

AS I SEE IT

Ecological overshoot and sustainability ethics

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Indications have pointed to a global ecological overshoot for many years, but they were often only parts of the entire system (e.g. depleted oceanic fisheries, loss of topsoil). Evidence is increasing at present that indicates ecological overshoot at the global system level (Meadows et al. 2004), and more and more numerical evidence is accumulating (e.g. Wackernagel et al. 2002). The New Society Publishers Report (2004) sets the overshoot at 20% more resources needed than Earth can generate. The ecological overshoot began around 1985, but demand was rising steadily for about 25 years before 1985. Crossing the carrying capacity threshold was not evident to most people because the deficit in resources was not obvious while humankind was using approximately 40% of the planet's natural capital. However, any ecological overshoot is alarming and indicates that humans are living unsustainably. This situation raises some serious ethical issues.

(1) What is the justification for ruining posterity's opportunity of inheriting a habitable planet?

(2) Natural capital includes living creatures that humankind is using to satisfy its own 'needs.' Overuse of natural capital includes driving numerous species to extinction and destroying the habitat of almost all species. Such unsustainable practices are and continue to be serious violations of eco-ethics.

(3) Although some disparity in income and resource use per capita is expected, the disparity between individuals and nations is increasing. Many individuals are living in abject poverty, and others have inadequate food, shelter, and warmth. A few are extremely wealthy.

(4) Humanity's consumption of natural resources, expressed in land and sea surfaces necessary to renew them, averages 2.2 global hectares per person, while that available to support the global population (approximately 6.3 billion people) is an average of 1.8 global hectares per person (Global Footprint Network 2004a). The consumption figure exceeds the planet's

regenerative capacity by 20%. Even though this percentage is a big difference to overcome, humankind must do so if it is to live sustainably. Surely, an ethical imperative dictates that this change must occur as soon as possible.

(5) An equally challenging ethical issue is that no allowance is made for the other life forms with which humans share the planet and which collectively constitute the living part of the biospheric life support system. They can share some space and resources with humans, but they also require some spaces and resources that are primarily theirs.

(6) Another ethical problem is the vast difference in each country's demand on nature (i.e. the nation's ecological footprint). If the number is positive, it represents the ecological deficit. If the number is negative, it represents a 'safety factor' since the biocapacity is underutilized. Some of the negative numbers are comforting: Australia (-11.5), Brazil (-8.0), Gabon (-18.4). In other countries, the biocapacity has been exceeded: Belgium/Luxembourg (3.7), Israel (4.9), Japan (3.6), Kuwait (9.2), Netherlands (4.0), Portugal (3.6), Spain (3.2), Switzerland (3.6), United Arab Emirates (8.9), United Kingdom (3.9), United States (4.7) (Global Footprint Network 2004b).

(7) As a matter of policy, death control (e.g. antibiotics, improved health care) has received much attention and resources, but birth control has not been given comparable attention. Since a stable population means that birth rates and death rates are fairly well balanced, an exponential increase in global population has resulted. Often, birth control assistance to other countries from comparatively wealthy nations has not been vigorously supported for political, ideological, or religious reasons. Populations must be stable (or well below carrying capacity) for sustainable use of the planet. The stable number should be congruent with an acceptable global footprint size. This approach seems to be the most ethical one, but society is not

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nearly at the stability needed for sustainable use of the planet. Understanding population growth requires some literacy about exponential growth (Bartlett et al. 2004). Perpetual growth is the major paradigm for most of the nations of the planet. Ecological overshoot is a consequence of continued economic and population growth. In 1968, world population was well under 4 billion people; in 1999, it was 6 billion and still growing. At a growth rate of only 3%, the doubling time is approximately 24 years. Consequently, all the resources (e.g. food supply, housing, hospitals, etc.) must double in 24 years just to maintain the status quo. Even tiny growth rates can have an enormous impact. For example, at a growth rate of only 0.1% per year, the approximate doubling time is 720 years. Earth is estimated to have 15 billion years of life left—even with a doubling time of 720 years, the number of people would be totally unmanageable in less than 2000 years. Long before that time arrives, a violent cutback would probably occur in population due to famine, disease, resource wars, and other unpleasant events that would markedly reduce population size. This outcome is nature's way of controlling excess growth. Is this a good, ethical choice? If not, what is?

(8) Ecological restoration offers a superb opportunity to address two ethical issues: (a) increasing the carrying capacity of the planet by restoring both natural capital and the valuable ecosystem services it provides and (b) increasing biological diversity by repairing habitat damage that eliminated many species from the area. In the recent past, environmental protection was often ignored when it appeared to be obstructing economic growth and development. At present, these issues are being reexamined in a few selected areas. For example, the Science and Technology (2005) section of *The Economist* reports a case history involving the Panama Canal in which ecological restoration was regarded as a good business deal. The restoration process was structured in such a way that it provided economic, social, and environmental benefits. Sustainability ethics requires a harmonious relationship between human society and the biospheric life support system, which is enduring. This goal hardly seems possible if the relationship between economists and ecologists is adversarial.

Editorial responsibility: Brian Marcotte (Managing Editor), Portland, Maine, USA

The current ecological overshoot makes an improved relationship among all humankind mandatory. If the goals and objectives of sustainability ethics are clearly stated, each individual and the social, political, and academic components of the planet can best determine how to contribute to achieve them.

Make no mistake, many people are openly hostile to any discussion of staying within the carrying capacity of the planet. They deride population stabilization and the elimination of exponential economic growth. Most of these people believe that science and technology can solve all problems (e.g. Simon 1981). They express their opinions openly. The really dangerous people are the ones who spend all of their energy and resources diverting attention from the basic problems. Usually, these people give the impression to the general public that they share ecological goals and objectives with ecologists. Literacy in sustainability ethics should help identify these diversions. Living sustainably will not be easy, but failure to do so will mean much suffering to many people.

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Submitted: May 24, 2005; Accepted: June 16, 2005

Proofs received from author(s): June 22, 2005

Published on the web: May 22, 2005