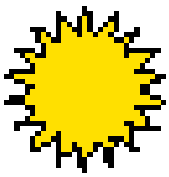

GLOBAL WARMING

What should we do about it?

Some loud voices are saying that we have been misled into believing that human activities will cause the earth's atmosphere to warm up, with potentially dangerous effects on the climate and life support systems, and that we should not rush into remedial action. They are helped by the usual reluctance of responsible scientists to make categorical statements in the absence of demonstrable proof. However, we have been warned that "if we wait until we are sure, it will be too late!". Scientists such as those on the Intergovernmental Panel on Climate Change (IPCC) appointed by the United Nations Environmental Programme, endorse this advice. They are aware that the situation may develop suddenly - so, why then the opposition?

REMEDIAL ACTION

It is generally agreed that remedial action will involve energy conservation and efficiency, the saving and extension of the forest, and the promotion of alternatives to fossil fuels. What needs to be emphasised is that all these measures are urgently necessary regardless of any relevance to global warming. Their implementation will bring great advantages even in the unlikely event that warnings about climate change are falsely based. Opposition may be coming from narrow vested interests seeking public support. It needs to be overcome by well-informed people willing to make necessary changes in their lifestyles.

CONSERVATION AND EFFICIENCY

The chief danger at present, as regards global warming, is considered to be the build-up in the atmosphere of carbon dioxide from the burning of fossil fuels and the destruction of the tropical forests.

Fossil fuels are a non-renewable resource, yet much of them are wasted in inefficient practices and apparatus. Moreover, they are often used in the manufacture of unnecessary products that also uses up other precious resources. In a world of rapidly increasing populations, where millions go short of bare necessities, this is completely unjustifiable.

It must also be remembered that fossil fuel burning releases pollutants that damage life.

Necessary reforms may well involve loss of profits in the short term by industrial concerns, but in the long term bring even monetary benefits, except to the coal industry and the oil magnates for whose products there will be slower demand.

The effects of checking waste and pollution in the industrially developed world could be nullified by industrial development in the Third World. We must stop encouraging and funding unnecessary industrial development. Non-renewable resources must be used only to meet genuine need, not to manufacture luxuries and trivialities, and not in unnecessary travel. We must give a lead in simplifying lifestyles, and demonstrate that such simplification does not mean deprivation but more creative and fulfilling living.

SAVING AND EXTENDING THE FORESTS

Tragically, at present great areas of tropical forests are being destroyed by fire, bulldozing and chainsaws. Temperate forests are also being damaged, by industrial pollution. Stopping this is an essential priority, for forests are a major source of important materials, they perform vital functions, and their destruction adds to the build-up of CO_2 in the atmosphere.

In the process of photosynthesis, green plants take in CO_2, use the carbon for energy and to build up their bodies, and give out the oxygen; trees, especially, store large quantities of carbon in their woody tissues. The idea of growing trees with the express purpose of thus dealing with the excess CO_2 is being seriously considered and implemented. Gregg Marland of the Oak Ridge Laboratory in the USA has estimated that 7 million square kilometres of new forests could absorb all the present releases of CO_2 from the burning of fossil fuels. His work is being taken up by the US Department of Energy, and an American power company has agreed to plant 52 million trees in Guatemala to absorb the amount of CO_2 that will enter the atmosphere from the new power station that it is building. Similarly, a plan has been worked out by the Netherlands Electricity Generating Board to plant enough trees in South America to compensate for the CO_2 from two new power stations near Amsterdam.

It is objected that such forests will only "lock up" carbon temporarily. It will be released as CO_2 when the trees are burned or decay. However, if the forests were extensive enough, and if they were managed efficiently with immediate replanting to replace mature trees felled, then the forest unit would be a permanent sink for carbon. Moreover, some of the trees felled would be used for long lasting constructive purposes - we still have Tudor cottages and furniture - and some could be used as raw material for long-lasting, even non-biodegradable, materials.

MULTI-PURPOSE TREES

Apart from their ability to check CO_2 build up in the atmosphere, forests are vital for a sustainable future. Carefully selected multi-purpose trees can supply nearly everything that humans need: maximum food per acre, timber for many constructive purposes, pulp for paper, fibre for textiles, material for synthetics, drugs, dyes, resins and fuel. They are a renewable resource that can be grown in most habitable regions. Research is urgently needed to discover the most useful species, their needs and ability to adapt to climate shifts. AT THE SAME TIME they have vital functions in the life support systems of the planet.

TREES, WATER, SOIL

Trees help to keep water available for their own needs and for those of other plants, for humans and other animals. The roots of the great forest trees penetrate deeply into the earth and draw up great quantities of water which pass through the trees and out through the pores of the leaves to create "oceans of the air". Thus water that might sink beyond reach is kept available for rain, and to keep the water table up and thus replenish wells. Sinking wells where there are no tree belts to maintain the water table can constitute a dangerous "living off of capital". It is said that there is a lake as big as France below the Sahara, which was formed after the Romans felled the trees to grow grain.

Forest height and the cooling effect of the water transpired by the tree leaves can promote precipitation in the same way as mountain ranges that force the rain clouds to rise and cool.

Paul Schreiber, the meteorologist, estimated that a region covered with forest increased rainfall to the same degree as elevating it 350ft.

When rain falls on forest canopies, its force is broken by the leaves and branches as it seeps gently through the forest debris to replenish the water tables below. Water running off deforested hillsides carries away the soil, not only depriving the uplands but also silting up dams and reservoirs and causing rivers to swell and flood.

In other areas, wind is the chief agent of erosion once the protective cover of trees is gone - fine particles of soil simply blow away. Anything which damages soil structure, such as artificial fertilisers, heavy machinery, constant ploughing for arable crops, the hooves of grazing animals, accelerates soil erosion which is increasing to devastating degree in many areas of the world. Even in England over 40% of the arable land is said to be in danger of erosion.

So the forests recommended to check global warming are essential for many other reasons.

ALTERNATIVE ENERGY SOURCES

As the dangers attendant on the use of fossil fuels become obvious, there is a growing interest in alternative sources of energy. The nuclear lobby is trying to take advantage of this, but hopefully the pollution, the risks, the waste disposal and decommissioning problems and costs are becoming too obvious for them to succeed (but some scientists are even more concerned about the dangers of global warming). Wind, tidal, solar, biomass, geothermal, hydro sources all have their advantages and disadvantages.

Wind farms in barren, exposed, isolated areas can make a valuable contribution to the national grid, and, in suitable locations, windmills can be used as local power sources as they were in the pre-industrial age. However, surely no one would wish to see large areas of countryside overtaken by wind farms. Pylons are unsightly enough. There is such a nuisance as visual pollution. The noise from large wind farms can also make them unacceptable.

Solar energy contrivances offer excellent alternatives to fossil fuel use, especially in the tropics, but, as Schumacher wrote, *"a most marvellous contrivance already exists, more wonderful than anything that Man can make - the TREE!"*.

Fuel wood is still the energy source of most of the world's people, but, in many areas, the forests are not being replanted and demands are outstripping natural regeneration. Wood should be burned in stoves designed for maximum economy and minimum pollution. Their use is now spreading, but not quickly enough. Only wood not suitable for other purposes should be burned or processed into gas, electricity and liquid fuel. Plants, especially trees, will be the only source of the latter when fossil fuels are all use up. Wood gives off no more CO_2 than the trees took in.

LAND AVAILABILITY

If forests are to be established to check, even reverse, global warming and to meet needs for energy, food and other materials for the increased world population, the land areas required will be enormous, BUT probably not larger than those cleared of trees through the millennia

for grazing animals and cereal crops. It could be made available if livestock farming were phased out and agroforestry systems established and the deserts reclaimed.

Of the earth's 130 million square kilometres, over 31 million are used as permanent pastures for animals bred unnecessarily for food. Such animals are also given a large proportion of the crops grown on the 15 million square kilometres of cropland. Animals yield nothing, not even fertiliser, that cannot be got more economically direct from plants. They compete with the humans that breed and enslave them for water, plant foods and other resources as well as land. They breathe out CO_2, and cattle and other ruminants belch out large amounts of methane synthesised by the bacteria in their rumen that enable them to digest fibrous food.

Methane is the gas judged to be responsible for 12 - 18% of global warming, as compared with CO_2's 50%. Molecule for molecule it is 20 - 25 times more potent as a greenhouse gas and is building up more rapidly. The bacteria in ruminating animals are one of its chief sources. Some scientists are saying that *"methane is a precursor to reactions that destroy ozone in the stratosphere"*.

The above facts make up a convincing case for phasing out animal farming and giving the land released to trees. Convincing, that is, to those not locked in the habits and thought patterns of the millennia and still believing that animal products are necessary for human health. Over fifty years ago a group of people, motivated by compassion for cruelly exploited animals, stepped out of those prisons and established a vegan diet. Now the obvious good health of vegans of all ages, and the results of extensive scientific research, have taken all plea of necessity from animal based diets.

WHAT SHOULD WE DO ABOUT "GLOBAL WARMING"?

Help to pioneer a way of life that is possible for all the world's people, that is sustainable on a finite and vulnerable planet, and free of the exploitation of people and animals.

Some relevant ideas are given above - please help to get them discussed.

Kathleen Jannaway

The arguments are clarified and extended, with charts and references, in the booklet *"Abundant Living in the Coming Age of the Tree"* from MCL which is available on the Publications page of the MCL website.

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