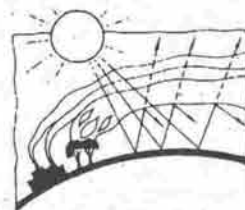


An Introduction to Man-made Climate Change



Number 8/1

Fact Sheet

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Climate Change

Introduction

Understanding the composition of the atmosphere and the levels of **greenhouse gases** (GHGs - see *Fact Sheet 8/2*) are most important. GHGs not only control our climate to a large extent, but these determine how air absorbs and transmits radiant energy. Some GHGs, such as CO₂, are crucial in determining the earth's climate.

Concentrations of GHGs are rising rapidly because human activity:

- burning fossil fuel and deforestation (causing CO₂ emissions);
- gases from intensive agriculture and natural gases escape (causing CH₄ emission); and,
- industrial activity (causing CFC emissions; and NO and O₃ increases for reasons still not clear).

It is less than 200 years since the first major man-made emissions of GHGs started, and concentrations of GHGs are higher than at any time since human beings inhabited the Earth. These levels will continue to rise in the near future.

Effects on the Pacific

For Pacific island countries the current rates of increase in GHGs are ever-increasing, as they will inevitably affect our climate. Scientists are, however, still grappling with the question of how GHGs do this. Climate is a complex system, with various components that interact at different times in complex and often in chaotic ways. So at present, man cannot be sure of the consequences of many of our actions until after climate changes occur.

Climate Change computer models show that GHGs emissions are linked to global warming, and predict rise in global average surface temperature of 1°C to 7°C by the year 2030. This is faster than any temperature

change over the past 10,000 years! Computer models, although known to be unreliable, still provide the best estimate of the effects of climate change. They sometimes overstate climate change effects, but are equally likely to undermine the risks.

What is clear is that warming has already begun, as shown by an average temperature rise of 0.3°C to 0.6°C over the past 100 years. This was deduced from weather records, and has been explained as being in part due to GHGs emissions from man's activity.

The future

Past natural and man-made emissions of GHGs commit us to a future of climate changes. Many GHGs have a long "lifetime" and stay in the atmosphere for decades, and continue to dynamically influence climate. This delayed effect increases the risks for people by waiting for more conclusive evidence before reducing emissions.

If we wait to reduce GHG emissions we face the serious consequences of unknown climate change:

- average sea levels may rise, resulting in coastal communities facing costly relocation, frequent flooding, and saline ground water; and,
- changes in rainfall patterns and soil moisture levels, to name a few.

The most risk from climate change will be those least able to adapt, where normal life over the centuries has evolved to suit the climate. Inside they could find traumatic, costly and chaotic changes at great speed and magnitude, because of current and future climate changes.

Despite uncertainties, we know enough now to say with confidence that the risks of climate change are genuine and serious, and these are reason to continue our effort to study the atmosphere, and how man-made emissions of GHGs can be phased out.

