

Global Warming: An Australian Perspective

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Abstract

There is already an abundance of publications on climate change and global warming. Most, but not all, support the theory that carbon dioxide emissions are the prime cause. There is anecdotal and some scientific evidence that global warming is occurring. Any remedial action that now needs to be undertaken is dependent upon political processes. The mechanism for ensuring that politicians have a good understanding of the scientific principles involved is discussed together with the necessity of getting international consensus and action on global warming, climate change and carbon emission reduction.

Introduction

There seems to be a lot of confusion about global warming; some “experts” say that it is real; others that it is not true. Disagreement among scientists is healthy and usually leads to a better understanding of the “scientific truth” about a particular phenomenon. In Australia this has brought about considerable and prolonged debate about the reality or otherwise of global warming. Many felt that, by 2009, the debate had run its course and global warming was accepted as a scientific fact. The situation has now substantially moved beyond debate among scientists and now involves political debate. For example, at least one political senator has expressed concern that global warming may not be a reality. This politician, who had done his own scientific research about global warming, does not agree with some of the commonly accepted scientific findings.

According to his research, over the last decade there has been no real evidence that global temperature is increasing. He accepts that carbon dioxide emissions have been going up but has suggested other reasons for this, such as solar activity being more closely aligned to global temperature changes, particularly over a long period of time.

It is always easier to hear “good news” rather than “bad news”. To hear that global warming (and unpleasant consequences) might not be a reality is much more palatable than the contrary view.

This has meant that it is very difficult nowadays for the lay person to know what to think about such a complex matter.

Anecdotal and Other Evidence in Australia

While the “global warming” debate goes on, there does appear to be significant “climate changes” oc-

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curing in Australia with prolonged periods of drought in inland areas and heavy flooding in some parts of Queensland.⁽¹⁾ Some sceptics claim that this is just part of a normal climatic cycle. In the case of Perth, the dams which supply the public drinking water are now at record low levels. It has been a long time since the major dams have overflowed. Obviously there are other factors, such as increased population, leading to a greater draw-down on dams. Of necessity, Perth has now become more and more reliant on underground water and recently desalination of ocean water (which requires considerable energy and hence contributes to carbon emissions). For the first time there are restrictions on winter sprinkler-water use.

Scientific Basis

On a simplistic level, one might imagine that global warming may be determined by taking a very large number of temperature measurements in many selected locations and factor in diurnal and seasonal changes. There are, however, many more physical variables at work. Most high school science students carry out an experiment whereby temperatures are recorded in a beaker of melting ice as it is slowly heated. The experiment shows that the temperature remains at 0 degree Celsius while there is ice present, despite the fact that heat is applied to the system and the ice is melting and becoming water. On a grander scale, if heat is applied to the Earth, particularly at the polar regions, there may not necessarily be a measureable increase in temperature. The extra heat applied to the system will be taken up by the melting process. Polar melting measurements may thus be a better indicator of "global heat increase" rather than just merely temperature. The United Nations-backed International Polar Year program, in

which there were participants from more than 60 countries, concluded that the icecaps of the North and South poles are indeed melting at an unprecedented rate.

If climate change is real, then the question arises as to whether climate change and global warming are part of the same phenomenon. Increased carbon dioxide levels are caused primarily by increased pollution from fossil fuel combustion on one hand and fewer mechanisms, such as green plants, to remove carbon dioxide on the other. It is believed by many scientists that the increase in carbon dioxide levels produces an increase in the warming of the earth. Dr Graeme Pearman,⁽²⁾ former head of CSIRO Atmospheric Physics and one of Australia's top climate scientists, points out that atmospheric carbon dioxide, oceanic carbon and the Earth's temperature form a complex interlocking system. If one component is disturbed by some external influence, the other responds over time-scales from decades to centuries. Currently, the main external disturbance is the injection of carbon dioxide into the atmosphere.

Political Backdrop and Time Frame for Action

Although many scientists might wish that politicians not become involved in this debate, political understanding and support are vital in issues such global warming and climate change in order to effect major improvements. Both science and economics play a major role in political decision-making. It is fundamental that politicians be well advised about the science involved and the environmental and economic consequences of such issues.

One problem is that such environmental consequences are likely to manifest themselves well into the future and generally after incumbent politicians



have left office. Politicians should avoid the temptation to defer important decisions on matters where some irreversible future impact may occur. It is essential that current politicians do not defer any decision-making processes for too long when it comes to climate change. Accurate science must be balanced with the need for timely remedial action, should such action be required. Politicians must be willing to enact appropriate legislative changes, should they be required, during their political life.

According to many scientists (and Al Gore), we may not have the luxury of further delay for much longer. The former United States Vice President visited Australia in July 2009 and expressed grave concern that the world is acting too slowly in reducing carbon levels. He is worried that the longer “the world” continues to increase carbon emissions, the more difficult it will be to reverse the adverse affects. The severe changes in the last decades have shown mankind that nature does eventually react to man-made changes.

In Australia, the necessary legislation must be approved by both houses of the Federal Parliament. In 2009, parliamentary approval hinges upon a Senate where the government does not have a majority. In essence, final approval is dependent upon the way only a few senators vote.

Scientific Input into the Political Process

The question arises of how politicians can be well informed about the science involved when there are diverse views.

In “most subjects,” there will always be differing viewpoints. With science however there is an expectation that it is more exact than “most subjects.” For example Newton’s laws are predictable and can

be accurately calculated. In the case of the science relating to global warming, climate change and carbon dioxide emissions, although the science of the component factors is accurate, the strong interaction of various environmental and man-made factors give rise to some variation in interpretation.

It would seem that the prudent approach for politicians to adopt in the first instance is to ensure that the scientific advice they receive is sound and based on peer-reviewed reputable publications. If they do not have a scientific background, they should be aware that it is usually (but not always) important to select the majority scientific view. This does not mean that they should not ignore minority views. On the contrary, such views provide an important tool for questioning the science further and increasing their understanding.

According to the editor-in-chief of *Science Magazine*,⁽³⁾ almost all of the recent scientific publications support the global warming theory. These publications are naturally peer reviewed. Despite this, there will always be some scientists who disagree with the mainstream publications. Such dissention is healthy and desirable in a scientific forum when there is so much at stake.⁽⁴⁾

It is thus prudent for politicians to seek advice from a range of recognized scientific experts. It almost goes without saying that this advice should be sound and unbiased.

To this end, the United Nations Intergovernmental Panel on Climate Change (IPCC) has been formed.⁽⁵⁾ It is composed of scientific experts who examine and report on their findings. IPCC has released a succession of reports which suggest that climate change created by human activities has already caused global warming and that urgent and substantial action

be taken to prevent dangerous levels of climate change. In Australia, studies from CSIRO and the Australian Bureau of Meteorology support the findings.⁽⁶⁾

As mentioned previously, a senator is concerned that global warming may not be a reality. In addressing his concern, IPCC has advised that considerable research has been undertaken into solar flares and cosmic perturbations extensively over the past 20 years. The Panel's conclusion was that these effects are indeed real but very small in comparison to the effects of greenhouse gases on the global temperature.⁽²⁾

Difficulties in International Agreements and Some Optimism

Science seems to overwhelmingly support the theory that global warming and climate change are real. The problem lies in getting international agreements for remedial action.

On one hand, some recently industrialized countries that are now reaping the rewards of industrialization may not be inclined to go to the expense of reducing their carbon emissions. They might argue that historically the older industrialized countries have benefitted from producing goods without being constrained by the expense of carbon emission controls. In other words, "other" countries have had their chance to improve their standards of living by industrialization without being constrained by carbon dioxide emission controls, so why should not they have their turn now?

On the other hand, countries that have long been industrialized are concerned that change costs money and they fear a drop in their living standards if money is channelled to emission controls. As in North America and Australia, it seems that most people in

Europe (and other parts of the world) still want a large property, a large house, two cars, good salary, the best of food and low taxes. Emission control is not a high priority. They might argue that money would be better spent on improving their country's economy, health, education, transport and energy supplies. In a time of financial crisis, economical failure, high unemployment and poor health care, the idea of emission control is hard to sell.

While it is desirable to have an international approach to reducing carbon emissions, Australia's plans for emission reduction have been stated by the Australian Government's Minister Assisting the Minister for Climate Change, Mr. Greg Combet:⁽⁷⁾

We have announced that even if there is no international agreement we will reduce our emissions by 2020 by five per cent and if there is a comprehensive agreement coming out of Copenhagen, we will reduce our emissions by 25 per cent. Of course we have also established a target to reduce our greenhouse gas emissions by 60 per cent by 2050. So we are on the record with our targets.

On a smaller (but growing) scale there is action to encourage individuals to be aware of the limitations of the planet, particularly in the light of the severe strain placed on the environment by the massive increase in the human population globally. Some positive moves are exemplified by the following examples, where there is a need to:

- Conserve (including land conservation)
- Reduce consumption
- Recycle
- Seek alternative forms of energy
- Reduce packaging
- Try alternate forms of heating



- Make better use of solar energy,
- Preserve species from extinction.

Despite the “gloom and doom” about global warming, there is still a fair amount of optimism about dealing with this problem. Al Gore illustrated this recently when discussing negotiations on a climate agreement in Copenhagen in December 2009. He said that “the glass is very definitely half-full.”

Again on a positive note, in Japan, awareness of global warming has increased considerably, with the spirit of “*mottainai*” or the “sense of sparing things.” This term is now commonly used in daily conversation as a condemnation of wasting useful resources. (In 2004 Professor Wangari Maathai, a Kenyan environmentalist, won the Nobel Peace Prize. Her motto was “*mottainai*”). Japan, very much an industrialized country and a key player in the Kyoto Protocol, has embarked on many saving measures, which in turn have given rise to reduced carbon dioxide emissions. The Ministry of Economy and Industry in Japan has provided statistics which show that Japan is one of the world’s most efficient energy producers. This means that for producing the same GDP, Japan uses about 50 percent less energy than the United States of America or Australia. Japan has generally avoided producing “gas guzzling” cars and appears to have been one of the first countries to market “hybrid” cars. Toyota started its project (“Globe 21”) in 1993 and marketed the first model (Prius) in December 1997.

Where to from Here?

As it seems that most countries are reluctant to “go it alone” in terms of reducing carbon emissions, international agreement is vital. Once such agreement is obtained among the main players, most countries will feel that they are on a much more “level

playing field” when it comes to carbon emissions and industrial output.

Many countries are reluctant to “move forward” unless other countries also “move forward” simultaneously. Earlier this year Australian Senator Penny Wong, Minister for Climate Change and Water, announced the Australian Government’s commitment to reduce Australia’s carbon pollution levels by 25 percent by the year 2020. Minister Wong⁽⁸⁾ said that the 25 percent target is on the table to try to drive progress in global negotiations. As stated by Wills:⁽¹⁾

According to the government, if the agreement is reached, Australia will meet this 25 per cent target by harnessing the CPRS (Carbon Pollution Reduction Scheme), the expanded Renewable Energy Target and with substantial investment in clean, renewable energy and energy efficiency and strategic investment in carbon capture and storage.

Up to five percentage points of this target could be met by purchasing international credits, such as avoided deforestation credits, using CPRS revenue no earlier than 2015.

In Australia, the export of coal energy from coal burning is an important aspect of the economy. It is envisaged that more research (and hence money) can be spent on carbon emission reduction from coal burning. In addition, serious consideration is being given to other forms of non-carbon-polluting types of energy, including all forms of renewable energy and nuclear energy, particularly from Generation 4 reactors, which are considerably safer and have much less of a radioactive waste disposal problem than earlier such reactors.⁽⁹⁾

Although one reason for action against pollution is to reduce carbon dioxide emissions, another rea-

son for this action is to reduce the world's dependence on fossil fuels. In other words there is a moral obligation to save some valuable resources, such as energy supplies, for future generations. The world has received several "wake up calls" in terms of the so-called "energy shocks." There is now realization that petroleum resources are finite and should not be wasted. These warnings are timely in that they have prompted research into renewable fuel sources and allow the production of more energy-efficient vehicles and transport systems.

The underlying problem may in part be that there are simply too many people impinging on the environment without giving it time and space to recover by itself.

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Further Reading

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