Bicycles are Greenhouse Smashers!

An Action Plan for Australia

by Alan A. Parker

By the turn of the century we will know whether mankind has destroyed the climatic basis for civilised life on this planet. We will also know whether we have the option of controlled climatic change with the very gradual retreat of the polar ice caps creating a greater land area for cultivation than the land lost due to rising sea levels.

Scientists have now established why the decade of the 1980s has been the warmest in over a century and why the average atmospheric temperature may rise by three degrees Celsius, producing a two metre rise in sea level by 2030 and catastrophic consequences in many countries. Australia will have a major change in climate, one prediction of which is given in Figure 1.

How the gases which contribute to the so-called Greenhouse Effect trap heat is shown on the diagram (Figure 2). In a delicately balanced process, short-wave solar radiation enters the atmosphere, is partly absorbed by the air and clouds or is reflected back into space. Radiation reaching the surface causes heating and the resulting long-wave infra-red radiation is returned to space or is absorbed in the atmosphere. The increased proportion of heat-retaining gases in the atmosphere produced by humans' burning of oil, coal and gas, the destruction of forests and the emission of chlorofluorocarbons is upsetting the earth's energy balance.

How fast the climate will change, whether natural regulatory mechanisms will affect that change or whether a dangerously unpredictable chain reaction will result is unknown.

CO_2 and methane are the main Greenhouse problem today but their contribution will become proportionally less by 2060. Man-made greenhouse gases cannot be removed and will remain in the atmosphere for many years as indicated in Figure 3 (next page).

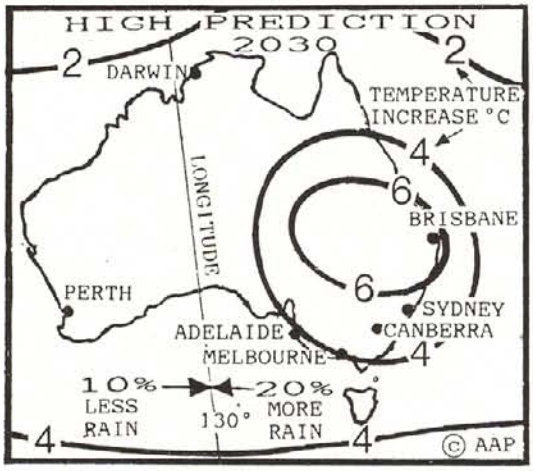
The real issue in deciding to take action on increasing greenhouse gas emissions is whether or not this generation is going to gamble with the survival of future generations. A worst case scenario for the next century indicates that many developing nations could suffer a great deal. Grazing areas which support hundreds of millions of people could become desert and rising sea levels will destroy homes, cities and rice growing areas. Animal and plant species' habitats will be destroyed and world food stocks could be eliminated by reduction of crop yields.

A more optimistic view has a cutback in greenhouse emissions allowing humanity to manage a slow climatic change which creates more land area suitable for growing crops.

The most important factor in whether or not there is an icecap meltdown is the ability of governments to co-operate with one another while getting their populations to change their behaviour and lifestyles. This generation must act — pessimism leading to in

PREDICTIONS TO 2040 INDICATIVE DRAWING OF TEMPERATURE AND RAINFALL CHANGES **1**

AT PRESENT IT IS NOT POSSIBLE TO PREDICT THESE CHANGES AND THE THREE COMPUTER MODEL OUTPUTS THIS DRAWING IS BASED UPON VARY GREATLY.



DATA SOURCE:
The Consequences of climatic change for seventy percent of Australia . Graetz, Walker and Walker.
Climate Modelling ,G B Tucker.
Greenhouse: planning for climate change. CSIRO 1988.

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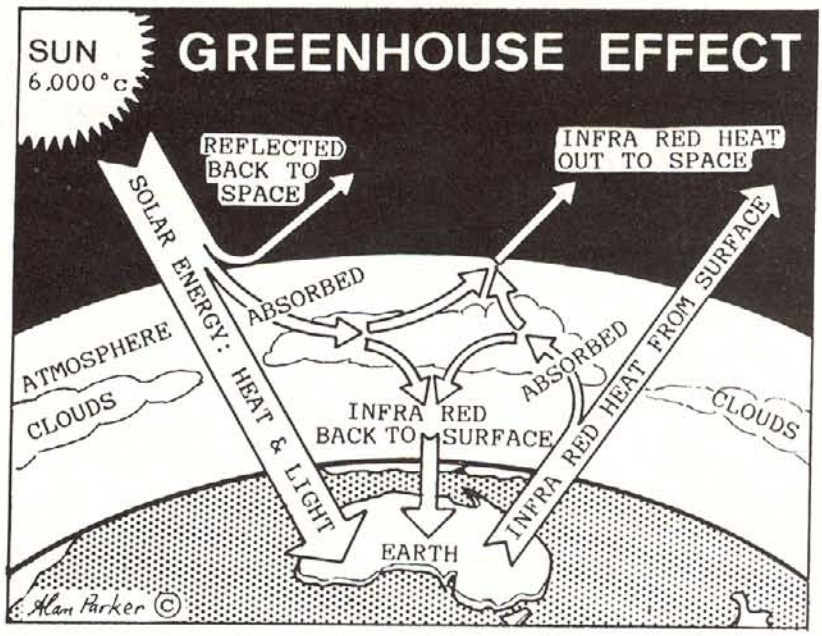


Some of the suns energy reaching the ground is re-radiated as infrared heat and is absorbed by carbon dioxide, nitrous oxide gases and re-radiated back to earth. That is the 'Greenhouse Effect'.

action or optimism of those who refuse to believe it will happen are equally dangerous.

International Agreement Needed

Five key policies could form the basis of an international anti-greenhouse program.

1. Recognition of the need to provide security for all nations by managing climatic change and by enhancing the capacity of all nations to adapt to and survive whatever changes take place.

2. Co-operation between major producers of greenhouse gases (Australians' per capita output is amongst the highest in the world) to reduce emissions and develop renewable energy resources (see Figure 5).

3. Stabilisation of growing populations of humans, their livestock and machines using energy derived from fossil fuels.

4. Assistance from developed nations to enable developing nations to survive and adapt to changing climate.

5. Imposition of a carbon tax on all fossil fuels to be collected by an international agency and used to implement the aforementioned policies.

What Australia Can Do

Australia has only 0.36% of the world's population but uses 1.21% of the world's coal, gas and oil resources and Australian black coal exports account for 3% of the world's coal consumption. Australia's per capita production of greenhouse gases from fossil fuel consumption is four times the world average and second only to the United States and Canada as a carbon dioxide producer. Figure 6 shows carbon dioxide emissions per capita for selected nations.

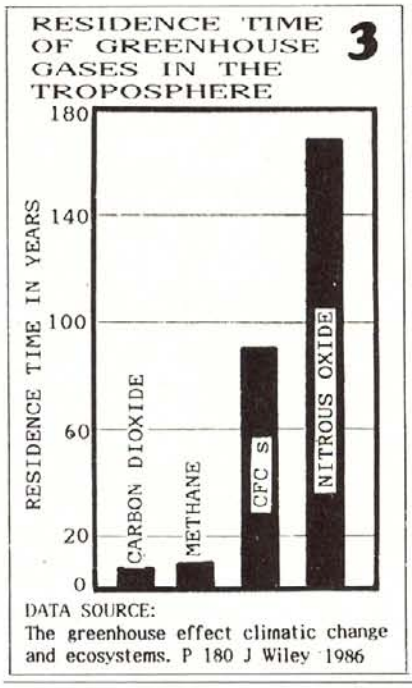
The rate of increase in fossil fuel consumption needs to be cut back by a range of measures and there is a need to plant new forests to soak up CO_2. Australia has plenty of marginal farmland that can be used for this purpose.

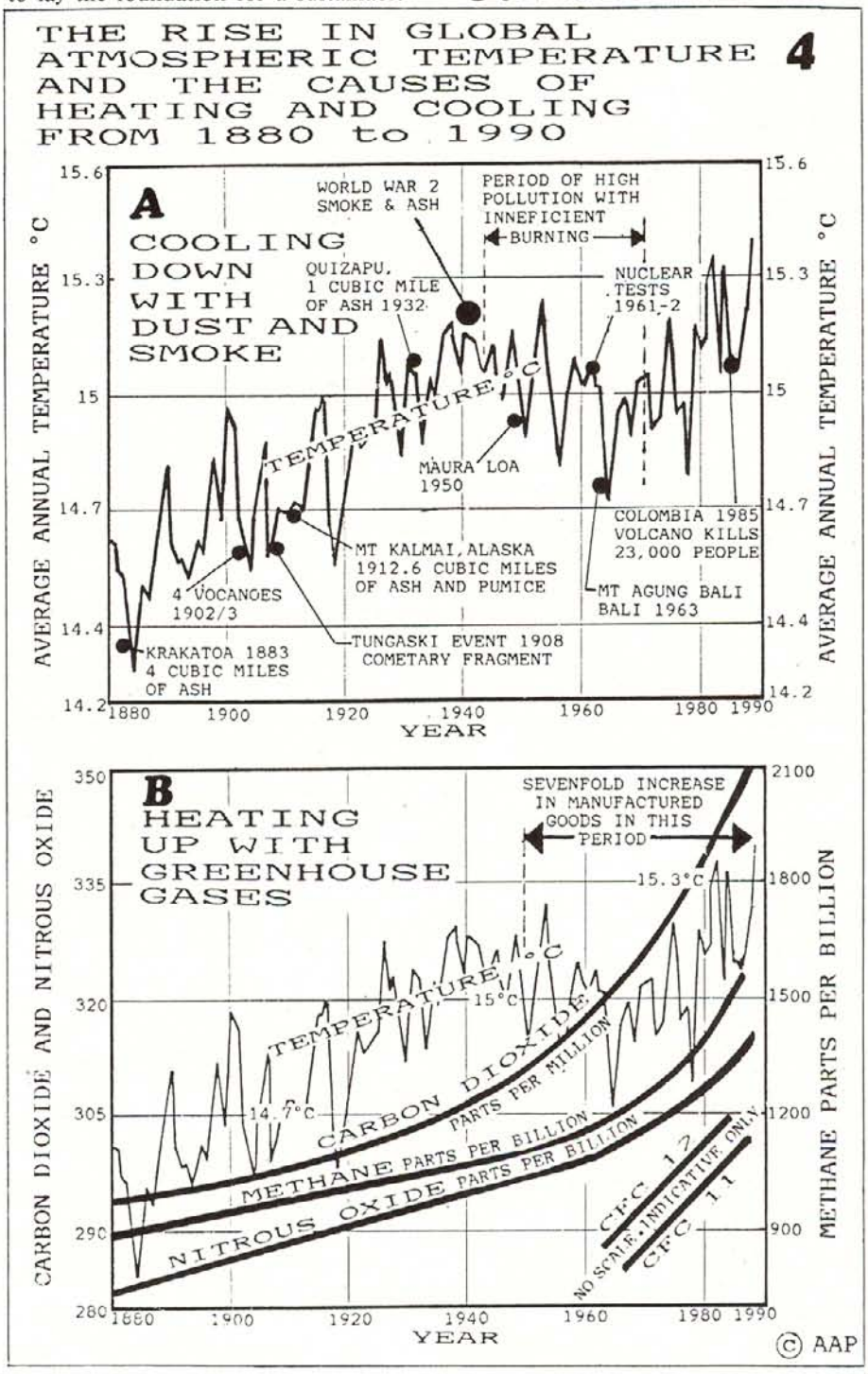
Actions which must be followed to reduce Australia's CO_2 emissions and to lay the foundation for a sustainable economy making the maximum use of renewable energy may take 30 years to implement fully but an early start is imperative.

1. Stop building coal-fired (especially brown coal) power stations. (Figure 7)

2. Increase the tax on petrol to encourage people to buy more efficient vehicles. Use tax to fund renewable energy development (the so-called "Carbon Tax").

3. Phase out the incineration of domestic and industrial wastes.

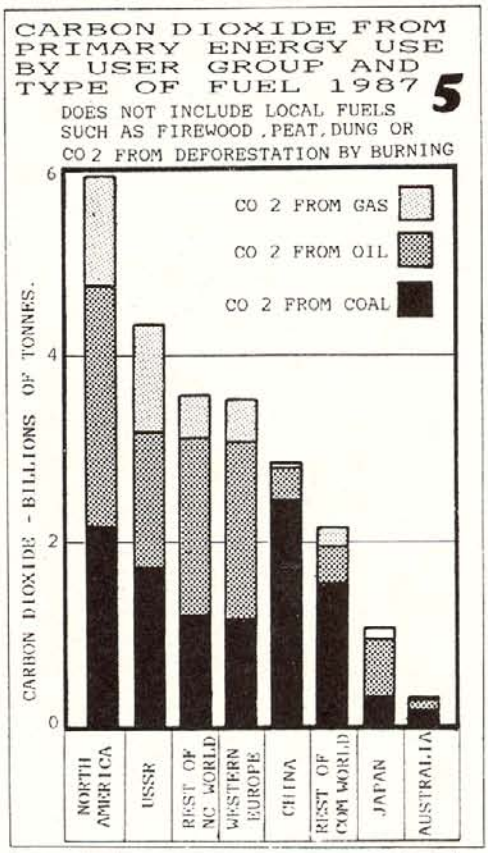


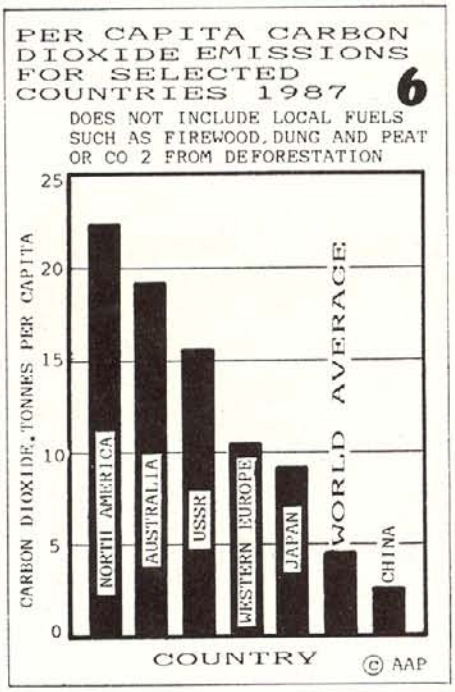


4. Improve energy efficiency of manufacturing industry.

5. Control the cutting down of trees and limit use of news print for "junk-mail" advertising.

6. Introduce energy tariffs that discourage excessive consumption of energy for low grade applications and encourage users to install energy conserving or renewable energy systems.





7. Increase the use of public transport and bicycles by providing more energy efficient and comfortable vehicles, providing more bicycle facilities and encouraging the use of bicycles as an access mode to express trains and buses (as in Netherlands and Japan).

8. Use school children, the armed services and the unemployed to plant new forests, prevent erosion and salination of soils. Establish a national youth organisation to implement forest conservation programs.

9. Develop and pioneer new high technology industries to produce solar electric, wind and biomass power generators.

When governments finally work out the huge hidden costs of putting millions of tons of combustion gases into the atmosphere every year, the non-polluting bicycle and energy efficient public transport systems may at long last receive priority in the provision of transport funding.

There are more bicycles in use worldwide than motorcars and bicyclists don't produce greenhouse gases. Bicycles use human energy and enable man to do more with less without polluting the world in which we live.

Bicycles are the superior form of transport on this planet for one reason. One of the most efficient forms of using solar energy is growing vegetables and grains and feeding them as fuel to bicyclists. In this sense, the bicycle is the solar powered vehicle in a world that desperately needs solar technology for its survival.