

The Human Economy is a Subset of the Biosphere



John Cairns, Jr.

Department of Biological Sciences,
Virginia Polytechnic Institute and State University,
Blacksburg, Virginia 24061,
USA

Abstract : For decades, deniers of the need to protect the environment have used the tactic of pitting the environment against the economy. However, this disingenuous tactic ignores the dependence of the human economy on the biosphere for raw materials (*i.e.*, natural resources) and also that the present biospheric life support system has maintained conditions favorable (*e.g.*, atmospheric gas balance) to the genus *Homo* for approximately 2 million years and for *Homo sapiens* for about 160,000 to 200,000 years. If this dependence were not significant, humans would become extinct and the human economy would disappear with them. Since the human economy is totally dependent upon the biosphere and humans are dependent on the biospheric life support system, why are they tolerant of the type of economic growth that damages the biosphere? The only reason that has some dubious validity is the assumption that, when a resource disappears, human ingenuity and creativity will be able to find a substitute for it. In short, deniers speculate that growth has no limits. However, in the latter part of the 20th century, ample evidence became available that this speculation was simply not true. In addition, persuasive evidence also substantiates that non-carbon alternative energy sources (*e.g.*, solar, wind) would be less damaging to the environment and also be an economic stimulus. Humankind should only engage in activities that nurture the biosphere.

Key words : Biosphere, Life support system, Economic growth, Natural resources, Environment versus economy, Environmental damage deniers.

It is to be remarked that a good many people are born curiously unfitted for the fate waiting them on this earth.

Joseph Conrad

The care of the Earth is our most ancient and most worthy responsibility. To cherish what remains of it and to foster its renewal is our only hope.

Wendell Berry

The earth we abuse and the living things we kill will, in the end, take their revenge; for in exploiting their presence we are diminishing our future.

Marya Mannes

At a September 2009 meeting of the leaders of the G20 group of nations, one issue was resolved:

In the great public policy battle between global economic growth and global climate change, the G20 is going for growth. And if growth trumps climate at the G20, that spells the end of any hope for a major climate agreement in Copenhagen in December. . . . Copenhagen was essentially sidelined yesterday at another event, UN Secretary-General Ban Ki-Moon's Climate Change Summit in New York. There, along with Chinese leader Hu Jintao, U.S. President Barack Obama more or less shuffled climate control policy off into the great dreamscape of unattainable plans and long-range objectives. Like equality for all and peace in our time, the world will have to wait for sweeping

and binding climate policy (Corcoran, 2009).

Arguably, even worse news came from the scientific community.

Anthropogenic pressures on the Earth System have reached a scale where abrupt global environmental change can no longer be excluded. . . . We have identified nine planetary boundaries . . . We estimate that humanity has already transgressed three planetary boundaries: for climate change, biodiversity loss and changes to the global nitrogen cycle. Planetary boundaries are interdependent, because transgressing one may both shift the position of, or result in transgressing, other boundaries. The social impacts of transgressing boundaries will be a function of the social-ecological resilience of the affected societies (Rockström *et al.*, 2010).

The global financial meltdown has been indeed serious, but not nearly as serious as having crossed three of nine planetary boundaries. Why is humankind willing to risk irreversible damage to Earth's life support system that could result in millions, probably billions, of deaths? What would happen to the human economy then? Deaths of huge numbers of people would devastate the human economy and make the present global financial meltdown appear trivial. However, the human economy has many well funded lobbyists influencing politicians while the biosphere has few, if any.

Anthropogenic Biological Systems

Earth's most recent geologic time period has been termed *Anthropocene* (*anthropo* meaning *human* with the root *-cene*; www.eoearth.org/article/Anthropocene). Anthropogenic landscapes are those influenced by humans. One pioneering landscape study has been carried out by Professor Linzhang Yang and colleagues of long-term biogeochemical changes in China's anthropogenic landscapes, which included effects of population growth, agricultural modernization, and other development over the past 50 years (http://www.ecotope.org/projects/china_2000/collaborators/). The burning question is how well anthropogenic landscapes fit into the biosphere. Anthropogenic landscapes probably provide some ecosystem services, but what else do they do? For example, they could export invasive species. Even if the anthropogenic landscapes are compatible with the biosphere, how reliable are the ecosystem services they provide?

The Dominance of Natural Capital

Natural capitalism recognizes the crucial interdependence between the production and use of human-made capital and the maintenance of natural capital. Economies need four types of capital to function properly (Hawken *et al.*, 1999).

- (1) human capital – labor, intelligence, culture, and organization,
- (2) financial capital – cash, investments, and monetary instruments,
- (3) manufactured capital – infrastructure, machines, tools, and factories,
- (4) natural capital – resources, living organisms, and ecosystem services.

However, all forms of human capital are entirely dependent upon natural capital (i.e., the biosphere), and, if natural capital is destroyed or seriously damaged, humans will suffer catastrophes and might even become extinct. Without humans, their economic system will not survive. So, human economy is a subset of natural capital and cannot exist without it. Why then is economic growth and repair of the economy given top billing at the recent G20 meeting and nurturing the

biospheric life support system given second place at best?

Human intelligence, which is responsible for both creativity and ingenuity, has enhanced survival for most of the time that *Homo sapiens* have existed on the planet. Evidence is persuasive that intelligence, coupled with compassion, literacy, and reason, has been enormously beneficial to individuals, tribal units, and even sizable societies on occasion. On the other hand, intelligence during such events as World War II has been used to develop technologies enormously destructive to both humans and the environment. Policies and actions to eliminate destructive practices are long overdue – even if they are initially painful.

Conclusions

Humankind is at serious risk until it accepts that the human economy is dependent upon the biosphere as is the survival of the species itself. Any practices damaging to the biosphere (i.e., which includes natural capital) are a threat to both the economy and human survival. Persuasive evidence indicates economic growth as now practiced damages both the biosphere and the biospheric life support system. Sustainable use of the planet requires nurturing the biosphere rather than using it to promote temporary economic growth. Very little time remains for this major paradigm shift!

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