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Agreement in Bonn

To widespread surprise and relief, the Kyoto Protocol survived the Bonn negotiations. New Zealand now looks set to ratify in 2002. On the next page we report a speech by Minister of Energy Pete Hodgson, setting out a broad timetable for the policy development and ratification process.

Alternative proposals promised by President Bush never materialised, and the US opted out (and after the appalling events in New York and Washington, Kyoto will be off their agenda for some time). Australia opted out too, and Japan looked likely to follow. Current indications are that the Japanese will ratify, but we may learn more when Japan and the US hold ministerial talks in late September. All being well, the next round of negotiations —filling in the details—will be CoP-7, in Morocco in late October, followed by ratification at 'Rio + 10' in Johannesburg in September 2002.

The agreement emerged from Bonn weaker—or more realistic—than from The Hague. But agreed. There are now no limits on the levels of international trading, or use of carbon sinks. New Zealand's contribution will simply be to get back to 1990 levels, but even that will be beyond us without relying on the carbon sink 'loophole.' NZ's carbon dioxide emissions grew by 22% in the 1990s, compared with 'only' 13% for the US.

Leaving the US out will have major effects. By far the largest potential buyer of carbon credits will not be in the market, pushing the price well below current estimates—one guesstimate is for a 90% reduction. But all is not lost. There will be a widespread, long-term commitment in place, and a new factor in private sector management thinking. Energy savings and renewable sources will be on the agenda. There are now 'real' incentives to promote house insulation, public transport and much else. And the hope or risk that a more enlightened or frightened US administration will join later, pushing up prices.

In any case we can expect to see price rises for non-renewable energy. US petroleum production peaked in the 1970s, and no renaissance is plausible. If Bush sticks with his energy policy, it will suck in world-wide resources. We can expect a search for cheap gas, to be liquefied and sent to the US. As the Green Party's Jeanette Fitzsimons points out: when there is a Resource Consent application for Kupe South or Pohukura to be developed and sent offshore, what will—or can—the government do?

All of which leads us to some fairly predictable policy conclusions:

- Go for local energy savings and renewable energy at a rate at least as high as the economically justifiable maximum, as a hedge against non-renewable energy costs.
- Review our ability to control development in the national interest.
- Seriously consider going for 100% renewable energy sources by 2050.

Other conclusions are gathering strength, and are supported by articles in this issue:

- Be wary of over-reliance on market forces (pages 6 and 20).
- Kick away the carbon sink crutch—as Norway has pledged to do—as soon as possible: it is getting shakier by the day (page 21).

Climate change beyond Bonn: New Zealand's approach

An edited version of Minister of Energy Pete Hodgson's address to the Diplomatic Club, 30 August

Six weeks ago, I arrived in Bonn with other climate change Ministers to try to reach a political deal on the Kyoto Protocol. The prospects of success did not look great. The US rejection seemed set to stop the process in its tracks. But that gloomy view was not borne out. The situation has changed—and remarkably so.

In Bonn the rest of the international community was not prepared to wait indefinitely for a new US position, and specific proposals. So without the US we finished work on the Protocol's rules. We now know how it will work. We have agreed on extra support for those few developed countries that were clearly going to have the most trouble meeting their obligations.

It was clear from the beginning of the Bonn session that most had come determined to make real progress. We were all, I suggest, rather wiser about what was achievable than had been the case in The Hague. Negotiating blocs and individual countries began to show greater flexibility, a willingness to listen and to compromise. Add a clear recognition by several of the major developed countries that they stood to benefit from the Protocol—and that a revision might be quite detrimental to their national interests—and there was incentive for serious negotiating.

"The protocol is the necessary first step to a global regime to address greenhouse emissions."

The NZ Government has consistently said it intends to ratify. With the decisions taken in Bonn, the case is all the more compelling. I am not asserting that the protocol is perfect. It isn't. As it stands it will—at best—only slow the rate of climate change. But that misses the point. The protocol is the necessary first step to a global regime to address greenhouse emissions. While the US may wish to remain outside for the present, other developed nations believe it is the best mechanism on offer.

From 2008 onwards—the beginning of the protocol's first commitment period—we will be operating in a different world. We need to start adapting now. I think the opportunities will be an important part of the new knowledge wave. Officials have begun a working with the NZ business community to identify opportunities, to find where this country's best prospects lie and identify areas where Government can work with business to develop a 'climate change sector.'

An impressive example of forward thinking is now occurring in the US, despite the US rejection of the protocol. Thirty-three companies have signed on to the newly created Chicago Climate Exchanges, signaling their willingness to look seriously at market-based steps for limiting emissions through a voluntary cap. Companies like BP, Ford, DuPont, International Paper, and Waste Management. The Exchanges will enable them to get credits for voluntary reductions in emissions and then trade them, to find the most cost-effective way of achieving reductions. To quote the leader of the project: "The private sector's response to the proposal has been incredible. These companies really believe that a pro-active approach to climate change advances everyone's long-term interests. It's simply good business."

Other US companies thinking ahead are members of the Business Environmental Leadership Council, including some of the climate exchange members and other major players such as Toyota, Rio Tinto, Enron, IBM, Lockheed Martin. They have signed up to four clear statements:

- Enough is known about climate change for members to take action to address its consequences.
- Businesses can and should take concrete steps in the US and abroad to reduce emissions and invest in new, more efficient products, practices and technologies.
- The Kyoto Protocol represents a first step. The market-based mechanisms must be used and the rest of the world must be more involved.
- Significant progress is possible in addressing climate change and sustaining economic growth by adopting reasonable policies, programmes and transition strategies.

After Bonn, we have enough assurance to move to ratification. Our intention is to work towards passing enabling legislation next year, for ratification in September 2002. This is the date for the World Summit on Sustainable Development, usually referred to as Rio+10—the ten-year review

meeting following the 1992 Rio Earth Summit. It was at Rio that the world set in place the United Nations Framework Convention on Climate Change that underpins the Kyoto Protocol. The countries that met in Bonn hope to have the Protocol enter into force by that time.

While the government believes that NZ should ratify, we also understand that the issues are very big ones. We will be consulting widely and carefully before we take a formal decision to proceed with ratification. The package of polices needs to be credible. The message I hear consistently from business is that the measures we take must be carefully balanced and integrated. That is precisely what we want to achieve.

The timetable has been put under considerable pressure by the delay in securing agreement. There will be a lot of officials working late to get the policy package finalised. This compression means the legislation introduced next year will provide a framework for ratification, rather than set out chapter and verse of how, for example, emission trading will operate. Later there will be a second Bill. We are taking this two-step approach to ensure we do not crimp on the consultation we must undertake.

The National Energy Efficiency and Conservation Strategy will be crucial to getting early and on-going action in reducing emissions. I will be releasing the final draft of the strategy on September 27[1]. Some aspects of it will be subject to further consultation, especially issues concerning new renewable electricity generation.

Linked to the strategy is the question of whether we introduce a carbon charge before the commitment period. This issue is with the Taxation Review Committee, which is due to report by the end of September. If there is a decision to introduce a carbon charge, we will take that as a policy proposal into the next general election. The Government's policy is to introduce no new taxes before 2003 and that is not changing.

Some of the biggest decisions in front of us concern who takes responsibility for emissions in the 2008 – 12 first commitment period. Should management of emissions be the responsibility of businesses or sectors? Should the government take responsibility for some sectors? If so, how does the government ensure equitable treatment between sectors? How do we ensure that everyone has broadly comparable incentives to abate emissions? Emissions trading is a significant part of the Kyoto mechanisms, designed to ensure abatement at lowest cost. But establishing trading mechanisms is easier and more sensible in, say, the energy sector, than it is in some areas of primary production. Those decisions are still in front of us.

Adapting to a new framework won't be easy for everyone. But the government is committed to setting policies in a manner that helps firms reduce emissions in the most cost-effective way possible and with as little disruption as possible. That is what the flexibility mechanisms in the protocol are for. Carbon trading will help us ensure that costs are kept to a minimum, while those incurred are a sensible investment in the future.

Two weeks ago I launched a process to secure Negotiated Greenhouse Agreements with significant emitters. Such agreements aim to secure lower emissions while ensuring the parties to them get fair credit for reductions. They will be an important point of engagement between the business sector and government as the policy process continues.

My message to the NZ business sector on climate change is simple: engage with the issue, understand your emissions and your abatement opportunities, look for the innovations and technological advances that will give you an edge.

The same thinking drives our approach to international negotiations. New Zealand's watchwords in this process are flexibility and environmental integrity. That will remain the case as we move into the next phase of building on the agreement at Bonn, starting in Morocco in November.

[1] EECA have confirmed that the document released on September 27 will be the 'final' document required under the Act, but that a revised strategy is likely to follow in much less than the five years maximum under the Act. This is good news, as a strategy prepared almost from scratch in twelve months looked unlikely to stand up to five years of heavy use.

EnergyWatch

The June issue finally came out in mid-July: our apologies. The invoices to be included in the mail-out were 17 days in the mail from Wellington to Wanganui (0.96 km/h).

The next issue is due in December but looks likely to get caught in the end-of-year rush and may not arrive until mid-January.

Cutting greenhouse gases is as optional as breathing

Andrew Simms, The Guardian

Is there any point negotiating on how far to build a bridge across a canyon? The mistake made by the US and the industrialised countries working on the Kyoto protocol is to treat scientific advice on targets for cutting greenhouse gas emissions as optional. In fact, the targets are as optional as breathing. Fail to meet them and we will lose a livable atmosphere. The storm of haggling over curbing emissions missed that adequate action is ultimately non-negotiable and represents unimaginable economic consequences.

Whatever political agreement is signed, such as the Kyoto protocol, or another more logical and embracing deal like contraction and convergence *(see page 19—EW)*, industrialised countries will need to radically change how they live. George Bush raises the spectre of growing emissions from developing countries. But an average American citizen is still responsible for around 20 times the CO_2 emissions of a person from India and 300 times that of someone from Mozambique.

A range of estimates point to rich countries needing to reduce emissions by anything up to 90%. How could it be done? Too much faith has been put in technology. In a global economy driven by crude growth, efficiency gains are constrained by the laws of physics. It turns out that individual life choices are crucial, not just about middle-class hand-wringing.

However, there are few precedents for widespread lifestyle change. Short of universal downshifting, or conversion to anti-materialistic religions, only war economies provide an approximate analogy. All the major industrialised countries have recent experience of them. They can generate senses of extended responsibility, purpose and focus. They always involve the complete re-gearing of the economy. The enemy here is a hostile climate, not another country. But the victims of climate change could be more than in any war. According to the insurance industry the economic damage will be greater, global bankruptcy striking around the mid-point of the century. And, similarly, life and death decisions have to be taken amid inescapable uncertainty.

Resource efficiency was a major focus for British people during the second world war. In six years from 1938 there was a 95% cut in private vehicle use. Public transport increased significantly. Consumption of all goods and services fell 16% in a similar period. A change in diet meant that while people were eating less, they were eating better. Life expectancy for people away from the bombs and bullets increased and infant mortality fell. For some, less really was more.

Behaviour changed partly in response to a massive government information campaign, itself amplified through media as far ranging as *Good Housekeeping* and *Feeding Cats and Dogs in Wartime*. It changed because people clearly understood the nature of the threat. New patterns of behaviour became self-policing. Profligacy with food, material or fuel was seen as anti-social. Rationing was a fact, parameters were set by government, but without public support the country would have been ungovernable.

Poor countries with conventional foreign debts have lived with badly designed 'structural adjustment programmes' for decades. To tackle the ecological debt of global warming, rich countries could now run the equivalent of environmental war economies, working within the framework of 'sustainability adjustment programmes.' Scenarios to meet the 90% emissions cut, and balance the environmental budget, can be drawn for negotiable timeframes over the next 30, 50 or 70 years. All countries in the Earth Summit process are committed to having national sustainability strategies by 2005. So, foundations already exist.

In 1943, Hugh Dalton, president of the Board of Trade said: "There can be no equality of sacrifice in this war. Some must lose their lives and limbs, others only the turn-ups on their trousers." In Bangladesh some 20 million people are threatened by homelessness due to flooding so that we can drive our sports utility vehicles. At the time of the first OPEC crisis in the US a congressional declaration of purpose to shape domestic policy called for "positive and effective action," to protect "general welfare . . . conserve scarce energy supplies (and) ensure fair and efficient distribution." Applied more generally, there is a new global plan to tame a savage climate.

Andrew Simms is head of the global economy programme at the New Economics Foundation and author of An Environmental War Economy - the Lessons of Ecological Debt and Climate Change

Beyond Kyoto

Edward A Parson, New York Times

Much is being made of the Bush administration's exclusion of the United States from an agreement to move forward on combating global warming. But both those who deplore Bush's snub and those who agree with the president that the US couldn't afford to join are losing sight of the long view. To really head off climate change, the world must eventually make even larger (much larger) cuts in its emissions of greenhouses gases than those envisioned in the Kyoto agreement and its refinements in Bonn. But we have some time. The Kyoto Protocol calls for reductions from 2008 to 2012. In fact, the large reductions can wait for another decade or two after that. But to make these cuts in time, we must begin now to engage private business and private inventiveness in attacking the problem.

The world's success in preventing damaging climate change will depend on how it gets its energy over coming decades, as conventional oil and gas grow scarcer. If most new energy comes from coal or oil sands, by 2100 the amount of CO_2 in the atmosphere will be higher than it has been for 50 million years. If most of the energy comes from non-fossil sources, or if new technologies allow us to burn fossil fuels without emitting CO_2, then climate change can at least be greatly slowed and perhaps eventually stabilised. Relative to this vast choice looming a few decades ahead, squabbles over the stringency of the Kyoto emission targets are foolish.

We have a model that can help: the 1987 Montreal Protocol on the ozone layer, now endorsed by 177 countries. Its success did not come from its initial controls, but from its adaptability. The flexibility of the protocol made it easier for industry and governments to accept firm goals in the first place, making it possible for the world to move in a common direction. The international controls under the protocol have been revised five times, each time with the advice of independent experts from many nations, on the applicability of new developments in science and technology. Letting regulations adapt to changing technical possibilities promoted an intense effort by private industry to reduce the use of ozone-depleting chemicals and develop substitutes for use in products like air conditioners and refrigerators. By participating, industries were better able to solve the technical problems they faced in meeting existing and anticipated regulations, and they could spot commercial opportunities in phasing out the old chemicals. Since 1987, use of ozone-depleting chemicals has declined 90% at modest cost, an achievement that once seemed unthinkable.

The Montreal lesson has not been learned well; political forces remain polarized on climate policy. We must break the impasse.

First, the nations of the world must make some—any—move to curb emissions: some law or rule that will exact a cost on power generators and other industries when they emit greenhouse gases, even if only a modest cost at first. Strategically, this would show the world is moving in a new direction, and the additional cost would be an incentive to develop new, cleaner technology. Implementing the Kyoto protocol without American participation can help if it means adoption of real controls by other nations. But international leaders must also keep trying to bring the US on board. Soon, because of the dominance of the US economy, US participation will be necessary to make global financial penalties and incentives work.

Second, the world must establish a process to identify and evaluate new technologies to reduce emissions, and linking periodic review and adaptation of rules to these advances. It is vital that the energy industry and other businesses be serious participants in this process. This will require some combination of providing incentives to needed changes and removing barriers to innovation.

The failure of the Bush administration to participate in Kyoto does not mean that significant progress cannot be made by other nations. Eventually, domestic politics here may well force the administration to become engaged on this issue. In the meantime, providing incentives for innovations from private industry will help make a response to global warming economically more palatable in the future.

Edward A Parson, associate professor of public policy in the John F Kennedy School at Harvard, was a consultant in the White House Science Office under Bill Clinton

Outdated economics defeats government's climate policy

Peter Read

The governments's National Energy Efficiency and Conservation Strategy is being widely promoted as a key element in climate change strategy, a top priority of Prime Minister Helen Clark. But as noted at the recent SEF conference in Wellington, plans are afoot to build three large new thermal power stations, each of about 400 MW capacity, at Otahuhu (Contact Energy), Huntly (Genesis Power), and Stratford (Natural Gas Corporation). These will add 50% to our existing thermal generating capacity and are likely to 'crowd out' many promising potential sustainable energy power projects—especially wind farms and hydro-electric projects. As SEF Convenor John Blakeley put it, "This leaves the distinct impression that the left hand of government doesn't know what the right hand is doing. (They seem) to believe that now that the electricity industry has been deregulated the market will provide new generating capacity at the time it is needed, and that demand increases will control this."

If so, the economic advice that the government is getting is dead wrong. Economics is in ferment; a bit like physics 100 years back, when traditional Newtonian mechanics was fraying at the edges as strange effects in cosmology came to be explained by relativity, and quantum mechanics took over at the atomic scale. Traditional 'Newtonian economics' says that the single best possible outcome—including the best pattern of electricity investment—will be delivered as the equilibrium of perfectly competitive markets, so long as the costs of greenhouse gas (GHG) pollution are reflected in a 'carbon tax.'

But the economic theory of information—analogous to relativity—says that some markets, needed for the best outcome to be achieved, cannot logically exist. How can you know the right price to pay for finding out about the best innovations, when you can't know what the payoff from the best innovations will be? So risk-averse managers under-invest in new technology. Their problem is that a lot of other markets that might exist, and that might help them, in fact don't exist—say an insurance market against the risk of droughts induced by climate change reducing future hydro dam output.

And the economic theory of learning—analogous to quantum mechanics—says there are many possible equilibria because learning results in reducing costs. This contradicts the traditional 'Newtonian economics' world of increasing marginal costs, the standard stuff of Economics 101. With competing technologies—say thermal power plant versus wind power—the outcome depends on small initial events, like the fabled butterfly in Peru that flaps its wings and causes a typhoon in Japan six weeks later. Once one technology takes hold, its costs fall and other technologies are 'locked out'—Otahuhu C is quite a big butterfly!

In typing this I am cursed with the notoriously inefficient 'qwerty' keyboard, as the legacy of Remington typewriters gaining dominance in Wall Street in the 1890s. Since that small initial event, typists have been trained on 'qwerty' and typewriters have been made for 'qwerty' typists. Such technological lock-in means that escaping from GHG-emitting fossil fuel technology, to low-emissions renewable energy and efficiency technology, requires a determined effort, working *against* market forces established by the incumbent technology.

One of the barriers is the herd instinct of managers. The penalty for being wrong (the sack) is much greater than the reward for being right (a pat on the back). So if one generator installs new thermal plant they all do, even with no need for new plant for at least half a decade. Never mind if the investment leads to risks of conflict with climate change policy: the customer, or the shareholder, will pay (and managers will collect their bonuses, while the business pages comment that they have done well in a difficult market).

But just a moment. Does the government not only have a left hand and a right hand, but also a foot for kicking with? As this was written, Genesis was next in line for a planning hearing, in the second week of July. But Genesis has the government as its shareholder. Either the government is wasting tax-payers' money on the National Energy Efficiency and Conservation Strategy, or it is neglecting its fiduciary duty to the public to manage its assets prudently.

Within the lifetime of the proposed new thermal plant, it may be necessary to retrofit them with costly carbon scrubbers, wrecking profitability projections. This might be needed to meet increasingly stringent carbon reduction commitments without cutting profitable—but highly emissive—dairy industry output. Without improved analytic capability, we do not know the

best payoff between cutting energy sector emissions, cutting land based emissions, and increasing forest absorption. That analytic modelling capability is a few years off at best. But, until we do know, the Genesis proposal is highly risky.

Would making Genesis privy to the government's climate change policy bring the Board to withdraw its planning application? Ought not such inside information to be disclosed to other generators? Might that lead the Natural Gas Corporation to have second thoughts about Stratford? Might prospective lack of demand lead to postponed development of the Pohukura gas field? Might that lead Contact to postpone Otahuhu? Is that not just what the government wants—that is, if it is not pussy-footing over climate change?

New Zealand can take a lead on the international scene, becoming the first country in the world to delay exploitation of a discovered oil or gas resource for environmental reasons. It is time for such a small initial event. It is needed to change the direction of technological development in NZ energy. Never mind calls for 'fairness' or appeals to out-dated economic theory: the electricity generating industry has set off in a high- risk direction, directly challenging the government's climate change strategy. It is time for Michael Cullen to call an extraordinary shareholders' meeting with Genesis. And, while they are at it, for the government to ensure a much more explicit statutory duty is inserted, into the new governance structure being developed for the power industry, to be responsive to environmental policies.

Peter Read has been involved in energy issues for most of his working life. Bill Birch cut off his research funding in 1982, in response to his work on 'think big'. He has researched climate change response strategies for the last decade, recently reducing his teaching commitments at Massey University to carry out public good research under FRST contract. He is currently working to set up the modelling capability mentioned in this article.

In good company?

The UK is already a small net importer of gas, and will become a net importer of oil in 2006 – 2007. NZ is not alone in wasting a petroleum bonanza.

Carbon sinks 'little help to climate'

BBC

Scientists say relying on trees and vegetation to absorb carbon dioxide will do little to tackle global warming. Some countries want to use sinks extensively to meet their commitments under the Kyoto Protocol, but the scientists say there is really no alternative to actual emission cuts.

A report published by the Royal Society says that governments meeting in Bonn should not rely too heavily on forests and farmlands to soak up CO_2. Rather the report suggests countries should focus on restructuring the generation and use of energy, and on technological innovations such as improved fuel efficiency and technology transfer to the developing world.

The chairman of the working group that prepared the report is Professor David Read. He said: "These measures may be socially and politically more painful to implement than land carbon sinks. "But they must provide the ultimate solution to the problem of reducing the amounts of greenhouse gases in the atmosphere."

The report focuses on terrestrial sinks. Although it is possible to store CO_2 in the oceans, land sinks are the only ones dealt with under Kyoto. Professor Read said: "We do not fully understand the processes that control how much CO_2 is absorbed by vegetation and soils acting as sinks. "They may help to reduce greenhouse gas levels in the atmosphere during the short term... but the amounts of CO_2 that can be stored are small compared with emissions from the burning of fossil fuels."

The report warns that changes in farming and forestry, like the widespread use of nitrogen-based fertilisers, can be problematic. While they are intended to increase the amount of CO_2 absorbed by sinks, they may actually increase climate change by releasing other greenhouse gases, like methane and nitrous oxide. Professor John Shepherd, a member of the working party, said, "Sinks are really a bit of a sideshow to the main event. "It would be better to spend less time worrying about them and look instead at the real long-term problems." The potential sinks are not very stable. "If you chop down the trees you release the carbon, and if you convert the land to wetland you release methane."

Corporations seek green power

ABC News

The US market for clean power is getting a boost from companies that aim to buy enough renewable energy to power a mid-sized city. Higher energy prices stemming from OPEC cutbacks in crude oil output or California's disastrous experiment with energy deregulation could have one positive result—they could hasten the day that clean, renewable energy is commercially competitive. And that day could come within the next decade, say renewable energy advocates, as the declining price of electricity from green sources intersects with rising prices from conventional power plants.

The market for clean power is getting a kick-start from 10 large companies, accounting for 8% of all electricity consumption in the US and including IBM , General Motors, Kinko's and DuPont. The companies have joined an effort called the Green Power Market Development group to buy a Gigawatt of renewable energy. "That creates a significant demand for new sources of renewable energy, said Ben Paulos of the Energy Foundation, a San Franciso-based partnership of major foundations with an interest in sustainable energy. The goal represents 7% of their current demand, said Jennifer Finlay of the World Resources Institute, which is organising the initiative in tandem with Business for Social Responsibility. "The goal is do-able, but ambitious," Finlay said.

A reason for her optimism is that corporations no longer make energy decisions solely on price. Big businesses see diversification of their energy supplies as a hedge against skyrocketing prices and scarce supplies. And the 10 companies in the network want to be seen as proactive on issues like climate change and energy use, because shareholders and advocacy groups increasingly demand corporate practices that accommodate the environment. "They want to be on the cutting edge and push [green power] over the edge and into competitiveness," Finlay said. "Renewables have public relations value, as well as clean air and climate benefits. So we're trying to come up with a model to monetise these benefits" to make it easier for the companies to justify purchases of energy powered by windmills, solar cells and other earth-friendly technologies.

Records show 'strong recent warming'

BBC

UK scientists at the Climatic Research Unit at the University of East Anglia say the last three decades were the millennium's warmest, and that natural phenomena are unlikely to have caused the unprecedented recent warming. Their analysis included instrumental and documentary records, and also other proxies of past climate variability—evidence from tree rings, corals and ice cores.

For the northern hemisphere, temperature reconstructions show that, "the recent 30 year period is likely to have been the warmest (about 0.2˚C above the 1961 to 1990 average) of the millennium, with the warmest century (by about 0.1˚C) likely to have been the 20th." The first half of the millennium was milder than the 1500 to 1900 period. Their work provides some support for the idea that there were two epochs in the last millennium, the medieval warm period, spanning roughly 900 to 1200, and the little ice age from about 1550 to 1900. The southern hemisphere temperature reconstructions are shorter and less reliable.

Professor Jones said: "The accuracy of records for the first half of the millennium is sometimes queried. We have calculated errors, and the picture is clearer. All records show that the 20th century experienced the greatest warming of the millennium. Examining this broad span of records from all parts of the world, we see that the North Atlantic Oscillation, which is responsible for the UK's recent milder, wetter winters, has behaved in this unusual way before, notably in the 1730s, the mid-19th century, and the early 1900s. Similarly, we find elevated activity of El Nino events in some earlier periods. Some people have attributed global warming to these two phenomena. But the records show that their past activity did not result in significant warming."

The scientists say it is important to recognise the dangers of taking documentary sources at face value. Accounts of the Thames freezing over in the past are often cited as proof that winters were colder then. But a significant factor in the freezing of the river was the way the old London Bridge was built, with a number of piers encouraging ponding. In the winter of 1962/63, the third coldest since 1659, the river did not freeze at all. There has been no complete freezing since the bridge was rebuilt to a different pattern between 1825 and 1835.

Kiwi's knowledge of climate change 'only moderate'

NZ government

New Zealanders only have moderate knowledge about climate change issues, according to a survey conducted for the NZ government by UMR Research. The survey asked more than 750 people aged 18 and over about their awareness and concern of climate change in New Zealand.

It found 46% agreed reasonably strongly that they would be prepared to pay a little more and put up with some inconvenience to help the environment. However, 11 % reasonably strongly disagreed with the prospect of paying more.

The primary consequences of global warming identified were hotter weather/droughts, and rising seas. The term *climate change* has far less meaning to New Zealanders than *global warming*.

There was 39% awareness of the Kyoto Protocol. That figure is likely to have been lifted sharply by the news of President Bush's abandonment of the protocol, which came through shortly before the fieldwork. There was little awareness of the protocol amongst focus group respondents.

In unprompted identification of the major environmental issues facing NZ over the next 20 - 50 years, global warming/climate change was well behind issues such as bio-security, the hole in the ozone layer and over-population.

There was some support for NZ taking an international lead in combating climate change. However, the indications from focus group discussions were that much of that support would vanish if clear economic costs would be involved.

The primary energy saving activity people currently engage in is recycling. This appears to be reasonably well ingrained behaviour. Key factors were that recycling was easy to do, it had had considerable publicity and reached a critical mass point where there was some sense of pressure to recycle.

A suggested communication strategy is to:

- Increase knowledge about climate change issues. This is a necessary first step to lift routine expressions of concern into real concern that can be the base for changes in behaviour.
- Clear up the confusion between climate change and the hole in the ozone layer.
- Tackle the damaging perception that natural weather cycles are more important than human impacts.
- Increase awareness of the Kyoto Protocol.

Government initiatives that would probably receive reasonable support are tougher energy conservation standards for new housing, more stringent emission standards for motor vehicles, government promotion of alternative fuels and monitoring of energy efficient labels. However, these options were only explored in a relatively small-scale study.

The strong impression from this study is that in the current situation the government should promote small and reasonably convenient energy conservation steps for New Zealanders to follow. There was, for instance, no sign of likely support for any measures such as increasing taxes on petrol or advocating less use of motor vehicles.

The full survey report is available at:
www.climatechange.govt.nz

Solar Energy Conference

International Solar Energy Society Solar World Congress Adelaide, Australia 25 – 30 November 2001

There will be a wide range of refereed technical papers covering the full spectrum of renewable energy topics, and an International Trade Expo. The Congress will also be supported by a series of topical workshops and business and industry forums. A public open day, technical tours and the conclusion of the 3000 km World Solar Challenge car race are all highlights of the Congress.

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Curbing Sprawl to Fight Climate Change

Boston Globe

Strategies to combat climate change are likely to fail unless they include incentives to stop urban sprawl, reports a new study by the Worldwatch Institute, a Washington-based research organisation. Sprawling urban areas are helping to making road transport the fastest-growing source of carbon emissions.

"Wind turbines, efficient cars, and other new technologies have received much attention in recent debates over energy policy, but changing the way we design cities may be even more important to stabilising the climate," said Molly O'Meara Sheehan, author of *City Limits: Putting the Brakes on Sprawl*. "Clogged roads, dirty air, and deteriorating neighborhoods are already fueling a backlash against car-based urban development—or sprawl. Understanding the role of sprawl in climate change should only speed up the shift towards more parks and fewer parking lots. We can have healthier, more livable cities and protect the planet from climate change too."

A large body of research shows that sprawl already wreaks havoc on people's health. Each year, road crashes take up to a million lives worldwide. Among cities in industrial countries, per-capita traffic fatalities are highest in the places with the highest levels of car use. In some countries, the number of lives cut short by illness from air pollution exceeds those lost to crashes. And by making driving necessary and walking and cycling less practical, sprawling cities widen waistlines by depriving people of needed exercise.

Cities in the US have been sprawling for decades, spreading out much faster than population growth. Chicago, for example, saw a 38% population growth from 1950 to 1990, but the land area grew 124%. US citizens are increasingly dissatisfied with sprawl, and approved some 400 local and state ballot initiatives addressing sprawl-related problems. At least 38 US states have passed laws creating incentives for more compact development.

"The US has the world's most car-reliant cities," said Sheehan. "US drivers consume roughly 43% of the world's gasoline to propel less than 5% of the world's population. The big question facing the US today, and even more so facing cities in the developing world, is whether we can turn away from a car-centered model and develop better land-use practices and less destructive transportation systems."

By the end of the decade, the majority of the world's population will live in cities. The urban design decisions made today will have an enormous impact on global warming in the decades ahead, especially in cities in the developing world where car use is still low. Adoption of the US car-centered model in these places would be disastrous. By 2030, for example, China is expected to have 752 million urban dwellers. If each were to copy the transportation habits of the average citizen of San Francisco, the carbon emissions from transportation in urban China alone could exceed 1 billion tons, roughly as much as released in 1998 from all road transportation worldwide.

"Some cities in developing countries have already proved that a strategy of de-emphasising cars and providing public transit instead can work," said Sheehan. One outstanding example is Curitiba, Brazil. Starting in 1972, Curitiba built a system of dedicated busways and zoned for higher-density development along those thoroughfares—and is now enjoying better air quality and more parks for its 2.5 million people. Today, other Latin American cities are adapting elements of Curitiba's system. Bogota, Colombia, has recently launched a similar bus system, the TransMilenio, expanded its bike paths, and tried a bold 'car-free day', where in the middle of the work week, the city of 6.8 million functioned as normal—but without cars. Bogota's example also illustrates the importance of higher population density to support buses and cycling: if Bogota sprawled like a typical American city, it would cover more than 20 times as much land area.

Another indication of the reaction against sprawl is the growth of light rail and other forms of public transit. A surge in light rail construction has brought the total number of systems in Western Europe to over 100 in 2000, the highest since 1970. In the US, public transportation use has increased for five straight years, following decades of decline. Planners in Portland, Oregon, estimate that a new light rail line there has saved the region from building eight new parking garages and two extra lanes on major highways.

For more information see http://secure.worldwatch.org/cgi-bin/wwinst/WWP0156.

The G-8 on sustainability and renewable energy

The final communique of the G-8 meeting in Genoa last July included statements on sustainability and renewable energy. The relevant paragraphs—in the usual turgid style—are given below.

In New Zealand the Wind Energy Association was quick to describe the communique as, "great news for NZ," adding significant new material for the Energy Efficiency and Conservation Strategy. NZWEA Chairman Alistair Wilson said, "In strong contrast to the pro fossil-fuel message presented in the recent IEA report on energy use in NZ, this report highlights strong common sense strategies on the use of renewable energy."

The G-8 group set up a task force last year, to recommend actions that would encourage renewables use in developing countries. It was presented to the G-8 meeting in Genoa. The report notes that, "Creation of widespread commercial renewable energy markets faces significant challenges," and makes recommendations in four main areas: reduce technology costs by expanding markets; build a strong market environment; mobilise financing; and encourage market-based mechanisms. "Together, actions taken to overcome these barriers will drive down costs and further increase market size." The report's recommendations include:

- Developed countries implement national plans to expand domestic renewable energy markets using portfolio quotas and incentive tariffs.
- G-8 countries expand support for R&D of renewables.
- G-8 countries develop renewable energy projects where they are a least-cost option on a lifecycle basis or where they achieve protection of the environment at reasonable cost, using well-defined subsidy programs which are temporary, competitively administered and performance-based.
- Corporations be encouraged to make voluntary global commitments to use renewables.
- Renewables be considered as part of energy policy in assessing priorities of countries participating in poverty reduction programmes.
- G-8 countries and development institutions establish a higher level of expertise on the role that energy policy choices can play in development.
- G-8 provide support to renewable energy industries for the creation of joint ventures and other manufacturing, assembly, and distribution/installation capabilities in developing countries.
- G-8 expand the scope and funding for developing countries to develop renewable markets.
- Programmes be strengthened to encourage sustainable forest management and efficient use of biomass resources.
- OECD be asked that renewables be selected for development projects when they are the least cost lifecycle option.
- Investment agencies provide increased support for renewables which are small and have long pay back periods.
- G-8 extend 'sector arrangements' for other energy lending to renewables and implement common environmental guidelines among Export Credit Agencies.
- G-8 call for proposals to mobilise 'patient capital' from private industry through appropriate tax and other support schemes.
- G-8 countries support access to renewables by the rural poor through micro finance organizations and competitive rural concessions.
- G-8 invite the International Energy Agency to support the evaluation of the benefits of national renewable certificate trading schemes.
- G-8 support development of emissions trading, JI and CDM mechanisms that are conducive to the support of renewable energy projects.
- G-8 countries remove incentives for environmentally harmful energy technologies, and develop market-based mechanisms that address externalities to enable renewables to, "compete in the market on a more equal and fairer basis."

Such reports are normally rubber-stamped by the G-8, but the final recommendation could be interpreted as calling for an end to fossil fuel and

nuclear-power subsidies. There was speculation that a number of G-8 nations, notably the United States and Canada, would refuse to endorse the task force report, and that is what happened.

The report acknowledges that the cost of shifting the focus from traditional sources of energy to renewable ones—such as wind, solar and biomass—will be high in the first decade. But it says that over a 30-year period, the change will pay off economically as well as environmentally.

Relevant paragraphs of the Concluding Communique of the G-8 meeting in Genoa in July are:

23 We confirm our determination to find global solutions to threats endangering the planet. We recognise that climate change is a pressing issue that requires a global solution. We are committed to providing strong leadership. Prompt, effective and sustainable action is needed, consistent with the ultimate objective of the UN Framework Convention on Climate Change of stabilising greenhouse gas concentrations in the atmosphere. We are determined to meet our national commitments and our obligations under the convention through a variety of flexible means, drawing on the power of markets and technology. In this context, we agree on the importance of intensifying cooperation on climate-related science and research. We shall promote co-operation between our countries and developing countries on technology transfer and capacity building.

24 We all firmly agree on the need to reduce greenhouse gas emissions. While there is currently disagreement on the Kyoto Protocol and its ratification, we are committed to working intensively together to meet our common objective. To that end, we are participating constructively in the resumed Sixth Conference of the Parties in Bonn (COP-6 *bis*) and will continue to do so in all relevant fora. We welcome the recent deepening of discussions among the G-8 and with other countries.

25 We reaffirm that our efforts must ultimately result in an outcome that protects the environment and ensures economic growth compatible with our shared objective of sustainable development for present and future generations.

26 We welcome Russia's proposal to convene in 2003 a global conference on climate change with the participation of governments, business and science as well as representatives of civil society.

27 We recognise the importance of renewable energy for sustainable development, diversification of energy supply, and preservation of the environment. We will ensure that renewable energy sources are adequately considered in our national plans and encourage others to do so as well. We encourage continuing research and investment in renewable energy technology, throughout the world. Renewable energy can contribute to poverty reduction. We will help developing countries strengthen institutional capacity and market-oriented national strategies that can attract private sector investment in renewable energy and other clean technologies. We call on MDBs and national development assistance agencies to adopt an innovative approach and to develop market-based financing mechanisms for renewable energy. We urge the Global Environment Facility (GEF) to continue supporting environmental protection on a global scale and fostering good practices to promote efficient energy use and the development of renewable energy sources in the developing world, and stress the need to commit adequate resources to its third replenishment. We thank all those who participated in the work of the Renewable Energy Task Force established in Okinawa. G-8 energy ministers will hold a meeting in the coming year to discuss these and other energy-related issues.

28 We are looking forward to the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, an important milestone in the Rio process. The three dimensions of sustainable development—enhancing economic growth, promoting human and social development and protecting the environment—are interdependent objectives requiring our concerted action. We will work in partnership with developing countries for an inclusive preparatory process with civil society on a forward-looking and substantial agenda with action-oriented results. We welcome the recent adoption of the Stockholm Convention on Persistent Organic Pollutants (POPs) and will strongly promote its early entry into force.

29 We are committed to ensuring that our Export Credit Agencies (ECAs) adhere to high environmental standards. We therefore agreed in Okinawa to develop common environmental guidelines for ECAs, drawing on relevant MDB experience. Building on the progress made since last year, we commit to reach agreement in the OECD by the end of the year on a Recommendation that fulfills the Okinawa mandate.

Electricity saving campaign

At the end of July, Cabinet approved Energy Minister Pete Hodgson's proposals for a 15% electricity savings target for the public sector. Also approved was a government-led electricity conservation campaign, calling on New Zealanders to make electricity savings of 10% for ten weeks, to avert a supply crisis later in the year. A savings campaign including practical information began in mid-August.

Wholesale market administrator M-co gave a daily measure of savings achieved. (www.save-electricity.co.nz).

Electricity-savings information is available on EECA's website (www.eeca.govt.nz).

Changing climate affects insurers

The Reinsurance Association of America pointed out in 2000 that half the insured losses from world-wide natural disasters over the previous 40 years had occurred since 1990.

Engineers Australia

Shaping the future of the Electricity Sector

Pete Hodgson, Minister of Energy
A heavily edited version of a speech to a conference on Electricity Industry Reform, August 2001.

A milestone in this Government's reforms arrived last week, with new legislation in response to the Caygill Inquiry. The legislation and the Government Policy Statement on electricity issued last December are designed to deliver a fair deal to all electricity users, and to promote environmental sustainability and energy efficiency.

It will be easier for distributed generation to feed into the market. The publication of amalgamated hedge prices will increase transparency. Retailers and large consumers will have better information, which they will be free to ignore at their peril. A process for deciding on and requiring the removal of transmission constraints will be in place.

Price control will apply to any lines companies abusing their monopoly power. Consumers who want to switch will be able do so promptly—and if they can't, the company at fault will risk a fine. Consumers will have the option of low fixed charges and higher variable charges, so that they can see real savings if they conserve electricity. And an independent process for resolving consumer complaints will be in place.

The government's overall electricity policy is consumer focused. Domestic consumers, in particular, need better service. The government has accepted the Caygill proposal to extend self-governance arrangements, rather than replace them with regulation. Our belief in industry solutions where possible, and regulatory solutions where necessary, is as firm as ever.

But calls for regulation are swelling. The industry is not popular, and the wholesale market is viewed with widespread suspicion and incomprehension. I hope that most of the new regulation-making powers will never be used. I know the industry does not want them used. A significant milestone on the road avoiding regulation has been reached with the release of draft rules by the Electricity Governance Establishment Project led by David Caygill. This is a major undertaking, as anyone who has tried to read the rule book—or even just pick it up —will appreciate. Concerns about the draft have been voiced, but that is what drafts are for.

But I have been frustrated by delays in establishing the consumer complaints scheme. Some have been beyond the industry's control, and there have been other genuinely pressing issues, but consumers need a complaints resolution scheme that is accessible, efficient and fair. I expect the industry to get on with establishing the office as quickly as possible once the rules are finalised. I mean weeks, not months.

Companies are also moving too slowly in making low fixed charge tariffs available. These are available in the main centres, although not always well promoted, but are unavailable in nearly half the network areas. Last week I wrote to 15 line companies, reminding them that I will—and now can—regulate if necessary. I will be bringing this issue up at ever-shorter intervals.

Targeted price control for lines companies is not a matter we have left to self-regulation. The legislation just passed, amending the Commerce Act, fills the most glaring gap in the reforms of the previous government. The Commerce Commission has an inquiry into electricity line business pricing already under way, and now has certainty about its statutory powers.

Last week I reconfirmed NZ's intention to ratify the Kyoto Protocol, and we are proceeding with domestic policy development. We will be consulting widely on a policy package, and working towards having framework legislation passed next year. The global response to climate change will be deeply relevant to the electricity sector in its roles as both client of the fossil fuel industry and competitor with it. Input cost structures will shift. The economics of generation technologies will shift. Carbon trading will become routine.

The most valuable thing I can say to the business community about climate change is, be alert to the opportunities. It is going to be a powerful force for change in an economy that still far too wasteful of energy. I will be releasing the final draft of NZ's first ever National Energy Efficiency and Conservation Strategy on September 27.

The Kyoto Protocol will drive a significant expansion of renewable energy sources. The new legislation widens the scope for that expansion, particularly by line companies. There is now no limit on the amount of generation they can invest in, using new renewable energy sources.

Now to the current situation. The hydro lakes have not reached the crisis levels of 1992, and I am optimistic that we will avoid blackouts, but

continued savings are crucial. Inflows to the hydro lakes this year are the lowest in 75 years and there are no signs of a break in the weather pattern.

A growing number of businesses already feel they face a crisis—not of supply, but of price. Those directly exposed to the wholesale market have been squeezed for weeks. Others find costs rising markedly as fixed-term contracts expire. That is an uncomfortable but inevitable result of the wholesale market, which has delivered low spot prices through warm, wet winters. Now users are understandably less happy when a dry, cold winter has sent prices up.

I have no intention of capping prices. It neither increases supply nor reduces demand. Those who note that Australia has a cap should also recall that it is currently set at 5.0 $/kWh and next year will rise to 10 $/kWh. Our daily average peak, so far, is a little over 0.40 $/kWh.

Dry-year risk is a fundamental feature of our electricity system. Having more than 60% hydro generation makes NZ electricity amongst the cheapest in the world, but with the risk of this kind of situation. We have long, narrow lakes with limited storage. For as long as we have a hydro-dominated system, which is for the foreseeable future, we will face this risk.

The wholesale market is only in its third winter in its present form. Even so, I have been surprised by the number of businesses exposed to wholesale prices that have been caught this year with their hedges down. Hedging against a dry winter is a pretty basic precaution in this country. Perhaps this will be the most valuable lesson some players will take away from this year's experience.

I am convening regular industry meetings to discuss how best to develop strategies to increase supply and reduce demand. I have been encouraged by the level of co-operation and goodwill. Inevitably, I have been asked whether there are fundamental problems with the electricity market, which many New Zealanders believe is seriously flawed. When we are through the risk period I expect there will be a case for some kind of post-mortem to be carried out, but many of the questions are not new and many are in the process of being addressed.

It is in everyone's interests to develop a thicker and more transparent hedge market and I am confident that will happen. The industry is still in transition from the radical reforms of the 1990s to a hopefully more stable future. Further reform should mean adjustment rather than upheaval.

More Renewable Energy needed

Ian Shearer

This is an edited version of a letter sent to Chris Laidlaw's Sunday programme on the National Programme, and read on 12 August. Chris was very supportive and his final comment was, "more power to your elbow, Ian."

Dear Chris

Many NZers are now deeply concerned that 'business as usual' in the electricity industry is not sustainable. Many sense this, and worry about the future for their children. But so far we have not been able to work together toward a different future. What we are missing is a shared vision of what 'sustainability' means for NZ. Without a coherent, relatively detailed, shared vision of what a sustainable society would look like, we cannot generate the political will or united effort to carry us from here to there.

Many people have a vision that efficient and increased utilisation of renewable energy will be the basis of a sustainable energy future for NZ. Government support would be very beneficial: clearly, less reliance on hydro would have had a significant impact on recent wholesale prices.

More than 50 MW of wind energy projects have resource consents, but will not go ahead until mechanisms to force gas fired stations to pay for their environmental damage—or a support mechanism for renewables—is implemented. Many hoped that the National Energy Efficiency & Conservation Strategy, combined with the government's commitment to ratify the Kyoto Protocol, would provide the forum for the debate and commitment to consequential action.

Renewable energy industry organisations in NZ are establishing Renewable Energy New Zealand (RENZ), an umbrella group to advance the use of renewable energy. These are the Bio-energy Association (currently being established from the bio-energy network); NZ Photovoltaic Association (solar electricity); NZ Wind Energy Association; Solar Industries Association (solar water heating); and the Sustainable Energy Forum.

A sustainable energy future needs more diversified renewable sources.

Recent SEF Submissions

- **Tax Review 2001**
- **Transit NZ: Higher Mass and Dimension Limits**

Kerry Wood

SEF has made submissions on the Tax Review, and Transit New Zealand's proposals for larger trucks. The Transit submission was made jointly with Engineers for Social Responsibility. Both are only summarised here; they are too large and too far from EnergyWatch's core business to be printed in full. Copies are available from the SEF office.

An extra point—arising from the Transit submission—is also given.

Tax review

- The Tax Review Committee has got the big picture wrong, with a too-close focus on economic efficiency and insufficient attention to broader national goals.

- The Committee has mixed up the measurability of environmental damage with the practical accuracy of measurement. Realising that they cannot be exactly right, they have instead chosen to be exactly wrong.

- The NZ government has decided to ratify Kyoto , but is struggling to accept the details and draw them into policy. Taxation can have a major role to play, both in supporting the new paradigm and in reconsidering support of the older and less efficient paradigm.

- The Committee's concept of ecological taxation is too narrow. Taxation can be used not just to offset environmental externalities, but also to offset externalities supporting or generated by unsustainable behavior. An example is taxation to offset the externalities of motor vehicle use, which are roughly $bn 3 – 4 a year, but 'only' $M 300 a year for greenhouse gas emissions.

- An objective of government policy is to minimise risk, especially uninsurable risk. Energy efficiency and renewable energy offer lower risks than a 'business as usual' approach, offering good reasons to use the tax system to favour renewable energy.

- Tax breaks for developing petroleum resources do nothing to increase the size of the resource, and may encourage too-early development and wastage—as happened with Maui.

- The government cannot afford to leave all risks to the market. Markets can handle commercial risk up to a point, but will not always accept risk (insurance of nuclear power stations), and will not always succeed when the attempt is made (electricity supply).

Higher truck mass and dimension limits

There are two Transit proposals. Either or both could be implemented, but Transit is clear that general implementation of either would be uneconomic:

Scenario A is for existing large trucks to be allowed to increase their maximum weights from 44 tonnes to 50 (payload up from about 24 t to about 30 t), and to be allowed on all State Highways and all other roads with no specific prohibition.

Scenario B is for trucks of conventional width but up to 25 m long, with a turning circle radius of 12.5 m (existing limits are 20 m and 10 m) and a maximum gross weight of up to 62 t (payload about 40 t). Their use is to be limited to selected State Highways and a few local access roads.

Points made in the SEF/ESR submission include:

- New Zealand is an isolated, mountainous, medium-sized country with the population of a medium-sized city. The truck sizes appropriate overseas are not necessarily appropriate here.

- Claims of safer trucks are implausible. Claimed safety features are either operability issues or will be introduced in any case, under new LTSA rules. The only exception is a small increase in static stability.

- New Zealand has a truck stability problem. New LTSA rules specifying a Static Rollover Threshold (SRT) of 0.35 g (35% of the acceleration due to gravity, roughly equivalent to a capsizing at a heel angle of 19°) will affect about 15% of trucks in any case. Transit proposes a small SRT increase to 0.38 (21°) for trucks operating under Scenarios A or B.

- Claims of safer roads assume that there will be fewer trucks, and are implausible. Growth of tonne-kilometres hauled by road has been 50% in the decade since the last permitted increase, and continues at about 4% a year.

- There is no discussion of pedestrian or cyclist safety, yet both will clearly be affected by Scenario B trucks, which need much more space to turn at junctions. Expect to see less

space for cyclists, longer crossing distances for pedestrians and faster cars in the more spacious junctions.

- The increase in expected road damage for Scenario A is given as 0 – 2%, compared with about a 70% increase for an individual fully laden truck, or a huge 240% if the heavier truck is loaded to 10% above the new permitted weight. There is no discussion of the much more serious effects of overloading.

- There is no discussion of increased traffic because of lower costs: freight transfer from rail, pipelines or coastal shipping, or longer hauls because local manufacturing or warehousing is closed down.

- The most obvious alternative—encouraging rail freight—is totally ignored.

Is this promoting the Transit mission statement, *To operate a safe and efficient highway system?* Is it the function of a fully-funded Crown Enterprise to promote commercial interests so blatantly?

Another point

Transit has made two inadvertent but important points for environmentally friendly transport in their Scenario B:

- Scenario B trucks will use only 4% of the total road network, largely on corridors served by rail. The benefit:cost ratio is 6, with 92% of benefits going to commercial operators and their customers. If this proposal is attractive, then it is impossible to argue that transferring freight from road to rail would not work because so many trips are away from rail corridors.

- Safety and environmental gains make up 7.4% of the calculated benefits. The same benefits on rail will be larger: about tenfold for safety and fourfold for environmental (largely carbon dioxide savings). This suggests annual savings for a rail case nearly five times greater than calculated by Transit for road, or still more when it is realised that the rail benefits come from the total operation, not just the difference between a 24 t and a 40 t load.

If rail freight is already competitive, and the safety and environmental benefits of transferring freight to rail are at least 40% of the on-road commercial benefits, then surely there is an economic case for a rail-based solution?

Diesel a cancer risk?

SHG

Last July, the website for US organisation Environmental Defence claimed that recent USEPA data showed the cancer risk from diesel exhausts dwarfed the combined effects of all other outdoor air toxics combined. As explained by ED's senior attorney, "The dominance of diesel in the unhealthiness of our air is a revelation. It couldn't be seen before, only because studies weren't looking for it."

Whilst this claim cannot been validated, and may be prompted by the American's dislike of diesel cars (see EW June 2001), it does have an undeniable credibility. Industrial air pollutants are relatively easily to control and are highly regulated in the US. However, the ubiquitous heavy diesel engine has a wide range of operating conditions and produces transient emissions of black smoke that would never be tolerated from a factory chimney. In fresh air the concentration of other air toxics is extremely small, so in comparison, the cancer risk from diesel exhaust could dominate; whilst still hopefully a low risk.

Diesel engines can produce black smoke when heavily loaded. This is because of the way a diesel engine works, by pumping air and heating it. Variable amounts of fuel are injected into the hot air to meet power demands. (In contrast, the petrol engine has a constant fuel/air ratio.) Under heavy load the diesel fuel/air ratio is at a maximum, so incomplete combustion can occur. This results in some of the fuel partly burning to form carbon soot. Sulphur in diesel fuel adds sulphates to the soot. This soot can be visible, and sulphates add mass, but that is not the primary cancer risk. At high fuel/air ratios, a small fraction of the heavier diesel fuel components, such as polyaromatic hydrocarbons, are not burned and can absorb onto the soot carrier as potential carcinogens.

These mechanisms are very difficult to quantify, which may explain why the cancer risk comparison has not been made before. However, since the risk of producing carcinogenic particulates increases with the load on a diesel engine, is it wise to increase the maximum payload for New Zealand's trucks?

Bio-diesel's potential

Ralph E H Sims
Centre for Energy Research, Massey University

Suddenly, interest in bio-diesel and bio-ethanol transport fuels seems to have revived. Media reports have highlighted several innovative and entrepreneurial bio-fuel projects both in New Zealand and overseas. But those involved would be well advised to first revisit the work undertaken in the 1970s and 80s by the Liquid Fuels Trust Board and the NZ Energy Research and Development Committee. All the technical information needed to produce and use biofuels is there, following millions of dollars of research investment at the time of the global oil shocks. Some updating is warranted, particularly on economics, but basically, "why reinvent the bio-fuelled wheel?"

There are many examples of commercially utilised bio-fuels. Brazil uses a 23% ethanol blend in its retail petrol, based on its sugar cane industry. Several states in the US use a 10% maize-sourced ethanol blend in their gasoline (known as 'gasohol'), not only to produce cleaner exhaust emissions but also to avoid the use of the carcinogenic MTBE additive used to replace lead. MTBE is now entering the groundwater after being washed off the road surfaces and is causing much concern. In Germany bio-diesel is available at the pump in over 400 service stations, and it is also widely used in France, Austria and now in the US too. So why not use bio-fuels in NZ? Their high cost is the key reason.

German bio-diesel retails for around 1.37 DM/litre (1.42 $NZ/l) whilst diesel fuel is sold in the next pump for 1.40 DM/l. The difference is due to the excise tax exemption by the German government. Bio-diesel is refined to high standards and vehicle manufacturers such as Volkswagen and Mercedes maintain their engine warranties for those vehicles using it. But without government subsidies it would cost around 2 to 3 times the wholesale diesel price to grow the oilseed rape crop, extract the oil and esterify it into bio-diesel. Using waste vegetable oil from take-away shops and restaurants or tallow by-products from the meat works may be cheaper options—but they still cannot compete with petroleum.

The incentive for using bio-fuels in NZ is likely to be reducing carbon emissions from vehicles. Also, ethanol is being considered as an additive to enhance the octane level of petrol without using other additives. The Ministry of Economic Development is currently reviewing the Specification Regulations for petroleum products. Submissions on the public document close on 15 October. The good news is that the CO_2-neutral benefits of bio-ethanol have been recognised. The proposal is to allow up to 10% by volume of ethanol. However there is no suggestion of enabling bio-diesel to be used in diesel fuel. It would make good sense to do so.

Biodiesel history

Bio-diesel fuel must be technically feasible to produce; distributed nationwide; have high strategic value; be competitively priced; and be suitable for use in existing engines without modification. A research programme was first instigated in the mid 1970s. Vegetable oil crop production trials were undertaken and inedible tallow, a by-product from the meat works exported for soap and candles, was also investigated. An overview study was conducted by Massey University in 1981/82 and a major Liquid Fuels Trust Board programme was then begun as a result of the promising potential.

Oilseed rape became the preferred oil producing crop. It had good yield potential of 1.6 – 3 t/ha, a 45 – 50% oil content of the seed and the oil has good fuel characteristics. It grows throughout NZ, fits into existing crop rotations, uses conventional machinery to grow and harvest, and provides a high protein meal by-product.

In the 1980s—against Massey advice—several farmers began to use home grown raw rapeseed oil as a tractor fuel. As predicted, there were problems: fuel pump seizures; carbon build up on injectors resulting in poor fuel atomisation; dilution of the engine lubricating oil, leading to polymerisation and gel formation; and storage problems after only a few weeks, due to bacteria and yeasts.

Converting the oil into esters was the answer, as these are very similar in most properties to diesel fuel, can be blended with it in any proportion, or used neat. Evaluations of the production of rapeseed oil esters at various scales were undertaken: a single grower producing 4000 l/y for use on-farm; a small co-operative of 4-5 farmers producing 36 000 l/y for their own use; a large co-operative of 20 or so farmers producing 190 000 l/y for sale; and a regional plant processing 7.75 Ml/y. Due to economies of scale, bio-diesel from the regional plant could be processed for half the cost of the on-farm scale, but even then it would still be double the ex-refinery cost of diesel. To be economic the oil crops would

need to produce higher oil yields; have lower opportunity costs of the land used; have the environmental benefits valued (mainly by a carbon tax on non-renewable diesel); be grown sustainably with low inputs; and have improved production energy efficiency.

Tallow esters were also evaluated. Tallow is a by-product from the meat industry, already collected and transported to ports for export. The current export volume is over 5% of the national diesel demand (2.4 Ml in 2000) so it could be a useful blended additive. Market research analysis in the 1980s showed the future value of tallow would remain low but the value of the glycerol by-product would remain reasonably high. This work needs updating.

Scale options assessed for tallow esters were a regional plant producing 4.2 Ml/yr or a single national plant alongside the Marsden Point oil refinery with a capacity of 25 Ml/y. The larger scale proved to be more economic due to the by-product values being fully captured; lower overheads; less variable fuel quality; and lower operating costs. This option assumed a tallow price of 250 $/t; tallow transport 0.10 $/t.km; processing costs 85 $/t and a glycerol value of 1200 $/t at 10% discount rate. A crude oil price of 27 US$/bbl was needed for bio-diesel to compete.

Fuel and engine tests

A wide range of engine tests were carried out, most on the tallow esters. They included short tests on a range of fuels and blends, and performance tests on 100% esters and 20/80 and 10/90 blends with diesel. The results showed improved combustion, reduced emissions, and no lubrication oil dilution even under worst case conditions. Tallow ester specifications were established to produce a fuel within current diesel fuel specifications so that no engine modifications were required, and no changes to handling and storage regulations. The aim was to develop confidence in biodiesel use by consumers and then to possibly relax the standards after gaining experience, thereby enabling esters to be produced more cheaply.

The initial stringent ester fuel specifications developed, and reasons for them, were as given in the table at right. Melting point was a critical issue as phase separation of methyl tallow esters occurs at temperatures below 3˚C. The cetane value was exceptionally high, at over 70, so the fuel can be used as an additive to upgrade poorer quality diesel. Exhaust emissions were lower than conventional diesel in most respects and there was no breakdown observed after 14 months in storage.

A range of 42 vehicles was evaluated including trucks, trains, tractors, and boats. Specific engine tests involved extended oil change periods, use in a turbocharged engine, and a comparison of sister vehicles, being two Ford 6610 tractors and two Ford Courier utilities with one running on diesel, the other a bio-diesel blend and involving full engine strip downs.

Conclusions

Market constraints on bio-diesel in NZ include engine manufacturers providing warranties, the refinery company agreeing to produce the blend and the oil companies agreeing to retail it. A secure supply is required and—to be economic—the by-products need to be fully utilised. For oilseed rape these are the straw, protein meal, and glycerol. No financial incentives are likely to be offered other than the value for the carbon emissions avoided once carbon trading takes effect. An extensive proving programme is needed and the latest international experience reviewed, especially for bio-diesel used commercially in Austria, France and Germany. An IEA Bio-energy activity on bio-fuels is operating and NZ should participate. International standards are being sought.

The use of bio-diesel ester fuels is technically feasible, either neat or in blends with diesel. Bio-ethanol is well proven for blending with petrol. Engine performance tests have showed no problems. The environmental benefits are evident but have not yet been valued. Bio-diesel will only become commercially viable if the crude oil price stays close to $US30/barrel, if bio-fuel production and processing costs are reduced and if economic incentives such as carbon avoidance are provided.

Ester biodiesel specification

Free fatty acids	<0.1%	Attacks metals
Water	<0.5%	Storage deterioration
Methanol residue	<0.05%	Fire/explosion
Catalyst residues	<0.5 ppm	Wear of engines
Monoglycerides	<0.05%	Filter blockages
Iodine value	42 – 52	Oil degradation
Insolubles	<4 μ ($=10^{-6}$ m)	Fuel system blockage

Contraction and Convergence

In July, with the Kyoto Protocol on the verge of collapse, *New Scientist* ran an article on an alternative that might have been better—Contraction and Convergence. It was first proposed by Aubrey Meyer, a professional violinist with no scientific training. It has entranced scientists and enraged economists and many environmentalists, but it is winning high-profile backers, such as China and the European Parliament.

Meyer saw in the early conferences on climate change a hideous charade, with politics divorced from science. The IPCC said we needed a 60% cut in emissions to halt global warming, but the politicians had no plan even to stabilise emissions, let alone cut them.

To do what the IPCC wants means reducing global emissions to an average of 0.4 tonnes of carbon per person per year. Meyer says that the only politically possible way of achieving that is to work towards national entitlements based on size of population. Today, the US emits 5.2 tonnes per head, the UK 2.6 t, India 0.2 t. This means that India could double its emissions while the US would have to come down by more than 90%.

This is the policy that Meyer proposes—Contraction and Convergence. Contraction to an average of 400 kg of carbon per head per year, and convergence on the same figure for all nations.

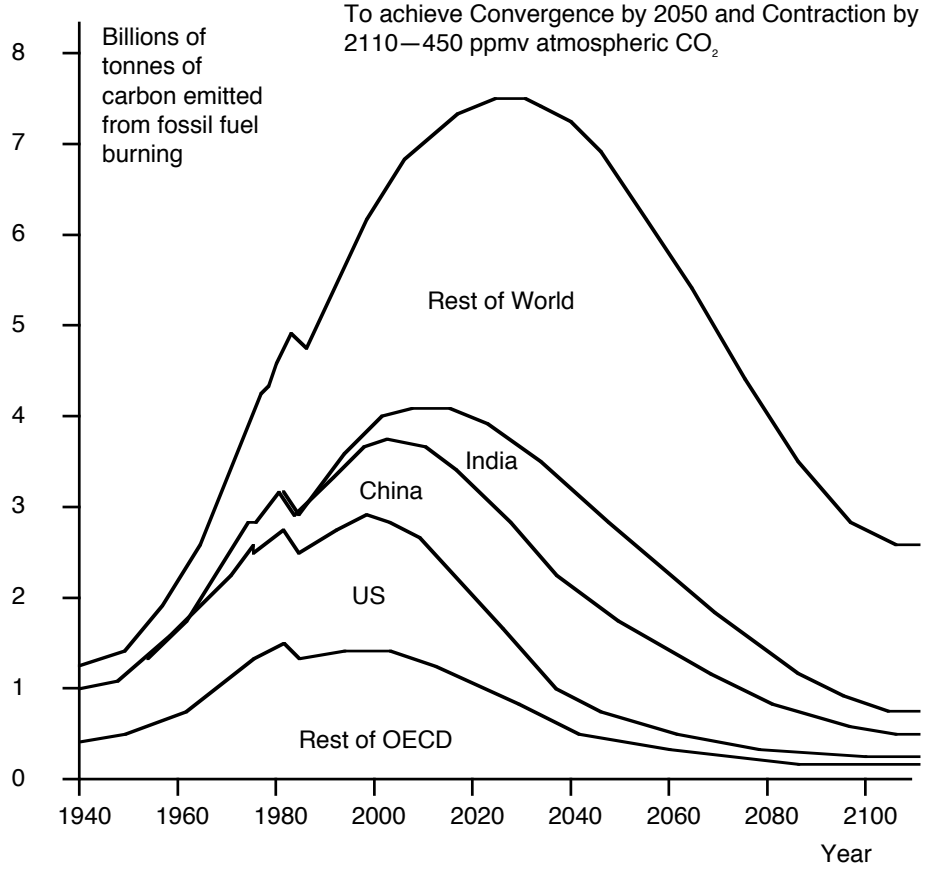
Meyer describes Contraction and Convergence as having rules, but also active. And it embeds an ethic—of equity and survival. The fairness of contraction and convergence is a powerful argument, but Meyer thinks the purely logical argument is the key. It doesn't solve all our problems at a stroke, but it creates the framework in which we can solve them. If people disagree, then the challenge for them is to think of something better.

Who backs it today? The European Parliament, China, the non-aligned movement, many African nations, the Red Cross, Britain's Royal Commission on Environmental Pollution and Jacques Chirac have all said they support the idea in principle. Many economists say they have no real quarrel with it, provided it allows countries to trade their emissions entitlements. If the revenues from trade are spent on renewable energy, it will bring the efficiency gains that the economists are so keen on. And it will allow the poorest countries with the low emissions to sell their spare entitlements for profit.

Contraction & Convergence by Aubrey Meyer is published by Green Books and can be found at http://www.greenbooks.co.uk/cac/cacorder.htm (www.gci.org.uk)

Contraction and Convergence Scenario

To achieve Convergence by 2050 and Contraction by 2110—450 ppmv atmospheric CO_2



Electricity complaints scheme

At the end of August, Energy Minister Pete Hodgson announced an Electricity Complaints Commission scheme that would be, "Free to consumers, independent of the industry, and binding on industry members."

The scheme is designed to be a mechanism for the resolution of disputes between consumers and electricity retail and distribution companies. It has three key operational components:

An industry Code of Practice

The Code of Practice was written following wide consultation with the Ministry of Consumer Affairs and consumer groups. It is designed to set minimum standards for electricity consumer contracts, binding on all members of the scheme and applying to all consumers. The code prevails over consumer contracts. It will be reviewed regularly, to ensure that it is up to date and reflective of industry best practice.

Internal complaints handling processes

The scheme requires its members to have effective internal complaints systems. The Commissioner will encourage the resolution of complaints as early as possible, to minimise the number of complaints that must be dealt with by the Commissioner. The scheme contains a protocol that sets out the minimum requirements for companies' complaint handling procedures and the relative responsibilities between companies.

The Electricity Complaints Commissioner

The Commissioner's principal powers and duties are to consider complaints by a consumer about the provision of services to the consumer, or anything else under the scheme, and facilitate resolution in accordance with the terms of reference, the code of practice and the protocol.

In those cases where no agreement can be reached the Commissioner may make an award up to a maximum value of $ 10 000, or up to $ 25 000 in some circumstances.

The interim Board met on 28 August and began the processes of appointing an independent chair and a Commissioner.

Post-winter review of the electricity industry

Energy Minister Pete Hodgson announced an electricity 'post-winter review' on 10 September. This time, there will be no committee or hearings. Instead the Minister has posted terms of reference and four questions, calling for submissions to be made on the questions, by 5 October and by e-mail to:

warren.player@parliament.govt.nz

They will them be posted on:

www.winterreview.govt.nz.

Cross submissions will then close on 19 October, and a summary of submissions will be available on 9 November, and will go to the Cabinet for decisions. The questions are:

1 What factors contributed to wholesale electricity market developments in the 2001 winter?

2 How effective were existing market arrangements in responding to these developments?

3 What changes should be made to market arrangements, why are these changes recommended and what are the costs and benefits?
(In responding to this question, please take into account the improvements to market arrangements required by the government as set out in the December 2000 Government Policy Statement on Electricity)

4 What changes to the energy efficiency and conservation campaign should be considered in case the need arises in future for a similar campaign?

Windflow in business

Windflow Technology now have the minimum funding needed to establish local wind turbine manufacturing. A first share offer fell short, but a second offer closed on August 10th with subscriptions at nearly $M 2.2, which exceeds the minimum required for the share allocation to proceed. The Companies Office has now confirmed approval of a time extension to attempt to raise the maximum $M 3.0, and the offer will now close on, "September 28th or such earlier date as the Directors nominate." Further information on: www.windflow.co.nz

Trees and CO_2

BBC

Hopes of using forests to tackle global warming—by storing excess carbon—have received a setback. Researchers in the US are shedding doubt on how effective trees are in absorbing CO_2 and then releasing oxygen back into the atmosphere. And they say they have identified factors that limit the ability of these natural sinks to soak up CO_2. The findings could have huge implications for attempts to tackle climate change.

The researchers, whose work is reported in *Nature*, looked at the growth rate of a plantation of loblolly pines on an experimental plot belonging to Duke University, North Carolina. They found that trees growing in air enriched to contain about 600 ppm CO_2—well above the current 360 ppm—increased their growth rate for only three years, before resuming their normal rate. What limited the trees' capacity to respond to carbon fertilisation was a shortage of other nutrients, especially nitrogen, and water. When the researchers made nitrogen available, the results were impressive. They write: "In two forest experiments on maturing pines exposed to elevated atmospheric CO_2, the CO_2-induced biomass carbon increment without added nutrients was undetectable at a nutritionally poor site, and the stimulation at a nutritionally moderate site was transient, stabilising at a marginal gain after three years. "However, a large synergistic gain from higher CO_2 and nutrients was detected with nutrients added. This gain was even larger at the poor site (threefold higher than the expected additive effect) than at the moderate site (twofold higher)."

Another group of researchers examined the same forest plots to see how effective the leaf-litter layer and soil were at absorbing CO_2. They found that nearly half the carbon uptake went into short-lived foliage. The total amount of litter did increase in a carbon-enriched atmosphere, but the rate at which it broke down also increased. And the carbon then went back into the atmosphere rather than into the soil. They say: "Given the observation that carbon accumulation in the deeper mineral soil layers was absent, we suggest that significant, long-term net carbon sequestration in forest soils is unlikely."

If sinks can help to absorb worthwhile amounts of carbon, many people will be very relieved. On this evidence, it is far from certain that they can.

Dubya, my Green hero

Zac Goldsmith, The Ecologist

The Ecologist magazine's first *Environmental Steward of the Year* award will go to President George Bush. Bush is the catalyst environmentalists have been waiting for. US environmental groups report a large increase in donations since his inauguration; the global environmental crisis is making headlines like never before; and politicians of every hue are clamouring—however unconvincingly—to present their Green credentials.

Even more significantly, there is a growing acceptance that the protesters may have a point. A debate about Gothenburg on BBC TV was remarkable because nearly everyone viewed the protest as healthy and necessary. This would not have been the case even two years ago. All this is down to Bush. He has put lead in the Green pencil.

This was all predicted by Ralph Nader, the Green Party presidential candidate. When asked why he was jeopardising the chances of Gore, a man highly regarded by many Greens, he retorted, "I would not trust Al Gore as far as he can be thrown. The gap between what he says and what he has done has been staggering. Gore is seriously dangerous because he appears to be a friend. He neutralises the Green movement. He is an anaesthetic. At least under Bush, the movement would be awakened, stimulated."

Recent polls in the US show dramatic support for the environmental agenda—a reaction to Bush.

Incomplete records do not falsify global warming

For many years a standard argument against global warming has been that it is an artifact of missing temperature data. But now researchers at the Lawrence Livermore National Laboratory have examined the effects of gaps in temperature measurements during the 20th century. They estimate that the actual warming is slightly larger than previously estimated from the incomplete observational data—about 0.7°C instead of 0.6°C.

The measured increase in the Earth's surface temperature during the 20th century is based upon thermometer measurements, which are less

complete further back in time. For example, at the beginning of the 20th century, thermometer measurements covered only 20% of the Earth's surface, compared to more than 87% in 1987 *(There is an interesting assumption in here: what area does a thermometer measure? EW)*. In an article titled "Effect of Missing Data on Estimates of Near-Surface Temperature Change Since 1900," in the July 1 edition of the *Journal of Climate*, LLNL researchers Philip B Duffy, Charles Doutriaux, Imola Fodor and Benjamin Santer studied effects of incomplete records by examining 16 climate model simulations of the surface temperature changes from 1899 to 1998. They compared temperature trends obtained from globally complete model output with temperature trends derived by sampling the model output at only those locations where temperature observations are actually available.

"We found no evidence to support the hypothesis that incomplete observational data has caused us to overestimate the true warming trend," said Duffy, lead author of the paper. "I hope that we've laid to rest the theory that warming that occurred during the 20th century is an artifact of missing data," Duffy said. "Knowing the accurate amount of the 20th century's warming is important because if it were much less than we've thought all along, we would have to fundamentally rethink our ideas about global warming."

Science Daily

MiniWhats

Environmental statistics newsletter

In August, Statistics New Zealand produced their first Environmental Newsletter, a series of quarterly e-mail newsletters giving details of a number of new environmental series and projects. To subscribe send an email to:

listserv@stats.govt.nz

with 'subscribe environment' in the subject line.

Enviro-diesel

Vegetable oil is on trial in Auckland as an alternative to diesel. Ecostore, a retailer of environmental products, is part of the Auckland trial and says the raw product is collected from fish and chip shops around the city. One person testing the oil said he noticed benefits like cleaner burning and better performance. However, the Automobile Association has warned that the vegetable oil might cause engine problems.

Ralph Sims, Director of the Centre for Energy Research at Massey University said that New Zealand could start producing vegetable-based fuels to replace diesel tomorrow if it were economically viable.

NewsRoom

Rio + 9

Carter Holt Harvey's Chief Operating Officer Jay Goodenbour says ratifying the Kyoto Protocol in September next year is premature and may have significantly negative impacts for NZ. "We applaud the government's willingness to show leadership on an important issue like global warming but, we believe all New Zealanders have the right to understand and debate the implications of ratifying the protocol. At this stage there are many important questions to be answered, but we do know the following facts:

- The costs to New Zealand of complying with the protocol will be significant.
- The US, as the biggest polluter, has not signed up to the protocol
- Many of New Zealand's most significant international trade competitors will not sign
- Australia has negotiated an 8% increase in their pollution over 1990 levels, whilst NZ must maintain 1990 levels.
- Many other countries have negotiated 'special concessions' before agreeing to sign up.
- There are no studies currently available from government on the magnitude of these costs to the country, nor who will pay.

"Carter Holt Harvey urges the government to slow down the process, consider the actions of our trading partners, fully and transparently investigate the risks and consequences of ratifying the protocol, allow all New Zealanders to understand and digest the implications, and only then make a decision."

Hybrid cars coming to the US

Honda plans to sell a gas-electric Civic model in the US next year. Its two-door hybrid Insight is already selling well, and Honda hopes to triple hybrid sales with its Civic. The Civic will be larger than the current Insight model, and Honda hopes to sell at least 12 000 hybrid Civics a year, in addition to 5 000 hybrid Insights.
Toyota have announced plans to build 300 000 hybrid vehicles a year, starting in 2005, and including a minivan and a four-wheel-drive.

MSNBC

NGC out of retail sales

About 288 000 On Energy electricity customers in the North Island were sold to Genesis Energy on August 1. On Energy is owned by the Natural Gas Corporation, who has now withdrawn completely from the retail market. This makes Genesis Energy, the retail arm of Genesis Power, the country's largest electricity retailer. NGC's South Island customers had earlier been sold to Meridian Energy.

More on clean coal

A new power station in Kentucky has set off another round of the US 'clean coal' debate. The coal-fired plant capacity is given only as 'sufficient to power 315 000 homes.' The plant has been cited as a model for the Bush energy policy, because it will emit only a quarter of the pollution from the existing cleanest plant. 'Pollution' does not include CO_2. Emissions recovered will include 98% of sulphur dioxide and 95% of particulate matter. The plant will burn about 2 million tons a year of waste coal that has been dumped in giant heaps across Appalachia. "The Bush administration says more is better since coal is getting cleaner, while environmentalists counter that coal will never be as clean as other energy sources." MSNBC

US CO_2 emissions rose 2.7% in 2000

Carbon dioxide emissions jumped nearly 3% in the US last year while declining in other industrialized nations, according to preliminary estimates. The new figures, compiled by the US Energy Information Administration, show that the United States released 1558 million tons of CO_2 in 2000 *(probably the short ton, of 907 kg—EW)*, up 41 million tons from 1999. It was the biggest US increase in years. The agency attributed the increase in CO_2 emissions to several factors: continued economic growth; lower summer temperatures; and reduced hydroelectric generation because of a drought in the West. Transportation-related emissions jumped 2.6%, while industrial emissions increased 1.8%.

LA Times

New Zealand's CO_2 emissions rose 22% in '90s

New Zealand, whose CO_2 emissions grew 22% in the 1990s, is further away from its commitment to the Kyoto Protocol to cut greenhouse gases, the government said. The latest annual report shows that gross CO_2 emissions grew 2% annually between 1999 and 2000, Energy Minister Pete Hodgson said in a statement. "This data represents the size of the challenge faced by NZ in meeting its climate change commitments," Hodgson said. Overall CO_2 emissions from the energy and industrial process sectors increased by 22% between 1990 and 2000, up from 20% the previous decade. NZ's gross CO_2 emissions were 31.1 million tonnes in 2000, compared to 25.5 million in 1990.

The report is available at:
www.med.govt.nz/ers/en_stats/green2000/

Sorry, too late

EnergyWatch's publication cycle means that we were unable to give timely notice of a conference on electricity industry reform, at Te Papa last August. All the usual suspects were there, spearheaded by Electricity Inquiry chair David Caygill and Minister of Energy Pete Hodgson. Other speakers included Geoffrey Palmer, speaking on *Limits to the Government's Constitutional Powers*, and Comalco's Kerry McDonald, speaking on *The Consumer's View of the Industry's Capacity to Deliver a Fair Electricity Price.* And all for a conference fee of $ 1906.88 including GST.

(See page 13 for a summary of Pete Hodgson's speech EW)

Environmental investigation frozen

The Bush administration has frozen one of the largest environmental investigations in US history, a probe involving dozens of utilities, oil companies and other firms accused or suspected of violating the Clean Air Act. Cases that have already reached settlement agreements totaling billions of dollars have been frozen during a 90 day review, started after Vice President Dick Cheney's energy task force raised questions about whether the law was properly applied and whether companies might be given more flexible alternatives that would help them clean the air and save energy without legal sanctions. The frozen probes focus on whether companies failed to disclose major repairs or alterations to facilities that would require them to install state-of-the-art pollution-control equipment, because the equipment is regarded as a 'new source' of pollution. Even some lawmakers are expressing concern. Senate Judiciary Chairman Patrick Leahy said the review, "is not just telling the companies there's a new sheriff in town. They're telling the companies the sheriff has left town." Wall Street Journal

China's emissions doubted

New studies have cast doubt on reports that China is significantly reducing greenhouse gas emissions.

It was reported in April that CO_2 emissions had fallen 14% while the economy grew by 36%, and that China had increased energy efficiency by 50% and reduced coal use by 30% over five years. But a report issued by the US Embassy in Beijing calls the statistical claims "greatly exaggerated." A Japanese scientist, funded by the World Bank, Nobuhiro Horii, of the Institute of Developing Economies in Japan, looked at how Hunan province handled government orders to shut coal mines. He concluded that local officials told Beijing they had shut the mines, when in fact they kept them open. Interviews with officials in other parts of China led Horii to determine this to be a nationwide problem. Washington Post

Significant climate change impacts predicted for NZ

Climate change is serious and will have implications for all New Zealanders says a new report released in July by Pete Hodgson, Convenor of the Ministerial Group on Climate Change. The report, *Climate Change Impacts on New Zealand*, is based on expert reports and peer-reviewed scientific studies published internationally and in NZ. It updates the last Government-led assessment produced in 1990. "Every aspect of New Zealand life will be affected in one way or another," Hodgson said. "There will be winners and losers in the short term, but there is little question that in the long run our economy and human welfare will be under substantial threat if we don't respond to the issue."

The expected impacts include:

- Drier conditions in eastern New Zealand.
- Risk of more frequent extreme events such as floods and droughts.
- Retreating snowlines and glaciers.
- Rising sea levels, with increased risk of erosion and saltwater intrusion.
- Possible productivity gains for agriculture, coupled with increased risk of droughts and spreading pests and diseases.
- Increased vulnerability of native ecosystems to invasion by exotic species.
- Increased risk to human health from subtropical diseases and ultraviolet radiation, benefits of warmer winters and risks from hot summers. NZ Government

Big-rig pollution scam

Many large diesel truck engines in North America are far dirtier than government regulators believed, because seven major engine makers secretly installed computer 'defeat devices' on 1.3 million heavy duty motors. Between 1988 and 1998, the devices allowed the units to pass US federal emission lab tests—then shut off the emission controls during actual highway driving. According to the US Environmental Protection Agency (EPA), those motors emitted up to three times the legal limit for nitrogen oxide, emitting as much as 65 million extra cars. Months after the EPA discovered the deception, the engine makers agreed to a quick, quiet settlement that will cost them US$ 1.0 billion in fines, re-tooling costs and dedicated investments in cleaner technology. The Vancouver Sun

Forum Membership

Memberships are for twelve months and include at least four copies of EnergyWatch. Membership rates, including GST, are:

Unwaged/student	$ 22.50
Individual or Library	$ 45.00
Small corporate (less than 50 staff)	$ 250.00
Large corporate (more than 50 staff)	$ 900.00

Overseas rates: No unwaged/student rates, Individual/library rate NZ$ 55.00.

Mail the form below, with your payment or order, to Sustainable Energy Forum (Inc), P O Box 11 152, Wellington, New Zealand. A GST receipt or invoice will be sent on demand.

Name: _____

Organisation: _____

Address: _____

_____

_____

Phone: _____ H/W

E-mail: _____

Membership type: _____

Amount enclosed: $ _____