COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON PRIMARY INDUSTRIES AND RESOURCES

Reference: Assisting Australian farmers to adapt to climate change

(Private Briefing)

WEDNESDAY, 3 JUNE 2009

CANBERRA

BY AUTHORITY OF THE HOUSE OF REPRESENTATIVES

HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON PRIMARY INDUSTRIES AND RESOURCES

Wednesday, 3 June 2009

Members: Mr Adams *(Chair)*, Mr Schultz *(Deputy Chair)*, Mr Bidgood, Mr Champion, Mr Forrest, Mr Haase, Ms Livermore, Mr Perrett, Mr Sidebottom and Mr Windsor

Members in attendance: Mr Adams, Mr Bidgood, Mr Champion, Ms Livermore, Mr Schultz, Mr Sidebottom, Mr Windsor

Terms of reference for the inquiry:

To inquire into and report on:

- Current and prospective adaptations to the impacts of climate change on agriculture and the potential impacts on downstream processing.
- The role of government in:

  - augmenting the shift towards farming practices which promote resilience in the farm sector in the face of climate change;

  - promoting research, extension and training which assists the farm sector to better adapt to climate change.
- The role of rural research and development in assisting farmers to adapt to the impacts of climate change.

WITNESSES

Committee met at 5.13 pm

CHAIR (Mr Adams)—I declare open this private briefing of the House of Representatives Standing Committee on Primary Industry and Resources as part of its inquiry into assisting Australian farmers to adapt to climate change. Today the committee will hear from representatives of the Climate Change Research Strategy for Primary Industries and the Managing Climate Variability R&D program. Although the committee does not require you to give evidence under oath, I should advise that this briefing is a formal proceeding of the parliament; therefore, it warrants the same respect as proceedings of the House. It is customary to remind witnesses that giving false or misleading evidence is a serious matter and may be regarded as a contempt of the parliament.

[5.14 pm]

CAMERON, Dr Owen, Program Manager, Climate Change Research Strategy for Primary Industries, Land and Water Australia

CREIGHTON, Mr Colin, Program Coordinator, Managing Climate Variability, Managing Climate Variability Program

ROBINSON, Dr Michael, Executive Director, Land and Water Australia

CHAIR—Welcome. Thank you for appearing before us. The committee has received submissions from Climate Change Research Strategy for Primary Industries network and the Managing Climate Variability R&D program. Would you like to make any corrections to those submissions?

Dr Cameron—There is just one. The date of our submission was put in as 17 March 2008, which would have been a great effort of precognitive planning. For the record, obviously that should have been 17 March 2009.

CHAIR—We will fix that. Do you wish to make a short statement? I am sure that committee members then will have some questions on your submission and on our general inquiry.

Dr Robinson—Thank you. I think we would each like to make a statement. I will commence as the Executive Director of Land and Water Australia, which is the agency that manages both of these programs. Australia's Rural Research and Development Corporation is an internationally recognised example of how to overcome market failure and foster innovations in the highly fragmented primary industry sector. Land and Water Australia has been investing in research and development to improve the management of Australia's land, water and vegetation resources for 19 years. We are deeply disappointed at the government's decision to abolish Land and Water Australia and to reduce the government's investment in research and development. We have been recognised as leaders in our field through the way that we have addressed natural resource management issues across all scales—from paddock to farm business and to catchment and region—through our research into the social and economic factors that influence the adoption of new practices, through the way we have managed our research portfolio and its legacy from knowledge to discovery to practice and through the way we have partnered with other research agencies, both purchases and providers. We are deeply concerned for the future long-term social environmental—

CHAIR—Just one moment. I do not want an attack on government policy; I want the issues that this committee wants to talk about.

Dr Robinson—We are concerned, particularly in the face of climate change, to address the long-term sustainability of our agricultural research sector through good research and innovation and its extension. The Managing Climate Variability Program and the National Climate Change Research Strategy for Primary Industries are two examples of that partnership and leadership role that we have played, and our submissions reflect this. Land and Water's strategy has been

managing those programs on behalf of its partners in various forms for 15 years. It is a critical program for agriculture. We have worked hard to find a new managing agent for the program, and I think it is important that we table that. We can now announce that the Grains Research Development Corporation will take over the role of being the managing agent for the Managing Climate Variability Program, including the current suite of projects—legal considerations, of course, notwithstanding. We also need to recognise that, without our funding and funding of the Department of Agriculture, Fisheries and Forestry, there is a greatly reduced budget.

We have also led the establishment of the Climate Change Research Strategy for Primary Industries over the last two years. Its primary function is to develop that national cross-sectoral research development extension strategy and to improve the effectiveness and efficiency of climate change research, in the face of the challenges of climate change. It is a unique partnership with very strong linkages. With the increasing policy debate on emissions reduction and the Carbon Pollution Reduction Scheme, the need for such an initiative is more important than ever, particularly to provide correct information to primary industry stakeholders and decision-makers. So we have made a commitment through Land and Water Australia and the steering committee of that initiative to ensure that we find new leadership and management to ensure that the goals of the initiative are realised. I will now ask Dr Cameron, Program Manager for CCRSPI, to say a few words about our submission.

Dr Cameron—Good evening. Very briefly, on CCRSPI, I thought it would be useful to start off with just a structure diagram, as it is quite a complicated entity. The key message there is that this was a collaborative initiative that was set up jointly by all state and territory governments and, in the form of CSIRO and DAFF, by the Australian government. It has formal endorsement through the council of chairs of the research development corporations—and all the rural research development corporations are involved—and also through the Primary Industries Ministerial Council. In essence, that is the CCRSPI network. My role is to manage the secretariat on behalf of all of the partners. It is a consensus model, so everybody has to agree on the way forward; it is not by majority.

We have a number of ongoing initiatives through this year, which the partners agreed. I will summarise what we have managed to achieve in the last 10 months, since I started in the role. We have worked collaboratively to try to streamline the number of proposals that went into government funding bids. That is to make sure that people share information on what they are doing and also just to use increasingly scarce funds more effectively. We supported the establishment of a Primary Industries Adaptation Research Network, which was a Department of Climate Change led initiative. Under the National Climate Change Adaptation Research Facility, the CCRSPI partners provided funding in the form of my time in developing a bid and have supported it, in recognition of the fact that government, farmers and the various investors all win if we align, as far as possible, what we are doing with our research activities.

We have developed, in conjunction with another Land and Water initiative called AANRO, a new database, which is going to have special reporting, that will show where various natural resource projects are located around Australia. The CCRSPI partners agreed to fund the technical development of that and are providing project data so that anyone, whether stakeholders, farmers or policymakers, hopefully will be able to go in and see what research is being undertaken on a national perspective. As ever, when you are building ICT systems, it is quite a convoluted process, but we are almost at the point of having a live model that people can see; therefore,

effectively, that is being delivered. One of the key requirements for the ongoing basis will be to make sure that people continue to provide data for it.

We are also trying to get our hands dirty in terms of holding climate coordination workshops with different commodity sectors around Australia; I would emphasise that this is upon request and working with the individual partners. We try to go out and describe what climate change means, in terms of its impact on region and farm, and also answer questions in conjunction with the different primary industry commodities as to what mitigation actions they could consider and what adaptation may mean in the long run. It is not to talk about the technical details of an emissions trading scheme; it is to identify for growers and producers what it might mean for their business. We have had a series of nine workshops; another two are to be completed by the end of this financial year. In conjunction with Managing Climate Variability, we are holding a national workshop on climate variability tomorrow. That is an example of getting out and communicating policy, trying to get a consensus with where the research priorities are and then feeding that back up to the policymakers.

As a corollary of that, we are trying to develop—which is always interesting in a policy context—simple and plain English facts sheets on climate change and how you can go about as a business, thinking about labelling, business-design and energy efficiency. Again that is being done in conjunction with the RDCs. Lastly, the secretariat provides an honest broker capacity for the various partners to discuss their initiatives on a monthly steering committee meeting chaired by Dr Robinson in a slightly less than formal setting. That is something that they also put emphasis on having value. So, if one partner comes out with keynote research, we can circulate the results in a report to all the other partners; we can also ensure that there is coordination of sponsorship of events, books and publications. That is CCRSPI this year.

With the rest of this presentation, I will summarise just briefly the key points in our submission, with reference to your terms of reference. This should take only about five minutes. In terms of terms of reference 1(a), 'current and prospective agricultural adaptations', the role of this submission was to consolidate agreement across the CCRSPI partners. Obviously, sometimes we had disagreement. One partner may have a greater focus on a priority than another; therefore, by necessity, that priority will be at a slightly higher level. But there was general consensus that we did need to increase primary industry research development and extension spend. That was not only to support existing adaptation activities—there are a number of quite interesting on-the-ground activities across Australia in different sectors and we have tried to give some examples in the submission—but also to try to make sure that we could enhance commercialisation capability. That is both in recognition of the challenge facing primary industry in Australia and also in the context of an increasing interest internationally in this area in terms of funds and technology firms in the Asia Pacific, China, India and Europe. It really emphasises the value of a national approach in trying to make the best use of the capital that we have available. Lastly, there is an issue also around decreasing capability of researchers working in primary industry; we have been losing capability progressively over the last 15 years, in relative terms.

In terms of the second part of the first terms of reference, 'implications for downstream processing', we felt that here it was most important to continue supporting research that would give us a better understanding of implications. In talking to different sectors and different segments of the primary industry arena, one of the things that have become very clear is that

there is not really one simple policy framework or regulatory tool that applies everywhere. Carbon taxes in emissions trading schemes have different implications, depending on which sector you are looking at. We really need to understand that, particularly in the overseas export dimension.

There is also a very powerful role to identify and share information and to support funding for processing adaptations. I think what is surprising and encouraging there is how many are in place. It is the ability to move them from Queensland to Victoria, as with contextualising the use of a rye grass in one sector to another, and also integrate our ongoing sustainability initiatives with building design, water efficiency and energy efficiency. This research will inform and support government policy formulation. It may also inform the options for structural adjustment. Of particular importance is the fact that it will assist individuals and communities to adapt to climate change also; it is not just economic impacts that are material.

In terms of the second terms of reference, 'the role of government in Australia's agricultural economy', again, very simply, it is to continue support for R&D—as I have noted, both focus on research and climate impacts from a social and an economic perspective—and, in particular, to try to ensure that research allows us to target future investment in a way that addresses the impacts of climate change most effectively. Again some specific examples from the sugar sector and other sectors are included in the submission. But the key here is to target capital and research where it can have the most effect with regard to the known impacts we have.

In terms of 2(b), 'service need', very simply, there is a public equity and a public interest issue to intervene with regard to market failure. We felt that was a key role of government—to provide infrastructure and services that will enable us to address market failure issues. That can be done through appropriate investment and also through the design of the regulatory framework. As I have already said, we felt that also, in this context, to encourage basic research capacity was important and to make sure that we also encouraged the ability to communicate that research.

Lastly, in terms of terms of reference 3, 'the role of rural RDE in facilitating adaptation to climate change', the key messages here were that government plays a vital role in coordinating investment and in supporting extension activity, making sure that the results from research get out to the community and can be understood by farmers and producers and are meaningful for them. The CCRSPI partners agreed that that strategic perspective was perhaps the most important role for government. Thank you.

CHAIR—Thank you. Colin.

Mr Creighton—There are really three opportunities that I perceive from managing climate variability. I will very, very quickly go through the detail. However, before I do that, I would submit that terms of reference 1 goes to what is already happening. I have put in there some pictures. There are some of the cane industry, which James and Kirsten are well and truly aware of, which is what delivered Reef Rescue. That is 2007, and just one farm. I put a second picture in there that is a bit of history. It is when John Kerin was minister and we got up the National Action Plan for Salinity and Water Quality. That is an example of what a farmer was doing way back when. I was a regional manager in DPI in those days, following the end of the Soil Conservation Service in New South Wales, which Tony is well aware of. There has been a long history of farmers adapting and changing. That is terms of reference 1 done.

As for terms of reference 2, the real issue I see first off is that there are some win-win-win-wins and we are not focusing on them yet. Whether it is stubble mulching, green cane or pasture management, we are talking about profitability, sustainability, mitigation and emissions reduction. A farmer might be thinking about changing fertiliser use, as much for the price of fertiliser as he is right now for nitrous oxide. I know that I am on my farm. But the reality is that it delivers that outcome for you. So how do we get many more farmers to deliver those four wins? I have used Reef Rescue in the Great Barrier Reef as an example that we are running with now; they are practices that this government has endorsed—and, incidentally, the coalition before this election also endorsed them. So I am referring to a major package of incentives to farmers to rapidly shift their practices.

I took that idea to a few colleagues of mine in the farming sector. I asked one of the presidents of one of the farming organisations just last week: where did he think we would get the money for this? His response was, 'Well, hang on, what's happened to the EC policy? Where is it? We're waiting for it.' We see that things like EC done properly with a new policy would be funding this sort of work because this is what would position Australia's agriculture, internationally and for the urban community. By the way, he raised another interesting fact with me. He said, 'You know, that urban community? They are just the big feedlots down the road these days.' I had never thought of it that way before, but it is an interesting concept and something that is useful to think about.

Mr SCHULTZ—That is a simplistic graphic illustration.

Mr Creighton—So that is terms of reference 2 (a). I think there are some win-win-win-wins and it is time that we had a hard look at how we foster that innovation and that solution orientation in agriculture. Terms of reference 2 (b): I come back to some of the work that we have done around people. Farmers will look to and listen to their local agribusiness consultant and the farmer over the fence et cetera. I suggest very, very strongly, from some work that we have done which was DAFF funded before—we are no longer eligible for that funding, but do not worry about it—that we need to push hard on climate champions. We need a couple of hundred farmers and agribusiness consultants who are well informed on climate, right across Australia, working with their peers. When we took the program out to farmers last year, we took some key people in each region through a two-day workshop and then they designed the workshop for the farmers in their region. Common sense? Sure, but it is also about continuing investment. It is about how you then reinvest in those same people, keep them up to date with the science, keep them up to date with what is happening in policy, ETS and whatever and keep them informing their colleagues. I think that is a five-, seven- or 10-year program, as of course are the policy shifts in the next five or seven or 10 years.

The third term of reference is about R&D. The bottom line for us is: more skill and value in our forecasting. The whole role of Managing Climate Variability is to listen to farmers' needs and to provide forecasts at the time they want them. It is no good telling a wheat farmer in WA if it is going to rain in December; he has already harvested. He wants to know about this time of the year: does he turn the tractor on or not? Our job in Managing Climate Variability is to make that happen. So our job is to work out what the farmers need and then, through things like the water and the land site on the Bureau of Meteorology, produce the products that they then use. If you have not been on the water and the land site, I recommend it. There were something like 70,000 hits last month and there are roughly 140,000 farmers in Australia. I am not saying that

half the farmers in Australia hit that site, but it is very, very popular; that is because it is starting to produce the products about climate variability that farmers want. As GRDC said the other day, 'Adaptation is about how I respond to this season. Don't tell me about 2070, as 2070 is about mitigation. I can see why I need to mitigate and I can see why I need to be part of Australia's mitigation. But, if you want me to be profitable and you want me to adapt, it is about forecasting now.'

There is a swag of pictures in there, if you want to look at them later, but my key message is those three things: time to invest in win-win-wins, time to invest in champions across our rural areas and time to ramp up our forecasting skill and value. To give you just one example of value, there is some work they are doing in south-west WA at the moment. We are not expecting that they would but, if a farmer in the last 27 years had blithely taken the forecasts that were available through our global circulation models and he was farming at Katanning, he would have been making $34 to $38 to $50 a hectare profit more every year; if he was farming a little further east, it would have been $100 per hectare. When you have the gross margins of a wheat industry, that is a lot of money. But at the same time we are not asking a farmer to blithely follow the forecast; we are just saying that it is one of the inputs in their decision-making. But forecasting will be a key part of adaptation, as long as it is turned into products that are useful to agriculture.

CHAIR—And it is people making the business decision and the business model that they use.

Mr Creighton—That is right.

CHAIR—People having the skills to do that is one of the battles too, I think. Your win-win-wins are great ideas. Audits across the commodities to get the win-winners and the heroes is a good idea. We are certainly interested in win-wins, and people are certainly in there doing some things now. I would certainly like to highlight some of that and get that evidence before us. The data is pretty important. I guess one of the things, coming into this inquiry, was that a lot of research is being done. I think the Senate report indicated that its main concern was that a lot of stuff was being done that was not getting anywhere or was not getting out there and was not getting to the people on the ground. Right through the Landcare days also, the experience with adaptation and change was that we were not really getting that into data to show people what we were doing in different ways. It was a bit of a loss. We did some good things, but we did not get it documented. I take it that that will be available for people to utilise.

Dr Cameron—Yes.

Mr SCHULTZ—I pick up on your enthusiasm on the forecasting side of things, which is very, very important in relation to forward planning by people because forward planning centres on capital outlay, taking a gamble and the rest of it. Do we have the capacity to undertake the professional forecasting that we need to supply that information; and do we have sufficient technology, manpower and infrastructure to complement that?

Mr Creighton—We have a new supercomputer coming to the Bureau of Meteorology, so we have substantial infrastructure coming; that has been funded by this government already. We are always looking for more capacity, but it does not always have to be in Australia. One of the pictures in there shows Australia's climate drivers, but let us face it: BOM has a partnership with Hadley and we do work with Hasselbad in India in terms of the Madden Julian Oscillation and

so on. This is about international collaboration as much as it is about capacity within Australia. Yes, we can always have more capacity and, yes, we can have more postdocs—unquestionably—but we also have to collaborate and link in with overseas.

There is an institutional issue within the bureau that I must point out: the researchers, like any research group, are not as well linked as they might be to the operational group, the National Climate Centre. We are working on that from an agricultural perspective and I am sure that others are working on it from other perspectives. But our dynamic models are starting to deliver very good skill. To give you just one example: subject to all these issues with Land and Water moving to the GRDC and so on, we are about to fund multiweek forecasting research. Based on our preliminary analysis, we believe that we already have skill—similar to what you were getting in weather about five or seven years ago—to produce out two weeks. Think about chemical applications, horticulture, planting lettuce and all the rest of it; just knowing with some level of skill what is coming two weeks ahead is a very good innovation.

Dr Robinson—Perhaps I could add to that. Also, I think a long-term commitment is required both in our research organisations and in the community. I think you were alluding to the community's capacity as well, and that is not something where we can just go in once, build capacity and walk away. I think long-term commitment is needed.

Dr Cameron—Perhaps I could add to that very briefly. I previously worked on international models. Having international linkages is incredibly valuable, but making sure that you can take down the outputs to a regional scale and a local scale is the value of programs like Colin's. Equally, making sure that there are people who can explain that and communicate that in simple language for farmers has been a recurring message I have received over the last year. So the simple answer is: international collaboration is great, but we do need to focus on the communication and the community perspective as well; and that is the extension element, which is so critical.

CHAIR—I think you will get some of that out of this inquiry.

Mr SCHULTZ—I have a final question on that: how easy is it to get that international accessibility?

Dr Cameron—If I can speak individually, very much so. I have just come back from overseas and spoken to a number of organisations who are very interested in linking up with the Australian models. The trick is to make sure that the national investment that comes out of Australia maintains relevance for Australia and does not get lost at the higher level. But there are networks being established around the Asia Pacific and a number of opportunities are in place now. Certainly, even around the Kyoto convention, other countries share the concerns of Australia.

Mr Creighton—If you are interested, Alby, I can send you a copy of the *Fast Break*, which comes out from the Victorian government. Have you seen that? It has all the models on there.

Mr SCHULTZ—Send it to the secretariat.

CHAIR—We will circulate it to members.

Mr Creighton—They are the sorts of things that—

CHAIR—We are very interested in it.

Mr Creighton—are coming out and are accessible. The art form is taking the five or seven good global circulation models and coming up with an ensemble that gives you the right forecasts for regions of Australia. That is the art form. That is where we need the skill.

CHAIR—That is where we need the research and the material; we need the resources to do that.

Mr WINDSOR—There is a question that no-one seems to be able to answer. Personally, I believe that something is happening in terms of climate change. Has Land and Water done any work on the reduction of inflows into the Murray-Darling system, given the forecasts that are out there in terms of climate changes?

Dr Robinson—Not directly. We have funded some work through the South Eastern Australian Climate Initiative, in conjunction with the Murray-Darling Basin Commission—now Authority.

Mr Creighton—And, effectively, the South Eastern Australian Climate Initiative's last three years of research, for which we put in a bit over a million dollars a year or something like that, among others—the Murray-Darling Basin and the Victorian government, very good collaborative investors—has shown that we have had an increase in temperature. That means, of course, more evaporation, and we have had low rainfall anyway. So the real impact over the last couple of years has been the fact that you have almost had a double whammy of low rain and then higher temperature. If you look at the picture I put in there of frost frequency in Emerald, just as an example, I can produce that sort of image for much of Australia showing that there has been a warming. We cannot really—I cannot and I would not—give you any information on rainfall; it is simply not yet predictable. IPCC will stop short. They will say, 'Generally, we think it is going to dry, but beyond that we do not know.' But we do know that, with higher temperature and more evaporation, there is likely to be less run-off to storage. That is all we know at the moment.

Dr Cameron—I also believe that Melbourne Water have some modelling work that has been done. Prior to my present role, I worked in the Office of Water in the Victorian government. They have some models looking at inflows, but obviously the key driver is where they take the baseline from. So historically there is definitely information; how far you can project it is a different question.

Dr Robinson—Colin might add to this. In that work with the SEACI initiative, we do look at the distribution of rainfall across the seasons too, with that changing. That makes a difference on your inflows.

Mr Creighton—Particularly for the Mediterranean climates, you will see a shift in the rainfall pattern, with an increasing number of high pressures blocking the lows coming through in southern Australia. I guess the big direction we would like to take on this is to be able to predict run-off a year ahead because that is what will really help us with water allocation policies. If we can predict with some level of certainty—say, 60 or 70 per cent—the amount of water in storage,

we can tell the irrigators in cotton or whatever, 'This is your likely allocation next year,' and then they can start making decisions. Then, of course, with the more seasonal forecasting, if you have already got your cotton crop in and we know there is going to be some follow-up rain, you can follow with a cereal crop after you have harvested the cotton and you can use the water that is already in the soil plus a bit of rain that follows. So there are profitability dividends here in a lot of respects, if we get this right.

CHAIR—Do you know whether any of the recording that information by local government—that would have a lot of that history in its records—is being fed into a system?

Dr Cameron—I can only speak on the Victorian level. In the urban context, yes, in the modelling context through the rural water corporations; but the data is not complete and would be of a variably quality. I think a lot of the water initiatives around groundwater and monitoring are about trying to establish a common baseline for water, particularly when you look at water consumption in the rural regions. That gives us a much better base to start thinking forward.

CHAIR—There seems to be software around that can do this; we just do not seem to be able to put it together and bring it together through local government and feed that into the bigger picture. I am getting a bit frustrated; I have been doing some work in this area.

Dr Cameron—Climate change may be a diabolical policy problem, but urban planning is another one. It is integrating the data feeds. As Colin said, initiatives are going on in this area. There are other areas, like groundwater, that we have to harmonise as well. One of the things that I think was in both of our submissions put that, to do this well, you almost need a strategic program of investment, funding a consultancy to collect data. I worked in a number of these business cases, and the continuity of the business operations and the data collection is key. You will never get 100 per cent perfect data, but there are levels of certainty that you jump over.

CHAIR—You can.

Dr Cameron—Yes, very much so. I believe that Melbourne University is looking at this also. There has been quite a lot done in China, of all places.

Mr Creighton—Just to finish off on that one: I led the Natural Land and Water Resources Audit in the late nineties. Our biggest challenge was in getting the data from the various states into a shape that you could use—and guess what? The recent audit done for the National Water Commission had to almost revisit exactly the same challenge because we still do not have consistency in the way that we manage our data.

CHAIR—Some of that federal money has gone into the states, I think, to try to get some of that in some order.

Mr Creighton—That is what the joint initiative of the Bureau of Meteorology and CSIRO is trying to do. I hope that in time we get a much more Australia-wide focus on those issues.

Mr WINDSOR—Just to follow up on that, I would refer to the Murray-Darling and arguments about trying to get more water into it, water buybacks and a whole range of other things that are happening. A lot of the cropping and pasture techniques that are being

recommended, in terms of adapting to a lesser rainfall or higher temperatures et cetera, are going to reduce the amount of run-off. So we are going to have a bit of a collision point in terms of two policies. One is trying to mitigate climate change and that will have a positive impact on food production but a negative impact potentially on run-off.

Mr Creighton—Possibly.

Dr Robinson—I just think that emphasises the point that we need integrated strategies here. You just cannot work on things in isolation. You have to understand the implications of one practice on other parts of the catchment or the system; to work in isolation is not the way to go.

Mr WINDSOR—The Murray-Darling Basin Authority is going to have to deal with some policy recommendations in terms of drought—

CHAIR—Real stuff.

Mr Creighton—Yes. There is another one down here and I was going to ask you a quiz about the flow variability in Australia's rivers. The ratio between high flow and low flow for the Darling is 4,700; whereas for the Amazon it is 1.3 between high flow and low flow. The variability in Australia's systems is so high that we have a lot of work to do to understand that and then think of the implications about what is happening on farm versus run-off to rivers.

Dr Cameron—I have two quick examples. Looking at a number of the irrigation district upgrade business cases, a lot of the investment rationale was done around environmental benefits in terms of the cost sharing Afterwards, of course, it was realised that piping irrigation systems reduced leakages and seepages, which in turn reduces the environmental flows. With most of the areas of water policy, this is a problem. But equally I would like to point out, purely from the perspective of a number of workshops with primary industry sectors, they understanding the certainty around water, but they would also like to see adaptation measures thinking about on-farm infrastructure, financing and tax breaks. We talk a lot about diversification and uncertainty, but some simple measures can be put into place, recognising the capital constraints on diversifying on farm and the cash flow constraints for a lot of farmers. They are practical areas where we can give them a positive message, and simple policy instruments can help. I appreciate that the other questions are in a scale of science and will take much longer to resolve.

Mr BIDGOOD—Colin, it is nice to see you again.

Mr Creighton—Good day, James.

Mr BIDGOOD—Colin, are you aware that at the moment the Standing Committee on Industry, Science and Innovation is holding public hearings into climate change and technology? Will you be presenting—

Mr Creighton—Yes. On the 24th of this month, we will be fronting up to them.

Mr BIDGOOD—That is great. It is very appropriate. This is good work.

Mr SIDEBOTTOM—I am interested in your win-win-win and your 'masters of climate'—which I notice are the words that you use here; the other term is 'climate champions'. How do you measure the success of that and, in your win-win-win, how important is it?

Mr Creighton—I will address the win-win-wins first. If you look at any agricultural sector, you will find practices that some of the leading farmers are already adopting. Say, you take cereals, it is stubble mulching. We know that it means more soil moisture sitting on the paddock. Sometimes that means there are more weeds in the off season and you have to spray them, but it definitely means more soil moisture. We know that it means soil carbon. We have not necessarily done all the research to put all the numbers around all that, but we know that it means more soil carbon, so there is mitigation. We know that it means less fuel passes. That has been measured; it was well and truly done years ago. Direct drilling means that less tractor time and fuel is used. GRDC have done some work on actual product coming out, tonnages and all the rest of it.

What we have never probably done is put all of that together. We have never taken the best practices in any industry to a level where we can articulate the benefits across climate, sustainability and profitability. When we did Reef Rescue, we did it for profitability and sustainability, particularly with the cane industry and the grazing industry. We put that in out Mackay Whitsunday Water Quality Improvement Plan. I was CEO of that while doing this program as well in those days. We showed very clearly the numbers and the benefits. But, to my mind, that is the sort of approach that we need to take to this. Yes, farmers are changing, adopting, moving on and innovating, and the top 10 per cent are way ahead of us, but it is the 50 or 60 per cent in the middle that we need to give a bit of a leg up to. We can measure it. We can do it with sound integrated research. We can use the research development corporations as a combined group to do that sort of work. Is that sufficient?

Mr SIDEBOTTOM—Yes. I am really interested in it. It seems so basic. Your masters or your champions obviously must have a fairly significant role to play in affecting their colleagues, more than would any paperwork—

Mr Creighton—Unquestionably.

Mr SIDEBOTTOM—or experts or whatever else that might be brought in.

Dr Robinson—Perhaps I can add to that. There is plenty of literature on adult learning techniques around that says that the face-to-face type communication is so critical. You just cannot sit as a research agency and put stuff on the shelf and expect it to be taken up. But, from a research agency point of view and a government funding point of view, we have to recognise how much it costs to do that—and not just once in presenting the information to your climate champions but also in continuing to go back to make sure that they have really got it. Keeping them up to date takes a lot of time and effort. If you are doing that on a national scale, it requires a lot of resources. As government and as research agencies, we have to recognise that.

Mr WINDSOR—I would just like to emphasise that point, if I could. Successive governments, state and federal, have walked away from that very point—and it is this extension point. Colin and Alby would know very well that we had what was called a Soil Conservation Service in New South Wales. The soil conservationists were believed by the farming community in terms of their recommendations; nowadays, similar people would be treated with suspicion.

Mr Creighton—It was a good training ground for us too; we learned a lot ourselves. But the extension area—

CHAIR—The extension area is so important that we have got away from doing state based extensions. We need to find things. We have come across it—certainly Alby and Tony have—— in other reports that we have done over the years in this committee; that have shown up there as well. With education, such as with ag science and all those things, there is the need to look at a new skill set too, with the people who are coming after you and whom you are going to have to bring through.

Dr Robinson—Just on that, in terms of our young scientists or scientific community, they have to have a broader skill set too to do that communication in order to fill part of that gap. Yes, let us admit that some scientists do not have that capacity, but many do.

CHAIR—That needs the tool of a communication strategy.

Dr Robinson—Absolutely. You have to support getting that information off the shelf and out there.

CHAIR—We come across the issue of extension companies. Where does somebody who comes out of a university with a degree get any base training and opportunity then to go on to the next level? Everyone says, 'I want them to earn.' It is a bit like being an apprentice, where the tradesman says that in the first year he does not make any money.

Mr Creighton—The real tension in agribusiness is about business and agriculture.

CHAIR—Yes, we will have to find another process.

Dr Cameron—There are actually examples as well. One of the things that have really come home to me in the last year is that, when you go out and talk to pork producers, rice producers and sugar producers, they know how they can save energy and water and make appropriate investments. What they need are those kinds of initiatives, which quite often line up with good mitigation policy, good on-farm efficiency policy and the connection back into the policy framework and the investment allocation framework. There is also a series of best practice case studies being developed by the Crawford Fund and the International Federation Of Agricultural Producers. So the extension capacity is invaluable.

I am obviously an immigrant; I came out here in 1996. Australian farmers are good at adapting. They have a lot of drivers that people overseas do not have. They can do increased on-farm storage. They can look at energy efficiency, using solar cells for cooling piggeries. They can look at modular design for their buildings. But they need help to make the transition to do those things. Again, following on from forecasting is one element, but there are other ways that I think there would be win-win-wins, and they are surprisingly easy.

CHAIR—That is fine and we can report that because that has emerged. You have the researches over there and we need those things to say that these are the directions that will help to go from here to there. Then there is government policy, which can help drive that. Then you

leave it up to the person to make the business decision to accept the risk—and that might be going somewhere else, investing in another area about forecasting the rainfall.

Ms LIVERMORE—The talk about the climate champions reminded me of a conversation that I had with someone from Australian Women in Agriculture last week. The minister announced a whole range of funding for women's organisations to do many things around workshops and capacity building regarding climate change and adaptation to climate change. I just wonder whether, if we put you in touch with some of the organisations that received that money, some of your ideas could be built into some of the programs that they will be running as a pilot or a test case.

Mr Creighton—The real issue that we have found is that those groups want the people who come out to have good science credibility, to be good communicators and also to be practical. There is only a handful of such people in CSIRO, BOM or wherever, and finding the resources for them to do just that is the hard part, let alone—

CHAIR—The community—

Mr Creighton—Yes.

Ms LIVERMORE—I take the point that it has to be part of an ongoing thing. I just thought it was worth mentioning as a way of just jumping on something that is happening right now as a test or a pilot.

Dr Robinson—Literally, in terms of seasonal forecasting, we only have a handful of scientists and they are stretched at the moment.

Dr Cameron—Particularly in the business dimension. At some point when you are out in communities, you have to move it from abstract science into what it may mean for a business. That perspective comes across very quickly or not at all. I would also say that your observation fits in with DAFF's conclusions from the Drought Policy Review in terms of solution applications—

CHAIR—It does, very much so.

Dr Cameron—so one would hope that it is continued.

CHAIR—Thank you for that. Communications strategies are going to be vital with the extension and I think these sorts of things will emerge too.

Mr SCHULTZ—I was going to ask questions about the extension side of things, but I think we have covered that.

CHAIR—We have probably covered that, yes. What about getting a bead on the life cycle assessments of carbon? I think the committee would be interested in your comments on that.

Dr Cameron—I recently attended a Rural Industries Research and Development Corporation workshop on life cycle analysis. I think it would be fair to say that there was a consensus among

the participants that this was important. I believe that it did not receive funding under Australia's Farming Future Climate Change Research Program, but the intention is to continue seeking to develop life cycle analysis work. I have three observations from the workshop. There was a high level of commitment. There was not a clear position on exactly which methodologies should be used—it can be a very complex area and it is very important not to get bogged down in methodological debates but to keep it focused on what it means for farmers. The other area of discussion was around intellectual property and how it would be managed. But, certainly, in terms of compliance and reporting requirements for carbon, nitrous oxide and methane, if farmers want to look at offsets for soil carbon or at reporting on their emission levels, life cycle analysis in some common framework will be a very important outcome.

Dr Robinson—I would reiterate that because it was one of the themes that we identified that we wanted to take forward under the strategy. Equally, it is important, I guess, to make haste slowly in terms of not getting it wrong. We have seen things like food miles come out of other parts of the world, which perhaps do not serve well.

CHAIR—That took us in a direction that got a political debate and all that caper, which was pretty useless.

Dr Robinson—And potentially perverse outcomes—not achieving what we are actually trying to achieve here.

CHAIR—I think we have to be very conscious of that. We have had several discussions about that. We are interested in that and we probably need to report on anything that we see like that. Food miles might be something that we might want to have a look at. Did that have something to do with farmers somewhere in the world, did it?

Dr Cameron—It is an economies of scale issue. You can cut that many different ways. Is it better for a heap of Nigerian farmers to get together and do one large transport or smaller transports to the UK? The other issue that came out was concern about exposure on the export side. If you have companies insisting on carbon labelling overseas, what does that mean for Australian producers? Are they being compared with apples and apples? In particular, if you are going to have a compliance burden and a market risk in terms of export and you are going to have changing consumer demands, it could suck up a lot of time for small- and medium-size farming enterprises.

CHAIR—The Europeans will use that against us though, I reckon, won't they?

Dr Cameron—Tesco is a lovely case study there.

Dr Robinson—The bottom line from that workshop is that it is grossly underdone, in terms of our understanding of the information that we need to do full LCA, life cycle analysis.

CHAIR—'Underdone', meaning we need a lot more work done?

Dr Robinson—We need a lot more work done. As Dr Cameron said, we do not want to get bogged down in the technicalities, but we do need to make sure that there is a full life cycle analysis as opposed to a half-baked thing so that we do not get perverse outcomes.

CHAIR—This goes to downstream processing and things as well. We need to be conscious—

Dr Cameron—That is right. There are point of obligation issues. Until we know the potential policies for the Carbon Pollution Reduction Scheme, and then you have the energy reporting requirements, which tie into carbon, under the National Greenhouse and Energy Reporting System, it is very difficult for companies to know what their liability for reporting will be domestically, let alone internationally. That was one of the messages that came out: just the level of regulatory uncertainty they felt they were facing, particularly on thresholds for operations.

CHAIR—Yes. There is still a long way to go to get there, and I guess that is why it is off until agriculture is pushed out.

Mr BIDGOOD—What is going on in Europe in this regard?

Dr Cameron—There are a number of different—

Mr BIDGOOD—You referred to the Tesco example.

Dr Cameron—That is one with a carbon labelling scheme, but that is not necessarily the same as a greenhouse labelling scheme. It depends on whether you do carbon equivalency or carbon. That has created a lot of problems. Tesco has a lot of market power in the UK, and I believe that the UK Carbon Trust stepped in and has been working with producers, trying to come up with a common framework. To give you an example of how one Australian agricultural sector approached it—

CHAIR—So that is really one company in the retail sector trying to say, 'We're doing the right thing,' et cetera and getting the advantage but not having it in marketing or whatever—and, of course, they are going to do that. They do it in food labelling. A report on obesity has come down this week, and it is those sorts of things. We need to get the sciences right on those things, don't we?

Dr Cameron—Absolutely, and to try to make sure that, as far as possible, either we compare like for like with systems—and that is where the development of international standards can help but not necessarily—or Australian producers provide at least the data so that they have confidence in the outcomes. That was where the market confidentiality issues came in. I just flag one other potential issue there, which is price gouging and the issue of market power in the supply chain. I am thinking of one sector in particular, but I should not really say what it is. However, I just look at some of the pork producers. Labelling is a concern for them because the scale of the number of producers is such that any core data that comes out is almost giving you competitive benchmarks. So they would want to make sure that a national scheme was kept fairly secure. If you look at other sectors, such as grapes and wine, they realised that, because they were relatively small and they had high export markets, the best thing to do would be to develop an international standard outside of the frameworks. The grape and wine sector got together and agreed standards for reporting. So it is partly here making sure that the reporting frameworks you get exposed to as a producer can be managed cost effectively and also are aligned with your supply chain. From my perspective, that was probably the most difficult element in terms of looking across different agricultural sectors. It is hard to see one cost-effective system that fits everyone.

Mr Creighton—That is a key government role.

Dr Cameron—Yes, that is the point.

Mr Creighton—If you believe the front page of the *Australian* today, we are going to come out of the recession due to our primary industries, then there is a key role for us to make sure that our primary industries are well positioned internationally.

Dr Robinson—But, on the other side, there is a fear factor here—from my perspective—that we get some sort of certification scheme pushed on it, perhaps an initiative like food miles, that is not appropriate and becomes accepted as a standard.

CHAIR—Which is the political angle, not the real stuff—and we know what perception and elections are about, yes.

Dr Robinson—We actually create some urgency in this area to get it right.

CHAIR—We had the application of organic food and I think that is about 10 in Tasmania. That is how you can get certified.

Dr Robinson—Timber is another issue too, of course, that we have had vast experience with.

CHAIR—That is right—and fish. If you had a decent system in the world that certified fish, we would take some of these bastards out of the system. There are a lot of fish markets around the place.

Dr Cameron—One other point that came up in the consultations was the importance of co-regulatory frameworks. Bringing in the Victorian example, I know that we had salinity plans, water management plans, energy management plans, climate management plans. There has been a move to try to integrate those under the EREP system. A number of the smaller producers did emphasise that, from their perspective, it is better to do one or two integrated best practice plans than to have multiple plans across multiple jurisdictions. Central government obviously has a key role in harmonising that.

Mr SCHULTZ—It would have no politics.

CHAIR—There might be a five-year or a 10-year central plan. Thank you very much.

Dr Cameron—Thank you for the opportunity.

CHAIR—We really appreciate your evidence. When you fit into where you are with everything, I am sure that those things will shake out and you will be playing your positive role. We thank you for your attendance here today. If there are matters that we need more information on, we will contact you. We will send you a copy of the transcript of evidence so that you can make any editorial corrections necessary.

Committee adjourned at 6.11 pm