Question: ABARE 01

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Farm debt
Hansard Page: Written

Senator Williams asked:

What is the current average debt for the average farm for each commodity group? i.e. dryland farming, beef, sheep, mixed farming, poultry, pork, citrus, horticulture, dairy?

Answer:

Based on Australian Bureau of Agricultural and Resource Economics (ABARE) farm surveys, the estimates of average farm business debt by commodity group are presented below.

Grains industry

Farm business debt averaged around $700 000 per cropping farm in mid 2007.

Beef industry

Business debt for beef producers with more than 100 cattle averaged around $830 000 per farm in northern Australia and $500 000 per farm in southern Australia in mid 2007.

Dairy industry

Preliminary estimates indicate that business debt for dairy farms averaged around $510 000 in mid 2008, with significant variations among regions: $962 000 in Tasmania, $730 000 in South Australia, $420 000 in Northern Victoria and Riverina, $374 000 in western Victoria and $363 000 in Gippsland. Improved cash flows in 2007-2008 allowed some dairy farms to reduce their debt.

Sheep industry

For producers of slaughter lambs, business debt in 2006-2007 averaged more than $1.4 million for producers who sold more than 2000 lambs for slaughter, around $700 000 for producers who sold between 1000 and 2000 lambs for slaughter and around $400 000 for producers who sold between 200 and 1000 lambs for slaughter.

Horticulture

Average business debt per farm in the Murray Darling Basin at mid 2007 ranged from around $1.2 million in the Border Rivers region to $790 000 in the Goulburn-Broken region, $342 000 in the Macquarie-Castlereagh region and $125 000 in the Loddon-Avoca region.

Farm business debt owed by the farm business excludes leasing finance and personal non-business related debt owed by the farm operator.

ABARE farm surveys do not cover pork, poultry and citrus.

Question: ABARE 02

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Farm debt
Hansard Page: Written

Senator Williams asked:

1. What is the debt burden currently on agriculture according to the RBA?
2. How much has it increased over the past 10 years?
3. Please provide a region by region breakdown for each of the previous 10 years.

Answer:

1. Based on information supplied by large lending institutions to the Reserve Bank of Australia, rural indebtedness was around $58.2 billion in 2007-2008 (see table 1 below).

2. This represents an increase of 175 per cent (in nominal terms) from $21.2 billion in 1997-1998.

3. ABARE does not have sufficient information to breakdown this data series by region.

Table 1: Rural indebtedness ($million)

	All banks	Pastoral and other finance companies	Other Government	Total
1997-1998	18 566	1 979	609	21 154
1998-1999	20 085	1 093	661	21 840
1999-2000	23 240	2 527	663	26 430
2000-2001	25 174	2 639	701	28 514
2001-2002	26 829	2 691	711	30 231
2002-2003	28 957	1 628	867	31 452
2003-2004	34 115	3 379	891	38 385
2004-2005	39 261	3 112	977	43 350
2005-2006	43 546	3 352	1 073	47 971
2006-2007	47 187	2 542	1 293	51 023
2007-2008	53 743	3 076	1 417	58 236

Source: Reserve Bank of Australia

Question: ABARE 03

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Global financial crisis
Hansard Page: Written

Senator Williams asked:

Will the credit crisis impact on the ability of farmers to borrow money to fund next years winter crop, or replanting of permanent plantings or for restocking purposes devastated by the drought?

Answer:

The impact of the global financial crisis on farmers' ability to borrow money to fund their businesses will be dependent on a number of factors, chief of which are the banking sector and other lenders' availability of funds, farm equity levels and farm financial performance.

Australian Bureau of Agricultural and Resource Economics (ABARE) is not in a position to comment on the liquidity or lending practices of the financial sector. ABARE surveys indicate that, in general, farmers have been able to maintain their equity in their farm businesses at high levels because of increasing land values.

While considerable uncertainty remains about the potential economic impacts of the global financial crisis, the farm sector as a whole appears to be in a reasonable position to finance ongoing operations.

Question: ABARE 04

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Interest rate
Hansard Page: Written

Senator Williams asked:

Have all of the recent interest rate cuts (last four) been passed on to farmers? If not how much has been passed on?

Answer:

Australian Bureau of Agricultural and Resource Economics (ABARE) does not have information on the actual reductions in bank lending rates to farmers.

The only information available to ABARE is the announced reductions in the variable benchmark lending rates by major commercial banks.

Between October 2008 and March 2009, the Reserve Bank of Australia lowered the official cash rate 4 times with a total reduction of 375 basis points.

Based on their media releases, the National Australia Bank reduced its benchmark variable business lending rate by a total of 260 basis points over the same period; the Commonwealth Bank by 253 basis points; Westpac by 260 basis points; ANZ by 240 basis points and Rabobank by 340 basis points.

Question: ABARE 05

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Interest rate
Hansard Page: Written

Senator Williams asked:

What is the average interest rate currently being paid by farmers?

Answer:

Australian Bureau of Agricultural and Resource Economics does not collect information that will allow the estimation of the average interest rate being paid by farmers.

Question: ABARE 06

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

Is ABARE still a 'professionally independent government economic research agency' or is it now directed by outside Department's agencies on what it can and can't do economic modelling on?

Answer:

Australian Bureau of Agricultural and Resource Economics is a professionally independent government economic research agency.

Question: ABARE 07

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

Has ABARE continued to demand that it is independent and takes its orders from no-one as was the case in the days when Dr Brian Fisher was heading the organisation?

Answer:

Australian Bureau of Agricultural and Resource Economics is a professionally independent government economic research agency.

Senate Standing Committee on Rural and Regional Affairs and Transport

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Agriculture, Fisheries and Forestry

Question: ABARE 08

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

Who decides what projects ABARE will investigate/research?

Answer:

The Executive Director. When accepting projects, Australian Bureau of Agricultural and Resource Economics considers resourcing and the organisation's expertise in the subject matter.

Question: ABARE 09

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

Given Dr Glyde told this Senate Estimate Committee in October last year that in relation to the Government's proposed CPRS and ETS;

> ***"****Our model has the capacity to look at impacts right across the economy—different sectors throughout the economy—at the impacts on growth and employment and the like"*

Does Dr Glyde stand by this statement that ABARE does have the ability to model the impacts of the Government's CPRS scheme, or any ETS for that matter?

Answer:

Australian Bureau of Agricultural and Resource Economics (ABARE) has the capacity to model the impacts of climate change related policies, including the Carbon Pollution Reduction Scheme, on the Australian and global economies. ABARE's models have detailed sectoral and regional representation. For example, sectors that are included in ABARE's Global Trade and Environment Model include: agriculture, food processing, energy, minerals, manufacturing and services. The models are capable of providing results relating to, among other things, economic growth and industry production.

Senate Standing Committee on Rural and Regional Affairs and Transport

ANSWERS TO QUESTIONS ON NOTICE

Additional Estimates February 2009

Agriculture, Fisheries and Forestry

Question: ABARE 10

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

1. Has ABARE now undertaken any work (or when will it undertake any work) on what will be the impact on the average Australian farm of the Government's proposed emissions trading scheme if agriculture is not included in the initial emissions trading scheme?
2. Please provide a breakdown of the cost per commodity (based on average farm size of each commodity group; i.e. wheat/winter cereals/dryland, irrigated cereals/cotton, beef, dairy, horticulture, wool, fat lamb, citrus, stone fruit, fishing and forestry)?

Answer:

1. Yes, Australian Bureau of Agricultural and Resource Economics (ABARE) has undertaken work looking at the impacts of the CPRS on the average Australian farm. This work has been published in an article 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications,' released on 3 March 2009 on the ABARE website (http://www.abare.gov.au/insights/)

2. ABARE estimated the percentage increase in total Australian agricultural production costs on an average farm because of the CPRS, relative to the average over 2004-2005 to 2006-2007 and assuming agriculture is excluded from the CPRS between 2010 and 2015 as:

	2010	2015
emissions price (2005A$/t CO_2-e)	$20	$28
	% increase in total production costs on an average farm after accounting for increased price of:	
industry	electricity	electricity, freight, fuel
all broadacre industries	0.2	1.1
wheat and other crops	0.1	1.3
mixed livestock–crops	0.1	1.2
sheep	0.2	1.1
beef	0.1	0.9
sheep-beef	0.2	0.9
dairy	0.5	1.1

Source: Ford et al. (2009) 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', *Issues Insights*, ABARE, (http://www.abare.gov.au/insights/).

ABARE has not conducted any analysis of the impact on an average farm of excluding agriculture from the CPRS after 2015.

Question: ABARE 11

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

1. Has the Government done any economic modelling to provide the cost of an emissions trading scheme for each commodity group whether agriculture is in the ETS or not?

2. What was the result of that modelling and at what price was a tonne of carbon priced?

Answer:

1. Yes. The Treasury has undertaken economic modelling of the impact of the Carbon Pollution Reduction Scheme (CPRS) on the Australian agriculture sector for the Australian Government. The modelling looked at five agricultural industries: sheep and cattle, dairy cattle, other animals, grains and other agriculture; and two food processing industries: meat products and other food. The modelling results were published on 30 October 2008 in the report 'Australia's low pollution future: the economics of climate change mitigation', which is available at: http://www.treasury.gov.au/lowpollutionfuture/report/downloads/ALPF_consolidated.pdf.

   Australian Bureau of Agricultural and Resource Economics (ABARE) has also undertaken modelling that expands on Treasury's work by examining the impacts of the CPRS (using the Australian Government's CPRS-5 scenario details) on six key agricultural industries (grains, other crops, beef cattle and sheep meat, other animals, dairy cattle, and wool) and three food processing industries (processed meat, processed milk and other processed food). This article, titled 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', was released on 3 March 2009 on the ABARE website (http://www.abare.gov.au/insights/).

2. The Australian Treasury economic modelling projections for carbon price and production impacts by sector are presented in **table 1** below for 2050. In the CPRS -5 and CPRS -15 scenarios, agriculture is included in the CPRS from 2015 with transitional assistance.

Table 1: Projections from the Australian Treasury economic modelling, 2050

	CRPS -5	CPRS -15
Emissions price at 2050 (2005A$/t CO_2-e)	115	158
% change in gross output, relative to the reference case, by sector		
Sheep and cattle	-6.7	-10.2
Dairy cattle	3.9	2.9
Other animals	2.2	1.7
Grains	1.5	0.9
Other agriculture	-0.2	-1.0
Meat products	-4.8	-7.7
Other food	5.7	5.1

Source: Australian Government (2008), 'Australia's low pollution future: the economics of climate change mitigation', table 6.11, p164.

The ABARE estimates were carried out for the Australian Government's CPRS-5 scenario, using two methods: a partial, static framework for estimating the potential effects of increased input costs on total production costs in the short term (2010 and 2015); and a general equilibrium framework for estimating the potential cost and production effects of the CPRS in the medium to long term (2020 and 2030). In using the general equilibrium framework, agriculture was included in the CPRS from 2015 with transitional assistance. Some of the results are presented below in **tables 2, 3 and 4.**

Table 2: Percentage increase in total Australian agricultural production costs on an average farm at 2010 and 2015, under alternative scheme coverage of the CPRS, relative to the average over 2004-05 to 2006-07

	agriculture not covered		agriculture covered
	2010	2015	2015
emissions price (2005A$/t CO_2-e)	$20	$28	$28
	accounting for increased price of		
industry	electricity	electricity, freight, fuel	electricity, freight, fuel and emissions intensive trade exposed assistance to livestock
all broadacre industries	0.2	1.1	2.8
wheat and other crops	0.1	1.3	3.6
mixed livestock–crops	0.1	1.2	2.4
sheep	0.2	1.1	2.6
beef	0.1	0.9	3.8
sheep-beef	0.2	0.9	3.1
dairy	0.5	1.1	2.5

Source: Ford et al. (2009) 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', *Issues Insights*, ABARE, (http://www.abare.gov.au/insights/).

Table 3: Implications for Australian agricultural production costs in the CPRS-5 scenario at 2020 and 2030, per cent change relative to the reference case by industry

	2020	**2030**
emissions price (2005A$/t CO_2-e)	$35	$52
grains	1.7	1.0
other crops	1.1	0.2
beef cattle and sheep meat	-0.1	19.9
other animals	1.5	4.0
dairy cattle	-1.2	6.7
wool	2.4	15.8

Source: Ford et al. (2009) 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', *Issues Insights*, ABARE, (http://www.abare.gov.au/insights/).

Table 4: Implications for production of Australian agriculture by industry in the CPRS-5 scenario at 2020 and 2030, per cent change relative to the reference case

	2020	**2030**
emissions price (2005A$/t CO_2-e)	$35	$52
grains	3.3	5.3
other crops	-0.6	0.0
beef cattle and sheep meat	0.1	-8.0
other animals	-1.6	-1.1
dairy cattle	0.4	-3.0
wool	-1.4	-2.1
total agriculture	0.1	-1.0
processed meat	0.0	-5.8
processed other food	0.0	0.6
processed milk	0.5	-2.8

Source: Ford et al. (2009) 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', *Issues Insights*, ABARE, (http://www.abare.gov.au/insights/).

Question: ABARE 12

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

1. Given the food manufacturing sector is vital to agriculture, whether it is abattoirs or milk processing plants, will food manufactures such as abattoirs be allowed under an ETS to pass their increased costs back on to farmers?

2. For example will dairy farmers be forced to take a farm gate cut to the price they receive for milk to pay for the energy intensive manufacturing of cheese, milk powder and pasteurising milk?

Answer:

1. Yes, to the degree that normal market forces will apply between food manufacturers and farmers.

2. The degree to which the cost of emission permits will be passed from food manufacturers to farmers will depend on a number of different elements. These may include the degree to which the industry is exposed to international competition and the sensitivity to price changes of demand for products in the value chain.

   In addition, some food manufacturing industries may qualify for transitional assistance in the form of free carbon pollution permits if the industries are judged to be an emission intensive trade exposed sector.

Question: ABARE 13

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

1. What modelling has the Government done on the cost to food manufacturers such as dairies and abattoirs of the Governments proposed ETS?
2. If no modelling has been done why not and when will it be done?
3. Will the modelling be publicly available and when?

Answer:

The Australian Treasury has undertaken economic modelling of the impact of the Carbon Pollution Reduction Scheme (CPRS) on the Australian agriculture sector for the Australian Government. The modelling looked at two food processing industries: meat products and other food. The modelling results were published on 30 October 2008 in the report 'Australia's low pollution future: the economics of climate change mitigation', which is available at: http://www.treasury.gov.au/lowpollutionfuture/report/downloads/ALPF_consolidated.pdf.

Australian Bureau of Agricultural and Resource Economics (ABARE) has also undertaken modelling that expands on Treasury's work by examining the impacts of the CPRS (using the Australian Government's CPRS-5 scenario details) on three food processing industries: processed meat, processed milk and other processed food. This article, titled 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', was released on 3 March 2009 on the ABARE website (http://www.abare.gov.au/insights/).

ABARE estimated the impact of the CPRS on production of processed food products from Australian food manufacturing industries as shown below.

Impact of the CPRS on output in the Australian food manufacturing industries

	Percentage increase in production in the reference case		Percentage increase in production in the CPRS scenario		Percentage change in the CPRS scenario, relative to the reference case	
	2005-2020	2005-2030	2005-2020	2005-2030	2020	2030
processed meat	15	30	15	23	0.0	-5.8
processed other food	42	70	42	72	0.0	0.6
processed milk	37	57	38	52	0.5	-2.8

Source: ABARE 2009, 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', http://www.abare.gov.au/insights/.

Question: ABARE 14

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

Will the ACCC or other government agency be monitoring the impact of the ETS on the price of food and what measures will be put in place to ensure farmers are not being forced to bear the entire cost of the ETS through lower farm gate prices?

Answer:

Questions relating to possible future actions of the Australian Competition and Consumer Commission should be directed to that organisation.

Question: ABARE 15

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

1. What were the assumptions used in the Treasury modelling for the Government's CPRS in relation to farm productivity under a business-as-usual scenario; an Emissions Trading Scheme (ETS) with Agriculture excluded and an ETS with Agriculture included?

2. Did ABARE provide these assumptions?

3. How were they derived?

Answer:

3. The Australian Treasury modelling assumptions regarding productivity under the reference case are documented in Annex B.5 of the 30 October 2008 report 'Australia's low pollution future: the economics of climate change mitigation' (see pages 235-239).

4. No.

5. Productivity assumptions were developed by the Treasury using inputs from a range of sources. Questions relating to the derivation of the assumptions should be directed to the Treasury.

Question: ABARE 16

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

I refer to a media release released by the Australian Farm Institute which states

> "The Australian Government's proposed Carbon Pollution Reduction Scheme (CPRS) has the potential to reduce the value of Australian agricultural production by $2.4 billion per annum by 2020, and $10.9 billion annum by 2030 compared to what would otherwise be the case under according to comprehensive new economic modelling released today by the Australian Farm Institute."

Has ABARE done any modelling to refute these claims by the Australian Farm Institute with the support of Australian Wool Innovation, Dairy Australia and the Cotton Research and Development Corporation?

Answer:

Australian Bureau of Agricultural and Resource Economics (ABARE) has modelled the potential impacts of the Carbon Pollution Reduction Scheme (CPRS) on Australian agricultural production. The results were published in 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications' which was released on 3 March 2009 on the ABARE website (www.abare.gov.au/insights/).

The ABARE modelling suggests that, given that some agricultural industries will be eligible for transitional assistance, the projected impacts of the CPRS to 2020 on Australian agricultural activity levels and costs will be relatively small. Furthermore, to 2030, the CPRS will create opportunities for some industries to expand, while growth in other industries will be slower relative to the reference case as consumers switch toward lower emissions intensive food and fibre products. Overall, under the CPRS scenario modelled, total agricultural output in Australia is projected to increase by about 35 per cent between 2005 and 2030, compared to the 36 per cent growth projected for the same period in the reference case.

The ABARE modelling was based on settings and assumptions in the Australian Government's CPRS White Paper and extends the work undertaken for the Australian Government by the Treasury in 'Australia's low pollution future: the economics of climate change mitigation'.

It is not possible to accurately compare the results from the Australian Farm Institute with ABARE results as the analyses are based on different modelling frameworks and assumptions. Direct comparisons of dollar figures are also difficult as it is unclear whether the Australian Farm Institute is reporting in real or nominal figures and the dollar figure will also depend significantly on the assumed baseline level of agricultural production.

Key differences in the assumptions underlying the Australian Farm Institute (AFI) report and ABARE's work include:

- The AFI assumes agriculture will react passively to coverage under the CPRS and therefore the main option for adjustment is through reduced output rather than significant changes in farming practices or technologies.
- The AFI assumes that Australia will take unilateral action, with no other countries reducing greenhouse gas emissions. This assumption is likely to lead to the impacts of the emissions trading scheme being overstated in all sectors if other countries also reduce emissions.
- The AFI's assumed rate at which free permits are provided to the agriculture sector is not consistent with the transitional assistance as described in the CPRS White Paper.

Question: ABARE 17

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

The Media Release also states that

> "The economic modelling, carried out by the Centre for International Economics, identifies that the biggest impacts of the CPRS will be on the Beef, Wool, Sheepmeats, Pork and Dairy sectors of agriculture, with these experiencing production declines of 9%, 6.8%, 5.8%, 3.9% and 2.7% respectively by 2020, and 28.2%, 27.5%, 21%, 10.4% and 8.1% by 2030 compared to a business-as-usual scenario without a CPRS."

Has ABARE done any modelling to refute these assumptions? If so what does ABARE's economic modelling show will be the affects of the Government's Emissions Trading Scheme on these industries?

Answer:

It is not possible to accurately compare the results from the Australian Farm Institute with Australian Bureau of Agricultural and Resource Economics (ABARE) analysis as the analyses are based on different assumptions.

The following key assumptions underlying the Australian Farm Institute report should be noted:

- Agriculture is assumed to react passively to coverage under the Carbon Pollution Reduction Scheme (CPRS) and therefore the main option for adjustment is through reduced output rather than significant changes in farming practices or technologies.
- It is assumed that Australia is taking unilateral action, with no other countries reducing greenhouse gas emissions. This assumption is likely to lead to the effects of the emissions trading scheme being overstated for all sectors if other countries also reduce emissions.
- The assumed rate at which free permits are provided to the agriculture sector is not consistent with the assistance as described in the CPRS White Paper.

ABARE has estimated the impact of the CPRS on agricultural production, as shown in the table below.

Impacts of the CPRS on production of Australian agriculture by industry

	Percentage increase in production in the reference case		Percentage increase in production in the CPRS scenario		Percentage change in the CPRS scenario, relative to the reference case	
	2005-2020	2005-2030	2005-2020	2005-2030	2020	2030
grains	29	49	33	56	3.3	5.3
other crops	20	37	20	37	-0.6	0.0
beef cattle and sheep meat	15	30	15	20	0.1	-8.0
other animals	26	48	24	46	-1.6	-1.1
dairy cattle	30	44	30	40	0.4	-3.0
wool	-4	6	-6	4	-1.4	-2.1
total agriculture	19	36	20	35	0.1	-1.0
processed meat	15	30	15	23	0.0	-5.8
processed other food	42	70	42	72	0.0	0.6
processed milk	37	57	38	52	0.5	-2.8

Source: Ford et al. (2009) 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', *Issues Insights*, ABARE, (http://www.abare.gov.au/insights/).

Question: ABARE 18

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

1. Under the Australian Farm Institute modelling isn't it a fact that many primary producers would suffer severe financial hardship leading to some farmers being forced off the land?
2. What would be the economic impact of this lost production be to the Australian economy?

Answer:

These questions concern modelling undertaken by the Australian Farm Institute, not Australian Bureau of Agricultural and Resource Economics. These questions should be directed to the Australian Farm Institute.

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Question: ABARE 19

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

Isn't it a fact that the Australian Farm Institute modelling is the first of its kind to be undertaken by either the public or private sector?

Answer:

No. Both the Australian Bureau of Agricultural and Resource Economics (ABARE) and Treasury have analysed the potential impacts of the CPRS on the agriculture sector. These analyses are generally consistent with government's proposed policy.

ABARE recently released an article, 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications', in which the potential impacts of the CPRS on various agricultural industries and food manufacturing industries are examined. This article was released on 3 March 2009 on the ABARE website (www.abare.gov.au/insights/).

Over the years, ABARE has published work on the potential impacts of emissions trading schemes as well as on the potential impacts of climate change on the agriculture sector. A list of ABARE publications is provided below.

On the potential impacts of emissions trading schemes:

1. Ahammad, H., Matysek, A., Fisher, B. S., Curtotti, R., Gurney, A., Jakeman, G., Heyhoe, E. and Gunasekera, D. 2006, *Economic impact of climate change policy: the role of technology and economic instruments*, ABARE research report 06.7, Canberra.
2. Gunasekera, D., Ford, M. and Tulloh, C. 2007, 'Climate change: issues and challenges for Australian agriculture and forestry', *Australian Commodities*, vol. 14, no. 3, pp. 493–515.

On the impacts of climate change and climate variability on the agriculture sector:

1. Goesch, T., Hafi, A., Thorpe, S., Gooday, P. and Sanders, O. 2009, 'Climate change, irrigation and risk management', *Issues and Insights*, March 2009.
2. Goesch, T., Hone, S., Hafi, A., Thorpe, S., Lawson, K., Page, S., Hughes, N. and Gooday, P. 2008, 'Murray Darling Basin: economic implications of water scarcity', *Australian Commodities*, vol. 15, no. 1, pp. 265–281.

3. Gunasekera, D., Kim, Y., Tulloh, C. and Ford, M. 2007, 'Climate change: impacts on Australian agriculture', *Australian Commodities*, vol. 14, no. 4, pp. 657–676.
4. Gunasekera, D., Tulloh, C., Ford, M. and Heyhoe, E. 2008, 'Climate change: Opportunities and challenges in Australian agriculture', Proceedings of Faculty of Agriculture, Food & Natural Resources Annual Symposium 2008, 13 June 2008, University of Sydney.
5. Hafi, A., Thorpe, S. and Foster, A. 2009, 'The impact of climate change on the irrigated agricultural industries in the Murray Darling Basin', Paper presented at the 2009 AARES conference, Cairns. http://www.abare.gov.au/interactive/09_ConferencePapers/Water/
6. Heyhoe, E., Kim, Y., Kokic, P., Levantis, C., Ahammad, H., Schneider, K., Crimp, S., Nelson, R., Flood, N. and Carter, J. 2007, 'Adapting to climate change: issues and challenges in the agriculture sector', *Australian Commodities*, vol. 14, no. 1, pp. 167–178.

Question: ABARE 20

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

When will ABARE actually show some leadership and undertake comprehensive economic modelling on the impact of the Government's ETS on agriculture?

Answer:

Both the Australian Bureau of Agricultural and Resource Economics (ABARE) and Treasury have analysed the potential impacts of the CPRS on the agriculture sector. ABARE has undertaken a range of economic modelling exercises, recently releasing an article, 'Agriculture and the Carbon Pollution Reduction Scheme (CPRS): economic issues and implications' which provides a detailed analysis of the potential impacts of the CPRS on various agriculture and food manufacturing industries. This article was released on 3 March 2009 on the ABARE website (www.abare.gov.au/insights/).

ABARE has previously published work on the potential impacts of emissions trading schemes:

1. Ahammad, H., Matysek, A., Fisher, B. S., Curtotti, R., Gurney, A., Jakeman, G., Heyhoe, E. and Gunasekera, D. 2006, *Economic impact of climate change policy: the role of technology and economic instruments*, ABARE research report 06.7, Canberra.
2. Gunasekera, D., Ford, M. and Tulloh, C. 2007, 'Climate change: issues and challenges for Australian agriculture and forestry', *Australian Commodities*, vol. 14, no. 3, pp. 493–515.

ABARE has also published research on the impacts of climate change and variability on the agriculture sector:

1. Goesch, T., Hafi, A., Thorpe, S., Gooday, P. and Sanders, O. 2009, 'Climate change, irrigation and risk management', *Issues and Insights*, March 2009.
2. Goesch, T., Hone, S., Hafi, A., Thorpe, S., Lawson, K., Page, S., Hughes, N. and Gooday, P. 2008, 'Murray Darling Basin: economic implications of water scarcity', *Australian Commodities*, vol. 15, no. 1, pp. 265–281.
3. Gunasekera, D., Kim, Y., Tulloh, C. and Ford, M. 2007, 'Climate change: impacts on Australian agriculture', *Australian Commodities*, vol. 14, no. 4, pp. 657–676.
4. Gunasekera, D., Tulloh, C., Ford, M. and Heyhoe, E. 2008, 'Climate change: Opportunities and challenges in Australian agriculture', Proceedings of Faculty of Agriculture, Food & Natural Resources Annual Symposium 2008, 13 June 2008, University of Sydney.

5. Hafi, A., Thorpe, S. and Foster, A. 2009, 'The impact of climate change on the irrigated agricultural industries in the Murray Darling Basin', Paper presented at the 2009 AARES conference, Cairns. http://www.abare.gov.au/interactive/09_ConferencePapers/Water/
6. Heyhoe, E., Kim, Y., Kokic, P., Levantis, C., Ahammad, H., Schneider, K., Crimp, S., Nelson, R., Flood, N. and Carter, J. 2007, 'Adapting to climate change: issues and challenges in the agriculture sector', *Australian Commodities*, vol. 14, no. 1, pp. 167–178.

Question: ABARE 21

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: Impact of the CPRS on agriculture
Hansard Page: Written

Senator Williams asked:

Has Australian Bureau of Agricultural and Resource Economics been instructed by any one in the Minister's office, the Department or the Department of Prime Minister and Cabinet or Treasury not to undertake any research or conduct any modelling of the cost of the Governments Carbon Pollution Reduction Scheme on agriculture or the agriculture manufacturing sector, independently of its commissioned work for Treasury?

Answer:

No.

Question: ABARE 22

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: ABARE's analysis of the CPRS carbon price scenarios on forestry.
Hansard Page: Written

Senator Williams asked:

I refer to the document 'Analysing the economic potential of forestry for carbon sequestration under alternative carbon price paths' produced by ABARE in November 2008 which was commissioned by The Commonwealth Treasury to estimate the potential increase in afforestation on agricultural land under four hypothetical carbon price scenarios.

1. Does ABARE stand by this accuracy of this document?
2. Were the assumptions in this document used in the Treasury Modelling of the Government's CPRS? If so how were they used?
3. Does ABARE really believe that the assumptions that Under the CPRS -15 carbon price scenario, the area of agricultural land economically suitable for afforestation in Australia is projected to be around 26 million hectares by 2050, with 83 per cent of this being environmental plantings (Table 7). In this scenario, the potential level of carbon sequestration in the economically suitable areas is estimated to be 885Mt of carbon over the period 2007-2050 (Table 8), although there will be significant additional sequestration after this period? (page 13/14)
4. How much land is currently farmed in Tasmania?
5. In the above scenario it claims that 1,076 million hectares in Tasmania is suitable for Timber Plantations, isn't it a fact that there is only around 1.2 million hectares in Tasmania currently farmed?
6. Did ABARE do any modelling under these assumptions on what planting all of Tasmania or planting 26 million hectares of forests would do Australia's ability to produce food?
7. Did ABARE do any modelling under this assumption on what planting 26 million hectares of forests would do the Australian economy if food was not produced on this land? Was this taken into account in the modelling?
8. Did Treasury use any of the assumptions in this document to offset the cost of its CPRS of the Government CPRS on the Australian economy?
9. What is the definition of an 'environmental planting'? How would an 'environmental planting be managed? For how long would the land be used as an 'environmental planting'?
10. Does the modelling take into consideration land management costs such as fencing, fire control, weed and pest control, particularly for 'environmental plantings'?
11. In *Appendix B: Potential landuse conversion to forestry under alternative carbon price paths* Which show maps of the potential landuse conversion to forestry under alternative carbon price paths are presented, can ABARE provide maps of current land use in the proposed areas which would be environmental plantings and plantations? (page 20)

12. Is it not a fact that the land ABARE proposes could be converted to environmental forests is some of the best grazing and mixed farming land in Australia?
13. What is the annual economic production from this land in 2006/07 and 2007/08?

Answer:

1. The Australian Bureau of Agricultural and Resource Economics (ABARE) stands by the accuracy of the model results presented in the document cited (Lawson et al. 2008). As noted in pp 16 in the report, ABARE acknowledges that changes in the assumptions used would change the projected afforestation potential. For example, possible implications of some of the key modelling assumptions used, particularly those related to native vegetation and water availability were explored qualitatively in the recently released released ABARE report (Burns, K, Vedi, J, Heyhoe, E and Ahammad, H 2009).

2. Questions about how these results were used should be addressed to the Treasury.

3. Based on the assumptions used in the analysis, there is potential for afforestation and carbon sequestration as detailed in Lawson et al. (2008). The report highlights on pp 4 that these estimates may be considered to be upper bounds.

4. According to the ABS (Cat. No. 7171.0), the farmed area in Tasmania was around 1.7 million hectares in 2007.

5. See answer to question 4.

6. ABARE has not modelled the impact of afforestation on food production.

7. ABARE has not modelled the economy-wide impacts of afforestation.

8. The Treasury incorporated ABARE's estimates of carbon sequestration and land use change arising from afforestation in its modelling of the broader impacts of the CPRS.

9. The term, environmental planting, used in Lawson et al. (2008) is defined as planted forests that have the primary function of sequestering carbon. Environmental plantings are not used for timber production and would be managed for carbon sequestration. Environmental plantings would be permanent and not harvested.

10. Yes.

11. The 2000-01 agricultural land use data used by ABARE in this analysis was sourced from the Australian Collaborative Land Use Mapping Programme (ACLUMP). These data are available at www.brs.gov.au/landuse

12. Preliminary analysis suggests that the value of agricultural land that is available for afforestation in the model is less than the average land value for the region.

13. ABARE has not undertaken analysis of the value of the annual agricultural production on the land considered economically viable for afforestation.

References

Burns, K, Vedi, J, Heyhoe, E and Ahammad, H, 2009, Opportunities for forestry under the Carbon Pollution Reduction Scheme (CPRS): an examination of some key factors, *Issues Insights*, vol.1, no.1, pp.1-22.

Lawson, K, Burns, K, Low, K, Heyhoe, E and Ahammad, H, 2008, *Analysing the economic potential of forestry for carbon sequestration under alternative carbon price paths*, Canberra, November.

Question: ABARE 23

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: ABARE's contribution to the development of the Australian carbon price and emissions targets
Hansard Page: Written

Senator Williams asked:

The Minister during the press Conference on 25 February, 2009 also stated;
The carbon price that's been spoken about, the emissions targets that have been set, were then put through ABARE.

1. Is this information publicly available?
2. Is this work that was 'put through ABARE' reflected in 'Analysing the economic potential of forestry for carbon sequestration under alternative carbon price paths' produced by ABARE in November 2008 which was commissioned by The Commonwealth Treasury to estimate the potential increase in afforestation on agricultural land under four hypothetical carbon price scenarios or is it different advice?
3. If the work that has been 'put through ABARE' is not the modelling in the document 'Analysing the economic potential of forestry for carbon sequestration under alternative carbon price paths' is it publicly available and does it supersede the work commissioned by Treasury?

Answer:

1. Yes, it is available at:
http://www.treasury.gov.au/lowpollutionfuture/report/downloads/ALPF_consolidated.pdf.

2. Yes.

3. Not applicable.

References
Australian Government 2008, Australia's Low Pollution Future - The Economics of Climate Change Mitigation, Canberra, October.

Lawson, K, Burns, K, Low, K, Heyhoe, E and Ahammad, H, 2008, *Analysing the economic potential of forestry for carbon sequestration under alternative carbon price paths*, Canberra, November.

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Agriculture, Fisheries and Forestry

Question: ABARE 24

Division/Agency: Australian Bureau of Agricultural and Resource Economics

Topic: Comments by the Hon. Senator Tony Burke, Minister of Agriculture, Fisheries and Forestry, on land use change during a media conference on the 25th February 2009.

Hansard Page: Written

Senator Williams asked:

In a media conference with the Minister for Climate Change and Water, on 25 February 2009, the Minister for Agriculture, Fisheries and Forestry, stated;

> Now, the Government has always acknowledged that you do need to have some land-use change, and that will be an implication and an outcome of the White Paper. But our advice has always been that we'd be looking at marginal land.

The Minister also stated;

> The advice that came back to me was that under the White Paper and the proposals that are there, prime agricultural land would not be at threat. It would be marginal land, where the economics stacked up, for people to be looking at doing more tree-planting.

1. What will be the 'land-use change' the Government has always acknowledged that you do need which will be an implication and an outcome of the Government's Emissions Trading Scheme referred to by the Minister?
2. Where will that 'land use change' take place and how will it take place?
3. How many hectares of trees are estimated to be planted under the Government's Emissions Trading scheme?
4. What is the definition of 'marginal land' that the Minister was referring to when he stated 'our advice has always been that we'd be looking at marginal land'? (please provide maps of land which the Government considers 'marginal' and on what basis it is referred to as marginal ie rainfall, carrying capacity etc).

Answer:

1. The land use change that will occur will depend on the relative returns of various land use activities, such as agriculture, commercial forestry and environmental plantings.

2. Australian Bureau of Agricultural and Resource Economics (ABARE) released a report in October 2008 that presented estimates of the potential land use change in Australia up to 2050. Under the CPRS-5 scenario which incorporates a specific set of assumptions, a large proportion of commercial timber plantations are projected to be planted in southern

   Australia, particularly Tasmania, South Australia and Victoria. In contrast, environmental plantings are projected to occur mostly in the north, particularly in Queensland, New South Wales and Northern Territory (Lawson et al. 2008).

3. ABARE modelling of the CPRS-5 scenario, under a specific set of assumptions, suggests that the upper bound estimate of land area economically suitable for afforestation in Australia by 2050 is around 5.8 million hectares. Of this, 3.0 million hectares are projected to be timber plantations, and 2.7 million hectares are environmental plantings (Lawson et al. 2008).

4. ABARE's modelling, referred to in question 3, shows that land use change primarily occurs on grazing land. The attached maps for the CPRS -5 and CPRS 15 scenarios shows where the plantations and environmental plantings could occur given the assumptions used in the analysis.

References

Lawson, K, Burns, K, Low, K, Heyhoe, E and Ahammad, H, 2008, *Analysing the economic potential of forestry for carbon sequestration under alternative carbon price paths*, Canberra, November.

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Question: ABARE 25

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: DAFF: Sheep flock statistics
Hansard Page: Written

Senator Fierravanti-Wells asked:

1. What is the size and composition of the current sheep flock?
2. Do you agree that the flock is projected to decline to about 72 million sheep by 2013? If not, please provide your views.
3. What is the projected decrease or increase in the flock?
   a. In each of the next three years
   b. Over the next five years

Answer:

1. According to Australian Bureau of Statistics(ABS) (cat. no. 7111.0 Principal Agriculture Commodities Australia Preliminary 2007-08), there were 79.2 million sheep and lambs in Australia at 30 June 2008. Of this total, there were 46.6 million breeding ewes aged one year and over.
The remaining 32.6 million includes rams, wethers, hoggets and lambs.

Data published by the ABS for the past 11 years are provided in the table below.

Year	Total sheep and lambs	Breeding ewes one year and over	Lambs under one year	Ewes mated to produce lambs
	million	million	million	million
1997-98	117.49	55.70	29.96	51.35
1998-99	115.46	55.61	29.50	49.88
1999-00	118.55	54.72	30.67	49.39
2000-01	110.93	53.43	27.97	47.01
2001-02	106.17	52.54	28.40	45.81
2002-03	99.25	51.20	25.86	43.74
2003-04	101.29	51.47	28.92	43.77
2004-05	100.60	52.23	28.99	46.05
2005-06	91.03	np	24.68	42.71
2006-07	85.71	np	23.42	41.52
2007-08	79.23	46.2	np	np

np - not published

2. and 3. ABARE's latest projections for the national sheep flock are contained in the latest edition of *Australian Commodities* which was released on 3 March 2009. ABARE's projections are provided in the table below.

Year	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Sheep numbers (million)	79	75	73	74	74	74	75

ABARE expects the size of the sheep flock to fall in 2008-2009 and 2009-2010. These forecasts reflect further expected declines in the number of non-breeding sheep (wethers) in the flock, as producers continue to shift from wool to meat production. This shift is expected as a result of higher forecast lamb prices and lower forecast wool prices, reflecting weaker demand for woollen apparel and textiles as global economic conditions deteriorate.

Question: ABARE 26

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: DAFF: Sheep flock statistics
Hansard Page: Written

Senator Fierravanti-Wells asked:

In relation to the merino breeding ewe flock, please provide a profile of the ewe flock such as age etc.?

Answer:

Australian Bureau of Agricultural and Resource Economics (ABARE) does not have sufficient information to estimate the profile of the ewe flock. The necessary data is not collected by either ABARE or the Australian Bureau of Statistics.

Question: ABARE 27

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: DAFF: Sheep flock statistics
Hansard Page: Written

Senator Fierravanti-Wells asked:

Of the current merino breeding flock, are you able to provide statistics as to how many are used for merino breeding and how many are used with meat breed rams?

Answer:

In its latest Agricultural Census for 2005-2006, the Australian Bureau of Statistics estimates 52 per cent of the ewe flock were used for merino breeding and 43 per cent were mated to short wool/meat breed rams.

	Number	Share of ewes mated
	million	%
Breeding ewes – 1 year and older	48.6	
Ewes expected to lamb to merino rams in the next season	22.9	52
Ewes expected to lamb to short wool/meat breed rams in the next season	18.9	43
Ewes expected to lamb to rams other than merino or short wool/meat breed rams in the next season	2.5	6

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Question: ABARE 28

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: DAFF: Sheep flock statistics
Hansard Page: Written

Senator Fierravanti-Wells asked:

1. What is the national average lambing percentage?

2. Taking into account the national average lambing percentage, how many merino lambs do you envisage will be born:
   a. in each of the next three years?
   b. Over the next five years?
3. How many of the estimated merino lambs born are likely to be ewes:
   c. in each of the next three years?
   d. Over the next five years?

Answer:

1. The lambing percentages published by the Australian Bureau of Statistics for 2001-2002 to 2006-2007 are shown below.

Year	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
Ewes mated (mil)	45.8	43.7	43.8	46.1	42.7	41.5
Lambs marked (mil)	37.7	33.9	36.3	37.2	35.1	34.1
Lambing rate (%)	82.3	77.6	83.0	80.7	82.1	82.0

2. Australian Bureau of Agricultural and Resource Economics (ABARE) does not have sufficient information to estimate the number of merino lambs that will be born over the next 3 to 5 years.

   ABARE publishes figures relating to the total Australian sheep flock, rather than by breed. ABARE projections to 2013-2014 of total lambs marked are presented below.

Year	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Lambs marked (million)	33.1	34.4	35.2	35.8	36.4	36.6	36.8

These numbers are based on assumptions about the proportion of ewes joined and lamb marking rates, as well as projected sheep and lamb slaughter.

3. ABARE does not have this information.

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Question: ABARE 29

Division/Agency: Australian Bureau of Agricultural and Resource Economics
Topic: DAFF: Sheep flock statistics
Hansard Page: Written

Senator Fierravanti-Wells asked:

1. With the number of merino ewes being slaughtered for historically high lamb prices, will there be a sufficient ewe base:
    a. In each of the next three years; and
    b. Over the next five years

   to maintain or increase the Australian merino flock?

2. How many lambs born in each of the next three years will need to be kept for breeding to increase the flock necessary to meet the projected increase in demand of 20 million kgs pa?

Answer:

1. The Australian Bureau of Agricultural and Resource Economics (ABARE) does not have sufficient information to answer this question.

   However, ABARE expects the size of the sheep flock to increase in the coming years, assuming that wool prices increase, providing sheep producers with an incentive to retain sheep and lambs for wool production, rather than slaughtering them to produce meat.

2. ABARE does not have any data to directly answer this question.

   However, ABARE does estimate the expected wool cut per head. These data are contained in the table below. Based on these figures, the number of additional sheep required to produce a projected increase in demand of 20 million kilograms of wool per year can be calculated as being approximately 4.5 million.

Year	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14
Cut per head (kg)	4.24	4.30	4.30	4.35	4.35	4.40	4.45
Implied additional sheep numbers (million)	4.72	4.65	4.65	4.60	4.60	4.55	4.49