

# SUSTAINABILITY DEMYSTIFIED

By Nona Dennis

## Part I

### “What is Sustainability Anyway?”



This was the title of an article published recently by World Watch Institute, monitor of global environment vital signs since 1974. It hints of the frustration of many environmentalists as they hear the word “sustainability” used more and more often in a variety of contexts. Despite being a relatively new term, sustainability has already been overused, corrupted, and thus rejected by many veteran activists who view it as a balancing act that can only compromise the

environment. Al Bartlett, University of Colorado physicist, suggested that our facile use of the term demonstrates Disney’s First Law: “Wishing will make it so.” And yet the concept contains durable principles that must be embraced if human communities and the whole of the biotic world are to survive – arguably the supreme global social and political issue of this century.

As the World Watch article suggests, sustainability is a “big, sloppy subject” that can be approached in many different ways. At one extreme, sustainability can be distorted so that it considers only human interests, and at the other it can be defined in ways that force humans out of the picture altogether by those who see people as a cancer on the Earth. In that broad middle ground, sustainability can encompass the full range of human values, experiences, and responsibilities as “citizens” within the community of all living creatures, as Aldo Leopold might have put it. Since we have to begin somewhere, I will first consider the basic definition and circumstances of its origin, and then continue in Part II with practical approaches that are helpful in understanding the many facets of sustainability.

### Concept and Definition

The concept of sustaining resources for the use of future generations is not new, but the term “sustainability” did not appear in environmental dialogue until the 1970s. Since the 1980s, it has been linked most commonly with “development,” as in “sustainable development.” Early definitions emphasized preserving biodiversity and ecosystems, but it became rapidly evident that environmental protections on a global level could only be accomplished by also addressing the social and economic needs of human populations, especially those living at or below subsistence levels. To accomplish one ideal –

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preservation of ecosystems, we could not ignore the other ideal – improvement of the quality of human life. At the same time, values and priorities surrounding what should be sustained and what should be developed differed significantly around the world. Sustainability, it seemed, could never reach a fixed, harmonious state but rather would be an ongoing process of cultural evolution.

The problem was how to reconcile differences while embracing common goals. The most acceptable definition emerged in 1987 in the U.N. World Commission on Environment and Development *Brundtland Report* (“Our Common Future”):

**“sustainable development is that development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”**

The Brundtland definition was designed deliberately to gain the widest possible support, leaving the details to be worked out. After the 1992 Earth Summit in Rio de Janeiro, the ideals of sustainability spread rapidly to become the central theme in countless international

organizations, national institutions, “sustainable cities,” and other community programs. Most initiatives began with a variant of the Brundtland definition, followed by specific goals and programs reflecting local priorities. But, indeed, the devil is in the details! Ten years after Rio, Earth Summit 2002, or “Rio + 10”, was held in Johannesburg. It was evident that implementation of ideals had been slow, in part due to lack of resolve, but also due to the variable interpretations of what sustainability means.

Amidst that variability, however, several principles, or goals, that expand on the basic Brundtland definition have gained general philosophical and political acceptance. One writer captured them as follows (I have added the numbers): “*Sustainable development implies the (1) ability of humans to coexist with the environment (2) in a manner that maintains the natural systems that support life; (3) protects and restores fish and wildlife and their habitats; (4) fosters livable human environments; (5) ensures equal access to societal goods and services; and (6) promotes economic well-being – for (7) the benefit of current and future generations.* These are laudable goals, but perhaps easier said than done! “Coexistence of humans with the environment,” in itself, requires a paradigm shift away from the classical Western notion that humans are somehow apart from and “superior” to nature and other living forms. Progress toward these goals also involves choice. Therefore, I would add another principle to those above: Only by working with and through people across all sectors of society, can the goals of sustainability be accomplished. In Part II, I will give a capsule description of some approaches that are proving effective in translating sustainability principles into practice.



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## Part II

The “common sense” nature of the Brundtland definition of sustainable development, discussed in Part I, masks wide operational discrepancies and leaves many questions to be answered in the pursuit of sustainability. The first – and most important – is: What must we sustain?

Fifty years ago, futurist Buckminster Fuller coined the metaphor “*Spaceship Earth*.” He observed that spending our cosmic-energy savings account (fossil fuels) is about as logical as burning the family home to keep warm on a particularly cold winter night! In July 1969, the Apollo 11 astronauts provided stunning photographs from the moon of the real Spaceship Earth, floating in a black void. These images exposed the sustainability problem at its most basic level: Earth is a closed system, isolated in space, fueled only by the sun’s energy.

Space scientist James Lovelock hypothesized Earth as Gaia, the mythical Greek goddess who brought forth the living world from Chaos. Gaia is an organic “being,” self-evolving and self-regulating. Her properties of air, temperature, oxidation and acidity, waters, rocks, biota, and etcetera, are maintained by automatic feedback processes that sustain life on Earth. Humans are disrupting the delicate balance of these vital properties and processes. The burning of fossil fuels, for example, has rapidly increased levels of carbon dioxide and other greenhouse gases in the atmosphere, leading to measurable climate change.

How do we stem the tide of these disruptions? Out of the plethora of sustainability initiatives and programs that have arisen during the past fifteen years, several have gained a wide following, in part because of their ability to communicate sustainability through metaphor, and in part because of their potential for prompting the changes in human values and choices a sustainable world requires.

### **Toward an Ecological Economy**

Ecological economists identify three kinds of capital that make up a community’s overall “economy.” *Natural capital* refers to Earth’s complex life support system, for example, marine and freshwater systems, clean air, biological diversity, and waste assimilation; *human, or social, capital* consists of people and their skills, education, health, and institutions; and *human-made capital* includes infrastructure and manufactured goods – the built environment. Traditional financial markets ignore the natural capital account as “free,” or outside the market. yet we can actually assign to it a monetary value of 33 trillion dollars. If we define sustainability as a whole system, we must begin by preserving this natural capital as well as investing in social and human-made capital.

How does sustainability work with these three capital accounts?

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*Weak sustainability* proponents—and there are many— contend that human innovation and new technologies will rescue us from the limits of natural capital. These technologies will enable conversion of limited natural capital, such as non-renewable fossil fuels, metals and minerals, into human-made capital of equivalent value. An example is substituting fiber optics for copper.

*Moderate sustainability* suggests that substitutes for some stocks of natural capital will develop as future technologies evolve. *Strong sustainability* rests on the premise that we must maintain natural capital at or near current levels because its life support functions are unique; we cannot duplicate or replace them by other forms of capital. A sustainable community lives off the interest, reinvests, and does not use up natural capital in a perpetual liquidation sale. There is little doubt that both strong and moderate sustainability require widespread change in behavior in order to stop the spiral toward self-destruction. How do we do this?

*The Natural Step* (TNS) is an international organization founded ten years ago in Sweden by an oncologist. It uses a science-based approach for developing sustainable practices (see [www.naturalstep.org](http://www.naturalstep.org)), defining the biosphere's functions ("natural capital") scientifically, in terms of thermodynamic principles and societal interactions with the environment. TNS serves as a framework of principles and provides a toolbox for educating businesses and communities in specific methods to avoid further disruption of natural processes and reduce consumptive use of natural resources.

The American Planning Association (APA) has adopted parts of The Natural Step in its own sustainability policy to guide future urban and regional planning. Sustainability, according to TNS and APA, requires meeting four Systems Conditions, roughly interpreted as (1) radically reduced dependence on metals and minerals and burning of fossil fuels; (2) decreased production of synthetic substances that are accumulating, and phasing out all persistent substances; (3) sweeping changes in our consumptive use of productive ecosystems; and (4) – the key to satisfying the other three conditions – meeting basic human needs with the most resource-efficient methods possible, with equitable distribution of resources.

### **“What gets measured, gets managed”:** Measuring sustainability and non-sustainability

Until the general concepts of sustainability are translated into measurable actions, they remain just theory and concept! *The Ecological Footprint* is now a well-known metaphor and useful accounting tool whose purpose is to quantify the effect of human consumption on the carrying capacity of the Earth. The “Footprint” represents the area of productive land required to support the life requirements of a person or population, wherever on Earth that land area is located, and to compare the consumption of one population with that of another. For example, an average-sized footprint for a U.S. citizen is 30 acres (you will see several versions of this number), whereas an average Italian requires 12, or a Bangladeshi, 1.5 acres. The World Average is seven acres. Assuming that only 25 %

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of the planet Earth is biologically productive, we now recognize that it would take three planet Earths to support current global population if all enjoyed a USA standard of living!

As metaphor, the Footprint is powerful in its ability to communicate complex scientific information in simple and intuitive terms, and to explain the relationship between human consumption and the natural environment. As accounting tool, it can also bring sustainability “home”: using a relatively simple template of questions about life-style, individuals or communities can calculate their Ecological Footprint and, in so doing, identify specific means and targets to reduce it (see [www.ecologicalfootprint.com](http://www.ecologicalfootprint.com)).

*Sustainability indicators* are a practical accounting tool communities to identify and measure progress toward locally selected sustainability goals. Indicators can be as diverse as “vehicle miles traveled,” “water consumption per capita,” “acres of land put into open space,” numbers of salmon returning to spawn,” or “availability of health services.” The exercise of identifying indicators, alone, is useful because it involves people and reveals their concerns, whether environmental, economic, or social in nature. The resulting metrics, if faithfully monitored, provide a kind of “dashboard instrument panel” for noting trends and evaluating direction and rate of change toward sustainability over time, and adjusting course as necessary (see [www.redefiningprogress.org](http://www.redefiningprogress.org)).

### **Linking Environment, Economy, and (Social) Equity**

The “*Three E’s: Environment, Economy, and Equity*” is possibly the most familiar slogan of the sustainability movement. Virtually every sustainability plan and program now tries to integrate three domains that traditionally have been considered separately. As metaphors, both the equilateral triangle and the three-legged stool suggest a commitment to “balance” traditionally competing interests in public decisions. This raises a problem for many environmentalists, who regard nature as fundamental to all human activity – the “playing field,” or what Paul Hawken calls “the pond we swim in.” Thus, Herman Daly, ecological economist, suggests a triangle that integrates natural systems, social and economic systems, and human aspirations, but places natural systems at the base, with the built environment and social/economic capital rising from that base, and community well-being forming the apex (see also the Draft Marin 2004 Countywide Plan, Introduction).

Regardless of metaphor, the Three E’s represent sustainability as process more than product. That is, setting a vision of sustainability, and determining how to achieve that vision, must include all public interests and economic sectors, as well as the environment. In reality, however, “balance” may be an illusion: the persistence of diverse community interests is a useful reminder that there’s no such thing as “perfect sustainability”!

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### CONCLUSION

Should we be pessimistic or optimistic? There is room for both. The global environment cannot tolerate even 6 billion of us living the “American Dream” or its European equivalent, under today’s technological conditions. The Ecological Footprint clearly demonstrates this. Technological progress and breakthroughs in energy and materials efficiency are not only possible but are happening; however, they are not sufficient for global sustainable development. The “*efficiency revolution*,” although promising, must be accompanied by a “*sufficiency revolution*” – a change in individual consciousness and attitudes.

All sustainability, finally, is local. No one person can change the world alone. As with voting, however, the future is influenced by the collective action of each individual. One writer advocates that we adopt modes of behavior in the spirit of “*affluence lite*” – a deliberate renunciation of the superfluous. This is not the same as asceticism, which will never gain broad approval. Considered individually, the changes induced by “*affluence lite*” may have only minor effects. Taken together, billions of individual actions can change the face of the Earth. To live sustainably is ultimately to act in enlightened self-interest.



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