



# **HOUSE OF REPRESENTATIVES**

**STANDING COMMITTEE ON ENVIRONMENT, RECREATION AND THE ARTS**

**Reference: Trading in greenhouse gas emissions**

**PERTH**

**Friday, 10 July 1998**

**OFFICIAL HANSARD REPORT**

**CANBERRA**

HOUSE OF REPRESENTATIVES  
STANDING COMMITTEE ON THE ENVIRONMENT,  
RECREATION AND THE ARTS

Members

Mr Causley (Chair)

Mr Jenkins (Deputy Chair)

Mr Anthony	Miss Jackie Kelly
Mr Billson	Mr Kerr
Mr Robert Brown	Dr Lawrence
Mr Eoin Cameron	Mr McDougall
Mr Entsch	Mr Mossfield
Mr Hockey	Dr Southcott

The committee will inquire into the regulatory arrangements that would need to be put in place to support a market in greenhouse gas emissions including:

mechanisms for measuring, verifying and monitoring emissions and the compliance with contracted arrangements;

mechanisms to integrate emissions trading with the development of carbon sinks (such as timber plantations, gas aquifer reinjection, soil rehabilitation etc), including the science, measurement and security of such arrangements;

the allocation of the right to emit greenhouse gases;

regulatory mechanisms to support a national market and potentially an international market in emissions trading;

possible emission traders, administration and transaction costs;

roles and responsibilities of governments and other stakeholders; and

the impact of emission trading on the environment and industry and the economic and social welfare of the Australian community.

**WITNESSES**

<b>AGOSTINI, Mr Michael David, General Manager, North West Shelf Interests, Woodside Energy Ltd, 1 Adelaide Terrace, Perth, Western Australia 6000 .....</b>	<b>603</b>
<b>BARTON, Associate Professor Allan Francis Murray, Associate, Australian Cooperative Research Centre for Renewable Energy, Institute for Science and Technology Policy, Murdoch University, South Street, Murdoch, Western Australia 6150 .....</b>	<b>620</b>
<b>BIGGS, Dr Paul Hadyn, Scientific Adviser, Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983 .....</b>	<b>579</b>
<b>BRIGGS, Mr Ian Maxwell, Senior Manager—Environment, Department of Resources Development, 168-170 St Georges Terrace, Perth, Western Australia 6000 .....</b>	<b>579</b>
<b>POULIQUEN-YOUNG, Dr Odile, Research Officer, Institute for Science and Technology Policy, Murdoch University, South Street, Murdoch, Western Australia 6150 .....</b>	<b>620</b>
<b>SIPPE, Mr Robert, Acting Chief Executive Officer, Department of Environmental Protection, 141 St Georges Terrace, Perth, Western Australia 6000 .....</b>	<b>579</b>
<b>SONNEBORN, Ms Carrie Louise, Policy Analyst, Australian Cooperative Research Centre for Renewable Energy, Murdoch University, South Street, Murdoch, Western Australia 6150 .....</b>	<b>620</b>
<b>WAITE, Mr Michael John, State Greenhouse Coordinator, Department of Environmental Protection, 141 St Georges Terrace, Perth, Western Australia 6000 .....</b>	<b>579</b>

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RECREATION AND THE ARTS

*Trading in greenhouse gas emissions*

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Present

Mr Causley (Chair)

Mr Kerr

Mr McDougall

Dr Lawrence

Committee met at 8.47 a.m.

Mr Causley took the chair.

**CHAIR**—I declare open this public hearing by the House of Representatives Standing Committee on Environment, Recreation and the Arts for its inquiry into the regulatory arrangements for trading in greenhouse gas emissions. This is the last public hearing for this inquiry before the committee starts drafting an interim report, which we hope to table in September. The committee's inquiry is focusing on the arrangements that should be put in place for a trading scheme in greenhouse gas emissions in Australia. As we collect information about the best sort of scheme to adopt, we will be looking for mechanisms that will ensure that emission trading contributes to emission reduction as equitably, effectively and efficiently as possible. We will be looking for ways of providing maximum certainty at minimum cost for the environment and the emissions traders.

Before proceeding I advise the witnesses that the committee public hearings are recognised as proceedings of the parliament and warrant the same respect as proceedings in the House of Representatives demand. Witnesses are protected by parliamentary privilege in respect of the evidence they give before the committee. You will not be asked to take an oath or to make an affirmation. However, you are reminded that false evidence given to a parliamentary committee may be regarded as contempt of parliament. The committee prefers that all evidence be given in public, but should you at any stage wish to give evidence in private, you may ask to do so, and the committee will give consideration to your request. I call the representatives of the Western Australian government.

**BIGGS, Dr Paul Hadyn, Scientific Adviser, Department of Conservation and Land Management, Locked Bag 104, Bentley Delivery Centre, Western Australia 6983**

**BRIGGS, Mr Ian Maxwell, Senior Manager—Environment, Department of Resources Development, 168-170 St Georges Terrace, Perth, Western Australia 6000**

**SIPPE, Mr Robert, Acting Chief Executive Officer, Department of Environmental Protection, 141 St Georges Terrace, Perth, Western Australia 6000**

**WAITE, Mr Michael John, State Greenhouse Coordinator, Department of Environmental Protection, 141 St Georges Terrace, Perth, Western Australia 6000**

**CHAIR**—We have received a submission from you and have authorised its publication. Do you wish to make any changes to that submission at this stage?

**Mr Sippe**—No.

**CHAIR**—Would you like to make an opening statement?

**Mr Sippe**—Thank you. Greenhouse emissions trading is supported by Western Australia, both in domestic and international arenas. We want a system that delivers the environmental outcomes we seek, but also does not unreasonably disadvantage Western Australia. We believe there are some special circumstances for Western Australia that should be taken into account in any domestic and international trading system.

On the emissions side, we have the factors of population and area, the factors of a primarily mineral resource based economy, with a thrust in recent years towards value adding and processing, and of course we are a major LNG exporter for Australia. On the sink side, we have significant opportunities for plantations, and also we have large areas of the pastoral regions of the state where things like vegetation thickening can act as significant greenhouse gas sinks. We do not underestimate the difficulties. In fact, I guess we have the view that if this committee does nothing more—and we hope it does, but if it does nothing more—than quantify the key questions, outline the options for resolution, and identify mechanisms for those resolutions, this I think would add significantly to the resolution of the trading emissions debate that we are currently going through.

We have some mechanisms in Western Australia already established—somewhat embryonic at this stage. The government has established the Western Australian Greenhouse Council, which comprises both government and private and industry representatives. Under the Greenhouse Council we have a committee on emissions trading, which has senior representation from both Premier and Cabinet and the Under-Treasurer, amongst others, so that gives you some sense of the importance with which emissions trading is being seen in Western Australia.

We have had limited experience in some of the concepts to do with emissions trading and gases. We have an environmental protection policy for the Kwinana region, the primary heavy industry region for Western Australia. The environmental protection policy looks at apportioning the air space for sulfur dioxide in particular through regulatory means, but it leaves the apportionment within those overall targets essentially to industry to sort out, so it is not a strict public marketplace driven mechanism, but it does have some of the principles to do with emissions trading established. Up until now, that has been successful. The environmental protection policy is due for review by the middle of next year, and we will be re-examining those mechanisms to see if they can be improved.

Finally, to recapitulate the overall policy position for Western Australia—and this is drawn largely from the submission made to you on behalf of the Western Australian government—we do not want to jeopardise the economic development of the state by having an unfair or disadvantaged trading emission regime. We need to take account of the future directions for industrial development. We do not want to restrict the growth of the economy or individual states and organisations within those economies. We do need to protect Australia's competitiveness. We need to be congruent with the processes of other nations. We need to be in harmony with those other processes that are working elsewhere. We need to encourage Australian industry to significantly reduce levels, and to encourage of course carbon sinks to sequester carbon. I would now like to ask Ian Briggs, my colleague, to give some views, particularly on the mineral resource processing side.

**Mr Briggs**—I guess one of the primary focuses for the WA government's interest in the greenhouse emissions trading, as Rob has outlined and initiated, is that we are a state with a large amount of resource development within it, most of which is new technology, using relatively clean fuels. One of the things that also prompted our action in this was some of the information that was coming out from the Department of Foreign Affairs and Trade issues paper which was published last year, regarding the projected growth of energy consumption by the state, which doubled any other state within Australia, and also on the planned energy intensive projects in relation to which, compared to the rest of Australia, WA accounts for around about 52 per cent of as well. So in that regard we were quite keen to see that the emissions trading process did take into account WA's particular circumstances. Also in that fact we wish to see that the mechanism takes into account future growth, because it will involve a lot of use of energy intensive processes to improve the economy of the state in the future.

We also supplied to the Department of Foreign Affairs and Trade some of the projects under consideration in the future, some of which may involve up to about \$34 billion worth of investment in the state in the future, which has a spin-off for employment, and also the growth of Western Australia itself. I think they are the prime reasons that we were keen on looking at that.

Apart from that, our mineral resource economy is much reliant on export trade as

well, so we are very keen that international competitiveness is maintained for the state. For example, with LNG being exported offshore, we did not want to see future developments in that in any way jeopardised by emissions trading. So we see a strong link between the development of the domestic emissions trading regime and the international trading regime.

**Mr Sippe**—Thank you, Ian. Could I ask Dr Paul Biggs just to provide a comment particularly on greenhouse sinks in Western Australia.

**Dr Biggs**—Thank you, and I will be referring to some documents, copies of which I have made available. Western Australia has huge opportunities for development of carbon sinks on a very large scale. We are talking about roughly 20 million hectares of agricultural land, from Geraldton to Esperance and to the south and west of that, which is also facing a large salinity problem at this stage, with two million hectares of land currently affected, and potentially six million hectares at equilibrium. Just as growing trees for carbon sinks is part of the solution to greenhouse emissions, growing trees on agricultural land is part of the solution to salinity. There is a convergence of opportunities here which gives us both the scope to gain large sequestration benefits, and the opportunity for improving environmental values across a lot of our farming land.

We are talking about the potential for 10 million tonnes per year of carbon being sequestered from the atmosphere through maritime pine plantations, mallee eucalypts, and biodiversity plantings which are associated with commercial plantations. As Rob mentioned, additional sequestration can also occur with some of the strategies in place for destocking former pastoral land as new conservation reserves are created in the rangelands.

As background, the link between tree farms and carbon sequestration has been recognised for over a decade now, and one of the documents there is from the Tree Trust, back in the 1987 to 1990 sort of period, where carbon sequestration was specifically included as one of the benefits to that scheme. Funding for this scale of plantations has to be done on a commercial basis. However, a lot of the areas which require trees for salinity purposes are marginal for traditional commercial tree crops, and this is where we see the financial benefits. A carbon trading system can increase the rate of return of those plantations to a point where they will be commercial and therefore critical for the go-ahead of those investments.

There are some key factors which nationally and internationally we see need to be addressed also to enable those tree planting efforts to go ahead. One is the issue of carbon stored in harvested wood products. We submit that carbon in those wood products should be treated as a store, and emissions from wood products should be counted at the time and at the place where the emissions occur, rather than there being a subjective treatment of carbon being emitted when the trees are cut down. There appears to be a view by some that plantations only provide a short-term solution to carbon sequestration, and that they do not provide an indefinite store.

We would submit that storing carbon for 20, 30 years is not a bad strategy because of the time that it buys, and in the next 20 or 30 years we would expect huge increases in science in climate change and also in our industrial processes, so that 20 or 30 years could be a very valuable time, and tree plantations can buy you that time. Secondly, the wood products offer advantages in avoided emissions because they do provide the opportunity to avoid the emissions from say high energy building products or replacing fossil fuel energy sources if that is desirable in the future.

Similarly the treatment of some parts of the carbon cycle in tree plantations and even in native forest needs to be consistent. There are views that you would try and separate out the anthropogenic burning for example from natural burning, but when that is looked at in its entirety it may be illogical because if that forces a reduction in prescribed burning in whatever ecosystem, which then would lead to wildfire later on, there may be actually more carbon dioxide emitted, so we are very conscious of the logic in those decisions being consistent.

Lastly, the speed of implementation: in our view there is a lead time for large carbon sink developments through plantations. If Australia is to gain a large benefit from sinks in the accounting period of 2008 to 2012, then we need to move now to get those trees into the ground, to make sure that the benefits can be accrued through that accounting period.

**CHAIR**—Thank you. I take it from what you have said that you do not disapprove of an emissions trading scheme in Australia, but the questions are how and when. The submissions that have come before us vary in many of these areas, but I would think the weight of numbers do come down on the side of saying that we should not sit back and wait, that we should be positioning ourselves in the expectation that there may be a world trading scheme in emissions trading. Would you disagree with that?

**Mr Sippe**—No. We would certainly agree. I think, if anything, the evidence suggests that there will be a scheme before the rules are created and the umpires are decided. So there is every danger, in fact, of being left behind the game rather than perhaps being in front of it.

**CHAIR**—I dare say we can only watch overseas to see what developments are taking place to try and put in place a scheme that is going to be compatible with any world scheme that might develop. Would you agree with that as well?

**Mr Sippe**—Yes, I think we have to work out an internationally acceptable accreditation system. There seems little point if you have 55 countries all running around having 55 systems, none of which are particularly compatible. I think the whole system of international trading will fall apart. I understand your terms of reference are basically orientated towards domestic trading, but as Ian has already said, we see an extremely strong link between the two, and in fact a necessity for Australia to participate actively in

both. But we have to have a fair system, and I think that means the international rules need to be sorted out probably fairly quickly. Quickly, I think, is a comparative term here.

**CHAIR**—I note in your submission that you disagree with grandfathering. I would have to say that that is probably out of step with most of the submissions that we have had. Could you just go into that a little bit further as to why you disagree with grandfathering?

**Mr Sippe**—I might actually ask Ian to comment on that point, and perhaps I could add to it.

**Mr Briggs**—In our statement about the grandfathering we were not trying to exclude grandfathering from the scheme, but it was more on how it was going to be treated. As I pointed out earlier in my presentation, a large proportion of industry in WA is relatively new and relatively clean, and a large proportion is powered or gets its energy from natural gas. Our main concern was that in any emissions trading system that was going to be developed within Australia it did take account of the large number of new clean industries that WA was promoting, or would like to see on a competitive basis throughout Australia come our way.

We recognised the grandfathering position, and it has to be accounted for, but we also wanted equally that if there were enough permits when permits were being allocated the new industry was not jeopardised or put at a disadvantage—it would not, in fact, jeopardise any international competitiveness, for example, with overseas countries buying our LNG. We would not want to see that the trading emissions or the trading permits, the pricing mechanisms, would increase the cost of that LNG and make other countries go elsewhere to places such as non-Annex 1 countries who produced LNG.

Although we did state that we were against the grandfathering principle we were really putting that in the focus of ensuring that whatever the permit system was, that new investment into Western Australia was not threatened or jeopardised by those.

**Dr LAWRENCE**—Mr Chairman, can I follow that up?

**CHAIR**—Yes.

**Dr LAWRENCE**—What then would you suggest? I know that is a hard question, but we do need to have alternative mechanisms at least canvassed.

**Mr Briggs**—Yes. When we prepared the submission we were really looking at the main issues that we felt Western Australia should be focusing on, and we have not really got into the micro-economic mechanisms which this may go about. We have had discussions with other groups about this as well, but we have not come up with any particular approach which may resolve that. I am not really quite sure on how we may—

**Mr KERR**—Can I just tease that out? Let's take the issue of LNG and compare it to, say, coal exports. In any global trading regime, or any system that accommodates a principle that climate change factors are going to be the measuring stick, then the embedded cost of the carbon dioxide is going to be attributed to either the exporting country or the importing country. In either case there is a cost competitive disadvantage to something which is high embedded carbon. In other words, coal has certain forms of embedded costs, so there will be an effect in terms of the cost being embedded and charged to the exporting nation or to the importing nation. The rules, as currently designed, attribute that cost to the point at which carbon emissions emerge, so that with coal exports the embedded carbon costs are attributed to the using country.

In the case of LNG, it is the same thing. There is an issue, of course, as with coal, that some emissions occur in the mining or extraction process. How do you propose dealing with the basic issue that if you have climate change as your measuring stick, and carbon is one of the principal greenhouse gases, there is going to be some importance attached to its measurement and that will be either attributed to Australia or to the importing country, and there is going to be a cost no matter what? It does not seem to me to make much difference whether or not you say you detach the cost from exporters; the system is then going to attach the embedded costs on the users. You cannot make the carbon disappear out of the system.

**Mr Briggs**—No. We were not saying that was the case. That is part of the dilemma we face: that in the production of LNG or even production of steel, the state or Australia would be assigned its carbon emissions there, and also there would be carbon emissions at the end user offshore; but in the production of that material, or even in that piece of energy, the state was probably going to be emitting relatively large amounts of carbon at this end compared to where it ends up at the end user offshore. That is the dilemma that we see: how you account for the end product being accredited. Would the state, in fact, get some credit from that country we exported to? I think that is really something we have not answered, but we do recognise it as being a problem.

**CHAIR**—That is really Duncan's point, though, isn't it? Conceivably your LNG is going to be a better fuel than coal. Take Japan for instance: if they are going to have to buy emissions permits obviously your fuel is going to be a better fuel, and possibly at a higher price. You should get gain out of it.

**Mr KERR**—It may well have a market advantage over coal.

**Mr Briggs**—We may, yes. I think it was recognised some time ago that there may be some disparity. There is obviously disparity between the coal exporters and the LNG exporters because of the—

**Mr KERR**—What worries me is that in all this everyone focuses on the downsides. There seem to be huge market opportunities that a state like Western Australia

would be capable of taking advantage of, and not just in your forestry sector where sinks represent a potential to integrate repair of the agricultural sector with this overall strategy. Can I just raise something that, to me, seems to be a fundamental inconsistency in the submission you have put?

The direction of it seems to be that there should be a trading system which is essentially a Western Australian system. I will just take you to a number of paragraphs. You are talking about sinks being controlled by state government.

**Dr LAWRENCE**—It is actually the minister's letter you are looking at.

**Mr KERR**—Yes, the minister's letter, sorry, about the sinks being controlled by state government. You are talking about the states being responsible for the process, the Commonwealth setting policy targets, but essentially there being, I suppose, seven different trading systems. That seems to me to be a policy description for disaster for Western Australia, an absolute policy disaster, because the opportunities for cheap abatement exist largely in the eastern states, if you are correct about the level of efficiency of your existing industries.

The opportunity for people to make trades and to take advantage of that outside the West Australian system would seem to be lost entirely if you construct a system that is self-contained.

**Mr Sippe**—I do not believe the inference was meant to suggest that the Western Australian intra-domestic trading system would be Western Australia's alone. I think the argument was that Western Australia's special needs and requirements really should be met, and that managing affairs within the state are the prerogative of the state.

**Mr KERR**—Can I suggest this: if we move to a trading system, isn't a trading system a system which allows individual enterprises to maximise their self-interest by making the most economic decisions that they can personally take?

**Mr Sippe**—Yes.

**Mr KERR**—That is not something that a government, even one as well respected and loved as the Western Australian government, is particularly good at. If we are looking at the most cost-effective system for abating greenhouse gas and we are talking about developing a market mechanism, surely it has to be a national market mechanism, at the least. In that sense the claim for special treatment to Western Australia is actually going to be very counterproductive.

**Mr Briggs**—We are not actually promoting the idea of special treatment within Australia itself, but we could perhaps advance that by saying it is perhaps not LNG versus coal within Australia that is the issue, because I think that is something that can be sorted

out, but it is probably more production like WA versus the non-Annex 1 countries where you are having this international competitiveness where we would not want to see that any trading regime would—within Australia—jeopardise that sort of opportunity.

**Mr KERR**—Understand that we do, of course, probably have common interests here and that the Australian government and, I think, the opposition both would wish that non-Annex 1 countries could move towards accommodating undertakings to reduce their greenhouse gases, but that is not the Kyoto framework at the moment, and we have accepted and signed two international obligations that accept that as a reality for the present time. The real question is, how do we do this most cost-effectively, with the least damage to economic interests that will be adversely affected, while recognising the other side of the ledger, that there are major economic opportunities that will emerge as we move down this track?

**Mr Waite**—I do not think the difference between what is said there and what you are saying is significant. In the same way that Australia said they have a different situation at Kyoto, Western Australia is saying that they also have a different situation, possibly, that needs to be taken into account: you need to have a national system which not only takes into account the processes and special circumstances in the eastern states, but also takes into account the processes and special circumstances in Western Australia. So it is not saying that there needs to be a special one for Western Australia, but that any national one takes into account both sets of circumstances, if you can divide them into two. There are probably seven sets of circumstances, but in effect it gives a challenge to whoever is determining the emissions trading regime to be able to take account of the different circumstances of all seven states, not just come up with a particular package that suits one state and not the others. It is a very difficult challenge.

**CHAIR**—But, if we started at 1990, which is the Kyoto Protocol, and we said, ‘Australia had a certain allocation to emit,’ and we cut all states off at 1990, you are saying you have got clean industries over here in Western Australia so you are going to end up with a very small allocation compared to the other states. What Duncan is saying is that you have an opportunity to gain credits with your sinks and with your clean industry for the dirty industries in the east.

**Mr Waite**—But that is only clean up to a point. The problem I think that Ian was talking about was liquid natural gas, for instance, which provides a very clean energy source to our industry but at a cost to the people who are producing the gas.

**Mr KERR**—I am meeting the Gorgon people this afternoon, and I think they are also meeting us today in a later submission, so I guess some of these things will be teased out. But isn't it the case that LNG cannot be treated as a common commodity? Some sources of LNG have very little CO<sub>2</sub> attached to them, others have very significant amounts, and a trading system will advantage some and disadvantage others. But isn't that just like saying some kinds of coal have got lots of SO<sub>2</sub> and nastiness associated with

them and therefore any pricing mechanism has to take into account that you have to—

**Mr Waite**—Yes, I do not disagree with that.

**Mr McDOUGALL**—Can I slightly change this? I am trying to get back to where a lot of this seems to be coming from. Your current power production in this state is predominantly what?

**Mr Sippe**—Black coal.

**Mr McDOUGALL**—Where do you get it from?

**Mr Sippe**—Collie.

**Mr McDOUGALL**—And you have got sufficient there for how long?

**Mr Sippe**—I am guessing—probably a couple of hundred years. I should add that there is gas turbine production for peak loads in Western Australia, and a lot of the private companies are running gas turbines for power production. But in terms of the state grid, it is primarily coal driven, with some gas.

**Mr McDOUGALL**—Okay. If we look at that, and you are looking at this growth in these resource areas that are going to take up, it is reported, the whole eight per cent that Australia has for the future—

**Mr Sippe**—It has been estimated—

**Mr McDOUGALL**—how are you going to supply the energy to those resource developments to develop? Are you going to supply it out of the coal based or are you going to expand the coal based or are you going to change your method of energy production?

**Mr Sippe**—It will be almost entirely natural gas based, as I understand it.

**Mr McDOUGALL**—So the take-up of the eight per cent is based on gas energy, not on coal burning energy, and a reduction in coal burning?

**Mr Sippe**—I would say a maintenance of coal burning but an expansion in the gas.

**Mr McDOUGALL**—Maintenance of coal burning?

**Mr Sippe**—Maintenance at existing levels of coal.

**Mr McDOUGALL**—On that basis then do you become an exporter of coal?

**Mr Sippe**—No.

**Dr LAWRENCE**—No-one would buy it.

**Mr Sippe**—It is not that bad!

**Dr LAWRENCE**—It is pretty bad.

**Mr McDOUGALL**—It is pretty bad? This is what I am trying to get at. Woodside have suggested that companies should be allowed to trade amongst themselves, both on a national and international basis, which could probably effectively bypass a national trading scheme. What does the Western Australian government think of insider trading within companies on an international basis, on a national basis, and particularly on a basis where a company has major operations in both Annex 1 countries and developing countries?

**Mr Sippe**—That is a very good and a very complicated question.

**Mr McDOUGALL**—One we have to try and resolve though.

**Mr Sippe**—Yes. However, can I just reinforce Michael's comment that in the submission we made to you we are not arguing for a solely Western Australian system; we are arguing for Western Australia's position not to be disadvantaged in a national scheme.

**Mr KERR**—That is not what the submission actually says.

**Mr McDOUGALL**—I agree with you, Duncan. That is the way I read the submission.

**CHAIR**—Unusual for the Libs and the Nats and the Labor Party to agree.

**Mr McDOUGALL**—Yes.

**Mr KERR**—I would just like to clarify this, because the minister's letter argues for a substantial role for state governments in emission trading while the Commonwealth would only have a policy role. So the first question obviously is: why should state governments operate and regulate emission trading schemes?

**Mr Sippe**—The implication of that is that we would be seeking a national scheme and not a Commonwealth scheme.

**CHAIR**—Through COAG?

**Mr Sippe**—You can do national schemes outside COAG. But the difference there

was a Commonwealth-state statement, not a state-only statement. What we are arguing for is recognition of an Australian national scheme, but we see that national scheme being a nine-government scheme, not a one-government scheme. That is the implication of that statement.

**Mr McDOUGALL**—How about coming back to that?

**Mr Sippe**—Insider trading: I think ‘insider trading’ is a bit of a loaded term, isn’t it?

**Mr McDOUGALL**—I did not mean it in a negative sense.

**Mr Sippe**—If you had national rules and the national rules were being complied with and the national rules were fair and equitable, I would not see a problem with it.

**Mr Waite**—As a personal opinion rather than a state one, I would suggest that you need a fair and equitable national system which allows the market to operate within it.

**CHAIR**—With these international companies though, doesn’t it really come back to the clean development mechanisms? If a world trading scheme is going to work, if we are really going to get the non-annexure 1 countries to be involved, the only way you can do that is with some of these larger world companies putting technology into those underdeveloped countries to improve the emissions in those countries, and therefore getting credits for that. That would resolve the international company situation where they would not go to an underdeveloped country and leave Western Australia or anyone else.

**Mr Waite**—Yes, that is right.

**CHAIR**—It is tied into that, isn’t it?

**Mr Sippe**—Yes, and I think on that basis that is the reason why we would be supportive of it, providing they played by the national rules.

**Mr Briggs**—One of the outcomes of the Bonn conference just recently was that G77 and China were not really trying to promote clean development mechanisms and joint implementation, and had some questions raised about emissions trading as well. So although that sounds to be a good mechanism where the multinationals can get involved in those schemes, I guess the uncertainty at the moment is whether or not they will agree to the implementation of those. There is some disagreement within those countries as well. I think Argentina and Brazil are keen to promote those types of flexibility mechanisms; however some other countries within G77 are not. In their interventions that they have been making, it does not make it a certainty.

**CHAIR**—You are absolutely right.

**Mr Waite**—One of the issues which is going to affect any international trading mechanism, as you have already identified, is what happens with developing countries. For the record, we have already discussed it, but whether or not the developing countries come in with similar sorts of protocols to the Annex 1 countries will also affect an international trading mechanism, and the way that various countries develop an international trading mechanism will also be done to try and make that happen. So the way that the US for instance negotiates on a future trading mechanism is also going to be affected by what they want to happen with the developing countries. That is something that Australia can be involved in as a country, but it is going to be something that all of us here do not have a lot of control over, and it is going to affect any later international mechanism.

**CHAIR**—Australia could get credits as a country if we have the technology to put alternate energies into these countries, as a country.

**Mr Waite**—Most definitely. There are some significant opportunities for Australia in that whole scenario.

**Dr Biggs**—That is currently being done under that activities implemented jointly program, which is evolving now into the joint implementation flexibility mechanisms. So, yes, there are opportunities that have already been explored.

**CHAIR**—Which comes back to the point that I have been worried about for some time, and I think you reinforced that here this morning, Everyone seems to be looking at sinks and saying they are the panacea, but they are only a very short-term panacea and if we are going to get involved, if we are serious about reducing emissions, then somewhere in this mechanism we have to set some incentives for people to do something about the production of energy that we have at the present time, cleaner production of energy. If we just sit back and say, ‘Look, there’s a great benefit in us with these sinks’—and there probably is in the short term—what are we going to do? What are the incentives we are going to put in place? It really comes back to allocation of permits as well, I suppose, as to how they are allocated. Are they allocated for life or are they on a reducing scale which says we have to somehow try to reduce these emissions over a period of years? Have you got any opinions on those areas?

**Mr Sippe**—Can I just make two comments. First of all, I think we accept your view that sinks have some advantages but are not necessarily the panacea. Paul put forward the proposition that sinks could be extremely useful for buying time.

**CHAIR**—Yes, I heard what he said.

**Mr Sippe**—I think that is a very valuable point to make. The other half of your point looks at how lack of grandfathering might work. It is coming back to how a permitting system might work. I guess I was a bit concerned that when we started this conversation some time back now it started out with a question on grandfathering. If there

is a word missing in the West Australian submission it is perhaps the word 'unfettered', and where we say, 'Grandfathering would not be supported by the West Australian government because this would put new source organisations at a cost disadvantage to current players,' perhaps the words missing there are 'unfettered grandfathering would not be supported'. The question of allocation of existing rights and permits is complex: do you simply allocate on current emissions, in which case inefficient producers would get a financial advantage over efficient producers right now? We do not think that is fair.

**Mr KERR**—Can I take you back on that point, because we have had a lot of discussion regarding this point. I think most of the economic rationalists, the economists who come before us, would dismiss that argument. They would say that inefficient producers who get credits have a choice: they can continue to produce subeconomic returns, or they can go out of business in favour of new entrants; in other words, it would be the marginal cost that is the determinant. If you have a permit system and somebody wishes to continue making three per cent or something on their investments when they can sell their credits to producers who can be much more efficient, why the hell would they do it?

**Mr Sippe**—But I say why should they get the credits in the first place to sell?

**Mr KERR**—Simply because it is a recognition of the sunk cost of capital; in other words, it is a recognition that you do not devalue an existing investment. That is the economic argument. No-one who has come before us with an economics hat on has bagged the proposition that you do. Whilst it makes apparently commonsense when you say it—and when I first heard the argument it seemed perfectly logical to me—the economists just say, 'It's a load of twaddle.'

**Dr LAWRENCE**—It may be they are probably right.

**Mr Sippe**—They would probably also argue, if you allocate the entire allocation on day one, that the market will sort out everything else.

**Dr LAWRENCE**—That is right, and I do not think we accept that.

**Mr Sippe**—I do not accept that either, because I think you have to leave room for—

**Dr LAWRENCE**—For policy regulation.

**Mr Sippe**—Yes, exactly. The economists may well be right if you are putting linear graphs on a page, but not necessarily right in a policy sense overall; otherwise you would have an entirely free market situation in Australia with no government controls at all.

**Mr KERR**—No. But if you are looking to the question of whether you are advantaging or disadvantaging new entrants, which is the threshold point that you are making, the argument is that it does not. I am just asking you the same question we have asked repeatedly throughout when people make this point. What it does seem to be asserting is that you need to help into the market new entrants. I am not certain why you would help into a market people who do not get in there on their own natural cost.

**Mr Sippe**—Because, for policy reasons—I think as Carmen Lawrence said—you may wish to. I will perhaps draw you to the example of sulfur dioxide emissions in Kwinana, where we, as a government policy position, deliberately and specifically did not allocate the entire airshed to these significant issues so that you could allow new industries to come in; you could provide an incentive for industries to develop there. You could argue that was in defiance of the marketplace, but I think that is a conscious policy defiance of the marketplace to attract new industries to the area. This is a personal view rather than a government view: I would suspect strongly that the WA government would have the same view with emissions trading, that they would want to have opportunities in a policy sense to attract different sorts of industries by having some management of the market.

**Mr KERR**—But in the case of existing players—something that is small and self-contained, where you exactly know the number of players—if Australia sets up a greenhouse trading regime with marketable instruments that can be traded freely, where you have a stock exchange or some mechanism of that kind, why would those existing holders not say, ‘Look, hang on. Each time you do something like this, you’re devaluing effectively what are our existing interests’?

**Mr Sippe**—It is probably the same thing every time you change the pollution laws.

**Mr KERR**—But you do that deliberately.

**Mr Sippe**—I guess we are suggesting we do this deliberately as well.

**CHAIR**—If you are going to have a market though, government could not interfere in that market, because once you set it up, really there should not be government intervention because otherwise you are going to destroy—

**Mr Sippe**—Yes, but what we are talking about is the point of setting up.

**Dr LAWRENCE**—Setting the ground rules.

**Mr Sippe**—We are talking about how you allocate permits. That is what we are talking about. Once you allocate the permits, then you are all right.

**Dr LAWRENCE**—I think there is a perfectly reasonable case to be made, when

you have polluting industries, whether it is greenhouse gases or others, that if you are attempting to begin the process of regulation then you set certain limits which may in fact reduce the amounts that are currently being emitted, and use some of that amount that you have taken back to then allow for new market entrants, and I think that is probably an important principle of the initial establishment. That is a role for government at the outset in establishing rules. Can I follow up on that?

**CHAIR**—Yes.

**Dr LAWRENCE**—You mentioned the need for an internationally acceptable accreditation system, and I think we all agree that in the longer term that is obviously critical for any regime to work, but one of the big questions, whether it is a domestic or international system regime, is: what is going to be the scope? What will we cover by way of emissions accreditation? You can go everywhere from ruminant cows through to the big companies who are extracting oil and gas.

**Mr Sippe**—Absolutely.

**Dr LAWRENCE**—And some people would suggest that we look at individual households, indeed. How do you cope with the transport system? Do you have any views about that, because a lot of the problems for a growing economy, a growing state like Western Australia, involves the increasing use of energy for effectively domestic and transport purposes, and obviously we cannot ignore that part of the system in any part of the country.

**Mr Briggs**—Yes, we agree that the scope of activities to be included within the permit system is a very difficult one, and I think, from my reading of industry's submissions to you, that they are looking at the view that they, the main emitters, do not want to be totally targeted, or targeted as the total emitters. They believe that it should be spread around fairly amongst the key greenhouse emitters, whether it is a point source or a non-point source.

The point sources, of course, are a lot easier to identify and measure. However, I think that the inclusion of non-point sources such as from agriculture and from households is a very difficult one. I think the bane of a pollution administrator's life is how you control these non-point sources as a sector, like agriculture or an urban development.

**Mr KERR**—Isn't agriculture relatively easy, might I suggest, in the sense that you have a voluntary process of opting in? You accept that you have non-point source emissions from agriculture, but there are going to be people who would want to trade. Take the ruminant cow issue. If feedlot producers use the modern technology of charcoal or some addition to feed that makes a very substantial change to methane emissions, provided they are prepared to have it audited perhaps once every couple of years to make certain that they are actually achieving that, why shouldn't they be able to get a credit for

it and market it?

**Mr Briggs**—I think that that is probably right, but that again comes back to the matter of having a fair and transparent system where everybody understands what is being measured. How do you actually account for those? How do you actually put a value on that emission—

**CHAIR**—Do you know how many cattle you have in the Kimberleys?

**Mr Sippe**—I do not, but we have an estimation. I like that example, but I must say I would treat your example of the cattle feedlot as a point source, not a diffuse source, because it bears all the resemblance to a point source. Could I give just a personal response rather than a government response. Those sorts of incentives I think we would support, but for what are called true diffuse sources, like perhaps rangeland grazing of sheep, then I think ultimately we have to work out what the threshold level is, where we are going to be concerned and where we are not. I do not believe we are going to be concerned with individual households specifically. I mean, no-one is going to get a permit for a pot-belly stove in Western Australia to emit greenhouse gases, nor do I believe a pastoralist is going to get a permit to carry 5,000 sheep on 50,000 acres of land.

What we might be moving towards though is rolling up some of those sectors, where you could look at perhaps government policy incentives to reduce those emissions. So they may not be necessarily participating in active trading through a commercial trading mechanism, but you might be looking at government incentives to bring down those emissions, and perhaps the government could then market those emissions on behalf of the industry groups.

**Mr KERR**—Perhaps even a regulatory regime that says that you cannot sell products that do not have certain energy ratings.

**Mr Sippe**—Yes.

**Mr KERR**—I wonder whether you agree that there is room for a national system that would prevent the import to Australia—or manufacture and sale in Australia, but principally imported now—of low energy rated products, many of which were not available for sale in other Annex 1 countries because of that reason.

**Mr Briggs**—I guess that comes up in one of the NGS measures, that you do have a natural energy rating on things such as whitegoods which come into the domestic market, so although you may not assign a permit on a household, you are actually putting a form of permit on the products that are consumed by the households.

**Mr Waite**—It is not part of emissions trading, of course, but it complements and supplements it.

**Mr Briggs**—I do not know if it is not part of emissions trading. I think that although it is perhaps not directly involved in it, if Australia can prove that between 1990 and 2008—and then for that first commitment period, to 2012—the importation of products from overseas, and also produced within Australia, has a lower energy rating and more greenhouse friendly products—

**Mr KERR**—It will certainly come to the overall meeting of our 2008 target.

**Mr Briggs**—That is correct, yes.

**Mr KERR**—And obviously greenhouse trading is one of the mechanisms which would be available, were it chosen, to meet those targets. Others would be regulatory measures, command and control kind of interventions. There may be some levels—for example, mandatory building codes, insulation and things of that kind—which go as part of a package.

**Mr Waite**—They are already proposed as part of the national greenhouse strategy, of course.

**Mr KERR**—Yes, I understand. I am just putting that.

**Mr Waite**—Yes.

**Mr KERR**—One of the things that you have mentioned in your submission is the establishment of the Western Australian Greenhouse Council. How is that resourced and staffed, how long has it been going, and what is it doing?

**Mr Sippe**—These are good questions. It is resourced through the consolidated fund in Western Australia. It is not over-resourced, but it is resourced. It is serviced by the Department of Environmental Protection. In fact, Michael Waite is the Executive Officer to the Greenhouse Council. It has been in operation for about four months. It has had about four meetings.

**Mr Waite**—The funding was approved in February.

**Mr Sippe**—Yes. The funding is basically to set up the council, to have an executive officer to it, and to look at greenhouse gas inventories. As the pace quickens, when we are looking at these emissions type trading regimes, we need to have a much better handle of course on what is actually happening out there. I think most of the inventories done around the world you could probably drive a Mack truck through, if you really got down to it. We are going to have to get much better at that, so we have a modest amount of money to look at that in Western Australia as well, and to look at some of the implications of costing the national greenhouse strategy on Western Australia.

**Mr Briggs**—I might just add that it also has the status of having cabinet approval to establish that council as well, so it is not an interdepartmental initiative. Well, it was an initiative, but it actually has the approval of cabinet.

**CHAIR**—Is the Australian Greenhouse Office coordinating with your Greenhouse Council?

**Mr Waite**—Yes. I am a member of the high-level group, as is our deputy CEO of Premier and Cabinet. The high-level group includes the Australian Greenhouse Office and is in fact chaired by them, so the link is through that way.

**Mr McDOUGALL**—One of the topics that you have raised in that is the methods of information, and raising awareness of climate changes in greenhouse, and the responsibility of the community. That is very commendable and I think it is very necessary, particularly from what we have just been talking about, but I do not see that you have got any community involvement on the council.

**Mr Waite**—We do. I will go through the membership of the council.

**Mr McDOUGALL**—I have seen the membership. There are a lot of government departments.

**Mr Waite**—Twelve CEOs from what we call the key government departments, and basically they reflect the modules in the national greenhouse strategy: Transport, Energy, Environment, Resources Development, and so on, and including Treasury. Then there are representatives from the peak industry groups: Chamber of Commerce and Industry, Chamber of Minerals and Energy, APPEA and so on, many of whom will have made submissions to you. APPEA comes to mind. There is the Conservation Council, representing the green movement. Then there are three community representatives. So three out of 24 are community representatives.

**Mr McDOUGALL**—It just was not there in my briefing notes at all, the details of those final two groups. Can I just come back and ask you a question in relation to the trading. What would your reaction be if we got to a situation in an open trading market where you ended up with groups buying up permits for the purpose of locking the permit away?

**CHAIR**—Environmental groups?

**Mr McDOUGALL**—Well, it might not be.

**CHAIR**—It may be just a trader.

**Mr McDOUGALL**—In other words, do you think that the trading scheme should

be restricted to prevent that sort of thing happening?

**Mr Sippe**—What an excellent question. We are not quite sure what the spin would be on—

**Mr McDOUGALL**—If you would like to take it on notice and drop us a line, we would appreciate it. It is a question that we have raised before.

**Mr Briggs**—Yes. That is a question that we have raised also but have not quite come to what the answer is yet.

**Mr McDOUGALL**—Maybe you would like to put a little bit more thought into it before we get down to an interim report.

**Mr Briggs**—We would appreciate that.

**Mr McDOUGALL**—You might be able to give us your thoughts on it.

**Mr Briggs**—Thank you for that.

**CHAIR**—Going back to Dr Biggs: you mentioned about the possibility of large areas going into sinks in Western Australia. I gathered from what you were saying that you were believing that they should be all government owned sinks. Why shouldn't private people be allowed to get involved in trading in those areas?

**Dr Biggs**—The opposite is actually the case. We are actively seeking private investment in those plantations. The government is taking a lead, primarily through the salinity action plan which I handed over, because the government recognises the environmental factors which need to be addressed. There is no way the government can finance the level of action which is required there, and tree planting is one of the strategies, but the government certainly is taking a lead in encouraging private investment into those plantations and trying to get the conditions right for that investment to occur. They are trying to establish markets for the timber products, making the commercial scene suitable for investment in the trees in the first place.

We are very conscious that for the lower rainfall areas, where there is still a large salinity problem, the economics and the internal rate of return based solely on today's wood prices are not attractive enough for large investors. We see that the ability to obtain financial credit for the carbon sequestered will tip the balance on that internal rate of return. There are graphs in Dr Shea's paper which I handed over.

**Mr McDOUGALL**—Just on that, even though you are talking about 20 million hectares and it has a limited capacity, even at 20 million hectares, to absorb growth in CO<sub>2</sub> emissions, it is still going to be a very small component of the effective mechanism.

If you changed that 20 million hectares to forest and forest product development, what sort of impact would that have on the existing economic use and agricultural use of that land, and what would be the variation of those two?

**Dr Biggs**—The strategy anticipates in the order of one million hectares going to trees in the first stage and potentially three million hectares, which is the area which would be required to redress the water balance in those agricultural areas. That would leave the majority of that land still available for those traditional agricultural pursuits and in fact would help to protect those traditional agricultural pursuits from the damaging effects of these salinity problems.

**Mr Briggs**—Some of these programs are complementary. The greenhouse sink programs that Carmen is thinking about are complementary to existing programs for repairing land degradation.

**Mr KERR**—This is one of the problems that struck me. Consultations and development of the RFA do not seem to coordinate with the salinity action plan or indeed any of the issues that you are talking about today. This integration idea is a great one but sometimes bits of the system do not seem to understand what the other bits are doing.

**Dr Biggs**—The RFA in Western Australia has been quite clearly focused on the native forests. Developments in the plantation sector and the salinity action plan are going separately, and they are all outside the RFA region.

**Mr KERR**—The RFA region is the whole state of Western Australia, isn't it?

**Dr Biggs**—No, the RFA region is—

**Mr Sippe**—It is only in the south.

**CHAIR**—It should in addition—

**Mr Sippe**—The RFA basically includes the state forest.

**CHAIR**—That is another argument. I would like to have another argument with you on that one as well.

**Dr LAWRENCE**—Can I just follow up very briefly about it. I do not want to spend overmuch time on it, because we probably have quite strong views about the way it is going, so rather than bore you with those—

**CHAIR**—I have the same in New South Wales.

**Dr LAWRENCE**—There is a problem, however, if you are talking about an

economic advantage to be gained from agroforestry or salinity programs that have a sort of side benefit in terms of possible exploitation of timber. If at the same time you are getting significant cuts of the native forest regime, that will presumably have an economic impact on the viability of agroforestry in plantation timber. Secondly, it will also mean that in terms of the net benefit in reduction in carbon you are likely perhaps to be swimming upstream because one half of the government or one half of industry is busily chopping down trees while the other is trying to put them up. So it is a zero sum gain and that will have an economic impact as well.

**Dr Biggs**—I think there are two points there. With the native forest there is quite clearly the replanting and the regrowth which happens. If native forests have to be accounted for in a trading scheme or more widely, then I think we would be quite prepared to calculate the net balance of those and stand by the balance of the regrowth versus what is being harvested, with the proviso that we would like the wood products to be assessed as an emission where and when the emission actually occurs rather than at the stump, which is the logic we see with something like coal. The carbon leaves in a locked up form and is counted as emission when it is burnt. With wood products we would like a similar treatment.

As far as the economics of the plantations versus the native forest is concerned, I think on a global scale we see that there is room in Western Australia for us to supply an international market from the plantations and the native forests. We are not just talking about the state market. Clearly the amount of product which would come out of plantations on this scale is far in excess of what this state requires, and we really are talking about the international market and the economics of that.

**Mr KERR**—I went to Kyoto as part of the Australian delegation. Victoria and Queensland were represented there but Western Australia was not, which rather surprised me, given the sort of significance of this issue in terms of where it is going. I appreciate you have set up a eucalypt greenhouse state based mechanism now. Firstly, is the government giving any consideration to developing something of the scale and dimensions of SEDA in New South Wales, which is driving a whole sort of focus on industry change and efficiency?

Secondly, will the government be getting involved in the further meetings? There is the one you mentioned before, recently in Germany, and then we have another meeting in Buenos Aires in November, which is going to be pretty important in terms of a lot of this detail, in terms of what actually will be measurable, what can be counted for sinks, what can be counted in relation to land clearing—a whole range of issues of that kind. I suppose it is a question of are you going to do it, with a suggestion that it is really important that you think about being involved.

**Mr Sippe**—Ian went to the Bonn meeting, representing the states. We recognise in all these exercises offshore run by Foreign Affairs there is very limited opportunity for the

states to get involved and generally states are limited to one, possibly two, representatives to go along. Therefore on some of the more popular visits like Kyoto you have to jostle a bit to get selected. Obviously no-one wanted to go to Bonn, did they, Ian? They let us go!

**Mr Briggs**—Queensland was very interested in going but they were in the middle of an election and no-one was permitted to travel overseas. A chap from Victoria was ill and could not attend, so it was me who finished up representing both the states and territories at that meeting. Rob is correct in that state representation on the Australian delegations is limited to two people, and industry is limited to one person as part of that delegation.

**CHAIR**—We are rapidly running out of time but, going back to those sinks, why shouldn't those private owners of sinks be able to sell those credits to Mitsui or BHP or whoever they like?

**Mr Sippe**—No reason at all.

**Mr KERR**—It is just again another thing where the words of the submission do not seem to reflect what you are saying.

**CHAIR**—That is what it says—that they cannot—and really in a trading scheme it would still be credited to Australia but they could sell to whoever they like.

**Mr Briggs**—I think that in the development of policies on that by the state we do recognise perhaps the limited role that government should have in the actual trading process in the marketplace.

**CHAIR**—Once it is set up.

**Mr KERR**—You want to be involved in design?

**Mr Briggs**—Yes, we would be the ones that perhaps actually set the rules, say, on the limits.

**CHAIR**—Can I have just a quick question on these diffuse sources, I suppose, and ones we cannot ignore. Whether we like it or not, Australia has been credited with a certain amount of methane and it is 21 times carbon dioxide as far as global warming is concerned. Who should buy these permits for the methane produced by animals?

**Dr Biggs**—I submit that one of the things we have to recognise is at the end point we are trying to change behaviour across all sectors in order to meet our target that we are establishing under Kyoto. For some sectors trading schemes may be the most appropriate mechanism for encouraging those behaviours to change. In other areas it will be regulatory mechanisms.

**CHAIR**—But you have to be practical about this. What do you do with a beast that you do not see for six years in the Kimberleys?

**Mr Sippe**—You do not give him a permit!

**CHAIR**—You cannot dodge these things. The other thing, too, is in the transport area. Should the manufacturer of the vehicle buy the permit?

**Mr Sippe**—There are other options with transport that have been looked at. For example, the carbon tax on petroleum products is one way of—

**CHAIR**—That is a dirty word. We do not talk about that.

**Mr Sippe**—I know, but you do not necessarily have to look at open trading permits for some of those things.

**CHAIR**—If you put it back down to the consumer, then there is no incentive for the manufacturer to do something about this type of engine they are developing.

**Mr Waite**—I think we touched on it before, but the emissions trading regime by government decision will go down so far and then other mechanisms, such as regulatory mechanisms, will take over from there. That is recognised in the greenhouse strategy where they are talking about energy efficiencies for buildings or machinery or power generation, or whatever, which will largely either be put in place by voluntary agreements or by government regulations. It will not be a permit system.

**CHAIR**—But if you put it on the manufacturer it is an incentive for people to go out there and compete with one another for the marketplace, isn't it? You do not have to get government involved.

**Mr Waite**—It is a possibility, and that gets back to the market driven implementation of the emissions trading regime. Markets, if there is a dollar to be made, will actually create something, but it will be created in line with the mechanism that is put in place over the top. To some extent then, how far it goes down—if you want to look at it like that—will be driven by market economics.

**CHAIR**—Finally, would you see that it would be reasonable to say that we could start an emissions trading scheme with those who are easily measured at this particular time and then draw the other more diffuse and difficult areas in as we go along?

**Mr Waite**—Yes.

**Mr Briggs**—I would have said that is a logical sequence. It is just the timing of it.

**Mr Sippe**—You have to be careful of the equity.

**CHAIR**—Sure, I understand.

**Mr Sippe**—You could not take off gas, for example, and leave coal running, because market balances—

**CHAIR**—It is a very delicate issue, I understand.

**Mr Sippe**—It is a very delicate issue about that balance between competing—

**CHAIR**—But it would be too difficult to set up a trading scheme with everyone involved at this particular stage.

**Mr Sippe**—I guess what we are saying is we are not sure that a trading scheme is going to provide all the answers. The trading scheme is going to provide some of the answers, but not all.

**CHAIR**—Just before we finish, the committee will receive the documents presented by Western Australian government as an exhibit. There are papers by Dr Syd Shea, a paper by the Tree Trust on private sector afforestation, and the Western Australian government reports on salinity. There is also the salinity action plan—there are two of these. One is one section, ‘Salinity: our situation’, and two, ‘Western Australian’. Could I have someone move that they be taken as documents.

**Mr McDOUGALL**—Yes.

**CHAIR**—Graeme. Thank you.

**Dr LAWRENCE**—Seconded.

**CHAIR**—I am sorry we have run out of time. It is a big subject and we could have gone through a lot of others, but thank you very much for your evidence. I do not think the debate is finished; there will probably be a lot more evidence taken before this is all over.

**Proceedings suspended from 10.00 a.m. to 10.12 a.m.**

**AGOSTINI, Mr Michael David, General Manager, North West Shelf Interests, Woodside Energy Ltd, 1 Adelaide Terrace, Perth, Western Australia 6000**

**CHAIR**—We have received a submission from you and have authorised its publication. Do you propose any changes to that submission at this stage?

**Mr Agostini**—No, I do not propose any changes.

**CHAIR**—Would you like to make an opening statement?

**Mr Agostini**—I would, if I may, thanks. You are probably aware that Woodside is the largest producer of oil and gas in Australia, and that we have plans for some significant expansion. Most of the gas from our fields off the coast of north-west Australia is liquefied near Karratha, and exported to Japan as liquefied natural gas or LNG. It is probably fair to say that few people outside the industry recognise the significant financial contribution that this makes to our economy. Our export of LNG is worth around some \$2 billion a year, and this equates to three per cent of the value of Australia's exports. The North West Shelf project itself contributes 1.2 per cent of the country's GDP, which I think you will agree is significant.

The gratifying feature of this export is that LNG has greenhouse gas advantages over other fossil fuels. Although there are significant emissions associated with the production of LNG, these are more than offset by the global greenhouse gas benefits in its utilisation. Being a low carbon density fuel, LNG produces significantly less carbon dioxide per unit of energy when it is burnt, compared with oil or coal. Therefore in the absence of suitable renewable alternatives, there is a significant opportunity for global greenhouse gas abatement if the production of gas and oil energy can be increased to displace the use of more carbon intensive fossil fuels.

Woodside believes that it is very important for both the Australian economy and global greenhouse gas abatement that regulatory arrangements for emissions trading do not constrain opportunities for LNG production in Australia, and for its export and utilisation worldwide. In the case of Woodside's LNG exports, emissions in Australia in producing LNG are more than offset by the emission savings in Japan from utilising the LNG. Any emission trading regime must be capable of taking into account the global greenhouse benefits of this export.

Furthermore, emissions trading must not penalise the Australian production of LNG relative to LNG produced by competitors in non-Annex 1 countries. Woodside would be very concerned if a national emissions trading scheme were to be introduced in advance of an international scheme and, as a consequence, LNG production in Australia were to be penalised through needing to have and trade permits. This would make no sense in the context of the positive contribution that LNG production makes to the limitation of global

greenhouse gas emissions. It is Woodside's view that there would have to be some mechanism in the national scheme to gain credit for the greenhouse advantages of exported LNG.

Alternatively, emissions associated with LNG production for export could be exempt from national trading until international arrangements are in place to capture its credit for global greenhouse gas emissions reduction. If a national scheme were to be introduced in the absence of an international trading scheme, it would have to be applied solely to emissions from activities which supply the domestic market. When an international scheme is introduced that treats all countries equally, it would be reasonable to include emissions from activities to supply the export market.

This brings me to the question of timing for the introduction of emissions trading. I think it admirable that the Australian government is now beginning to consider arrangements for emissions trading. Designing an equitable scheme that will meet the objective of emissions limitation will require much debate and deliberation. This process in Australia will hopefully arm our negotiators with a well thought out position in discussion with other Annex 1 countries on international emission trading at future conferences of parties. However, we should be careful not to implement a national emissions trading scheme before it is shown to be necessary. In order to protect our international competitiveness, it should also be done in concert with international arrangements, as I have already mentioned. Once it is clear that national emission trading will be necessary, permits should be available for trading several years before enforcement date, in order to allow time for the market price of permits to settle down. I understand that if emissions trading is shown to be necessary, the first enforcement date will be sometime in the period 2008, 2012.

I would like now to outline some views that Woodside has on the design of an emission trading scheme. Firstly, we believe that it should be comprehensive in terms of gases and sources of emissions—from the outset. An emissions trading scheme should be comprehensive in applying to all greenhouse gases listed in Annex A of the Kyoto Protocol. The permits would be for emitting a certain quantity of carbon dioxide equivalents, rather than a specific greenhouse gas. Phasing in new sources and additional gases over time may well appear to be easier, but would lead to a changing playing field for individual companies, depending on the sector they are in, and the gases that they have an opportunity to control. I believe this would not be equitable or an efficient way of trying to achieve the desired outcome.

It is not unreasonable to expect participants of the scheme to be able to estimate the emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons or sulfur hexafluoride. The accuracy of estimates for each gas will be different for each participant, and you should not assume, for example, that estimating emissions of carbon dioxide will always be easier than estimating methane emissions. For some participants estimating methane may well be easier than estimating carbon dioxide.

Clearly, the permit trading scheme needs to be as comprehensive as possible at the outset if we are to avoid the risk of being unable to meet our national targets.

In terms of the level playing field, emissions trading should cover all sectors, such as energy, industrial processing, agriculture, land use change, and waste. I accept that large stationary sources will be easier to include than numerous mobile sources. The issue here is equity of economic impact in achieving greenhouse targets. I would encourage you to consider further the appropriate organisational level for the holding of permits in ensuring that all sectors are covered. In the upstream petroleum sector, this may be petroleum exploration and producing companies. For motor vehicles, this may be the petroleum retailers. For agriculture, this may be the government's agricultural department. The point is that permits should be held across all sectors by organisations that are able to exercise control through price signals or whatever other mechanisms are appropriate to the individual sources.

In line with the concepts of comprehensiveness and flexibility, Woodside is in favour of the inclusion of the ability to gain credits for projects which increase carbon sequestration. Likewise, a possibility for joint implementation should be retained in the design of an emission trading scheme. Woodside has a view on the initial allocation of permits, which is that the initial allocation as an international emission trading scheme must take into account each organisation's emission levels at the time of implementing the scheme, and should recognise greenhouse emission abatement effort since 1990.

We have included a suggested formula in our submission to the inquiry. In essence, the formula allocates the available cap to participants on a weighted basis that takes into account emission levels at the time of implementing the scheme, assuming that no abatement measures have been implemented since 1990. In this way, companies will receive permits for emissions they have already reduced since 1990. I must stress the importance of being able to gain recognition for greenhouse gas abatement measures which have been implemented prior to the emission trading scheme coming into effect. In the event of an emission trading scheme for which the initial issue of permits is based on emissions at the time of implementing the scheme, a company which has already reduced its emissions will receive a reduced number of permits. Had the investments associated with greenhouse gas abatement been delayed until the trading scheme commenced, the company would have been issued with a larger number of permits. The company thus finds itself in a disadvantaged position as a consequence of taking early responsible action to reduce greenhouse gas output.

Adding further to its difficulties will be its reduced ability to make further improvements. Its competitors, which declined to make early investments, not only enjoy a greater number of emission permits, but then find that their options in making emission reductions are much greater. The company making early investments will have already implemented its low-cost abatement measures and will be faced with the more expensive and difficult options of making further progress. The avoidance of this dilemma is not

only in the interests of individual companies, but also of government. Failure to address the problem of assurances now will deter companies from making greenhouse gas abatement investment. This will delay and potentially threaten the achievement of national greenhouse gas emission targets.

Once permits have been allocated, we believe that trading should as far as possible be governed by normal market mechanisms, with minimal regulator involvement. This will maximise the flexibility and certainty, while at the same time minimising transaction costs. It is recognised that some regulation may be required to prevent anti-competitive behaviour, and there would also need to be rules set for monitoring, reporting and verification. These aspects are covered in our submission.

I would like to thank you for this opportunity to have input to the government's deliberations on emission trading. An emission permit and trading scheme could have far-reaching implications for the economy and for financial viability of the hydrocarbon processing and production system in Australia. I think everyone recognises that setting up a fair scheme will not be easy, but it is clear that it is vital to get it right. I hope you will find Woodside's submission and my comments helpful. We very much want to continue to be involved in assisting and developing an approach to emission trading which is equitable.

**CHAIR**—Thank you, Mr Agostini. I congratulate you on that statement. I think there is a lot of very useful information there. Could I just flesh out a couple of points. It seemed—well, you were saying to me, anyway—that you are not opposed to the idea of developing an internal trading scheme, and it would be possible to set such a scheme up, as long as it was quarantined to the Australian sector, but you are wanting an exemption for any exporting at this particular stage, until an international trading scheme may develop. Is that the position you are proposing?

**Mr Agostini**—Yes. Essentially what I am saying is that there are two problems with the export sector. One is that those products which are exported and which are finished products in Australia and produce greenhouse gases in Australia, but the finished product is not consumed here, add to our greenhouse gas burden, and add nothing further to our economy. In the case of LNG, we are the only significant LNG producer in an Annex 1 country, so in addition to this we have the problem of competing against countries who do not have the cost burden of having to deal with such a scheme.

**CHAIR**—Yes, understood. I think the other point I got very clearly, too, and I think it has come from other witnesses, is that you would like to see the government, and particularly the Australian Greenhouse Office, I suppose, be very closely involved with Australian industry, and the state governments in particular, in developing any Australian position on this.

**Mr Agostini**—Sorry, I would like to see—

**CHAIR**—You would like to see the industry within Australia—and I suppose the committee cannot get too big—and state governments involved very closely with the Australian Greenhouse Office in developing policy.

**Mr Agostini**—Yes, we would.

**CHAIR**—On the area of allocation of permits, there have been submissions put before this committee, varying I suppose, but one of the areas I think the committee probably is looking very closely at—and others can speak for themselves—is that maybe a certain proportion of permits would be allocated, a certain proportion would be auctioned, and a certain proportion would be held back for new entrants into industry. Would you have any comment on that?

**Mr Agostini**—As we said in our submission, we do favour the allocation through the grandfathering arrangements as an appropriate mechanism, and whether there are any held back for new entrants is something I think requires a bit of finetuning. We see no rationale for auctioning. The allocation mechanism that we are suggesting is that the proportion of greenhouse gases put out by industry at the time that the scheme is implemented should represent the way they are allocated, adjusted on the assumption that companies that have made changes to their systems between 1990 and the start of the scheme are provided a theoretical emission volume that is associated with that avoided through that investment.

**CHAIR**—So the cut-off is 1990 as far as you are concerned, because that is the Kyoto Protocol.

**Mr Agostini**—Precisely, for investments that are made proactively to reduce emissions, but it is done, after making that adjustment, proportionately on a weighted basis within the cap. Now, it may be that the government would choose to withhold some of the cap—not the whole 108 per cent—for new entrants. That is a decision for government to make, but whatever it does allocate, whatever it does put out and does not withhold, I suggest, should be done on the grandfathering system rather than an auctioning system. I can see no rationale or justification for improving a system by auctioning.

**Mr KERR**—Accepting your point, could I ask a couple of threshold questions, just to clarify it? Reaching back to 1990 has some technical difficulties. I am sure you would appreciate them. Firstly, what do you do with a firm that was established in 1991? Would you regard them as a grandfathered firm? Secondly, what do you do with a firm that was in existence in 1990, but now has ceased to exist? What do you do with a firm that has transferred its investments and perhaps was a coal generator in 1990, went out of business and is now supplying power through natural gas?

**Mr Agostini**—The firm that did not exist in 1990 and existed in 1991 would receive permits because what I am saying is that they are allocated on the basis that if we

started this scheme in the year 2000, for instance, they would be allocated on the basis of output from the year 2000 but adjusted for investments made between 1990 and 2000. This firm that came into existence in 1991 would clearly get permits on the basis of its output in the year 2000—if that is when the other scheme started. So I do not see a problem for a firm that has come into existence in the 10-year interval in between.

With the firm that ceased to exist, again, if it did not exist at the time the scheme started it gets no allocation of permits. I do not really see a problem with that. The third point was a firm that transferred its investments—I believe you said from coal to gas? Is that it?

**Mr KERR**—Many companies in the last decade have been taken over or changed entirely what they were doing. They may have been a pastoral company in 1990 and now they are a steel maker. I really do not know, but this has been a decade of immense change.

**Mr Agostini**—I accept that.

**Mr KERR**—And whilst your company has probably had the same core business I expect there would be many companies which have substantially changed the nature of their business over that period of time, and their ownership structures, the corporate framework in which they operate and the like.

**Mr Agostini**—Addressing the issue of such a company, that company and its framework and its output of greenhouse gases in the year 2000—if that is the year the scheme starts—would be allocated its permits on the basis of its shape at that time. Whether there is any adjustment for proactive abatement investment in the intervening decade would be a question of whether it can demonstrate to whomever this needs to be demonstrated to—a greenhouse office or whomever—that these investments were made in fact for that purpose. If it was just a question of changing industries, it is unlikely it would be able to do that.

**Mr KERR**—Can I ask another threshold question? One of the points that troubles me in terms of the design issues is that you are saying that we should, in a sense, exclude the export related sector. The problem with that is, of course, that the Kyoto Protocol will attribute those emissions to Australia as a national entity. The design system that you are proposing excludes from measurement in the trading system a component that will be attributed to Australia. I am not attracted to that as a matter of principle because you could have the scheme operating very effectively notionally but still the nation could find itself, at the end of the day, in breach of the undertakings made at Kyoto.

Particularly with the point you made about economic advantage, it seems to me that with your industry in particular you are going to have a massive sectoral advantage, for the very points that you made. LNG is a product which in the main has very little

attached carbon compared to its competitors, excluding, say, the renewables and nuclear. Whilst it is possible hypothetically that Japan will actually meet its nuclear targets I am pretty sceptical, to be honest, and I think that there is going to be a very substantial sectoral advantage that products such as your own will have as companies seek to achieve compliance with the undertakings, most of them stricter than the ones Australia has undertaken. There are going to be huge market advantages flowing to the LNG sector.

As against that, there will be minor intersectoral disadvantages. The disadvantage you would have is that at the moment your product comes aboard with about two or three per cent emissions of CO<sub>2</sub> from source. That should not be a significant disadvantage, whereas with Gorgon, for example—who I am discussing issues with later this afternoon and I understand they have much higher levels of emissions from source—those emissions are going to be counted as part of Australia's overall emissions. Given that you are going to have these huge sectoral advantages isn't your industry going to be booming anyway?

**Mr Agostini**—Let me pick up firstly your point about the export exclusion and measurement issue. I was not suggesting we should not measure what output is derived from export. I think we need to measure it because clearly we have to account for, within the national cap, the total output in Australia. So we must measure it. The issue is really whether we have to hold permits for that section and therefore add a cost to a burden for putting out carbon dioxide equivalent, or carrying out abatement measures.

I am arguing that in a competitive sense Australia is significantly disadvantaged. It is the only Annex 1 country burdened with this problem. Of the 75 million tonnes of LNG traded internationally 7½ million tonnes or 10 per cent comes from Australia. With the exception of one million tonnes in Alaska, the other 90 per cent is all in non-Annex 1 countries, so we really are significantly disadvantaged competitively. If we seek to put the price of all these permits onto our product we will just lose market. There are plenty of other suppliers in non-Annex 1 countries where it mostly comes from.

But I am not suggesting we do not measure it. I realise there is a problem for the government in dealing with an exempt sector and getting total output to fit under its cap. There are a number of things which need to be explored here: one is that there is a potential for some regulatory approach as opposed to permits in that particular sector.

**Mr KERR**—But are they not going to have higher costs?

**Mr Agostini**—Yes—

**Mr KERR**—Isn't the argument—excuse me, I am not seeking to interrupt you to throw you off your course; I am just trying to clarify this.

**Mr Agostini**—Yes, they will have costs—of course there are costs—but what I am saying is that if the argument can be put or it can be determined that it is not going to

damage the competitive position in achieving a reduction—

**Mr KERR**—Hang on for a minute. Let us take another example, not Gorgon. Let us assume a hypothetical company B which can extract LNG but there is at least 200 per cent as much CO<sub>2</sub> attached to it as the LNG it pulls out of the ground. It says, ‘We could export all this. We’re not going to be subject to a cap. Don’t do anything about it that would expose us to competitive disadvantage’. You could not regulate it without exposing them to competitive disadvantage. The whole nature of this process is to cap CO<sub>2</sub> emissions.

**Mr Agostini**—Yes, I realise that, but the thing is that carbon dioxide that is emitted as a result of making LNG is not solely the result of the intrained carbon dioxide in the feed gas. Ten per cent of the gas that is put into an LNG plant is consumed as fuel in the process, so 90 per cent of the energy that goes in comes out as part of it. That 10 per cent that is consumed generates a lot of carbon dioxide. There are also methane emissions. The greenhouse gas emissions from LNG plant are not only associated with that intrained CO<sub>2</sub> in the feed gas to which you referred. To do anything about that is extremely expensive and I agree with you there. The other part of it is where the real opportunity lies for reducing greenhouse gas from LNG plant, particularly the methane emissions.

**Mr KERR**—But what I am seeking from you concerns this. Most people come to us and say—I think this represents almost a universal view—‘If we have to make reductions in CO<sub>2</sub>, market based mechanisms are most cost-effective.’ It enables the company to identify where it will act, how it will draw and what purchases it will make, and other credits. It will enable it to do all these sort of things itself as an independent commercial operator.

I appreciate the point you were making about the relative disadvantage on the export sector, but I am just wondering whether you are actually seriously proposing that we look at command and control mechanisms in this area to find a solution when most people are saying that is not the way to go. In other words, if at the end of the day we have to measure and control those emissions, isn’t a market based mechanism going to give you the best advantage and most opportunity to reduce your emissions, given that it will attach some disadvantage? I mean, given that the whole point of this is that it is going towards abatement of carbon, and that some disadvantage to some sectors will be inherent, isn’t the best way to maximise your self-interest to be able to take full advantage of a market based mechanism—and as soon as possible?

**Mr Agostini**—In principle, yes, but let me be clear: I am not suggesting a command and control system for LNG output. I was suggesting that there may be opportunities that could be found for reducing it while you are measuring it, at minimal cost. If you cannot find those then it should not be done at all.

**Mr KERR**—What do you do with somebody who comes forward with a proposal that, for example, does have very large amounts? It is unfair to talk about Gorgon, and they will be talking and they have their own case to bear, but let us assume one was—

**CHAIR**—Certainly under what we have committed ourselves at Kyoto it has a bearing.

**Mr KERR**—Yes, it has a bearing. Let us assume that we have a deposit of LNG that has very high associated CO<sub>2</sub>. You can take two possible positions. One is to say, ‘Look, accepting our responsibilities, this now is a proposal that is not economic’—because we require people to meet certain kinds of outcomes, either by a cap or by command and control mechanisms. Or you can say, ‘We exempt it.’ But if we exempt it why would we be talking about this. People are talking now about Gorgon having to reinject; why should they be subjected to that obligation?

**Mr Agostini**—They have a particularly high carbon dioxide content in the gas itself.

**Mr KERR**—But why should they, under your proposal—

**Mr Agostini**—I am not saying under my proposal that they should. What I am suggesting is that this dilemma creates a real competitive disadvantage for Australian producers of LNG. What we ought to be doing in Australia is seeking a mechanism in the international arena—when we go to the fourth conference of parties in Buenos Aires and those that follow—that recognises that it is absolutely counterproductive to be driving producers of LNG out of business or to slow down the business when in fact that business is producing positive benefits.

**Mr KERR**—I do not disagree with you at all.

**Mr Agostini**—And to have acceptance internationally of removal of those industries which are contributing in this way from Australia’s national cap.

**Mr KERR**—I do not disagree with you, but the hypothesis I am putting to you is that the other Annex 1 countries, which are now going to be under enormous pressure to reduce their emissions, will be making much harder decisions than we have to make in Australia because they have got much tougher caps and much higher projected emissions. They are going to have to shift their power sources. Japan has talked about shifting power sources to nuclear, closing down a whole range of presently coal fired operations. That will be a disadvantage to some of our coal producers, although they think they can market effectively into some other countries, and particularly China.

But that aside, isn’t it true that there is going to be such a huge growth in demand for LNG as a source of pure production, because it can rapidly supplant existing fuel

sources, that you are going to have a massive increase in demand—whatever small internal cost disadvantage within the LNG market—and that demand is going to be so great that Australian production will boom?

**Mr Agostini**—No. The market, we believe, is not going to expand in the way you describe. Firstly, the economic growth in the consuming countries is being affected by a number of factors and total energy consumption is not growing as quickly as it was in the past. Secondly, in converting to lower carbon output per unit of energy—what is called cogeneration—the single cycle use of gas is being implemented more and more; investment is going on in this. This reduces the amount of gas used per megawatt of electricity produced, so that is working in the opposite direction to the direction which you describe.

Yes, substitution of gas for coal is moving in the direction of increasing demand for LNG, but the move from simple cycle to cogeneration is in exactly the opposite direction in terms of gas volume required, and there would be a lot of movement. In fact there would be probably complete movement away from simple cycle to cogeneration around the world and in the countries that use LNG. So there will be growth, but I do not see it as being as massive as you describe it. Secondly, the competition that Australia faces across the world in LNG supply is huge. There are lot more potential projects on the horizon in the next decade than there are consumers for those projects. It is a fiercely competitive business.

**CHAIR**—Non-Annex 1 countries would have an advantage producing gas, particularly if you had to buy permits. That is what you are saying?

**Mr Agostini**—Absolutely, yes.

**Mr KERR**—What do you actually estimate that at, because it is quite interesting. Obviously there are two per cent emissions which you factor in at some level. You are saying you have got a cost of production, which you are utilising about 10 per cent to drive the production system which itself generates some greenhouse gases—presumably not 10 per cent, but some component of that is carbon, and others are methane and whatever. Is it possible for you to give some sense of what you say would be your market disadvantage compared to companies who did not have to attribute that cost into their production?

**Mr Agostini**—It depends entirely on what the cost of the permit for a tonne of CO<sub>2</sub> will be, but we put out something like from the existing plant in Karratha—and I do not have the exact number with me, but order of magnitude—we are talking about six million tonnes or so of CO<sub>2</sub> equivalent.

**CHAIR**—You will be grandfathered under your scheme so you can all do that for nothing. It is only new investment that you are talking about.

**Mr Agostini**—We are looking at going from 7½ million tonnes of LNG to 14 million tonnes of LNG in the near future.

**CHAIR**—That is a 50 per cent increase. I am trying to get what would be the marginal cost.

**Mr Agostini**—It depends on the cost of a permit, of course, and the market will determine that, so I do not have a number that I can give you, but it will be whatever the permit cost is by that number of tonnes. In the total context of things I think we are talking about, again from memory, about one per cent of Australia's total output of greenhouse gases coming from that plant. So it is a significant volume of gas and therefore a significant element of the total permits that will be issued, and therefore I expect a significant cost.

**Mr KERR**—I appreciate this very much. This is actually hard detail that I think any national government is going to have to look at. Moving beyond the theoretical I would like to actually be able to get over some of the numbers, and I appreciate you say it depends on the cost per unit of tradable permit. That of course would not be known until you establish a market because the value of it will depend on demand. I would be interested if you could have a crack at identifying what you think would be the actual cost, because if it is marginal it means less. If it is a lot it means we have to take more account of it.

The point you are making is not an insubstantial one, and I would be quite interested in teasing that out a little more. If you grandfather your existing production, obviously it is no disadvantage to you in an export related sense in your existing production. So we are talking about whether or not you would require some component of additional cost to cover off the cost of carbon emissions, which you would need to acquire to fit within the cap, and what sort of economic add-on that would be to your price in the marketplace, and what are your costs of production compared to other comparable international producers.

As I understand it, the scale of the basins here is so great that you have quite a significant marginal advantage in any case. I am just trying to get into my own mind the scale and consequence of what we are talking about, because nobody wants to damage Australia's opportunity to grow this industry, which seems to have tremendous opportunities to make a contribution internationally.

**Mr Agostini**—Let me try to help. These numbers of course are numbers that I could not necessarily substantiate as being absolutely correct, but give a feel for what it would be like. Firstly, we are talking about Australia with something like 100 TCF gas available for export in LNG. Today we are using a very small component or part of that. If the North West Shelf expansion went ahead, it would double today's output from Australia. If Gorgon went ahead together with the expansion, we would triple it. Then

there is the Northern Australian gas venture—it could quadruplicate it. So we are talking about very large volumes, but today's output is quite small in terms of what could eventuate if we were able to capture the market competitively. Unless we are competitive, we could not, because there are, as I said before, more producers than there are consumers, and I see that as being the position for quite some time to come.

If we look at the cost of what people are prepared to pay for abatement of CO<sub>2</sub> output or CO<sub>2</sub> equivalent output of today in industry, and we assume that there is something like a shortage of permits and therefore people in trading permits are going to in fact be paying the abatement costs, because that is what will determine the tradable value of a permit, I think we are talking today at the lowest cost options in the order of \$50 to \$100 per tonne of CO<sub>2</sub> per year. That is \$50 to \$100 for a tonne, and we are talking about millions of tonnes of output each year. There are quite large sums involved.

**Mr KERR**—I do not want to take it through now, but if it is possible for you to give the committee some further back of the envelope estimates of the cost, certainly it would help me in trying to understand the upsides and downsides of the points you are making.

**Mr Agostini**—To go any further on this, I would prefer to take it on notice.

**Mr KERR**—That is what I mean, yes.

**Mr McDOUGALL**—Do you believe that a permit, when issued, is a right to emit, or is it a property right?

**Mr Agostini**—I am not sure what distinction you are getting at, but the permit is a speed limit, signalling a speed limit in what your total output needs to remain within. It is a mechanism for causing the national speed limit to be held down at the least cost to the nation by always seeking out the lowest abatement cost element for reduction in output.

**CHAIR**—Once you start to trade it is a property right, isn't it?

**Mr Agostini**—The permit has a value obviously. If that is the point you are making, I accept that. It has a value.

**Mr KERR**—Won't you also get a shift in investment in Australia to greater use? It has happened, I understand, in Western Australia already. Most companies are now drawing directly on LNG because of its relative cost advantage compared to black coal fired generating capacity from the grid. If people are having to pay the sunk cost of carbon from coal generated power, won't you get a surge in national demand as well as potentially a surge in international demand?

**Mr Agostini**—Let me draw a distinction between LNG and domestic gas. We do

not in fact consume LNG in Australia. We consume pipeline gas. The gas that comes into the plant in Karratha goes through either the LNG plant or the domestic gas plant. In the case of the LNG plant, it is liquefied so that it can be shipped. Domestic gas is treated quite differently. It is transported through pipelines across Australia and there is no need to liquefy it to do that. The proposition I am putting here today is not suggesting that part of the business which emits greenhouse gases as a consequence of supplying gas into the domestic market should be exempt. I am not suggesting that.

**Mr KERR**—No, I understand that, in fact. What I am trying to do is to see the swings and roundabouts here, and try and put this in a larger picture, because you are seeking to exclude from measurement a component. I understand the argument, and I am not trying to diminish it, but the roundabout to the swing is that your production will have an expanding share of the national market, presumably. In other words, you may be marginally cost disadvantaged because of a trading system in your internationally related exports, but your overall profitability, your opportunity for market penetration domestically, is going to increase, because the cost of the attributed carbon in your domestic sales is going to be significantly less than your competitors. In your system you get all the bang, all the gain, and none of the pain.

**Mr Agostini**—In the domestic market, while there will be, again as I described in the Japanese or the foreign markets, some substitution for high carbon density fuels by low carbon density fuels to the advantage of gas, we will also see a shift to cogeneration. So there will be a countervailing force to that growth.

Secondly, there will be a lot of gas on gas competition. We are competing against not just coal or oil, but other gas producers, and the LNG producer, the only one at this point, is the North West Shelf venture. It is competing in the domestic market against a lot of other gas producers who have no LNG output. They are just purely and simply domestic gas producers. If you are suggesting that we should carry the burden of a cost disadvantage in LNG through into the domestic market output and compete against gas producers who do not have that economic cost, it is in fact inequitable to the company that is producing LNG.

**Mr McDOUGALL**—Can I just go on to the international side, because I was interested in your comment when you said that an international trading scheme needs to be equal with all countries before it is introduced, and your comment that because of the fact that Australia is the largest single Annex 1 country in the production cycle: if we ended up with an ability through both a domestic and an international scheme for a company to trade within itself, particularly where you have got a company who had a major stake in the Annex 1 country production and also a financial stake in some of the non-Annex 1 countries' production as LNG becomes a bigger component of the energy world, how do you separate the benefits to the individual country targets, particularly those in Annex 1 countries that have been set by the protocol?

**Mr Agostini**—I am not sure I fully understand what you are getting at. Let me try and see if I am answering your question. A company that is operating in Australia producing LNG is competing against companies in countries who are not dealing with a trading permit problem or with a cap on their greenhouse gas output. If this company in Australia were to invest-and I think you are saying in a non-Annex 1 country-it certainly could enjoy the advantages of not having to deal with its greenhouse gas output in that country. So Australian companies, producing LNG here, could divert their investments into producing LNG in non-Annex 1 countries and escape from the problem I am describing. That would not solve Australia's problems. What would happen in Australia is we would stop producing LNG here.

**Mr McDOUGALL**—You have said back earlier that you do not want an international trading scheme until all countries are on board. Do you mean there all non-Annex 1 countries as well as Annex 1 countries?

**Mr Agostini**—I am suggesting that, for this to be equitable and for the carbon dioxide equivalent to produce from LNG manufacturing to be handled exactly as the rest of this system and to be equitable and also not damaging competitively, we would need to have those countries who currently produce LNG, and do in the future, also included under the same system as Annex 1 countries, which in effect means a worldwide system.

**CHAIR**—So in relation to the green development mechanism, which encourages developed countries to put technology into underdeveloped countries and get credits for that to reduce their emissions, you would see that as being vital in any trading scheme internationally?

**Mr Agostini**—That would help in that it may be less expensive to meet your requirements under a cap by investing in a lower cost abatement in another country than the opportunities available in Australia. That would be more helpful than purely a domestic trading scheme, but it would not remove the cost disadvantage unless you had, in fact, the same obligations to meet greenhouse gas targets and therefore the consequential cost burden on the industry in those countries against which we are competing.

**Mr McDOUGALL**—What you are saying is that you want a domestic trading scheme to measure yours but grandfather your permits until an international trading scheme comes in which is inclusive of these developing countries. From what I am getting in evidence that could be so far down the track it will be past 2012 before that could possibly happen.

**Mr Agostini**—I am saying, firstly, that it is the export component of our business. It is not the total business I am referring you to here. Secondly, we in Australia should be attempting to get the international trading regimes or international obligations altered to either bring those countries in under the obligation umbrella or get international acceptance of the exclusion of export of LNG, which is after all contributing to the

reduction in global greenhouse load, and it is illogical to be damaging the production of LNG in Australia when its production and consumption in Japan, or the countries to which we export, is reducing the international load of CO<sub>2</sub> equivalent.

**Mr McDOUGALL**—You made mention that you believe that trading in permits—and I gather from both either domestically or internationally—should be a very free and open market. Taking that on board, what would your comment be if, let us say, environment groups were to come into the marketplace and buy up permits and lock them away? Do you think that should be as part of an open free market?

**Mr Agostini**—I mentioned in the submission, and I think it was in the written submission, that there would need to be some mechanism for dealing with anti-competitive behaviour. That anti-competitive behaviour could be a green lobby, or it could be in fact the coal industry. It could be anyone locking up permits. If the locking up of permits and removing them from the marketplace began to occur in a way that was actually destroying Australia's competitiveness by withdrawing carbon at a faster rate than was necessary for meeting national cap, then I think that is undesirable, and therefore there needs to be a mechanism to deal with that and prevent it.

**Dr LAWRENCE**—You have indicated in your report, on the other hand, that you are in favour of banking and borrowing, so that seems to cut across the observation you just made. Perhaps you can pick that up in answering a couple of other very brief questions. Whereabouts in the chain do you think the permits should be allocated? Obviously it gets more and more complex the closer it gets to end use, but we want to pick up as many possible sources of carbon as is sensible to do.

The second question is this. You also indicate in your submission that you advocate some time limit to these permits—you see them not as a sort of permanent permit, but rather see that they should be made available, time limited. The alternative to that is they have a decreasing value and, as you say, the speed limit—to use your analogy—gets lower and lower and each permit is worth less in that sense. Could you comment a little on those questions, please?

**Mr Agostini**—In relation to the banking and borrowing thing I guess on the surface it could be seen as being incompatible with what I just said. While I do not have a prescription for how you deal with the withdrawal of permits from the trading system at a rate faster than is necessary to fit it within the cap, I am saying that a mechanism needs to be found to do that because it is nationally not desirable. I do not have a prescription as to what that is. It needs to be searched for.

Where in the chain do we permit? I touched on that a while ago. It needs to be low enough down the chain so that the population of traders is significant and large, and therefore there is an active trading regime going on. But if you go too far down the chain, to the end user, you end up with real measurement and verification difficulties. The idea

of doing it to the petrol pump to me seems impossible in a practical sense. It is suggested that perhaps the petroleum retailer may have to do it, and then to go to the next level down it would have to become a price signal.

So there is a question of practicality and where in the chain you go in each case. It is impossible to deal animal by animal on a farm, I am sure, but it may be you deal with the feed producers in that the feed they produce is less prone to methane production.

**CHAIR**—My favourite position is with the manufacturer of the vehicle.

**Mr Agostini**—It could be the manufacturer of the vehicle as well as it could be the petroleum exporter, but there you probably are dealing with a price signal again, rather than a permit, which is in itself a little bit less efficient. I think it is a case by case thing but on the principle of going as far down as you can without running into the impracticality of verification and measurement.

**Dr LAWRENCE**—And the time limited permits question?

**Mr Agostini**—As to the time limit permit question, there is an issue with the system resulting in Australia meeting its international obligations of 108 per cent in the 2008 and year 2012 window. If the permits are all allocated at the beginning—or perhaps some are withheld for growth—there is going to need to be a monitoring and a determination of whether the trend is getting us there or not getting us there. It may well be necessary to start withdrawing a number of permits to trigger off abatement investments, wherever the least cost basis for those things. What we are suggesting there is one mechanism that permits have a time limit on them and that they expire, but they do not expire all together: there is a trickle of expiration so that every few months a small—very small—slice of the permits expire, and they are reissued to the holder at 100 per cent, 95 per cent or 98 per cent.

**Dr LAWRENCE**—Some discount, though.

**Mr Agostini**—Whatever is determined to be necessary for the slow removal to start triggering off a cycle of investment in abatement.

**Mr KERR**—Can I just toss one idea to you? You have argued that initial allocation should be free, and I think that has been the predominant thrust of submissions to us.

**CHAIR**—Naturally enough.

**Mr KERR**—Naturally enough. But you have raised this question of how to deal with export related industries. An alternative which has crossed my mind—and it has not been put forward by anybody, so I will just test it with you—is that you should set the

initial cost at a very low rate, not free, but at a low rate sufficient to enable you to rebate all exporters for whatever they pay in relation to their export products, so that you effectively zero rate export products. You do not take them out of the trading system, but you enable a rebate system, and you make them buy the permits to the extent that they can take advantage of the market to minimise their costs, et cetera. Obviously it is in their straight economic advantage to do that. But you have either 100 per cent rebate or a 60 per cent rebate—maybe a lesser rebate than 100 per cent—to put the pressure on the economic side, but essentially to deal with the issue that you have raised.

I do not know what the cost of the permit would be in relation to the export exposed sectors if you were to try and do this, not as a revenue raising exercise, but to simply mean that government is not meeting this as an additional expenditure item—having to deal with it. Would you have any comment on that sort of proposal?

**Mr Agostini**—Let me say firstly that I would like to be able to come back to you after giving it some thought. It is not something I have given any thought to before, and therefore I will take it on notice and come back with some further thoughts on it. My initial thoughts are that in relation to the allocating of permits with some tax or some cost attached to them in order to be able to create a rebate, in the end if it is cost neutral to the export component you are going through a more complex mechanism to get to the same place in the end, where the producer of the CO<sub>2</sub> equivalent for the export component, has ended up cost neutral on that component, has no attached cost, so it remains competitive internationally.

You have reached the same point but in a more complex manner and have asked industry around the country to pay a cost for doing that rather than just exempting it. I am not sure why that would be more advantageous, but I would prefer to just take that on notice and come back with my thoughts on that.

**CHAIR**—Any other questions? Thank you, Mr Agostini. It has been very helpful.

**Mr Agostini**—Thank you.

[11.05 a.m.]

**BARTON, Associate Professor Allan Francis Murray, Associate, Australian Cooperative Research Centre for Renewable Energy, Institute for Science and Technology Policy, Murdoch University, South Street, Murdoch, Western Australia 6150**

**POULIQUEN-YOUNG, Dr Odile, Research Officer, Institute for Science and Technology Policy, Murdoch University, South Street, Murdoch, Western Australia 6150**

**SONNEBORN, Ms Carrie Louise, Policy Analyst, Australian Cooperative Research Centre for Renewable Energy, Murdoch University, South Street, Murdoch, Western Australia 6150**

**CHAIR**—We have received a submission from you, but I understand that you would like to replace that with an expanded submission.

**Ms Sonneborn**—Yes.

**CHAIR**—There being no objection, that is so ordered. Would you like to make a brief opening statement.

**Ms Sonneborn**—Yes, I will provide the opening statement. Our full name is the Australian Cooperative Research Centre for Renewable energy and Related Greenhouse Gas Abatement Technologies. Its mission is to develop those industries by cooperative actions between universities, business and electricity utilities. Obviously these are the businesses that are going to be crucial in providing the sort of greenhouse gas abatement opportunities to the other industries that are going to be involved with having to reduce their emissions.

We are particularly interested, of course, in emissions trading from the perspective of how any scheme that might be adopted is going to affect renewable energy and energy efficient industries, and how it can promote the opportunities for those industries, and our presentation will focus on the sort of programs, actions and linkages that will benefit the Australian renewable energy and energy efficient industries, as well as the industries that need to reduce their emissions. Of course you are aware that if the Kyoto Protocol is ratified, Australia will have to allow no more than an eight per cent rise in its greenhouse gas emissions over 1990 levels by 2008, 2012, and the mechanisms that are going to be needed by Australian companies are of course the issue at hand with an emissions trading regime.

In the PM's statement 'Safeguarding the future' there were quite a few activities that were aimed at reducing greenhouse gas emissions, and the national greenhouse strategy will no doubt contain more of those. However, at the moment there is no obvious way to link these actions quantitatively or to allocate the resources between public and private investment options. So getting to the matter at hand, that is, emissions trading, it is ACRE's view that emissions trading could indeed provide such a framework, and could help create a market that would allow all means of reducing emissions to compete. That is perhaps the nub of what I am going to say: that all means of reducing greenhouse gas emissions should be allowed to take part in an emissions trading scheme. The challenge I think will be to devise a scheme that allows that to happen.

The advantages to Australia would be far beyond just greenhouse gas savings. There is also a great potential for jobs in exports that reside in the industries that are going to help with greenhouse gas emissions. There is already the likelihood that emissions will have to be reduced beyond what the Kyoto Protocol is calling for, and we are already seeing quite a growth in demand for renewable energy. For example, in 1996-97, in one year alone, there was a 25 per cent increase in wind energy capacity installed the world over. We now have a total of 7.6 gigawatts of wind energy alone, and the main buyers were Germany, Denmark and India; Annex 1 countries are already getting into renewable energy.

I would also like to mention that carbon sinks are of course a valid way of containing greenhouse gases, more or less permanently sequestering them, particularly if they are used as part of a biomass electricity production cycle, or if they are used to offset electricity use, and the trees are then replanted. When I say 'offset electricity use', I am talking about things like domestic home heating—wood burning. Wood currently provides about 20 or 30 per cent of Australians' domestic home heating. So trees can be part of a renewable energy resource with zero net emissions if the trees are replanted properly. Both Professor Barton and Dr Pouliquen-Young will speak a bit more about that.

A possible model of which you are no doubt already aware is the SO<sub>2</sub> control program in the US. They take a cap in trade approach to allocating permits, and to releasing a specified number of tons of the pollutants, and at the moment in phase 1 of that program, only the largest power plants are involved, but phase 2, which begins in the year 2000, is going to involve all power stations, and a limited number of permits consistent with the 50 per cent reduction in the total emissions are what is issued—the cap in trade system.

Market institutions have sprung up to facilitate trading in the US. The Chicago Board of Trade is involved with trading SO<sub>2</sub> allowances now, and by all reports it has been a very successful system. There has been more than a 30 per cent reduction in SO<sub>2</sub> emissions. At least one utility in the US has actually volunteered to retire its excess credits by donating them to—as we mentioned—an environment organisation called the Environmental Resources Trust, which is a non-profit organisation. So there is also scope

for eventually getting emissions that are no longer needed, apparently, out of the system, and that power station was also able to apply for a federal tax deduction by virtue of making a donation.

So we would promote an ETS—an emissions trading scheme—with a cap in trade approach, and we would also be very supportive of a pilot scheme being adopted as soon as possible in Australia, perhaps after the model of the Canadian government, which recently, as in just last month, have set up what they are calling a greenhouse gas emission reduction trading pilot, or GERT, which will help their industries get practical experience, even without any of it being an official scheme at the moment. We would say that we should be getting that sort of experience in Australia as soon as possible.

**CHAIR**—That is a national scheme in Canada, is it?

**Ms Sonneborn**—That is a national scheme in Canada, with a limited number of participants. There is voluntary participation in the pilot. I can get you more information on that if you are interested.

**CHAIR**—I would be interested, yes.

**Ms Sonneborn**—To keep any ETS pilot stage simple, we would advise that it takes a sector by sector approach, and focuses initially on the electricity supply industry, and focuses initially on CO<sub>2</sub>, with the intention of bringing in the other greenhouse gases as they become quantifiable. The reason we would promote the electricity industry is because it is a key one for developing renewable energy and energy efficiency. It is also one that does produce a substantial proportion of CO<sub>2</sub>. It is a stationary, centralised source of emissions, administered by a limited number of corporations. It is relatively easy to quantify, monitor and document their emissions, so they are perfect for a pilot. Also it mimics well the SO<sub>2</sub> emissions trading scheme which involved electricity production facilities in the US.

The industry is already undergoing major commercial restructuring, so they are used to being in flux and also looking at new commercial ways of operating, and they have recently established the National Electricity Market Management Co., or NEMMCO, a body which could be well placed to monitor an ETS pilot. I think another strong reason for making the electricity industry the focus of a pilot is that they are already scrutinising and acting on their greenhouse gas emissions via green power schemes and via the federal two per cent renewables mandate. So they are already in the thick of thinking about these things, and of course our interest is that they were also crucial in kick-starting, if you like, the renewable energy industry in Australia, which will be essential for Australia to take advantage of the international opportunities. To get that industry viable and growing and strong in Australia will be important for creating a niche for Australia in the world renewable energy market.

We would also like to see that there are links, and any sort of ETS is constructed so that it complements those other sort of policy measures, like two per cent renewables, and market measures, such as green power schemes and the commercialisation of the electricity industry. They should be compatible with all of the policy measures. One of the stated intents of the two per cent renewables target is promoting the Australian renewable energy industry, so an emissions trading scheme should help fulfil that aspect of the two per cent renewables target as well.

Similar to our previous presenter, we would also like to see that the export of small-scale system to Third World villages could in some way perhaps be considered to be part of the two per cent renewables target, and of course any CO<sub>2</sub> credits that are created via the two per cent target and that are traded within states become part of an ETS and therefore part of any international ETS that we eventually trade up into. So we would like to think that there are opportunities for international export of renewable energy in some way feeding back into our domestic target. I am not exactly sure how we engineer that, but we think it is possible.

Green power of course is also a means for utilities to reduce their emissions and create CO<sub>2</sub> credits. There have already been some concerns that there are clashes between green power and the two per cent target, green power being the market driven initiative that was already happening, that utilities were already working on. There are 12 Australian electricity retailers that are offering green power. Do you know what I mean by green power?

**Mr McDOUGALL**—Yes.

**Ms Sonneborn**—And there were concerns that the two per cent target would negate the green power initiatives consumers.

**Mr KERR**—Are you aware of the take-up rate of green power?

**Ms Sonneborn**—I know it is about one to two per cent on average. It varies.

**Mr KERR**—It is much less than—

**Ms Sonneborn**—Yes, it is less than what they had anticipated in their market research.

**Mr KERR**—Regrettably. I am a great advocate of it but—

**CHAIR**—It comes down to the holy dollar.

**Ms Sonneborn**—Yes.

**Mr KERR**—Maybe it has not been marketed well, Ian.

**Ms Sonneborn**—I think that is a factor, and the two per cent renewables target may help them to market green power better, if they can claim green power towards the two per cent. Anyway, my main point was that any ETS should integrate green power—two per cent renewables—and other activities, if we look at energy efficiency, which I will do in a moment. There is an argument that there is market failure in energy efficiency. That needs to be addressed perhaps through other schemes, through other sorts of programs.

In the electricity sector there are three ways to reduce greenhouse gases, and I will give you a little summary sheet there which you might want to refer to. These are: generate electricity from renewable sources; displace electricity, that is, increase energy efficiency; or use technologies which provide direct heat, like solar hot water, gas for heating and cooking, and sequestering carbon. I have already mentioned that in some instances renewable energy can provide multiple benefits, such as a biomass scheme where you are sequestering some carbon. You have got an energy crop that you are producing. Groundwater salinity can be controlled, and so on, and Professor Barton will give us a specific example of that.

There are good arguments that credits could be created through energy efficiency, and this would have to be at the level of manufacturers in efficient technologies—for example, an energy efficient fridge. I will give an example. If it saves 400 kilowatt hours per year over a 15-year life, that could be estimated to save six tonnes of CO<sub>2</sub> in its lifetime. If CO<sub>2</sub> emissions were worth \$9 a tonne, which is in the ballpark of what it is being valued at, then that would be equal to \$54. That particular fridge has saved \$54 worth of CO<sub>2</sub>, and if that could somehow be integrated into an incentive for manufacturers or a credit for manufacturers of this energy efficient fridge, to have something that they can sell on the market, according to the number of fridges that they produce, that could be one way of providing incentives at a lower level—and we do not want to go too low in the market—to the manufacturers of energy efficient appliances.

Of course there are different issues associated with monitoring and measuring the CO<sub>2</sub> equivalent of greenhouse gas savings that we generate, and with respect to energy efficiency, the real question would be how do we make the inclusion of energy efficiency administratively efficient and valid in terms of CO<sub>2</sub>. There are probably good arguments that the participation would have to be limited to appliance categories that have a five-star energy labelling scheme, a minimum energy performance standard in place for their product, so that not just any manufacturer could claim their product is energy efficient. They must go against some benchmark.

With tree planting or reducing land clearing, it is often stated that there is methodological uncertainty, and also the activity is very dispersed amongst many farmers and land-holders, so it might be advisable to issue permits to an aggregate grouping, such

as state governments, and it becomes their responsibility to estimate the net sinks versus emissions of their land that they oversee. I think I have already said that energy efficiency can be very effective, if we look at things like the SEDA energy smart companies program, where there has unfortunately been a fairly low uptake by companies, which I think indicates that market failure that needs addressing by complementary programs. But we do see that they get a very high internal rate of return on energy efficiency. There are other problems such as that it is low priority, it is not their core business, so they do not attend to it.

But I think it is interesting to note that a few years ago, in about 1994, a consortium of United States electricity utilities actually pooled about \$30 million and ran a competition, along with the department of energy, called the golden carrot competition to give a prize to the manufacturer of the most energy efficient refrigerator, not to just produce the design, but to also market and get it out there in people's homes. These utilities put that money there not because they thought it was a nice idea, but because they recognised that they would save money by delaying the need for costly new power plants if their customers had access to energy efficient appliances. So there are perhaps ways that the government could be working to correct energy efficiency low uptake.

Of course with renewable energy the CO<sub>2</sub> savings are calculated fairly easily—that is simply relative to the fossil fuel electricity that they are replacing, and with appliances that directly replace electricity such as solar hot water. We could use an approach similar to the energy efficient appliances, just to estimate the CO<sub>2</sub> savings over that product's lifetime, and taking into account things like climate and whether natural gas is available in the area and so on.

I would just like to close my introduction by mentioning that it is often suggested that with tree planting for sequestration and sink creation, if it is taken up, renewable energy will be put on the backburner. I think that is a fallacy and that what really should be happening is that all options for reducing greenhouse gases need to be pursued equally and in parallel in order for Australia to be effective in its greenhouse gas reduction efforts and also to develop industries for export into a global market. I hope that any ETS keeps that firmly in mind and does not pursue only one approach.

Having said all of that, I will introduce Dr Odile Pouliquen-Young who will speak about sequestration.

**Dr Pouliquen-Young**—My research is on climate change impacts, not climate change mitigation. From that point of view I was interested in the last of your references, which is the impact of emission tradings on the environment, and I would like to talk about it as it relates to tree planting. I can see three issues related to the impact of emissions trading by tree planting. The first is tree planting as a sink, the second is about trees in general as a carbon sequestration mechanism, and the third is the climate change impact on them.

In my view the emission trading mechanism regulations are addressing for the moment the development of carbon sinks, but in my view it should also be about protection of sequestered carbon. I agree with the background paper where the ACF mentioned that tree planting should concentrate on areas which have already been cleared; and one aspect would be to protect trees that are already there, and the second aspect is that there would be multiple benefits as they are already being used now for salinity, wind erosion, water erosion control, improving landscape, amenity values and providing shelter and corridors for the fauna to move. I think that such areas should be the focus of any development of emission trading regulation through tree planting.

I also think that there should be a system by which carbon sequestration is also a sort of tradable commodity. For the moment unmanaged forest and other vegetation are probably not acting as a great carbon sink, but they are an enormous carbon sequestration pool. Some examples could be the old-growth forest, over which there are all the programs, and other examples could be what they call woody weeds in the pastoral regions and remnant vegetation in the agricultural region. I think there could be some focus directed towards trying to protect them as part of a carbon sequestration issue.

My last issue is climate change impacts. It seems to me that tree planting is seen as a panacea for everything and we should plant trees anywhere we can. Tree planting is a very long-term approach: you plant a tree, you wait; it is not going to take in carbon very quickly, but as it grows it will take more and more carbon. The problem with that is that it is also extremely sensitive to the long-term impact of climate change per se, which is mainly global temperature increases and changes in the rainfall.

In the Northern Hemisphere there have been multiple studies showing that tree species are able to track favourable climates. In the Northern Hemisphere it was between 10s and sometimes over several thousand kilometres. The problem here is that in Australia we have got a highly modified landscape and the speed at which the temperatures are predicted to increase are extremely rapid, so it is unlikely that the trees, or any major vegetation, would be able to track more favourable climates and this will impact mostly on native forest trees.

The plantation trees will also be sensitive, but it will be much easier to move them 20 or 30 years later as opposed to cutting them down, and then you can move them to the new areas which seem more likely to be favourable. My own opinion is that there should be some strict monitoring of tree planting, not only as a CO<sub>2</sub> sink to see if they are growing properly, but also to see that climate change is not going to impact on these plantations—so a very long-term monitoring system. For the moment, and since all the research money is going into mitigation, I think there should be a little bit at least sent into climate change impact research.

**Ms Sonneborn**—Dr Barton is going to give an example of how a renewable energy resource can be a closed loop, or how a biomass resource can be a closed loop in

terms of net emissions.

**Prof. Barton**—Yes, I am referring to attachment B in the submission. It is clear that for the foreseeable future we are going to be converting fossil carbon into carbon dioxide and although it may be possible in the future to permanently lock up this carbon in some method using chemical or physical methods—and I am a chemist, not a biologist, so I can see some advantage in doing that—currently tree planting seems to be the only practical method of reversing that trend.

The storage time for the carbon in trees is variable depending on whether you are talking about it as a renewable energy source, a short rotation crop, or at the other extreme, as a long-term forest, so any trading regulations have to accommodate this variability. The other main point that I want to make is that there is the opportunity for significant benefits to the community economically and in other aspects of environmental issues associated with tree planting and the trading of carbon credits for the purpose of promoting tree planting.

One of the issues is that when the international trading becomes established we do not want a situation where the Australian structure has encouraged movement of activities offshore. In other words, once they can be traded internationally we do not want a situation where carbon dioxide producers in Australia can plant trees more economically overseas. In fact it should be the reverse, and Australia's energy exporting industries should be able to offer overseas customers carbon credits associated with the sequestering of carbon in Australian plantations.

In particular, in terms of the additional benefits both in Western Australia and in New South Wales and Victoria, there are many situations where other environmental problems require the planting of deep-rooted perennials, some form of tree. In many of these situations the climate and/or soil is not appropriate for a timber crop, so you are looking for some other commercial incentive for the tree planting. Carbon dioxide control is one incentive, and we should be looking for additional ones. Again, the trading structure should be sufficiently flexible so that it provides this form of encouragement built into other economic incentives. Salinity control is one environmental one, and there are many alternative tree crop products which have still not been exploited in Australia in terms of the pharmaceutical and industrial biomass produced chemicals.

One particular case study which I have been involved in for a long time here, and I use as an illustration, is that of the eucalyptus oil mallee. Mallees, as you know, have a large root, a lignotuber, and the above-ground crop can be harvested indefinitely from that lignotuber—indefinitely in the sense that experience from Victoria and New South Wales shows that what might be called old-growth mallees can actually be harvested for at least 100 years without any diminishment of vigour.

The lignotuber or mallee root provides an opportunity for long-term carbon

sequestration mechanism. The above-ground material can produce not only a leaf oil, which is a substitute for a petroleum solvent, but also can be used at the same time as a biomass energy crop, a short rotation carbon cycle. In addition, of course, there is the factor I have already mentioned, the environmental ground water salinity control mechanism. The point I want to emphasise is that in the balance between renewable energy, the control of carbon dioxide producing fossil fuel structures, and tree planting for these purposes, we have to keep a balance, with each part addressed by the trading mechanism so as to provide the maximum total benefit for Australia, not just to meet the carbon dioxide obligations.

**Dr LAWRENCE**—I am very conscious of the fact that you mentioned at the outset your concern that all means of reducing greenhouse gas emissions should be in the system, so that they can compete with one other. That is particularly important for renewable sources and the sort of thing that Professor Barton was just talking about. Have you given much thought—you hinted at it in various ways in your presentations—about how that might best be done? I know that SEDA in New South Wales have put forward a few ideas, but you have probably independently developed some of your own.

**Ms Sonneborn**—If you look at my little diagram, what I am trying to show there is, in the pilot at least, that we could imagine that there should be ways for the three main mechanisms for sequestering carbon or reducing carbon to trade into that pilot scheme—that is energy efficiency, renewable energy and biomass emissions. I gave a little example of how one might calculate the value of energy saved by an energy efficient appliance. One can do the same with biomass emissions. I think for a pilot scheme it would possibly be best to start with plantations on a case by case basis, so that you can actually say, ‘Okay, this type of tree on so many hectares of land’ and ‘They’re this old and we know how much carbon they’re sequestering or able to sequester.’

With renewable energy it is pretty easy to calculate for a particular installation, once you know the parameters of an installation, what its output and what its electricity production ability are going to be. In that way you then value input into what value you are giving your CO<sub>2</sub> emissions per tonne in a pilot. I am still talking in a pilot sense. Are you asking me who should be allocated emissions?

**Dr LAWRENCE**—That is part of the question, isn’t it, because a lot of the renewable sources are either free of almost any CO<sub>2</sub> emissions.

**Ms Sonneborn**—They are selling the service of reductions.

**Dr LAWRENCE**—In the marketplace, one way of looking at them is that companies who will have a very considerable problem with meeting targets will then have to turn to alternative technologies. That is one mechanism.

**Ms Sonneborn**—Yes.

**Dr LAWRENCE**—The other is to provide some capacity for those owners of the alternative technology to have part of the CO<sub>2</sub> permit applied to them which they can then, in a sense, translate into a technology which allows them the benefit of a cost advantage initially, because the problem is the price, of course, with renewables.

**Ms Sonneborn**—Yes. On the one hand there are those who own the permits to emit, like for example the utilities, and then there are the service providers who do not own the permits. They are the ones that are selling a service.

**CHAIR**—On that line, we are talking about giving permits to emit, but when we look at the clean producers of energy, like hydro, solar, wind—I cannot quite put nuclear in those areas—why don't we give them credits or even double credits?

**Ms Sonneborn**—They could have credits that could be bought. I would like to just mention one of the things I am currently developing and working on. ACRE is going to be putting together a forum of renewable energy policy heads around the country on emissions trading, and in the next month or two we are going to be jointly pooling our thoughts on this and producing a major discussion paper on how renewable energy and energy efficiency can best be integrated into ETS. I do feel that anything I say is preliminary in that regard, but certainly a credit scheme. They are issued with credits as opposed to-

**Mr KERR**—Credits for what?

**Ms Sonneborn**—Credits that are then—

**CHAIR**—For not emitting carbon dioxide.

**Mr KERR**—Yes, but how do you value them?

**CHAIR**—On a carbon unit.

**Mr KERR**—That would just be giving everyone in renewables a cash—

**CHAIR**—It is, but if you are going to reduce—

**Mr KERR**—Why not do it directly off budget rather than—

**CHAIR**—I think because we want to get into a trading scheme.

**Mr KERR**—The only way they can cash it in is to sell it to somebody who is going to punch more carbon out.

**CHAIR**—That is not my thinking actually.

**Mr KERR**—Sorry.

**CHAIR**—My thinking goes the other way. My thinking goes to the reason that the dollar drives the world, particularly the American dollar, and so if you give some incentives for people to go out there and research and improve energy, then they are a bit more likely to get involved in trying to get into this area, because there is some economic benefit for them. If we did not have the space race and the money that was injected into R&D there, we would not have some of the technology we have got today. It is trying to get that money to encourage the development of these types of energies. That is the way I am thinking.

**Ms Sonneborn**—I think there is also scope for complementary policies to an emissions trading scheme—

**Dr LAWRENCE**—It does not have to all be through the market.

**Ms Sonneborn**—which I tried to flag, particularly round energy efficiency. There seems to be quite a lot of market failure going on there. If an emissions trading scheme is to deliver least cost to society, and energy efficiency is one of those least cost measures that for some reason is not taken up—and the reasons have been reasonably well documented, and I mentioned a few: it is not a core business activity, often in small to medium sized companies there is no-one to attend to it, and they do not have the expertise—I know there have been policies and programs that have tried to address this, but perhaps what is needed in tandem with an emissions trading scheme is for an injection of new thought and effort in that area so it will complement an emissions trading scheme. So that then businesses can access those kinds of services or turn to those kinds of services.

If the emissions trading scheme allows them to get credit for reductions in their operations, in their energies, which is a little bit different from reducing just straight emissions, obviously, I think the onus is on the renewable energy industry and the energy efficiency industries to develop a methodology—and I think the previous presenter was saying something similar—so that the manufacturers of energy efficient appliances, or of all appliances, have an incentive to make their appliances more energy efficient, because they are able to trade some sort of a credit into an ETS. I am not an economist, and a lot of emissions trading talk is very much couched in the terms of market theory and exactly how to do that, but I think there should be a way to create it—and similarly with biomass, yes.

**Prof. Barton**—Talking about the distinction between the current sulfur dioxide trading and carbon dioxide trading, there is no active removal of sulfur dioxide. It is allowed to dissipate, if you like, whereas in the case of carbon dioxide we have got mechanisms which can consciously go out there and remove it. So that additional component has to be built into the carbon trading one which is not in the sulfur dioxide

trading.

**Ms Sonneborn**—So the SO<sub>2</sub> control program is not a perfect analogy to CO<sub>2</sub> control because it does not have that active way of removal.

**Dr LAWRENCE**—Of capture.

**Ms Sonneborn**—So we need to think creatively and add that on to any scheme that is developed.

**Mr McDOUGALL**—I understand your point in relation to appliance manufacturing. I am interested that the manufacturer gets some credits, but how do they actually trade in those credits? I think that is an interesting point, but just expand that appliance thing. How would you approach the question in regard to the motor car? The domestic motor car is one of the major emitters. How would you see some sort of credit scheme running in that area? Have you looked at it?

**Ms Sonneborn**—I have not thought about it a lot. I have certainly read other proposals which are similar to appliance manufacturers. You provide a credit scheme or some kind of incentive scheme to the manufacturers of automobiles to make them more fuel efficient.

**Mr McDOUGALL**—I want to just change the subject a bit. You are saying that you advocate a sector by sector approach. Should the initial scheme be limited only to electricity or energy producers?

**Ms Sonneborn**—I am suggesting a pilot scheme—I am proposing or promoting a pilot to be established soon—be limited to electricity. That is a scheme that does not have real credits being traded. It is simply like a game, if you like, where toy credits are traded.

**Dr LAWRENCE**—In practice.

**Ms Sonneborn**—People are practising. As emissions are easily measurable and we have confidence in the data, then those sectors be brought on.

**Mr McDOUGALL**—I think there is enough evidence around in the measurability of a couple of other sectors.

**Ms Sonneborn**—Sorry, the measurability?

**Mr McDOUGALL**—Measure—that you can actually easily measure emitters, and one is the manufacturing of cement. Another one might be the gas industry that we have just heard this morning.

**Ms Sonneborn**—Natural gas.

**Mr McDOUGALL**—Why wouldn't you include those straightaway in the scheme?

**Ms Sonneborn**—I suppose I am showing my bias towards activities that are going to assist renewable energy and energy efficiency, and that is largely from electricity. So I am showing where I am coming from there.

**Mr KERR**—Plus, if I remember correctly, they actually want to be involved.

**Ms Sonneborn**—The electricity industry?

**Mr KERR**—Yes.

**Ms Sonneborn**—Yes, so it is easy. It is often a good point.

**CHAIR**—This game that you are playing in many ways is not a game because there are people out there, countries and others, who are trying to position themselves at the first—

**Ms Sonneborn**—It is a very serious game. It is a trial, it is a pilot, but I think it will be real very soon.

**Mr KERR**—In any trial you wouldn't want to be playing with Monopoly money and then discover that you try and change the game.

**Prof. Barton**—If it is 1990 benchmark, then the game money becomes real.

**Ms Sonneborn**—As soon as—

**Mr KERR**—If you use the design system.

**Dr LAWRENCE**—Their desire to be involved is not based on—

**Mr KERR**—It depends on the design system that you ultimately bring in.

**Ms Sonneborn**—The advantage for those early participants in a pilot is that they are up to speed. That certainly has been the Canadian experience, that the companies who are willing and able, and have the resources to participate, are very keen to participate, because they are ahead of the game. We are already seeing, as in Pacific Power, sequestration deals with New South Wales State Forests and other companies actively promoting their services in an emissions trading framework, simply because they know, as long as they do it and keep the records now, once the details of an ETS are sorted out, there will be some kind of allowance no doubt through activities from a year or two or

three prior to the actual scheme beginning. As long as they have got their records in order, the Monopoly money becomes real.

**CHAIR**—Can I throw one in from left field. It seems to me in many of these issues we are dealing with the effects of human population. Why aren't we dealing with human population in this debate?

**Dr LAWRENCE**—Permit to have children, Mr Chairman?

**Ms Sonneborn**—Personally that is one of my pet issues, and it could certainly come into absolutely everything.

**CHAIR**—It is critical to monitor this, isn't it?

**Ms Sonneborn**—I agree that population is—

**Mr KERR**—This is where the Chinese government actually is playing it.

**Ms Sonneborn**—It has got lots of Monopoly money. I totally agree that population is an issue, so is consumption, but my personal view is it is a whole lot easier to get people to have fewer children than it is to get them to not enjoy themselves once they are here.

**CHAIR**—It depends on the economy of the country, I think.

**Ms Sonneborn**—It is demonstrably doable when you see what is happening around the world.

**CHAIR**—I have just one final question, which I do not think we quite got clear—I did not anyway. Is your group funded by the university or has it got outside funding as well?

**Ms Sonneborn**—I have got some brochures back here. ACRE is a CRC, cooperative research centre, so it has got some government funding. The participants contribute with funds as well, and some of the universities are participants. They are some of our brochures. On the back is a list of the members. It is utilities, businesses and government.

Resolved (on motion by **Dr Lawrence**):

That, pursuant to the power conferred by section (o) of standing order 28B, this committee authorises the publication of evidence given before its public hearings this day.

Resolved (on motion by **Mr McDougall**):

That the following submission be received as evidence and authorised for publication: No. 69 Hydro-Electric Corporation, Tasmania.

**Committee adjourned at 11.52 a.m.**