EnergyWatch

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ETS Target Unclear

It is now acknowledged by the Government that New Zealand will have a substantial deficit in its obligation to limit greenhouse gas emissions under the Kyoto Protocol over five years commencing on 1 January 2008, which will be met by the purchase of carbon credits.

In launching the Government's emissions trading scheme (ETS) on 20 September 2007, the Climate Change and Energy Minister, David Parker, suggested a resulting near-halving of this deficit from 45 million tonnes of carbon dioxide equivalent to 25 million tonnes or less during the five year commitment period expiring at the end of 2012.

However in another recent statement, the Minister has said that without this ETS, our projected emissions deficit could increase further and reach 65 million tonnes.

He needs to clarify whether he is expecting emissions trading to achieve a reduction in the deficit from 45 to 25 million tonnes by 2012 which would be very difficult, or from 65 to 25 million tonnes which would be a near-impossible task.

A more realistic assessment may be that with this ETS, it might be possible to get the deficit down from 65 million tonnes (where it might otherwise be) back to 45 million tonnes (which is close to the present forecast).

New Zealand's greenhouse gas emissions have been moving steadily upwards over the years from 1990 to the present. The extent of this emissions increase is now such that even after deducting the extensive credits we have as a nation for forest planting since 1990, we are left with this substantial deficit. When we ratified

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the Kyoto agreement in 2002, we still thought that we were going to have a surplus!

At the time of the release of the carbon trading policy, Mr Parker said that the estimated deficit over the five year period ending in December 2012 had recently increased from 41.2 million tonnes (the 2006 estimate) to 45.5 million tonnes (the 2007 estimate). He said that this increase was largely due to increased dairy farming activity, including increasing conversion from other land use to dairying.

During question time at a breakfast in Auckland following the launch of the ETS, the Minister was asked where exactly he thought that his expected deficit reduction resulting from this scheme was going to come from.

He replied that he expected a substantial reduction in the amount of deforestation as a result of the new emissions trading policy. There will be some reduction in emissions from the transport sector but these will not be significant by 2012. There will be more focus on renewable energy sources in electricity generation projects. But the key issue will be what the agriculture sector does, in determining whether New Zealand's overall greenhouse gas emissions in 2012 will be more or less than those in 2008.

This reply from the Minister was far from convincing, especially considering that the agriculture sector is not included in the ETS until 2013!

So where will this expected deficit reduction come from? There has been no mention from the Government of the possibility that the only way to actually reduce emissions may be through cutting back and decreasing consumption, with a consequent reduction in economic growth.

The Minister claimed that the ETS will only reduce GDP by 0.3% over the five year Kyoto Commitment period to 2012, during which time economic growth could be expected to total 15% or more. This miniscule GDP reduction hardly indicates any significant reduction in consumption.

If the deficit reduction does not come from reduced consumption it must come from one or more of three other possibilities:

- Reduced deforestation or increased new forest plantings; or
- Increased efficiencies of energy use; or
- Increased adoption of new technologies.

The first possibility will happen only if there is a dramatic turnaround from the present trend towards converting forestry land back to farmland when the trees are harvested, together with more projects for large scale new forest planting on areas of marginal land.

The second possibility will happen only if the Government's new Energy Efficiency and Conservation Strategy announced in October 2007 is more successful in its implementation than its predecessor which was launched in 2001.

The third possibility is unlikely to happen before 2012 because of the long lead times in implementing new technologies in the following sectors:

- In the transport sector, the Government is expressing great hope in the future use of electric cars but acknowledges that this will not be significant by 2012. Also, by then some use of biofuels will have had only a very minor effect on overall emissions from the transport sector.

- In the agriculture sector, hope is expressed in the future reduction of methane emissions from farm animals, but a technological breakthrough in this by 2012 is most unlikely. Reduction of farm emissions of nitrous oxide through more use of nitrification inhibitors offers some chance of significant emissions reductions by 2012.

- In the energy sector, there is talk of the long-term prospects of underground sequestration of the carbon dioxide produced from coal-fired power generation, but that is certainly not going to occur before 2012 on a significant scale. Also nuclear power generation in New Zealand seems to be off the agenda for the foreseeable future.

It seems that forestry is now the Government's main hope for reducing our emissions deficit by 2012, but present trends there are moving in the wrong direction towards more deforestation. By 2012 there are expected to be only minor cutbacks in our increasing emissions in the transport and energy sectors.

Roughly half of New Zealand's emissions come from agriculture where nothing will be done under the Government's ETS until 2013.

The Minister repeated many times during the launch of the ETS his claim that it would lead to a near-halving of the expected emissions deficit by 2012. He should now spell out in more detail how he expects this to happen.

Rethink on Biofuels?

The European Union (EU) has in place a target of replacing 5.75 percent 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 percent of EU agricultural land would be needed if all that amount of biofuel was home produced. As this is clearly unrealistic, large amounts of biofuels will have to be imported into Europe including from countries which strip rainforests for land to grow biofuel crops.

There is also a draft proposal that 10 percent of all fuel used in transport in Europe should come from biofuels by 2020 and the emerging global market is expected to be worth billions of dollars per year.

Just as this issue of EnergyWatch was being prepared, on 15 January a news item on Radio NZ 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. (This was also reported in the NZ Herald the following day).

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

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

What this REALLY seems to be saying is that the EU will have to revise downwards its 5.75 percent target by 2010 in order to prevent such environmental damage occurring.

Dr Tad Patzek, commenting on the EU statement as a member of a group of independent scientists, said that the EU approach to biofuels has been naïve. "It is a mirage but a very enticing mirage, and people go along with it", he said. "It pushes into the future the inevitable tough decisions we have to make as individuals and societies and therefore we would rather believe in the tooth fairy than face reality".

Dr Patzek said that vast areas of rainforest are being cleared globally to feed the demand for biofuels in Europe and the United States.

Denis Avery, from the US think-tank the Hudson Institute, says that there is no way that biofuels can solve the problem of global warming. He says that the costs of producing ethanol are huge and there is not enough land for large scale production.

"It is another horrible mistake produced by hysteria" he said.

Reference: Radio NZ News, 15/1/08

Also included in this issue is a summary of a recent article taken from the Independent newspaper in the UK considering the environmental impact of growing crops to produce biofuels over vast areas of prairie country in the USA, and the major subsidisation of the crops produced, paid for by the US Government to the biofuels producers. Insecurity over future oil supplies appears to be a major reason for this happening, and yet producing biofuels from crops can actually consume as much fossil fuel as the biofuel will replace.

Also included is the correspondence during last year (arising from the request for submissions on the draft NZ Energy Strategy) which your editor

had with the Minister of Energy, David Parker, over the NZ Biofuels Sales Obligation. The legislation for this is currently before Parliament and it is due to commence in April 2008 at a level of 0.53 percent of petrol and diesel sales and increasing to 3.4 percent of sales by 2012. The Minister presents a good case to justify this policy but I remain far from convinced that the policy will be of much net benefit to either the NZ economy or the environment.

In a recent opinion piece (NZ Herald 7/1/08), energy consultant Bryan Leyland said "The strategy (NZES) makes much of biofuels even though all the evidence points to the fact that growing crops to make biofuels is bad for the environment, deprives people of much needed food and in most cases does nothing to reduce carbon emissions. The only beneficiaries are those that grow rich on the billions of dollars in subsidies paid for biofuels production.

Sadly your editor has not seen much evidence so far to refute this point of view.

As noted in a recent article in the New York Times (19/1/08), rising fuel prices are now a serious issue around the world. Shortages and rising prices for palm oil, soybean oil and many other types of vegetable oil are the latest and most striking example of a developing global problem – costly food.

The article says that soaring fuel prices have altered the equation for growing food and transporting it across the world. Huge new demand for biofuels has created tensions between using land to produce fuel and using it to grow food.

Soaring prices for palm oil are drawing environmentalists, energy companies, consumers, indigenous peoples and governments into acrimonious disputes.

Palm oil prices have jumped nearly 70 percent in the last year because supply has grown slowly but demand has soared. Farmers and plantation companies are responding to the higher prices, clearing hundreds of thousands of acres of tropical rainforest to replant with rows of oil palms. But the oil palm takes eight years to reach full production and worldwide, palm oil output climbed just 2.7 percent last year.

In the USA, farmers have been planting more corn and less soy because demand for corn-based ethanol has pushed up corn prices. American soybean acreage has reduced by 19 percent last year, leading to a drop in soybean oil output and inventories.

The European Union has now moved to restrict imports of palm oil grown in unsustainable ways. The measure has incensed the Malaysian palm oil industry, which had plunged into increased biofuel production, in part to satisfy European demand.

SEF has recently (31 January 2008) made a submission on the Biofuel Bill at present before Parliament, pointing out that in regard to the use of biofuels to meet the Biofuels Sales Obligation, the Bill does not compel the use of biofuels which are sustainable, or indeed reduce greenhouse gas emissions when the production and manufacturing process of the biofuel is taken into account.

SEF's concern is therefore that as a consequence of dependence upon an unspecific Order in Council, a situation may eventuate allowing oil companies to buy locally or import, then blend and sell, biofuels that have not complied with any sustainability or greenhouse gas emission standards.

EnergyWatch Changes

This is the first "slimmed down" issue of EnergyWatch and we hope to produce four or five issues per year.

As previously advised, the normal method of distribution to SEF Members will now be electronically by pdf file. If for any reason you wish to continue to receive EnergyWatch as a hard copy, please send a request to treasurer@SEF.org.nz or by mail to Steve Goldthorpe at PO Box 96, Waipu 0545.

There will be no extra charge for receiving the hard copy version of EnergyWatch - at least for 2008.

John Blakeley

Climate Change/Global Warming

Emissions Trading Scheme Proposals

The Government unveiled its proposals in Wellington on 20 September 2007 followed by a breakfast addressed by three Ministers held in Auckland the following morning, to which your editor received an invitation.

Since then, legislation has been introduced to Parliament with a submissions deadline of 29 February and it is expected that the legislation will be passed before the House rises for the election later this year.

The scheme will be launched with the forestry sector in 2008 and then gradually expanded across the whole economy.

The cap-and-trade scheme will then:

- Cover the transport sector from January 2009;
- Cover energy generators and energy-intensive-industries from January 2010, and finally;
- Cover agriculture from January 2013.

The Government expects about 200 companies, plus foresters, to be direct particiapants in the scheme when all sectors and all greenhouse gases are included. The scheme is designed to link to international carbon markets.

The aim is to make NZ carbon neutral in electricity by 2025, with 90 percent of the country's electricity generation coming from renewable sources by the same date. Over time, there will be an emissions price embedded into all goods and services purchased.

The big winner under the new regime will be the forestry sector, which will receive incentives to plant new trees equivalent to hundreds of millions of dollars. In a startling U-turn from its earlier decision to nationalise all carbon credits from forestry sinks, the Government says that it will enable forest owners to opt into the emissions trading scheme, accruing both credits and associated liabilities.

Farmers are also relieved to be getting off relatively lightly, with a reprieve from emissions trading for another five years which will hopefully allow time to find ways of reducing emissions of methane from livestock and nitrous oxide from urine and fertiliser.

When agriculture eventually comes into the scheme, the Government is likely to target processing companies, such as fertiliser manufacturers, dairy processors and meat processors, rather than individual farmers. Companies will receive free credits equivalent to 90 percent of their 2005 emissions.

In the transport sector, it is impractical to directly target all those who generate emissions through operating vehicles. Instead, the point of obligation will be a small number of companies high in the supply chain, in particular fuel suppliers. As these companies are expected to pass the cost of joining the scheme on to their customers, they will not receive any free allowances.

The so called "stationary energy sector", which includes electricity generation and all other energy except transport fuel, will join the scheme in January 2010. Heavy emitting industrial processes mainly the metal, mineral and chemical industries will be brought in at the same time.

Industries exposed to international competition will receive free permits equal to 90 percent of their 2005 emissions, but electricity generators will receive no free allowances as they will pass the cost on to their customers.

In general, the Government has indicated that emission units will not be issued free to emitters who are able to pass the cost on to their customers. In Europe, many businesses received windfalls by getting free emission

units but then passing on the cost of these units, and the Government is looking to prevent a similar occurrence in NZ.

Reference: NZ Energy & Environment Business Week, 26/9/07.

ETS May Hit Future Investments?

Business lobby groups say the Government's planned emissions trading scheme (ETS) will put thousands of jobs and $1.5 billion of investment at risk.

The Greenhouse Policy Coalition (GPC) and the Major Energy Users Group (MEUG) base these claims on 32 responses to a survey of firms in the meat, dairy, pulp and paper, steel, cement, shipping, mining and supermarket sectors.

Based on an emissions charge of $30 per tonne of carbon dioxide, respondent's firms' direct energy costs would rise by a combined $241 million per annum (and for which there will be no free allocation of emissions permits).

Respondents were evenly split on whether their investment plans would be affected, but among those who though it would be, the combined impact was put at $1.55 billion of new capital investment and 425 new jobs at risk.

A minority thought that a $30 per tonne carbon dioxide emissions charge would mean scaling back their existing businesses or would reduce business-as-usual growth. The number of jobs potentially at risk was estimated at just over 2000.

But the results of the survey come with an important proviso because it presumes no free allocation of emissions permits for industrial production.

GPG and MEUG believe that 14 of the 32 respondent firms would qualify for free allocation under the draft ETS policy's provision to grandfather 90 percent of a firm's 2005 emissions above a threshold of 50,000 tonnes. (However, the policy exposes emitters to the full cost of carbon dioxide emissions on any increase in their industrial production and envisages the progressive phasing out of protection between 2013 and 2025).

Climate Change Minister, David Parker said that the Government was finalising decisions on the legislation for emissions trading, which was likely to be introduced into Parliament in December 2007.

"Following the bill's introduction it will be released to a select committee in the normal manner" he said (The deadline for submissions on the bill is now 29 February 2008).

Reference: NZ Herald, 13/11/07.

The Likely Cost of Carbon Credits

When the Government announced its Emissions Trading Scheme (ETS) in September 2007, it was made clear that it would be designed to link to international trading markets.

And yet in all its many policy announcements since then, the Government has maintained steadfastly that it expects the cost per "emissions unit" (equivalent to 1 tonne of carbon dioxide emissions) to be around NZ$15 per tonne, even though it is quite clear that the international price is going to be well above this level.

As an example of the Government's thinking, on page 12 of the Explanatory Notes to the Biofuel Bill tabled in Parliament in December 2007, it states "NZ is forecast to incur a deficit of $600 million for emitting 41.2 million tonnes of carbon dioxide equivalent in excess of its Kyoto Protocol target over the period 2008-2012". A quick calculation shows that this assumes a cost of $14.56 per tonne. (Also note that the 41.2 million tonnes had already been revised upwards to 45.5 million tonnes at the time of the announcement of the ETS in September).

During the launch of the ETS in September the Climate Change Minister, David Parker, stated categorically on many occasions that the Government, on Treasury advice, believed that $15 per tonne was the right figure to use.

At the breakfast in Auckland on 21 September which followed the announcement of the ETS, during question time your editor asked Mr Parker if he thought the figure of $15 per tonne might be "on the low side", especially considering that on the European market, credits for 2008 and beyond are now selling at well over $30 per tonne.

Mr Parker looked at the Finance Minister, Dr Michael Cullen before replying and then said that his advice from Treasury was that there were a number of sources where if it wanted to, the Government could purchase credits right now at about NZ$15 per tonne, or perhaps a little more than that, say around NZ$17 per tonne on average.

From the ripple which went around the room when David Parker said that, I detected that there was a considerable degree of scepticism about what the Minister was saying.

Later in the breakfast discussion a person from PriceWaterhouse Coopers took up this theme and stated that the present price on the European market was NZ$34 per tonne and noted that in replying to me, the Minister had implied that the European price might be particularly high because of stricter requirements for carbon credits on that market, but that actually if anything the European price should be lower than the international price because European credits have to be used up by 2012, whereas there is no such restriction on credits available internationally.

An interesting discussion on this matter subsequently took place on SEF News initiated by Molly Melhuish. She had commented on an item on Morning Report on 17 October in which the Major Energy Users Group (MEUG) had said that they are not against a market price for carbon, but had no inkling that the price might rise from NZ$15 per tonne (as indicated earlier by the Government) to NZ$30 per tonne of carbon dioxide equivalent. MEUG said that in the worst case, jobs might be lost in NZ and GDP might fall.

Molly commented that MEUG do not seem to understand that NZ$30 per tonne is the expected world market price, and the Government has always said that the NZ carbon price would be linked to the world market price.

Among the respondents to this, Tim Jones said that a critical issue in the design of the ETS is whether participants will be allowed to purchase "Assigned Amount Units" from the former Soviet Union. These are also known as "Russian hot air credits" because they arise from the collapse of the Soviet (mainly Russian and Ukrainian) economies, leading to a big reduction in emissions, just after the date from which their Kyoto liabilities were set.

The NZ Government's present position seems to be that it will allow these credits to be purchased, even in their "raw" form (i.e. without being "greened" by linking them to real emissions reductions projects).

Tim noted that allowing purchase of these "Russian hot air credits" greatly increases the range of credits available internationally but would surely weaken the "environmental integrity" of the New Zealand scheme (that is the chance that the ETS scheme in NZ will lead to real verifiable emissions reductions).

At a meeting held with Government officials in Wellington on 16 October, a number of NGO's argued strongly that these credits should not be included in the NZ scheme, because not including them would:

- Align the NZ scheme more closely with the ETS now operating in the European Union, which excludes them.
- Improve the environmental integrity and therefore international reputation of the NZ scheme.
- Increase the chance that the NZ scheme would lead to actual emissions reductions - something which is not at all evident in the present form of the NZ scheme.

Reference: Various SEF News Postings, 17/10/07

Recent News Items

Is the World Warming?

In its ecologic column on 29 December 2007, the NZ Listener presented its "The Planet I'm on Still Works Fine" Award to "business lobbyist and climate change sceptic" Bryan Leyland, for his December assertion, citing England's Hadley Centre, that global temperatures haven't risen for the last nine years.

This assertion was repeated in an article in the NZ Herald (on 7/1/08) where Bryan Leyland said "The surface temperature record used by the IPCC shows that the world has not warmed since 1998. If cooling continues for a few more years, then the hypothesis, the theories and the computer models supporting claims that carbon dioxide causes dangerous man-made global warming will have to be re-examined".

Commenting on this claim, the NZ Listener said "meanwhile in the real world, the British Met Office said in June 2007 that ….the warm UK spring follows a run of record breaking years - the last five years are the warmest on record - and this trend is consistent with our predictions from the Met Office Hadley Centre."

Some clarification of these different interpretations of the Hadley Centre information is provided in a recent NZ Herald article (7/1/08) which stated that world temperatures will cool slightly in 2008 but it will still be among the top 10 hottest years on record.

The impact of a strong La Nina climate pattern over the Pacific will help keep temperatures down in 2008, according to the annual forecast by the (UK) Met Office and the University of East Anglia.

Overall, the global temperature is expected to be 0.37 degrees C above the long-term average of 14 degrees C, making it the coolest year since 2000, when the average value was 0.24 degrees C above the long-term average.

"Phenomena such as El Nino and La Nina have a significant influence on global surface temperature and the current strong La Nina will act to limit temperature rise in 2008", said Professor Chris Folland of the Met Office.

"However, mean temperature is still expected to be significantly warmer than in 2000 …..sharply renewed warming is likely once La Nina declines" he added.

"The fact that 2008 is forecast to be cooler than any of the last seven years - and that 2007 did not break the record warmth set in 1998 - does not mean that global warming has gone away" warned Profession Phil Jones, director of the climate research unit of the University of East Anglia.

"What matters is the *underlying rate of warming* - the period 2001-2007 with an average of 0.44 degrees C above the 1961-90 average was 0.21 degrees C warmer than the corresponding values for the period 1991-2000".

Footnotes:

1. This has all happened despite the record warm year being in 1998. Obviously it all depends on how you interpret the figures and ten year averages are very important.

2. Bryan Leyland is not alone in his views. National List MP Richard Worth, writes a weekly column in which he states "the world has not warmed since 1998 and 2007 will not break any records". He then adds "There is increasingly strong evidence that the sun and cosmic rays control our climate". Just to make it clear where he stands Worth concludes "if this is correct, then we are entering another little Ice Age". Can he expect a rap on the knuckles from his party leader?

Reference: NZ Energy & Environment Business Week, 26/9/07

John Blakeley

"Carbon Footprint" now Common Parlance!

In its "2007: The Year in Review" the NZ Listener (29/12/07) said

"The term 'carbon footprint' moved into common parlance big time in 2007."

"History will show that this was the year when, finally most of us in the western world

grudgingly accepted that possibly, just possibly, we each have an individual responsibility to do what we can in our own little way to tread more lightly on the earth and think about the way we…., well you know the rest. You'd better".

"In January Prince Charles sought to set the tone for the year by cancelling his regular skiing trip to Switzerland, but alas, in the same month he and 12 staff flew to Philadelphia to pick up an environmental awareness award, emitting 20 tonnes of carbon dioxide in the process. Way to go yet Charlie".

As signalled by the Listener in its March 3 2007 cover story, "food miles" became a stick for European producers to beat NZ exporters with: the latter will have their work cut out to show that their produce actually leaves LESS of a footprint, despite being shipped half way around the world. But we're all thinking more carefully now about what we eat, where it comes from and what it costs - in all senses - to produce".

Footnote:
It has recently been reported that Prince Charles is resuming his regular skiing trip to Switzerland in 2008.

NZ Emissions Trading Scheme

In the same article the NZ Listener (29/12/07) said

"Here in NZ the government's much-heralded Emissions Trading Scheme has put industry on climate-change notice. Under a rolling schedule starting next year, greenhouse gas emitters - foresters*, energy generators, transport - will have to start paying for their pollution."

But agriculture gets off scot-free: farmers are effectively licensed to pollute for another seven years while the rest of industry knuckles down.

NZ also flunked a recent UN survey of greenhouse gas emissions. It reported that our emissions have grown by 12 percent since 1999 compared with Australia's 8 percent and the United States' five. Britain actually REDUCED its emissions by 2 percent.

On the way: a vehicle emissions technology standard that will ban Japanese imports built before 2000. But sales of gas-guzzling cars like SUV's rose sharply in the second half of the year.

***Editor's Note:** In the case of foresters, "pollution" presumably actually means the cutting down of forests and conversion to farmland (rather than replacing the trees)?

Airline Offers Carbon Offsets

Cathay Pacific passengers can now "do their bit for the planet" by supporting a Chinese wind farm as part of a voluntary carbon offset scheme.

Economy class passengers can pay just under NZ$20 on a return trip to Hong Kong as part of the scheme, which the airline says is the first of its kind in Asia.

Passengers can buy as many offsets as they like - including those for previous journeys - on either Cathay Pacific or its sister airline Dragonair. Passengers can also use air miles points to pay for their offsets.

Cathay has joined a growing number of airlines, including Qantas and Virgin Blue in offering voluntary contributions. Air New Zealand plans to introduce a scheme early in 2008which it says will have more tangible benefits for passengers.

Business and First Class Cathay passengers will be asked to pay more than Economy Class because they take up more space on an aircraft and contribute more to total weight. The fuel efficiency of the particular aircraft, dictated by its age and type and season it is flying in, will also determine the size of the contribution.

The initial Cathay voluntary contributions are:

- Auckland - Hong Kong return

  Economy NZ$19.80

  Business NZ$29.72

- Auckland - London return

Economy NZ$40.62

Business NZ$60.93

Cathay's NZ manager, David Figgins, said the scheme was not a response to specific passenger demand but because "public interest" in environmental mitigation schemes was growing and the world airlines industry body was demanding action.

The prospect of taxes on airlines has also been a spur to voluntary action in other countries.

"I don't think any airline denies we've got emissions but what we're trying to do is improve the situation as much as we can". Mr Figgins said.

It is estimated by the airlines industry that airlines are responsible for between 2 and 3 percent of worldwide carbon dioxide emissions.

Reference: NZ Herald, 21/12/07

NZ's Carbon Trading Market

NZ's fledgling carbon trading market, TZ1, began to take shape yesterday with the announcement of former Vector boss, Mark Franklin, as Chief Executive.

Mr Franklin said that NZ's strong green reputation, innovation and forward thinking would help the exchange become a trusted international market.

He said that TZ1 would be only the second exchange of its kind, after the European Union's trading scheme, making it "second cab off the rank in the competition for trade".

As well as carbon credits, Mr Franklin said he expected the exchange to grow to include rights to water and other natural resources. He hoped that the exchange would be trading in mid-2008 with offices in Auckland, Wellington and overseas.

NZX chief executive, Mark Weldon, said a regulated and trusted market for carbon credits was essential for companies to manage their costs and future risk.

Credits sold on TZ1 would be third-party certified to ensure they met the requirements of domestic and overseas governments, and buyers would be able to check their certifications on an electronic registry.

TZ1 will cater for both:

- The compliance market (businesses buying credits to meet legislative obligations), and
- The voluntary market (businesses or individuals buying credits to reduce their carbon footprint).

Mr Franklin dismissed suggestions that a change of government in NZ could derail the exchange: "NZ, as part of the world, could not afford not to do this. We will be dragged into it, whether we lead it or not."

Reference: NZ Herald, 22/12/07

Voluntary Carbon Offsets Issues

Most people feel hopeless about climate change. Any action they could take seems so utterly inconsequential. Why bother to do your bit when the Chinese start up a new coal-fired electricity plant every week?

Yet if we leave climate change to mandated government actions as such or treaties, caps, emissions trading and standards, we will never achieve the reduction in greenhouse gas emissions needed to stabilise the global climate.

You have to engage everybody and that means developing voluntary carbon markets to incentivise people to change their behaviour and adopt better technology.

A growing number of companies, typically in North America and Europe, are devising all sorts of ways to reward consumers and aggregate their climate change efforts.

So far, voluntary carbon markets around the world are tiny but it is estimated that they could grow to 350 million tonnes of carbon dioxide equivalent by 2012.

But there are plenty of complicated issues to solve before voluntary carbon markets can become features of everyday life. These include:

• Standards: The voluntary market has attracted some rogue operators and shonky credits such as forests that were never planted, or hydro-electric schemes that never deliver the power promised.

However a number of standards have already been developed such as the Gold Standard for Voluntary Emissions Reductions produced by a highly reputable Swiss foundation.

• Additionality: Is the credit actually for a genuine reduction in carbon dioxide emissions that would not otherwise have happened? This is difficult to determine but the methodology is getting better.

• Relationships to Mandatory Programmes: Could for example, reputable voluntary credits be used to help NZ meet its Kyoto commitments? This is a hotly debated issue but it is possible that they could be, as long as clear protocols are followed.

• Measurement: This is another highly challenging area. If for example, you wanted to offset the carbon dioxide generated from driving your car, do you measure only the carbon dioxide content of exhaust emissions from the petrol combustion? Or do you work right back to the "embodied carbon", that is from the energy used in materials, construction and transport of the car to NZ, and then recycling it at the end of its life?

Such life-cycle analysis is becoming more common and it's a powerful tool for change. If, for example, car makers were penalised for high levels of embodied carbon in their vehicles, would they rapidly shift to better, cleaner materials and technology in their cars?

Reference: Article by Rod Oram, Sunday Star-Times, 4/11/07

Likely Sea Level Rise

As noted in a previous EnergyWatch (Issue 45, page 11) your editor queried, as being an extreme view, a figure of a sea level rise of 25 metres quoted in the NZ Listener (14/7/07).

An even more extreme figure of 57 metres has since been quoted in an article by Reuters, but it turns out that this would only happen if ALL the ice in Antarctica melted, over thousands of years.

The same article noted that a year after the IPCC report projected sea level rises by the year 2100 of between 20cm and 80cm, a Reuters' poll of 10 of the world's top climatologists showed none thinks that this range is alarmist.

Six experts, stuck by the IPCC projections, saying that the response of ice sheets in Antarctica and Greenland to global warming was still unclear, and four other experts, including one of the authors of the IPCC report, projected sea level rises could be 1 or even 2 metres by 2100.

Most experts said that it was still impossible to model how the ice would react, and rather than the ice sliding off faster into the sea, Antarctica might actually accumulate more ice during this century because of global warming (which is attributed by the IPCC mainly to the increased use of fossil fuels).

Reference: NZ Herald, 4/2/08

Footnotes:

1. During the whole of the twentieth century, the global average sea level rose by 18 centimetres (7 inches).

2. In releasing its November 2007 Synthesis Report, the IPCC removed the upper limit it had placed, as recently as Feburary 2007, on its projections of sea-level rise durng this century.

Biofuels

Will Biofuels Prevent Global Warming?

The European Union (EU) is having second thoughts about its policy aimed at stimulating the production of biofuel. Stavros Dimas, the EU environmental commissioner, has admitted that the EU did not foresee the scale of problems raised by Europe's target of deriving 10 percent of its transport fuel from biofuel by 2020.

The rush to produce biofuels is said to have increased the cost of food, destroyed large tracts of rainforest and to have had little overall impact on reducing greenhouse gases.

A report on biofuel by the Royal Society in London concluded that there is no simple answer to whether biofuels are good or bad for the environment, and that each type of biofuel – and how it is produced – has to be considered on its own merits.

There are many problems with biofuel production that can significantly change the carbon balance sheet. For a start, biofuel crops often need fertilisers and pesticides which are made from oil. The machinery used to grow, transport and process the crop is also often powered by fossil fuel.

Then there are the tracts of pristine forests that are cut down to grow biofuel crops. This results in the loss of natural carbon sinks that are invaluable in the fight against climate change. In short, biofuels are not the universal panacea that some people believe them to be.

Biofuels can come in one of three varieties. The first is bioethanol, or alcohol, which is usually produced from the fermentation of sugars and starches. The second is biodiesel produced from processing plant oils and the third is synthetic biofuels, which result in fuels identical to petrol, diesel or even aviation fuel.

What has gone wrong with the biofuel dream? People have failed to look at the overall costs and benefits from the complete production process from "farm to forecourt". This is sometimes known as lifecycle assessment and it involves taking into account all aspects of the carbon budget from one end of the production process to the other. When this is done, the simple assumptions that politicians and some environmentalists have made about the benefits of biofuels begin to look hopelessly optimistic.

Take, for example, biofuels made from maize (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 reductions in greenhouse gases on a lifecycle assessment resulting from ethanol produced in Brazil is 80 percent, compared with just 10 percent from intensively farmed maize in the USA.

But the problem is not just about the efficiency of biofuel production. Demands from countries without land for biofuel production, has led to a growth of non-food crops in parts of the world where millions already go hungry. It has also put pressure on wildlife as forests are cut down to clear land for biofuel crops.

The Royal Society in London believes that current policy frameworks on biofuels in the EU (and elsewhere) must be changed so that they encourage an overall reduction in greenhouse gases, rather than being aimed simply at reducing reliance on imported oil - resulting from which, there is no incentive to invest in "low greenhouse gas biofuels".

However there are many things that can be overlooked and, in order to answer the question, people need to assess the entire lifecycle of the production process, including its impact on local people and wildlife.

Reference: NZ Herald, 16/1/08 from The Independent (UK)

Biofuel Worse Than Fossil Fuels?

Using as a transport fuel biofuels which have been made from corn, sugar cane and soy, could have greater environmental impact than burning fossil fuels. Although the fuels themselves emit fewer greenhouse gases, they all have higher environmental costs in terms of biodiversity loss and destruction of farmland.

The problems of climate change and the rising price of oil have led to a race to develop (so-called) environmentally-friendly biofuels from sources such as palm oil, or ethanol derived from corn and sugar cane. The EU has proposed that 10 percent of all fuel used in transport should come from biofuels by 2020, and the emerging global market is expected to be worth billions of dollars per year.

But the new fuels have attracted controversy. Regardless of how effective sugar cane is for producing ethanol, its benefits quickly diminish if tropical forests are being razed to make the sugarcane fields, thereby causing vast greenhouse gas increases. Such comparisons become even more lopsided if the full environmental benefits of tropical forests - for example, for biodiversity conservation, hydrological functioning and soil protection - are included.

Efforts to work out which crops are most environmentally friendly have until now focused only on the amounts of greenhouse gas a fuel emits when it is burned, but in Switzerland a new method has been developed that can take total environmental impacts - such as loss of forests and farmland and effects on biodiversity - into account.

In a study of 26 biofuels, the Swiss method showed that 21 of these fuels reduced greenhouse gas emissions by more than 30 percent compared with petrol when burned. But almost half of the biofuels, a total of 12, had greater total environmental impact than fossil fuels. These included economically significant fuels such as US corn ethanol, Brazilian sugar cane ethanol and soy diesel, and Malaysian palm oil diesel. Biofuels that fared best were those produced from waste products such as recycled cooking oil, as well as ethanol from grass or wood.

Also, government initiatives have resulted in unintended perverse consequences in environmental impacts. In the US for example, farmers have been offered incentives to shift from growing soy to growing corn for biofuels. This is helping drive up global soy prices, which in turn amplifies economic incentives to destroy Amazonian forests and Brazilian tropical savannas to make way for soy crop production.

The Swiss researchers note that the findings highlight the enormous differences in costs and benefits among different biofuels. There is a clear need to consider more than just energy and greenhouse gas emissions when evaluating different biofuels and to pursue new biofuel crops and technologies.

A Greenpeace spokesman said that Europe had already bought into mandatory targets for the use of biofuels with very little thought as to what the environmental impacts will be. This study further confirms that there are serious environmental risks associated with first generation biofuels, particularly from corn, soya and palm oil.

He said that the biofuel technology has been "oversold" by industry and politicians. It is clear that what government and industry are trying to do is "to find a neat drop-in solution that allows people to continue business as usual".

"If you are looking at the emissions from the transport sector, the first thing you need to look at is efficiency of fuel use and massively increasing it. That needs to come before you even get to the point of discussing which biofuels are good or bad".

Reference: Article by Alok Jha, science correspondent in the Guardian (UK), 4/1/08

Prairie Dying for Ethanol?

Almost unnoticed by urban America, the last 35 million acres of prairie - deliberately left alone to preserve its precious ecology - is being ploughed up to produce ethanol from corn.

The corn economy is viewed by some people as being nothing short of a disaster for the environment, for the farm economy, and potentially for local communities.

America wants to become less dependent on foreign oil, but instead of cutting back on consumption and reducing emissions, the USA is planning to substitute ethanol for petrol.

Across the country, there is a madcap dash for biofuels - home-brewed ethanol and vegetable oil diesel substitutes - made from such crops as soybeans, sugar cane and corn.

Because the carbon in biofuels comes from the atmosphere, the theory is that burning it as a fuel could be carbon neutral. But producing ethanol from corn can actually consume as much fossil fuel as the ethanol itself replaces.

Long known as America's breadbasket, the Great Plains have been the country's primary source of wheat for over 100 years. Insecurity over future oil supplies -worsened by the disastrous situation in Iraq - has created a situation in which ethanol production is expected to reach 60 billion gallons by 2030.

Rather than climate change considerations, it was energy anxiety and fears about cancer from additives added to petrol to raise its octane rating that caused the US Congress to decree two years ago that 7.5 billion gallons of the country's fuel must come from crops.

This triggered a boom in grain alcohol distilleries in the Mid-West, followed by a surge in railroads to carry the grain and the ethanol (which happens to be too corrosive to use in the country's network of fuel pipelines). So great has been the rush to cash in, that a glut of ethanol hit the market causing the price to plunge 30 percent since spring (early in 2007).

This has forced the Government to fork out more subsidies to the loss-making ethanol producers and blenders of ethanol and petrol.

Environmentalists are now seeing corn being grown for ethanol in places it was never been before, from southern Texas to the marshy "pothole prairie" of rural Iowa. The total private grassland area declined by almost 25 million acres from 1982 to 2003 - and the pace is quickening along with energy insecurity.

The greatest loss of habitat has been in the Corn Belt, which takes in a vast stretch from Iowa to Kentucky. There, some 5 million acres - about 25 percent of grassland - has already been lost to ethanol, paid for by subsidies that cost the US taxpayer about US$2.7 billion (NZ$3.5 billion) in 2006.

The fuel E-85 (85 percent ethanol, 15 percent petrol) which arrives at the pumps is sold as "completely renewable, domestic, environmentally friendly fuel". And it is America's 300 million consumers who enable the corn bonanza to take place.

In the US economy overall, the American taxpayers hand over US$82.1 billion in subsidies a year to farmers, and the political system is rigged to keep it that way.

Reference: NZ Herald, 30/10/07 from the Independent (UK)

Biofuels Sales Obligation Letters

Minister's Initial Letter
1 March 2007

Dear Mr Blakeley

Thank you for your letter of 6 January 2007 regarding biofuels and the New Zealand Energy Strategy ("NZES"). Biofuels are an important component of the NZES if New Zealand is to reduce its dependence on fossil fuels for transport use. The uptake of biofuels will also reduce New Zealand obligations under the Kyoto Protocol.

The Government's approach to biofuels is to design and implement the most appropriate policy response for New Zealand's circumstances. Government recently announced that it will require biofuels to be sold to cut greenhouse gas emissions and increase energy security in the transport sector. 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 3.4% of sales by 2012.

It is envisaged that initially much of the obligation will be met by domestically produced biodiesel from tallow, with ethanol being introduced more gradually. The introduction of ethanol will however ensure that infrastructure is readied for the uptake of increased amounts of ethanol in the future.

Second generation biofuels, such as cellulosic ethanol, are expected to deliver greater greenhouse gas emission benefits than first generation biofuels. They are also less likely to rely on the use of land currently employed for food production. Government is keen to ensure that New Zealand is in a position to exploit the environmental advantages that second generation biofuels may provide.

Background reports on the Biofuels Sales Obligation are available on the Ministry of Transport's website at www.transport.govt.nz/biofuels-440-index/.

Thank you again for your letter.

Yours faithfully,
David Parker

Your Editor's Reply
7 March 2007

Hon. David Parker, Minister of Energy

Dear Minister

Is the Increasing Use of Biofuels an Economically Viable Answer to New Zealand's Future Transport Energy Needs?

Thank you for your letter to me of 1 March 2007 regarding biofuels and the NZ Energy Strategy. However for the reasons set out below, your letter has not alleviated my concerns that the Biofuel Sales Obligation (increasing from 2008 to 2012) does not "stack up" in terms of:

- Economics
- Efficiency of energy use
- Reducing carbon dioxide emissions from a global point of view.

In saying this I am assuming:

(a) That the international price of tallow is increasing at such a rate that little if any New Zealand tallow product will be available for feedstock for locally produced biodiesel, and that instead either the feedstock or the biodiesel itself will have to be imported.

(b) That the amount of locally produced bioethanol available for petrol substitution will be minimal in relation to that required under the Biofuel Sales Obligation, so nearly all of the bioethanol will have to be imported.

(c) Little if any New Zealand grown crops will be available for conversion to bioethanol or biodiesel, because this would be a very inefficient use of good agricultural land and would be uneconomic in comparison with other land uses such as for dairy farming. Also the inefficiencies of energy use in growing and harvesting and transporting the crops and in the energy conversion processes to bioethanol or biodiesel is such that any net saving in carbon dioxide emissions is likely to be very small or negative.

I will be making a submission on the draft NZ Energy Strategy covering the above matters.

In addition to the comments in your letter of 1 March 2007, I was also interested to read in the notes of a speech which you gave on Monday 19 February to the International Association of Energy Economists the statements that:

1. First generation biodiesel from tallow, a by-product from livestock processing, may substitute 5 percent of our diesel at little, if any, additional cost.

2. Second generation biofuels are likely to come from converting wood waste to ethanol.

Biodiesel

In regard to your statement 1 above, I would refer you to the article entitled "Biofuels for Transport" by Professor Neil Curtis, Emeritus Professor of Chemistry at Victoria University of Wellington, published in "Future Times" (NZ Futures Trust) Journal 2006/Volume 4. Curtis states that apart from the relatively trivial use of waste cooking oils (5,000 tonnes per year, widely dispersed), 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.

But as the growing bioethanol industry in the USA consumes corn previously used for stock feed, more US tallow is going into animal feed, tightening international supplies and lifting prices.

NZ's current diesel usage is around 2.33 million tonnes per year so if all the presently available local tallow product was diverted to biodiesel we might get up to 6.4% of our NZ diesel requirements using biodiesel from tallow, so your suggested percentage of 5% is quite possible. But as noted in "The Business" section of NZ Herald on 26 February 2007, the international price of tallow has gone up from $400 to $700 per tonne in the past 12 months and local biodiesel manufacturers will have to compete with Asian users of NZ tallow who may be willing to up the price to secure supply.

If domestic tallow becomes too expensive for use in making local biodiesel, then feedstocks such as palm oil may have to be imported to produce the required amount of biodiesel. But if the palm oil comes from plantations in countries such as Malaysia, Indonesia or Borneo where tropical rain forests have been cleared to make way for new plantations, the net global effect of using such biodiesel may be to increase carbon dioxide emissions into the atmosphere, and not reduce them.

Other possible sources of imported biodiesel would be from crops such as rape seed or soybeans, but substantial amounts of energy will be used in growing and harvesting these crops and in the conversion process to biodiesel.

Bioethanol

In regard to your statement 2 above, your view that second generation biofuels are likely to come from converting wood waste to ethanol may be true but over what time frame? My understanding is that second generation biofuels still require further research into their viability. I have covered this issue in a letter which I have recently sent to the Royal Society of New Zealand on 26 February 2007and I would tend to agree with an article by Professor Ralph Sims and Andrew Barber published in the January/February 2007 issue of Grower Magazine entitled "Biofuel Production and NZ's Prospects" which states that there is potential for this process to become competitive by 2030.

Curtis states that New Zealand currently produces 16 million litres of ethanol from dairy waste. Of this, 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.

As far as using the currently exported ethanol produced from dairy waste is concerned, the paper by Curtis suggests the figure for such exports is 10 million litres per year which is a very small percentage (approximately 0.29%) of the 3.5 billion litres of petrol used per year in NZ. So most of the ethanol for the Government's required substitution of biofuels for oil-based transport fuels of 3.4% by 2012 (as far as petrol is concerned), will have to come initially from importing ethanol unless crops grown in NZ are diverted to producing ethanol.

Curtis notes that NZ currently produces about 150,000 tonnes per year of maize grown on 14,000 hectares. This could be converted into about 60 million litres of ethanol, enough for a 1.7% petrol blend, with corn oil and stock feed as by-products. This is still well short of the Government's target figure of 3.4% by 2012.

By expanding the area devoted to maize (and/or by growing sugar beet), in principle we

could produce enough ethanol to replace all petrol. This ignores the inconvenient facts that we, and our animals, require the land for food production and that other land uses, such as dairying, often give greater financial returns. If the best land were to be used for maize or sugar beet, for fuel production, there would be little agricultural product left to export. Also the net saving in carbon dioxide emissions may be very small or negative because of the energy required in growing crops and in the conversion processes to ethanol.

There is a point of view (from climate change considerations) that even if the conversion process from maize (or sugar beet) to ethanol is energy-inefficient, this doesn't matter too much for local production, as long as the energy used in the conversion process comes from a renewable source. However this view is an erroneous one, as in New Zealand, we need as much renewable energy as we can get for generating electricity, rather than wasting some of it on inefficient energy conversion processes to produce biofuels.

Growing crops to produce ethanol also requires large amounts of water to be used, and also nitrogen fertilisers, a source of greenhouse gas emissions.

Also, the fact that increased financial returns for dairying has led to large areas of land in NZ being changed in recent years from forestry to pastoral land is illustrative of the problems which would likely be experienced in diverting pastoral land to produce biofuels against strong financial competition from dairying.

My main concern as expressed on page 9 of "The Business" section of NZ Herald on 26 February is that at least as far as petrol substitution is concerned, if the Government's mandatory target on biofuels by 2012 remains at 3.4%, then it seems likely that New Zealand will have to import most of the ethanol to meet that target and there will be no control as to whether or not that imported ethanol was produced in an energy-efficient way or if tropical rain forests were cleared to produce sugar cane in countries like Brazil.

Unless the full carbon history of the ethanol imports is known, the New Zealand consumer may end up paying more for their blended petrol when in fact from a global point of view, there may be a net increase in carbon dioxide emissions rather than a net reduction as a result of the Government's mandatory target on biofuels for petrol substitution.

Final Comment

In NZ Energy and Environment Business Week, 21 February 2007, page 4 a correspondent suggests that if consumers are told the total energy and total carbon dioxide emissions required to get a litre of biofuels to their tanks versus the number of kilojoules it delivers to their engine, we'd find out that biofuels are NOT the answer to the planet's looming environmental crisis.

Yours sincerely,
John Blakeley

Minister's Response
2 July 2007

Dear John Blakeley

Thank you for your letter of 7 March regarding biofuels and the draft New Zealand Energy Strategy. You have made a number of considered points which I shall answer in turn.

First, it is your view that the economics of biofuels do not stack up for either biodiesel or ethanol. For biodiesel your view is that domestically produced tallow will continue to be exported in light of higher world tallow prices (NZ$700/tonne) and that as a consequence New Zealand will need to import biodiesel feedstock or finished product to meet the sales obligation. In addition, your view is that domestically produced ethanol from maize is considered uneconomic in comparison with alternate land uses.

In the formation of the biofuels sales obligations, officials examined the relative competitiveness of domestically produced biodiesel from tallow and imported biodiesel from palm oil derived from either Malaysia or Indonesia. The input

price for tallow used in the analysis was NZ$516/tonne, less transport costs of NZ$60/tonne, giving a net price to the New Zealand producer of NZ$456/tonne. The import cost of biodiesel from palm oil used, including transportation, was NZ$677/tonne. Using these feedstock costs and making assumptions for capital costs, methanol costs and other costs at domestic biodiesel plants, domestically produced biodiesel from tallow was calculated as having a competitive advantage of over NZ 32 cents per litre over imported biodiesel from palm oil. Factoring a higher price of NZ$700/tonne for tallow, domestically produced biodiesel from tallow would still remain a competitive advantage of over NZ 16 cents per litre over imports, all other things being equal. This suggests that even at the higher tallow price, tallow producers are more likely to supply domestic biodiesel producers than to export tallow.

Another factor to consider is the relative control that some of the major potential biodiesel producers have over tallow output. Argent Energy, for example, has a shareholding interest in New Zealand Light Leathers in the South Island and has major interests in meat wholesaling and animal by-products processing.

With regards to the relative competitiveness of ethanol from maize versus alternate land uses, an investigation of this question was undertaken by Hale & Twomey and was used in the policy formation process. You can find this report on the Ministry of Transport's website at http://www.transport.govt.nz/assets/NewPDFs/Biofuels-Supply-Report-Final-24-07-06.pdf. The report notes that while maize growing is not competitive to dairy farming or other crops, it is very competitive to sheep and beef farming and that there is plenty of potential land currently used for intensive sheep and beef farming that is also suitable for growing maize. Specifically, there is close to 1.5 million hectares of land currently used for intensive sheep and beef farming in the Waikato, Bay of Plenty, Manawatu and Rangitikei. The biofuels sales obligation of 3.4% assumes that ethanol will account for approximately 2.05 PJ in 2012, with the remaining 5.25 PJ being made up of biodiesel. 2.05 PJ 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, a further 14,000 hectares of land could be converted to maize growing by 2012.

Second, it is your view that the full life-cycle reduction of carbon from ethanol is minimal at best given the energy required to covert maize into ethanol and the use of nitrogen fertilisers in the production process.

I accept that the full life-cycle reduction in carbon emissions from ethanol is not as clear cut as it is for biodiesel, although the analysis undertaken in the policy formation indicates there would still be some carbon reduction. However, there are other environmental and health benefits that need to be taken into account when assessing the net benefits of ethanol. Specifically, particulate matter tailpipe emissions from ethanol are significantly lower than for straight petrol (up to 40% less according to some UK and US studies for E10 blends) and there are lower carbon monoxide and benzene emissions. More importantly, I believe that putting policy settings in place that create a market for ethanol will send a strong Government signal for firms to undertake further research into second generation biofuels and seek to rapidly commercialise these as soon as possible. Second generation ethanol production is expected to have far greater carbon saving benefits than the current technologies used for converting maize into ethanol.

Third, it is your view that carbon emissions on a global basis are likely to rise as a result of imports to meet the biofuels sales obligation and that there will be no control as to whether or not that imported biofuel was produced in an energy efficient way or if tropical rain forests were cleared to produce them.

In designing the biofuels sales obligation, an objective was to enable domestic sources of biofuels to be utilised to the extent that this was

economically efficient. To ensure that policy settings encouraged this, an extensive evaluation of New Zealand's feedstock availability, the relative competitiveness of domestic production over imports and other land uses, minimum plant sizes, vehicle constraints and storage constraints was undertaken. The culmination of this analysis was that 3.4% was the maximum level that could currently be met by domestic production and taking a conservative view of the technical limitations posed by New Zealand's vehicle fleet. In addition, there are specific features of the policy in relation to rollover possibilities, trading and limited banking designed to provide sufficient flexibility to oil companies to meet the target from domestic biofuel producers without having to have recourse to imports. As such, I have confidence domestically sourced biofuels will play a significant role and that carbon emissions, both at a global level and for New Zealand's Kyoto commitments, will reduce as a result. For those biofuel imports that do occur, firms will be required to report on the country of origin.

At a more general level, I would like to point out that the biofuels sales obligation is just one component of many components put forward in the draft Energy Strategy designed to reduce New Zealand's carbon footprint. Some of these other components include, but are not limited to: a stated preference for renewable generation over thermal powered generation, to the extent that this does not threaten the country's security of supply; providing a mechanism for consolidated consideration of Resource Management Act consent applications for wind and geothermal projects; the establishment of a contestable fund to support the deployment of marine-based electricity; and a commitment to significantly increase the use of solar water heating.

I would like to thank you again for your considered thoughts on the biofuels sales obligation and the New Zealand Energy Strategy.

Yours sincerely
Hon David Parker
Minister of Energy

US Biofuels are Heavily Subsidised

In an interview with the NZ Listener, a former Minister for the Environment, Simon Upton, said that unfortunately there are so many subsidies in this world, they are so numerous and so lavish, that you could spend the next 20 years analysing them.

In the gun at the moment are biofuels which in Upton's words have become the object of "one of the most spectacular bonfires of public money ever conceived". Upton notes that the American biofuel subsidy bill is US$7 billion annually and rising. The cost of emissions reduced through the use of heavily subsidised bioethanol is US$500 per tonne – an absurd sum when compared with the world carbon price of around US$20 per tonne.

Reference: NZ Listener, 9/6/07.

Argent Energy's Second Thoughts

Argent Energy is a biodiesel manufacturing company based in Scotland which produces 1 million litres of biodiesel a week from by-products and wastes only - i.e. animal fats (tallow) and used cooking oils.

Argent say that their technology could be used for much simpler conversion to biodiesel of vegetable oils such as palm, soy and canola but believe that these feedstocks do not give adequate greenhouse gas emissions savings and may be unsustainable because of competition with food demand, and because of farming policies (e.g. deforestation).

Argent has identified potential sites in NZ for a plant capable of producing 85 million litres of biodiesel annually and in February 2007 signed a letter of intent with Shell to supply biodiesel after the Government's new biofuels legislation takes effect later in 2008.

However Argent now appear to be having second thoughts about building a biodiesel plant in NZ.

Their NZ Managing Director, Dickon Posnett says that they are grappling with "one or two political issues" before making a decision.

The main issue for Argent appears to be a concern that cheap biodiesel imported from the USA could undercut the local NZ market and put NZ-based plants out of business.

In the USA, biofuel producers get Government subsidies from the US Government and have recently flooded the European market with cheap biofuel, which has seriously damaged the European biofuel industry.

Reference: NZ Energy & Environment Business Week, 24/10/07

Ethanol is Running on Empty?

The ethanol boom in the USA may be fading. In recent years it spurred a frenzy of distillery construction, record corn prices, rising food prices and hopes for a new future for rural America.

But companies and farm co-operatives have built so many distilleries so quickly that the ethanol market is suddenly plagued by a glut, in part because the means to distribute have not kept pace.

The average national ethanol price on the spot market has plunged by 30 percent since May 2007, with the decline escalating sharply in the last few weeks.

While generous US Government support for corn growers is expected to keep the output of ethanol fuel growing, the poorly planned over-expansion of the industry raises questions about the hopes of President George W Bush and other policy makers for the industry to serve as a serious antidote to the nation's heavy reliance on foreign oil.

Companies are already shelving plans for expansion and cancelling new ethanol plant construction. If prices fall more, as many analysts predict, there is likely to be a sweeping consolidation of the industry and some smaller companies could go out of business.

The falling price of ethanol comes in sharp contrast to the rise in crude oil prices. Lower ethanol prices help reduce petrol blend prices at the pump, where ethanol is available, but because ethanol constitutes 10 percent or less in most blends, the impact for the consumer is marginal.

The US Congress essentially legislated the industry's expansion by requiring steadily higher quantities of ethanol as a blend with petrol, a kick-start that was further spurred by a proliferation of bans on a competing fuel additive previously used to help reduce air pollution. (These bans were partly brought about by fears about cancer from additives added to petrol to raise its octane rating).

But the ethanol production industry, which is also heavily subsidised by US federal tax incentives, got far ahead of the requirements of the law, rapidly building scores of ethanol plants and snapping up a rising share of the corn harvest in the USA.

Many of these ethanol plants have gone into production in recent months and more are scheduled for completion by the end of 2008.

Reference: NZ Herald, 4/10/07 from Associated Press

Biofuels More Costly to Run

There are now about 5 million cars in the USA equipped to run on the mix of 85% ethanol and 15% petrol known as E85. Most of these cars can also run on 100% petrol. Corn is the current agricultural commodity source for creating ethanol to fuel some of these cars.

However there may be a consumer backlash against E85 when buyers discover that the E85 fuel costs the same per gallon as regular petrol but delivers only two thirds of the miles per gallon of the traditional fuel.

There doesn't seem to be any movement to price the E85 on an energy equivalent basis and in miles per gallon terms, it is not going to compete with petrol.

Ford's vice president of research and advanced engineering, Gerhard Schmidt, said that these may be a problem if carmakers over promise an ethanol as a fuel, and that drivers should be reminded that a prime benefit of ethanol is that it takes some pressure off the use of petrol by using a renewable resource.

Reference: NZ Herald, 31/4/07

Editor's Note: With present proposals to blend only very small percentages of ethanol into petrol in NZ (3.4 percent or less), the lower energy equivalency of ethanol than petrol is unlikely to be a significant issue.

However if and when E85 fuel does come into common usage in NZ, then the energy equivalency of E85 in relation to petrol may be an important consideration in setting a price for the E85 fuel.

Questions and Answers on Biofuels

The Government wants motorists to start putting a fuel for a cleaner, sustainable future into their cars. It has announced that it wants fuel companies to have an average of 3.4 percent biofuel content in petrol and diesel by 2012 – a move that will cut greenhouse gas emissions without, it hopes, costing motorists dearly.

Q.So what are biofuels?
A.Biofuels are made up of renewable materials. There are two main types:

- Biodiesel made from vegetable oil or animal fat; and
- Ethanol made from sugars and starches

Q. Where will I get biofuel?
A.It will be available at petrol stations from 2008.

Q. Will I need to adapt my car?
A.Low level biofuel blends work with most modern vehicles. But higher blends (above 3 percent bioethanol or above 5 percent biodiesel) may require new fuel filters. The Automobile Association has warned that some vehicles (and especially secondhand vehicles imported from Japan) could have problems with a 3 percent bioethanol blend.

Q. Will it cost more at the pump?
A.The Government says biofuel blends shouldn't cost more than ordinary petrol or diesel, but admits all prices could rise as part of the obligation to sell biofuel blends. Shell has estimated that the cost of petrol and diesel could increase by at least 5 cents a litre to cover costs.

Q. Why are biofuels being introduced?
A.To reduce the impact of fossil fuels and reduce our dependence on imported fuel. They will help reduce greenhouse gas emissions.

Q. Can biofuels be made in New Zealand?
A.Yes. New Zealand produces sufficient tallow, a by-product of the meat industry, for biodiesel. Whey from the dairy industry, and possibly maize would create bioethanol from local sources.

Q. When is this happening?
A.The biofuel targets will begin in 2008, when 0.53 percent of total petrol and diesel sales must be biofuels. The target rises each year until it reaches 3.4 percent by 2012.

Q. Have other countries made this move?
A.Biofuel blends are used in the USA, Brazil, Canada, China, India, Australia and most of Europe.

Q. Are the oil companies in NZ under pressure to deliver?
A. They face multi-million dollar penalties if they fail to reach the target of adding 3.4 percent of biofuel to petrol and diesel sold by 2012.

Q. Can I use biofuel blends in my boat?
A. It is discouraged because the fuel can separate into a water layer causing the engine to stop. (The NZ Herald on 2/2/08 notes that EECA says that the new bioethanol blended petrol is not suitable for use in boats or any marine applications - although it is apparently perfectly suited for use in land vehicles!)

Reference: NZ Herald, 14/2/07

Peak Oil

Response to Previous Editorial

An article in the NZ Energy and Environment Business Week (23/1/08) notes that the Government appears to be unsure about its position on Peak Oil, with the issue receiving scant attention in the NZ Energy Strategy.

The article notes that this is understandable, given conflicting reports and predictions about the future of world oil supplies and prices. It then notes that your editor who sees Peak Oil as a serious potential threat to NZ's economy has condemned the Government for its complacency (see EnergyWatch Issue 46, pp 1-2).

The article notes that your editor's fears about a looming oil crisis are somewhat allayed by a new report by Cambridge Energy Research Associates (Cera) which predicts that oil production will continue to rise during the next decade. Cera predicts oil output will exceed 100 million barrels per day by 2017 compared with just over 85 million barrels per day now.

The article then notes that BP's chief economist, Peter Davies, is also optimistic that there will be no imminent shortage of oil. Although Davies expects oil production to peak within a generation, he believes that this will be due mainly to political reasons such as efforts to reduce carbon dioxide emissions, which will see a shift to alternative energy sources.

However in a news item two weeks later (6/2/08), NZ Energy and Environment Business Week notes that Shell CEO, Jeroen van der Veer, predicts that demand for oil and gas will outstrip supply within seven years (i.e. around 2015) and that this could have serious environmental and political consequences.

The article notes that van der Veer believes there will be no choice but to add other sources of energy, not only renewable but also nuclear power and unconventional fossil fuel such as oil sands. He foresees a growing number of electric cars and hydrogen-powered vehicles, while industrial facilities will capture carbon dioxide and store it underground.

So who do you believe – Cera and BP's chief economist on the one hand, or Shell's CEO on the other?

Peak Oil and Rising Oil Prices

In the first week of 2008, the international price of crude oil exceeded US$100 per barrel for the first time ever and it is instructive to consider what has happened to the price over the last twelve months.

The 2007 year began with the price at US$61 but it dipped suddenly to US$55 in the first week of January, its lowest level since June 2005, before rising again to around US$57 in March.

From then on, it progressively increased to around US$80 in mid-September, exceeding the previous record figure (of nearly US$79 set on 8 August 2006), and continued on upwards reaching a peak of US$99 on 21 November. It then dropped back to below US$90, before its recent surge back to US$95 in the last week of December and then to US$100 in the first week of January. Since then it slipped back to around US$90 but has now risen to US$100.

Opinion is divided over what will happen to the oil prices over the next two years. Some economists are saying that it may now drop back over time to around US$70 and then remain reasonably constant at that lower, but still historically high level, while other people including a former Chairman of Shell, Lord Oxburgh, have issued a warning that the price could continue upward towards US$150 barrel.

The present rise in crude oil price has been attributed to three main factors.

- Increasing demand for oil. Whereas demand is reasonably stable in most western countries,

in the more energy-intensive developing countries it is still rising strongly, especially in China and India with their rapidly expanding economies.

- Climatic conditions, especially in the northern hemisphere where winter weather can considerably increase the demand for home heating oil. In the recent cold winter in the USA, reserve stocks of oil were at their lowest level for a number of years. Other climatic events such as hurricane warnings in the Gulf of Mexico can also have an impact on oil prices.
- Geopolitical instability, not only in the main oil producing countries but also in other countries where political unrest can cause world concern, including recently in both Pakistan and Kenya.

In addition, according to the International Energy Agency, ongoing production from existing oil fields is declining by an average of 4% per year. This means that 3.2 million barrels of oil per day of new production must be found each year just to keep production levels stable. Most of this must come from the Middle East, and especially Saudi Arabia, as oil production in most other part of the world is now declining.

The present situation is complicated by the fact that the expected greater investment in oil exploration and production following the rising oil price does not appear to have yet eventuated. Limited oil refinery capacity around the world is further complicating the situation.

The problem was highlighted by President George W Bush visiting Saudi Arabia in mid-January to ask OPEC leaders to supply more oil, to try and help protect the US economy by preventing oil prices from rising further. But Saudi Arabia, the world's largest supplier provides only about 10 percent of the world's total supply, so there is a limit to what they can do.

During a debate in the US primary election campaign in mid-January, Senator Hillary Clinton accused President Bush of mounting a "pathetic begging mission" to press Gulf leaders to curb high oil prices. Her attack came in the context of fears over the US economy and a possible dip into recession. These fears are becoming a dominant theme on both sides of the presidential race (NZ Herald, 17/1/08).

However a most important factor in determining future oil prices will be whether or not world oil production has now reached a peak or plateau, or whether it can keep on rising.

World oil production reached a peak of around 86.1 million barrels per day (bpd) in June 2006 and it then declined slightly to around 85.1 million bpd, then it started to rise again to 86.5 bpd towards the end of 2007.

It is not clear whether or note this increase in production observed towards the end of 2007 was as a result of earlier pledges by Saudi Arabia and its fellow members of OPEC to increase their production.

However the Paris-based International Energy Agency (IEA) is now predicting that world oil consumption will rise to reach 87.8 million bpd during 2008, which will be 2.1 million bpd higher than the average figure in 2007. In particular, demand from China alone will increase to 8 million bpd as oil imports expand to support an economy that is likely to grow during this year by 11 percent, the IEA said.

It appears that oil suppliers will be straining this year to increase oil production above the present figure of around 86.5 million bpd and it is doubtful if they will be able to meet the projected figure of 87.8 million bpd by the end of 2008.

If the oil suppliers are able to continue increasing production to meet projected demand figures, then perhaps the economist's prediction that the future price of oil is likely to fall back and stabilise at around US$70 per barrel is possible. Otherwise, Lord Oxburgh's prediction of US$150 per barrel before too long is likely to be a more accurate forecast of the future oil price.

John Blakeley

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EnergyWatch

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