EnergyWatch

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E-mail sefi@actrix.gen.nz Editor: Kerry Wood

"Climate change policy is an exercise in risk management, not accountancy"

The European Parliament has voted to ratify the Kyoto Protocol by a huge majority: 540 to 4, with 10 abstentions. Despite that parliament's limited powers, the ratification debate in the EU seems to be over. Elsewhere it continues. In this issue we report on the debate in Canada, Japan, the US and especially New Zealand, as well as taking a sympathetic look at compliance problems in Australia. We also comment on the Bush Administration's long-awaited alternative to the Protocol, and on China's developing energy policy.

On pages 3–4 we print an invited response from the Employers and Manufacturers Association, to our December opinion piece, then cover other aspects of the NZ debate. This includes Pete Hodgson's challenge on the nature of climate change policy, used in our headline above, and a report on the 'Kyoto Business Summit' in Auckland. On page 11 we look at Australia's ratification problems, and on pages 12–13 we cover aspects of US policy, including a SEF briefing letter to Prime Minister Helen Clark on Bush's 'Global Climate change Initiative.' Page 14 features an article from Canada, which includes the interesting observation that business interests opposed to ratification seem to be counting on public complacency. On pages 15–19 we look at the scene in Japan and China, including a thoughtful piece by Shinji Fukukawa on the need for widespread social changes, implicit in the Kyoto Protocol. We also give a Monitor article on world-wide oil production, consumption, and reserves, which highlights the futility of President Bush's energy policy.

So where is all this taking the debate? We suggest that since CoP-7 at Marrakech, two things stand out:

- A widespread feeling that the real debate is over, and the dominant attitude is now, 'do it.' This attitude is widespread even in the US, as we report on page 13 and in two short articles on page 27.
- The EMA and their fellow-travellers — here and abroad — have completely failed to counter the key point made by Pete Hodgson in our headline. We are dealing with the world of climate risk management and the precautionary principle: economic assumptions are of limited value and benefit–cost analysis is inherently meaningless, because no plausible, long-term, 'do-nothing' scenario is possible.

Many business people appear to be stuck in denial, which may explain why they seem so blind to business opportunities. For opportunities are breaking out everywhere: those in this issue of *EnergyWatch* include: Bio-ethanol as an export fuel (page 15: our present ethanol exports have no value in this particular market because they are petroleum-based); Large-scale offshore windfarming, as in Germany and Ireland (pages 19 and 26); Internal energy trading for large companies (pages 24 and 25); Rural power options (page 28); Revived coastal transport (page 26); and massive, fuel-generating, reductions in municipal emissions, as in Toronto (page 4).

How are we going to explain to our grandchildren what all the fuss was about?

Dr Colin Wells
1961 – 2001

Colin Wells died in a swimming tragedy at St Clair, Dunedin, on the last day of 2001. He was an academic, an engineer — and a member of the Forum's Management Committee.

Colin's background sprung from an Agricultural Engineering degree at Canterbury University, where he gained first class honours. This was followed a PhD, in mathematical modelling of the optimum control of a plant-growing environment. He then worked on policy development for Agriculture NZ Ltd. In 1998 he joined the energy management programme at Otago University, and later became its Director.

Colin saw increasing energy use as a critical environmental risk, and a challenge. He was up to the challenge, developing new analytical methods which will be helpful in measuring the efficiency of other farm activities. A major result was his study of dairy farm energy use, to be published soon and summarised at right. It is expected to make a major contribution to the prosperity of New Zealand's dairy sector in the post-Kyoto environment.

Colin joined the Sustainable Energy Forum at the Dunedin Conference in July 2000, but by then he had already presented a paper at a SEF conference, at Palmerston North in 1998: *Total energy inputs as indicators of agricultural sustainability*. In Dunedin he broadened his scope with a paper on *Solar home architecture* , and broadened it again in Wellington (2001) with a paper on *A new model for the energy sector*. The 'new model' was a look at the demand side of energy, and he made simple but penetrating observations, such as:

- Transport and heating use 70% of energy demand, so they are the best place to put energy management efforts.
- Why do we burn Maui gas to produce electricity and then use that electricity to produce heat in electric resistance heaters when it is much more efficient to burn the gas directly?

Colin was active in the engineering profession and the community, and in May last year he was able to find the time to join the SEF Management Committee, for what was intended to be a three year term. We shall miss him.

Colin is survived by his wife Karen and two children, as well as his parents and two brothers.

(We give below a brief summary of Colin's last work, on dairy farm emissions EW)

NZ's dairy energy use 'lowest recorded'

Key findings from a study of energy use in dairy farming, by SEF member Dr Colin Wells, who died last year:

- Nitrogenous fertiliser use and irrigation pumping are key energy consumers.
- The total primary energy input to the 'national average' dairy farm has doubled from 20 years ago to 18 GJ per effective milking hectare each year, mainly due to increased use of nitrogenous fertilisers.
- It takes around 22 MJ of primary energy to produce one kilogram of milk solids. This equates to an overall energy ratio of 0.59: the primary energy input is 59% of the food energy output. This is lower than any recorded overseas: in the US is is 2.8 and in Europe the range is from 0.67 to 2.4.
- The gross CO_2 emissions from energy use on dairy farms are estimated at 1.1 t/effective ha, or 1.4 CO_2/kg milk solids (excluding animal emissions of greenhouse gases).

EnergyWise News

EnergyWatch

The Euro

From this edition, we are changing from the US dollar to the Euro (€) as the main currency for international cost comparisons. The change symbolises the kind of bus that the US might miss, with the drive for sustainable energy increasingly centred on Europe and Japan. The Euro is worth just over $NZ 2.00 at present, or a little under US$ 0.90.

Layout

In this edition we introduce some minor layout changes, which will hopefully make *EnergyWatch* easier to read. This is also our first 28 page edition, although the standard length remains at 24 pages.

Kyoto will turn off investment and growth

Alasdair Thompson
Chief Executive of the Employers & Manufacturers Association (Northern)

(In our December issue we were critical of the EMA's stance on the Kyoto Protocol. The EMA were sent a copy and invited to make a response, "written for a knowledgeable audience." They were also invited to respond to a particular criticism of their stance by Minister of Energy Pete Hodgson (page 10): "Climate change is an exercise in risk management, not accountancy."
This is the full text received from the EMA EW)

Business in New Zealand is virtually unanimous in opposing the ratification of the Kyoto Protocol until our trading partners signal their commitment to the process, and until a clear indication emerges of how the new global carbon trading regime will work.

The debate over when Kyoto should be ratified is clouded by competing political agendas globally as well as uncertain geophysical objectives. Questionable means are being used to justify political ends.

We can't fathom, for instance, why New Zealand should support either Europe or the US on this issue, while their high levels of trade distorting agricultural subsidies degrade their environments and undermine New Zealand's trade.

Business is also confused by Government statements emphasising the need on the one hand for strong economic and job growth, to restore New Zealand to the top 10 of OECD countries, and on the other erecting 'keep out' signs to investment and trade. Kyoto will add energy costs and more regulation and these are certain to limit further the competitiveness of New Zealand goods and services in international markets.

Poor countries have a poor record in environmental conservation. New Zealand business wants to ensure we have the resources to protect our environment in the same way we want the economy to expand to increase job opportunities here to sustain our standard of living. At present the country is slipping backwards. A recent OECD report placed New Zealand amongst Slovenia, Cyprus, and Portugal.

EMA and our Wellington based organisation Business New Zealand don't take a position on whether the climate is warming as a result of man made carbon emissions. We accept climate change is an issue New Zealand must take seriously.

Nevertheless our two main trade partners, Australia and the US, have rejected the Kyoto Protocol and come up with their own approach. They say they are doing this because cutting greenhouse gas emissions requires a global approach and Kyoto does not involve all countries. Italy too is having second thoughts. New Zealand in its wisdom is backing a Protocol which omits the developing countries though our production profile resembles that of a developing country. Many other countries with higher per capita incomes and which account for far more emissions than us are also not ratifying.

Climate change Minister Pete Hodgson tells us that since New Zealand has much to lose from global warming we should be amongst the first to reduce carbon emissions. In countering this *non sequitur*, our economy is heavily dependent on pastoral agriculture, and the emissions required to farm and process animal products. We stand to lose heavily if trade constraints or distortions add new restrictions to the market competitiveness of them.

Minister Hodgson is also convinced New Zealand has to ratify Kyoto to benefit from the international trade in carbon credits, and to influence the rules under which the Protocol is to be conducted. Both these reasons ring hollow. International trading in carbon credits won't be restricted to Kyoto signatories, and as a signatory, while we may be able to influence the rules, the profile of New Zealand's economy is uniquely commodity dependent amongst the other, mainly European signatories. Our interests are therefore unlikely to find much support.

EMA hosted the summit on Kyoto on February 20th to try and broker a way through the plethora of misunderstanding inherent in the issue. We were keen to learn what opportunities may exist to compensate for all the extra costs looming. We asked Government to tell us what business opportunities could be possible under the Protocol.

Two areas where we could gain were presented: one was the 'windfall' held in the carbon sinks of our forests, and the second is said to be in the development of renewable energy products and systems, waste minimisation, and energy conserving technologies.

The forest windfall could well be valued at several billion dollars, if the ownership question of the carbon credits can be sorted out. It's a big if because if the credits are nationalised, the state's carbon interests would compete with the private ownership of timber held in the same trees. If the

carbon is retained privately it would be freely traded internationally, with enormous implications for trans-national companies' new plantation investments. Countries would no doubt quickly resort to offering subsidies to attract such investment. Either way, these ownership issues are nowhere near resolution. We should not gamble with our future by ratifying the Protocol blindly before this matter is resolved, and we cannot resolve it unilaterally.

Such huge issues mitigate against New Zealand taking early action. Indeed we would compromise our ability to reduce greenhouse gases, and cut our own prospects for growth, if we tried to.

New renewable technology will be developed in New Zealand but in this we are in direct competition with every other developed country's r&d and innovation budget. Still, we are certain to come up with some very good systems. But for many years they couldn't hope to compensate for the loss of jobs in our cement manufacturing plants, steel mill, paper production, milk drying plants and freezing works. When we get more examples of world beating technology to market, and we will, the time it takes from prototype to established market position is typically 10 years. That will take us to 2012, which is probably about the time New Zealand business realistically thinks we should be looking to implement Kyoto carbon constraints.

Toronto's emissions down 67%

The City of Toronto has cut its greenhouse emissions by 67% since 1990. Annual emissions are down from 2.3 Mt of CO_2 equivalent to 765 000 t. Part of this huge reduction was achieved by such simple steps as improving the energy efficiency of city buildings and streetlights, but the biggest portion was due to changes in the treatment of gas seeping from the millions of tonnes of rotting garbage in municipal landfills. The achievement is three times the original goal.

Methane seeps out of most landfills, where it is produced when garbage containing organic matter decays in the absence of oxygen. In 1990, about 75% per cent of Toronto's greenhouse gas emissions came from waste methane. Now it is piped to power plants, where it is burned to generate up to 20 MW of electricity. The city has also started composting more organic material, an activity that doesn't produce methane if done properly. Globe & Mail

Prime Minister's Statement To Parliament

(We quote in full the section on the Kyoto Protocol in Helen Clark's statement to Parliament on 12 February EW)

Legislation will also be introduced to enable the ratification of the Kyoto Protocol on climate change. Ratification is an important step and will give a clear signal that New Zealand believes that all nations must accept their part of the responsibility to address climate change.

Ratification, however, does not mean that NZ must immediately implement policies to reduce greenhouse gases ahead of our trading partners. The government intends to move in step with and not ahead of the broad consensus of western countries on Kyoto.

Implementation of measures to meet NZ's obligations will not occur until enough countries ratify to bring the treaty into force. At that point many countries will be obliged to introduce policy measures, and trading regimes, which will allow NZ to gain benefits to offset the costs involved. The full treaty does not come into effect until 2008.

New Zealand has plenty of time to make the transition required. The overall economic effect is estimated to be of net benefit to NZ. The effects of unimpeded climate change would most certainly adversely affect an economy like NZ's with its large primary sectors. In preparing to ratify the Kyoto Protocol, we are, after all, participating in an international process to slow down climate change which has the potential to cause billions of dollars of damage and affect hundreds of millions of people.

2001 the second hottest year

On 19 December the UN's World Meteorological Organisation said that the Earth's surface temperature in 2001 was expected to be the second highest in the 140 years of records. "Temperatures are getting hotter, and they are getting hotter faster now than at any time in the past," said Michael Jarraud, deputy secretary general of the WMO. Nine of the 10 warmest years since 1860 have occurred since 1990, the agency said, and temperatures are rising three times as fast as in the early 1900s.

National Interest Analysis: New Zealand and the Kyoto Protocol

(An edited version of the summary of a government-sponsored study released on 13 February EW)

More than any other developed nation, New Zealand depends for its prosperity on an equable and stable climate. The NZ economy is grounded in primary production, with an excellent climate for pastoral farming. This makes us particularly vulnerable to climate change. NZ has a clear and direct interest in supporting efforts to minimise climate change.

The United Nations Framework Convention on Climate Change has now been ratified by almost all countries. Voluntary commitments agreed under the Framework Convention were unsuccessful, and the Kyoto Protocol is the next development. Any alternative to the Kyoto Protocol would likely involve many more years of delay in reducing greenhouse gas emissions.

NZ has taken a positive role in developing the Protocol. Continued commitment will maintain our standing and influence in future negotiations. Abandoning the Protocol would have the contrary effect, damaging our credibility and reputation as a global citizen — not only in climate change forums but also over a wide range of international issues.

NZ is one of the few developed countries that stands to make a small net economic gain from the first Kyoto Protocol commitment period. This is because carbon sink credits from plantation forests will more than offset the emissions reductions required. Carbon sink credits will be an internationally tradable asset.

Economic benefits are likely to include technology and energy efficiency improvements. Emissions limits will create incentives to develop and adopt new technologies less reliant on fossil fuels. Energy efficiency incentives will be enhanced, producing the double benefit of lower emissions and higher productivity per unit of energy. Rejection of the Protocol would carry the contrary risk of falling further behind competing nations in energy efficiency and trailing a significant shift in energy technology rather than helping to lead it.

Obligations under the Protocol

The Kyoto Protocol would require NZ to ensure that total greenhouse gas emissions for the first commitment period (the five years from 2008 to 2012) are no more than five times the 1990 level, or that we have taken responsibility for any emissions above this level through the flexibility mechanisms and sinks provisions of the Protocol. We would be required to obtain credits for excess emissions, from domestic forest sink activities or from emissions reductions made outside NZ. Other obligations for NZ would be to:

- Make demonstrable progress, by 2005, toward achieving its commitments under the Protocol.
- Put in place, by 31 December 2006, a national system for estimating greenhouse gas emissions, and carbon uptake by sinks.
- Establish a register to record and track changes to NZ's assigned amount of emission units under the Protocol.
- Engage in international co-operation in relation to policies and measures, technology transfer, scientific and technical research, and education and training.
- Assist developing countries to implement their existing commitments, and comply with any future negotiated agreements to further reduce emissions. The nature, costs and benefits of complying with these future commitments is at present unknown.

NZ's emissions management task

Over the first commitment period, it is projected that NZ will emit between 415 and 440 million tonnes (Mt) of carbon dioxide (CO_2) equivalent. NZ's initial assigned amount (translating into a corresponding holding of 'emission units') for the commitment period is 365 Mt of CO_2 equivalent; five times the 73 Mt emitted in 1990, times 100%, which is NZ's target under the Protocol.

NZ is projected to gain, during the commitment period, additional assigned amount ('removal units') of 110 Mt of CO_2 equivalent due to the growth of trees planted on land that has been converted (or reverted) to forest since 1990. Removal units can be counted against first commitment period emissions in NZ or sold internationally, but doing so would establish a contingent liability for emission units if the forests were generated were subsequently harvested. Excluding removal units, NZ's first commitment period emissions are estimated to exceed its assigned amount of emission units by 50 to 75 Mt of CO_2 equivalent.

Counting removal units, NZ's commitment period emissions will be less than its total assigned amount of emission units by an estimated 35 to 60 Mt. While removal units from sinks are likely to provide a significant benefit to NZ, the amount of this benefit will depend on future planting, whether forests are replanted, future harvesting and how much scrub had regenerated since 1990.

Effects of entry for NZ

Economic

Ratification and entry into force of the Protocol would have economic effects on NZ. These would largely depend on the domestic policy measures chosen. The effects would not be determined by ratification itself.

Modelling studies suggest that gross national income would increase during the first commitment period if sink credits were sold overseas. The studies also suggest that emissions pricing would lead to a slight contraction of domestic economic activity, equivalent to a small reduction in growth. Emissions pricing could cause reduced output from emissions-intensive sectors and increased output from non-emissions-intensive sectors.

There would also be economic effects on NZ if the Protocol entered into force without NZ having ratified it, as a result of the adjustment of global markets.

Environmental

Direct environmental effects of the Protocol, in the form of avoided climate change, will be negligible during the first commitment period because of the inertia of the climate system. But the first commitment period is the initial key step in a long-term process. Longer-term effects depend on future emissions beyond the first commitment period. Modelling studies indicate that:

- There would be a very small reduction in the expected temperature increase by 2100 if emission reductions applied only to the first commitment period and global emissions reverted to business-as-usual afterwards.
- Climate change risks could be minimised if emission limits become more stringent and included developing countries in subsequent commitment periods.
- A wide range of ancillary environmental benefits and damages could occur due to domestic climate change policies. These depend heavily on domestic policy choices, their specific implementation, and interaction with other environmental objectives.

Social and cultural

Like ancillary environmental effects, social and cultural effects are an indirect outcome of domestic policies and measures. Because NZ can choose its own domestic policies, it is considered that:

- There will be no direct social or cultural effects from ratification of the Protocol itself, but there could be indirect effects as a result of the economic and environmental effects of the Protocol and domestic policies for NZ.
- Ratification of the Protocol is consistent with the Treaty of Waitangi, but policy measures will need to be individually assessed in terms of the Treaty.
- Ratification of the Protocol will have no effect on human rights.

Public Consultation

Process

A two month public consultation and submission period was held in late 2001, on ratification and the development of policy options for meeting Kyoto obligations. Nine thousand information packs and 3750 supplementary working papers were distributed. Seventy nine meetings (including 15 Maori focus meetings and hui) were held, involving around 1780 people. Two major economic studies by Australian Bureau of Agricultural and Resource Economics (ABARE) and PA Consulting were released to inform consultation.

Findings

Around 550 submissions were received:

- The majority of submitters accepted that there was a need to respond to climate change, and in particular to reduce greenhouse gas emissions. A significant number of submitters expressed support for a delay in ratifying the Protocol.
- A minority of submitters opposed ratification altogether.
- A minority of submitters supported immediate ratification.

Reasons for delaying or opposing ratification focused on the possible economic and competitiveness effects of policies under the Protocol, and whether it was the appropriate framework for achieving the desired outcomes. Some submitters supporting a delay in ratification included as reasons:

- Waiting for more information, particularly on likely implementation policies and/or economic and competitiveness effects.

- Waiting until other Annex I trade partners or competitors had ratified the Protocol.
- Waiting until binding emissions limitations were agreed for major developing country emitters or trade competitors.

Some submitters supporting ratification included as reasons:

- Environmental benefits expected to result from policies under the Protocol.
- Economic benefits, particularly the importance of NZ maintaining a 'clean green' brand.

There is a low level of real understanding within the wider community about what the Kyoto obligations entail; particularly in written responses.

Preliminary results from a public wider survey carried out by UMR from 19–20 January 2002 show: 47% of those surveyed favour the Government 'signing up' to the Protocol 6% are opposed 42% 'need to know more.'

Address to the EMA Kyoto Protocol Conference

Dr Michael Cullen, Minister of Finance

(We assume that EnergyWatch readers will be familiar with much of Dr Cullen's argument, and we give an edited version of the second half of his speech EW)

We must accept some uncertainty over possible effects of the Kyoto Protocol on New Zealand's competitiveness and productivity, and on sectors and regions. That is true with all economic analysis, but it is especially so with climate change because the future international price of carbon will be set by a market that does not yet exist.

Assumptions

Assumptions are the economist's weapon of choice against uncertainty, and by lining up enough of them it is possible to model the economic effects of just about anything. The government and the private sector have both commissioned a range of economic analyses in recent months, and I want to stress a couple of points about what these studies do and do not tell us.

First, the studies do not tell us what the economic consequences of ratifying the Kyoto Protocol would be. The difference between a general equilibrium model and a real economy should be obvious enough, yet we have seen figures deployed as if they were definitive predictions. The modelling has tested the effect of applying a carbon price evenly — to all emitters — throughout the economy. In reality the government has a much wider range of policy options, and we will be using a combination of them. This includes measures already under way, such as the National Energy Efficiency and Conservation Strategy and minimum energy performance standards, whose effects the models do not allow for. Nor can the models allow for changes in technology, probably the most significant factor determining the economic effects of the Protocol.

What the modelling does tell us is that domestic policy will be crucial to maximising the benefits and minimising the costs of ratification — and that the interests of some sectors of the economy must be carefully safeguarded. Beginning with the premise that the effects of carbon pricing should be spread as evenly as possible, we learn from the modelling that immediate and universal application of the price would have the contrary effect, hitting some sectors and industries much more than others. We are very conscious of this as we develop our preferred domestic greenhouse policies. We have absolutely no interest in adopting crude or extreme climate change policies that would run counter to that goal.

Key principles

A set of key principles is guiding our policy development. *(see page 8 — EW)* They include the principle that policies need to be consistent with a growing and sustainable economy. This has several important implications. Policies must recognise the importance of maintaining the competitiveness of all our industries, including new entrants. Achieving this means moving carefully and progressively to a full cost on emissions, reaching that point only when competitiveness issues have been addressed by the evolution of the Protocol into a fully global agreement.

Consistency with the goal of sustainable growth means avoiding inappropriate distortionary effects on investment, including inward investment. And it means promoting the economic opportunities that come with climate change and the Protocol. Policies must also be responsive to the changing international context for action on climate change. We must recognise some of those immutable uncertainties about the future, including changes

in our emissions profile, in technology, and the international environment.

Another implication is that policies must be adaptable and flexible, recognising the need for business and others to be able to accept them and respond to the policy changes that will inevitably be necessary in years and decades to come. The government does not see the first commitment period as the time everything will and must happen. It would be a mistake to assume every policy instrument available to us will be deployed from 1 January 2008. The timing needs to be right.

A principle of particular interest to this audience, says that policies must result in permanent reductions in emissions. They must avoid 'carbon leakage:' the relocation of high-emitting industries to countries that do not have emissions reduction targets. Clearly it is not in NZ's economic interests to drive such industries offshore; nor would it be consistent with the fundamental purpose of the Protocol, which is to reduce global greenhouse gas emissions. As with the need to maintain the competitiveness of NZ business, this principle argues for a phased approach to greenhouse policy.

Opportunities

I want to close with a very important reminder: business must focus on the opportunities, not just the risks. The Protocol will change our energy use habits by accelerating the shift away from finite fossil fuel resources. The countries that ratify the Protocol will be those where the sustainable technologies of the future are most rapidly developed and adopted. The stragglers will risk being spectators to growth and innovation elsewhere.

One of NZ's competitive advantages over other developed nations is cheap electricity, but — probably because it is cheap — we have not been very efficient with it. Under the Protocol our power will still be cheap, but there will be new incentives to make more efficient use of it. If at the same time we can reduce greenhouse gas emissions while improving productivity, there are no losers. If we achieve the target of the National Energy Efficiency and Conservation Strategy, which calls for a 20% improvement in energy efficiency by 2012, we will have cut by a third our estimated excess of business-as-usual greenhouse gas emissions over our Kyoto target.

In the post-Kyoto world there will be international demand for new and improved technologies that increase energy efficiency and reduce emissions. Industrial processes, consumer products and agricultural technologies will be redesigned. There is no reason why NZ should not originate and profit from such advances. This is particularly true of agricultural technologies: no other developed nation has a greenhouse gas profile as heavy in agricultural emissions as we do, which means none has the same incentive to develop processes and technologies for reducing agricultural emissions. The demand for such technologies and processes will come from less developed nations as the Protocol expands, and as developed nations seek to sponsor emissions-reducing projects under the Protocol's Clean Development Mechanism.

The government and the NZ Business Council for Sustainable Development — one of the sponsors of this summit — are co-operating on a climate change project to identify in some detail the business opportunities of a post-Kyoto economy. Business must be alert to the risks that poorly conceived greenhouse policies would bring, and bring them to the attention of the government. But it is every bit as important that you think strategically about capitalising on the change. In the long run, that is where the profits lie.

Government sets greenhouse policy principles

On February 13 the NZ government announced that Cabinet has adopted a set of key principles to guide the development of climate change policies:

- Policies must result in permanent reductions in emissions over the long term.
- Policies need to be responsive to the changing international context.
- Policies need to be consistent with a growing and sustainable economy.
- Policies will not disadvantage the vulnerable in our society.

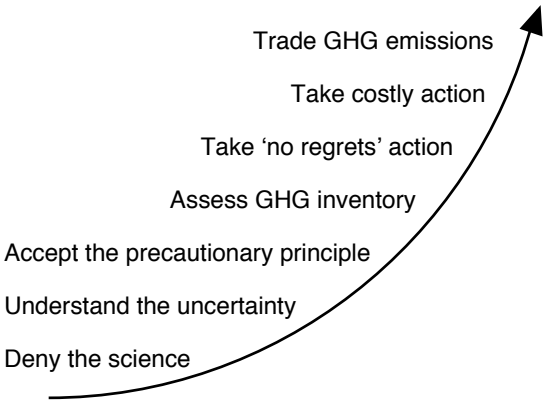
Impressions of the Kyoto Business Summit

Steve Goldthorpe

The 'Kyoto Business Summit' was a conference held in Auckland on 20 February 2002. It was heralded as "an opportunity for New Zealand business to understand the rationale behind the Kyoto Protocol and the need for sustainable development." The theme was, "Welcome to the carbon-constrained world." The one-day conference was very well attended by delegates from a wide range of businesses in the region, many of whom attended with the express purpose of learning what the Kyoto Protocol is all about. It is therefore most regrettable that most delegates went away at the end of the day either confused or seriously misinformed.

In my 20 years experience of working on all aspects of the Greenhouse question, I have come to appreciate that there is a learning curve to climb to progress from business-as-usual thinking to the new paradigm which involves effective integration of the carbon-constraint with the other constraints operating on business. The chart summarises my observations of where people are coming from as they progress up that learning curve.

A spectrum of responses to the Climate Change issue



The presenters and delegates at the conference were at different points on this spectrum as they addressed the three principal issues of the day; the Science, the Economics and the Politics.

The Science

The first session of the conference addressed the scientific background. Dr Bob Watson, Chairman of the International Panel on Climate Change (IPCC) and Chief Scientist and Director ESDD, World Bank, summarised in 20 minutes the outcomes of decades of studies by thousands of scientists who have established a good understanding of the extremely complex multi-disciplinary issues and mechanisms that comprise the Greenhouse problem. I venture to paraphrase the accumulated wisdom on the complex matter with the simple historic phase: "Houston! We have a problem!"

Including due consideration of scientific uncertainty, Dr Watson explained that the IPCC has established, beyond any reasonable doubt, that the Greenhouse problem is real. The remaining uncertainty is concerned with the defining the exact scale of the problem and quantifying how the outcomes for the environment will be affected by the future global rate of fossil fuel exploitation.

Dr Watson's presentation was set against a presentation of equal length by Dr Chris de Freitas from Auckland University, who focussed only on issues of uncertainty and methodology, such as the heat island effect, which had already been taken into account by IPCC. In questioning, Dr Watson dismissed most of the points raised by Dr de Freitas. The 'greenhouse sceptic' argument of the 1980s is now recognised at the international policy level as irrelevant. The informed international community is higher up the learning curve and recognises that the precautionary principle should be applied to accommodate the uncertainty.

However, the apparently even-handed, juxtaposition of these speakers at the conference seriously misled and confused delegates by giving the impression that codified debate by scientists of highly complex issues meant that it is undecided as to whether or not the Greenhouse problem is real. In talking with delegates it was clear that the message they had received was that there is no consensus on whether there is a problem, what had caused the problem and what could be done about the problem. The common misconception that people can choose whether or not to believe in climate change was reinforced by the conference debate. The real choice facing business was not presented to the delegates. That choice is whether or not to factor the real climate change imperatives into future planning.

The Economics

There was a presentation by the Australian Bureau of Agricultural and Resource Economics (ABARE), who had previously carried out a study for the NZ Government that had concluded that there would probably be a marginal net benefit to the New Zealand economy from ratification of the Kyoto Protocol. There was also a presentation by the New Zealand Institute for Economic Research (NZIER), who had previously carried out a study for NZ business that had concluded that there

would probably be a slowing in the rate of economic growth. The conference debate identified that the use of economic models to project long term effects on GDP was entirely dependent on the modelling assumptions. Furthermore, it identified that the models are unable to contrast minor impacts on the rate of change in medium term GDP growth with the potential long-term fundamental dislocation in agricultural productivity.

Despite the inconclusive outcome from the economic modelling debate, after lunch there were five consecutive presentations by sector representatives which all asserted that ratification of the Kyoto Protocol will be bad for New Zealand's international competitiveness. The contrasting presentation by the New Zealand Business Council for Sustainable Development could only promote broad generalisations about business opportunities.

This discussion of economics switched the conference debate from the bottom end of the learning curve directly to the top end, without any consideration of the logical steps involved in translating the need to reduce global fossil fuel use to the use of economic drivers as one possible means of encouraging that reduction. Other ways for business to plan to live within a carbon-constrained world were simply not on the agenda.

The Politics

Dr Michael Cullen, presenting the New Zealand Government's position on behalf Pete Hodgson, opened the conference. Dr Cullen explained the international political background to the Kyoto Protocol and recognised the groundwork done by Simon Upton to obtain good terms for New Zealand in the Kyoto Protocol. He identified that New Zealand has international influence much greater than its proportion of global Greenhouse Gas emissions. He explained that ratification of the Kyoto Protocol would have no effect until it came into force for all signatories at the same time. It is the Government's view that, at that time, it will be better for New Zealand to be inside that group of countries than outside of it. Therefore the New Zealand Government has decided in principle to ratify the Kyoto Protocol later this year. One objective of this public statement of intent is to provide more certainty for business in planning how to operate in a carbon-constrained world. It is a pity that the ministerial address is not included in the proceedings of the conference that are published on the internet. *(but see pages 7–8 EW)*

Bill English presented the contrary political view at the end of the day. He pointed out that the "rules of the game" that will be required to translate the Kyoto Protocol target into domestic policy are not yet fully worked out. As is the appropriate role for the Leader of the Opposition, he was critical of the Government's progress in developing appropriate domestic policy. He advocated that ratification of the Kyoto Protocol should be delayed if adequate definition of the corresponding domestic policy cannot be achieved in the next few months.

In summary, my impression of the Kyoto Business Summit was that it had been more concerned with positioning than with educating. I left the conference saddened by the polarisation of positions leading up to the next round of public debate on this crucial environmental issue. In a country that prides itself on an ethic of informed consultation, I believe that this conference was a missed opportunity for genuine open dialogue to help the drivers of New Zealand's industry to understand the rationale behind the Kyoto Protocol and what the carbon-constraint means. Furthermore, I fear that it was no accident that many delegates left the conference confused and seriously misinformed about what the Kyoto Protocol is all about.

Best shelter from the storm

Pete Hodgson, Minister of Energy

(On 20 December the NZ Herald published an article by Pete Hodgson under this heading. Much of it will be familiar to EnergyWatch readers but the last two paragraphs will bear repetition EW)

The Government is well aware that bad climate change policy imposes unnecessarily severe costs on the economy. That is why we are consulting widely before settling on a policy package — and why we will consult widely again when we have developed that package. In the meantime, some economists have attempted to gauge the cost of ratification by guessing which policies will be used and then estimating the results. Extreme policy scenarios have produced some extreme cost estimates, which have been brandished noisily by various industry groups either opposed to ratification, or staking out negotiating positions.

Such analyses have their place — and their limitations. Climate change policy is an exercise in risk management, not accountancy. The short-term costs of action on climate change can be roughly

estimated, but the costs of doing nothing, while undoubtedly large, are virtually impossible to quantify. Good risk management entails several obvious stratagems, including emission reduction, energy efficiency, research and development, contingency planning and an effort to define and capture the business opportunities of the post-Kyoto business environment. The business community would serve its own interests best by thinking ahead on these issues. The Government needs the considered input of business. That is how we will maximise the benefits and minimise the costs.

Canberra's problem

Steve Goldthorpe

The best estimate of Australia's expected GHG emissions in 2010 is 143% of their emissions in 1990. That increase is primarily due to the expected growth in Australia's exploitation of its natural resources to meet the demands of the world market for commodities such as aluminium, magnesium, steel, coal, liquefied natural gas, methanol, ammonia and so on. The projected rate takes account of expected improvements in process efficiency and reductions in fugitive emissions.

The Kyoto Protocol limit for Australia is 108% of 1990 GHG emissions by 2008–2012. Whilst some improvements are possible, it is simply not possible to make a 25% reduction (143% to 108%) in the amount of GHG that is emitted when converting the available resources to the required products. Therefore, in addition to improving efficiency as far as possible, Australia would have to reduce their expected level of exports to meet their Kyoto target. Australia does not have much land that can grow forests, like we have.

Of course, the business interests in Australia don't want to have their hands tied. But also, from the point of view of the global atmosphere, there is no point in constraining efficient production in Australia if natural resource exploitation plants would be built elsewhere to meet world demand. Furthermore, if those plants were built elsewhere using poorer quality resources and/or less efficient technology, then the global climate would be worse off. The answer is to reduce world demand for commodity resources, but that will require something much more radical than the Kyoto Protocol.

Accordingly, Australia is unlikely to ratify the Kyoto Protocol when it would make them legally obliged to meet a fixed limit on GHG emissions by 2008–2012, when both the Australian economy and the global climate would likely be the worse for it.

Protocol not rejected

However, the Aussie's position is far from 'rejecting' the principle of the Kyoto Protocol. In his speech for Kyoto, the Australian PM said, "We are prepared to ask industry to do more than they may otherwise be prepared to do, that is, to go beyond the 'no regrets' minimal cost approach where this is sensible in order to achieve effective and meaningful outcomes." This is still the Australian position.

They are taking the Kyoto Protocol number very much to heart as a target to aim towards. The Australian Greenhouse Office has a huge budget to drive a very wide range of programmes to promote renewable energy, energy use efficiency and demand reduction. All new industrial developments must, as a part of their consenting requirement, produce a GHG inventory and demonstrate that they are doing all that is reasonably possible to minimise their Greenhouse footprint. (In contrast, the requirement to think about greenhouse implications is still not an RMA requirement, although it would be a very simple matter to make it so)

Of course, there are the vocal red-necks and the greenhouse sceptics in Australia, as elsewhere, but down in the engine room the guys have seen the writing on the wall and are doing everything they can to prepare their energy intensive industries for effective and meaningful operation in a carbon-constrained world. In my consultancy work for Australian clients I try to do my bit to help them to move in that direction.

(There is an example of Australia's problem on page 27, where we report a Japanese project to synthesise DME in Australia, for use as a fuel in Japan. EW)

Bush to go for climate stabilisation

> *"President Bush announced today that the United States has agreed with other industrialised nations that stabilisation of carbon dioxide emissions should be achieved as soon as possible. The United States also agreed that it is timely to investigate quantitative targets to limit or reduce carbon dioxide emissions."*

But note the date: 7 November 1989...

NY Times

US Global Climate Change Initiative 'creative accounting'

(SEF has recently written to Prime Minister Helen Clark, expressing the view that the new US energy policy is creative accounting. The full text of the letter is given here EW)

Dear Helen Clark

I write to express our views and to present analysis on the recently announced US Global Climate Change Initiative, as background information for your forthcoming visit to President George Bush. We are concerned that the initiative will be seen as an alternative to the Kyoto Protocol. Indeed it is presented as, *"comparable to the average progress that nations participating in the Kyoto Protocol are required to achieve."* However, one of our members, an Energy Systems Analyst, has studied the supporting documents and describes that statement as "creative accounting."

Nonetheless, the initiative does have three interesting sub-themes, to be applauded:

- Additional funding for climate change studies;
- Development of technologies to reduce emissions, including work on methane emissions from livestock; and
- 'Escape clauses' such as, *"It sets America on a path to slow the growth of greenhouse gas emissions, and — as the science justifies — to stop and then reverse that growth."*

We see this hedging as a very welcome response to domestic and international pressure.

As Dr Robert Watson, chairman of the IPCC put it:

> *"Japan, brilliantly in my opinion, seized the opportunity in 1973, at the time of the oil crisis, to sell... fuel-efficient cars to the rest of the world. It was the time they penetrated the market in America... So I would say to American industries, 'Do you want German or Japanese industries to produce energy technology for the future, or do you want to be part of the revolution?'"*

Energy Minister Pete Hodgson has also stated that he believes the US will restate its position before 2008, and another prediction is that this will happen as early as the proposed Moscow conference in 2003. This would be in time to influence the negotiations for the Kyoto Protocol's second commitment period, beginning in 2005 for implementation after 2012.

We believe that the Global Climate Change Initiative statements significantly overstate the case. Summarising our analysis of the supporting data:

- The real outcome is an *increase* in CO_2 emissions of 11% between now and 2012, compared with a 16% increase under business-as-usual.
- The claimed 18% reduction in emissions intensity (emissions/GDP) is achieved by taking credit for business-as-usual energy efficiency improvements. Our analyst suggests that a more accurate statement would be:

  "Under business-as-usual conditions there will be 13.6% reduction in greenhouse intensity in the US over the next 10 years. The measures announced are projected to result in improving this figure to 17.5%. This means that GHG emissions in 2012 will be 4.4% lower than under business-as-usual."

- The claim that the US emissions reduction is equivalent to taking 70 million cars off the road appears to be in error. A more reliable estimate would be 7 million cars.
- The claim that the goal for the US in 2012 is comparable with the goal for parties to the Kyoto Protocol is nonsense. It appears to confuse reductions relative to business-as-usual with reductions relative to 1990 emissions.

Another difficulty with the initiative is an over-reliance on market forces — to the extent of portraying regulations as expensive and ineffective. The result for large industries would be a satisfactory cap-and-trade proposal. However, for transport this approach is limited to research funding and tax breaks for purchasers of efficient vehicles, which seem unlikely to achieve much.

We offer these views and analysis to you and your officials in the hope that they will aid you in your forthcoming discussions with President Bush, to distinguish between spin and real changes of direction.

Climate protection begins at home

Paul Schell, Mayor of Seattle
Seattle Post Intelligencer, 20/12/01

I've been asked why, as mayor of Seattle, I chose to take a stand on a global issue like climate change. Isn't this issue better left to national and international authorities? The answer is simple: Global climate change is an acutely local problem. It may sound remote and difficult for a city to influence. But in the end, even the biggest global problems begin and end at home. Particularly in the absence of federal leadership on the issue, local initiative can pave the way to global solutions.

Global warming threatens the signature resources that define the Pacific Northwest's identity and support its economy — water resources, energy, forests, salmon, agriculture, our quality of life. Consider one impact: Snowpack in the Cascades is projected to decline by more than half during our children's lifetimes. Think about what that means for water supply, hydroelectricity and fish. Think about the fierce annual battles for summer water supply we have in the Northwest now, then think about cutting our water storage capability in half. The language of climate change is global. But the action is profoundly local.

International agreement

Without much notice in the US media, the train to stop global warming left the station out of Marrakech, Morocco, on 9 November. That's where the international community hammered out agreement. The goals are modest — we'll have to go much further to prevent catastrophic global warming — but it's an urgently needed start. The one passenger that missed that Marrakech train is the world's most prolific producer of global warming pollution — the US.

And yet the rest of the world is moving forward. Other countries decided to forge ahead, in part because they know that the costs of global warming on the scale now anticipated by scientists are simply unbearable. They also know that there are enormous economic opportunities awaiting those who get ahead of the curve in the global transition to clean energy and efficient transportation. Those who dally will be left behind to cope with the fallout of continued over-reliance on fossil fuels — the environmental damage, the economic disruption and the security risks associated with our addictions to coal, oil and gas.

Local initiatives

Whatever happens in the other Washington, Seattle isn't waiting, because it's the right thing to do and because it helps make Seattle a better place to live.

Take our energy conservation programs. Over the past two years, when energy markets went haywire, Seattleites saved $114 million (€ 132 M) in power costs due to City Light-sponsored energy efficiency upgrades over the past two decades. Using more efficient lights, appliances, motors and construction practices, we get better energy service, more comfortable buildings, higher productivity and more competitive businesses while saving a bundle on our energy bills. These investments are now hard-wired into our community, returning financial savings and cleaner air year after year.

Local initiatives

Local climate protection initiatives aren't about sacrificing local priorities in the name of global environmental goals. On the contrary, the best things we can do to help protect the global climate are some of the best things we can do to improve Seattle. Traffic reduction, salmon habitat restoration, affordable housing, solid waste reduction and recycling, clean transportation alternatives and controlling energy costs are some of Seattle's highest priorities. And they are also the most effective things we can do to be part of the climate solution. We're already on the hook for the costly adaptations to our power and water systems that are in store due to climate changes we've already caused. But we can avoid much costlier fixes by getting ahead of the game and reducing our emissions of global-warming pollution.

An authoritative recent report concludes that the Northwest stands "poised for profit," on the brink of a clean energy revolution that could be the engine for the next wave of regional economic expansion. We have all the tools to be at the forefront of this technology transformation.

We create global warming at home in our communities, where we drive the cars and use the power and generate the trash that causes greenhouse gas emissions. We experience the damages at home, where we'll pay the tab for coastal erosion, summer drought, winter floods and the expanding reach of tropical diseases. We can begin to solve the problem at home too. And we'll make this a better place to live and to work in the process. We've started down this road and, as a community, I hope we stay the course. We'll all benefit as a result.

Canada's Kyoto decision time

Michelle Lalonde, Montreal Gazette

(Canada has a special problem in ratifying the Kyoto Protocol — an economically dominant neighbour which has rejected the Protocol. In January the US ambassador to Canada went so far as to say:

> "We just think that Kyoto is not in the interests of the United States or its economy and we don't think it's in the interests of the Canadian economy either."
>
> *EW)*

Decision time is looming for Canada to sign the Kyoto accord, or ditch it. Most climate experts agree that letting climate change go unabated will hurt the global environment, human health and quality of life in the next century. But business groups say they don't want Canada to rush into something it cannot afford. Some economists say the cost will be modest, especially when we consider the long-term environmental and health-related costs of climate change.

If Canada ratifies, it must limit its net greenhouse gas emissions between 2008 and 2012 to an average of 6% below 1990 levels. To meet this commitment it would have to reduce its projected emissions by about 26%.

Big business groups and right-wing politicians are pushing the federal government to back off. They say ratifying the Protocol would cripple Canada's economy and not significantly slow global warming.

But climate experts say Canada can afford the cost of complying, especially when you consider what it will cost to let global warming continue unabated. "The doom and gloom statements by industry are overblown," says Ken Ogilvie, executive director of Pollution Probe. "They do have major points to make around the costs to specific industries and competitivity with the US, but the bottom line is they know we have to get on with the job. The cost of inaction has got to be much higher than action, if you look at the cost of more ice storms, droughts on the Prairies, sea level rising in Prince Edward Island and lower levels in the Great Lakes, or the increase in heat waves and smog episodes in large urban centres.

"If climate change goes ahead unchecked, Canada will suffer enormous costs; social, environmental and economic," says Matthew Bramley, a climate-change expert with the Pembina Institute in Ottawa. "We are already seeing rising sea levels, changes to forestry and agriculture. So for us not to co-operate in efforts to reduce emissions is really inexcusable."

'When' or 'if'?

The debate is raging in Ottawa, where cabinet ministers who had previously spoken with confidence about "when" Canada ratifies the Kyoto Protocol, now speak of a debate about whether Canada will ratify at all.

Economic analysts have done extensive modelling, including the cost to Canada of cleaning up its act even if other countries do not. Richard Loulou, an adviser to the Analysis and Modelling Group of the federal government's National Climate Change Process, is one. Even in the worst-case scenario of Canada acting alone, Loulou says, the cost of complying would be "moderate." The models show complying would mean, at most, a 3% reduction in growth of Gross Domestic Product. Canada's GDP is expected to grow by 30% in the next 10 years, so this would mean Canada's GDP would be about C$ 1.33 trillion instead of C$ 1.37 trillion in 2010 (€ 950 – 970 bn), a difference of CS 40 billion.

Loulou puts some important caveats on the figure of C$ 40 billion (€ 2.8 bn). Firstly, it is very unlikely Canada would be the only country to act, so that number is probably high. European countries are already well advanced on implementing reduction measures. Several American states and the US Congress have come out strongly in favour of emissions-reduction legislation. "We think and hope that in the next few years, there will be a greenhouse- gas reduction policy in place in the US," Loulou said.

Secondly, it is the biggest, most polluting sectors of the economy that would be hardest hit. Other sectors, like renewable energy would actually boom. This is why energy-intensive industries are particularly worried about legislation, but Loulou notes the federal government has many tools with which to cushion the blow to these sectors, and spread the cost of complying around.

Public complacency

The key to whether Canada ratifies, environmental and business groups agree, is public awareness of the problem. Business lobbyists are counting on public complacency to discourage the government from ratifying. Michael Cloghesy, head of the Centre Patronal de l'environnement du Québec , says "There is no pressure from the public. They don't know what climate change is about." He says the public mixes up climate change with ozone depletion, air pollution, smog and other environmental issues.

Japan eyes ethanol to cut greenhouse gas emissions

ABC/Reuters

Japan is considering introducing a policy of blending ethanol with gasoline to reduce motor vehicle emissions. Industry officials say use of the bio-fuel in Japan, if mandated by the government, would create a big export opportunity for ethanol-producing countries like Brazil. Japan, the world's second largest consumer of gasoline after the United States, has no extra agricultural produce to be used for fuel output.

Mitsui, which is backing ethanol's introduction to the Japanese fuel market after an import pact with Brazil last month, told Reuters world-wide use of the alcohol for fuel was expected to double to about 35 million m^3 over the next several years. "We estimate the potential size of Japan's ethanol market at nearly 6 million m^3 a year, based on the assumption that Japan would adopt an ethanol-to-gasoline blending ratio of 10%," said Mitsui biomass project manager Norimichi Okuda. "This market will be realised if the government decides on the mandatory use of ethanol as fuel additive," he said.

An ethanol blending ratio of 10% is common in the US, the second largest producer and consumer of ethanol. It produces the fuel from corn. In Brazil, the top ethanol producer and consumer, the level of sugarcane-based ethanol in the nation's gasoline is now 24% (up from 22% last year). The Japanese have not used ethanol as fuel because they have not had any compelling need, but Japan has now turned serious about using 'green' energy.

Government policy scrum

Japanese officials responsible for implementing the Kyoto targets said they wanted to popularise ethanol, since the Protocol excludes CO_2 emissions from biomass fuels. "Blending ethanol with gasoline may be one option we will have to take to achieve reduction targets for CO_2 emissions," said Tsuneo Takeuchi, director of the climate change policy division in the Environment Ministry. Mandatory use of ethanol for cars in the same blending ratio as Brazil would reduce Japan's CO_2 emissions by about 2%, he said.

Transport sector CO_2 emissions accounted for more than 20% of Japan's total emissions last year. But Environment Ministry officials said they would have to win support from the energy and transportation arms of government for laws on mandatory use of ethanol. They also need the co-operation of the oil refining industry. Safety, durability and emission tests would also have to be conducted on cars using blended fuel.

Business opportunity

However, Mitsui and Brazil's Coimex Trading have agreed to develop a market in Japan for imported sugar-based ethanol, and introduce ethanol-producing technology developed by Mitsui to Brazil. Mitsui's Okuda said nearly 30 million m^3 of ethanol is produced from sugarcane, corn and other biological resources world-wide for this year, of which 17–18 million m^3 was used for motor fuel. "The size of the ethanol market should grow as industrialised countries must comply with emission targets set out by the Kyoto Protocol," Okuda said. Ethanol-blended petrol is already used for cars in Brazil, the United States, Canada and Sweden. Argentina, Australia, India, Thailand, and China are preparing to use the blend.

Activating the Kyoto Protocol

Japan Times

The Kyoto Protocol is expected to take effect later this year. The agreement, signed in 1997, has been dogged by nuts-and-bolts issues involving operating rules. Now that ratification is assured by major signatories — but without the US — the real job of implementing the agreement is about to begin. Under the agreement, Japan is committed to cut greenhouse gas emissions by 6% of the 1990 level in the five years from 2008 to 2012. Emissions in Japan continued to increase in the 1990s even though the economy remained stagnant. The level in fiscal 1999 was up 6.8% from 1990. Output of CO_2, which accounts for the bulk of the emissions, expanded 9%.

Clearly, Japan's lag in emissions control reflects the fact that the effort has been left largely to private industry. If no new measures were taken in coming years, emissions in 2010 are forecast to increase 8% above 1990s levels. Emissions can be reduced only gradually; to reach the target Japan must start preparations early on.

The plans drawn up last year by a government advisory panel call for reducing emissions in two stages. In the first stage, a national campaign would promote development of lifestyles less dependent on energy consumption, while private

industry would continue voluntary efforts to curb emissions and announce specific results.

Plans disappointing

These plans fall far short of expectations. It is not clear what kinds of new anti-warming measures the government intends to take and how it will encourage industry efforts to curtail emissions. The Protocol is expected to be ratified during the regular Diet session that opens later this month, but the government seems ill-prepared to meet the challenge that lies ahead.

A national anti-warming campaign will have little practical effect unless institutional measures are put in place. It will likely have little educational effect, either, unless specific methods are devised to stimulate public awareness of warming issues. It is also important that concerned citizens be allowed to participate positively in the policy making process.

Private industry, for its part, must disclose as much information as possible regarding its emission control efforts. It must also use verification procedures to ensure progress. This is particularly true for the manufacturing sector, which accounts for most CO_2 output. Each company or factory should publish its emission volume and submit its reduction plans and results for evaluation by a third-party panel. But the government does not seem interested in pursuing this approach. The government also appears to be marking time on international emission trading, a scheme adopted in Kyoto as a means of securing flexibility in national efforts to achieve emission targets. Japan would have much to gain from the trading of emission rights.

Generally, global warming can be tackled in three ways: voluntary efforts; regulatory regimes; and economic means (such as environmental taxation). Regulation should be minimised so as not to hurt long-term economic growth. Voluntary efforts have their limits, as past experience amply shows. That leaves the economic approach as the best way possible to induce significant reductions in CO_2 emissions. Introducing a carbon tax, for example, would be a step in the right direction.

Achieving the Kyoto targets is just the beginning of a long battle against global climate change. Industrialised countries, in particular, must join forces against global warming. Japan, for its part, needs to have a more efficient and more committed government. A government of quarrelling ministries, each trying to protect its own interests, cannot mount an effective campaign against this common threat to the environment.

Efficiency and recycling must replace mass consumption, production

Shinji Fukukawa
CEO of the Dentsu Institute for Human Studies
Yomiuri Shimbun

Environmental destruction is one of the most serious issues we face in the 21st century. The fact of the CoP-7 agreement in Marrakech, Morocco, in November is an encouraging indication that the international community has started moving together toward sustainable growth.

Since the 1980s, prolonged droughts and massive floods have taken place in various parts of the world. In Canada and Europe, some forests have been ruined by acid rain and many of Africa's lakes have disappeared because of decertification. The Parthenon in Athens and the ancient temple of Angkor Wat in Cambodia have been damaged by air pollution. The 'blue Earth' — so described by the world's first astronaut, Yuri Gagarin in 1961 — is undergoing degradation.

In its third assessment report to the United Nations, the Intergovernmental Panel on Climate Change stated that global warming would cause the average surface temperature on the Earth to increase 1.4 to 5.8 °C by 2100. Economic growth and technological advancement may lead to diverse patterns of environmental destruction and increased complexity of the issue. Global warming, acid rain, desertification, declining biodiversity and the widespread use of toxic materials may interact, accelerating environmental destruction — paralysing the ecosystem, worsening the water cycling system, lowering agricultural production and harming the health of mankind. In addition, the space to dispose of wastes is gradually approaching the limit.

New thinking needed

To prevent further destruction of the global environment, it is our inevitable choice to change the system of mass production, mass consumption and mass waste to a system of efficient production, efficient consumption and full recycling. If we want to pursue change of this kind, we have to reform the technological paradigm. We should change the structure of energy supply and demand and develop a fully recycling industrial system aimed toward zero emission of global warming gases and zero discharge of wastes.

To attain these goals, we have already started to tackle the development of new technologies in

such fields as solar and wind energy, hybrid and electric cars, renewable plastics, super-conductivity, and bio-reactors for environment restoration, greening of deserts and fixation of CO_2. We have to press ahead with those challenges.

The US and the protocol

The problems facing the global environment cannot be solved without the involvement of all entities. From this standpoint, I regret very much that the US did not join the Kyoto Protocol. The international framework for reducing greenhouse gases without the US is clearly ineffective. If we are to invite developing countries to take part in the framework in the future, the participation of the US will be a prerequisite. I expect that they will take part in joint action to tackle the issue of the global environment. Also, we have to prepare circumstances for developing countries to join the international framework.

The way forward

To achieve sustainable development, the social system should also be reformed. Many governments have already taken necessary measures such as the imposition of relevant regulations, incentives for technological developments, expansion of environmental education and enlargement of environment-related investment. At the same time, many governments have promoted the disclosure of information and collaboration with local governments, commercial enterprises and non-profit organisations.

Most important for sustainable development is for a value system based on environment protection to take root within society. I am really encouraged by the fact that concepts like industrial ecosystems, cleaner production and zero emission targets are emerging as common goals of corporate management. Consumers have come to embrace recycled goods and those that put less burden on the environment. Changes such as the environmental management standard, ISO 14 000, and introduction of environmental accounting models are favourable developments for society.

The government is now drafting comprehensive policy measures to achieve the targets set by the Kyoto Protocol. While making the best use of market forces, the business community and society as a whole should be encouraged to make efforts toward these goals. Japan has developed a culture in which people respect nature. Japanese gardens have been designed to combine the beauty of nature and the excellence of artificial devices, and to harmonise with surrounding mountains and rivers. In the Edo period (1603 – 1868), an integrated recycling system was established covering Edo (now Tokyo) and its surrounding agricultural villages, and recycling of paper and metals was common.

The refined combination of the natural and artificial is also seen in the Japanese style of cooking. Since World War II, the lifestyle of consumers in Japan has been Americanised, with mass consumption and practice of 'use and throw away' prevailing. However, Japanese consumers of late are paying more attention to recycling and energy efficiency. I expect that the potential value system of Japan for environmental preservation may lead to actual movement to protect the environment world-wide.

China could help Japan by taking its money and cutting its Kyoto target

Japan Times

Japan is anxious to have China as a partner in a scheme linking development aid to achieving cuts in greenhouse gas emissions. According to government sources, Japan and China have agreed to launch talks to discuss co-operation in implementing the Clean Development Mechanism. Under the CDM, industrialised countries can earn credits if they provide financial assistance for projects aimed at reducing the emissions of greenhouse gases in developing countries. The credits can be applied to the industrialised country's reduction target. A Japanese delegation of officials will visit Beijing before the end of March, the sources said.

While imposing legally binding targets — 6 % for Japan, 7% for the US and 8% for the EU — the protocol allows industrialised countries to achieve targets by using mechanisms such as the CDM. At CoP-7 in Marrakech it was agreed that industrialised countries could use official development assistance for CDM projects, a concession demanded by Japan.

Benefits to Japan

There are good reasons for Japan to push toward making China its strongest partner in implementing the CDM. As a rapidly ascending global economic power, already ranked seventh in terms of gross domestic product, China has

emerged as a major polluter. China relies heavily on coal for energy and is the world's second largest producer of CO_2. However, the world's most populous country is showing signs of placing a greater importance on environmental protection after more than two decades of putting development first.

China has earmarked about 1 trillion yen (€ 8.8 bn) for environmental preservation-related projects in its current 10 year development programme, which started last year. Chinese officials have said that they will voluntarily try to keep the growth in Chinese emissions of environmentally harmful gases below the estimated 7% economic growth rate expected for this year. China is also a major recipient of Japanese ODA money, receiving an average of nearly 200 billion yen (€ 1.8 bn) a year in yen loans alone in recent years.

"China has strong expectations of advanced Japanese environment protection technologies to combat its own environmental problems," a senior Japanese government official said. "It will be a win-win case if China can promote its environmental protection with Japanese assistance and if Japan can achieve its greenhouse gas reduction target through partnership with China in the CDM." The official said that competition between Japan and other industrialised countries for CDM projects in China may heat up in the future.

China hungry for energy

Business Week

Next year, Chinese consumers will buy 900 000 cars. They will purchase apartments at the rate of more than 8 000 a day, furnishing them with appliances and heating systems. Legions of entrepreneurs will start businesses that require light and heat. And foreign and domestic companies will open or expand thousands of factories that depend on reliable supplies of electricity.

All this will eat up massive amounts of energy, most of it directly or indirectly from oil and gas. Less than 10 years ago, China was a net petroleum exporter. Today, its thirst for oil, natural gas, and the power they generate is second only to the US. Energy consumption in China is expected to grow at 4% a year over the next decade. Next year, China's net oil imports will reach an estimated 70 M tonnes — up fivefold from 1996. On current trends, by 2010, half of China's energy needs could be filled by foreign oil. Like the US, Beijing considers it dangerous to be at the mercy of global oil markets. A spike in petroleum prices could put pressure on state finances and hit the economy just as tariff barriers to foreign competition are dropping. At the same time, Beijing is worrying about America's growing global influence, especially its military choke-hold on the Malacca Straits, through which much of China's oil sails from the Persian Gulf.

Now, amid mounting international instability, the government is looking for secure energy supplies and to create a coherent energy policy. And Beijing is moving fast. Over the next 10 years, policymakers aim to spend € 110 bn to build pipelines, ramp up oil and gas exploration at home and abroad, and overhaul the nation's inefficient power plants. A key factor is the need to wean the country off the cheap, plentiful coal that is poisoning Chinese cities.

What Beijing is trying to do all at once — hike domestic production, cut dependence on foreign oil, diversify into natural gas, further deregulate energy prices — is a monumental challenge. Consumer and industrial prices are close to international levels and likely to rise. At the same time, Beijing will have to find the money to pay for the massive rollout of infrastructure. And it has to construct a new regulatory framework.

Resources available

Many experts reckon China has the resources to pull it off. China has huge savings, and with entry to the WTO, the big financiers are coming to Beijing — or are already there. And China is opening the energy sector, welcoming more foreign participation in everything from exploration to petroleum refining.

Beijing's preferred defence against dependence on foreign oil is to boost production at home. China is sitting on 24 billion barrels (3.8 km^3) of crude — enough for 20 years at current demand. Now, after years of watching existing wells run dry, the government is encouraging development. China also has been pushing its companies to secure supplies from abroad. China National Petroleum Corporation, has invested billions in fields in Sudan, Peru, Burma, and Kazakhstan. PetroChina formed an overseas exploration arm in October and is looking at deals in Canada and Southeast Asia. In November, China National Offshore Oil Company (CNOOC) signed a preliminary deal to jointly develop a natural gas field off Australia's Northwest Shelf. It would supply gas to a liquid natural gas terminal (LNG) in Guangdong that CNOOC is building with BP Group.

Beijing hopes LNG will play a major role in its efforts to switch to cleaner-burning fuel. Policymakers want gas to account for 6% of energy use by 2010, up from 2% now. China certainly has enough gas — 8 trillion m^3 (km^3) of proven reserves. But much of it sits below the far western region of Xinjiang, as well as under Inner Mongolia. That means the gas must be piped all the way to China's booming southern and coastal cities. Hence, the government plans to lay thousands of kilometres of pipe over the next decade. The centrepiece is the € 5.7 bn west-east line, which will run 4 000 km from Xinjiang to Shanghai.

World wind generating capacity jumps 31%

Lester Brown

(This article was sent in by SEF member Hugh Barr)

Preliminary data show world wind electric generating capacity climbing from 17.8 terawatts (TW — 10^9 W) in 2000 to an estimated 23.3 TW in 2001, a dramatic one-year gain of 31%.

As generating costs continue to fall and as public concern about climate change escalates, the world is fast turning to wind for its electricity. Since 1995, world wind-generating capacity has increased nearly fivefold, while use of coal declined by 9%. One megawatt of wind-generating capacity typically will satisfy the electricity needs of 350 households in an industrial society, or roughly 1000 people.

Growth of installed capacity in 2001 was 24% in Germany, 48% in Spain and a huge 63% in the US. Despite this growth, development of the earth's wind resources has barely begun. In densely populated Europe, there is enough easily accessible offshore wind energy to meet all of the region's electricity needs. In the US, there is enough harnessable wind energy in just 3 of the 50 states — North Dakota, Kansas, and Texas — to satisfy the country's electricity needs. And China can easily double its current electricity generation from wind alone.

In the US, the cost of wind-generated electricity has fallen from 35 ¢/kWh in the mid-1980s to 4¢ /kWh at prime wind sites in 2001 (€ 0.045). Some recent long-term supply contracts have been signed for 3¢ (€ 0.034).

Munich Re report — 2001

Reuters

Natural disasters caused at least 25 000 deaths world-wide in 2001, more than double the previous year, according to the world's largest reinsurer. Putting total economic losses at € 41 bn, Munich Re said catastrophes related to extreme weather were a result of continued global climate change. It said the 2001 figures — with 14 000 people killed in an earthquake in India in January alone — compared with 10 000 deaths the previous year and losses of around € 34 bn.

Storms and floods dominated this year's statistics, contributing more than two thirds to the 700 major disasters and causing 91% of all insured natural disaster losses, Munich Re said.

Total insured losses were at € 13.2 bn, compared with € 8.6 bn the previous year. "Forest fires in Australia, floods in Brazil and in Turkey, snow chaos in central and southern Europe and a typhoon in Singapore, which was meteorologically seen as impossible, are all indications for a link between climate changes and a rise in weather catastrophes," the company said in a statement. Citing World Meteorological Organisation statistics, the reinsurer said 2001 had been the second warmest year since the beginning of systematic temperature recording 160 years ago.

Munich Re said the worst event in terms of the number of deaths was an earthquake in the densely populated north-western Gujarat region of India with 14 000 deaths confirmed and many more feared dead. It said it had counted 80 major earthquakes, burdening economies with around € 10 bn losses. The worst weather-related disaster in 2001 was tropical storm Allison, which caused losses of some € 7 bn, making it "the most expensive tropical storm in history."

Munich Re — which faces € 2.1 bn in claims resulting from the September 11 attacks on the World Trade Centre in New York — said losses from extreme natural disasters would be even bigger than those arising from the attacks. "Clients, insurers and reinsurers have to take into account the unthinkable." Munich Re said. Claims resulting from the attacks in the US — its biggest ever loss — will push Munich Re's profits sharply lower this year, but the company expects to remain profitable.

Monitor

World oil reserves and consumption

Kerry Wood
Data from BP: www.bp.com

Some claim that oil reserves will last for centuries, others that permanent oil shortages will develop by 2020. The first statement is correct, although the implication that reserves will be sufficient for any demand (and the atmosphere can absorb any emissions) is untenable. But the second statement may also be correct. This article summarises how oil reserves and production have changed in the last decade, with a look at changes in proved reserves since 1980 and some tentative thoughts on the next decade. Thanks to BP for the data.

Oil reserves in 1980, and reserves and production in 1990 and 2000, are summarised in Table 1, which shows:

- The top 20 oil-producing countries, listed in order of current (2000) annual production (Column 7). The European Union is not shown separately, but EU production is very largely from the UK fields.
- Proved oil reserves by country, in 1980 (Column 1), 1990 (Column 2) and 2000 (Column 5), in billions of tonnes.
- Annual oil production by country in 1990 (Column 3) and 2000 (Column 7), in millions of tonnes.
- The 'reserves:production ratio' (R/P ratio) by country in 1990 (Column 4) and 2000 (Column 8). This is the ratio of annual production to total reserves, and gives the nominal lifetime of the reserves, in years. However, note the 'nominal.'
- The percentage change in reserves by country between 1980 and 2000 (Column 6).
- The proportion of world oil reserves, by country in 2000 (Column 9).

An obvious feature of Table 1 is large variations in the R/P ratio, both over time and between countries. Saudi Arabia has a ratio of 81: the

Table 1: Oil Reserves and Production

	1980	1990			2000				
	Reserves	Reserves	Product'n	Reserves/ Production	Reserves	Reserves Change since 1980	Product'n	Reserves/ Product'n	Reserves share
	(10^9 t) (1)	(10^9 t) (2)	(10^6 t) (3)	(years) (4)	(10^9 t) (5)	% (6)	(10^6 t) (7)	(years) (8)	(%) (9)
Saudi Arabia	23.0	35.5	341	100+	35.8	56	441	81	25.0
United States	4.5	4.2	417	10	3.7	(19)	353	10	2.8
Russian Federation	—	—	516	—	6.7	12	323	21	4.6
Iran	7.9	12.7	161	79	12.3	56	186	66	8.6
Mexico	6.2	7.3	147	50	4.0	(64)	172	23	2.7
Venezuela	2.6	8.5	116	73	11.1	320	167	66	7.3
China	2.8	3.3	138	24	3.3	17	162	20	2.3
Norway	0.7	1.0	82	12	1.2	71	157	7.6	0.9
Iraq	4.0	13.4	105	100+	15.1	275	128	100+	10.8
Canada	1.0	1.0	92	11	0.8	(17)	126	6.3	0.6
UK	2.1	0.5	92	5.8	0.7	(66)	126	5.5	0.5
UAE	3.9	12.6	105	100+	12.6	122	115	100+	9.3
Kuwait	9.4	13.4	47	100+	13.3	42	106	100+	9.2
Nigeria	2.3	2.4	90	26	3.1	35	104	30	2.2
Libya	3.0	3.0	68	44	3.9	28	71	55	2.8
Indonesia	1.3	1.5	72	21	0.7	(47)	68	10	0.5
Algeria	1.1	1.2	58	21	1.2	12	67	18	0.9
Brazil	0.2	0.4	33	12	1.1	520	64	17	0.8
Oman	0.3	0.6	34	18	0.8	140	48	17	0.5
Argentina	0.3	0.3	26	11	0.4	24	41	9.7	0.3
Other countries	7.0	8.1	424	19	10.3	47	18	7.4	
Totals	89.6	137.1	3164		142		3590		100.0
Averages				43		59		40	

known reserves will last 81 years at current production rates. The US has only 10 years.

Note that any change in reserves is net of production. China had reserves of 3.3 billion tonnes in both 1990 and 2000, showing that the average rate of discovery was the same as the average rate of production. However, the R/P ratio fell because production was increased with no supporting increase in proved reserves.

So is the US going to run out of oil in 2010, or the UK in 2006? Not unless three unlikely assumptions are all correct:

- The reserves estimate is accurate: in practice estimates are very difficult — although methods are now very sophisticated — and a conservative approach is usually taken (but see below).
- Production is maintained at a constant rate. In practice production from a single field grows with field development and increasing demand, then declines as the field is exhausted: the classic bell-curve. A group of fields — local or world-wide — will probably show the same overall behaviour.
- There are no new discoveries and no re-evaluations of discovered or producing fields (which will be wrong if President Bush has anything to do with it).

Columns 4 and 8 show that the R/P ratio for the US has not changed in a decade, but production has declined by 15% and reserves by 12% (19% and 18% since 1980). This, and the small proportion of world reserves in the US suggest that Bush will not be able to increase production very much, or for very long. Canada and Mexico are in similar positions, with steeply declining reserves; some 38% since 1980 for North America as a whole. North Sea production (Norway and the UK) is also declining steeply.

Production uncertainties

World-wide reserves have risen by 59% since 1980 (Column 6), but the R/P ratio is 40 years, down from 46 years in 1990. Discoveries are not keeping pace with production. Again, 40 years is not when the oil will run out, but caution is needed:

- Some 65% of world reserves are in the unstable Middle East, with over half in four countries: Saudi Arabia, Iraq, the United Arab Emirates and Kuwait. Low R/P ratios in many other countries suggest that production outside the Middle East will decline steadily.
- The Middle East reserves are themselves a little suspect, as shown by the average annual growth rate:

1975 – 1986	0.7%
1987 – 1989	16.2%
1990 – 2000	0.5%

  The large increase in 1987 – 1989 (60% in 3 years) is thought to be 'political oil,' used to support negotiating stances rather than deriving from exploration.
- If demand is high, or foreign exchange a worry, there is a temptation to increase production beyond the prudent rate for a given field. This may permanently reduce reserves, by increasing the proportion of oil that is not recoverable.
- China and several Asian economies have very rapid growth.
- One 'positive' caution is that some Middle East countries have reserves that will last for over a century. The true reserves in these countries may be even larger — exploration is hardly worthwhile at this stage.

Field exhaustion

An 'exhausted' oil field still holds a lot of oil. For example, US Geological Service estimates for the Alaska wildlife refuge are that 37% of the oil in place is recoverable, but only 15% is economically recoverable (at US$ 20 /barrel: € 142 /m^3). In this case at least 63% of the oil must be left behind.

In an almost exhausted field, any of the following outcomes is plausible:

- Continue pumping until it is no longer economic (or until uneconomic repairs are needed). Pumping may be suspended and then re-started when the price is high enough, as has happened in New Plymouth's Moturoa field.
- Use 'secondary recovery' methods such as water or CO_2 injection to push more oil towards the wells. Again, abandoned fields may be worth a second look if the price goes up.
- Permanent closure, even with recoverable oil still in place. This tends to be the fate of offshore fields, where very high operating costs have to be justified by adequate oil flow.

Consumption

The top 15 oil consuming countries are listed in Table 2 (next page), again in order of consumption in 2000. The European Union is shown as a single country. New Zealand and six other countries of interest are also shown, to give an indication of developing local and Asian demand. Table 2 gives consumption in 1990 and 2000 (in millions of tonnes), and the percentage change in that decade. Also shown is consumption per capita in 1995, in tonnes/head (the year is chosen for availability of

population data, and consumption is taken as the average of the 1990 and 2000 figures). Countries affected by the first commitment period of the Kyoto Protocol (taken as the Annex 1 Parties, including the US) are marked with an asterisk.

A striking feature of Table 2 is the prominence of developing countries (no asterisk), including the fourth largest consumer (China) and another four in the top ten. These countries have high or very high growth rates: China and South Korea have both had a 106% consumption increase in a decade, and Pakistan, Bangladesh, Thailand, Indonesia and India are not far behind.

Long term needs

The last column of Table 2 shows per-capita oil consumption. The world-wide average (on a population basis) is 560 kg/capita of oil, plus emissions from gas and coal. This is barely a third of New Zealand's current consumption, or a sixth of US consumption. Current IPCC thinking is that in the long term, emissions need to be reduced by 60% or more. Equitable sharing of resources can only be on a per capita basis, so long-term thinking in New Zealand needs to be in terms of a six-fold or greater reduction in emissions. In complete contrast, Bangladesh has the luxury of being able to contemplate a tenfold *increase.*

Table 2
Oil consumption, 1980 and 2000
Consumption/head of population, 1995

	1990 Mt	2000 Mt	Change %	1995 tonne /head
*USA	782	897	14.8	3.1
*EU	580	630	8.7	1.6
*Japan	248	254	2.3	2.0
China	110	227	106	0.14
*Russian Fed	250	124	(50)	1.3
South Korea	49	102	106	1.6
India	58	98	69	0.08
Brazil	58	84	44	0.45
Mexico	68	84	24	0.78
*Canada	78	83	6.7	2.7
Saudi Arabia	51	62	22	3.0
Iran	47	57	21	0.75
Indonesia	30	51	71	0.2
*Netherlands	35	42	19	2.4
Taiwan	27	40	48	1.5
*Australia	32	39	22	1.9
Thailand	20	34	74	0.44
Singapore	20	29	43	7.7
Malaysia	13	20	58	0.80
Pakistan	11	20	83	0.11
Philippines	11	17	46	0.19
*New Zealand	4.9	6.3	29	1.5
Bangladesh	1.9	3.3	74	0.02
Other countries	689	666	(3.5)	0.39
Totals	3135	3504		
Averages			11	0.56

* Emission reductions required in the first commitment period of the Kyoto Protocol

The next decade

Ratification of the Kyoto Protocol is not going to make a major difference to consumption in the decade to 2010. The first commitment period will only cover the last two years of the decade, many countries have no commitments in this first round, and little can be expected from the requirement to show 'demonstrable progress' by 2005.

President Bush has already ensured that there will be major exploration activity in the US. However this may have the world-wide effect of *reducing* growth in reserves, because US tax breaks will lead to drilling in the most profitable areas, not the most promising.

We can expect to see declining reserves and increasing consumption in much of the western world, although there is some hope that western consumption will peak before the end of the decade. The Middle East has enough reserves to supply the shortfall, at the cost of increased OPEC dominance. Whether it can deliver the necessary political stability and investment remains to be seen. Increasing production costs and a possibility of developing scarcities means that there is little hope for low prices in the next decade: .

From the archives

EnergyWatch happened to come across petroleum production data for 1937. Apart from anything else, the data is an interesting — and frightening — commentary on the strategy of the Second World War. The figures are in millions of tonnes:

United States	168	
Russia	27	
Venezuela	27	
Iran	10	
Indonesia*	7.0	
Romania	6.9	
Mexico	6.6	
Iraq	4.2	
Colombia	2.8	
Other	12	
World	272	(7.8% of current production)

* Given as *Netherlands East Indies*

Green conspiracy theory

Clive Hamilton, Canberra Times

One of the more disturbing trends in the environment debate has been the emergence of anti-greenhouse fundamentalists, best represented in Australia by the Lavoisier Group. The group was formed two years ago, ostensibly to bring rationality to a debate dominated by "green extremism." The Kyoto Protocol negotiations are seen as an elaborate conspiracy in which hundreds of climate scientists have twisted their results to support the "climate change theory" in order to protect their research funding.

The Lavoisier Group seems to have been initiated by people associated with the mining company WMC in Melbourne, the source of other right-wing groups politically influential in the 1990s. The group's strange mixture of conspiracy and apocalypse includes describing the Kyoto Protocol as "a formula for impoverishment," a claim that even the most pessimistic economic modelling backed by the fossil fuel lobby cannot sustain. Another comparison is between papers by the Federal Government's Australian Greenhouse Office and Nazi propaganda. With evangelical fervour, the group has been conducting a systematic campaign to muddy the waters on climate science and to stampede the Federal Government. One claim was, "with the Kyoto Protocol we face the most serious challenge to our sovereignty since the Japanese Fleet entered the Coral Sea on May 3, 1942."

More generally, one can find the following arguments in the various papers promoted by the Lavoisier Group:

- There is no evidence of global warming.
- If there is evidence of global warming, then warming is not due to human activity.
- If global warming is occurring and it is due to human activity, then it is not going to be damaging.
- If global warming is occurring, it is due to human activity and it is going to be damaging, then the costs of avoiding it will be too high, so we should do nothing.

It is impossible to have a rational discussion with people like this for they are immune to evidence and argument.

EnergyWatch adds:

We can expect a lot more of this sort of nonsense in the run-up to ratification of the Kyoto Protocol at Rio+10 in September. For example, nearly ten years after the Rio declaration we hear:

> *"We want a genuine dialogue with the Government where all the facts are on the table and the costs and benefits can be frankly discussed and assessed in a reasonable timeframe. This has not yet happened and our concerns are that the consultation process is not much more than a box ticking exercise."*
>
> Pan Industry Group (NZ)

The Pollyannas are also out in force, some of them sporting titles that out-shine even their prose:

> *"...to more sober minds it appears odd to target something that clearly and universally betters the human condition — increased energy use — and that brings about wealth creation and increased health."*
>
> Christopher Horner
> Senior Fellow at the Competitive Enterprise Institute, and
> Counsel to the Cooler Heads Coalition

But the prize goes to Larry Mounser, writing in the Canberra Times:

> *"There is a fine line between science and religion, and as British scientist Thomas Huxley once said, "Science commits suicide when it adopts a creed." Has the greenhouse effect become a creed? The greenhouse effect was first hypothesised by Swedish chemist Svante Arrhenius in 1896. He also predicted the existence of tropical jungles on Venus. If his first prediction was correct, the temperature of the earth could have risen 3.5 ˚C by now. Worst-case estimates put the actual rise at just 0.6 ˚C, though it is very difficult to make a measurement of that accuracy across the entire planet over a 100 year period."*

Mounser is a gem. In his first 100 words he suggests that the greenhouse effect is a creed; links it to a failed hypothesis by the scientist who first proposed it; completely ignores the immense complexity of carbon cycles and climate; and belittles the IPCC estimate of warming by calling it worst-case and difficult to measure. It is in fact a best estimate. Because it is difficult to measure — and important — it has been determined by consensus amongst specialists in a wide range of different fields.

Mounser is described as having "worked as a geophysicist" but he cannot maintain the pretence:

> *"About 5000 years ago there was no ice on either pole — and nature, including humans, thrived during that time."*

Dare we suggest that there might be some kind of religious theme here?

MiniWhats

Dam busters

Hydropower can do more environmental harm than good, according to a report by the German Environment Agency, published in September 2001, *Hydropower as a renewable energy source*. The report says that when hydro plants are built on natural rivers, the cost to local ecosystems may exceed the savings in carbon emissions from other forms of electricity generation, particularly for plants with capacities of under 1 MW. The agency's scientists believe that no new hydro stations should be built in Germany. e.nz

See www.umweltbundesmt.de

Rate of north Pacific CO_2 absorption down

The volume of CO_2 absorbed by the North Pacific has fallen as much as 10% over the past 15 years, as the rate of water circulation from upper to lower levels has continuously dropped, according to a team of Japanese researchers. Published in *Geophysical Research Letters* in August, the finding is thought to be the result of higher sea temperatures caused by global warming or natural climate change, the team said. The discovery is the first of its kind, but such a rapid decrease in the ocean's absorptive capacity may also be happening in other sea areas. Kyodo News

Business reporting standard for GHG emissions

The World Resources Institute and the World Business Council for Sustainable Development have released an international standard that will enable businesses to uniformly report their emissions of greenhouse gases. The standard, called the Greenhouse Gas Protocol Initiative or GHG Protocol, was developed over a three-year period by a partnership of over 350 individuals from corporations, non-profit organisations, and governments. It is supplemented by a number of user-friendly calculation tools that can be found at: http://www.ghgprotocol.org

Greenhouse quotas at risk

Australia's efforts to curb global warming are at risk, with the government agency empowered to lead the charge to cut greenhouse gases strapped for cash. A government-commissioned report shows the Australian Greenhouse Office (AGO) would be unable to properly work on curbing emissions unless funding was bolstered. The report on output pricing review 2000–2001 recommended ministers note that lapsed funding meant AGO outputs would fall by 45% for the current financial year. The Australian

The emissions trading patchwork

Emissions trading systems are popping up around the globe, but without clear international standards companies will have to navigate a maze of different rules designed to cut carbon pollution.

For multinationals, these trading regimes raise questions about how to adopt strategies to fit each region in which they operate, and whether credits obtained in one country can be used to help offset the requirements imposed by another. "This is a fragmented market," said Andrei Marcu, executive director of the International Emissions Trading Association. "The standards are not there. You have a patchwork, but you need linkages," he told EyeforEnergy's Emissions Trading conference in Amsterdam. The UK and Denmark have set plans to allow firms to buy and sell allocations of CO_2, and the EU has sketched out its pilot programme which will kick off in 2005. For companies such as oil giants BP and Shell , the new trading regimes offer a chance to take their already established in-house systems to the outside world.

BP, which reckons its three-year old internal emissions trading system yielded £ 650 million (€ 1.05 bn) in extra value for the company, says the challenge will be adapting its methods to government-run schemes. Reuters

Kyoto Co-operation

In late December, Japan and Russia reconfirmed their continuing co-operation towards implementing the Kyoto Protocol. The two sides agreed to expedite preparations to move the process forward as well as to carry out 13 joint research projects for environmental protection starting next year. The joint research projects include studies on the outbreak of methane gas in Siberia's tundra and water pollution of Lake Baykal. BBC

A new definition: Enronism

Communism: You have two cows. Your neighbours help take care of them and you all share the milk.

Capitalism: You have two cows. You sell one and buy a bull. Your herd multiplies and the economy grows. You sell them and retire on the income.

Enronism: You have two cows. You sell three of them to your publicly listed company, using letters of credit opened by your brother-in-law at the bank, then execute a debt/equity swap with an associated general offer so you get all four cows

back, with a tax exemption for five cows. The milk rights of the six cows are transferred via an intermediary to a Cayman Island company secretly owned by the majority shareholder, who sells the rights to all seven cows back to your listed company. You hire Arthur Andersen to revise your books. The annual report says the company owns eight cows, with an option on one more.
Financial Times

Hitachi introduces consultancy and internal CO_2 trading

With the enforcement of limits on greenhouse gas emissions looming under the Kyoto Protocol, electronics giant Hitachi is preparing to impose limits of its own on emissions of carbon dioxide (CO_2) at its factories and set rules allowing them to trade emissions rights. About 100 Hitachi group facilities in Japan will be affected by the new system, which is to be introduced in April 2004. Under the new system, plants that stay within their limits can sell off excess CO_2 emissions allowances to plants that are having trouble hitting their emissions targets.

The group will begin running computer simulations of emissions trading in April 2002, with results to be reflected in the details of the actual system. Emissions limits will be based on the total amount of electricity, gas and other utilities used by each plant in fiscal 2000. Overall reduction goals will be set for fiscal 2010, after which emissions reduction goals will be set annually. The plants to be included in the program currently account for about 80% of the Hitachi group's total CO_2 emissions, which reached 3 Mt in fiscal 2000.

Hitachi and the ChuoAoyama Audit Corporation are to start a joint consulting service to help companies take measures to prevent global warming. Hitachi will assist companies in the construction of management systems for carbon dioxide emissions from their operations, while ChuoAoyama will provide know-how for CO_2 emission trading. Asahi Shimbun, Asia Pulse

High density housing 'out of character'

Residents in Glenfield, Auckland, are appealing to the Environment Court, against a residential development of 35 units (reduced from 42) on 1.2 ha, or 29 units/ha. They describe the development as 'poorly designed,' 'inappropriate' and 'out of character' with the rest of the area.

Medium density developments like this are part of the Auckland Regional Growth Strategy. They reduce infrastructure costs generally and especially energy use for transport. Higher density increases the number of potential passengers on a bus route, justifying better services and so encouraging greater use. Higher densities also encourage more closely spaced services such as schools and shops, which encourage walking and cycling. NZ Environment, EW

Shell warns of gas price increase

Oil company Shell has warned that the price of natural gas will need to triple to avert a shortage crisis in about five years when the Maui gas field is predicted to run dry. The main players in the petroleum industry are discussing the direction and state of their industry at a three-day conference in Auckland.

Shell's regional business director for Asia-Pacific Tim Warren told the conference that as New Zealand's main gas field runs out, the average price for natural gas will increase. He said the raw gas price, as it came from the ground, will need to triple to keep New Zealand's industry competitive as it looked to develop new gas stocks.
Mr Warren said that because of New Zealand's remote location, getting drilling rigs and equipment here was expensive and it would cost more to sustain the small local industry.

If new gas fields were not operating efficiently by the time Maui runs out in 2007, Shell will look at importing liquid natural gas, which would also encourage prices to hit the international level.
NewsRoom

UN to map green energy sites

The United Nations Environment Programme (UNEP) is trying to identify the best sites for wind and solar energy in 13 developing countries. It believes the scheme will prove renewable energy sources have far more potential than supposed, and hopes its findings will encourage investors to finance green energy schemes. The project should help both to tackle climate change and to relieve poverty. The countries to be surveyed are Bangladesh, Brazil, China, Cuba, El Salvador, Ethiopia, Ghana, Guatemala, Honduras, Kenya, Nepal, Nicaragua and Sri Lanka.

The project is called the Solar and Wind Energy Survey Assessment (SWERA). It will enable prospective developers to pinpoint promising locations online. Dr Klaus Toepfer, UNEP's executive director, said one obstacle to the widespread introduction of solar and wind power — despite the recent rapid fall in their costs — was uncertainty over how much could be available. He said, "The SWERA project aims to bridge this knowledge gap so potential investors can know, with a great deal of accuracy, the locations where they can secure a good and reasonable return. If we can accelerate the deployment of renewable

energy we can not only bring down the costs, but also help in the fight against global warming and poverty." UNEP says the findings from the survey could lead to 480 MW of renewable energy in place by 2008, and as much as 2000 MW by 2015.

An example of what the project might achieve is that knowing the solar radiation intensity on an hour-by-hour basis allows the proper specification of steam turbines driven by concentrated solar thermal energy, which are strongly affected by fluctuating solar energy input. Such dynamic effects may easily reduce performance by 10–20%

Recent work in the Philippines is encouraging. A pre-feasibility study for a 40 MW wind farm, the first important one in the country, was carried out by the Philippine National Oil Corporation. This was only six months after completion of a survey and national atlas of wind potential. Before the survey the official projection for wind power in the Philippines in the coming decade was around 100 MW. BBC News

Wind power in Ireland

Ireland has agreed to build the world's largest offshore wind farm — a 200 turbine, 520 MW facility that will provide 10% of Irish electricity needs. The € 630 million wind farm, will be built in the Irish Sea off County Wicklow on Ireland's east coast. A private Irish company called Eirtricity will build the facility on a 25 km long sandbank, about 6 km offshore at its nearest point. The facility should reduce Ireland's emissions of CO_2 by 13.5 Mt/yr. Eirtricity hopes to begin construction in early 2002, with the first phase going into operation later in the year. AFP

Wind power in Germany

Germany has expanded its wind power capacity by 44% in the past year. The country now has more than 11 000 wind turbines. The dramatic expansion follows the German Government's decision to phase out nuclear power. Though wind power now accounts for just 3.5% of Germany's energy consumption, turbine construction has been encouraged by a German law guaranteeing a minimum price for energy produced by wind power.

German authorities are now considering plans for what could be a revolution in renewable energy: a plan to build up to 5 000 wind turbines off Germany's north coast. Some would be located in open sea up to 45 kilometres offshore. Since the wind is stronger at sea, the energy potential is highly attractive. Giant wind turbines, double the size of conventional ones, are being developed for offshore use. A pilot project has already been authorised and is expected to be operational next year, but as well as the technological challenges, the project will have to overcome concerns about shipping safety and its impact on the sea environment. BBC

EU exemption for German energy tax

Energy intensive industries in Germany will retain reduced eco-taxes as long as they respect voluntary initiatives to cut greenhouse gas emissions, the European Commission has decided. The Commission approved Germany's eco-tax regime, which levies lower rates to some sectors, because it was satisfied there would still be a net benefit for the environment. Germany introduced the tax in 1999 on the consumption of electricity and increased tax on consumption of mineral oils, as a way of tackling the emissions of greenhouse gases associated with global warming. But it allowed a range of exemptions for industry to protect German companies that had to compete with firms from other EU countries where such taxes do not exist.

In November Monti, who is in charge of vetting state aid in the EU, told Germany it had to alter its eco-tax exemptions to ensure industries were not getting tax breaks without making an effort to help the environment. These concerns had now been met. Reuters

Superships to help cut emissions

The Japanese Ministry of Land, Infrastructure and Transport plans to build special freight vessels and cut the transportation load on trucks to reduce greenhouse gas emissions by 1 million tons by 2010, ministry sources said. The ministry in fiscal 2001 started developing the 'Super Eco Ship,' which will emit 25% fewer CO_2 emissions than current freighters, the sources said.

The ministry decided to target trucks, which are far less eco-friendly than ships. Trucks emit five times more CO_2 than freighters carrying the same load over the same distance, the sources said. There are also practical reasons to choose ships over trucks.

The ministry plans to switch half of the nation's freighters larger than 500 tons to the new 'Super Eco Ship' vessels by 2010. At the same time, the ministry will raise the share of sea transportation for Japan's total cargo haul to 44% from the current 41%. These measures will lead to a reduction of 1 million tons in CO_2 emissions. Asahi Shimbun

Most in the US shun energy plan

The US administration and public are at odds over the core elements of energy policy, according to an opinion poll that is fuelling debate in Congress.

Most people in the US prefer to achieve energy security by increasing efficiency and developing alternative energy sources rather than by increasing the supply of oil, the Mellman Group, a prominent Democratic polling firm, has found.
Power Report, 26/1/02

California targets emissions

California's State Assembly has approved a bill that could create the United State's first restrictions on CO_2 emissions from automobiles. The bill directs the California Air Resources Board to adopt regulations that reduce emissions from passenger vehicles.

The bill has the support of a broad coalition of individuals and organisations, including Environmental Entrepreneurs, a group of Silicon Valley business leaders. "As business leaders, we recognise that immediate action must be taken to preserve the economic and natural resources that our state's businesses and residents depend and thrive on," said Bob Epstein, founder of Environmental Entrepreneurs.
Los Angeles Times, 26/1/02

New fuel under development

Japan is working to commercialise a new fuel by 2006, to reduce greenhouse gas emissions and to rely less on Middle East energy imports. Two separate Japanese joint ventures — one led by Mitsubishi Gas Chemical Inc and another by Japanese steel maker NKK Corp — are aiming to begin mass production of dimethyl-ether (DME), which is commonly found in hair sprays. DME, made from natural gas, emits no sulphur oxide or particle matter and only small amounts of carbon dioxide. Currently, Japan produces about 10 000 t of DME a year, mostly for use in hair sprays.

Backers of DME say it could eventually replace liquefied petroleum gas (LPG) or gas oil as the main fuel for some vehicles and power generators. Mitsubishi Gas plans to build a € 600 million plant in Western Australia by the end of 2003 with annual capacity of 1.7 Mt of DME by 2006. NKK is considering building a DME plant in gas producing countries such as Indonesia, Australia or the Middle East. "In the near-term, the most likely user for DME is the LPG industry in Japan," said Yotaro Ohno, NKKs general manager of environmental solutions. Reuters 14/3/02

Sweden approves greenhouse emissions cut

The Swedish parliament has approved a plan to apply stricter controls on greenhouse emissions than required by the Kyoto Protocol. The plan aims to cut Sweden's emissions by 4 % of 1990 levels by 2012, compared with a permitted 4% increase. Sweden already has some of the lowest emission levels in Europe. Sweden also was the first country to introduce a tax on CO_2 emissions.
AP 6/3/02

Japanese acquire rights to explore for Mexican oil

Japan National Oil Corporation has acquired exclusive exploration rights to major Mexican oil fields, paving the way for Japan to lessen its dependency on Middle Eastern oil, according to government sources. JNOC was handed exclusive rights to explore the Chicontepec oil fields, situated on land along the Gulf of Mexico and east of Mexico City. The fields are believed to have some of the largest oil reserves in the world and are estimated to hold around 11 billion cubic metres (11 km^3). Japanese oil development firms are expected to participate in production in the fields, with Japan obtaining exploitation rights in the future.

If these rights materialise, Japan will be able to reduce its dependency on oil from the Middle East, where it currently sources nearly 90% of its total supply. This will have a significant impact on the nation's energy security policy. Under its current constitution, Mexico does not allow foreign firms to have exploitation rights to its oil fields. JNOC's research may give Japan an advantage in terms of future negotiations over exploitation rights, the sources said. Japan Times

Geothermal energy

Geothermal energy may be less Greenhouse-friendly than it looks: CO_2 and methane are emitted from the waste geothermal water. SEF member Steve Goldthorpe estimates the following emissions, expressed as a percentage of emissions from a combined cycle gas turbine station:

Wairakei	6%
Ohaaki	110%
Others	<42%

Climate Defence Coalition Launched

As EnergyWatch went to press, SEF joined a new coalition of medical, environment, resource management, recreational and engineering groups, launched to campaign for government action on climate change and ratification of the Kyoto Protocol.

Members of the new Climate Defence Network, include: Med Eco, the association of medical professionals concerned about environment and health; ECO, itself comprising 70 organisations with a concern for the environment; the Environmental Defence Society; Forest and Bird;

Federated Mountain Clubs; Greenpeace; Pacific Institute of Resource Management (PRIM); the Sustainable Energy Forum (SEF); Engineers for Social Responsibility (ESR); Friends of the Earth and the Cycling Advocates Network.

Spokesperson Cath Wallace says the coalition members share a strong concern that pressure from polluting businesses opposed to ratification of the Kyoto Protocol could result in the government delaying action to reduce New Zealand's greenhouse gas emissions. The Climate Defence Network is calling on the government to reaffirm its commitment to ratify the Kyoto Protocol and to introduce a strong package of measures to reduce New Zealand's growing greenhouse gas emissions. Ecowatch 17/3/02

Exploring power options

Farmers and rural groups are seeking alternative power sources as concerns mount over the cost and even availability of rural power. Under section 62 of the Energy Act, line companies will be able to discontinue unprofitable lines from 2013. Though this is some time away, the rural groups are asking the Centre for Energy Research at Massey University for information about wind, solar and small hydro station power production, with the idea of installing equipment before then, or if electricity prices rise further.

Federated Farmers national office commissioned a study some years ago, which found that it would not be viable to switch to alternative sources. Federation vice-president Tom Lambie said the cost was quite prohibitive at the time. But Ralph Sims, director of the Massey research centre, said that new technology was bringing the price down each year. The university is conducting a study of renewable energy supply options for the rural sector. It is being carried out by PhD student Phil Murray, and should be completed by the end of this year. Murray is developing a computer model which would enable a community to easily assess how viable it would be for them to install wind, solar and hydro power equipment.

Gil Norman, *Stuff*

Climate change in Tajikistan

One third of the Hisor-Oloy glaciers in Tajikistan lost half of their ice in the second half of the 20th century. The Fedchenko glacier receded by almost 1 km, and its area shrank by 11 km^2, losing about 2 km^3 of ice. If this continues, Tajikistan may face a water shortage, which may lead to a new drought, a change of climate and various disasters. Experts from an environmental group supported by Global Environment Facility and the UNDP are compiling the first national data about changes in the climate.

EnergyWatch and SEF Conference Proceedings

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BBC

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