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#669 - Scientists Say Future Is In The Balance
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In 1992, Sir Michael Atiyah, president of the Royal Society of London, and Dr. Frank Press, president of the U.S. National Academy of Sciences, issued a joint statement under the title, "Population Growth, Resource Consumption and a Sustainable World."[1] The Royal Society, founded in 1660, is sometimes called the United Kingdom's Academy of Science.

This joint statement, issued by two of the world's leading scientific organizations, was unprecedented. The Royal Society, in particular, had in the past been very reluctant to issue pronouncements on matters of public policy that might stir controversy.

Unfortunately, this important joint statement was almost entirely ignored by the world's media. Therefore, we are reprinting it verbatim as part of our series on "the meaning of sustainability."

The statement says that if population growth continues and patterns of human activity remain unchanged, "science and technology may not be able to prevent either irreversible degradation of the environment or continued poverty for much of the world."

"The future of our planet is in the balance" the statement says. "Sustainable development can be achieved, but only if irreversible degradation of the environment can be halted in time. The next 30 years may be crucial."

The joint statement:

WORLD POPULATION

In its 1991 report on world population, the United Nations Population Fund (UNFPA) states that population growth is even faster than forecast in its report of 1984. Assuming nevertheless that there will in the future be substantial and sustained falls in fertility rates, the global population is expected in the UN's mid-range projection to rise from 5.4 billion in 1991 to 10 billion in 2050. This rapid rise may be unavoidable; considerably larger rises must be expected if fertility rates do not stabilize at the replacement level of about 2.1 children per woman. At present, about 95 percent of this growth is in the less developed countries (LDCs); the percentage of global population that live in the LDCs is projected to increase from 77 percent in 1990 to 84 percent in 2020.

THE ENVIRONMENT

Although there is a relationship between population, economic activity, and the environment, it is not simple. Most of the environmental changes during the twentieth century have been a product of the efforts of humans to secure improved standards of food, clothing, shelter, comfort, and recreation. Both developed and developing countries have contributed to environmental degradation. Developed countries, with 85 percent of the world's gross national product and 23 percent of its population, account for the majority of mineral and fossil-fuel consumption. One issue alone, the increases in atmospheric carbon dioxide, has the potential for altering global climate with significant consequences for all countries. The prosperity and technology of the developed countries, however, give them the greater possibilities and the greater responsibility for addressing environmental problems.

In the developing countries the resource consumption per capita is lower, but the rapidly growing population and the pressure to develop their economies are leading to substantial and increasing damage to the local environment. This damage comes by direct pollution from energy use and other industrial activities, as well as by activities such as clearing forests and inappropriate agricultural practices.

THE REALITY OF THE PROBLEM

Scientific and technological innovations, such as in agriculture, have been able to overcome many pessimistic predictions about resource constraints affecting human welfare. Nevertheless, the present patterns of human activity accentuated by population growth should make even those most optimistic about future scientific progress pause and reconsider the wisdom of ignoring these threats to our planet. Unrestrained resource consumption for energy production and other uses, especially if the developing world strives to achieve living standards based on the same levels of consumption as the developed world, could lead to catastrophic outcomes for the global environment.

Some of the environmental changes may produce irreversible damage to the earth's capacity to sustain life. Many species have already disappeared, and many more are destined to do so. Man's own prospects for achieving satisfactory living standards are threatened by environmental deterioration, especially in the poorest countries where economic activities are most heavily dependent upon the quality of natural resources.

If they are forced to deal with their environmental and resource problems alone, the LDCs face overwhelming challenges. They generate only 15 percent of the world's GNP, and have a net cash outflow of tens of billions of dollars per year. Over one billion people live in absolute poverty, and 600 million on the margin of starvation. And the LDCs have only 6-7 percent of the world's active scientists and engineers, a situation that makes it very difficult for them to participate fully in global or regional schemes to manage their own environment.

In places where resources are administered effectively, population growth does not inevitably imply deterioration in the quality of the environment. Nevertheless, each additional human being requires natural resources for sustenance, each produces by-products that become part of the ecosystem, and each pursues economic and other activities that affect the natural world. While the impact of population growth varies from place to place and from one environmental domain to another, the overall pace of environmental changes has unquestionably been accelerated by the recent expansion of the human population.

INTERNATIONAL ACTION

There is an urgent need to address economic activity, population growth, and environmental protection as interrelated issues. The forthcoming UN Conference on Environment and Development, to be held in Brazil, should consider human activities and population growth, in both the developing and developed worlds, as crucial components affecting the sustainability of human society. Effective family planning, combined with continued economic and social development in the LDCs, will help stabilize fertility rates at lower levels and reduce stresses to the global environment. At the same time, greater attention in the developed countries to conservation, recycling, substitution and efficient use of energy, and a concerted program to start mitigating further buildup of greenhouse gases will help to ease the threat to the global environment.

Unlike many other steps that could be taken to reduce the rate of environmental changes, reductions in rates of population growth can be accomplished through voluntary measures. Surveys in the developing world repeatedly reveal large amounts of unwanted childbearing. By providing people with the means to control their own fertility, family planning programs have major possibilities to reduce rates of population growth and hence to arrest environmental degradation. Also, unlike many other potential interventions that are typically specific to a particular problem, a reduction in the rate of population growth would affect many dimensions of environmental changes. Its importance is easily underestimated if attention is focused on one problem at a time.

THE CONTRIBUTION OF SCIENCE

What are the relevant topics to which scientific research can make mitigating contributions? These include: development of new

generations of safe, easy to use, and effective contraceptive agents and devices; development of environmentally benign alternative energy sources; improvements in agricultural production and food processing; further research in plant and animal genetic varieties; further research in biotechnology relating to plants, animals, and preservation of the environment; improvements in public health, especially through development of effective drugs and vaccines for malaria, hepatitis, AIDS, and other infectious diseases causing immense human burdens. Also needed is research on topics such as: improved land-use practices to prevent ecological degradation, loss of topsoil, and desertification of grasslands; better institutional measures to protect watersheds and groundwater; new technologies for waste disposal, environmental remediation, and pollution control; new materials that reduce pollution and the use of hazardous substances during their life cycle; and more effective regulatory tools that use market forces to protect the environment.

Greater attention also needs to be given to understanding the nature and dimension of the world's biodiversity. Although we depend directly on biodiversity for sustainable productivity, we cannot even estimate the numbers of species of organisms --plants, animals, fungi, and microorganisms -- to an order of magnitude [a factor of 10]. We do know, however, that the current rate of reduction in biodiversity is unparalleled over the past 65 million years. The loss of biodiversity is one of the fastest-moving aspects of global change, is irreversible, and has serious consequences for the human prospect in the future.

What are the limits of scientific contributions to the solution of resource and environmental problems? Scientific research and technological innovation can undoubtedly mitigate these stresses and facilitate a less destructive adaptation of a growing population to its environment. Yet, it is not prudent to rely on science and technology alone to solve problems created by rapid population growth, wasteful resource consumption, and harmful human practices.

CONCLUSIONS

The application of science and technology to global problems is a key component of providing a decent standard of living for a majority of the human race. Science and technology have an especially important role to play in developing countries in helping them to manage their resources effectively and to participate fully in worldwide initiatives for common benefit. Capabilities in science and technology must be strengthened in LDCs as a matter of urgency through joint initiatives from the developed and developing worlds. But science and technology alone are not enough. Global policies are urgently needed to promote more rapid economic development throughout the world, more environmentally benign patterns of human activity, and a more rapid stabilization of world population.

The future of our planet is in the balance. Sustainable development can be achieved, but only if irreversible degradation of the environment can be halted in time. The next 30 years may be crucial. [End of joint statement.]

--Peter Montague(National Writers Union, UAW Local 1981/AFL-CIO)

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[1] See the original statement at http://www.spiritone.com/~orsierra/rogue/popco/warn/ warn01.htm. Or at: http://208.240.253.224/page7.htm .

Descriptor terms: sustainability; science; royal society; national academy of sciences; statements;