This series of essays began with a challenge: to find a way to promote changes in how economies function, in order to accomplish the following:

1. Reduce to an acceptable level, as quickly as possible, the environmental harms that result from economic activity
2. Maintain or increase human well-being in the present
3. Preserve and, where necessary, rehabilitate, the productive resources required to maintain or increase human well-being in the future
4. Cope with unavoidable harms to the natural and social environments

Goal #1 is about mitigation of climate change, and goal #4 is about adaptation to the climate change impacts that cannot be prevented. It is of great importance, in the immediate future, to put a major emphasis on mitigation, because the more mitigation is done, the less adaptation will be necessary. A massive climate change mitigation effort can be a highly successful economic development strategy, involving investments in energy conservation and renewable energy that will create more good jobs than the same investments in fossil fuel energy. But much deeper changes will be required to prepare the world to adapt to the health, weather, and other resource-related disasters that even the best mitigation activities can no longer prevent.

The second and third of the goals listed above are about maintaining or improving human well-being in the present and the future. While, as just noted, some mitigation activities can work to enhance well-being in the standard ways, of providing jobs and income, other mitigation activities, along with many adaptation requirements, will be in direct competition with the usual prescriptions for economic growth. This is because a focus on the causes of climate change leads almost inexorably to a requirement to reduce the total global consumption of energy, and of materials with energy-intensive requirements in their production or transportation. The replacement of fossil fuels with sustainable alternatives may ultimately relax this requirement, but we must expect at least a 50-year transition period while those alternatives are developed, mass-produced, and their costs lowered. Energy is therefore likely to be more expensive during the period of transition, and increased energy costs will ripple throughout the economy, raising other costs. Meanwhile, it will be necessary to divert large amounts of available effort and resources to adaptation.
This transition period may see new kinds of jobs replacing old ones, but many people will likely find that incomes from jobs will not buy as much of industrial production as they have been accustomed to. This will scarcely affect the poorest countries, whose people have little or no access to industrial production now. However, in the rich countries there will be massive dissatisfaction, unless there is a large shift towards emphasizing the quality (vs. the quantity) of goods, and unless society’s product is divided more equitably than at present.

Economic theorists and policy makers have tended in the past to see their role as finding ways to promote economic growth – meaning increased output, and increased income with which to purchase that output. This role has not normally been defined in such a way as to indicate how or to whom the increased income should be allocated. The industrial revolution coincided with circumstances that in fact allocated much of the increase to the less wealthy portions of industrializing populations, creating mass markets and the modern culture of mass consumerism. The last few decades, however, have seen a reversal of this trend. While the productivity of labor has continued to rise, the income benefits associated with this have tended increasingly to go to the wealthiest 5 or 10% of populations, nationally and globally.

Some of the diversion of resources to adaptation requirements may show up as increases in GDP, in the same way that the costs for cleaning up an oil spill, or for treating a patient exposed to a radiation leak, are financial transactions that get included in the economic flows recorded in national accounts. However, these kinds of “economic growth” signal decreases, rather than increases, in the well-being that would have existed without the oil spill or radiation leak. Other disaster-related costs are born only by the people who suffer from disease when water is contaminated, or who lose their homes, or lose a parent whose income was essential to the family. These human costs may show up as decreased GDP, or else may not show up at all in the economic statistics – only in the experience of suffering and loss.

Two points may be derived from the foregoing. The first is that it is necessary to find ways to orient economies more towards well-being than towards growth, as traditionally understood.

The second point is one that has emerged strongly from the earlier discussion of the social cohesion and resilience required to allow societies and individuals to adapt to the various effects of climate change. Economies not only require a fundamental shift towards a well-being orientation – they also need to contain more effective mechanisms for promoting equality. The importance of equality is stressed because of its relevance to resilience and social cohesion. Many studies show that inequality, to the extent that it is viewed as unfair, or that it creates circumstances of extreme deprivation for some members of a society, degrades the social capital which is important for promoting cooperation. In actual economic life cooperation is more important than competition for achieving efficiency and productivity; but it is harder to evoke cooperation in a situation of oppressive inequality.

Mechanisms for promoting equality must include excellent education for all children – not just for the children of the wealthy. Also essential are systems of health care and nutrition that allow all people to develop their physical and mental capacities. Other needs that should be considered among the basic rights of all human beings are access to clean drinking water, and sufficient sources of inanimate energy to allow them to participate in global communications and education systems.
The last of these desiderata – sufficient energy for everyone – may seem to contradict earlier statements regarding the necessity to reduce global energy consumption, at least over the next half-century. It is, of course, the rich whose energy consumption must decline drastically until sustainable replacements can be found and made available. In 1998 the wealthiest 20 percent of the world’s population consumed about 68 percent of the world’s commercial energy, while the lowest quintile consumed less than 2 percent of these resources. These percentages have been shifting somewhat, as less developed countries have increased their energy consumption – too often adopting, as the only affordable or available energy sources, technologies that are especially high in greenhouse gas emissions.

In order for all four of the goals outlined above are to be met, it will be essential for the rich nations to provide both money and technology to allow the poorest peoples to increase their energy consumption, and to do so in the most efficient, least polluting manner. Moral principles of equity and fairness make it evident that the wealthy, industrialized countries, who have contributed over 90% of the CO2 that is now in the atmosphere, have a responsibility to assist the poor countries. It is the poor countries who will suffer most from the consequences of climate change; who contributed the least to the existing atmospheric stock of greenhouse gases; and who are now confronted with “full skies,” and urgent pleas, or demands, that they not add any more atmospheric pollution. However, the types of economic organization that are now most prevalent in the world present some high barriers to achieving equality on either local or global scales.

Existing market economies do not appear to work toward equality; indeed, at present, they seem to have a stronger tendency to perpetuate and increase inequalities. Some of this can be righted, within nations, through political systems, by returning to more equitable systems of taxes, along with appropriate laws and regulations on work conditions and environmental impacts. While doing this, however, it is necessary to look beyond the particular patches that are applied to particular flaws, and deal with the meta-externalities that emanate from the whole system.

A host of meta-externalities proceed from the fact that market economies are oriented toward the goals of maximizing profits, production and consumption – not toward increasing well-being. The social sciences have been making considerable progress on understanding what does contribute to well-being. As, or if, these findings become part of common knowledge, this could provide a counter-weight to the social meta-externality of market economies, wherein consumers (including the very youngest children) are persuaded to want many purchases that will not increase (and may reduce) their well-being. In other words, many people in rich countries, and some elites in poor countries, could actually be better off with less stuff. Reduced material throughput in the global economy would help with climate change mitigation; at the same time, resilience and social cohesion would be increased by policies that depress conspicuous consumption and encourage societies to define success in terms other than material possessions.

Societies altered in these directions will probably not experience any near-term reduction in investments opportunities, or in jobs. As noted above, by and large green industries and activities employ more people, in better jobs, than equivalent fossil fuel-reliant activities.
Nevertheless, there as likely to be considerable push-back from corporations, and the corporate-government complex. Large corporations are managed by individuals who have spent their lives learning the rules of the old system, with goals of maximizing market share, output, and profits, regardless of well-being or sustainability consequences. Many governments are now oriented to doing what is in the short term, profit-making interest of corporations, rather than working for the general, long-term well-being of people and their environments.

There is not one single answer to the question of how to define and shape a desirable and sustainable path of economic development for the 21st century. Perhaps the most probable starting point for change is cultural – a change that can occur if widespread education and communication help people come to a better understanding of what really contributes to a good life. Beyond such a cultural shift, an adequate response will require myriad changes at every level, and in many aspects, of home life and work; business investment, production, sales strategies, and choice of product; in government regulations, purchasing, infrastructure development, incentives to businesses and households, and international relations; in the roles and capabilities of NGOs; and in the actions of, and the powers given to, multilateral institutions such as the World Trade Organization, United Nations, World Bank, regional development banks, and other multilaterals perhaps not yet created. Motivating government actors to serve the common good will continue, as always, to be critical and difficult, but not impossible. A similar, though usually easier, task relates to the not-for-profit, non-governmental sector. The greatest challenge is to find incentives to orient business toward the provision of well-being-enhancing goods and services.

Climate change is sometimes referred to as the immanent perfect storm – a force that will bring political and economic unrest to boiling points, as people deal with shortages of food and water, and as changing weather patterns destroy human, animal and plant habitats, bring new diseases and pests, and create hordes of environmental, political and economic refugees. People who care about inequality and unnecessary suffering have, over decades and centuries, produced a rich menu of ideas for how to make a better world. It may be now possible for some of these to be implemented, because it is becoming evident that failure to do so may spell ruin for us all.

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