



“Summary of article by Michael A. Toman: The Difficulty in Defining Sustainability” in Frontier Issues in Economic Thought, Volume 1: A Survey of Ecological Economics. Island Press: Washington DC, 1995. pp. 88-90

Social Science Library: Frontier Thinking in Sustainable Development and Human Well-being

“Summary of article by Michael A. Toman: The Difficulty in Defining Sustainability”

The terms sustainability and sustainable development mean different things to different people. In general, sustainability involves some notion of respect for the interests of our descendants. Ecologists have taken this to include preserving the status and functions of entire ecological systems. Economists have stressed the maintenance and improvement of overall human living standards.

There is also disagreement about the prospects for achieving sustainability. Some scholars argue that in the past humankind, through resource substitution and technological progress, has avoided the specter of Malthusian scarcity. Yet others believe that the human pressure on natural systems has already passed sustainable levels. They argue that it is likely that the world's population will at least double before it stabilizes, and they cannot conceive of ecological systems tolerating the consequences of the economic growth that will be needed to support a decent living standard for this increased population. It is difficult to determine where the truth lies and what the appropriate strategies are. Progress is hampered by disagreements about basic concepts and terms of reference.

Key Conceptual Issues

There are differences of opinion between economists and resource planners on the one hand, and ecologists and environmentalists on the other, with respect to at least two salient elements of the sustainability concepts: intergenerational fairness, and what is to be sustained.

In economics, the standard approach for dealing with issues of intergenerational trade-offs is to discount the costs and benefits of future generations, as well as future receipts and burdens of the present generation. Discounting is justified on the grounds that present benefits are preferred to future benefits, and future costs to present costs, and that, from the point of view of current decision makers, current receipts are preferred to future receipts as they can be invested to increase capital and future income. Critics of discounting object to its excessively wide application. Ethical objections are raised when present generations exercise influence over future generations. The capital growth argument is criticized on the grounds that in many cases the environmental resources at stake are inherently limited in supply. Critics also object to the preferences of an "average" member of the present generation guiding resource use when such usage may threaten the future well-being of the entire species. "Deep ecologists" object to human values being at the center of the debate, arguing that other elements of the ecological system have an equal moral right to be sustained.

If one accepts that the present generation has collective responsibility to future generations, then the question is: what kind of social capital should be transferred to future generations? Many economists view the natural endowment, physical capital, and human knowledge and abilities as relatively fungible. Thus degradation of the environment and ecosystem are not seen as intrinsically unacceptable. The question is whether and what sort of compensatory investments can be undertaken. Such investments include human knowledge, technique and social organization. Many ecologists and some economists, however, view such a position as untenable. They point out that physical laws limit the possibility of substituting other things for ecological resources. In addition, healthy ecosystems are seen as offering resilience against unexpected changes, and degradation may be irreversible.

Another area of disagreement on this issue is the appropriate level of geographical scale in considering resource substitutability. On the one hand, the larger the geographical scale the greater the opportunities for resource trade-offs. On the other, the smaller the scale the more attention can be paid to unique attributes of ecosystems. This disagreement is especially clear in considering the scale of human impact relative to global carrying capacity. Ecologists believe this to be a serious problem and an immutable constraint. Economists generally believe that substitution and technology will arise from within the system to deal with problems of global carrying capacity.

Safe Minimum Standards

The concept of a safe minimum standard can be applied to concerns about intergenerational fairness, resource constraints and human impact. The safe minimum standard posits a socially determined, albeit "fuzzy," dividing line between moral imperatives to preserve and enhance natural resource systems and the free play of resource trade-offs. Suppose that the damages to natural systems can be characterized by the size of their cost and degree of irreversibility. The size of costs can be measured in terms of opportunity costs (by economists) or as a physical measure of ecosystem performance (by ecologists). The effects of irreversibility, which reflect uncertainty, cannot be so easily monetized from an environmentalist perspective. The two are therefore treated separately. Following a safe minimum standard, society would rule out actions that could result in natural impacts beyond a certain threshold of cost and irreversibility. Central to the safe minimum standards approach are the role of public decision making and the formation of societal values. The safe minimum standard will be defined differently by ecologists and economists, depending on judgments about moral imperatives and the value of discounting, but the concept may provide a useful frame of reference for discussion.

Research Needs

There is great scope for interdisciplinary work to address some key issues related to sustainability, including defining objectives, identifying constraints, and resolving the relevant disagreements. Economists could make greater use of ecological information and the implications of physical resource limits in an analysis of resource values. Social scientists can contribute to an understanding of how future generations might value different attributes of natural environments. Ecologists should provide ecological information in a manner that can be

used in economic valuation. They should also take into consideration the role of economic incentives in ecological impact analyses.