

## **Regenerative Land Management for Safe Food Production: Ecological vs. Environmental Economics**

by Daniel Nuckols

Managing land in a regenerative, resilient fashion is directly connected to, and part of, improving the quality of the overall national economy, its natural environment, and safe food production. Unfortunately, such a linkage is not exemplified or measured in the one national statistic meant to gauge human economic welfare. Of course, I am referencing our country's main calibration of economic prosperity, Gross Domestic Product (GDP). GDP is formally defined as the "total dollar market value of all final goods and services produced in a given time period, usually one year." The first-year college student of economics can quickly cite the flaws in the measurement: 1) the product or service must be sold in the formal market to be counted—leading the late Nobel Economist Paul Samuelson to quip, "GDP immediately falls when a man marries his maid;" 2) many improvements in, or worsening of, the quality of life or products are also not captured; 3) the issue of poverty and the maldistribution of income is not addressed and; 4) any severe decline in air and water quality is not taken into consideration, nor is the exploitation of finite natural resources, usually meaning oil, gas, and precious metals. Moreover, conspicuous in its absence as a listed failing of GDP accounting is soil mineral depletion and soil's overall erosion. You will not find the topic of soil and land management in the standard mainstream economic principles texts, as was also true with two articles in the April 30, 2016, *Economist* publication about the failing of GDP as a measurement of human well-being entitled, "How to Measure Prosperity" and "The Trouble with GDP." In essence, the sorts of ecological problems not addressed by mainstream economic discourse are simply not on the table when it comes to GDP accounting. WHY?

The easy, yet troubling, answer is that GDP only addresses "growth," output per capital, while ignoring sustainable "development." Thus, poor traditional industrial land management may create growth opportunities for Monsanto and Cargill—similar to how a crime spree creates more jobs for locksmiths—but does not address how/why the problem came about, and how our quality of life is affected. Fortunately, R.T. Naylor of McGill University, and others, have succinctly articulated an historical narrative that sheds light on more fundamental problems. Quoting Naylor, all human economic activity involves interference with and disruption of surrounding ecosystems, including the "earth system" itself. But for most of human history, political, cultural, and technological constraints together ensured that human demand remained relatively small, compared to the ability to supply resources and manage wastes, while Malthusian disease, limited food supply, war and social strife helped keep global population from increasing too rapidly. Of course, certain land areas did experience cropland and soil erosion, forests devastated, ground water drained, and the most accessible minerals depleted. But as Naylor explains, there was always more "empty" land to replace it. So the negative human impact on various parts of the global ecosystem was marginal, and nature, given enough time, could usually reverse much of the damage.

However, the last two hundred years or so have seen three interacting components ensure that this “global ecosystem self-healing process” to be problematic. Naylor recognizes that enormous advances in food supply, sanitation, and medicine have permitted a remarkable growth in population. Second, today’s consumers regard “economic growth” as their birthright, expecting a continual rise in their income, with the corresponding ability to purchase the goods they desire. Third, technological inventions and innovations have shifted energy foundations from a renewable solar flow to a finite fossil-fuel stock. Naylor rightfully claims that these three factors now threaten the biosphere, through climate disruption, depletion of the ozone layer, and biodiversity loss that obliterates many food webs and weakens surviving species. Moreover, the use of toxic, carcinogenic, mutagenic pollutants and the evolution of super-pests are beginning to resist restorative human technological responses. For those of us who believe in a holistic management approach to land stewardship, any continued intense use, and heavy reliance upon, the same mental constructs, technologies and institutions that brought forth this malaise, will only make it more difficult to chart a different path. Thankfully, such a viable path is now being addressed through holistic land stewardship and the discipline *ecological economics*—not to be confused with *environmental economics*, a field that has fundamentally ignored how a market economy is connected with the biosphere and its feedback loops. *Ecological economics*, by contrast, fuses ecology with economics to study and gauge how natural ecosystems support

Indeed, hope exists with the growth of the field of ecological economics; especially with its emphasis on the need for safe food systems deriving from a holistic approach to land stewardship. Environmental economics, by contrast, has traditionally operated within a disconnect between the market economy and the feedback loops of the biosphere. Ecological economics, in rebuttal, fuses ecology with economics to claim that a healthy natural ecosystem is direly needed to support a market economy.

Robert Costanza, Gund Professor of Ecological Economics at the University of Vermont, correctly asserts that ecological economics is a trans-disciplinary field, branching into biology, psychology, anthropology, history, and archaeology. Its practitioners want to know how humans are embedded in their ecological life-support system, and not have the study and operation of the natural environment derivative from that of the functions and behavior of a market economy. Costanza goes on to claim that conventional economics does not properly factor-in an essential understanding of scale. In many respects, we live on a finite planet where the economy cannot sustain infinite physical growth—there are biophysical limits. Traditional economics, unfortunately, does not properly treat these resource limits; or, it operates under the mistaken consciousness that technology can always address the issue of resource constraints. A key underlying proposition of this fallacy is that the market price system generates the appropriate price signals for when a resource is becoming scarce, providing incentives for entrepreneurs to invent and innovate man-made resource substitutes. While indeed this has, at important instances, taken place, e.g. fiber optics replacing copper, the price system is infamous for failing to properly price natural resources when: 1) “commons” are involved, i.e., rivers, lakes, atmosphere; 2) scale is ignored, leading to unanticipated “tipping” points, e.g. soil erosion, global warming, and; 3) biosphere feedback loops are not considered.

In essence, the economy is a subset of the environment. As the environmental commentator Dano proclaimed, “you can have an environment without an economy, but you can’t have an economy without an environment.” Those who support economic systems that promote continuing and unlimited growth are ignoring problems of intergenerational, intra-generational, and interspecies equity and sustainability. So called expert cultivation of new technology will not always be able to circumvent rudimentary resource and energy constraints. Rather, ecological economists—those more tuned into the study of natural systems—recognize living organisms and their habitats, e.g., soil, do invariably stop thriving when they reach underlying resource constraints and its *mismanagement*. Costanza disagrees with “technological optimists (who) argue that human systems are fundamentally different from other natural systems because of human intelligence; or how history has shown that resources constraints can be circumvented by new ideas. Technological optimists claim that Malthus/ dire predictions about population pressures have not come to pass and the ‘energy crisis’ of the late 1970s is behind us.” Costanza, however, shies more towards being a technological pessimist when he asserts, “The technological pessimists argue that many natural systems also have ‘intelligence’ in that they can evolve new behaviors and organisms (including humans themselves). Humans are therefore a part of nature, not apart from it. Just because we have circumvented local and artificial resource constraints in the past does not mean we can circumvent the fundamental ones that we will eventually face. Malthus’ predictions have not come to pass *yet* for the entire world the pessimists would argue, but many parts of the world are in a Malthusian trap now, and other parts may well fall into it.”

Where do the Council for Healthy Food Systems, Farmers & Ranchers Freedom Alliance, Holistic Management International, Quivira Coalition, among many others, fit into this debate between environmental economists versus ecological economists? I strongly suspect our loyalties lie more with the latter. We also know that sustainability is fundamentally about leaving sufficient capital for future generations; how much we decide to consume today impacts how much we invest in the future. We are also keenly aware, however, of the argument that it is morally problematic to separate out (save) capital for future generations while millions of people today are experiencing dreadful poverty. We should not let this quandary paralyze our mission of educating consumers about safe, viable food systems, improving the land, preserving water, training organic agricultural producers, and ultimately enhancing and sustaining lives. We want to promote and sustain policies and practices that bring forth land *resilience* that will support healthy food systems. We know it is possible to provide educational management and planning programs to consumers, farmers, ranchers and land stewards which help producers reduce costs, increase profits, improve the health of their land and families, yet NOT leave less for those who follow. Regenerative land management practices for healthy food systems are transferrable across the globe, and *between* generations. Through practices promoting long-term resilience, holistic land management proponents can operationally and morally eschew the debate over how much capital to consume today versus how much to leave for future generations.