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The Lavoisier Group

Submission to the Senate References Committee for the Environment, Communications, Information Technology and the Arts

The Renewable Energy (Electricity) Bill

Renewable Energy (Electricity) (Charge) Bill 2000

Introduction.

These Bills provide an example of government folly, particularly bureaucratic folly, which is cause for concern. The ideas behind this legislation had been floating around the bureaucracy for quite some years prior to December 1997, and were fed to the Prime Minister during the hysterical greenhouse press campaign of the pre-Kyoto period. Regrettably, it was then seen as a cost-free exercise in symbolic environmentalism that would appease some of the Government's critics. But out of the Prime Ministerial statement of November 20, 1997, a massive bureaucratic structure has been designed into this Bill, with the capacity for rapid introduction of a wide-ranging carbon-withdrawal regime if the Government can be persuaded to go down this path. Despite recent assurances, in writing, from the Prime Minister, and the Treasurer, that the Government was not considering a carbon tax, these Bills introduce a carbon tax regime in which CO₂ emissions from coal-fired electricity generators are to be reduced by 5.5 million tonnes at an annual cost to Australian consumers of over \$400 millions.¹ The effective carbon tax on these figures is over \$70 per tonne of emitted CO₂, which translates in turn to more than \$200 per tonne of coal consumed, or to be more precise, not consumed.

This particular tax applies only to 9,500 GWhrs. If a carbon tax of \$70 per tonne of emitted CO₂ were to apply, across-the-board, to all of Australia's carbon-based electricity, the consequences for the Australian economy would be catastrophic, and the political consequences for any government which introduced such a regime, would be similarly catastrophic. Hence this carbon tax is to apply only to a prescribed quantum of coal-derived electricity, beginning at 400 GWhrs in 2001 and rising to 9,500 GWhrs in 2010 and beyond. It is the not-so-thin end of a wedge with enormous splitting power when the next blow of the global warming sledgehammer is applied.

Estimates commissioned by the Government of the costs of this particular impost cite a reduction of GDP in 2010 of \$800 millions, a reduction of employment of 0.06%, and an increase in inflation of 0.24%.² These figures have now been contested, and shown to be

1. Paper presented to 23rd Annual Conference of the International Association of Energy Economists, 9/7/00, Sydney, by Michael Hitchens, Senior Consultant, ACIL Consulting

2. Econtech, *Macroeconomic and Industry Effects of the 2% Renewables Target*, Final report to the AGO 14 April 1999.

underestimates by a factor of 2. For example, Econtech's advice to the AGO predicted that average increase in electricity prices in 2010 will be 2.4%. ACIL's advice to the Aluminium Council predicts 5.1%.³ This is a significant impost.

Not discussed in any of the advice which has been commissioned by the various parties concerned in this debate is the cost of the rent-seeking which is institutionalised by this legislation; the cost of maintaining an inspectorate and an administrative bureaucracy, the changes to the Australian political economy which these new institutions will occasion; and the cost of compliance to the electricity industry generally.

Of all of these costs, it is the cost that is not discussed, the cost of rent-seeking, which is potentially the most serious.

Members of this Committee will be aware that in 1983, the Hawke Government began the politically difficult task of rolling back 80 years of Australian protectionism, an era which began in 1902 with the passage of the first Commonwealth Tariff Act. The Hawke Government was aided in this politically hazardous enterprise because the Opposition, led then by Andrew Peacock, supported the Government in this policy. The bipartisanship in this matter was driven by a shared understanding of the damage that had been done to Australia, as a nation, and to the standard of living of the Australian people, through 80 years of transfers of income and wealth from the internationally competitive sectors of the economy, to industries which were not competitive, and did not seek to be competitive. On the contrary, the energies and acumen of those responsible for these rent-receiving industries were directed to ensuring that the rents were, at the minimum, maintained and, more hopefully, increased. Those industries which were paying the rents had to spend considerable time and energy trying to find some off-setting subsidies which would enable them to continue in business. The main task of what was then the Country Party was playing on both sides of this negative-sum game, personified in the extraordinary career of Country Party leader, John McEwen.

A very large proportion of the cream of Australia's human capital was therefore taken up in either aggressive rent-seeking, or in defensive manoeuvres against the rent-seekers. The drain on Australia's ability to compete globally was immense. And by the 1980s it had become clear that unless the protectionist burden was removed, our future as a nation was economically doubtful and strategically precarious. Australia was very fortunate in having both a Government and an Opposition which was at that time willing to act together to remove a malignancy which would otherwise have, before long, reduced our international standing, and our standard of living, to derisory levels.

It is particularly tragic, then, that this Bill will create rents of at least \$800 millions per annum, and inevitably, expenditures on rent-seeking and the blockage of rent-extraction will soon equal and subsequently surpass that figure. As in all extortion rackets, the proceeds are never enough, and there will be a constant clamour to increase the amount of electricity to be generated by

3. *Cost of the Proposed 2% Renewables Measure*, A Report to the Australian Aluminium Council, ACIL Consulting, August 1999.

these high-cost, primitive technologies. And because the machinery is at hand to readily accede to these demands, it will be politically very difficult to say “No”. The legitimacy of transfers has been built into the legislation now under consideration and the institutions to give effect to the transfers will have been created. There will be no principle available to limit the transfers. CO₂ is identified in the Bill as a “satanic gas” and every rent-seeker will be able to point to the huge volumes of this satanic gas being emitted in Australia as a reason why his or her particular proposal should be subsidised by the CO₂ emitters.

In the second reading speeches on the Bill this rent-seeking is already clearly evident. Proponents of tidal-power schemes, ethanol production, the use of bagasse in electricity generation, windmill generation, and so on were on their feet, in the House, extolling the benefits of channelling the rents established by this Bill to their electorates. That’s what energetic and committed members of parliament do.

Once the rents are established and flowing month by month to the rent recipients, that is not the end of the matter. The recipients will need to keep up a constant stream of political activity aimed at ensuring that the rents keep on flowing. There will be a concern that other rent-seekers will also be successful and that the cost of the whole thing will become a matter of public debate. There is never any quietude in the lives of rent-receivers.

Arguably, then, the most disquieting thing about these Bills is the creation of new classes of rent-seekers and their victims, and the legitimisation of the process. The role of the Treasury, under the leadership of Treasury Secretaries going back to Roland Wilson, has been to oppose rent-seeking as an accepted part of our polity. It is tragic to see that this tradition seems no longer to be honoured.

Proponents of this type of legislation - and the alleged need to switch to “clean energy” - assert they have widespread public support for their position. Significantly, they have declined to test this assertion in the market place (where actions speak louder than words) by inviting individual electricity consumers to buy “clean” energy at an appropriate premium price.

This is unlikely to be an oversight. They probably know this was tried in NSW some years ago. About 1.25 percent of consumers agreed to back their concerns about greenhouse gases, with their own money, by accepting the offer.

Some detailed comments

As set out in the Explanatory Memorandum the alleged purpose of the legislation is to, first, reduce the emission of CO₂ from power stations which run on fossil fuels, principally coal or natural gas, and substitute the electricity which would have been generated at those power stations with electricity produced either from solar cells, windmills, hydro or tidal power schemes, or from biomass fuels such as bagasse, woodchips, wheat stalks, or even animal dung.

Substitution of solar hot water systems for electrical systems is also envisaged through the issuance of certificates to owner-operators who could then sell them to electricity retailers.

New hydro schemes such as the Franklin Dam scheme (which was blocked ultimately by the High Court, which agreed to the constitutional validity of the Federal Government's legislation vetoing that dam) would, at face value, enjoy the certification for which the Bill provides. Tidal power enthusiasts have already joined in the rent-seeking scramble and wave power enthusiasts will not be far behind.

Second, the Explanatory Memorandum states that the Bill will "provide an on-going base for the development of commercially competitive renewable energy"; and, third, and most bizarre of all, states it will "contribute to the development of internationally competitive industries which could participate in the burgeoning Asian energy market."

Solar cells will not be able to compete economically with the other technologies cited above. The passage of this Bill will encourage a return to C19 and earlier technologies by subsidising either windmills, or the installation and operation of generating plant using wood chips or other bio-mass fuels at the expense of coal based power generators. Typical cost figures associated with these technologies are of the order \$80 to \$100 per MWhr. Existing coal fired power stations are producing at \$30 - \$40 per MWhr and new combined cycle gas fired generators, at \$20 - \$30 per MWhr depending, of course, on the gas price at the power station.

The existing power generators will inevitably pass on the extra costs they incur to their customers, and they in turn will suffer loss of competitiveness as a result. It is a carbon tax masquerading as a subsidy for windmills and woodchip or other bio-mass fired mini-power stations and solar hot water systems. The visual pollution from solar hot water systems, and from wind-mill farms, does not register on the preference schedule of the Bill's defenders. Nor does the mortality rate of the raptors cut down by wind-mill blades as they use their traditional flight paths. The bird kill associated with the wind generator farms of central California has dissolved environmentalist support for wind power, and when the subsidies expire, so too will these wind generator enterprises. New hydro schemes will, like the ill-fated Franklin Dam, run foul of environmentalist anger.

In the UK a situation has developed in which land-holders grow willow trees or some other rapid-growth shrub, and receive a subsidy for not growing wheat or corn as a result. They cut these crops every other year and supply them to micro-power stations and receive another subsidy from the electricity industry for supplying bio-mass fuel. The combined cost to the taxpayer/consumer of this nonsense has become so scandalous that on July 10 last the UK Government announced measures to claw back the subsidies. Wind power, particularly will be seriously affected⁴.

In Australia we can envisage (if this Bill is enacted) the development of tree farms in irrigation areas in which scarce water is used to grow trees, or other biomass, which is then burned in micro-power stations, in order to receive the certificates which will then be sold to make this egregiously mal-investment profitable. The environmental impact of monoculture of this kind is something which should be a matter of concern to this Committee. The thermal efficiencies of

4. Planet Ark, July 10, 2000 (attached)

such plants will be a fraction of the thermal efficiencies of the large coal fired power stations which will have to cut back on their electricity production. The CO₂ production per unit of output will be greater in these micro-power stations. The argument that the CO₂ thus generated will be taken up by the new crop of bio-mass being produced for subsequent combustion, ignores the fact that if trees or shrubs destined for power generation replace rice for overseas export, there is virtually no change in the net take-up of CO₂ from the atmosphere. Any crop, whether self-sown or otherwise, takes up CO₂, although some crops are more efficient in this regard than others. The only way in which such procedures could reduce the net CO₂ flux from Australia into the atmosphere is to harvest the biomass and send it to developing countries to burn in minipower stations located there. As India and China have made abundantly clear, such countries, prefer to use coal or gas. They are trying to escape from poverty to prosperity - not the other way round.

The reference to “the burgeoning Asian energy market” is risible. The developing countries have made it clear that their only interest in Western Environmentalism is its use by them as an instrument for transfers. In particular, they see “carbon leakage” as an opportunity for more rapid investment within their economies than would otherwise be the case. The idea that India or China, let alone Malaysia are going to invest in windmills rather than coal, gas, or nuclear power generation is something which Dr Mahathir, particularly, would find amusing.

The instrument by which substitution of the cheap electricity by the much more expensive “green” electricity is to be enforced, is a certificate, issued by an inspectorate entitled “Office of the Renewable Energy Regulator”.

The Orwellian resonances of the title “Renewable Energy Regulator” are amplified when we read that “the Criminal Code applies to all offences against this Act” Sect 152 (1). The “Regulator” is to be appointed by the Minister for the Environment and if this Bill becomes an Act, and the present Minister appoints the first Regulator, there can be no doubt that this Regulator will approach his job with zeal, enthusiasm, and with no regard to the economic consequences of his activities.

The creation of this new Office, and the appointment of a zealous Regulator, will have a marked impact on what we can call the political economy of Australia. Career paths will be created; research institutions will jostle for research grants which this new Office will influence if not directly bestow; educational institutions will create new departments to train graduates for careers in this field; journalists will write many articles extolling the virtues of the regime and its executors; carbon dioxide will be further demonised; and civic honours will be awarded to the pioneers who mark out the new territory for regulation and control.

Carbon Dioxide and Global Warming.

Section 1 of the Joint Explanatory Memorandum entitled “Statement of the Problem” begins with the following sentence.

“The balance of scientific opinion supports the view that there has been a discernible anthropogenic influence on the Earth’s (sic) climate, as a result of increasing concentrations of greenhouse gases in the atmosphere.”

There are two parts to this proposition, one relating to “scientific opinion” and one relating to anthropogenic influence, climate, and greenhouse gases. “The balance of scientific opinion” is a very imprecise notion depending very much on who does the estimating, and who gets left out of the estimates. Attached is a recent book review by Professor Sonja Boehmer-Christiansen of the University of Hull, which considers this issue with perception and clarity.⁵

Of particular interest is the attention now being paid to temperature data from the former Soviet Union. Research that has been recently been undertaken in Australia (and referred to by Boehmer-Christiansen) indicates that the temperature data from the former Soviet Union shows unique warming in recent decades, particularly in Siberia. This unique warming may have much more to do with the direct connection between low temperatures and fuel deliveries which applied under the Soviet system, and which has since disappeared, along with the USSR, than with any actual temperatures. John L Daly, of Launceston Tas., who has achieved international standing through his web site entitled “Still Waiting for Greenhouse” [www.vision.net.au/~daly] has been in the forefront of this research.

Once the surface temperature data is considered with a view to eliminating urban heat islands, temperature records from very poor countries where there is little chance of obtaining accurate records of any kind, and the “Siberian hot spots” of the last two decades, the much vaunted global warming of the last 25 years, attributed by global warming enthusiasts to carbon dioxide and other greenhouse gases, simply vanishes.

The satellite data which has been gathered since 1979, and covers the entire globe, also stands in the path of the global warming protagonists. Since October 1998 when the El Nino influence peaked, there has been a rapid return to the long-term zero trend line of the 20 year record.

It is no longer possible to maintain that the science is closed on this issue. Too much evidence and too many eminent scientists are opposed to the perceived IPCC orthodoxy. As more work is done on the surface temperature records (an investigation that has been driven by the refusal of the satellite data measuring tropospheric temperatures to show any non-trivial warming since 1979) the oft-quoted 1996 IPCC statement from the accompanying Policy Makers’ Summary, “the balance of evidence suggests a discernible human impact on global climate” appears increasingly indefensible. A “human impact” which results in zero change may, in theory, still be present. But it is not something which justifies any attempt to dramatically change human behaviour and the use of resources by political means.

5. The footnotes giving Australian values for Swedish currency have been added in the attachment.

Under these circumstances the protagonists for carbon withdrawal such as Dr David Harrison, a Special Adviser with the AGO, are forced back to arguing that the “science doesn’t matter any more. The political momentum is so great that implementation of the Kyoto regime is inevitable.”⁶ This is not a position which any Australian Parliament could endorse. Parliaments are the crucial institutions in our political tradition and their essential characteristic is their capacity to change political course. Changing course is the essence of sovereignty. That is why the most fundamental attribute of a particular Parliament is its inability to bind a successor Parliament. The Kyoto protagonists seek to establish an international regime of carbon withdrawal which will be beyond the capacity of Australian Parliaments to challenge.

The truth about global warming does matter. If there has been no significant global warming since CO₂ levels in the atmosphere really began to increase (ie in the post WWII era), then the Australian people have a right to know that this is the case. They should also know why it is that our taxpayer-funded scientific institutions have allowed public perceptions to reach a point where the entire broad sheet press, for example, takes it for granted that global warming is a fact, and that every right thinking person knows it as a fact.

This Senate Committee could perform a major public service by demanding of the Government the appointment of a Royal Commissioner to inquire into the state of the science debate on global warming, with the capacity to invite witnesses from overseas as well as to subpoena witnesses at home.

This Bill is the first piece of legislation which gives a parliamentary imprimatur to a carbon tax, and does so by appealing to a “scientific” consensus which does not exist. It begins the process of Parliamentary legitimisation of the junk science which provides the rhetorical base for the Kyoto Protocol. There is nothing in this Bill which would improve any aspect of Australian life and there are hidden but nonetheless serious threats to Australian sovereignty embedded within it. The Senate should refuse to pass this Bill.

6. Dr David Harrison Special Adviser with the AGO gave a seminar in Melbourne on 8 March last, organised by the Victorian Department of Treasury and Finance. When challenged on the scientific basis underlying the Kyoto Protocol he responded by stating that even if the science were to change overnight, the Protocol would still come into effect because too many governments had committed to it, and it was now impossible to change course.

Attachment 1

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BOOK REVIEW

T.R.Gerholm (ed.), *Climate Policy after Kyoto*, Multi-Science Publishing Company, UK 1999, ISBN 0 906522 161, 170 pages, £24.50.

Translated from Swedish, the subject of this book is Swedish climate policy. Its relevance, however, is much broader. It is a must for students and social scientists interested in climate policy because it combines a summary - in a most readable form - of the sceptical, or contrarian view of global warming with a rather bad-tempered and lengthy reply by Bert Bolin, the former chairman of the IPCC. The claim that dangerous, anthropogenic global warming is underway and can be 'mitigated' by emission cuts, is questioned by reasoning and evidence. The inclusion of the IPCC Second Assessment Synthesis Report is useful for checking what the modellers and science mandarins actually told the policy world in 1995, and for comparison with the forthcoming Third Report. This contains the sentence, at least in its draft form that

“the netforcing of the climate over the last 100 years (and since pre-industrial times) may be close to zero or even negative” (Chapter 5 page 50, Lines 8, 9 of draft),

something the authors could not yet have known, and which may well never appear in more widely disseminated summaries.

The contributors are Scandinavian scientists and students of climate models (Gerholm, Karlén, Ahlbeck, Wallin, supported by Richard Lindzen, USA), as well as science and energy policy analysts, (Moberg, Böttcher, Gerholm, Edin and Radetzki). Since Bolin claims that one of the contributors is largely repeating my work and chides me personally for not having any evidence for my critical view of the IPCC, this review pays more attention to these claims than it otherwise might have.

On the science side, there is little agreement even among these contributors beyond two points: there has been a slight warming during this century, 0.3 degrees C during the past three decades and that human activity has raised the concentration of several trace gases in the atmosphere. But the effects of these changes (albedo, behaviour of water vapour and clouds, aerosols) and even the observational record and nature of 'radiative forcing' remains healthily contested. Will the warming last? What are its causes? There is no consensus, and Böttcher therefore sees the IPCC's peer review process as sham. He warns scientists against advising government when governments hear what they want to hear. Karlén shows that climate so far has behaved normally and that empirical data does not show any changes from the pre-industrial era. The warming threat derives from model predictions that are not valid for policy-making, argue Lindzen and Wallin. Ahlbeck tells us that the ice collapse in Antarctica has nothing to do with climate, nor have recent forest fires or floods, (or coral bleaching, one might add.) Recent temperature increases measured in Siberia - made much of by believers - are likely to have more to do with the loss of subsidised fuel in the

postcommunist era than global warming. The amount of fuel supplied had increased as the temperature dropped. (Here is an argument that cannot be proven, only deduced.)

Gerholm is very interesting on how and why emission scenarios were drawn up by the IPCC with the help of a British expert, and why he believes that we can wait before undertaking expensive corrective measures. Sweden has one of lowest per capita levels of energy consumption in the industrialised world and could keep it that way by not phasing out nuclear power.⁷ Yet he argues for the withdrawal of subsidies to fossil fuels. Radetzki questions the high costs of proposed mitigation measures and argues that they would do more good elsewhere, clearly showing that IPCC economic calculations consider climate change purely as damage and that the benefits of abatement are exaggerated by analysing a number of global studies. He argues against the optimistic assumption that climate policy will stimulate economic growth; if beneficial, these benefits will be strictly limited to a small number of developed countries. The protection of current lives, not potential future ones, should be a target of public policy. Edin then looks more closely at Sweden's very high carbon tax (37 ore per kg of carbon)⁸ and overall level of energy taxation that doubles its price. The damage costs avoided are unknown, but not the needs of the Ministry of Finance. Nevertheless the tax may have reduced Sweden's emissions by one sixth, 'but at great cost'. The same amount of money invested elsewhere would have done much more good. Wood burning is now subsidised and large amounts of it, as well as peat and waste are now imported. Pine tar pitch, imported from the USA, has become a popular cheap fuel. He estimates that the leakage of carbon dioxide abroad is over 50% and Sweden pays SKr 6000 million more per annum,⁹ mainly to please a 'green' conscience? Other measures again, such as the replacement of petrol by ethanol, have increased carbon dioxide emissions. Swedish climate policy is in a mess and should be a warning to others.

The lengthy comments by Bert Bolin are directed, it see mainly at me. While he remains open to new findings on the science side, certainty prevails, ironically, on the policy side: emission should be reduced fast by all possible means. This readiness to advocate policy, however, contradicts his own advice that scientists should not advocate. Bolin has long ceased to be a bench scientist and is surely better described if not as a great science politician, than as a science mandarin who is using science to push his preferred policies.

On science, many uncertainties and imperfections are admitted, but there is always 'fear of surprises.' Global temperature is 'obviously affected by variations in solar radiation', but this misses the main points of the solar theory. Bolin agrees that our 'series of observations (of natural variations of temperature) are far too short to establish whether or not human influence has contributed to global warming'. The IPCC therefore has to go back to its reliance on models whose credibility for the purpose of prediction (rather than experimentation), lies at the very crux of the sceptics' critique. If testable predictions remain impossible because of incomplete scientific understanding and data, then scientific advice remains open to political and ideological 'steering'. This, according to critics, should be

⁷ This an obvious mistranslation. Sweden has a high per capita energy consumption, the greater part coming from hydro and nuclear power. What is low is Sweden's per capita carbon dioxide emissions.

⁸ A\$71.4 per tonne of carbon

⁹ A\$1.16 billion per annum (for a country of 8 million people)

minimal and not involve major interference with markets. What Bolin praises as measures of international solidarity, others see as an attempt to slow down development and welfare everywhere.

That the IPCC position is more attractive to governments seeking regulatory roles globally and at home, stands to reasons. Both views are held sincerely and may compete in the world - motivations vary between 'stakeholders'. No wonder politics has taken over, the point made so well by several other contributors. It is sad, however, to see Bolin who once initiated atmospheric research in Europe under the 'acid rain' banner, defend - quite unnecessarily - the dedicated climate researchers in the UK Met Office, Princeton and Hamburg - against my accusation of being in the pay of governments. Most scientists are paid by the public purse, the issue is how intimate and direct the links are between piper and pay master, and whether government officials are dominant when summary texts are drafted and authors are selected. Is government funding research to aid policy, or is research supporting a policy that has already been made?

In my experience, it is not research scientists who advise governments on researchable threats, formulate global research agendas or plead in Cabinet or at the UN for research funding. This is done by the 'mandarins' of the research community who have to be able to extract public funds for all sorts of projects. This is done with reference to political correctness: in the name of human solidarity, poverty alleviation, the defence of peace (or the free world), and now global 'sustainability'. Readers might like to have a look at the claim made by Phillip Newton for the IGBP (Nature 29 July.1999 p.399,). This programme - to which Bolin is no stranger - is again looking for funding and hopes to do so through closer links with the World Climate Research Programme, FAO and the Human Dimension of Global Change Programme. 'The emphasis would be on environmental change of relevance to society, targeting the carbon and water cycles', says Newton. The aim, echoing the IPCC, is the wish of scientists to 'increase the chances of effective management of global change' through improved understanding of how the Earth System functions. If it were that easy! Scientists managing the Earth System! This may turn even a socialist like me into a member of the John Birch society! I guess that many of the contributors to this book have a similar distrust of the uses to which climate science is being put, given the current political context.

Bolin attacks my view that science and policy are unhealthily linked if government departments fund major research projects angled towards 'global' policy advice. Are there not recent examples of this danger, from eugenics and nuclear physics to fusion? Most of the policies the IPCC is advocating are heavily R&D intensive, and therefore self-serving, as well as being very similar to those that were advocated in the 1970s under the Limits to Growth and Oil Crises scares. The real threats then were political, not environmental. Why should 'global warming' be different?

Bolin does not want to admit that the science-politics link can be too close and cosy, and hence harmful both to science and policy. Perhaps this danger does not exist in Sweden where scientific censorship may well be weaker, politicians more intelligent and the media more responsible. That this book was written and published in Sweden may demonstrate such a fortunate situation. The refusal by Bolin to permit people like me, who are not

scientists but have lived inside the scientific community for many years, to view Big Science as a global lobby consisting of a mixture of competing institutions and disciplines ‘naturally’ allied to Big Government - smacks of arrogance typical of many great men of science. He has long been one of the great science activists, and so is Bob Watson, his successor. Many scientists and labs owe them jobs, research projects and status as experts in Chomsky’s sense as ‘servants of power’. Science managers must be activists, not in the Greenpeace sense of alerting the masses and media, but in the sense that they must deliver funding by persuading governments of the ‘relevance’ of their agendas or ambitions. By doing this they leave the realm of science. Governments in turn seek the ‘authority’ of science to underpin unpopular policies.

By the way, the evidence for my view does not, as Bolin points out, come from a ‘firm understanding of the scientific issues’. It does not need to. It comes from an understanding of world politics and science funding problems, and long observation of how the contemporary research enterprise is required to behave in order to maintain itself. Such insight derives not from model experiments or calculations, but from observation, confidential interviews, political analysis, interpretation and experience, as well as access to several years of IPCC documents. I lived for many years in close association with the ‘fusion’ community and know how ‘energy’ related arguments have kept many a research agenda afloat. Nothing wrong with that, you may argue... and you may want to peruse the following: John L. Daly, “Still Waiting For Greenhouse”, <http://www.vision.net.au/~daly>.

Sonja Boehmer-Christiansen, University of Hull

Attachment 2

BC-UK's new elec rules seen penalising green schemes

UK : July 10, 2000

LONDON - Britain's struggling green energy industry will suffer further under government plans to introduce new electricity trading arrangements (NETA) in November, government officials and industry executives say.

Wind farms, dependent on the vagaries of the British weather, will be among the worst hit as the new trading system punishes generators which cannot guarantee output.

"NETA will penalise some renewables because of the way the balancing mechanism will work. NETA will reward regularity in the market place and some renewables will lose out," said Anna Walker, director general of energy at the Department of Trade and Industry (DTI) at an energy forum this week.

Environmentalists and renewable energy companies say NETA runs contrary to the government's stated aim of increasing the green contribution to electricity supply to 10 percent by 2010. Renewable energy currently contributes just over two percent.

INTERMITTENT SUPPLIES PENALISED

NETA's balancing mechanism will allow companies to buy or sell electricity close to real time to meet their commitments but will penalise companies which are forced to use it.

This aspect is likely to hit green energy sources which are prone to intermittent supply. Wind farms will be particularly badly affected, as will combined heat and power plants (CHP).

"NETA looks as if it will (scuttle) wind power," said Colin Palmer, director of Bristol-based Wind Prospect Ltd.

Penalties for non-delivery could be severe, said Palmer, who added "safe predictions on wind turbine output can only be made a few minutes ahead".

David Green, director of the Combined Heat and Power Association said all small generators will face problems as they will not have the flexibility of large generators which can rely on several power stations to ensure steady supplies.

"Big generators can juggle with their plant portfolio to remain in balance, but for most CHP and renewables there is not this flexibility," he said.

"If you only operate one plant and you become out of balance you have no leeway to redress the problem."

GREEN SCHEMES TO JOIN FORCES

Recognising the impact NETA may have on renewables, the government has supported aggregation - a process whereby small generators can join forces to sell electricity and minimise the risk of imbalance penalties.

But Green said aggregation had not been tried before and the proposals at present do not appear workable as it will be difficult to get small companies to cooperate.

Walker told Reuters the advantage of NETA over the existing Electricity Pool will be its flexibility and added the system could be modified if it doesn't work.

"NETA can be refined. It will be flexible and we will be able to change the rules," she said.

Story by Matthew Jones

REUTERS NEWS SERVICE