Has modelling replaced science?

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The role of science in policy-making is becoming more important, as governments tackle complex environmental issues such as climate change, biodiversity conservation and sustainable land and water management. However, close scrutiny of some of the ‘science’ utilised to inform policy decisions reveals that there is an increasing reliance on modelling, rather than actual science. This raises some difficult questions for governments, in that it is often more difficult to scrutinise the results of modelling, and small variations in assumptions can result in large changes in outcomes. An examination of some recent case studies suggests that the reliance on modelling – in some instances because governments have not adequately resourced science agencies – can result in poor policy decisions and significant community cost. Governments need to adopt a more sceptical attitude to modelled ‘science’ in formulating future environmental policies.

Modelling the extent of dryland salinity
During the 1990s, concern about the potential risk that dryland salinity posed for Australian agriculture increased, and in 2000 Australian governments adopted the National Action Plan for Salinity and Water Quality (NAP), committing $1.4 billion in funding over seven years to tackle the problem. As part of this program, state governments were required to map priority areas of salinity risk or hazard within their jurisdictions. The various state government salinity audits were incorporated into a national salinity mapping project, and in January 2001, the Australian Dryland Salinity Assessment report (NLWRA 2000) was released.

The report estimated that there was approximately 5.7 million hectares (ha) of land within regions at risk of or affected by dryland salinity. It also concluded that this could increase to

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some 17 million ha within 50 years. While this was significantly higher than earlier estimates, it was used to allocate funding under the NAP.

A review of state salinity reports leads to the conclusion that there were major shortcomings in relation to the available data, the assumptions used in developing projections from that data, and the overall conclusions of the audit. The so-called audit relied very heavily on modelling, because the necessary data to accurately assess the extent of dryland salinity was not available.

Dryland salinity is believed to be caused by changes to land use (such as tree clearing and cropping) that result in rising groundwater tables which bring to the surface mineral salts which are deposited there when the groundwater evaporates. Salinity greatly reduces agricultural productivity, and causes damage to infrastructure and buildings. A key factor in understanding dryland salinity risk is depth to groundwater, which can be measured using data from bores.

The lack of availability of this data was a major deficiency for the salinity audit. Apart from Western Australia, the coverage and quality of bore data available was quite poor. In many cases, depth to groundwater information was only available from a very limited number of sites, and these were often located in lower areas of the landscape, resulting in distorted data, especially in hilly regions.

A second major deficiency was the method used to estimate future trends in groundwater levels. In many cases, groundwater trend estimates were extrapolated using only two or three bore readings taken relatively short periods of time apart – often just one or two years. Extrapolating forward over a 50 year period based on such limited data is inherently risky, as other researchers highlight:

Areas of shallow water levels extrapolated from two point bore water level rises suggest that approximately two thirds of the catchment could suffer from shallow water levels by the year 2100. Bore hydrographs and groundwater modelling, however, indicate that water levels have remained high and stable for up to 25 years, and that a dynamic equilibrium may exist. (Creswell et al. 2003)

Such extrapolation is even riskier when, with the exception of Victoria and South Australia, no allowance was made for the variations in groundwater levels due to seasonal rainfall conditions. The effect of seasonal rainfall was recognised in preparing the Victorian assessment, and two projections were developed: a worst-case (wet climate) and a best-case (dry climate) estimate of likely salinity extent in 50 years. The best-case estimate of 1.6 million ha was approximately half the worst-case estimate, yet in compiling the national assessment, the worst-case figure was utilised.

A third major deficiency in all except the South Australian assessment was the assumption that future groundwater trends would be a simple linear extension of observed trends. This was equivalent to assuming that the rate of increase of water levels in a filling bathtub will continue unchanged, even after the bathtub overflows! Virtually all assessment reports noted that this linear projection was an unrealistic assumption.

The Queensland audit result was perhaps the most questionable. It was clearly explained that there was little or no groundwater data available on which to base the Queensland assessment, which was a ‘hazard’ rather than a ‘risk’ assessment. The report states that the approach used will ‘result in a significant overestimation of areas at risk’ and ‘should not be directly compared with 2050 predictions using the groundwater trend approach.’ Despite this qualification, the national audit used the Queensland data to calculate salinity projections for 2050.

These and other issues were all considered in a subsequent technical review of the audit (Webb 2000). The key conclusion of that review was:

Existing monitoring and assessment systems for dryland salinity are inadequate for determining with confidence, the current and future extent of dryland salinity across the continent, or for assessing the effects of any remedial or preventative management responses.

This conclusion hardly generates great confidence in the usefulness of the audit findings, nor does it provide reassurance that the modelled outcomes should be given the high degree of credibility and recognition that they have subsequently been accorded.
Modelling environmental conditions in the Murray-Darling River system

One of the most significant environmental reforms currently being undertaken in Australia is the development of a plan of management for the waters of the Murray-Darling Basin. The process of finalising a future plan has been underway for several years, and has been the subject of considerable controversy.

At the core of disputes about the plan is the science that is being utilised for decision-making. Those arguing that the draft plan makes insufficient water available for the environment frequently refer to the ‘science’ supporting the need for more environmental water.

One key piece of ‘science’ that has been important in establishing a baseline condition assessment for the Basin Plan is the Sustainable Rivers Audit (SRA) which was released in June 2008. As explained by the Murray-Darling Basin Authority (MDBA), ‘The data collected by the SRA is a key input to the Basin Plan and other programs of the Murray-Darling Basin Authority.’ (MDBA 2012)

According to the authors of the Sustainable Rivers Audit report (Davies et al. 2008) the SRA involved two main processes. The first was a large-scale survey to collect relevant physical data from numerous sampling sites within the Murray-Darling Basin, with the data initially focused on three themes – hydrology, fish and macroinvertebrates.

The physical data used to inform the current condition assessment for each of these was collected over the period 2004 to 2007, which was during a period of severe drought. The authors noted, ‘A severe drought has prevailed over the Basin during the audit period. It is too soon to say how much this has affected fish and macroinvertebrate communities.’

It would seem only logical that the prevailing drought conditions would have had a negative impact on the fish and macroinvertebrate populations.

There were also limitations to the data collected to assess current environmental conditions. For example, in relation to macroinvertebrates the report notes:

The AUSRIVAS sampling method does not accurately represent the abundances of macroinvertebrates, and numeric data from samples therefore are not used here in the assessment of Condition. Nor does the method adequately sample several groups of molluscs and crustaceans, especially larger species like freshwater mussels and crayfish. These limitations will be addressed in future refinements of the sampling protocol.

In relation to hydrology, the SRA report notes:

Extensive delays in determining the location of representative sites and the delivery of modelled data by some States caused substantial problems, and there were inconsistencies between models, estimations of Reference Condition and the durations of site records. The hydrological assessments in this report therefore do not meet rigorous SRA design principles.

The second step in the process involved computer modelling to develop estimates of the ‘reference condition’ for each of these indicators, that it was assumed would have been the case if there had been no significant human intervention in the landscape. The SRA report explains that, ‘Historical data, expert knowledge and modelling are used where possible, but sometimes these may not be sufficient for reliable estimates of some variables.’

For the hydrology theme, the report explains:

Reference Condition for Hydrology is estimated using models run under assumptions of no direct human influence on water management (that is, with storages, diversions and inter-valley transfers set to zero). The effects of farm dams, reafforestation, land clearing, groundwater extraction and other land management activities, will be incorporated when they can be quantified.

For the fish theme, the SRA report noted:

As it is not possible to measure Reference Condition directly, it is determined by combining expert knowledge, previous research, museum collections and historical data, and is used in the calculation of several indicators.

The final step in the SRA was to compare the data detailing the current state of environmental factors with the modelled reference condition for each to create a condition assessment, with that assessment being either good, moderate, poor, very poor or extremely poor. Assessments for each of the three themes were also combined to produce...
an overall indicator of ecosystem health for each river valley.

The assessment was based on how different each of the theme indicators was from their modelled ‘reference’ conditions. Of the 23 river valleys included in the analysis, 13 were classified as having ‘very poor’ ecosystem health, seven were assessed as ‘poor’, two were assessed as ‘moderate’ and one was assessed as ‘good’.

The reliance of this process on theoretical modelled assumptions of the state of the environment prior to human intervention, the use of physical data collected during an extreme drought, and the limitations of the physical data collection process all raise serious questions about the robustness of the modelling and science used to assess the Basin’s environmental health. This, in turn, puts in serious doubt the usefulness of the physical data collected during an extreme drought, and the limitations in the availability of recorded climatic data are also a constraint. Reliable climate records are rarely available for more than 100 years at any location, and the factor causing concern – rising atmospheric greenhouse gas concentrations – has only been recorded over the past 50 years.

As a result it is difficult to adequately test climate models to determine how robustly they are able to predict future climate changes. For example, it is particularly important to be able to calibrate climate models using one set of data and then validate them on independent data to ensure the models are predictive, rather than just a curve-fitting exercise. This is problematical given the slow response rates of the climate, the complexity of climate systems, and the limited climatic data sets available. These factors, plus the practice of ‘tuning’ climate models to reflect current conditions also makes it difficult for researchers not involved in the development of a specific model to check assumptions used.

While policy-makers proclaim that ‘the science is settled’, climate researchers are more circumspect, and have expended much effort to develop robust climate datasets, and to objectively test the performance of models.

A major example is the World Climate Research Programme’s Coupled Model Intercomparison Project phase 3 (CMIP3). This has involved comparisons of the performance of over 20 major climate models utilising a wide range of parameters. There have been many reports from this project, and there have also been a number of reviews conducted at a national level, such as the 2008 report by the US Climate Change Science Program (CCSP 2008). Groups such as the UK Royal Society (Knutti 2008) and the American Meteorological Society (Reichler & Kim 2008) have also published reviews on this topic.

Broadly speaking, these reviews find that current climate models are reasonably ‘skillful’ at mimicking current climatic conditions at a broad scale. They are also getting better at incorporating the effects of factors such as El Niño and La Niña events. However, different models exhibit different strengths and weaknesses, and no single model performs well in all respects. The limitations of the models are highlighted by the fact that the range of uncertainty in projected future temperature change (between 1.5 and 4 degrees C) associated with a doubling of carbon dioxide concentrations in the atmosphere has not been reduced significantly.

Global climate models were also found to have limited usefulness when downscaled to regions, have higher levels of uncertainty in predictions of future changes in rainfall, and be limited in the extent to which they incorporate all known processes and feedbacks from factors such as aerosols, clouds and the terrestrial carbon cycle.

The limitations of climate models are recognised by researchers working in the area, who also recognise the dilemma inherent in communicating the limitations of the predictions arising from these models:
There is a delicate balance between giving the most detailed information possible to guide policy versus communicating only what is known with high confidence. In the former case, all results are used, but there is a risk of the science losing its credibility if the forecasts made a few years later are entirely different or if a forecast made a few years earlier is not verified. The other option is to communicate only what we are confident about. But being conservative (i.e. not being wrong by not saying anything) may be dangerous in this context; once we are sure about certain threats, it may be too late to act. (Knutti 2008)

Is modelling replacing science?

These three examples highlight the increasing reliance of policy-makers on modelling, rather than actual science, in making decisions in response to complex environmental challenges.

No doubt modellers would protest that their models are based on science and simply provide a means of better understanding complex scientific problems when it is not possible to empirically test all aspects of a problem. While this is true, it also needs to be recognised that models often have major limitations and are subject to modification or assumptions that may bias results in a particular direction.

The modelling utilised to estimate the likely future extent of dryland salinity in Australia is a case in point. That modelling relied on limited and questionable physical data, and the promise of substantial government funding to ‘fix’ the problem created a quite strong incentive to maximise the projected salinity risk.

The modelling to establish ‘reference conditions’ for environmental factors in the Murray-Darling Basin also apparently relied on limited physical data, and it is virtually impossible for any independent person or group to determine how realistic the resulting ‘reference conditions’ are. Despite this, the modelled reference conditions were used as the basis for comparison with present conditions (during the middle of a devastating drought). Not surprisingly, this resulted in the conclusion that environmental health was poor or very poor in almost all the valleys of the Basin. This finding was, in turn, used to determine the amount of additional water needed by the environment. It is difficult to conclude that these factors, in combination, have not biased modelled outcomes in a way that paints an overly negative picture of the environmental health of the Murray-Darling Basin.

The modelling being used to better understand possible future changes in climate has, by comparison, been subject to a great deal more scrutiny. The cost of the development of global climate models and their complexity limits the contestability and transparency of the science underpinning them, but concerted efforts have been made to validate the performance of the models. Limited timeframes and other factors have constrained the extent that these models can be tested, but the current slowing in the rate of warming will provide a good test of their robustness, and enable them to be further refined.

Neither of the other two Australian modelling cases discussed above were subject to the same degree of scrutiny, and in the case of the dryland salinity example, this has resulted in considerable public expenditure achieving very questionable outcomes (Pannell & Roberts 2010).

Science and modelling are not the same, and while models normally incorporate some of the science base associated with an issue, they are still just models. They are often not able to be scrutinised to the same extent as ‘normal’ science, and their cost and complexity can reduce the ability of others to contest their results. Modellers may not necessarily be purely objective, and ‘rent-seeking’ can be just as prevalent in the science community as it is in the wider economy.

The lesson for governments is that much greater caution is required when considering policy responses for issues where the main science available is based on modelled outcomes.

Governments should consider the establishment of truly independent review processes in such instances, and adopt iterative policy responses which can be adjusted as the science and associated models are improved. Ill-considered or rushed responses can result in major cost and little reward, as previous examples demonstrate.

References


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The success of Australian agriculture over most of the past 100 years has been due to the innovation of Australian farmers, resulting in the development of agricultural systems that are unique and highly productive, despite the intense variability of the Australian climate and the competitive global markets in which Australian farmers operate.

However, recent rates of productivity growth in the agricultural sector have slowed, suggesting the ‘innovation system’ driving innovation and productivity growth may no longer be as effective as it once was.

Public-sector research, development and extension (RD&E) agencies including state agriculture departments, CSIRO and Research and Development Corporations (RDC’s) have been key contributors to the ‘innovation system’. Over recent decades, federal and state governments appear to have reduced the level of resources and funding available for agricultural innovation and increasingly rely on RDCs to fund research and development efforts. Similar trends are also evident for the publically funded agricultural extension sector, with a noticeable reduction in the number of extension staff servicing agricultural businesses and the amount of funding available for extension activities in most states.

In the grains industry, changes in the innovation system have been occurring simultaneously with significant productivity and commercial developments including deregulation of the grains markets, expansion of private sector plant breeding and associated IP ownership, the dramatic expansion of information availability through the internet, adoption of precision farming and many more.

Many of these changes have prompted the emergence of an active private advisory sector to provide RD&E to the grains industry. In many locations, the emergence of the private sector has changed the way public RD&E organisations interact with grain farmers. In some locations no public extension is available while in others public RD&E agencies are information wholesalers to the private sector who then transfer the information to producers.

Over the next 18 months the Australian Farm Institute will be conducting a comprehensive review of the Australian grains extension system and evaluating extension models from the US, Brazil and Denmark to inform the industry about opportunities and possible design options for grains extension systems to drive productivity growth.

The review of domestic extension will involve interviews with key private and public extension providers to gain an understanding of interactions between the two sectors, the perceptions of strategies used by the public sector, the nature of activities carried out by the private sector, how gaps could be addressed and overall perceptions of effectiveness. A survey of the private extension sector will also be conducted to obtain reliable information on the size and growth trends of the industry and its make-up, skills and experience profile.

International extension models will be studied from practitioners’ and farmers’ perspectives, including the rationale of the models, availability of resources, and views on their effectiveness. The views of key decision-makers on future developments in their agricultural extension systems will also be collected.

Methods of evaluating the effectiveness of decisions regarding resource allocation for extension will also be reviewed. The research, due for completion in late 2013, aims to identify broad strategic directions for future grain industry extension design.

Annual Agriculture Roundtable Conference
13 & 14 November 2012
Marriott Hotel, Brisbane

Each year the Australian Farm Institute convenes a national conference to bring together farm and agribusiness leaders to consider and discuss some of the strategic policy issues of importance for agriculture.

Go to www.farminstitute.org.au for more information, or to book online.
How many farmers are there in Australia, and how has the number changed over time?

The answer to a simple question like this would normally come from official government statistics – in Australia’s case the Australian Bureau of Statistics (ABS). But unfortunately, it’s not that simple. There has been regular changes over time in how the ABS defines and counts farmers, with the consequence being that there is no consistent time series of farmer numbers. In fact, if you believe the ABS the number of farmers in Australia jumped by almost 25,000 in 2005, despite a steady annual decline in numbers over the previous two decades. Even more surprising is the reported fact that the area of land used for farming in Australia jumped by almost 10 million hectares during 2010–11, again a reversal of a long-term trend in the opposite direction.

Agricultural statistics are critically important for many of the decisions that are made by governments, industry organisations and individual business managers. Think of some of the really complex issues that confront Australian agriculture at the moment, and at their core lie questions that government and industry need to have accurate answers for. Examples include: ‘How much water is used for irrigation in the Murray-Darling Basin?'; ‘How much nitrogen fertiliser is used on Australian farms?'; ‘How profitable are Australian horticultural farms?'; ‘How much Australian farm land is foreign owned?’. These questions are at the core of issues such as water management in the Murray-Darling Basin, greenhouse emissions from agriculture, the market power of Australian grocery retailers, and the role of foreign investment in agriculture. They highlight the importance of a comprehensive, robust and independent national agricultural statistics system.

Recognising how critical agricultural statistics are to some of the major policy decisions currently being made by government, the Australian Farm Institute has carried out research to examine the adequacy of the Australian agricultural statistical system. The results of that research will soon be released.

The research involved a comparison of the agricultural statistics system in Australia with the systems maintained by the United States (US) and France. These two were chosen because they both involve federal-type systems, where responsibilities are shared between the national government and state or provincial governments.

The research initially involved an examination of the administrative structures and resources available to each nation’s agricultural statistics system. While both the US and France have substantial farm subsidy and support systems that necessitate the collection of extra data, it was still somewhat surprising to discover that Australia spends less than one-tenth the amount of money that either the US or France does on their agricultural statistical systems, even when compared on a per farm business or per dollar of agricultural GDP basis.

The research then compared the range of statistical ‘products’ generated by each of the three statistical systems. These include the national agricultural census that each nation carries out, plus the range of other reports and regular surveys carried out by each relevant national organisation.

Some quite important differences were identified between the three national agricultural statistics systems, and a number of recommendations were made that should enhance the Australian system.

The report will be available from the Institute from late August. Please contact the Institute for more information.
Are the new live export regulations effective in...

Mr Kelvin Thomson MP
Member for Wills, Victoria
Australian Labor Party

It is my view that the present regulations fall short of ensuring animal welfare is guaranteed in the live export trade. This was demonstrated by the revelation in May of 37 breaches of animal welfare export standards by two exporters.

The 37 breaches raise the question of whether the framework of self-regulation is working. The Department of Agriculture Deputy Secretary said if further animal welfare breaches occur the exporters would face the possible loss of their export licence, but you have to wonder how many chances they get. When the trade was resumed last year after being suspended, the government said the industry was on notice, so I think the public would expect that any exporters now found to be treating animals inhumanely would have their export licenses revoked. In my view 37 breaches is way too many and the two exporters should have their licences suspended or even cancelled.

Even more worrying for me than the question of penalty is the fact that it wasn’t industry self-regulation that brought these breaches to light, it was Animals Australia. Are we really seeing only the tip of the iceberg?

The current Exporter Supply Chain Assurance system (ESCAS) allows for audit companies to be selected and paid for by exporters. Not unlike the current shipboard veterinary-placement system, this system may exert undue pressure on those contracted to provide the desired reports, rather than an independent and thus reliable audit. He who pays the piper calls the tune.

The independence of the audit regime is not the only issue of concern. There are no required spot checks or unannounced audits of facilities. Audit requirements necessitate only a very small number of vehicles to be observed during a discharge audit (e.g. just two trucks checked, or handling observed for 50 animals); or small numbers of animals to be observed slaughtered during an abattoir audit (e.g. just 10 animals or 20% of daily kill, whichever is the lesser).

When ‘feeder’ animals (animals that go straight to the feedlot rather than straight to the abattoir) are involved, such as in Indonesia, a facility can operate for months without an audit – i.e. after an initial audit of facilities, a performance audit for that consignment isn’t required for up to 190 days. Over such a period workers may have been replaced, training forgotten, or equipment broken or stolen and thus practices may have deteriorated.

- ESCAS standards are inadequate because they do not require pre-slaughter stunning of exported animals.
- In addition to Australia’s export of animals for slaughter we also send breeding animals all over the world to assist other countries to build up their herds. We know that these animals inevitably end up in the same abattoirs as animals exported for slaughter, however they are not covered by the ESCAS.

So far we have had three investigations into breaches of the ESCAS in Indonesia – one from a self report and two from Animals Australia. Any system that relies on the conscientious actions of organisations like Animals Australia and the World Society for the Protection of Animals to detect and report breaches will inevitably run into trouble.

When the animals are offloaded at a foreign destination port they are in a completely different jurisdiction – one where Australia has no authority. Australian visibility of what goes on is very much reduced, with obvious potential for under reporting of animal welfare breaches. Our key control is whether to send the animals or not. Long distance transport is cruel. Many sheep die from starvation, and suffer from the cramped conditions, humidity and heat, ship movement, and the cumulative effects of stress.

The live export trade is not only a failure of ethics but a failure of economics. We should move towards a viable alternative – a local chilled meat export industry that protects and creates more Australian rural jobs, results in higher profitability through value added opportunities and addresses the public’s welfare concerns.

In 2011, the Australasian Meat Industry Employees Union (AMIEU), estimated that some 3500 direct employment meat processing jobs have been lost because of the Australian live animal trade. An ACIL Tasman report (2011) on Australia’s live animal exports estimated that the establishment of a meat processing facility in northern Australia could create up to 1300 new jobs in the region.

I think the only way we are going to ensure our animals are not being mistreated is to insist on mandatory stunning – that all animals are stunned before being killed. I further think we should be supporting proposals for the establishment of abattoirs in northern Australia, such as the Australian Agricultural Company proposal for Livingstone Valley south of Darwin, and transitioning away from live exports and into domestic processing, which is better for both animal welfare and for Australian jobs.

In 1988, Kelvin Thomson MP was elected to the Victorian Parliament as the Member for Pascoe Vale and was re-elected in 1992. In 1996, he was elected to the Federal Parliament as the Member for Wills. From 1998 to 2007 he served in a range of Shadow Ministries, including Assistant Treasurer, Environment and Heritage, Regional Development, Roads and Housing, Public Accountability, Human Services and Attorney General. In 2007, he was appointed to Chair the Joint Standing Committee on Treaties.
Protecting the welfare of live sheep and cattle?

Senator Chris Back
Senator for Western Australia
Liberal Party of Australia

Some elements of the new regulations controlling the export of live cattle and sheep from Australia are to be commended. They will assist our exporters to ensure purchasers and processors in our target market countries take the necessary steps to deliver on Australia's animal welfare standards. The regulations, introduced early in 2012, are referred to as ESCAS: the Exporter Supply Chain Assurance system.

There are some realities which need to be clearly understood but are usually overlooked in the focus on the live export trade. ESCAS is in this mix. Firstly, few credit Australia as the only exporting country in the world to have invested expertise and money over many decades to improve animal husbandry, health and welfare in our overseas target markets. We are the only one of 109 exporting nations to do this.

Standards have increased immeasurably over the years as a direct result. Does more need to be done? Obviously. If Australia is caused to exit the live export trade in sheep and cattle to the Middle East and Asian regions, what will be the inevitable outcome for animal welfare standards in these countries? I have never heard an animal activist acknowledge this fact. Do we think that concern for animal welfare standards stop at Australia’s borders?

I remain concerned that the ESCAS process has imposed the entire regulatory burden for live animal exports on one group, being the exporters. Shared Ministerial and Departmental responsibility seems to have been avoided. Australia is the only exporting country which requires industry, under threat of criminal liability, to guarantee the behaviour and performance of every player in the supply chain, including those in overseas jurisdictions.

Our government must play its important role in diplomacy and bureaucracy to preserve our market share and achieve our goals of the highest standards in animal health and welfare in the target countries.

Australia is not the only supplier of live animals to importing countries. Since the debacle of last year’s suspension of the live cattle trade to Indonesia, we know that country is actively seeking alternative supplies of beef and possibly live cattle from India and Brazil. You can’t blame them.

Foot and mouth disease (FMD) is endemic in cattle and buffalo herds in India. Many regions of Brazil also have FMD. If this catastrophic disease returns to Indonesia’s cattle herds, it is only a matter of time before it will reach Australia’s northern borders. The direct cost to the Australian economy of a FMD outbreak is estimated, in the first year alone, at AU$12 billion. The impact on every aspect of the economy across northern Australia would be diabolic.

The imposition of ECSAS on our Middle East customers in February this year has caused a negative reaction from several governments in the region. Kuwait, which has trusted the supply of Australian stock for almost 30 years, is now looking actively for alternative supplies in Georgia, North and South Africa and South America. Turkey is accepting supply of cattle from Mexico in increasing numbers, despite being very satisfied with the quality of Australian cattle.

Let me dispel another myth. We cannot simply replace live animal exports with beef or sheep meat to these markets. In the case of the Middle East, the two complement each other. We lose one, we lose both and importantly we lose the capacity to influence behaviours in these countries to continually improve welfare standards.

People in the higher socioeconomic strata buy our chilled meats and fat-tailed sheep produced from their own region. The majority, including those in lower socioeconomic communities, depend on freshly killed meat from ‘wet markets’ due to their lack of refrigeration and religious preference. Chilled or frozen meat is not an option for them.

If Australia will not supply, plenty of others will.

In Indonesia, cattle bred on northern Australian pastoral properties and fattened in local feedlots provide the much-needed beef protein to some 68 million low, socioeconomic Indonesian people. Little wonder the Indonesians reacted with such amazement and anger when our Minister for Agriculture cut off supply without as much as a word of negotiation or consultation. Indonesia won’t be self-sufficient in its demand for beef or any other form of animal protein any time soon. We need to rebuild the confidence of an important trading neighbour without delay.

A final word on ESCAS. No-one can confirm to me, anywhere in the world, where another exporter of a product or commodity is held criminally liable for the performance of every person in a supply chain right through to the final consumer.

Why Australia and why the live animal export trade? Imagine if our Tasmanian poppy producers were held criminally liable if their product was high-jacked and used for heroin production rather than medicines? Or if a Swedish wind turbine manufacturer faced the threat of criminal charges if their product was proved to cause severe health effects on consumers in another country?

In 2009, Dr Chris Back was sworn in as a Liberal Senator for Western Australia. He is the only veterinarian currently serving in Federal Parliament and has been a consultant veterinarian in the live export trade. He is deputy opposition whip in the Senate, and an active member of the Rural and Regional Affairs and Transport Committee.

In corporate life, Senator Back was a consultant in the agribusiness arena, and a chief executive officer in various sectors including tourism, emergency services, IT, the fuel industry, energy and resources.
Fear and paranoia permeate milk marketing

If anyone is ever looking for evidence of the divide that exists between some Australian media representatives and Australian agriculture, then they need look no further than the recent controversy that erupted over the use of permeate in milk processing. Permeate is a technical term used to describe the clear liquid containing lactose, vitamins and minerals that is one component that can be separated from whole milk by filtration. It is sometimes added to or subtracted from milk in varying amounts (both in Australia and overseas) to standardise the composition of fresh milk, which the Australian Food Standards Code decrees must contain at least 3.2% fat and 3% protein. Without the use of permeate, the composition of processed milk varies throughout the year depending on seasons and other factors.

The ‘Today Tonight’ current affairs program recently ran a program that ‘exposed’ the use of permeate in the milk industry, replete with an anonymous industry whistleblower, and a reporter dressed in a white laboratory coat for extra authority. The tone of the report can be gauged from the following transcript:

The whistleblower claimed he had to stay anonymous, because he feared repercussions if the ‘industry’ discovered his identity. (Exactly how the dairy industry had kept this practice a secret for so long, despite the many thousands of workers who have access to this so-called secret was not revealed.)

The report then involved an extensive interview with a milk manufacturer who does not use permeate (and who stood to gain market share as a consequence of the revelations, if consumers were sufficiently convinced that permeate presents a risk to them).

At no stage did the report identify how long this terrible practice had been occurring, or whether it also occurred overseas.

Almost immediately, major retailers responded by saying that henceforth, their home-brand milk products would no longer contain permeate. Exactly why they decided this was not spelled out, but the inference was that there might be health or safety issues associated with permeate use. How they would test or check to make sure no permeate was used was also not clarified, and nor was it mentioned that it is not possible to test whether or not milk has permeate added.

If dairy processors choose not to use permeate, and use that fact as a marketing angle to convince consumers to pay extra that is a great outcome. Unfortunately, the way Today Tonight approached this story created a very strong impression that permeate makes milk unsafe, and that consumers should be fearful and avoid drinking milk which contains it. There is absolutely no evidence or justification for this, as the representative of Choice mentioned when interviewed. But this was ‘drowned out’ by the overall shock-horror tone of the program, which has unnecessarily created doubt in consumer’s minds and damaged the reputation of the Australian dairy industry.

Changing faces at AFI

There have been a number of changes in personnel involved with the Australian Farm Institute over recent months.

Board Chairman Dr John Keniry stepped down at the Annual General Meeting (AGM) after having been involved with the Institute since its inception. John’s extensive experience and industry contacts will be greatly missed, and the Institute is extremely grateful for his contribution over the past nine years. David Anthony has taken on the role of Board Chairman.

Board member Mike Carroll also stepped down at the AGM. Mike has been a Board member over the last two years, but his expanding business roles have forced him to rationalise his involvement. Mike has been an enthusiastic and very supportive member of the Board, whose contribution will be missed.

Two new Board members were appointed at the Institute’s AGM, these are Jane Bennett and Andrew Spencer. Jane has extensive experience in the Tasmanian dairy industry and as a Board member of a number of organisations including the ABC. Andrew is currently the CEO of Australian Pork Limited, and has extensive agribusiness experience. Both will bring valuable insights and experience to the AFI Board.

The Institute’s Research Advisory Committee has also undergone a number of changes. Long-time members John Kennedy and Dr Ray Johnston have both resigned after long periods of service, and the Institute is extremely grateful for their generous contributions over many years. Replacing them are Dr Mal Wegener of the University of Queensland, and Dr David Sackett, CEO of Growth Farms Australia and formerly a Board member of a number of Co-operative Research Centres. Both will bring valuable experience and knowledge to the Committee.
Agricultural land register

The development of a national foreign ownership register for agricultural land has been announced by the Federal Government. A working group has been tasked to define what ownership interest should be captured on the register, how the register will interact with existing state and territory land title registers and how the information would be reported and disclosed.

The consultation process aims to improve transparency in foreign ownership of agricultural land. ABARES have already declared the need for better data sources to provide a more accurate picture of the state of foreign investment in agriculture and how this may evolve.

AgriFood Skills 2012 Environmental Scan

The AgriFood Skills Australia 2012 Environmental Scan results have been launched by the Parliamentary Secretary for Agriculture, Fisheries and Forestry. AgriFood Skills is one of 11 Australian Government funded industry skills councils that provide advice on workforce development and training needs.

The scan predicts that by 2018 over 33% of the existing agriculture, forestry and fishing workforce will be over 65 years old. The results underline the importance of industry and government coordination to counter the effects of workforce and skills shortages in the agricultural industry. Four priorities have been identified, they are:

- attraction of new workers
- adoption of higher skills levels across the workforce
- diffusion of new research findings, innovative practice and technology
- retention and skills utilisation of existing workers.

The scan is based on interviews with stakeholders in the sector.

State of the Climate Report

The 2011 State of the Climate report reveals La Niña conditions had a strong influence on the global climate. The scan is based on interviews with stakeholders in the sector.

For Australia, back to back La Niña events resulted in the wettest two year period on record. Rainfall in 2011 was 51.6 mm above average, and Australia’s second wettest year since records began. For the first time since 2001, annual mean temperature was below the 1960–90 average. Cooler temperatures and high rainfall are not uncommon characteristics of La Niña years. Despite the relatively cool 2011, the 10 year average for 2002–11 was equal warmest on record.

GMOs

The European Union’s Chief Scientific Advisor has publically said that genetically modified organisms (GMOs) are no riskier than conventionally farmed equivalents. Claiming there have been no substantiated cases of negative impact on human health, animal health or the environment, she felt confident in the evidence available. Consequently she felt there was no risk in eating GMO food and that the precautionary principle no longer applies.

Seven EU countries currently have national ‘safeguard’ bans on growing GM maize and the Chief Scientific Advisor implied these countries are ignoring robust evidence. Stating scientific evidence needs to play a stronger role in policy-making and that there should be an obligation to say why evidence was rejected or only partially use in decisions.

US drought

US farmers are amidst the worse drought the country has seen since 1988, although it’s reported farmers are now in a better financial position than during that last drought of 1988. While financial losses from failed crops are expected to top the $40 billion loss of 1988 ($78 billion today), less debt, record high grain and land prices, plus greater production and exports is buoying the industry.

Due to soaring feed costs dairy, beef, pig, poultry and fish farmer will be the hardest hit. Graziers are currently selling off large proportions of their herds as they can’t afford to feed them.

Some analysts are predicting a yield estimate for the US corn crop of 130 bushels per acre while the USDA is still forecasting 146 bushels per acre. While recent rains in the US Midwest created hope of stabilising the crop and resulted in a slight price drop, overall the corn crop won’t be able to greatly benefit from any rains as it’s finished its kernel setting phase.

Latest reports

The 2010–11 Agricultural Census released by ABS sums up a range of data regarding agricultural commodity items, including broadacre cropping, horticultural production, livestock production, industry activity and land use management.

The data shows that 53% of Australia’s area is dedicated to agriculture, and the total farm area rose by 3% over the previous year. Beef farming is the most common agricultural industry representing a third of the businesses. Broadacre crop production and livestock numbers increased over the past year. Tomato and potato production decreased, by more than a third for tomatoes and 12% for potatoes. Pear and apple production increased.

In another recent report, ABS reported that the value of Australian agricultural production reached $46 billion over the last year, which is an increase of 16% from 2009/2010. A steadily increasing trend of the value of agricultural production since 2002/2003. In 2010/2011, the gross value of all crop or livestock industries increased. The value of livestock products has increased by 25% to reach $7.2 million and the value of crops has increased by 18% to $25 million.
In the news

In May, the Institute’s ‘Managing the future of Australian farmland conference’ and the release of the research report, *Does Australia need a national policy to preserve agricultural land?*, generated a great deal of media interest, including the articles:

- ‘Managing the future of farmland’ (24/05/12) in *Stock and Land*
- ‘Urban sprawl prompts call for local law change’ (30/05/12) by Sarina Locke on *ABC Rural*
- ‘Sprawl, mining bite into best farmland’ (28/05/12) and ‘Mining threat to farmland’ (30/05/12) in the *Weekly Times Now*
- ‘“Reckless” with ag land’ (30/05/12) and ‘Save our soil: AFI report’ (6/06/12) in *The Land*
- ‘Urban sprawl, mining, reserves biting into best farmland’ (28/05/12), ‘Family farms resist pressure to expand’ (26/06/12), and ‘Call to consider US model and pay farmers to farm’ (30/06/12) by Sue Neales in *The Australian*
- ‘Threat to farmland from urban sprawl: report’ (28/05/12) by Alex Sinnott in *The Warrnambool Standard*
- ‘Land policy vital for food future’ (8/06/12) by Bobbie Hinkley in the *Farm Weekly*
- ‘The end of the family farm? 72% of family farms don’t earn enough to support the family on them’ (26/06/12) by Cara Waters in *Smart Company*.

Out and about

Recently the Institute’s Executive Director, Mick Keogh, has spoken at:

- Rural Financial Counselling Service NSW Annual Conference, Bourke, NSW
- Westpac Seminar, Wagga Wagga, NSW
- East Gippsland Regional Landcare Carbon Farming Initiative Workshop, East Gippsland, Victoria
- Mackay Rural Futures Forum, Mackay, Queensland
- Southern Otway Landcare Network Carbon Workshop, Apollo Bay, Victoria
- Murray Catchment Management Authority Sustainable Farming Systems for 2020 Seminar, Wodonga, Victoria
- Macquarie Franklin Agricultural Advisors Dinner, Launceston, Tasmania
- Watershed Landcare Climate Change Workshop, Mudgee, NSW
- The Institute of Chartered Accountants in Australia Public Practitioners Conference, Sydney
- Australian Lot Feeders’ Association Carbon Workshops, Sydney and Brisbane
- North Coast Regional Landcare Network Carbon Farming and Land Stewardship Information Days, Nambucca Heads, NSW and Wollongbar, NSW
- Climate Change Workshop, Northam, WA
- Department of Primary Industries Victoria Top Shelf Climate Science Forum, Swan Hill, Victoria
- Municipal Association of Victoria’s Rural and Regional Planning Conference, Torquay, Victoria
- Tasmanian Farmers and Graziers Association Annual Conference, Launceston, Tasmania
- NSW Farmers’ Association Annual Conference, Sydney
- University of Western Australia ‘Foreign Ownership of Agricultural Land and Agri-business in Australia: Challenges and Opportunities’ Industry Forum, Perth
- Westpac Premium Beef Conference, Sydney
- Australian Grain Industry Conference, Melbourne.

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