The Environment

Sustainable Development – A Future for our Planet

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We are hooked on the idea of progress: the thought that, whatever the setbacks or deviations, human beings advance upwards and onwards. For us, time goes in an ascending line, rather than, as in many other societies, a near cycle which brings us back close to where we started. Hence our ingrained feeling that problems can always be solved, resources should be exploited to the full, dynamism is better than stability. Certainly this has been the most powerful energiser and instrument of European expansion worldwide.

Yet, in the longer term, this philosophy requires modification. 'Sustainable development' has been described as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.[1] It carries the implication of balance with nature over an indefinite number of generations. Thus animal species, including our own, and the ecosystems of which they are part, must eventually achieve a stability in which population and resources are in broad equilibrium.

Here are some simple points to give a sense of historical perspective: in the last 2½ million years, the earth has been in an ice-age mode. The rhythm has been very roughly 100,000 years of glaciation, followed by between 10,000 and 15,000 years of warm intermission. We are now in the second part of the last intermission. The last 10,000 years have seen all human civilisation. In the last 250 years the industrial revolution has changed the face of the planet. The last 20 years have seen growing awareness of some of the consequences.

What are the consequences? They result from the disequilibrium between resources and population. In the countries which pioneered the industrial revolution, there has been an amazing rise in living standards which the rest of the world now wishes to emulate. The success of these countries was founded on their ability to feed their growing populations. They each had an agricultural revolution before an industrial one. Others have not done so well. Total world population rose from 2 billion in 1930 to 5.3 billion now, and will rise again to over 8 billion in 2025. But the ability to feed this population is in serious doubt and the prospect of any substantial rise in living standards in countries without the resources and skills of industry must be illusory. Even if all sorts of

improvements could be envisaged, the prospect of a rise in human population to six, seven, eight billion and upwards is alarming indeed. Such a rise is more than a prospect. Even allowing for war, famine, and disease, the rate of increase – at present some 90 million more people every year – suggests that we are on the back of a tiger.

Even if resources were limitless, the condition of life – in short, the environment – would be bound to deteriorate. It is doing so already. We have only to look at the repercussive effects of the industrial revolution on land, ocean and air.

The most significant change in land use has not been the spread of brick, stone, concrete, houses, factories, roads, etc, but the acceleration of the destruction of forest cover and the declining fertility of soils. Although forest cover is slightly increasing in industrial countries, its destruction elsewhere, with accompanying loss of species, is on a sufficient scale to change the global ecosystem. Whatever the differences in different parts of the world, the total impact is that human beings are consuming their capital of the earth's resources rather than the income from it.

Fresh water is another essential element affected by the population explosion. The global use of water doubled between 1940 and 1980, and is expected to double again by the year 2000. 97% of the water of the earth is sea water and of the other 3%, 2% is locked up in ice at the Poles. The remaining 1% is already in excessive demand, not only for agriculture and human consumption, but also for industry. Many countries already suffer severe shortages and droughts.

Then there are the direct effects of industrialisation. Every industrial country has pollution problems which touch directly on the quality of life; and recent accidents have demonstrated the international character of industrial hazards. Chemical disasters tend to be of limited scope. Nuclear ones reach further; the fallout from Chernobyl was some 50 times that of Hiroshima. Western Europe is one of the most crowded areas of the world, and an accident of comparable magnitude in any of its major countries would create horrendous problems for all.

Marine pollution is serious but less of an immediate source of conflict; but competition for fishing resources make the seas a potent source of potential trouble in the future.

Of the problems of the atmosphere, depletion of the ozone layer is the most serious. The molecules known as chlorofluorocarbons and halons (for use as refrigerants, deodorants, fire extinguishers, etc) have been depleting the protective screen which prevents short wave ultraviolet radiation from reaching the surface of the earth. Damage to the human metabolism (melanoma, etc) may seem alarming to us, but the more fundamental problem for the planet could be the effects on critical organisms in the food chain, not least phytoplankton in the oceans. Global warming, through enhancing the natural – and indispensable – greenhouse effect, could affect almost every aspect of human society.

The consequences of the industrial revolution on other forms of life have been devastating. Biodiversity, or the variety of life, is under heavy and sustained assault. Most of the current losses result from the destruction of moist tropical rain forest. Such forests cover only 7% of the earth's land surface but they

contain at least 50% of its species. As other species recede in importance, so ours increases. Human beings now use, or waste, some 40% of all net primary productivity, with all that implies for other species and their life support systems.

Like many other animal species, we have changed the environment to suit our needs. The effects on other organisms can be compared to earlier disasters in the history of the earth, such as the extinction of the dinosaur family and many less famous ecosystems 65 million years ago. Current calculations suggest that perhaps a quarter of the earth's remaining biodiversity will be at serious risk over the next 25 years. The destruction of one species can profoundly change a whole ecosystem, and once a species is destroyed it has gone for ever. As has been well said: 'Death is one thing; an end to birth is something else.'

Any forward look compels the conclusion that we cannot continue as we are; but in looking to the future we need to confront our alarming degree of ignorance. We simply do not know enough about how the world works. Much current science is about detail and the short term. Few even try to encompass the scene as a whole.

We also need to perceive change in a new way and not as something gradual. Critical change is often abrupt – we bounce rather than progress from one apparently stable state to another, and the bouncing (and necessary readjustment) can be extremely painful. We must expect more of the unexpected. (The discovery of ozone holes, for instance, was entirely unexpected.) Most people feel that something will always happen to stave off disaster; but disasters have happened in the past and will happen again.

Ignorance and uncertainty, however, are no excuse for not making the best judgements we can and taking action where necessary or possible. There are certain catalysts which affect both the quality of human life, and life itself. The most obvious is the impact of population increase. When combined with such other factors as environmental degradation and global warming, we could find a further widening of the gap between rich and poor. As supremely adaptable and ingenious mammals, we could modify our practices, especially in countries equipped with modern technology. But most countries would be unable to adjust. In the comfortable West, we conveniently forget the need for fairness in international arrangements for adaptation to environmental constraints.

Another catalyst of change to our quality of life would be a rise in sea-level resulting from global warming. A substantial proportion of the human population lives in low-lying areas, which are liable to flooding, high tides or storm surges. Rising sea-levels would also affect underground aquifers and fresh-water supplies.

It would be pointless to try and work out all the consequences of the industrial revolution and the threats to the environment, but two are of particular importance. First, we should expect a great increase in human displacements. I believe there are now more than 17 million refugees. If we add some 10 million environmental refugees or economic migrants, it means that at present there are around 25 million refugees worldwide. With disruption of current patterns of life, that number would increase dramatically, with alarming consequences for the integrity of human society as a whole.

The other probable result of environmental degradation would be changes in existing patterns of disease and increased risks to human health. Temperature and moisture are both critical to the ability of viruses, bacteria and insects to multiply. Thus we could see the spread of diseases we had thought under control or far away; contamination of water supplies; increase in skin cancer, melanomas and cataracts arising from atmospheric ozone depletion; respiratory problems worsened by petrochemical smog in urban areas; malnutrition and diseases related to poverty; and the spread of new unforeseeable diseases (on the pattern of syphilis in the 16th century, and AIDS in our own times). Nor should we forget that, with loss of biodiversity, it will be less easy to tap the natural world for the constituents of drugs to cope with changes in bacterial and viral populations.

In view of this bleak scenario, why are the governments and peoples of the world not concerting action to meet an unprecedented range of problems? They are in fact tinkering with it. But 'environment' has been captured by the industrial countries, and 'development' by the non-industrial ones, and each is talking a different language. The industrial countries tend to think of the problem as one which involves them much less than the rest of the world. In fact, they are directly or indirectly responsible for the mess, their consumption patterns are a root cause, and so far these remain unchanged. Such patterns are of course an example that other countries wish to follow; by not giving an example of restraint but continuing to preach it to others, the industrial countries lack credibility; they continue to use economic instruments and methods of thought that fail to take account of the environmental dimension.

For their part, the non-industrial and other countries perceive a bargain in which they trade some measure of environmental restraint against massive quantities of aid, debt forgiveness, new terms of trade, etc. They too are guilty, although more forgivably, of using outdated economic analyses and policies. Many still see the concern in industrial countries about the environment as a trap to slow their development, and keep them in subservient poverty.

I am afraid that both sets of countries are living in cloud cuckooland. The division between them is highly artificial. Environment concerns them all, and so does development. The interests they share are vastly greater than those which divide them. Environmental change will affect all, but be more damaging to poor countries than to rich ones. They are supremely vulnerable: most are in zones affected by small climatic shifts; they lack resources to react to change – and they are often without administrative structures capable of organising adaptation to new circumstances.

By contrast, most of the industrial countries should be able to manage over time. But they could scarcely prosper in an impoverished world where they would be a shrinking proportion of the population and where they would be vulnerable to invasion, infiltration and the growing pollution of others. Wealth and poverty cannot sit together for long. Yet the gap between rich and poor is ever widening.

In relation to the size and scope of the issues, we have hardly started to cope with them. We need not only to behave differently but to think differently. We need to abandon assumptions, change hallowed habits, create new models of thought, accept different values, and see the world through other eyes.

We need to recast our vocabulary. Words are not only a means of expression but also the building blocks of thought. Such words as 'growth', 'development', 'cost benefit analysis' are more than ripe for redefinition. For instance, 'development' was recently redefined as involving 'a progressive transformation of economy and society', with its objective as 'the satisfaction of human needs and aspirations'.[2]

We need to change the culture. Many have lamented the division between the cultures of science and the arts. They are right to do so – but neither is now in charge. Our real bosses are the business managers. It was Edmund Burke who feared that the age of 'sophisters, economists and calculators' had come; but their calculations are strictly short term. We need to recast parts of our educational systems to promote better understanding of the environment. Above all, we need a value system which enshrines the principle of sustainability over generations.

There are five main areas for action:

People We need to support international organisations seeking to limit human population increase. It is not enough simply to try and raise living standards in the hope that this will limit population growth. High living standards invite higher consumption and thus more pollution. We need to promote the status of women and family planning. We need to anticipate and cope with likely displacements of human population; if possible refugees should stay at home even if they need help from outside to do so.

Energy We need to investigate and apply the social costs of different sources of energy, increase efficiency and improve conservation, develop alternative sources and cut back consumption of fossil fuel, introduce new transport systems, and promote new building design and urban infrastructure.

Land use We need to promote reforestation and introduce new agricultural methods to manage a CO_2 richer world; and make more economical use of fresh water, including desalination. We need to create ministries of land use (rather than divide responsibility between bodies representing different vested interests).

Industry We need to introduce new and cleaner production methods, and use of information technology; also to cope more effectively with disposal of toxic and other wastes.

Life We need to respect biodiversity as part of the earth's natural capital, and regularly remind ourselves of our extreme dependence on other organisms.

All this will amount to a refashioning of our society. But the prospect need not stun us into inaction. I suggest five principles on which governments should act, singly or together.

First, they should do what makes sense for reasons other than any one environmental factor. For example global warming might suggest the conservation of forests and the creation of new ones to draw carbon out of the atmosphere; at the same time, fuels should be used which do not add to atmospheric carbon dioxide. But there are other excellent reasons for so acting, such as not depleting our non-renewable resources of coal and oil.

Second, governments should take out insurance policies against disaster, and

pay the necessary premiums in terms of precautionary investment: for example improving coastal defences, building bridges and oil rigs higher out of the water, and anticipating changing patterns of rainfall and thus availability of fresh water.

Third, they should retarget and give more financial support to relevant scientific research and coordinate the results. At a global level we need better means of observation from satellites and ground stations, and regular monitoring of changes in land, sea and air.

Fourth, they should work out an international strategy which recognises the realities, sets the framework for collective action, takes good account of equity, and is founded on national as well as international interest.

Finally, governments should deal with environmental issues together. Isolated measures to cope with one problem can sometimes make others worse.

Above all, we must recognise that human society is fragile. It is much more fragile than life itself. All previous civilisations have collapsed because, in every instance so far, the uncontrolled growth of civilisation produced more problems than human intellect could solve.

Ultimately we are as subject to biological constraints as any other animal species. But unlike them we can consciously shape our future. We need to reach a steadier state in which our species can accommodate change instead of being endangered, damaged or destroyed by it. Only thus can we come to terms with the realities of our planet.

REFERENCES

1 Report of the World Commission on Environment and Development, chaired by Gro Brundtland (prime minister of Norway), published on 20 March 1987.

2 *Ibid*