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APPENDIX TO THE SEF SUBMISSION ON THE BIOFUEL BILL

The Main Concern

Since under the Biofuel Bill, the Biofuels Sales Obligation will be introduced at a level of 0.53% of petrol and diesel sales from April 2008 which will increase to only 3.4% by 2012, it will have very little impact on New Zealand's greenhouse gas emissions from the transport sector.

However there are two major concerns as follows, about whether the Biofuel Bill will have any positive environmental impact at all. It could, in fact, have a negative environmental impact.

A. The Sustainability of the Biofuels Used

The European Union (EU) now has in place a target of replacing 5.75% of fossil fuels with biofuels in transport by 2010.

But a study part-funded by the European Commission has said that between 14% and 27% of EU agricultural land would be needed if all that amount of biofuel was home-produced. As this is clearly unrealistic, large amounts of biofuel will have to be imported into Europe either from countries which strip rainforests for land to grow biofuel crops, including sugar cane for ethanol and palm oil for biodiesel, or from the USA where biofuels production from crops is heavily subsidised and with very little reduction in greenhouse gases on a lifecycle assessment.

There is also a draft proposal that 10% of all fuel used in transport in Europe should come from biofuels by 2020.

On 15 January 2008 a news item said that the EU has admitted that changes are needed to its biofuels policy because it failed to foresee the adverse effects on the environment it might cause.

Studies have suggested that some biofuels barely reduce carbon dioxide emissions overall, while the production of others can lead to rainforest destruction, biodiversity loss and destruction of farmland, and higher global food prices.

The EU now says that new guidelines will be developed to ensure that their biofuel target for transport fuels from crop sources is not damaging to the environment.

As an example, compare biofuel made from maize (or corn) in the US way, and from sugar in the Brazilian way. Providing that the land has not been cleared by deforestation to grow the crop, the Worldwatch Institute estimates that the reduction in greenhouse gases on a lifecycle assessment resulting from ethanol produced in Brazil is **80%** compared with **just 10%** from intensively farmed maize in the USA. For ethanol from corn in the USA, the figure is **about 18%**.

It seems that the only major beneficiaries of corn or maize production for biofuels in the USA are those that grow rich on the billions of dollars of subsidies paid. These amounted to about US\$2.7 billion (NZ\$3.5 billion) in 2006.

Second generation biofuels made from cellulosic ethanol, including wood chips and other waste products, are described as the "Holy Grail" of biofuels. They are expected to deliver greater greenhouse gas emission benefits than first generation biofuels and are also less likely to rely on the use of land currently employed for food production.

But when will second generation biofuels become economically competitive? An article published by Professor Ralph Sims and Andrew Barber in the January/February 2007 issue of Grower magazine states that there is potential for this process to become competitive by the year 2030.

B. Will New Zealand need to Import Biofuels?

(a) Biodiesel

Apart from the relatively trivial use of waste cooking oil (5000 tonnes per year), tallow (150,000 tonnes per year) is the only practical local feedstock. This is currently exported, mainly for soap production returning about \$500 per tonne.

NZ's current diesel usage is around 2.33 million tonnes so 150,000 tonnes of tallow would be 6.4% of this figure. Therefore a target of a 5% blend of biodiesel in all diesel sold in NZ by 2012 would appear to be readily achievable if we stop exporting most of our tallow, with a consequent loss of export income of around \$60 million annually.

It is understood that a 5% biodiesel blend is an upper limit at present due to technical limitations of the NZ vehicle fleet.

(b) Bioethanol

NZ currently produces annually around 16 million litres of ethanol from dairy waste. Of this, about 6 million litres is used locally (mainly in the beverage industry but also in the industrial chemicals market) and unlikely to be available for use as a biofuel.

Therefore approximately 10 million litres per year of ethanol produced from dairy waste might be available for biofuel blends. This is a very small (approximately 0.29%) proportion of the 3.5 billion litres of petrol used per year in NZ.

Hence for a 3% ethanol blend in all petrol sold in NZ by 2012, approximately 2.71% (95 million litres) of ethanol will have to be imported annually, unless crops grown in NZ are diverted to producing ethanol.

A letter from the Minister of Energy to John Blakeley dated 2 July 2007 states that while maize growing is not economically competitive to dairy farming or other crops, it is very competitive to sheep and beef farming, and there is plenty of potential land in NZ currently used for intensive sheep and beef farming that is also suitable for growing maize.

The letter also states that the biofuels sales obligation of 3.4% by 2012 assumes that ethanol will account for approximately 2.05 petajoules (PJ) in 2012, with the remaining 5.25PJ being made up of biodiesel (and 2.05PJ of ethanol derived from maize would require slightly less than 28,000 hectares of land).

Given the more favourable economics of maize growing to intensive sheep and beef farming, and the fact that 14,000 hectares of land is already used for maize growing, if all that maize was diverted to biofuel, then another 14,000 hectares would be sufficient for NZ to avoid having to import bioethanol to meet the biofuels sales obligation by 2012 (This calculation appears to assume that bioethanol from dairy waste is not available for biofuels).

A quick calculation suggests that there would be an overall blend of bioethanol into petrol sold in NZ of only about 1.75 percent by 2012 which is much less than the 3 percent which has been suggested in publicity on the Biofuels Sales Obligation as being the technical limitation posed by the NZ vehicle fleet.

Any higher overall percentage blend of bioethanol into petrol by 2012 than 1.75% is likely to either require extensive importation of ethanol or much larger areas of land used to grow maize than 28,000 hectares.

This is probably the reason why the Minister's letter suggests that an overall 3.4% of biofuels by 2012 was the maximum level that could be met by domestic production of biofuels and taking a conservative view of the technical limitations posed by NZ's vehicle fleet.

But as stated earlier, as a crop, intensively farmed maize will give only a 10 percent reduction in greenhouse gas emissions compared with imported petrol, and so the sustainability of using ANY maize crops in NZ to produce bioethanol must be seriously questioned.

Despite such concerns, as further discussed in our submission, the Bill in its present form does not require that the biofuels used to meet the sales obligation meet any sustainability criteria, and nor are they required to contribute to net greenhouse gas emissions. We believe that this is a fundamental flaw in the Bill, and that Clause 34(G) should be amended to make it clear that qualifying biofuels must meet a set of sustainability and greenhouse gas emissions criteria that will be tightened over time, rather than merely allowing for the possibility of introducing such criteria at some indefinite future point.

John Blakeley and Tim Jones
3 March 2008