

Sustainable Well-Being

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Economic progress achieved since the advent of industrialization has resulted largely from advances in science and technology (S&T). Yet even as society benefits from S&T through choices that we have come to take for granted, decisions on its future are increasingly being questioned and scrutinized. The current path of economic growth deviates from the objectives of sustainable development. It is not only society at large, spearheaded by leaders of public opinion, that is expressing concerns, but also the scientific community itself, which is looking for ways to promote the sustainable well-being of all humanity.

This microscopic analysis of science and its applications emanates from several valid concerns: the role of science in the development and extensive use of lethal weapons; the continuing existence of widespread poverty, with over a billion people in the world remaining virtually untouched by the benefits of modern S&T; and the threat of serious environmental externalities from unprecedented levels of production and consumption of goods and services.

A meaningful discussion of S&T solutions to contain war, terrorism, and heinous crime cannot be included in this limited space, but the other two issues deserve elaboration. The distinguished economist Kenneth Boulding, a rare intellectual far ahead of his time, pointed out that two centuries earlier, the difference in average income between the poorest country in the world and the most prosperous was no more than 1:5. When he expressed this concern 30 years ago, he estimated it as being 1:50. Income and wealth disparities are even sharper today. Despite astounding progress globally, the S&T gap between rich and poor nations is ironically wider now. If this growing chasm is not bridged, fissiparous tendencies will inhibit and even reverse prospects for enhancing human welfare. Unfortunately, the global community has failed to bring technological opportunities and skills to underprivileged and impoverished communities across the globe.

The challenge of widespread worldwide poverty has typically been addressed through doles and handouts as convenient but largely ineffective palliatives. Seldom have programs in this area created avenues for applying modern S&T to develop local skills and capacity, which alone can generate income and employment on a sustainable basis. A program being spearheaded by The Energy and Resources Institute embodies technological innovation in the allied fields of agriculture, energy, natural resource management, and information technology in partnership with local entrepreneurs for the sustainable well-being of rural communities in Asia and Africa. This approach, called Integrating New and Sustainable Technologies for Elimination of Poverty, meets a challenge that could become insurmountable if ignored any longer. Creating opportunities for the productive application of S&T by the most dispossessed communities of the world is a task that scientists and policymakers must embrace with urgency.

Among the negative externalities created by human activities, the cumulative emissions of greenhouse gases have had by far the most serious consequence in the form of global climate change. Cuts in emissions of these gases require technological

initiatives to stabilize the concentration of greenhouse gases. Because the impacts of climate change will continue for centuries, adaptation measures will also require the timely application of S&T. However, these will not take place in a policy vacuum. Regulatory and fiscal measures will have to be put in place by governments, facilitated if necessary by multilateral agreements to trigger the development and application of appropriate technological solutions.

The agenda for the global scientific community is very clear. We must recognize and evaluate the most critical impediments to the sustainable welfare of human society, including various threats to human life and global peace, disruptions in the delicate balance of Earth's natural systems, and the growing gap between rich and poor. These three sets of conditions are intimately interlinked, requiring a coordinated approach to solve them. Scientists must work with decision-makers to devise rational policy measures that mobilize desirable responses in the form of development and deployment of suitable S&T solutions in these areas.