

The Secretary
Select Committee on Fuel and Energy
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SENATE SELECT COMMITTEE ON FUEL AND ENERGY

Submission

1. Introduction

It is appropriate, and timely, that the Senate has chosen, through its Select Committee, to conduct a comprehensive inquiry into all aspects of the fuel and energy industry in this country. As with the rest of the world, our consumption of both these commodities has been nothing short of prodigious during the twentieth - and early twenty-first - century. We in Australia were perhaps more fortunate than most of the international community, in that we possessed our own deposits of oil, coal and gas; and although deposits of the former are now virtually depleted, nevertheless deposits of the latter two are still quite considerable. In the short term the treaty negotiated with East Timor, over the oil and gas resources situated between the two countries, will certainly stand us in good stead: while our rather substantial deposits of uranium ores will ensure supplies of energy over the longer term; if we decide to pursue that course of action. Additionally, wind, geothermal, solar and tidal power display some potential to meet the shortfall in energy; however, these still require major development before they can be applied to large-scale operation. Insofar as industry is concerned there are, or should be, no great concerns regarding either fuel or energy supplies. However, although the general energy picture is bright, the same cannot be said for the transport industry. It is on this aspect of fuel and energy that this paper will focus.

2. Current Position in Transport

The fuel most frequently used in the transport industry has been petroleum, including diesel and kerosene. The burgeoning nature of the transport industry, resulting from the application of the internal combustion and diesel engines, as well as the greater affordability of the motor car, aimed at domestic use by vehicle manufacturers, has seen, worldwide, the rapid depletion of petroleum reserves. For most of the twentieth century this usage was confined to the so-called developed countries. However, during the late twentieth and early twenty-first centuries, the usage pattern shifted markedly to include the emerging economies of, among others, China and India. If depletion of petroleum reserves had been recognized as problematical in the 1970s, it should reach gigantic proportions by the end of the

first decade of the 2000s. Clearly, with increasing numbers of vehicles appearing on the roads of the world, together with increased consumption of petroleum products by these vehicles, there is a great need to consider alternative fuels in the motor vehicle industry; if for no other reason than to reduce pressure on existing supplies of petroleum, largely controlled by the OPEC countries.

3. Alternative Sources of Fuel

Some of these have already been mentioned: gas(LNG) and coal. Vehicle engines are currently being modified to accept LNG; and there is a possibility that a fuel may be developed, suitable for use in vehicles, as a by-product of coal production.

Experimental buses in WA are also using hydrogen as a source of fuel but, at the present time, costs associated with this fuel are exorbitant and it is unlikely that they will come down appreciably in the near future. This, of course, excluding electrical energy supplied by batteries which are largely experimental at this stage, leaves only one type of fuel remaining: the class of fuels known as biofuels. Essentially, these fuels, since they come from animal fats or plant matter, can be broken into two sub-classes: biodiesel and ethanol.

4. Environmental Impact

In an article entitled: "Fuel Myths Explained", Mike Upton, Vehicle Policy manager, RAC (WA), states that one of the myths surrounding the use of biofuels is that: "Biofuels are environmentally friendly". He goes on to say: "Use of biofuels does not always reduce greenhouse gas emissions. In fact, in some cases the emissions are substantially higher. A recent report by the CSIRO found that in some cases, emissions from biodiesel were actually much higher compared to those from ordinary diesel fuel. In particular, palm oil from crops grown in peat swamp forests produced emissions 2000 per cent higher than ordinary diesel.

The report also found that ten per cent ethanol blends, produced from wheat stocks, result in a small reduction in greenhouse emissions but there is little difference in the emissions of those fuels produced from corn." ('Horizons', Issue 7, 08.08, p51, No. 7).

What Upton neglected to mention in his report, however, was the use of ethanol produced from sugar-cane. This is used extensively in Brazil as a substitute for fossil fuels; since the latter are quite simply unaffordable there. Brazil had been the major producer of ethanol in the world, but has recently been overtaken by the USA where, instead of using sugar-cane, ethanol is produced from corn and grains. The US aim is to replace 30 per cent of fossil fuel gasoline with ethanol by 2030.

Furthermore, in the NCC publication: 'Green Energy, Green Car', it is stated that: "ethanol is greenhouse-neutral"; and that: "The more ethanol used in cars, the less net CO₂ added cumulatively to the atmosphere.", all of which is good news for greenhouse gas emissions. As if to underscore these statements, Yvo de Boer, head of the UN climate agency rejected the idea that carbon-cutting biofuels should be banned when he stated: "I think biofuels are a very important part of the solution". ('US balks at EU's climate change call', "The West Australian", 4 Jun '08).

Another benefit obtained from using ethanol as a fuel is gained as a result of a reduction in exhaust emissions of carbon monoxide, hydrocarbons and the like which are responsible for the occurrence of chronic illnesses such as asthma, bronchitis and so on. According to Assoc Prof Ray Kearney of Sydney University, about 1400 Australians die each year as a result of pollutants emanating from fossil fuel vehicle emissions; a further reason for considering ethanol as an alternative to fossil fuels. Assoc Prof Kearney has also estimated that petroleum, comprising 10 percent ethanol, cuts emissions by 50 per cent.

The AMA has also given qualified support for the inclusion of 10 per cent ethanol in fuel, and 20 per cent biodiesel in diesel.

5. Australian Ethanol Industry

Can an ethanol industry be established in Australia? The answer is, of course, yes. As one of the foremost wheat producers in the world, an ethanol industry based on wheat would certainly be viable. However, there is concern that any wheat diverted to an ethanol industry would occur at the expense of food production; especially where supplies to developing countries are concerned. This of course does not hold true for an ethanol industry based on sugar-cane. If anything, the sugar-cane industry in Australia is under-utilised, with excess capacity brought about by low returns dictated by corrupt world market prices. With existing areas under cultivation in Eastern Australia, there are also another 400,000 ha of land adjacent to the Gilbert River in north Queensland which, with irrigation, can provide the basis of an expanded sugar-cane industry; together with the black soil plains of western Queensland covering an area of approximately 1000km by 500 km. Then there is the Ord River region in northern Western Australia, capable of providing a further 78,000ha, especially with the proximity of extensive irrigation.

Australia certainly has the potential to emulate Brazil as a major producer of ethanol from sugar-cane. In fact, since Australian cane contains a higher concentration of sugar than its Brazilian counterpart, less cane would need to be produced to ensure parity with Brazil.

6. Pricing

Delegates at the Queensland Ethanol Conference, 2006, were informed that the cost curve for ethanol production in Brazil has been falling steadily, in linear fashion, between 1980 and 2002, because of: increased yields per hectare, content, ethanol yield and fermentation yields. This pattern is predicted to continue as bagasse, a by-product of cane production, is used to produce ethanol from cellulose.

The WA and NT governments have been investigating the feasibility of establishing a sugar and ethanol industry based in the Ord River Irrigation Area. We were advised, by the WA Premier's Department in May 2008, that one of the options examined, by those conducting the investigation, indicated an ex-refinery price of 50-56 cents per litre could be achieved. Roughly this equated to a crude oil price of about \$US56 a barrel in order to break even. Since then, the price per barrel of crude oil has jumped

by a factor of 2.5; surely a compelling reason to consider the introduction of ethanol from sugar-cane as an alternative fuel?

7. Car Industry

The Australian car industry is moribund. From a peak of about 70 per cent of vehicles required for local consumption, production has now dropped to around 30 per cent of its annual demand for new cars; with a strong likelihood that it will fall even further, especially now that tariffs on imported vehicles have been cut to 5 per cent.

Currently, Holden is manufacturing a VE Commodore which runs on a 24 per cent ethanol mix. As might be appreciated the vehicle is not for domestic consumption, but rather for export to Brazil. In short, Australia possesses the expertise, as well as the capacity, to give the flagging car industry a substantial boost; to the extent that we could produce 1 million cars annually. This surely will provide avenues for increased employment opportunities; both in the vehicle manufacturing industry, and its associated spare parts production. Initially, this will require a measure of government assistance of the kind offered recently by the Prime Minister, Kevin Rudd, to the Toyota Company to assist with the production of a hybrid vehicle.

8. Balance of Trade

In 2005-6, at \$US 50 per barrel of crude oil, Australia's deficit in crude and refined fuel was \$12.8 billion. Given the price of crude oil, this deficit is probably running at around \$32 billion at the present time; and, although prices have moved downwards in recent times, nevertheless, the upward pressures on price will continue because of supply-side problems. An ethanol fuel industry in this country would go a long way towards reducing this deficit; as well as making Australia less reliant on the vagaries of the international markets.

Australia's trade deficit in vehicles and parts was around \$18 billion in 2005. A viable vehicle industry, using ethanol-based fuels, could substantially reduce this deficit.

9. Conclusion

While there appear to be no long term problems associated with the fuel and energy supplies needed for industry in this country, the same cannot be said for the fuel required for the transport industry. This is due in part to diminishing levels of supply coupled with increased demand by the emerging economies of the world, especially China and India. It is clear that investigation into the use of alternative fuels must be accorded the highest priority; this is especially so for the class of fuels known as biofuels. This paper contends that the biofuel best suited to use in this country is ethanol produced from sugar-cane; because of its availability, as well as the potential which exists for rapid expansion of the cane industry to accommodate ethanol production.

It has been estimated – by Assoc Prof Ray Kearney of Sydney University – that fuel containing 10 per cent ethanol is capable of cutting dangerous exhaust emissions by a factor of 50 per cent, as well as in reducing the death rate associated with

pollutants, now numbering 1400 per year. The AMA has also endorsed the introduction of 10 per cent ethanol in petrol and 20 per cent biodiesel in diesel.

With costs of ethanol falling between 1980 and 2002 - with a further fall predicted when bagasse is used to produce ethanol from cellulose – and with the prospect of steadily increasing prices for petroleum products, there is a great urgency for government to implement policies conducive to ethanol production as soon as possible.

The WA government considered that a price of 50-56 cents per litre of ethanol compared more than favourably with crude oil at a cost of \$56 per barrel. The price per barrel of crude is now more than 2.5 times that figure and increasing.

Acceptance of ethanol as a fuel source may well lead to a resurgence of the motor vehicle industry in this country; we now export VE Commodores, running on a 24 percent ethanol mix, to Brazil.

By reducing our reliance on imports of fuel, motor vehicles and spare parts we will be in a far better position to reduce the size of the deficit in the balance of trade.

D Hartley

(Secretary)

National Civic Council(WA)

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