

The scourge of global warming

It seems amazing that the combination of two atoms of oxygen and one of carbon can be causing mother earth such a problem. After all, the total CO₂ present in the atmosphere is only about .03% and even with the addition of other greenhouse gases like methane, nitrous oxide, water vapour and the various CFCs, the total of carbon based gases is still less than .05% compared with the predominant gases, nitrogen (78%) and oxygen (20%).

Yet there it is; incoming sunlight can pierce this greenhouse shield, but the heat radiated back from the earth's surface in the form of longer infrared waves is screened and absorbed by them thereby raising the surface temperature to whatever level their quantity in the atmosphere demands. Without the normal level of carbon in the atmosphere provided by, what we call, the 'natural greenhouse effect' the earth's surface would be inhabitable. When that carbon level is increased by the 'enhanced greenhouse effect', global warming occurs. Global warming and global cooling have been occurring alternatively since the atmosphere commenced and have, over time, probably constituted one of the key reasons why the evolution of species has occurred. When taken to extremes, however, they present a growing danger to existing species, particularly those that are unable to evolve sufficiently to meet the changed conditions.

The earth's climate having fluctuated between warm and cold over millions of years, we are left with little idea of what its 'normal' climate might be. Recent research, using ice cores from Greenland and the Antarctic, tells us, however, that every significant cooling or warming that the earth has undergone for the past million years or so has been associated respectively, with a decrease or an increase of carbon in its atmosphere. What has triggered the earth's climate changes from cool to warm and vice versa are largely unknown, but with at least one exception. That exception is the global warming which is presently occurring and beginning to make our politicians very nervous indeed.

This global warming is not being aided, but is in fact driven by what humans have done and are doing and that has never occurred before. The current warming process, according to the ice cores, started around 1800 with the commencement of the industrial revolution and it has continued to speed up ever since. The effect of this global warming and its comparison with previous warm periods was clearly, and most dramatically, shown in Al Gore's film "An Inconvenient Truth" and does not need to be repeated here.

The science of global warming was first discovered mid way through the nineteenth century and by century's end science knew that human activity was enhancing the natural greenhouse effect. At that time, however, the quantity of fossil fuel being consumed worldwide was miniscule by today's standards. On the basis of that level of consumption, science in the 1890s reached the conclusion that it would take something in the order of 3,000 years for the enhanced greenhouse effect to be significant. The enormous increase in the use of fossil fuels since about 1900 has, however, resulted in that significance being achieved in less than 100 years.

We have, of course heard repeatedly that the consumption of fossil fuels is the factor causing global warming. This is largely, but not wholly, correct. Humans have progressed remarkably by using fossil fuel energy commencing with wood and coal and progressing to LNG. But fossil fuels are not the only cause of global warming. At least in Australia, the human preference for beef, milk, butter, cheese and other cattle products is also a substantial causative factor, probably of about the same magnitude as that of fossil fuels consumed by all Australian cars. Worldwide, the production of methane (about 21 times the warming potency of CO₂) by cattle and other ruminant livestock is matched as a global warming causant by land clearing activities which return CO₂ to a gaseous state as timber is removed and/or burnt and the surrounding ground (which contains substantial quantities of CO₂) exposed to the sun's rays thereby causing gasification of that CO₂ and its return to the atmosphere.

Yes, there are also 'natural' reasons for the emission of carbon gases. These include termite activity in the forests, volcanic eruptions and, of course, the exhalation of CO₂ common to humans and other animals. But, all in all, the current global warming is very much human induced and human driven. What has become of the gravest concern is that its onset is occurring at a faster pace that was previously thought possible. The reasons for this are contained in earlier papers on this website.

About the best that can be said concerning the other side of the ledger is that human concern about global warming has at long last, commenced to grow and to grow at a rate far in excess of global warming itself. A Time/ABC News/Stanford poll last year discovered that 85% of those polled agreed global warming was probably happening, 87% believed government should move to achieve lower power-plant emissions and 85%

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Agreed that something should be done to get cars to use less petrol.

This upsurge in human concern clearly results from the speed with which global warming is taking on and the publicity it is now attracting. The former scepticism about climatological science that has ruled the roost for so long seems to have vanished utterly. Here in Australia, the 'long dry' (now beyond 11 years in duration) continues and deepens. The overall percentage of the earth's surface which is now suffering drought has doubled since the 1970s and desertification of former farming and grazing land is occurring on almost every continent, not least right here in Australia. Fire has ravaged the bush, particularly in Victoria, for months on end and the fires are becoming increasingly difficult to extinguish. Exactly the same thing is happening throughout western USA, Indonesia, Alaska, Europe and many other countries. The great ice sheets of Antarctica and Greenland are melting and doing so at an unbelievable rate, threatening the flooding of huge areas of low lying land well before the end of the century. The gathering loss of the permafrost, threatens to put into the atmosphere an additional quantity of carbon gas that will dwarf existing annual human induced greenhouse gas emissions, unbelievably huge as they are.

The opening conclusion must therefore be that human concern, although welcome, has come about only as a result of massive environmental disasters right around the globe that we ought to have prevented. As Bill Chameides, Chief Scientist for the Environment Defence Group is quoted as saying, *"things are happening a lot faster than anyone predicted"*. Politicians, including the Prime Minister, who have prided themselves on their ability to ignore predictions they considered 'alarmist' now need to think again. As earlier papers on this website have said, by the time the various manifestations of global warming are apparent, it is already too late to prevent them.

This paper argues the practical conclusions which follow must include an acceptance that Australia can no longer wait until 2030 before it does anything significant about global warming. It is time for the Commonwealth Government to ditch the initial plan that said Australia could comply with its international greenhouse obligations without doing anything significant before 2012 other than to half forest clearing in Queensland. That policy is now grossly out of date.

The proposed switch to nuclear energy and the burying of Australia's electricity power-plant emissions of CO₂ may or may not occur and even if we do proceed with them, they cannot, for a variety of reasons, be fully implemented for many years. We need to be doing much more in that period.

A review of the home building industry's Green Star rating system is already overdue. It doesn't work, for the simple reason it is not geared to provide a popular incentive for better standards. It remains, as it has always been, much more a bureaucratic imposition than a commercial incentive.

Air conditioning units need to be re-jigged to impose maximum upper and lower temperature levels that substantially reduce energy consumption. Genetic engineering to convert the methane emissions of cattle to some other, non-greenhouse gas, should be high on the agenda and these are but a few items that could and should be attended to without delay.

Another conclusion is that the world must assist the developing nations to overcome the massive emission problems caused by the huge increases in their industrial outputs.

Finally, Australia needs on to a real reductions in energy consumption by the introduction of an emissions trading market and simultaneously, impose site accountability for both operational energy and embodied energy.

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