Submission to the Joint Standing Committee on Treaties
Inquiry into the Kyoto Protocol
Parliament of Australia

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Personal Background

I received a Ph.D. in Economics in 1996 from the University of British Columbia, and the same year was appointed Assistant Professor in the Department of Economics at the University of Guelph, where I specialize in the economics of environmental policy. I have been studying the issue of climate change since 1992. My Ph.D. thesis examined options for implementing carbon taxes in Canada, for which I constructed several computable general equilibrium (CGE) models. Since then I have continued to research theoretical and applied topics in environmental economics. My work has been published in academic journals including *Economic Modeling*, *Journal of Environmental Economics and Management*, *Canadian Public Policy*, *Canadian Journal of Economics*, and *Environmental and Resource Economics*. I am a frequent journal referee for environmental and natural resource economics articles. In 1996 I wrote a report for Environment Canada on the costs of carbon emission controls and in 2000 I was a member of an international scientific panel which presented a critical review of the forthcoming Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) before a public briefing at the US Capitol. My research is funded by the Social Sciences and Humanities Research Council of Canada and by internal University research grants. In particular I have never sought funds from private industry.

Brief Summary

The global warming hypothesis consists of two assertions:

(a) Greenhouse gas (GHG) emissions are causing a potentially dangerous warming of the climate.
(b) Immediate action, primarily in the form of the Kyoto Protocol, is warranted to reduce greenhouse gas emissions.

Four questions need to be asked.

1. Are greenhouse gases causing climate change?
2. Is the current climate change process harmful?
3. If so, will the Kyoto Protocol solve the problem?
4. Could the resources used up implementing the Protocol do more good elsewhere?

I submit the answers are as follows.

1. This is currently unsettled, but there are good reasons to believe that scientists have overestimated the sensitivity of the climate to carbon dioxide. There are conspicuous discrepancies between actual 20th century climate changes and model predictions of what would have happened if GHG's were as influential as has been hypothesized. While the surface has warmed, there are several possible explanations, each with credible scientific proponents, none of which can be ruled out as yet. The role of solar variations, the lunar cycle, the Arctic oscillation and pure natural variability, as well as the role of common air contaminants such as soot and nitrogen oxides, are not well-enough understood at present to permit precise conclusions about the relative importance of carbon dioxide and other GHG's.
2. Carbon dioxide is accumulating in the atmosphere at less than half the rate assumed in IPCC projections of 21st century climate change. At current rates it will take over 170 years for the carbon dioxide concentration in the atmosphere to double. Early research on the economic effects of global warming failed to take account of the ways that people adapt to changing conditions, and overstated the losses due to warming. New studies which account for such adaptation show that moderate warming and increased carbon dioxide concentrations (even at the risk of more variable weather) is, on balance, a small but discernible benefit to the global economy. Moreover there are clear indications that a warmer climate is a more stable climate. The frequency and severity of storms is not increasing, and may even be decreasing. Recent research on the effects of increased carbon availability on plant growth is only just emerging in the journals, but the picture is overwhelmingly positive. Plants and trees grow better and make more efficient use of water when carbon is more abundant in the air.
3. The Kyoto Protocol, if implemented, can be predicted to unravel quickly. It will be subject to cheating, defections and so-called economic leakages. The leakage effect arises when Annex I countries cut their demand for fossil fuels, forcing down the world prices of coal, oil and gas. These price reductions will prompt increased fuel use (primarily coal) and GHG emissions among non-Annex I countries, partly or wholly offsetting the reductions in the Annex I countries. Even if the Protocol is fully implemented with no cheating or economic leakages, model simulations show that it will have almost no effect on the rate of atmospheric carbon accumulation or temperature change over the next century. Meanwhile the costs of implementation are on the scale of a significant economic recession (1-2 percent real GDP loss). It is inconceivable that the public will accept such costs to implement a treaty which is a futile gesture at reducing emissions that are largely harmless.
4. There are much more pressing environmental issues facing the global community. Most of these lack the international glamour of climate change. Total Suspended Particulate concentrations in 3rd World cities, organic water pollution in developed and developing countries, the lack of clean drinking water in low-income communities, etc, are real environmental problems which are causing real but largely

overlooked human suffering. The Kyoto Protocol will cost so much to implement it will displace other more worthy environmental and development initiatives from the public budget.

On these grounds I advise the Joint Standing Committee to recommend that Australia not ratify the Kyoto Protocol.

The detailed discussion begins on the next page.

1. Are greenhouse gases causing climate change?

The global climate, measured at the surface, warmed by about 0.4 ^{o}C from 1900-1940, then cooled slightly until 1980, and since then has warmed just over 0.2 ^{o}C, for a total 20th century change of about 0.6 ^{o}C. Also, over the 20th century, GHG concentrations have risen by about 50 percent. When discussing the hypothesis that GHG emissions caused climate change, IPCC reports use vague phrases like "broadly consistent", "balance of evidence suggests", "discernable human influence" and "due at least in part" to describe the similarities between the theory and the data. However, a policy as expensive as the Kyoto Protocol requires much stronger, more conclusive evidence than this. There are many important and unresolved discrepancies between model predictions and reality.

(a) Half of all fossil fuel-related GHG emissions have occurred since 1970 (Marland *et. al.* 1999). Yet most of the 20th century warming took place before 1940. There is still no scientific agreement about the causes of the early warming phase, although plausible candidates include solar changes (Friis-Christensen and Lassen 1991) and the natural recovery from the Little Ice Age of 1350-1850 (Elsaesser 2000a). Although a role for GHG emissions is often insinuated when discussing 20th century climate change, no one today attributes the pre-1980 temperature changes entirely to GHG emissions.

(b) According to IPCC documents, the models project the strongest surface warming to occur in the polar regions, at rates that should now be about 0.8 ^{o}C/decade. In reality, no such warming has occurred, in fact the dominant trend in the postwar data has been *cooling* at the north pole (Kahl *et. al.* 1993, Przybylak, R. 2000) and in the Antarctic (Comiso 2000). Some recent anecdotal evidence of warming at the north pole is due to the very strong 1998 El Nino.

(c) Climate models clearly project warming to be stronger in the troposphere than on the surface. But satellite and balloon data show that no warming has taken place in the troposphere since 1979 (NRC 2000, Hurrell *et. al.* 2000). No convincing physical explanation has been offered to reconcile a strong (hypothesized) climate sensitivity to GHG levels with a neutral or cooling trend in the troposphere. It cannot be ruled out that the climate is simply not as sensitive to carbon dioxide as modelers assume, and that the surface data are contaminated by urbanization bias.

Climate models do not "predict" warming as a result of carbon dioxide increases (and the IPCC is careful not to refer to model simulations as "predictions"). Instead, they are *programmed* to a predetermined "climate sensitivity" chosen by the researcher, usually 2.5 ^{o}C per carbon doubling. For instance, Wigley (1998 p. 2287), reports on climate simulations from a suite of IPCC models and comments:

> "Figure 4 (top) shows temperature changes relative to 1990 for a climate sensitivity of 2.5 ^{o}C equilibrium warming for 2xCO_2…Figure 4 also shows the temperature reductions for the central scenario (B=CONST) for different climate sensitivities [1.5-4.5 ^{o}C] to illustrate the dependence of the results on this *parameter*." (emphasis added).

It has long been known by radiation experts that the differential equations describing temperature change due to variations in the optical depth of the atmosphere are so sensitive to minor changes in the lapse rate (the rate of cooling as you gain altitude) and the surface albedo (reflectivity) that actual temperatures could go up *or down* in response to CO_2 increases (Essex 1991). Models which always predict temperature increases must be programmed to do so. In practice, they all are. Unfortunately, the fact that they all now "predict" temperature increases is taken as evidence that temperatures will increase as carbon concentrations go up.

Many researchers claim to have discovered a GHG "signal" in the data (e.g. Wigley *et. al.* 1998, Tett *et. al.* 1999 etc.). Most such results rely on comparisons between actual data and model-generated simulations of what the climate would look like with lower GHG emissions. Interpretation of the results requires the assumption that the model is "correct" so the only differences between simulated and actual temperatures are due to reduced GHG climate forcing. For instance:

> "Assuming that the O/AGCM control-run data [i.e. data generated by a computer simulation without GHG effects] provide a reasonable representation of the unforced behaviour of the real climate system, then a marked difference between the observations and the control-run results would provide evidence of external forcing effects in the observed temperature record." (Wigley *et. al.* 1998 p. 1676).

The argument is, *if* the models are accurate, *then* GHG's are responsible for any difference between model output and actual temperatures. The problem is that General Circulation Models are inaccurate in many ways, so the differences between the numbers generated by these computer programs and the real world temperature data cannot be treated as evidence of a greenhouse effect. The "signal detection" type of argument must be looked at with considerable skepticism.

The IPCC claim that "the balance of evidence suggests that there is a discernable human influence on the global climate" is ultimately a circular argument. The "signal detection" studies presuppose that the models are correct. The models build in the assumption that warming always occurs in response to GHG increases. This assumption is then justified on the evidence of signal detection studies.

A further challenge to the IPCC is from Hansen *et. al.* (2000). Many commentators have misinterpreted this paper as a "recanting". In fact Hansen and his co-authors still argue that GHG emissions warm the climate, but they argue that sulfate aerosols offset this effect. There are many reasons to question this claim (sulfate aerosols are mostly in the northern hemisphere, but that is where the surface warming has been strongest), but what is especially noteworthy is that the Hansen *et. al.* implicitly deny that the GHG+sulfates signal is present in the data, despite the many authors who claim to have "detected" it.

There are alternative explanations for the observed 20th century surface warming. Many authors believe that the surface data are compromised because so many thermometers are located in urban areas and have been subject to growing "heat island" effects (Singer 1999). There is now wide agreement that when urbanization bias is removed from the continental US data, the apparent warming trend vanishes. Similar results have been found in European data (Balling 1997). These are disturbing findings, and the response of the IPCC to this challenge has been very inadequate.

The role of the sun is only slowly being worked out. The correlation between changes in solar output and surface temperature growth is very strong (Friis-Christensen and Lassen 1991) but the solar changes (in terms of watts per square meter) are small compared to the resulting climate effects. There is no generally accepted theory of how or if the climate amplifies the solar input, but there is a lot of research being done on the question.

Other natural forces are possibly behind recent warming. Researchers at the Scripps Institute of Oceanography (Keeling and Whorff 2000) have published evidence showing a long term relationship between the 1800-year lunar cycle and surface temperatures, operating through tidal forces. We are currently in a warming phase which will last for at least another 3 centuries. We are only just beginning to learn about the character of natural cycles in the climate, such as the El Nino Southern Oscillation (which

has strongly influenced global temperatures in the 1990s) and the Arctic Oscillation (AO). Meteorologist Hugh Elsaesser has argued (2000b) that the observed intensification of the AO, which began in the late 1970s but is not connected to GHG accumulation, explains northern hemisphere temperature changes since 1979 better than does the carbon dioxide hypothesis. And Hansen *et. al.* (2000) have argued that the increased concentrations of common air contaminants (soot, nitrogen oxide, etc) are largely responsible for 20^{th} century warming, not CO_2.

The hypothesis that carbon dioxide emissions are warming the climate may in the end be vindicated, but the science is far from settled. This is why so many prominent scientists have signed the Leipzig Declaration, which reads in part:

> "…We believe that the dire predictions of a future warming have not been validated by the historic climate record, which appears to be dominated by natural fluctuations, showing both warming and cooling. These predictions are based on nothing more than theoretical models and cannot be relied on to construct far-reaching policies. As the debate unfolds, it has become increasingly clear that –- contrary to the conventional wisdom -- there does not exist today a general scientific consensus about the importance of greenhouse warming from rising levels of carbon dioxide."

This bold statement was signed by more than 100 atmospheric scientists and climatologists from around the world, including among others, the editor of *Climate Research*, the editor of *Atmospheric Research*, a member of the Nobel Prize selection committee in physics, the chair of the (US) National Research Council Carbon Dioxide Assessment Committee, a former president of the US National Academy of Sciences, a former director of the US Satellite Weather Service, and (ironically) a founding member of the Club of Rome. (The full list of signatories is at http://www.sepp.org/LDsigs.html.)

Serious discrepancies between model predictions and reality forbid acceptance of the greenhouse hypothesis at present. There is a circuitous relationship between signal detection studies and climate models which limits the credibility of the IPCC conclusions. And there are a host of alternative explanations which cannot be ruled out. It may yet turn out to be the case that the climate is much less sensitive to carbon dioxide than is currently supposed.

2. Is the current climate change process harmful?

The simulations of global warming in the 1995 IPCC Second Assessment Report, which predicted a warming of 1.5-4.5 ^{o}C over the next century, assumed that CO_2 concentrations would grow at 1 per cent per annum for the next century. Post-1958 data on actual carbon dioxide concentrations (measured at the Mauna Loa observatory) are available at http://cdiac.esd.ornl.gov/trends/co2/sio-mlo.htm. Over the period 1960 to 1998 the average annual percent change was just under 0.4 per cent. At no point in the available record has CO_2 ever grown by 1 per cent in a single year, let alone over a long period. If concentrations continue to grow by 0.4 percent per year the atmospheric concentration will only rise by 50 per cent over the next 100 years, and it will take 174 years to for it to double. Clearly, if the rate of growth of carbon dioxide is less than half that assumed in the IPCC projections then any climate changes will be less dramatic as well.

The IPCC also projected too much methane growth. Comparisons of recent changes in methane levels show that actual levels are below the lowest of the 1995 IPCC projections, and the growth in methane is approaching zero (Hansen *et. al.* 2000).

The warming which is known to have occurred 1000 years ago coincides with indications of prosperity around the world. It was an age of ample crops, cathedral building in Europe, expansion of ancient civilizations in Mexico and South America, and monument building from Easter Island to Malaysia. By contrast, the cold centuries which followed are known to have been years of hardship as harvests fell, fuel became scarce and poverty spread. Looking at the past 1000 years, warming is a better trend than cooling, and temperatures at contemporary levels are associated with general prosperity.

Early studies on the economic impacts of climate change (e.g. Rozenzweig and Parry 1994) did not take full account of the adaptation measures people would employ in response to warming trends (this is sometimes called the “dumb farmer” assumption). By accounting for feasible adaptation to changing growing conditions more recent studies have shown net gains in global agriculture (Mendelsohn *et. al.* 1999, 2000) and forestry (Sohngen and Mendelsohn 1998) due to climate warming. Manufacturing and other indoor production is pretty much unaffected by local climate.

There is a perception that as the world warms, the weather gets more deadly. This is not true. In North America (where the best long term data exist) deaths due to hurricanes and tropical storms are negligible today compared to the period up to the mid-1900’s, despite the enormous increase in population located on the storm-prone southeastern US coastline. There have been 259 Atlantic cyclones recorded as making landfall in the US over the past 5 centuries (http://www.nhc.noaa.gov/pastdeadlya1.html). The deadliest 39 storms each caused more than 1000 deaths, but they occurred long ago. The deadliest storm after 1981 was hurricane Joan (October 1988) which was 95th most severe with 216 deaths. The deadliest entry since 1995 is Hurricane Opal (October 1995), which is the 182nd most severe, with 59 deaths. There is no upward trend in the frequency of storms, nor is there any upward trend in the severity of storms (Landsea *et. al.* 1996, Zhang *et. al.* 2000).

Biologists are moving towards the view that enhanced carbon dioxide levels will help preserve, rather than reduce, the diversity of plant species. Wand *et. al.* (1999) reviewed studies of 120 different plants and found consistent evidence that increased carbon dioxide levels stimulate growth rates of both C3 and C4 type species. Owensby *et. al.* (1999), BassiriRad *et. al.* (1998), Maroco *et. al.* (1999), Delucia *et. al.* (1999) and numerous others have shown that increased carbon availability promotes growth in plants and forests, and helps them use water more efficiently.

3. If climate change is harmful, will the Kyoto Protocol solve the problem?

Despite all the above, some are convinced that global warming is happening due to GHG emissions and that it is a big problem. If so, the Kyoto Protocol is no solution. The so-called "leakages" problem deserves more attention than it typically gets. The economic mechanisms are very simple. Suppose all OECD members undertake large reductions in fossil fuel use to control CO_2 emissions. This reduction in demand for fossil fuels will force down world fuel prices. Outside the OECD, non-abating countries will respond to these decreases by increasing *their* fuel use. Also, energy-intensive industries will have an incentive to move themselves out of the OECD into the nonparticipating countries. Since natural gas is a less predominant energy source outside the OECD, energy demand increases will be disproportionately met through coal and oil use, the more carbon-intensive fuels. The increase in non-OECD emissions as a percentage of the cut in OECD emissions is called the "leakage rate". For instance, a leakage rate of 50 percent means that half of the emission reductions by participating countries are offset by newly-increased emissions elsewhere. Estimates of the leakage rate vary, but many economists expect it is around 30 percent (Smith 1994).

A further difficulty with the Protocol is that countries are self-monitoring on both emissions and sinks. These are very difficult to measure even when done conscientiously, and the Accord provides a not-so-subtle reward for nations that underestimate their net emissions. No external agency will be in a position to accurately audit national carbon dioxide emission accounts. One should not underestimate the incentives to cheat, even on international environmental agreements. The Montreal Protocol on Ozone-Depleting Substances was developed in response to a pollution threat that many perceive to be much more immediate and deadly than GHG-related warming, namely depletion of the ozone layer from use of chlorofluorocarbons (CFC's). Also, its provisions are relatively simple to monitor: the chemicals are banned outright, so production and sale is forbidden. Yet, today, the international black market in illegal CFC's is estimated at US$ 100 million (CRA 1999).

A country which cheats or defects from the Kyoto protocol would not face any serious threat of international sanction. First, it is unlikely that *any* countries will be in full compliance, so no one will be in the position to demand others' full compliance. Second, apart from warfare, the only compelling way to enforce international agreements is through trade sanctions. But these instruments run into the problem that trade is undertaken because it is mutually beneficial, so the countries which can inflict the most pain on the target are themselves the most hurt by the sanctions.

But if we suppose that the Protocol is fully implemented, the effects on the climate are still negligible. Wigley (1998) presents forecasts based on three post-Kyoto scenarios, all of them optimistic. Under the basic implementation scenario, with universal compliance, no defections and no leakage effects, global temperatures in 2100 are only 0.08 ^{o}C below the baseline (2.5 ^{o}C) increase. With Kyoto plus 100 years of ever-tightening constraints on carbon dioxide emissions, temperatures are only about 0.3 ^{o}C below baseline. Under the basic scenario, concentration of CO_2 in the atmosphere reaches double its current level in about 105 years, rather than 100 years. Similar results were found by the climate modelers at MIT (Reilly, *et. al*. 1998)

If global warming is real, then the climate is going to warm to the same extent with or without the Protocol, so Kyoto is a waste of money. But if global warming is not real, and the climate is not warming, then Kyoto is an even bigger waste of money. Our challenge is to learn to adapt to change, not to expend resources in a futile attempt to prevent it.

4. Could the resources used up implementing the Protocol have done more good elsewhere?

In popular discussions of public policy the distinction between costs and benefits is often confused. Suppose the government introduces a policy requiring all buildings to be painted pink. There would, of course, be a sudden surge in the demand for pink paint. Paint factories would hail the policy for its far-sightedness as they gear up production, hire new staff and build new plants. Some observers might consider the value of all this new employment and production as a *benefit* of the policy, but this is a mistake. These are the *costs* of the policy. The labour, materials and capital devoted to repainting all the buildings was taken out of useful service in the production of other goods which, had it not been for the regulation, the public would have preferred to receive. The benefits of the pink-building policy are the good ends served by having all those pink buildings. If, on reflection, the nation decides there is no benefit to making all buildings pink, then the policy yields no benefits. The labour and materials used up in the painting process cannot be cited as a benefit, because those factors would have been employed elsewhere, producing goods and services of greater value to society.

Many people make this mistake in discussing global warming policy. The fact that sellers of efficient engines or natural gas equipment would benefit in the short run from the implementation of the Kyoto Protocol is totally irrelevant. Their profits belong on the cost side of society's ledger. The benefits of Kyoto are measured by looking at the environmental good it will do. The above sections showed that the Kyoto Accord will not yield any environmental benefits.

Some defenders of global warming policy claim that it will yield beneficial side-effects, by reducing a host of other air contaminants related to fossil fuel use. But the need to reduce, say, sulphur dioxide emissions, or ground-level ozone, justifies policies which target these particular contaminants directly: it does not justify policies which are themselves pointless but which might indirectly alleviate these. Any benefit gained as a side effect of carbon dioxide reductions could have been achieved more cheaply by policies which focus on the particular contaminant directly. Many air contamination problems are caused by a complex combination of factors, including but not limited to fossil fuel combustion. In Ontario, vehicle-kilometers traveled rose by 71 per cent between 1971 and 1995, yet carbon monoxide (CO) emissions fell by 87 per cent over the same period, because of improvements in emissions control technology (Ontario 1998). To have tried to achieve the same reduction in CO emissions by cutting gasoline use would have been far more costly. In the same way, if a regulator wants to cut the levels of a certain type of emission, policy should be targeted specifically at that pollutant, not at cutting the use of some other valuable but correlated factor.

The recent published estimates of the costs for industrialized countries like the US and Canada to implement Kyoto are mostly between 1 and 2 percent of GDP.[1] These assume emission reductions of about 25 percent below baseline. While the spread of published estimates is large, one key theme emerges repeatedly. All the standard economic cost studies presume an efficient pricing instrument will be used, such as a universal carbon tax. Any departure from a uniform economy-wide carbon price causes cost estimates to go up rapidly. Wigle (1999) finds Canadian welfare losses equal about 1.4 percent of GDP to comply with Kyoto if a uniform carbon pricing scheme is used, but sectoral exemptions have dramatic

[1] For Canada see McKitrick (1997), Howatson (1998) and Wigle (1999); for the US see Charles River Associates (1999), Shogren (1999) and references therein. For other countries see *Energy Journal* special issue on the Kyoto Accord, May 1999.

effects on the costs. If the policy only targets intermediate energy use in energy-intensive sectors the losses jump to over 10 percent of GDP. This is an important point since no government seems willing to implement a uniform carbon tax, and many have already promised sensitive industries an exemption from emission control policies. Policies which do not rely on direct emission pricing are guaranteed to inflate the costs of compliance many times over.

It is worth noting what the dollar figures mean in this debate. If good policy design is used (including international permits trading), adjustment and administration costs are small, and emissions are allowed to grow somewhat after 2012, it is reasonable to conjecture that implementing Kyoto would cost OECD nations about 2 per cent of GDP per year, on average, at least over the first decade. Is this a large amount? In 2010, the OECD will produce about 25 trillion US dollars worth of goods and services. 2 per cent of this is $500 billion US dollars, about the same as the entire GDP of Australia and New Zealand combined, and roughly 7 times the entire foreign aid budget of OECD members. Over a decade this amounts to $5 trillion. This is the *minimum* cost of complying with the Kyoto Accord, and, as was explained above, if global warming is really going to happen, Kyoto will do nothing to stop it.

This is real money which must come out of real budgets, and will no longer be available for health care, education, highway maintenance, food inspection, homeless shelters, pollution control, wilderness preservation foreign aid, support for the arts, or anything else for which it might have been used. All these things will be given up for a policy that even its strongest supporters admit will yield no significant delay in the onset of climate change.

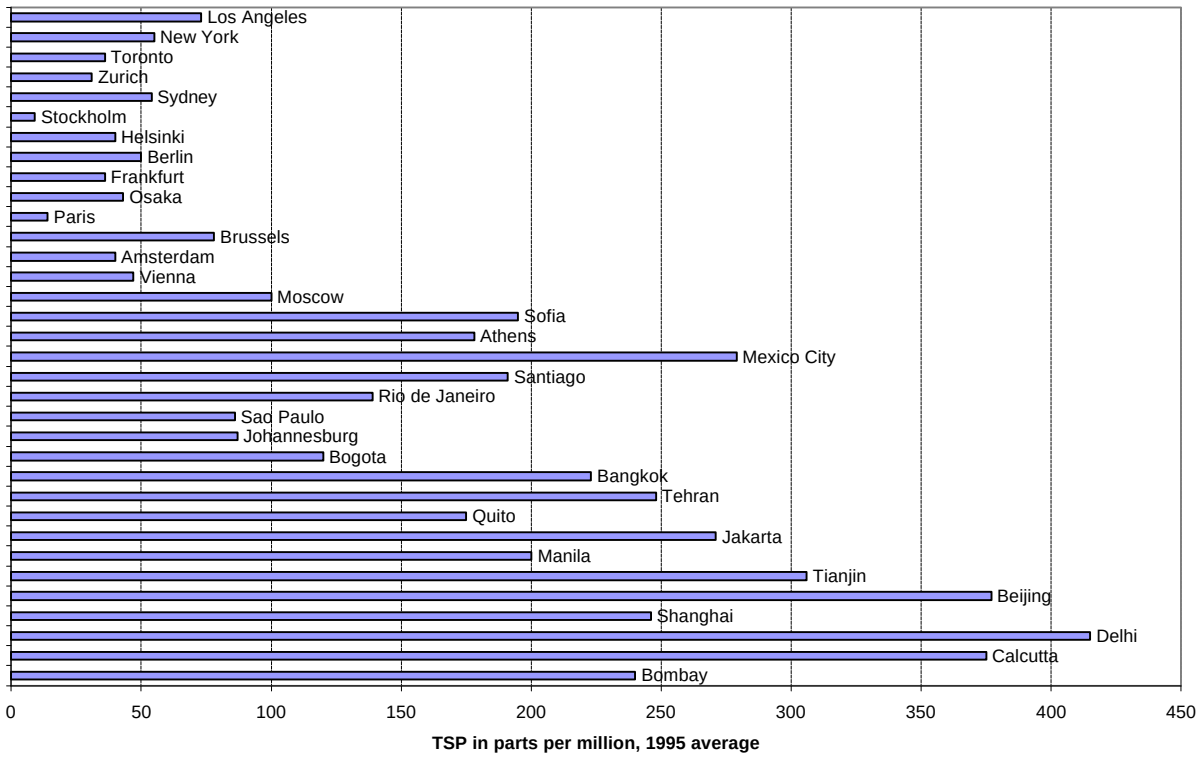
Another way to understand the costs is to look at the 1990-1991 recession. Between these two years, real GDP in Australia[2] fell by 1.3 per cent. The estimates of the cost of implementing the Kyoto Protocol begin at this magnitude, and increase quickly if more restrictive policies are implemented thereafter.

Since the cost of implementing the Kyoto Accord will displace other environmental initiatives out of the public budget, it is worth examining what might have been done with the money instead. Figure 1 shows average Total Suspended Particulate (TSP) concentrations for 34 cities around the world. They are arranged from wealthiest to poorest going from top to bottom. Note that a reading of 60 parts per million is the standard at which most North American cities would trigger an air quality alert, on the expectation of breathing difficulties among the elderly and those with lung diseases. Figure 2 shows organic water pollution emissions for 31 countries around the world, based on 1993 data. In this case there is less of a relationship between the wealth of a country and its emissions rate. Some of the heaviest polluters are Germany, Japan and the US, though China is clearly the worst case.

By implementing the Kyoto Accord, not only will developed countries have fewer resources for dealing with real environmental problems, but they will have much less money available for helping developing countries deal with their environmental problems, some of which are incomparably worse than anything the citizens of developed countries have to contend with. What less-developed countries need is growth and investment, to raise incomes and increase national wealth. As incomes rise, the resources will become available for better environmental protection. The Kyoto Accord will drain resources away in a futile attempt to prevent something which may or may not happen and which would be largely benign if it did. It is no help to the environment, regardless of how badly it impacts the world's economy.

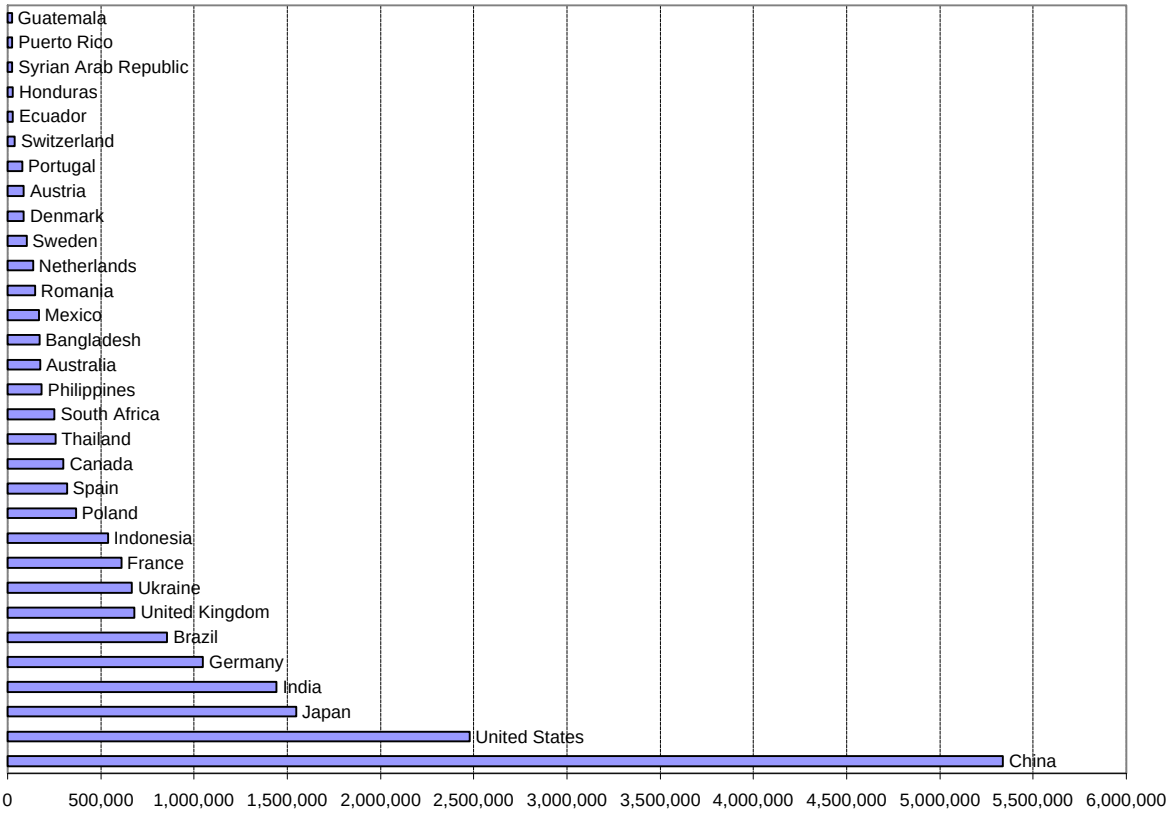
[2] According to standard OECD National Accounts, with real GDP converted to US$ at prevailing exchange rates.

Figure 7.4
Total Suspended Particulate Concentrations versus Average Income



Source: Economic Performance and Environmental Quality Information Base (http://biff.econ.uoguelph.ca/~rmckit/epeq.html).

Figure 7.5
Organic Water Pollution Emissions (Kg per day) 1993.



Source: World Development Indicators, World Bank.

Conclusions

I advise the Joint Standing Committee to recommend that Australia not ratify the Kyoto Protocol. This stance is justified on four grounds.

- The relative effect of GHG emissions on the global climate is subject to considerable uncertainty.
- Even if GHG emissions cause some warming, it will be slow and largely benign.
- Even if some aspect of global warming is harmful, the Kyoto Protocol will not stop it.
- The costs of the Kyoto Protocol exceed any identifiable benefits.

There is no shame in facing reality. The Protocol was drafted in haste, it is an ineffective response to an ill-defined problem, and it needs to be rethought from scratch. To proceed with it on symbolic grounds, despite the scientific and economic arguments against it, would benefit no one.

There are some false arguments often heard from proponents of the Protocol. Some suggest that it is a "good first step." But in environmental policy, the first step is always the one that costs the least and does the most good. After that, marginal costs rise and marginal benefits fall. If the first step fails the cost-benefit test, the subsequent ones will too. Some worry about world opinion if a country like Australia does not ratify Kyoto. But the US has already declared that it will not ratify the Protocol, and no signatory has indicated a willingness to implement the kinds of policies that will be necessary to achieve compliance. In any case, the decision must be made based on facts and sound arguments, not on worries about what others may or may not think.

I urge the Joint Committee to recommend instead that Australia focus its environmental policies on helping developing countries achieve clean air and safe water, and that Australian expertise about adaptation to climate change be made available to others who could benefit from it. In the long run this will be a much more beneficial contribution to the common good.

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