Australian Government

Department of Agriculture, Fisheries and Forestry

Submission to Senate Select Committee on Fuel and Energy

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Executive Summary

Australia's agriculture, fisheries and forestry industries have a combined gross value of production of $38.5 billion in 2006-07. The sector operates in a dynamic and complex environment and faces a number of pressures, including the drought, declining terms of trade, movements in the value of the Australian dollar, and higher input costs including fuel and fertiliser.

Fossil fuels, and inputs derived from fossil fuels such as lubricants and fertilisers, are essential inputs for almost all agriculture, food, fishing and forestry industries and supply chains. Fuel costs are a variable, but generally significant, cost of production and can vary according to production methods, location, and seasonal and climate conditions. The quantum of these costs is an important consideration for operators in deciding whether to continue their business activity in the short and longer term. The sensitivity of business margins to rising fuel costs is highly varied across and between industries. However many farmers cite high fuel costs to be of significant concern.

Diesel is the major fuel source used in agriculture. The price of diesel in Australia is linked to the international price of crude oil, as around two-thirds of the oil used to distil diesel in Australian refineries is imported. Diesel prices in Australia also reflect a range of domestic factors, such as transportation and storage costs as well as wholesale and retail selling margins.

The fuel tax credit scheme includes all taxable fuels used in agriculture, forestry and fishing activities. Eligible businesses can claim 38.143 cents per litre, which is equivalent to the current rate of excise, to reduce their overall fuel costs.

Biofuels and bioenergy have the potential to reduce the current reliance on fossil fuels. The Australian Government is currently conducting an internal review of biofuel arrangements. The government funds biofuel research through the Research and Development Corporations and other partnerships, and is also targeting investment in second-generation biofuel technologies that use non-food feedstocks.

Introduction

The Australian Government Department of Agriculture, Fisheries and Forestry (DAFF) welcomes the opportunity to provide a submission to the Senate Select Committee on Fuel and Energy. A separate submission has also been made by the Australian Bureau of Agricultural and Resource Economics (ABARE).

While the ABARE submission provides information about the domestic oil and gas exploration and refinement industry, this submission provides an overview of the importance of fuel and energy to Australian agricultural industries and communities, and the impacts of fuel price movements. The submission also provides an overview of taxation arrangements as they currently apply to fuel and the role of alternative fuels including biofuel and bioenergy.

The Department of Agriculture, Fisheries and Forestry

The role of the department is to develop and implement policies and programs that ensure Australia's agricultural, fisheries, food and forestry industries remain competitive, profitable and sustainable.

Our policies and programs:

- encourage and support sustainable natural resource use and management
- protect the health and safety of plant and animal industries
- enable primary industries to adapt to compete in a fast-changing international and economic environment
- help improve market access and market performance for the agricultural and food sector
- encourage and assist industries to adopt new technology and practices, and
- assist primary producers and the food industry to develop business and marketing skills, and to be financially self-reliant.

The department includes divisions that provide specialist services to portfolio stakeholders such as the Australian Quarantine and Inspection Service (AQIS), ABARE, and the Bureau of Rural Sciences. Biosecurity Australia is a prescribed agency within the department.

Role in relation to fuel and energy

The Department of Resources, Energy and Tourism (DRET) has portfolio responsibility for energy policy, including fuels. DAFF is keenly aware of the importance of fuel and energy to its stakeholders in agricultural, fishing and forestry industries. DAFF works closely with DRET and other agencies to ensure portfolio stakeholder interests are included in relevant policy processes. For example, the portfolio supports biofuel and bioenergy related research and analysis undertaken through the RDCs and Cooperative Research Centres.

ABARE monitors and publishes data and forecasts of Australian and world fuel prices, production and trade on a quarterly basis. Historical data collected by ABARE is also published each December in *Australian Commodity Statistics* (tables 309-320 in the 2007 edition).

ABARE also conducts annual surveys of selected Australian agricultural industries. Through the farm surveys, information on farm expenditure on inputs, including fuel, fertilisers and lubricants, is collected.

Operating environment for Australian primary industries

Australia's agriculture, fisheries and forestry industries have a combined gross value of production of $38.5 billion in 2006-07. The sector operates in a dynamic and complex environment and faces a number of pressures, including the drought, declining terms of trade, movements in the value of the Australian dollar, and variable input costs including fuel and fertiliser.

Since 2002–03, severe and prolonged drought conditions across Australia have had a significant impact on rural and regional Australia. On farm, the drought has significantly reduced yields and farm incomes, with farm incomes in 2006–07 at their lowest levels in over thirty years. However, the Australian Bureau of Agricultural and Resource Economics September 2008 statistics show that, on the back of high commodity prices, the value of farm production is forecast to rise by 10 per cent to $45.3 billion in 2008-09.

While the Australian dollar has recently significantly declinined in value relative to the US dollar, its appreciation on a trade weighted basis over the previous 12 months presented some challenges to the agricultural sector. Given Australia's reliance on export markets, the appreciation of the Australia dollar made exports relatively more expensive on world markets, reducing Australia's competitiveness against similar products produced by other countries. While a stronger Australian currency was able to reduce the cost of imported inputs such as fuel, fertiliser, chemicals and capital, it also offset to some extent the value to Australian producers of higher global commodity prices that are mostly denominated in US dollars.

The recent global financial crisis has brought about another level of uncertainly for farmers to manage on top of drought and climate change. However, major banks and rural lenders have expressed cautious optimism for the agricultural sector in the immediate term and strong optimism in the medium-to-long term. Despite this, different commodity groups in different regions would be impacted in different ways by the global financial crisis. The cost of fuel and fertilisers in addition to the impact of the drought will have a significant impact on the viability of some farm businesses.

Fuel and energy for Australian primary industries

Importance

Fossil fuels, and inputs derived from fossil fuels such as lubricants and fertilisers, are essential inputs for all agriculture, fishing and forestry industries and supply chains.

Agricultural production systems made rapid and large productivity gains during the second half of the last century through the use of fuel and energy intensive technology and practices. These include the widespread adoption of high yielding crop and pasture varieties that require high analysis fertilisers, industrial chemicals and use of machines throughout the production process. Variations in the prices of fuel and energy often result in higher business costs, which are either absorbed or passed onto farm suppliers or consumers. Table 1 provides an indication of the relative dependencies of agricultural industries on fossil fuels and inputs derived from fossil fuels.

Table 1: Input costs as a percentage of total cash costs

Primary Industry	Fuel, Oil and Grease	Fertiliser	Chemicals
Broadacre	7.7	8.7	5.7
Cropping	9.5	13.9	12.5
Mixed crop/stock	8.2	8.3	3.2
Sheep	7.0	2.8	0.7
Beef	6.0	5.6	1.9
Sheep/Beef	5.6	6.4	0.5
Dairy	3.9	18.0	8.5
Average	6.8	9.1	4.7

Source: ABARE Australian Farm Survey Results 2007

ABARE estimates that diesel accounts for around 84% of energy use in the agriculture, fisheries and forestry sector. Diesel is the major fuel source for mobile equipment, such as tractors and harvesters, in the transportation of agricultural commodities and for powering fishing vessels.

ABARE farm survey data shows that average total cash costs of broadacre farms are estimated to have increased in real terms by more than 17 per cent between 2000-01 and 2006-07. While the average farm expenditure on fuel and lubricants have increased in real terms over the same period as shown in Table 2, there was little change in the proportion of total cash costs being spent on fuel and lubricants between 2000-01 and 2006-07.

Table 2: Annual percentage change in farm costs

% Change	2004-05	2005-06	2006-07	2007-08	2008-09 b
Materials and services					
chemicals	2.5%	3.4%	-11.7%	21.2%	16.2%
fertiliser	1.3%	-5.6%	-5.1%	94.9%	34.0%
fuel and lubricants	3.7%	24.8%	-0.5%	42.9%	30.0%
marketing	-3.7%	5.2%	-28.4%	10.5%	28.6%
repairs and maintenance	1.6%	4.4%	-5.2%	4.7%	2.7%
seed and fodder	-1.1%	-10.6%	29.9%	21.0%	-22.2%
other	2.8%	6.1%	-4.0%	4.9%	3.4%
Sub-total	*0.4%*	*2.3%*	*-2.4%*	*23.5%*	*8.7%*
Labour	-0.3%	10.8%	-3.3%	4.0%	3.5%
Overheads					
interest paid	3.0%	40.9%	18.4%	12.0%	3.0%
rent and third party insurance	2.4%	3.2%	0.3%	4.0%	3.5%
Total cash costs	0.6%	7.0%	0.0%	18.8%	7.2%
Depreciation a	2.6%	3.2%	3.0%	3.9%	3.5%
Total farm costs	0.9%	6.5%	0.4%	16.8%	6.7%

a Based on estimated movements in capital expenditure and prices of capital inputs. b ABARE forecast. Note: Prices used in these calculations exclude GST. Sources: Australian Bureau of Statistics; ABARE.

While the data in Table 1 and 2 suggest direct expenditure on fuels and energy is in itself significant and variable between years, the costs of other production inputs, such as chemicals fertilisers and transportation, are also linked to fuel and energy prices. A combination of direct input costs of fossil fuel products and the additional costs of other inputs (derived or associated with fossil fuel products) results in differing degrees of susceptibility to fuel price movements in primary industries.

Primary industries

Fuel costs are a variable, but generally significant, cost of production and can vary according to production methods, location, and seasonal and climate conditions. The quantum of these costs is an important consideration for operators in deciding whether to continue with their business activities in the short and long term. The sensitivity of business margins to rising fuel costs is highly varied across and between industries.

For the forestry sector, fuel is a major input for the mechanised preparation of land for tree planting, harvesting and road transport to domestic processing facilities and shipping ports for export. Energy is also a significant cost factor in manufacturing processes such as sawmills and paper production.

Commercial fishing is also a fuel intensive operation. For the five Commonwealth fisheries surveyed by ABARE[1] in 2005-06 and 2006-07, fuel accounted for between 10 per cent and 39 per cent of total costs, which is significantly higher compared to other primary industries. Fuel use varies across fisheries and fishing methods, with trawl methods requiring more power to drag nets than other fishing methods such as long-lining or gillnetting. Other factors that influence vessel fuel usage include distance to fishing grounds, time spent searching for fish, and vessel and engine efficiency.

For horticulture and cropping, activities such as land preparation, sowing, fertiliser application, pest prevention and treatment, harvesting, processing, packaging, storage and product distribution all require fuel. For the livestock sector, including intensive livestock production, fuel contributes to costs associated with animal and feed transport, animal management, heating and lighting.

A number of other inputs, predominantly synthetic fertilisers and chemicals, are also energy intensive to manufacture and apply. Fertilisers containing high concentrations of nitrogen, phosphorous and potassium are critical for plant growth, and chemicals are applied to protect crops from weeds, pests and diseases. For example, natural gas makes up to 90 per cent of the production cost of nitrogenous fertilisers, notably ammonium nitrate and urea. Therefore, the price increases in natural gas in the past decade, among other factors such as increasing cost of transporting and distributing fertilisers, have contributed to an increase in fertiliser prices.

Fossil fuels, electricity and natural gas are also essential for the post harvest processing, packaging and distribution of agricultural products, such as milling grain for bread and refrigerated transport of meat and other fresh products. Fuel and energy costs form part of the final retail price of agricultural products and any changes affect overall product competitiveness.

[1] These five fisheries are: Gillnet Hook and Trap Sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF), Eastern Tuna and Billfish Fishery (ETBF), Northern Prawn Fishery, Torres Strait Prawn Fishery, and Commonwealth Trawl sector of the SESSF.

Rural communities

Fuel is an important determinant of the overall living costs for families and communities located in rural and regional Australia.

Employment in agricultural, fishing and forestry industries is dependent on business profitability, which in turn is affected by income and cost factors such as fuel. The profitability of these primary industries also affects employment in affiliated industries, such as transport, food processing, mechanical plant services and the retail sector, and could lead to broader community impacts.

People located outside major regional centers are highly dependent on private vehicles to provide transport to schools, shops and medical services. An increase in the cost of fuel can affect the ability of those people to access health, employment and education services, their choice of location to live and community participation in a broad range of social and community activities.

Fuel and energy price factors

As Australia is a net importer of fuel products, movements in Australian prices generally track developments in world markets. There are limited substitution possibilities between these and other farm inputs. As a result, Australian farmers often have little choice but to either absorb increases in fuel and fertiliser costs through increasing productivity, adopting less energy intensive methods of production, discontinuing the activity or passing costs on through increased output prices. However, in many cases it is not possible to pass on costs, particularly for those commodities that face competition from overseas suppliers, some of which have state funded fuel subsidies.

The price of diesel in Australia is linked to the international price of crude oil, as around two-thirds of the oil used to distil diesel in Australian refineries is imported. It is also closely linked to the international benchmark price for diesel, the Singapore Gasoil price. Diesel prices in Australia reflect a range of domestic factors, such as transportation and storage costs within Australia and wholesale and retail selling margins.

The price of electricity in the national electricity market (New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory) is determined by generation costs in the wholesale market. In these jurisdictions, large consumers can contract with suppliers at prices dictated by generation, network and other operating costs. Price caps for smaller retail consumers are still regulated by state governments at this stage. The Australian Energy Market Commission is currently undertaking a review to consider removing these price caps. In Western Australia and the Northern Territory, due to lack of competition, a uniform regulated tariff is applied.

Average electricity prices have remained relatively constant since the introduction of the national electricity market. However, electricity prices have increased significantly since the beginning of 2007, largely as a result of record demand combined with tight supply. In particular, the drought has constrained the hydro generating capacity in the Snowy region, Tasmania and Victoria. The limited availability of water for cooling in some coal fired generators led to higher offer prices by generators. Occasional price spikes in the past have been caused by factors such as widespread heatwaves, industrial disputes and generator malfunctions.

Gas is sold mostly under confidential long-term contracts to large consumers. These prices are not related to international prices. In Victoria, New South Wales, Queensland and South Australia, prices to small gas customers are set at regulated maximum prices which account for wholesale gas costs, network charges, retailer costs and retailer margins. Tasmania, the Australian Capital Territory and the Northern Territory do not regulate gas retail prices. Price regulation for gas is generally less regulated than for electricity. The Commonwealth and state and territory governments—through the Council of Australian Governments—have reaffirmed their commitment to remove price caps where effective competition can be demonstrated, agreeing that transitional price caps should not hinder the development of competitive markets.

Fuel taxes and primary industries

Fuel sold in Australia is subject to excise and the goods and services tax (GST). Excise is payable by the product manufacturer at a rate of $0.38143 per litre. Manufacturers generally choose to incorporate the excise cost into the sale price of their product. Therefore, excise is built into the final price paid by the consumer.

The Diesel Fuel Rebate Scheme was introduced in 1982 to reduce the cost of diesel fuel to off-road users such as farmers. This scheme ended in 2004 and was replaced by a fuel tax credit scheme. From 1 July 2008 the scheme was expanded to include all taxable fuels used in agriculture, forestry and fishing activities, electricity generation and non-fuel use (such as an ingredient for plastics). Businesses that are registered for GST and for fuel tax credits can claim $0.38143 per litre, which is equivalent to the current rate of excise.

This differs from fuel used in vehicles greater than 4.5 tonne gross vehicle mass travelling on public roads. These vehicles are instead eligible for a fuel tax credit of $0.1851 per litre. This is equivalent to the road user charge, which is determined by the Treasurer under section 43-10 of the *Fuel Tax Act 2006.*

Fuels that are not eligible for a fuel tax credit are aviation fuels, alternative fuels (liquefied petroleum gas, compressed natural gas, liquefied natural gas, ethanol or biodiesel, which have different excise and/or rebate arrangements) and fuels used in light vehicles of 4.5 tonne gross vehicle mass or less travelling on a public road. Alternative fuels are subject to alternative subsidy arrangements.

Three states and territories also have fuel subsidies for which agricultural activities are eligible. The Queensland fuel subsidy scheme offers a $0.08354 per litre saving on eligible fuel sold in the state. New South Wales has a Queensland border subsidy scheme designed to ensure that New South Wales sellers of eligible fuel are able to compete fairly with Queensland fuel re-sellers. The subsidy of between $0.0835 and $0.0167 per litre is available in five northern New South Wales zones. The Northern Territory fuel subsidy scheme offers a general subsidy of $0.011 per litre on all eligible fuel sold.

Biofuels and bioenergy

Biofuels and bioenergy have the potential to reduce the overall current reliance on fossil fuels. The Australian Government is undertaking an internal review of biofuels policies, taking into account opportunities for industry development and existing support mechanisms. The review is expected to be completed by the end of 2008.

Globally, biofuels are currently produced using existing 'first-generation' technologies, which use food crops (such as sugar, corn and wheat) and by-products[2] and co-products[3] of food production as feedstock material to produce fuel. In Australia, biofuels are currently produced using feedstocks drawn predominantly from waste starch, sugar cane (molasses) and co-products of food production.

Australia's commercial biofuel production is small in comparison to worldwide production and represents about 0.5 per cent of combined petrol and diesel use. While biofuels represent a small proportion of the domestic transport fuel market, they are the second most widely available alternative fuel in Australia and can be purchased from about 16 per cent of Australia's retail fuel outlets.

There is concern about the impact of global biofuels production using first-generation technologies on food security and food price inflation. As the majority of biofuels feedstock used in Australia is drawn from non-food sources, the impact on domestic and international food security and food prices is therefore limited. Not withstanding this, global biofuels developments are affecting world agriculture commodity prices and have the effect of benefiting grain, cane and oilseed producers while simultaneously disadvantaging intensive livestock industries for which grain is a major input.

The environmental benefits of first-generation biofuels have also been questioned in terms of the effects of land-use change and actual greenhouse gas benefits. Under current international emissions accounting rules, biofuels are 'zero rated' as the carbon dioxide emissions from the combustion of biofuels are deemed to be equivalent to the carbon sequestered through the growth of feedstocks. However, the greenhouse gas savings differ based on the feedstock used through to the transportation, production method and end use, which may include distribution and blending processes. The life-cycle emissions of biofuels can therefore be highly variable.

Second-generation biofuels technologies use woody and fibrous plant matter, such as the non-food components of crops, wood, cereal straw and algae, to produce fuel. These technologies have the potential to offer significant benefits over first-generation technologies. For this reason, the Australian Government is targeting its investment in this technology. However, commercialisation of these technologies depends on continuing research and development. Earlier success may be achieved for algal biodiesel. It is envisaged that future Australian biofuel production will be based predominantly on the by-products and co-products of manufacturing until second-generation technologies are operational.

The introduction of the Carbon Pollution Reduction Scheme (CPRS) will impact upon Australia's transport fuel mix in a number of ways. Under the framework described in the CPRS green paper, suppliers will bear the cost of carbon, which will be passed onto consumers through increases in the price of fuel. Further, the greenhouse gas savings of alternative non-fossil fuel transport fuels, such as biofuels, will be reflected in the price of

[2] Co-products are secondary or incidental products from manufacturing processes. For example, molasses is a co-product from refining sugar cane to sugar.

[3] By-products are from the waste stream of manufacturing processes. For example, waste starch from flour milling.

these fuels (i.e. they will become cheaper), and this may result in these playing a greater role in the transport fuel mix.

The increased cost of petrol and diesel from the introduction of the proposed CPRS will impact on primary producers, as they rely heavily on these fuel sources. This is likely to encourage the adoption and use of alternative fuels, in particular biodiesel, in this sector.

The government has stated that it will match fuel taxes on a cent-for-cent basis for three years to offset the proposed CPRS associated price impact on fuel to businesses within the agriculture and fishing industries. The government will also provide an equivalent rebate for heavy vehicle users, although this will only run for one year. Therefore, the full effects of the proposed CPRS on fuel prices may not be felt immediately.

While biofuels production in Australia is expected to increase, particularly with the introduction of second-generation technologies, the contribution these fuels will make to the domestic liquid fuel mix over the long term is expected to remain small. Other alternative fuels, such as liquefied petroleum gas (LPG) and transport technologies, are expected to be major alternative transport energy sources.

Research into biofuels and bioenergy

Within the agriculture, fisheries and forestry portfolio, investment in biofuels and bioenergy research and development (R&D) is carried by the rural Research and Development Corporations (RDCs). These RDCs are involved in programs, individual projects and other collaborative partnerships. R&D in the bioenergy arena includes:

- *Bioenergy, Bioproducts and Energy* – Rural Industries Research and Development Corporation (RIRDC) has taken the main lead in bioenergy R&D. RIRDC's bioenergy subprogram has a budget of $971 000 in 2008-09 funded by RIRDC core funds provided by the Australian Government and some voluntary industry revenue. The program aims to meet Australia's R&D needs for the development of sustainable and profitable bioenergy and bioproducts industries.

- *Methane to Markets* – a collaborative program as part of an international partnership with $1 million funding from the department and input from Dairy Australia, Australia Pork Limited, Meat and Livestock Australia and the Australian Lot Feeders' Association. RIRDC has taken the lead role until February 2009 in the running of this program, with the aim to encourage and enable development, adaptation and use of methane capture and use technology in the Australian intensive livestock industries.

- A *Collaborative RDC program on Energy in Agriculture* – funded by RIRDC, Australian Pork Limited, Meat and Livestock Australia, Cotton Research and Development Corporation, Sugar Research and Development Corporation and the Australian Chicken Meat Federation. This program initially aims to develop an agreed methodology to undertake life cycle assessments for energy, greenhouse emissions and water use, while also assessing the energy efficiency of Australian agricultural systems.

The department is also part of *Bioenergy Australia* – an alliance of about 65 government agencies, industry organisations and RDCs. The goal of Bioenergy Australia is to foster the development and use of biomass for sustainable production of energy, transportation fuels, chemicals and other value-added products.

Other government agencies also contribute funding to biofuels and bioenergy R&D.