the best farmers to keep up. Not everyone could keep up. So it's of real significance, it's of historic significance that, so far, in the twenty-first century, the farmers' terms of trade have moved the other way.

And they've moved the other way, despite the resources boom taking the real exchange rate to a level that we couldn't have imagined, not long ago. Even a couple of years ago we'd find it hard to imagine a hundred and six cents; especially when you take into account that our general inflation rate's been higher than America's or Europe's or Japan's. So the real exchange rate has increased even more.

And so the world has changed when farmers' terms of trade have held up in the last decade, despite the extraordinary level of the real exchange rate. And what's driving that is the growth in incomes of people in the big developing countries; of, first of all, China - but not only China - which is driving demand for food and agriculture raw materials.

It looked for a while as if wool was missing out, but that's caught up this year and, again, driven by Chinese demand. Most of our wool now goes to China; which pleases me particularly, because when I was ambassador to China in the eighties, I put a huge effort into persuading the Chinese textile companies and Government that it was in their interests to open up to international trade in wool because that would make them competitive globally, if they started using high quality wool instead of the rubbish that they were drawing in very large quantities from the west of China; from animals that were really meat animals; out of which they got a bit of wool and produced a suit that no-one in Paris would ever wear. Well, that's all changed, and it's made a huge difference to our wool industry.

And that story of rising demand for our food and agriculture raw materials, driven by economic growth in the big developing countries, is going to be an underlying part of the ag. story in Australia over the next half century.

And climate change effects will interact with that in complicated ways. So already we're seeing what the climate scientists recognise as a human footprint, in more extreme weather events around the world which are disrupting agriculture. And if they happen to other people it does you some good.

The huge disruption associated with the Russian drought last year, for example, in the extreme temperatures they lost a lot of their crop. They responded to the loss of their crop by putting bans on exports,

which further increased prices in global markets, above what they would have been just from the loss of Russian production.

And floods and droughts and fires and quite a number of major producing countries drove world food prices to exceptional levels. Well, I think we can - we can take that as one of the things that's going to be part of the supply/demand story for food in the period ahead. And that's going to be another factor driving up average prices above what they otherwise would be.

Now, that's not so good when they - the variable climate, the extreme conditions, affect your production. So a big question's going to be, what will the effect of climate change on us be, and how much will that inhibit our capacity to take use of these expanding opportunities?

One of the things I looked at fairly closely in my original review that I gave to all of the State premiers and Prime Minister Rudd in September 2008 - I tried to use the best of the climate science in Australia to form a view on the impacts of climate change under various conditions. And Australian agriculture is at a lot of risk if climate change is not constrained.

A lot of agriculture in Australia is undertaken in climatic conditions of temperature and aridity that's at the extreme end of agriculture anywhere. So that if you get further increases in temperature or further instability in precipitation, then it's harder for us to adjust than for others.

If you get an increase in temperature of a few degrees in East Anglia, then they can ship in wheat varieties that we developed in NSW, already developed and adapted. But if you get a few more degrees of temperature in NSW, there's nowhere else that's hotter that grows wheat that you can bring in the variety for. So it will be more of a challenge for us than for others.

In addition, and a problem that you won't have so much in Queensland, precipitation, rainfall will be affected a lot by climate change. But it won't all be in one direction. And the big challenge for southern Australia is the climate science models show that it's quite likely that the wind patterns that bring the rain in southern Australia, the strong westerlies in winter - and that's the basis of our winter cropping in southern Australia, are likely to move further south. And so we'll miss out on some of that rain. But parts of Australia that depend more on the tropical rain, the northern rain, the summer rain won't have that same effect. Greater variability of rain, more intense episodes is likely to be a bigger issue in the north.

But for all these reasons, the Australian rural sector has got an extremely strong interest in effective global mitigation. If we can hold the temperature increase associated with the increase in greenhouse gases within a couple of degrees, then there's a reasonable chance of our managing the adaptation and changing our farming systems to adapt. But once it gets beyond that, it becomes harder and harder.

So far the average temperature in Australia increased a bit less than a degree in the last half century and increased every decade in the last half century. It seems pretty inevitable that we'll get that again just from the momentum in the system. If we held it there through effective global mitigation, adaptation to that might be manageable, although some climate scientists warn of quite big risks even then.

But if we just let it go, then we'd really be in uncharted territory for Australian agriculture. So climate change will bring a plus in higher prices, higher food prices and agricultural raw material prices. But the big question is, will we have the productive capacity to make use of it?

And the answer to that question's going to depend on how effective global mitigation is.

Some people say we're only one-point-five per cent of world emissions, so why should we do anything? It's the other ninety-eight-point-five per cent that matters most. And that's a true point, but a trivial point. Every international relations issue is like that. An awful lot of things - problems that wouldn't be solved without collective action with everyone doing their fair share.

And if we applied that sort of analysis, there's no way we would have had 60,000 dead in the First World War. You certainly couldn't say that all those Australian troops were absolutely essential to the outcome. We wouldn't have troops in Afghanistan or Iraq if we applied that sort of analysis.

But the test is not whether our contribution is decisive. In itself the test is what's a reasonable contribution from each country to an effective global effort. What's a fair share? If each country - especially if each developed country - and especially if the developed country with by far the world's highest per capita emissions - and that's Australia, is not doing its fair share, then that helps undermine the effort of others.

So you won't get the same effort from others if we who've got such a big interest in successful global mitigation; if we who happen to be the world's biggest emitter per capita amongst the developed countries; if we who are one of the developed countries that have accepted that the first responsibility is theirs, don't do our fair share then it makes it less likely that there'll be an effective global effort.

But also if we share an interest with the whole global community in effective mitigation, I think most Australians would think it was right that we did our fair share, that we don't free ride on others.

Another point to be made there is we're only one-and-a-half per cent of global emissions, but most of world emissions are from countries that are only a couple of per cent or less of global emissions. Britain's played a very big role in leading the global effort ever since Margaret Thatcher made this a big international policy point during her prime ministership.

Incidentally, the biggest leadership efforts have mostly been from conservative governments, because that's what conservatism is about. Preserving our institutions, preserving our way of life. Not running risks that are unnecessary. And - but ever since Margaret Thatcher, British prime ministers, Labour and Conservative have made this a very big issue.

Britain's three times the population of us. But their total emissions are about the same as us, one-point-seven per cent of the world. And you just - Margaret Thatcher or David Cameron, the present Conservatives leader, you never hear from them: "We're only one-point-seven per cent of world emissions, so what we do doesn't count". Other countries are taking the attitude that we're only going to solve this issue if we do our fair share, so I think it's important that we look at it in that way.

If it were really the case that no other countries were doing anything, then I think it would be reasonable for us to say, well why should we do anything? Tony Windsor has put this eloquently on a number of occasions. He said if the people of the world are running like lemmings over the cliff, then the smart thing is for us to enjoy the last run over the cliff. No point in being the one lemming who doesn't if the whole crowd's diving over the cliff anyway.

But fortunately, the rest of the world are not a lot of lemmings running over the cliff. The leaders of the effort have been the developed countries of Europe. About half the world's high income people live in Europe, about half a billion people. European Union but also the Scandinavians, others who are not members of the European Union.

Scandinavians have had carbon pricing since the early '90s. That's one reason why Norway is even richer in fossil fuels per person than we are, because of their oil and natural gas resources. But their emissions per head are about ten tonnes per year. Ours are twenty-seven tonnes a year.

The rest of the Europeans have had a carbon price since - for half a dozen years since 2005. Australians who don't want to do anything about climate change typically say well, the two big emitters of the world, China and the United States, aren't doing anything or don't have a carbon price so why should we? Both China and the United States are actually doing a lot.

In the debate since my report came out, some people who don't want to do anything have argued that I've misrepresented the United States, because I took seriously President Obama's commitment to the international community to reduce United States emissions by seventeen per cent by 2020. And they say "Well, he was unable to get his emissions trading scheme through the Congress". Well that's true, he got it through the Senate but didn't have the numbers in the House of Representatives.

And what the Americans did in response to that, the American Government, was to say "Well if we can't do it by the cheap method - the low cost way is carbon pricing through an emissions trading scheme, but if we can't do it through the cheap method we'll do it through an expensive method. We'll do it through regulation and in other means." And through a combination of measures, the US is making a very big effort to reduce its emissions by seventeen per cent from 2005 levels in 2020.

In a speech in Sydney a couple of days ago, because my judgements about the US effort were questioned by some people, I said a little bit about how I formed those judgements. First of all in 2008, I spent a fair bit of time in the US talking to relevant people, not only in Washington but across the country including Governor Schwarzenegger's people in California and Mayor Bloomberg himself, who's making big efforts in New York to reduce emissions. Mayor Bloomberg. In other parts of the country as well.

This time my update was concentrated in seven months, so I could only spend a week in the US. I spent all of that in Washington. The US ambassador in Australia helped me with a lot of materials. I spoke to the relevant people in the congress on both the republic and democrat side. I was helped by a long conversation with the United States Secretary for Energy, Stephen Chu, who happens to know something about climate change; he's a Nobel Prize winner in physics and has led the American Cabinet's efforts to get America's act together on climate change. He took me through all the regulatory approaches that the United States will take now.

I talked to the advisors to the Democrats on the hill and the Republicans. I heard different perspectives from the two. I received a very nice email the day after my full report went on the web on 31 May, saying he'd read it carefully and read it overnight and that every detail was correct on the United States.

So I could go through in a similar way how I formed my judgements about China. I spent a lot of time with the key ministers and key

officials who are driving Chinese policy. So I'm very confident about the judgements that I've got in chapters three and four about what the rest of the world is doing.

My general approach on the international questions is to try to get Australia into a position where - not where we lead the world, it's just simply impractical for us to think of leading the world, we're so far behind, but I think we should try to catch up to be in the middle of the developed countries. And the proposals that I've put forward for carbon pricing, with support for innovation in low emissions technologies and support for sequestration in soils, pastures, woodlands and forests in the farm sector being part of it.

If we're going to do our fair share it's a big question about what's the low cost way of doing it; we should do it in the lowest cost way possible. Well, I don't think there's any dissent amongst economists that the low price way of doing it, low cost way of doing it is through carbon pricing.

The alternative is regulation or direct action. You can reduce emissions a lot through direct action but market mechanisms have proven themselves to be much more cost effective than regulatory mechanisms. We've learnt that lesson a lot of times.

It's the reason why the United States could afford the Cold War and the Soviet Union couldn't. One was a market economy and one was an economy run through regulation. That's the reason why South Korea's done well and North Korea's collapsing.

It's the reason why our productivity growth was rotten through the first eight decades of our federation, when we relied a lot more on regulation, and was the best in the world in the '90s after we'd got rid of a lot of the constraints on the market economy in Australia. And why productivity growth hasn't been too good in the first decade of this century when we've lost some of our commitment to the market economy.

So - and the fundamental reason is if you rely on regulation or direct action, you do the things that the minister and the people advising him think of. Even if they are much smarter than the rest of us, they won't think of all the ways of reducing emissions efficiently the millions of Australians responding to market incentives will think of.

They might have the biggest brains in Australia, the people that are administering a regulatory system, but all the evidence is, if you put in incentives and let the markets work out what to do, then millions of Australians taking decisions on how they can save on emissions because there's money in it, will give you a better result.

The cost will be higher with regulation than with carbon pricing, but in addition, with carbon pricing the government collects revenue from it and can use that revenue to offset some of the cost.

In my proposals, which aren't government policy - you'll know government policy, I think, in a couple of weeks - but my proposals have got a bit over half the revenue going back to households, I've suggested mainly as tax cuts - but with some adjustments of social security arrangements as well.

A fair bit of the revenue going to support innovation in low emissions technologies, including innovation in the land sector, because there's a lot of research required to get the most out of sequestration in soils, pastures and woodlands.

Then I've suggested a fair bit of the revenue go into purchase of offsets from the land sector and those offsets fall into two categories. There are some offsets from - or some sequestration in the land sector that already qualifies under the international rules on crediting carbon. Certainly planting of forests falls within that, and there are some others. I've suggested that sequestration on the land that falls into the international rules, should be just sold into the carbon pricing system and the incentive there will be very large.

But for forms of genuine sequestration of carbon that's not currently recognised under the international rules, I've suggested that the regulatory authorities should pay the carbon price for that if the owners of land or lessees of land opt into the system - well opt to be covered for purposes of offsets in the farm sector.

I've suggested some limits on the proportion of revenue from carbon that should go into these activities. But the limits would allow the growth of a new industry of, in effect, carbon farming that would be about as big in revenue as the wool industry was last year, by 2020. They're the limits I've suggested at this stage. At a later stage that could be reviewed. So potentially this is a very big source of revenue in the farm sector, in the land sector.

CSIRO did a major study of opportunities for carbon sequestration in the land sectors in Queensland and I used that extensively, referred to that extensively in the chapter on land in my report. They identified a very large technical potential.

Well all of my calculations were done on the basis that ten per cent of that technical potential might be realised, potential in Queensland, especially large in intensifying growth in woodlands, which are very extensive, obviously, in Queensland, but also in New South Wales and some other parts of Australia.

Well, I might leave it there, Brent and very happy to spend the rest of the time answering your questions.

[Applause]

BRENT FINLAY: Certainly I'll open it up for questions; so if you just put your hand up and then identify who you are. I think, Ross, we could probably sit on the chairs on the stage; it might be a bit more...

ROSS GARNAUT: Okay.

BRENT FINLAY: Questions for Ross.

SIMON WARNER: Professor Garnaut, thanks for speaking to us. Simon Warner from South East Queensland Catchments, we're one of the regional bodies in Queensland.

Almost since I - a long time ago - did economics, I was always under the view that tax was a regulatory instrument whereas a market economy was based on creating demand. So I'm a bit confused about - the discussion at the present time seems to impose carbon pricing with a carbon tax.

I don't think the message about a market economy and actually providing incentives for other ways of actually achieving it rather than through the tax, have actually been canvassed enough in the community. Do you have a comment on that?

ROSS GARNAUT: Well, when I contrast market approaches to reduce emissions with regulatory approaches, the contrast I'm drawing is between putting a general price on carbon and to have the market respond to that. Now

everyone makes - every business, every household makes its own decisions in relation to that.

That's one way of reducing emissions. The other is having government say "well, we're going to do this here and this here and this here and that's how we're going to reduce emissions". That's the contrast I'm drawing.

And in the economics literature it's usual, in fact it's - all of the economics treats it this way, to see both a carbon tax and an emissions trading scheme as market-based approaches, because it sets the prices and then businesses and households respond to that.

The difference between a carbon tax and emissions trading scheme is that with the carbon tax, you fix the price and then households and businesses decide how much reduction in emissions they'll do in response to that incentive.

With an emissions trading scheme, you fix the quantity of emissions, sell that number of permits and so you know the emissions outcome. But the price is determined by supply and demand.

What I've suggested and which I think is quite likely to be adopted by the Multi-Party Committee on Climate Change in the Government, is that we should legislate for an emissions trading scheme. And have the regulatory authority that administers the scheme sell prices, permits at a fixed price for the first three years.

So it will operate under the institutions of an emissions trading scheme from the beginning but with a fixed price. Some people have called that a carbon tax for the first three years, I wouldn't have called it that myself. But the fact that the price is fixed is one characteristic of a carbon tax, so that's why I suppose it's come to be seen as a carbon tax.

But either way, it will be individual, whether you've got a market based price or a fixed price for permits, the market will determine what each household, what each firm's response will be.

ROBIN McCONCHIE: Hi, Robin McConchie from the ABC, I suppose we've got to ask the first question. Lord Monckton has described you as a fascist, are you a fascist and what's your response to those comments?

ROSS GARNAUT: Well I'm not going to say anything about myself, other people can look at my life and career and make their own judgments. I think that Nazism and the symbols of Nazism are deadly serious. And I think that most Australians would think that anyone who uses those terms and symbols inappropriately is putting themselves outside the boundaries of civilised discourse in Australian democracy.

ROBYN McCONOCHIE: So the question had to be asked. So I'll pass onto you.

FEMALE REPORTER: Are you frustrated by how childish the debate and discussions surrounding climate change has become?

ROSS GARNAUT: Oh I've been around a long time and frustrated is probably not a word I'd use to describe my feelings about it. I do think that the level of discussion this time is lower, more ignorant, less civilised than on any major policy issue in which I've been deeply involved. Over four decades of deep involvement in big public policy issues.

BRENT FINLAY: Professor can I ask you a question though, when I was in Burketown about eight weeks ago and I was talking to a cattle producer up there and it was costing him one-hundred-and-twenty-six-dollars a head to move his cattle from Burketown through the long supply chain here



into South East Queensland. And into I guess, into the processing count. And given that we don't know what's actually going to be in the policy for a couple of weeks and if you do, I'm happy to know, or we're happy to hear that of course.

But transport costs are a massive impost on the beef industry in Queensland and also the grain industry. And anything that affects those will certainly affect their viability to continue to produce the food that we do.

ROSS GARNAUT: Yeah. Well for the scheme as a whole, the average effect on costs will be less than one per cent and of course a lot of that will come back in tax cuts and in other ways. Well, all of it will come back in one way or another.

BRENT FINLAY: But that's all food, the cost on food.

ROSS GARNAUT: No, no I'm building up to answer, I would treat – so across the economy total costs will be less than one per cent. So it's a much smaller effect than the effect of the GST, for example. And as with the GST, the money will come back into business and households in other ways.

I have recommended that the initial impact on fuel be offset by reduction in excise, that's the initial impact and that that be paid for by adjustments to other tax concessions related to the use of fossil fuels. And in particular I mentioned the fringe benefit tax advantages for fuel and cars. Now the Treasurer took up some of that in the Budget in May, so I'm not sure whether he will do more on that.

But anyway, I've recommended that the initial impact on petrol and diesel will be reduced by an adjustment of excise for fuel, paid for in other ways. Now over time I suggested inclusion in the scheme, so that over time subsequent increases would flow through to fuel and be offset by other means.

What I'd suggest there Brent is that – and I don't have all the figures in my head – but that's it's worth focusing on what the actual contribution of the subsequent increases in carbon pricing will be to that one-hundred-and-twenty-six-dollars of transport costs. If that is the number, I don't know. Yeah.

BRENT FINLAY: That was the [inaudible].

ROSS GARNAUT: Yeah and I think you'd find that it's a pretty small proportion. For a start, it's a very small proportion of the cost of fuel. What's fuel now, one-hundred-and-forty something, probably more out in the bush? The – even if you did not exclude petrol and diesel from the initial impact and I recommended excluding it from that initial impact, the total effect would be a bit of a twenty-six-dollar initial carbon price would be a bit less than six cents.

So even if you had not excluded it, and I've recommended exclusion from the first step and the first step will be the biggest, then you'd be looking at a bit less than six cents a litre, which is less than four per cent of the cost of fuel.

The cost of fuel is only a proportion of the total transport cost, the cost of the truck and the driver and everything. So you're looking at a fair way south of that, of that four per cent and remember that less than – sorry, that less than six cents, less than four per cent of the fuel cost is if you had fully included fuel in the first step.

So when you work through all that, you're looking at a very low number and you've got to balance that against the effects of the tax

cuts and other measures. And the other advantages that the rural sector, the other opportunities that the rural sector would have.

I could say for sure that for Queensland, the money that comes back into the farm sector from taking advantage of the farm initiatives for carbon in those sequestration that I've suggested would dwarf any effect on fuel costs. So – and I've got Paul Ryan from the Department of Climate Change here with me, Paul, maybe you could help people do those numbers?

That – look, not now but over the next...

[Laughs]

But above all, working through what the actual effect of the fuel costs will be for that chap who's bringing a truck load of cattle from...

BRENT FINLAY: Bullocks, bullocks from Burketown to Dinmore.

ROSS GARNAUT: Okay, that'll do and I think you'll find that that's very small compared with some of the offsetting advantages for the rural sector.

BRENT FINLAY: We'll take yep, David Ford.

DAVID FOOTE: David Foote, ACCC.

ROSS GARNAUT: And one of the advantages for the rural sector is we are doing our fair share, our necessary contribution to a global effort to avoid major disruption of the Australian rural sector in the next generation. That doesn't matter at all if you don't care about your kids and your grandkids, but it matters a lot if you care as much about your grandkids as you care about yourselves.

DAVID FOOTE: I was hoping to be wrong. The market base and the incentive base in emissions trading, most of Australia's power generation is in monopolies or duopolies. Where will be their incentive to actually become efficient given they actually just get to sell their charges for their cost to an unwitting consumer base?

ROSS GARNAUT: Well I've got a whole chapter on electricity in my final report. And I should say that the final report is based on ten very detailed papers that are all on the web. So if you're interested in electricity, there's a more detailed version on the web, [garnautreview.org.au](http://garnautreview.org.au).

But I spent a fair bit of time going through these cost factors for electricity. The data I used from a year or so ago had about forty per cent of the costs of electricity, typically average in Australia being the generation, about forty-six per cent being distribution and transmission and fourteen per cent being - something like that - I might not have it exactly right, being the retail cost.

Well the second and the third categories have blown out in the last five years. I myself think that's a major problem in public policy in Australia. We went to a national regulatory system in 2006. Up 'til then, our prices for electricity rose more or less in line with the rest of the world; more or less in line with what had happened with other prices in Australia. Real prices didn't increase much; costs went up like in other industries, but more or less in line with the CPI.

Since 2006 under the new regulatory system, our costs have gone up enormously and not by a little bit, by enormously compared with other prices in Australia and compared with other countries. Nearly all of the increase is - disproportionately the increase is in the distribution end.

I wasn't onto this issue until I did this work this time, but I started digging into it. It was a puzzle when you saw the way Australian costs have blown out, compared with other countries. And you saw it was all in this distribution so I started asking a few questions about it.

I think we've just got the regulatory incentives wrong. We're giving - as you say, it's a monopoly. Every bit of the line is a monopoly. And so a regulator determines the price that the owner of the distribution - that bit of the line gets for his asset. I think we give them too high a rate of return.

So that adds directly to costs. If the cost should be six per cent and you give seven, that increases the cost of distribution by a sixth. But in addition, if you set the regulated rate of return, for what is a riskless investment, just add it to your power bill. So it's not like growing cattle where the price of steers might double or half. It's a certain return.

And if you are guaranteed a return for a low risk investment that's higher than the cost of capital, you will do as much investing as you can. And boy, are they investing and improving the distribution system. And the costs have just blown out. So that's a big problem. Now that's a problem of the distribution system. The solution has to be reform to the regulatory system. I've made that point very strongly in my report.

If we have the carbon pricing that I recommended, the increases in price of electricity related to the carbon pricing will be much smaller than the increases in the last few years and the next few in the costs of distribution, in my view, the result of distortions in our regulatory processes.

On the generation part and here we are talking about forty per cent; it's got a bit less because the distribution bit keeps blowing out. On that part, the generators will have very strong incentive to shift to lower emissions power because they're paying for every ton of carbon dioxide they put out.

Now the Government may choose to, against my advice, may or may not choose to give a whole lot of free permits to generators. That won't affect their behaviour. They'll pass on the value of those permits to consumers whether or not they get them free, just as you won't charge a low rent on a house just because you got it for free inherited from your grandmother.

DAVID FOOTE: You know me well.

ROSS GARNAUT: [Laughs] But that will really be like money, because if they are given any free permits, they'll be able to sell them or hold them, just like money. And so they will still feel the cost of paying for permits and the costs will not be small.

And if you are a really - if you are using really high emissions, dirty coal from the Latrobe Valley in Victoria and I was down speaking to the people of Latrobe Valley twice in the last couple of months and had a good conversation with them. But say they're paying a hundred dollars per megawatt hour. It's not that, but just for the example. Then using higher quality coal will be, well very much less than that. Maybe something like sixty dollars. Using natural gas will be right down to about forty dollars; using wind or solar or nuclear would be zero.

So this will affect decisions. And the first transition will probably be to greater use of gas and less use of the most highly emissions intensive coal. So there'll be very powerful incentives there.

The other side of the incentive will be that, although the increase in generation costs as a result of carbon pricing will be smaller than the costs associated with the regulatory regime in distribution since 2006, there will still be a significant increase in the price of electricity associated with the emissions pricing.

And higher price does affect electricity consumption. The price elasticity of demand for those who have done their economics, the international studies show it's about point-three in the immediate impact short term and about point-seven in the long term.

If you put up the price of electricity ten per cent, on average studies of a lot of countries say that you get a pretty quick reduction in demand for electricity. About three per cent once everyone has had time to adjust, about seven per cent, from a ten per cent increase.

Well the only good I can see coming from those extraordinary increases in the price of distribution is it will reduce power demand a bit, but in a very inefficient way. You'll get a little bit of further reduction in demand from the emission pricing.

DAVID FOOTE: If I may Brent, could I just finish? The [inaudible] incentive... Two hats. One of those hats, actually we don't use the Latrobe Valley coal. We've got the really wet stuff out of [inaudible] far away. The cost of changing from coal fired boilers to gas is actually going to be a three-hundred-and-fifty per cent increase in my operating costs.

So I am therefore facing a really savage disincentive on the price of coal going forward to make me want to go to gas. Or how will that impact me in that particular instance do you think?

ROSS GARNAUT: Well the costs will be different for every enterprise. Your figures are different from others. If the cost of electricity for gas for you is going to be three-fifty per cent of the cost of electricity from coal, but maybe they are. You know your...

DAVID FOOTE: Sorry. I use coal to generate water and steam.

ROSS GARNAUT: Yes.

DAVID FOOTE: Versus gas.

ROSS GARNAUT: Yes. I've talked to a lot of other people who think the cost of conversion for them will be less. And for those where their cost of conversion is higher, they'll be the last to convert. And for them, the question will be whether it's still profitable to stay in production.

But you - the first adjustment will be from the wettest coal. I thought that was lignite in Victoria. Maybe it's not. And you'll get all sorts of adjustments. So it will be - some people will use a bit of gas in existing boilers. As some people will start running the coal based plants less intensively, taking advantage - only running at full capacity when the price is high and running their gas plants more intensively, at the moment just using gas for the peaks or might use the gas.

The new investment in gas will be combined cycle, which uses gas more efficiently. If you're using it over long hours then a peaking plant open cycle. So you'll get all sorts of adjustments and every business will make its own decisions on the adjustment that makes sense. There may be some existing coal base where adjustments are very difficult.

LISA MARTIN: Lisa Martin from AAP. What impact did climate change play in Queensland's summer of disasters and do you think the severity of those disasters has shaped public opinion?

ROSS GARNAUT:

I don't know about shaping public opinion and it's always very difficult to attribute causation to a particular event. What the climate science does tell us, and long before the Queensland events, I wrote it in my 2008 report, I said then - I was just using the climate science - I said then that in a warming climate, there will be more energy in cyclonic events so that you'll get more - not necessarily more cyclones, but more extreme cyclones. The extreme events will be more extreme, they'll have more water in them, stronger winds. Extreme events, whether of flooding or wind or temperature, heat wave or drought, extreme events will become more common.

Now, it's very difficult to say that we would never have an event like the Black Saturday bushfires in Victoria without climate change, maybe once in 10,000 years you would. But it becomes more common with warming. Similarly cyclones of extreme intensity become more common in a hotter atmosphere. So events that might have happened very infrequently become more common. So that's the sense in which there's a link between global warming.

But you have to bear in mind that we're in the very early stages of warming. The mainstream climate science, most of the people who spend their lives studying these questions, the real climate scientists, the climate scientists that have the support of the academies of science, the peak science organisations, the top scientists in all of the countries which take science seriously and no exceptions. If you take the views of the mainstream science, they say if we don't do anything about reducing emissions and if economic growth proceeds the way that I, in my report, say it's likely to in the 21st century, then you could have an increase in temperature without any mitigation whatsoever.

I'm not predicting it because I think the world is doing something about it. But if the world did nothing about it, you'd have an increase in temperature, a mean level, a mean of the expectations of about six degrees by the end of the century and still getting warmer after that.

Well, we've had less than one up until now. So you wouldn't expect that big an increase in the extremity of climatic events from the warming we've had but at two degrees you get a lot more than at less than one. At three degrees you get a lot more than at two. At four degrees a lot more than the three.

So just bear in mind that, when you ask about events now, we're at the very early stages of global warming as a result of human activities.

BEVERLEY HENRY:

Beverley Henry from Queensland University of Technology. Thank you for the talk, Professor Garnaut. In that you mentioned the need for research and particularly the land base [inaudible] and the technical potential mitigation and also the practical, achievable mitigation. Would you like to comment on what might be the best way to embed that commitment to research so that we have it there for the longer term so that it doesn't come at the expense of productivity research?

Also would you like to comment on whether mitigation for the food and fibre sector should be on the basis of intensity, so the amount of - a reduction in emissions per unit of product rather than absolute reduction when we've got an increase in demand for food production?

ROSS GARNAUT:

Yes. Well, on research, you need to draw a distinction between the more pure end of research and development and the development that moves into demonstration activities and commercialisation. We've got a continuum of innovation and there's some pure research which, in its nature, is not done by commercial enterprises because a business can't capture all the benefits of it.

In Australia that's typically done in the universities and in the CSIRO and in the - especially the state government ag. departments, a lot less than it used to be. I think we need more money at that end, the more pure research and development end and I think on the really basic research or measurement, for example, of soil carbon, that's where a lot of it has to go. It won't be worth the while of any private business at this stage to put a lot of money in to that because if the research is successful, everyone benefits from it. They won't be able to capture the benefit - not very easy to patent that sort of information.

So I think there's a lot of capacity in our existing research institutions to use more funds more effectively. So I think that institutionally that's relatively straightforward for the university. My own view is that the existing ARC systems could fund more. Now, I think there's a role for our research and development corporations and in my Land paper in the update series, I've recommended that where the R&D corporations are investing in this innovation related to carbon, that for it - because we need to accelerate the research effort in this area, there could be an additional Commonwealth payment in addition to the normal matching funding.

The current matching funding is under review by the Productivity Commission but whatever the outcome of that review is, I think there's a case for an augmentation. I think that's a very efficient way of providing research funding into the rural sector. When you get to the commercialisation end, the first businesses, the farms that start applying the technology, I'm suggesting an adjustment to the normal research and development tax incentives.

Now, the tax incentives for research and development are going through a reform anyway. Amongst the elements of the reform, one very important one for the rural sector is moving from tax deductions to tax credits so that if you don't happen to have taxable income, you can cash out the tax credit, so it's of no less value for you if you don't have current production.

But I'm suggesting that on top of that reform system of research and development incentives, that there should be an additional payment made if it's for innovation, for research and development and commercialisation and demonstration in the carbon - right in the carbon sequestration or reduction of emissions, simply because we need to accelerate these technological improvements in this area.

So I'm suggesting that range of things, at the pure research and more funding through existing mechanisms, all of them, including the research and development corporations. At the private end, the commercial end, an augmentation of the reformed incentive for research and development.

PETER HUGHES:

Peter Hughes, Primary Producer. Professor Garnaut, I'd like to thank you for coming and speaking to us this morning but I do have a comment and I've also got a question. I would like - like you, I've been around quite a long time and I think we have had some hotspots in Queensland but we've had one of the best seasons we've had since the fifties, you know. From Alice Springs to Melbourne it's absolutely remarkable season, which is good without a lot of extremes, except in a few hot spots.

But what I wanted to get back to was livestock emissions. I mean I probably - whether you've heard of him or not, but David Mason-Jones' theory of a closed cycle and whether the livestock eat the grass or they don't, it breaks down and the same amount of emissions come out of the grass whether the cattle eat it or they don't.

I was wondering whether you could comment on that.

ROSS GARNAUT:

Well I had better read some of that. But I'm not sure it all comes out as methane if it just comes from the grass the way that it comes out as methane if it goes through the cow. That's one point.

But anyway, what we have to look at is the whole, is the comprehensive carbon cycle and if that were the case, then the incentive structure would need to address that. But I don't think that is actually the case, but I don't know the particular work to which you refer. So I don't like to comment on it without looking at that.

But under the proposals I have made, you wouldn't, in the initial stages be comprehensively including methane emissions from livestock in the scheme, but you provide some incentives through the offset system for reduction of emissions in enterprises that choose to opt in.

I suggested that the limits on carbon credits, carbon offsets, should be lifted so that there's unlimited access to carbon credits by the land sector, if ever the farm sector is included in the emissions trading system and that may lead to a bit of a clamour from the bush in a few years time for inclusion in the system. But we'll wait and see how that happens.

Emissions from livestock are quite important in the emissions profile of Australia, although they have fallen quite a lot because of the decline in sheep numbers since the early '90s, so it does matter what we do there.

There do seem to be significant opportunities for reducing sheep and cattle methane emissions through changes in diet and a bit through genetic selection. I was briefed at James Cook University a year or so ago when I was up there about how the work they had done on algae, directed initially at finding a base for biofuel, they're finding quite a market for it for cattle in Japan, amongst other things, because it reduces emissions - algae a very effective cattle feed, but also has an effect on emissions.

So there will be opportunities for reducing emissions and under my proposals that would all be upside without penalties for not doing it, but if ever ag. were comprehensively included in the scheme then the incentive structure would be more similar to that of the rest of the economy.

But I don't know the particular paper you're referring to.

BRENT FINLAY:

I think we will be able to organise to get you a copy of that Professor.

We'll take three more quick questions.

SPEAKER:

Paul [inaudible], Ross. Two quick questions - there's a lot of antagonism to the very policy of you know and the basis, scientific and otherwise, and two of the things that come to my mind that seemed to have some [inaudible] one is that the price mechanism and market price of carbon and whatnot become a [inaudible] and I think even later some European experience have become a plaything for investors. I'd be interested in your response to that.

And the other one - how do you in your modelling - have you taken account of presumably to some [inaudible] - but how far the, just the sheer growth of the world population and its consumption patterns - is there enough alternative energy even available in the best case scenario to replace fossil fuels? To put it perhaps in the political vernacular we might well not, may not be a piss ant country but we could well be pissing in the wind if the population grows out to 10 billion.

ROSS GARNAUT:

Yeah. Well on the second question - it would be, it may be that global population and global growth in incomes puts a pressure on the global environment, global resources that we can't manage and that would be pretty bad news because global warming is real. Its effective physics, just like gravity is and it doesn't go away because you wish it away. It doesn't go away because you haven't found a particular solution for it.

The atmosphere will take no notice of whether or not it's hard to reduce emissions. It'll just respond according to the laws of physics and if we don't reduce emissions there will be consequences - possibly catastrophic consequences. But the good news is that, yes there is a path to reduction in emissions and one that's consistent with maintenance of a reasonably strong economic growth.

All the modelling I did, which didn't assume any big advances in new technology, but just incremental advances on what's known now, suggested that if we were part of a global arrangement to hold temperature increases to two degrees, we would have to reduce our emissions and developed countries generally would have to reduce their emissions by around 90% by 2050; that put in place the right incentives to do that and we would cut economic growth by between point one and point two percentage points per annum below what it would otherwise be, so that would accumulate between now and the middle of the century to a significant manageable amount.

On the modelling I did, it would suggest that the income levels through economic growth that we would have reached in 2048 we'll reach in 2051, so it's a slight diminution of income growth. But later in the century we start getting it back because we avoid the costs of climate change. And certainly from the 2060 years onwards, under my modelling, the rate of growth is higher if you have made these outlays.

Now sooner or later we're going to have to make that adjustment away from fossil fuels anyway, because only a certain amount of the stuff in economically accessible areas - so what, taking into account the scientific realities of climate change means we've got to make that adjustment earlier than we otherwise would.

But all of the economic analysis says that we can make that adjustment at a modest and manageable sacrifice of income in the next few decades for the sake of preserving our way of life in later decades.

BRENT FINLAY:

This is the last question. I know there's a few more questions in the room and I would encourage you to catch up with the Professor after we finish off. I'm getting the wind up. Your question.

TOM SEILER:

Thanks. Tom Seiler, beef producer. I just wanted your comments on the carbon trading that you - carbon offsets for ag. sector that are outside the global allowances and whether they're real offsets or not and whether you anticipate them being included in global rules in future.

ROSS GARNAUT:

Well, they have to be real or they won't meet my tests and the government's carbon farming initiative - which is before the Parliament now - has got a lot of provisions to make sure they're real. So yes, they're real. Australia for some years have been trying to get a lot of those elements included in the international rules. I think they will be because they're real.

I think if Australia had been right at the centre of the international action on climate change from an earlier date, we would have more rules that were better suited for us, but we sort of opted out for a few



years and so we let the Europeans make the rules and not all those rules were good for us.

But now we're back, we're back in the game and we're not bad at persuading the international system to adopt good rules when they really are good and these ones would be really good.

And that's reminded me, I didn't answer the question about speculation and a trading scheme. That's always a risk in any market activity and for that reason a lot of effort's got to be put into good rules, good regulatory arrangements for the trading side of things.

We're not bad at that. Our financial regulations stood up well compared with other developed countries during the financial crisis. Some of the same people who worked on that for Australia have been working on that for the - for Australian financial system - have been working on that for the emissions trading scheme.

So there are issues you've got to take seriously, but I think we are taking them seriously and I think we've got them covered.

BRENT FINLAY:

Thank you. Professor thank you very much for your presentation this morning and I'd ask people to show their appreciation.

[Applause]

- ENDS -

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