
CCRSPI Forum 2011

Consultation on the Draft 2012-17
National Climate Change RD&E
Strategy for Primary Industries

7-8 December 2011,
Crowne Plaza, Coogee Beach, Sydney

CCRSPI CLIMATE CHANGE RESEARCH STRATEGY FOR PRIMARY INDUSTRIES

Draft Report (Version 2) - 15 December 2011



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Abbreviations

AECL	Australian Egg Corporation Limited
APL	Australian Pork Limited
ARC	Australian Research Council
BOM	Bureau of Meteorology
CEF	Clean Energy Futures legislation
CFI	Carbon Farmer Initiative
CMA	Catchment Management Authority
CCRSPI	Climate Change Research Strategy for Primary Industries
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
DCCEE	Aust Govt Department of Climate Change and Energy Efficiency
DEEDI	Qld Department of Employment, Economic Development and Industry
DOIG	Domestic Offsets Integrity Commission
DPI	Department of Primary Industries
ETS	Emissions Trading Scheme
KPI	Key Performance Indicator
LWA	Land and Water Australia
GFC	Global Financial Crisis
GHG	Greenhouse Gas
GRDC	Grains Research and Development Corporation
N	Nitrogen
N ₂ O	Nitrous Oxide
NFF	National Farmers Federation
NRM	Natural Resource Management
NRDEF	National Primary Industries RD&E Framework
NZ	New Zealand
PIMC	Primary Industry Ministerial Council
PISC	Primary Industry Standing Committee
RDC	Research and Development Corporation
RD&E	Research, Development and Extension
RIRDC	Rural Industries Research and Development Corporation
SARDI	South Australian Research and Development Institute
TBL	Triple Bottom Line

Introduction

The Climate Change Research Strategy for Primary Industries (CCRSPI) is a collaborative and strategic response to the opportunities and challenges posed by climate change for Australia's primary industries.

The purpose of this document is to report the outcomes of the CCRSPI Forum 2011.

The Forum was held at the Crowne Plaza, Coogee Beach, Sydney on Wednesday and Thursday 7 and 8 December 2011. A list of participants is provided as Appendix 1. A copy of the final forum agenda is provided as Appendix 2.

Forum Purpose and Context

The purpose of the forum was to:

1. Provide an introduction to CCRSPI for those unfamiliar with the strategy
2. Examine the changing role of CCRSPI since inception in 2008
3. Develop a revised CCRSPI strategy.

Craig Burns, Chairman – CCRSPI Steering Committee (Managing Director RIRDC) opened the workshop by providing a history of the previous CCRSPI strategy and describing its operating structure. Craig explained that the CCRSPI strategy 2008-2011 was the first cross sectoral RD&E strategy. There are twenty one 'sectoral' or commodity based National RD&E strategies and a couple of first generation cross sectoral RD&E strategies such as water and animal welfare. The success of cross sectoral RD&E strategies depends on multiple players, identifying meaningful gaps in RD&E programs and convincing the states, the Australian Government, the Research and Development Corporations (RDCs) and others that there is benefit to be gained in collaboration and coordination.

There have been many changes to the operating environment since the first CCRSPI strategic plan was formulated in 2008 and the rate of change has intensified since 2010. Ample funding has now been dedicated to climate change research and legislation supporting a price on carbon has passed through the Australian Parliament.

Craig articulated the goals of the workshop as providing:

- A forum for the exchange of views;
- Opportunity to hear and understand private sector priorities and ensure the R&D program is 'demand driven'; and
- An opportunity for refining the draft 2012-17 CCRSPI strategy.

Professor Snow Barlow, CCRSPI Director (University of Melbourne) set the CCRSPI draft strategy in context. The CCRSPI strategy is a coordination of 25 sets of 'parents'. These parents include state agencies, RDCs and CSIRO with support from the National Farmers Federation (NFF) and the Australian College of Deans of Agriculture.

In terms of the big picture, global carbon emissions dipped during the GFC but are now back to trend level increases. Only Saudi Arabia has higher per capita emissions than Australia and there is bipartisan support for a 5% reduction in year 2000 level greenhouse gas emissions by 2020. Both the government and the coalition are looking to the land-based sector for delivery of this target. Land based offsets are the least cost carbon offset solution and are thought to be viable at less than \$25/tonne sequestered.

Snow noted that the big challenge in designing the revised draft CCRSPI strategy is not to get completely focussed on the proposed price of carbon (\$23/tonne) but rather to think about what research is needed to adapt to a future Australian climate.

Snow concluded his introduction by describing what success would look like for the CCRSPI strategy. Descriptors chosen included 'integrated', 'engaging', 'improving productivity', 'outward looking', 'international', 'inclusive of the post farm gate (important)' and 'commercial'. A commercial perspective was brought to the workshop by the keynote speakers.

Keynotes: Commercial Perspectives

Gary Brinkworth, Chief Operating Officer, Incitec Pivot Fertilisers described the impact on his business of pricing carbon and the company's response to the challenges. Gary made it clear that Incitec Pivot wished to be involved in the CCRSPI strategy and solutions development.

As an energy intensive emitter that is trade exposed, Incitec Pivot will not be able to compete with low cost fertiliser imports. The company must therefore move away from bulk undifferentiated sales and toward specialised products backed with service and other forms of 'value add'. Nitrogen fertilisers with inhibitors will be important but not enough on their own. Biochar was not an area of interest for Incitec Pivot – their strengths lie in accurate chemical formulations. Gary was concerned that the Carbon Farmer Initiative did not seem practical at this stage of its development. Greenhouse Gas (GHG) solutions must be nested in enhanced farm productivity.

Francois Joubert, General Manager Sustainability, Fonterra Australia explained that investment in sustainability must be commercially justified and that Fonterra had found this to be the case. Pricing carbon will still impact Fonterra's dairy farmer suppliers even though agriculture is excluded for the foreseeable future. Fonterra estimate that flow on costs associated with electricity and transport will cost the average dairy farmer an additional \$3,000 per annum. For the Fonterra business which spans 'cow to consumer' 85% of emissions are on farm and are mainly methane, 10% are processing and 5% are distribution. Therefore rumen technologies are vital for the company. Fonterra's R&D priorities relevant to CCRSPI are rumen microbiology, reduction in variation in emissions between individual animals, forage based solutions, farm management systems and solutions to reduce nitrous oxide (N₂O) levels. Easy wins for the company include transport efficiencies, changing energy sources from coal to gas and then gas to renewable, and taking some of the water out of milk prior to transport.

In conclusion Francois noted that research is very important and that change needs to be commercially viable if it is to be adopted.

Presentation of the Draft Revised CCRSPI Strategy 2012-17

Kelvin Montagu, Colo Consulting (commissioned by CCRSPI) detailed the draft Revised CCRSPI Strategy 2012-2017.

Kelvin noted that there are high transaction costs associated with collaboration and having a cross sectoral strategy. He explained that the CCRSPI strategy is a cross sectoral strategy

because the carbon cycle is common to all primary industries and that most primary producers are involved in producing more than one commodity.

Kelvin reiterated the CCRSPI strategy's mission – R, D and E, in partnership with industry and underpinning natural resource management. Strategies are to guide investment and minimise transaction costs. They are about priority setting with partners, understanding and developing capacity. Strategies are about adapting primary producers to the new policy settings, recognising the scale and capacity variation within primary production and working with the whole supply chain. No matter how successful emission mitigation is there will be a need for primary industry adaptation and the CCRSPI strategy recognises this reality. Long term there is an anticipation that agriculture will enter the emission trading system. Primary industry investment tends to be large and long term, multi-decade in nature and it is important that we start to plan for future investment now.

Kelvin noted that the revised strategy has a greater emphasis on delivery and that the key 'markets' for the strategy are industry and individual enterprises, policy makers and communities. A range of public and private sector partnerships will be needed and that given the contested nature of climate change research excellence is very important.

His goal from the workshop is to 'sharpen up' the strategy.

Theme 1: Future primary industry systems constructed on best climate information

Overview Presentation by Dr Peter Hayman, SARDI

Understanding climate change spans everything from 'now-casting' through to 'forecasting' one hundred years into the future. The CCRSPI strategy needs to span the changing atmosphere, global climate, regional climate and human and natural systems. Adaptation to climate change is the key to this part of the strategy. The challenge for the CCRSPI strategy will be to identify and partner with those long established delivery groups to secure climate change adaptation.

Climate predictions are useful for informing direction and the extent of change. In the past forecasts have been best received when they are supplied by authoritative sources i.e. CSIRO and the Bureau of Meteorology (BOM). Forecasts are effective when they acknowledge uncertainty and greater uncertainty seems to exist around rainfall rather than temperature forecasts.

In terms of action oriented forecasts we need to do better. Furthermore, we need to improve seasonal information, provide daily water balances, forecast heat waves and frost and provide a narrowing of the forecast precipitation range.

The 2008 CCRSPI strategy appeared to some to say that we need the best climate forecasts possible before we have any basis to act. No, this is just putting action off into the future. We need to use the best available information and move on using (1) sensitivity tests, (2) temporal comparisons (what we learned from the drought) and (3) spatial comparisons (drive to Moree NSW and see what southern Victoria might become). A lack of certainty in forecasts provides opportunity for scoping discussion and it is this dialogue that will provide greater certainty. We need to have an adult discussion on 'variability' and 'change'. Let's not

ignore the 'change' dimension just because it upsets some primary producers and farmer organisations. This would be irresponsible of us as informed professionals.

Delivery of the strategy will start with understanding ENSO, the Indian Ocean Dipole and other similar systems and how they interact with climate change. The new dynamic model developed by BOM is exciting in this regard.

Research to support adaptation to climate change can be usefully thought through using Dr Mark Howden from CSIRO's well-known three stage model (1) adjustment, (2) system change, (3) transformational change with each stage 'kicking in' as climate change becomes more severe. A further key reason for CCRSPI being cross sectoral is that we need to be aware that the future might be a systems response not be a singular commodity based response and therefore the silo based RDC model might not be the best approach for planning transformational change.

Adaptation is tough to manage and it is not clear whether adaptation research is different from productivity research.

CCRSPI will add value when its efforts are demand driven, provide good predictive power, are founded in agricultural science, and work in partnership with other arms of government policy including drought policy.

Facilitated Interactive Discussion

The Theme 1 interactive discussion included short presentations from Gary Allen – Senior Climate Liaison Officer Bureau of Meteorology, Colin Creighton - Chair Climate Change Adaptation Fisheries Research and Development Corporation, Brian Foster, former presiding officer of Eyre Peninsula Natural Resources Management Board and Peter Deuter – Senior Principal Horticulturist DEEDI. Key points arising included:

- There are knowledge gaps – sequestration opportunities and impediments are under done across Australia eg 'blue carbon' - 50% of Australia's land based sequestration comes through wet areas and mangroves which constitute 5% of the landmass. There are win wins here for the environment and fishing through restoring wetlands.
- Adaptation is cross sectoral – the outcomes of this theme are all about policy and providing the right drivers for industry. To date CCRSPI has thought in terms of adaptation being physical on farm and in the regions but the policy dimension is just as important and should be reflected in the 2012-17 strategy.
- An outcome of research under this theme needs to be knowledge on which regions and which commodities are most vulnerable. For example there are hundreds of horticultural commodities so if we know which are most vulnerable we can focus.
- For horticulture we need temperature forecasting tools, rainfall is less important because we irrigate. Really useful would be 3 to 6 month out temperature forecasts.
- We need forecasting of extreme temperature and rainfall events. Extreme temperature events have a major impact on horticultural product quality. Information on the forecast out of season occurrence of these events would be particularly helpful.
- We need more accurate emission factor estimates for example the N₂O estimates we currently have for horticulture are 'rubbish'.

- From a cross sectoral perspective we need to address the ‘down scaling’ issue – taking global and national forecasts and making them local. For example the Lockyer Valley (SE Qld) is a major vegetable production area but we can’t get forecast data that separates the Lockyer Valley from the adjacent mountains and Darling Downs where farming systems are quite different and have therefore very different weather and climate sensitivities.
- Regional scale information is appropriate for adaptation. Adaptation is about change at the community level, keeping agriculture prosperous and developing diversity in a region. We need data for a 10 to 15 year timeframe and again for the longer term.
- We need vulnerability assessments to inform regional development, NRM, local and state governments. These assessments need to include options and opportunity and need to be completed using existing regional networks.
- BOM has just updated its seasonal climate outlook products. If primary industries are to be successful in influencing BOM’s work program it needs to speak as one voice and CCRSPI might be a useful vehicle. BOM forecasts are currently accurate in weeks and at least in theory we have potential to get them right decades into the future. As a consequence of recent extreme events associated with La Nina (such as the Qld floods in January 2011), government's regard improved forecast skill for such events as the top priority. For this and other reasons, significantly increased investment in forecasting over longer time frames is unlikely at this time.
- There is scope to engage with primary producers through the language of climate variability prior to letting the language morph into climate change.
- There are some serious challenges facing trade exposed processors such as the low margin meat processing industry.
- A lot of primary producers don’t yet even realise they have a climate variability / climate change problem.

Workshop Suggestions for Theme 1 Improvements

Small table discussions provided suggestions on improvements that should be considered for Theme 1. The seven small table suggestions were aggregated by Martin Blumenthal GRDC into the following key points.

General

- Not enough of the ‘social’ in Theme 1 and also in other Themes to justify the draft strategies’ stated vision - eg adaptive capacity, resilience, limits and barriers to adaptation.
- The name of this theme could be shortened to ‘future farming systems using best climate information’.
- We need to be world’s best at adapting to climate change – efficiency and productivity is the answer.
- There seems to be a lack of passion in the argument for this theme, adaptation is what we farmers do every day. Adaptation is very important.
- There is little recognition in the theme of the need for a systems approach – technology, capability and capacity to change.
- Better forecasts are coming / Better forecasts are missing.

1.1 Improved Understanding of Current Climate - Better Forecasts

- Need better understanding of the drivers of climate variability (eg Indian Ocean Dipole).
- Soil moisture is the missing climate change indicator – link to seasonal and intra-seasonal forecast.
- Need greater focus on temperature predictive tools months out and over a few weeks.

1.2 Modelling Future Climates

- Ability to adapt is dependent on the capacity to accurately predict rainfall and temperature variables at different timescales.
- Better prediction of extreme events and intensity and understanding their frequency.
- Need for coordination in downscaling ie making national forecasts relevant to the region.
- (NB: while many argued that this sub theme was about improved temperature and scale information, others thought it was more about risk management and doing the best with the forecasts what we have, rather than striving for constantly improving accuracy).

1.3 Adapting to Physical Impacts (for industries, producers and regions)

- A priority is for a framework for linking medium to long term regional planning to climate outcomes. There needs to be a strong social dimension to this sub theme.
- Transformation is as much about new technology and productivity as it is about new industries and industries shifting location.
- Improved productivity is even more important in a changing environment.

New Sub themes 1.4 through to 1.7 were suggested to be added by the workshop to the draft strategy.

1.4 Mitigation by Adaptation Interactions

- Using climate forecasts to decide on N applications to minimise N₂O loss.

1.5 Economics

- Where are the dollars and economic analysis – where is the value proposition for growers to adopt?
- As presently written the three sub themes fall short on the value proposition as to why industry and producers should adopt.

1.6 Communication and Extension

- There is a lack of communication in the strategy – it is all science based.
- Climate forecasting research has progressed further than usage by end users.
- We need tools that allow farmers and processors to assess the triple bottom line (TBL) implications of farming system change.
- Tools for primary producers to deal with climate change with a short to medium term seasonal forecast.

- Improved climate information to enable risk management to continue to be successfully applied to an increasingly uncertain and variable climate.
- Improved within and between-season forecast tools is the big gap.
- Adoption gap at local district level is an extension task. Information to growers is the biggest gap – need to really focus and clarify the ‘E’ role for CCRSPI.
- How to tap into needs at the regional level ie consulting with regional NRM bodies – two way information flow. Communication is missing from the current draft strategy.
- On farm tools and applications are missing – we need ‘quick and dirty’ tools now not necessarily deadly accurate tools in the future.
- Note that primary industries are not the only sector adopting and there may be lessons that can be drawn from other industries like emergency services and the health system.

1.7 Integration with other industry sectors

- Integration of forecast climate predictions with water (hydrology) to improve the overall decision making process based on adequate lead times and an enhanced whole of system outlook. This type of research can enable effective adaptive responses.
- Address cross cutting issues with other sectors eg water resource availability to optimise responses. Other sectors relevant to primary industries adaptation might include energy services, mining and aviation.

Theme 2: Reduction in greenhouse gas emissions intensity of product

Overview Presentation by Professor Richard Eckard Uni Melbourne and Vic DPI

Emission intensity refers to GHG emissions per unit of agricultural product (kilogram of meat, litre of milk, etc). It could also refer to the emissions per kilo joule of food or any other unit of output. Research focussed on emission intensity does not necessarily result in a decrease in total emissions. Abatement is about reducing total emissions.

Areas for research might include:

General

1. Nitrogen inhibitors – coatings on fertiliser, feeding inhibitors to animals, spraying the inhibitor on pastures. Some of these options increase pasture production ie they have a positive impact on productivity.
2. Dietary oils – ingestion of oil by farm animals reducing methane production.
3. Grape marc and tannin forages – decrease emissions but may also decrease productivity.
4. Breeding for higher feed conversion efficiencies (but need to be careful in relation to the policy requirements of ‘additionality’).
5. Feeding improved pasture and grain to reduce emissions (but in turn may increase carrying capacity and consequent animal emissions).

Sub theme 2.1: Priorities for non-CO₂ emissions (methane, N₂O and waste) might include:

1. Emissions measurement tools – have currently got tools but they are very expensive to use. Potentially tracers, markers and proxies could be used. There may also be novel methods from other industries (eg mining).
2. Modelling – process based models to decrease the expense and develop links between top down and bottom up analyses (to make both methods align).
3. Whole farm systems analysis – biophysical and economic models. We will also need to invest in the validation of these models. To measure N₂O, methane and soil carbon we have very few validated models.
4. Decision support tools – for analysis of mitigation options.
5. Raising methane free animals is possible but is not being done. Rumen methane inhibitors need investment. These tools can oxidise methane in the rumen.
6. N₂O is released from fertiliser, urine and through indirect activities (eg ammonia leaching). Its treatment is being researched with soil microbes but fungi also provide opportunity.
7. Alternatives to nitrogen should be researched – including plants that are less dependent on N, legumes and organic ameliorants.
8. There is big scope for more efficient N fertilisers.
9. Urine is a major source of GHG – impact mitigation is a prospective area for research.

Sub theme 2.2: Priorities for bio sequestration and soil carbon might include:

1. The impact of soil management on soil carbon – not much has been done in this space.
2. We need cost benefit analyses on building soil carbon with 100 years permanence built into the price and the knowledge that building soil carbon requires a very large increase in offsetting nitrogen. Building soil carbon now (and locking up large volumes of N) may in fact increase emissions in the future.

Sub theme 2.3: Priorities for managing energy use and generation at the enterprise scale might include:

1. Optimal use of organic wastes – is it electricity generation from methane, bio ethanol, biochar.
2. Oil crops best used for food, bio diesel or plastics?
3. On farm energy efficiency research.

In conclusion allow for solutions to come from left field and focus on cost effective, no regrets mitigation options. The key for CCRSPI will be to define the intersections and those areas of research that are truly cross sectoral. We need more integration at the systems scale.

Facilitated Interactive Discussion

The interactive discussion included short presentations from Ian Porter - Principal Research Scientist in plant pathology Vic DPI, David Cattanach - Climate Champion and grain grower from Riverina NSW, Lynne Strong - Climate Champion and owner Clover Hill Dairies Jamberoo south coast NSW and Harm van Rees - National Adoption and Mitigation Initiative, Victoria. Key points arising included:

- What is missing from the draft Strategy is the detail on what success looks like eg is it dollars for growers?

- We note that managing nutrition through farming systems is more important than fertiliser for primary producers.
- With the Montreal Protocol (aimed at reducing ozone depleting gases) a lot of effort went into measuring and reporting success. There is a lot to learn from the successes of the Montreal Protocol and how it succeeded.
- Case studies of success would be useful eg an individual horticulturalist using N inhibitors and achieving profitable and productivity outcomes.
- Retention of primary producers' social licence to operate is a very good reason for producers to adopt research outcomes. Primary producers need strategies to communicate with their consumers. To explain to them the benefit of what they do.
- Adoption is dependent on research outcomes being cost effective for primary producers to adopt. For example creating humus is great for GHG abatement but as a farmer it locks up nutrients and costs money.
- We look for win wins. A carbon audit on my place revealed that a major emission source was from N fertilisers. Acidic soils are the worst N polluters and treating soils to reduce their acidity has production benefits as well.
- It needs to be noted that in many cases farmers adopt things that they can see – carbon is not visible and the science is believed to be still contested. There is lots of confusion amongst farmers and this works against adoption.
- There is a big communication challenge ahead for CCRSPI and we need more consistent messages.

Workshop Suggestions for Theme 2 Improvements

Small table discussions provided suggestions on improvements that should be considered for Theme 2. The seven small table suggestions were aggregated by Michael Battaglia CSIRO into the following key points.

General

- Wide agreement on the need to be definitive about scale – are we talking paddocks or regions?
- The workshop had both positive and not so positive responses to the theme title.
- There was debate on whether targets per unit of product or total emission reduction were the best way to proceed.
- The workshop indicated that this theme was indeed a cross sectoral issue and therefore very worthy of investment.
- The scope of the theme was considered fine but new sub themes emerged through discussion. If needed these sub themes could be quite appropriately amalgamated into existing sub themes.

Eleven separate issues were identified:

1. Have we got the boundaries right for this theme – it has a farm gate feel but we need a whole supply chain response.
2. Integration is missing – there is no whole of systems analysis, are we dealing with cumulative or additive effects, interactions of practices or creation of tradeoffs. There

is no farm level decision support or risk analysis to inform carbon – productivity relationships.

3. There is no GHG mitigation fit in a framework for productivity. This reflects a disconnect between top down climate policy and bottom up action which will be driven by mitigation co benefits.
4. Assumes measurement and modelling is implicit – needs to be explicit.
5. There needs to be an overarching analysis of the cost effectiveness and timeliness of emissions reduction and bio sequestration.
6. Fisheries and estuaries are missing – wetlands, mangroves, estuaries (‘blue carbon’).
7. Waste utilisation – looks at emissions reduction but needs to view capture opportunities / benefit generation from waste streams. Reallocating of waste to feed products, energy and fertiliser.
8. There needs to be a definition of common practice and benchmarking of industry performance so that we can measure mitigation achieved (It was reported that the ABS have started work in this area).
9. There needs to be a clear statement about what this theme is trying to achieve – does it have a measurable end point or is it continuous improvement? The theme needs to be defined quantitatively.
10. There is a fair bit of negative language in the document. This risks disengagement.
11. Extension – adoptable information from this space is confused or inappropriately packaged for adopters. We need to understand information pathways, information needs to be skilfully summarised and delivered. We need an understanding of on farm decision making and drivers to contextualise the R&D.

Theme 3: Proactive participation in a low carbon economy

Overview Presentation by Mick Keogh, Australian Farm Institute

Mick Keogh presented Theme 3 from the perspective of the farm business. He addressed policy impacts, response strategies, the Carbon Farmer Initiative (CFI) and overall implications.

In policy terms (the Clean Energy Future 2011 legislative package), agriculture has been excluded from the carbon tax/ETS for the foreseeable future. This is not to say that agriculture will not incur costs (fuel, electricity and fertilisers) or that the agricultural supply chain has been excluded. Of the ‘Top 500’ (major GHG emitters), many are agriculture related and will subsequently incur costs from 1 July 2012. From Australian Farm Institute (AFI) modelling, the Clean Energy Future (CEF) legislation will result in something in the order of a 1% to 2.5% increase in farm input costs and a 2.5% to 7.5% reduction in gross margin. Enterprise and scale are critical determiners of impact. Productivity will be the key in offsetting impact.

The CFI has very significant transaction costs for farmers and investment in bio sequestration only works in high rainfall single species woodlots. Better models may emerge in the future for farmer participation but at the current time the CFI offers limited opportunity for farmers.

What we need is better whole farm models so that multiple abatement options can be assessed for the one farm business. For example a single farm adopting soil carbon, woodlots and N management.

We need CCRISPI coordinated research to deliver better mitigation techniques and systems together with engagement models. Farmers need a ‘knowledge foundation’ – enough information to give carbon abatement a go and this is missing at the current time.

Facilitated Interactive Discussion

The interactive discussion of Theme 3 included contributions from Darryl D’Souza - Australian Pork Limited (APL), Michelle Edge - Australian Meat Processors Co, and Robert Quirk - Climate Champion and canegrower Tweed River NSW.

- We need to be clear about what the goal is for CCRSPI RD&E strategy. For APL the goal is Australian pig productivity without collateral damage (from a carbon tax/ETS) and Australian pork businesses that are price competitive. APL’s KPI is 1 kg of CO₂ equivalent emission for every 1 kg of pork. We need the CFI to deliver our goal. Our priorities include manure management – covered ponds then what, is it flaring the gas, electricity generation or growing algae for pig food. Can we add human food scraps to the ponds?
- Meat processing and export is a trade exposed low margin industry. We have 15 sites in the ‘Top 500’ and the Clean Energy Future legislation will result in a significant market distortion. Small processors will be left with a competitive advantage over large operations that are required to comply. We will have to offset this imposition through R&D yet we are not eligible for agricultural offsets. Australia’s major trading partners and competitors have delayed carbon pricing. We need the CCRSPI strategy to deliver models to identify business impacts. We need tools that help us understand reporting requirements. We need waste to energy techniques, methane capture and beneficial use, refrigeration efficiencies, better ways to process meat and then get regulatory approval for them. We need training for our environmental managers. The key is to collaborate, to work with GRDC, APL and others but still meet our customer requirements. The CCRSPI strategy is an opportunity to engage and we are keen to form clusters with other industries facing similar challenges.
- For NSW sugarcane growers carbon sequestration in the soil is working but it is not a profitable activity. We are also working on controlling N₂O emissions from cane land that is old wetland and managing acid sulphate soils. We can cut emissions from this source to zero. Sugarcane is uniquely positioned – it is a carbon neutral crop. We are keen to see our successful methodologies adopted by other primary industries.
- Comments from the workshop following these short presentations included: we can see a time when all farmers will have to generate some energy as part of their productive system. Post farm gate processing has common issues with energy efficiency and waste management which provide good opportunities for across industry collaboration. Cool chain efficiency is an obvious area for collaboration. Being able to do something to reduce carbon is one thing, having it recognised through the CFI is another. This lack of recognition is one reason the government has set aside funding for research ie development of abatement measurement techniques. Capacity building – primary producers, processors, advisors, etc should be a very important component for the CCRSPI strategy.

Workshop Suggestions for Theme 3 Improvement

Small table discussions provided suggestions on improvements that should be considered for Theme 3. The seven small table suggestions were aggregated by Georgina Kelly NSW DPI into the following key points.

General

- There is confusion on the purpose of what we are trying to achieve. Is this theme adoption ie extension or is it not?
- Tools to facilitate adaptation are critical and these are missing.
- Bundling, consideration of the whole system is missing from this theme.
- The theme needs to explicitly consider the social drivers for participation in the low carbon economy.
- Extension needs more attention especially remembering that this is a PISC RD&E strategy.
- The strategy needs to cover off a wide range of responsibilities and ‘markets’. We don’t see this in the current draft strategy.

3.1 Adapting to New Policy Settings

- Research needs to be completed under this theme to identify and then rectify the potential for perverse outcomes (eg Mick Keogh’s presentation showed that farmers were financially better off sequestering with monocultures and ignoring NRM / biodiversity policy goals). A better example might be new irrigation systems that saves water but requires much more energy to operate.
- This sub theme needs to address subsidies plus incentives and market instruments.

3.2 Realising Opportunities and Meeting Obligations

- ‘Connectivity’ is more about measurement than attribution and therefore fits into Theme 2 Emissions Reduction.
- Why is biodiversity conservation singled out – should be changed to ‘Primary Production’?
- Expand ‘Realising Opportunities’ to include Tools to support and enable farmers to decide cost and benefit of engagement. What trading models maximise adoption?
- Need a database of Business as Usual (DCCEE to provide). Practical tool for emissions intensity to determine benchmark.
- What role does price play in land use change (sensitivity analyses).
- Evaluate/quantify carbon co-benefit and productivity: including (1) development of metrics and an integrated assessment framework (2) Develop a decision tree for simple assessment to invest/engage (3) Cost benefits of alternatives strategies leading to sustainability and efficiency.
- Need cost effective/time critical options.
- Carbon foot printing needs to be broadened to environmental foot printing (and don’t refer to it as Life Cycle Analysis).

3.3 Drivers for Engagement

- This sub theme should be: What are the barriers/enablers to participation (structural and institutional impediments).
- Need to convey/understanding the difference between ‘carbon footprint’ and CFI abatement.
- Productivity improvements are critical drivers for participation.
- On farm demonstration of practical implementation of economic benefit.
- Reduction of transaction costs for participants - optimise efficiency through multiple projects for one reporting mechanism: stacking meths/projects in a system.
- Need guarantees of policy security for longer term to underpin project investments.
- Insert “Industry Capacity” as another heading under 3.3.

Add an Adoption Strategy to the CCRSPI strategy

- The CCRSPI strategy needs to be generic and finetuned for each region.
- It needs to provide a synthesis of what is already known.
- Adoption needs to be embedded in all three CCRSPI strategy themes.
- CCRSPI needs to become a trusted advisor.
- Omitting ‘Extension’ does not sit comfortably with the title of the RD&E Draft Strategy nor match the clear intent of PISC RD&E Framework and 2011 revised guidelines).
- Extension needs to articulate actions not just implied intent.

Georgina Kelly also presented a draft decision tree for selecting projects that should be included in CCRSPI strategy (included in this report as Appendix 3). The decision tree was developed by Kate Lorimer Ward (NSW DPI) and Georgina Kelly and they suggested that the decision tree be included in Section 8.3 of CCRSPI 2012-17 strategy. Key features of the decision tree include the requirement that CCRSPI projects included in the CCRSPI strategy be cross sectoral, an assessment of whether previous research in the area has assessed proof of concept, whether further investment will increase adoption, is policy such as the CFI a driver and what is the scale of the emissions reduction if the research is successful.

Integration across the Three Themes

Forum facilitator Mike Williams identified three standout integration needs emerging from review of CCRSPI themes:

1. Greater emphasis on a systems approach
2. Tools at appropriate scale – that identify co benefits and productivity benefits
3. Consideration of the social and economic dimension – preferably embedded in each of the themes. This includes extension and ensuring that research outcomes are ‘adoptable’.

These observations were put to the forum and the following comments emerged:

- Integration needs to be about N₂O researchers understanding and learning from what CO₂ researchers are doing. It is about people talking to each other.

- Climate Champion representatives were pleased to hear the need for additional emphasis on extension and reiterated the need for research outcomes to be cost effective to implement.
- The outcome we are seeking by investing in the CCRSPI strategy is adoption. Clearly therefore we need to focus on making the strategy relevant to farmers.
- We appreciate the recognition of farming systems arising from the forum.
- Perhaps the decision tree should include a response from farmers – is this research likely to be affordable and will you adopt?
- We need to bear in mind the current status of farmers – after a decade of drought they are often severely in debt and have in some instances lost faith in their capacity to make sound decisions. This in turn is having an impact on both production and financial risk in primary industries.
- The RD&E continuum is critical and our traditional publically funded extension capacity is gone – therefore we will have to engage through more diffuse and the burgeoning commercial extension industry.
- Caution was also expressed in relation to overinflating the importance of extension ‘let R happen then worry about the E’ and ‘too much emphasis on extension results in short term and potentially meaningless research’.
- Overall there is support for the three themes currently articulated in the draft CCRSPI 2012-17 strategy.

Snow Barlow noted that it was the intention of those who drafted the current strategy that extension would be integrated across all three themes rather than just through Theme 3. Kelvin Montagu noted that in accordance with PISC, CCRSPI strategy needs to be about national research, regional development and local extension. The CCRSPI strategy must therefore stay at the macro level while extension is relevant at the individual business plan level.

Session 4: Engagement and Extension – Adoption Pathways and Behaviour Change

This session explored ideas and examples of how national climate change research can be delivered. Perspectives were provided by Graham Anderson – Manager Planning for Climate Change Vic DPI, Robbie Sefton, Principal of strategic communication firm Sefton & Associates based in Tamworth NSW, Alexandra Gartmann – CEO Foundation for Rural and Regional Renewal and formerly CEO Birchip Cropping Group Victoria and Heather Campbell - CEO Landcare Australia. Comments from the forum floor are also recorded along with information on DAFF policy initiatives provided by Amanda Jones.

Graham Anderson, Vic DPI: There is a lot of anxiousness amongst farmers about climate change. Farmers have been out of the loop on climate change developments for the last ten years. Farmers understand that more research is needed but they have not been exposed to what is already known. As a consequence Vic DPI has set out to build capacity in those who advise the farming sector and get primary producers up to speed. When working with primary producers language is all important and it must be jargon free. Farmers are receptive but get frustrated when impacts are in 2030 and there is no immediate action they can adopt. Farmers work well with short term forecasts and it is suggested that this would be a good place to

start. Get content for extension by asking researchers to ‘tell us everything you know in 60 seconds’.

Robbie Sefton, Sefton & Associates: Recent work has been with DAFF on Australia’s Farming Future, a program to tell farmers about climate change and there are some lessons learned from this experience. Remember the ‘consumer is king’ and the RD&E strategy would benefit from recognising this preeminent driver. Consumer values and ethics are changing. Consumers are becoming more rigorous and inquiring of the products they purchase. We are currently not linking ‘paddock to plate’ at all well and we need to link the consumer into R&D and communication. Collaboration is also important. Most farmers produce more than one commodity and we must work across RDCs to ensure we engage with farmer needs. Talk ‘returns per hectare’ and give messages in this form ie research aimed at increasing sustainable production with productivity gain. Talk in a context of things that farmers want to talk about eg ‘a run of bad seasons’ and allow this to gradually evolve into a discussion about climate change. Deliver the message in partnership with people that farmers trust and these people will be different in each community.

From the Australia’s Farming Future program we learned that there is a feeling of fear amongst farmers and they feel as though they are being blamed for climate change. Climate challenge and risk management are concepts that farmers are prepared to work with. Focus on productivity and the bottom line. Farmers are willing to change but think in terms of the individual’s current situation, where they have been and where they want to go.

Alexandra Gartmann, formerly CEO of the Birchip Cropping Group: Extension is only provided with lip service in the draft CCRSPI 2012-17 Strategy. As an extension practitioner I do not feel part of the strategy, rather an add-on at the end. This should be an ERD&E strategy with the first E standing for ‘engagement’ to set research priorities. The strategy currently relies on the classic extension model – “research it then shovel it out”. The capability audit is solely focused on research capability, however for full realisation of the strategy, the extension capability should be considered. Why focus on peer reviewed science. Few farmers read science journals. Something like the BCG Annual Research Results Book is a good example of an industry publication that gets used by the end user: farmer. The partnerships described in the strategy are all about public agencies however these organisations are decreasing their commitment to extension. We need the private and not for profit sectors to be part of the strategy and we need the information to flow in small regular timely “bites”. Information that incorporates social and economic implications – the relative advantage of one decision over another. “It is variability not change” attitude is a coping mechanism by many, as identified in ‘Critical Breaking Point’ social research.

Heather Campbell, Landcare Australia: Engagement tends to be confined to a narrow path – we like to work with those with whom we are familiar. There are many different avenues for communication with farmers and many non traditional players. Farmers’ advisors such as lawyers and accountants are good because they focus on what is important to farmers – the bottom line. Incitec Pivot and Fonterra are also relevant but the type of channel varies in each community. The key is to identify who is trusted and invest in having them skilled in climate change adaptation. A great tool for extension is farm scale case studies prepared by people farmers trust. Farmers want to engage and this is something they can engage with that is real. Also make use of those who are engaged with the end consumer eg Woolworths.

The Australian Government’s and Grains RDC, MLA, RIRDC and Sugar RDC’s Managing Climate Variability Program is successful because it (1) Started with information that farmers

are interested in (2) recognised farmer knowledge and started from this point (3) had credible science sitting behind it.

Facilitator Mike Williams asked the room for principles to achieve effective CCRSPI extension and the following comments were received:

- Simple cartoons on the many factors that go to make up climate change.
- Show how climate change can be profitable.
- Add economic analysis – evaluate how useful seasonal forecasts are. Communicate the Mick Keogh analysis to both primary producers and policy makers.
- Are we confusing a lack of communication with CFI being ineffective?
- We need some really good primary producer social research to inform decision making (NB: the Australia's Farming Future program was informed by good social research completed by a firm called Instinct and Reason Pty Ltd).
- To be consistent with other PISC Cross Sectoral RD&E Strategies we must embed communication in each theme and sub theme.
- There is no single extension model that fits all industries. For example the 10% of producers who produce 90% of Australia's vegetables all use consultants and are easy to communicate with. The other 90% are time poor and struggling.
- If the research output is cost effective and practical (ie it doesn't require large investment such as a new machine) then farmers will find a way to adopt it.
- Presenting the information in a form that means something to farmers is also important. For example a 2°C increase in mean temperature means nothing but translated into a significant drop in soil moisture and the change in days above wilting point and you have something that gets farmers' attention.
- Participatory research is long established and well known and should be included in this strategy. Good researchers who can't communicate should partner with those who can. The right partner might be from right outside agriculture. It might be useful to incorporate the CSIRO Adoptability Framework into RD&E design.
- Let's also remember that not all outputs of research are driven toward adoption. Some research is about creation of knowledge that will feed into future research.
- Plan for (1) awareness, (2) education, and (3) adoption. Build communication right through the strategy.
- For a small RDC like the Australian Egg Corporation Limited (AECL) climate change has been a low order priority. This has now changed and we will be looking for ways to adopt outcomes and have abatement counted through our QA audits. In this way we can cut down transaction costs. We will also be looking for the outcomes of the CCRSPI strategy to provide tools that we can use to train our vets and communicate with our producers.
- The Managing Climate Variability Program was effective because we learned together – it wasn't researchers just delivering facts.
- The Australian Government is already backing lots of pure science programs so should the CCRSPI strategy be about outcomes that are practical?
- The accountability for extension is not clear in the current draft strategy. If who is responsible is not stated up front we will fail.

- Build extension and communication activities in at regular intervals through the CCRSPI 2012-17 strategy delivery and make sure they are funded.

Snow Barlow concluded the session by acknowledging that the feedback received was a reality check; that the draft strategy needed to meet farmer extension needs while still delivering internationally tradeable Kyoto permits that need to be backed by peer reviewed science.

Government Investment and Future Trends

Amanda Jones, DAFF: explained to the workshop that DAFF will be informed by CCRSPI 2012-17 strategy and DAFF will be developing its own long term strategy over the next twelve months. DAFF is looking to see cross sectoral coordination and delivery of RD&E and substantial funds are being set aside for investment. DAFF is looking to see both a short term and a long term RD&E focus and this should be clearly articulated in the final CCRSPI 2012-17 Strategy.

The Australian Government's policy as articulated through the Clean Energy Future legislation is in three parts (1) mitigation (2) adaptation (3) international engagement. There will be major investments in the coming years in the land based sector. For example the Biodiversity Fund is \$946 million over six years. Carbon Farming Futures is \$429 million over six years made up of:

1. Filling the Research Gap - \$201 million
2. Action on the Ground - \$99 million
3. Extension and Outreach - \$64 million

Filling the Research Gap will support competitive grants that address emissions reduction, models and soil carbon. There will be funding for methodologies. DAFF will be looking for collaboration and cross sectoral participation.

Action on the Ground will be driven by grants to landholders aimed at reducing emissions and increasing soil carbon. It will focus on translating lab findings to the field.

Extension and Outreach will provide national coordinated communication using existing channels and will commence with a mapping of existing extension networks.

There is also a Biochar Capacity Building Program with a budget of \$2 million.

Keynote: Perspectives from New Zealand

Dr Harry Clark – New Zealand Agriculture Greenhouse Gas Research Centre, AgResearch provided an overview via videolink of the NZ Emissions Trading Scheme and the Global Research Alliance.

The NZ ETS is still at the planning stages; it is still evolving and changing daily. It is due to start January 2015 and only methane and N₂O from agriculture will be included. The effective cost of emissions will be very low in the scheme's first twenty years of operation (\$2.50/tonne emitted). Only minor agricultural species such as alpaca will be excluded from the scheme. The point of obligation is the processor (eg abattoir). This means there are no incentives for on farm emissions efficiency. Soil carbon will not be included. All units will be internationally tradeable. Trade exposed industries like agriculture will be subject to special

arrangements. It will be an intensity based system rather than an absolute emissions cap. The ETS is not popular and a formal review is scheduled for 2014, which may modify or even shelve the scheme prior to January 2015.

The Global Research Alliance is a NZ initiative started at the Copenhagen Climate Change talks aimed at research to balance the difficulty of agricultural mitigation and the need to secure food security. Separate groups focus on Livestock, Crop Land and Paddy Rice. At this stage it is a forum for exchange of information and ideas and does not have access to dedicated funding.

Keynote: Trading Carbon Westpac's Perspectives

Scott James Head of Agribusiness Westpac explained Westpac trade carbon in the same way it trades other agricultural commodities such as wheat. In NZ where the market is already established the bank works as an aggregator, lumping up small parcels of offsets. In addition Westpac provides advice to its agribusiness customers in relation to carbon as an agricultural commodity and our advice has been 'wait till the legislation has passed through Parliament, talk to a licensed financial planner who is accredited to give carbon advice and treat carbon the same as any business opportunity'. Dairy and piggery owners who can capture methane from ponds are likely to be the first to invest in emissions abatement. From our assessment to date there are no 'rivers of gold' in this business for either farmers or bankers.

Questions from the floor following Scott's presentation noted that opportunities in agriculture would be greater if there were additional methodologies available for accredited emissions capture. At the current time each project has to have its methodology approved by the DOIG. This was clearly a research priority of the highest importance for CCRSPI but having the methodologies recognised internationally was going to be an ongoing hurdle.

Scott was asked about the demand for credits from big emitters. He commented that the big emitters had long factored in the cost of carbon and want access to simple overseas sources in order to avoid the complexity that exists with domestic products.

Forum Wrap Up and Next Steps

Snow Barlow provided a wrap up for the forum. Key questions for the future include (1) What is going to happen to the carbon price and (2) How are we going to deal with things that are 'not quiet Kyoto'? In future international negotiations Australia will be chasing answers to these questions, so the whole space is still evolving.

Snow's summary included:

1. More context on the strategy – fundamentally there needs to be a clear articulation of the strategy's value proposition. Especially in light of the complexity of the multiple stakeholders of CCRSPI.
2. There seemed to be general comfort with the themes and considerable detail can be added as a result of the forum. We have also heard the message about a more systems based approach and greater use of positive language.
3. The challenge will be to deliver more integration, more systems thinking, more extension and outreach. Delivery of research through extension is very important but so is the peer reviewed science.

4. The hardest challenge will be to measure outcomes from the strategy and it needs to be noted that this is not a research plan it is a strategy and we are not necessarily in control of what investments are ultimately made.

The process from here will be:

1. Delivery of the next draft of CCRSPI 2012-17 strategy by 23 January 2012
2. Circulation of the draft strategy to the CCRSPI partners by 1 February 2012
3. Finalise and send to PISC by 28 February 2012.

Thanks and close

In closing Craig Burns thanked the CCRSPI Secretariat and in particular Alison Kelly and Lauren Hull for their marvellous efforts in developing and delivering the Forum, to Michael Williams for his expert facilitation and guidance of the Forum and to all the presenters, panellists and synthesisers for their thoughtful presentations. In closing Craig requested ongoing feedback from the commercial / producer sector to ensure the CCRSPI strategy 2012-17 was indeed demand driven.

Forum Reference

Climate Change Research Strategy for Primary Industries (2011) Climate Change Research Strategy for Primary Industries – Research Development & Extension Strategy 2012-2017 – A Revision of the 2008 Strategy, draft revised CCRSPI strategy for consultation. Prepared 30 November 2011.

Appendix 1 CCRSPI Forum 2011: Participants list

Title	First Name	Last Name	Organisation	FORUM	
				Dec -07	Dec -08
Ms	Alexandra	Gartmann	Birchip Cropping Group		<input checked="" type="checkbox"/>
Mrs	Alison	Kelly	University of Melbourne	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Amanda	Jones	Department of Agriculture, Fisheries and Forestry	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Andrew	Carmichael	Climate Champion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Angus	Crossan	Australian Egg Corporation Ltd	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Ann	Penny	National Climate Change Adaptation Research Facility	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Beverley	Henry	Managing Climate Variability Program		<input checked="" type="checkbox"/>
Dr	Bianca	Cairns	Sugar R&D Corporation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Brian	Foster	Eyre Peninsula	<input checked="" type="checkbox"/>	
Dr	Cathy	Phelps	Dairy Australia Ltd	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Clive	Noble	Department of Primary Industries – Vic	<input checked="" type="checkbox"/>	
Mr	Colin	Creighton	Fisheries R & D Corporation	<input checked="" type="checkbox"/>	
Mr	Craig	Burns	Rural Industries R & D Corporation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Darryl	D'Souza	Australian Pork Limited	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	David	Cattanach	Climate Champion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	David	Eyre	NSW Farmers Association	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	David	Putland	Growcom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Prof	Deli	Chen	University of Melbourne - Associate Dean MSLE	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Emma	Gilmour	Incitec Pivot	<input checked="" type="checkbox"/>	
Dr	Francois	Joubert	General Manager Sustainability, Fonterra Australia Pty Ltd	<input checked="" type="checkbox"/>	
Mr	Gary	Allen	Bureau of Meteorology	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Gary	Brinkworth	Incitec Pivot	<input checked="" type="checkbox"/>	
Dr	Georgina	Kelly	NSW Department of Primary Industries	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Geraldine	Pasqual	Department of Agriculture and Food – Western Australia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Graeme	Anderson	Department of Primary Industries - Vic	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Gus	Manatsa	Australian Wool Innovation Limited	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Guy	Roth	Coordinator, National Program for Sustainable Irrigation	<input checked="" type="checkbox"/>	
Dr	Harm	van Rees	National Adaptation and Mitigation Initiative	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Harry	Clark	New Zealand Agricultural Greenhouse		<input checked="" type="checkbox"/>

			Gas Research Centre, AgResearch (via Video Conference)		
Ms	Heather	Campbell	Landcare Australia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Ian	Porter	Department of Primary Industries – Vic	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Jack	Holden	Sustainability Strategy Manager, Fonterra	<input checked="" type="checkbox"/>	
Ms	Jann	Conroy	University of Western Sydney	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	John	Ive	Climate Champion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Jonathon	Pavetto	Canegrowers Association	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Julie	Bird	Rural Industries R & D Corporation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Kate	Lorrimer-Ward	NSW Department of Primary Industries	<input checked="" type="checkbox"/>	
Mr	Kelvin	Montagu	Colo Consulting	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Lauren	Hull	University of Melbourne	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Lynne	Strong	Cloverhill Dairies	<input checked="" type="checkbox"/>	
Dr	Martin	Blumenthal	Grains R & D Corporation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Michael	Battaglia	CSIRO	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Michael	Clarke	AgEconPlus	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Michael	Williams	Michael Williams & Associates Pty Ltd	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Michelle	Edge	Australian Meat Processors Corporation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Mick	Keogh	Australian Farm Institute	<input checked="" type="checkbox"/>	
Mr	Neil	Cliffe	Department of Primary Industries and Fisheries – Qld	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Neil	Fisher	Grape & Wine R & D Corporation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Peter	Deuter	Department of Employment, Economic Development and Innovation	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dr	Peter	Hayman	South Australian Research and Development Institute	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Peter	Melville	Horticulture Australia Ltd		<input checked="" type="checkbox"/>
A. Prof	Richard	Eckard	University of Melbourne - Director PICCC	<input checked="" type="checkbox"/>	
Mr	Rob	Young	NSW Department of Industry and Investment		<input checked="" type="checkbox"/>
Mrs	Robbie	Sefton	Sefton & Associates		<input checked="" type="checkbox"/>
Mr	Robert	Quirk	Climate Champion	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Robyn	Cowley	Department of Resources – NT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Mr	Scott	James	Head of Agribusiness Segment - Westpac		<input checked="" type="checkbox"/>
Dr	Shane	Norrish	Landcare Australia	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Prof	Snow	Barlow	University of Melbourne	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ms	Su	McCluskey	Council of Rural RDC Chairs	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Appendix 2 Forum Agenda

See separate document

Appendix 3 NSW DPI Draft Decision Tree for CCRSPI Project Selection

Note: This is a draft decision tree only and the process depicted does not constitute an endorsed approach for project selection.

