The Economic Dimensions of Sustainability

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What is an economy? What is it for? And how can we tell when it's healthy? These questions are a good place to start, if you're curious about the economic aspects of sustainability. Taken together, they shed light on pieces of the puzzle that are often overlooked or misunderstood.

Economies aren't just about money. They are dynamic, ever-changing systems, where countless interactions and feedback loops affect the production, movement, and use of goods and services. Wherever people are putting time, energy and money into providing, making, moving, consuming, or disposing of something, an economy is how and where it all happens.

In economic terms, economies are supposed to distribute limited resources among competing interests, and the resulting allocations are considered to be efficient when they provide the greatest value. Often, this value is associated with some aspect of well-being or human welfare, e.g., personal safety or health care, but this is not always the case. Economies can also be geared towards less desirable outcomes, including warfare.

Spending Natural Capital

Anyone who manages a bank account knows that as long as you only use the interest from a given lump of money, the lump will last indefinitely. But as soon as you start digging into the lump (your capital), the account will start to run down, unless new money is added.

Similar principles apply to stocks and flows of energy and other resources in the global ecosystem. Here, the "lump" includes coal, oil, natural gas, and peat – accumulations of fossil fuels that represent a "one-time gift" from the distant past. Some of the "interest" comes from the Sun, as daily blasts of solar energy are captured as wood, crops, and other types of biomass. Solar heating also warms up the land, air and water, creating winds, ocean currents, and other sources of renewable energy.

For thousands of years, people used only small amounts of fossil fuel energy, relying on domesticated animals, wood, wind and other renewables to drive their economies. A shift towards fossil fuels started only about 200 year ago, with the Industrial Revolution, and the global demand for energy is now being met mostly by non-renewable sources.

Our appetite for energy is now so big that the annual demand for renewable resources is far beyond what the planet can provide. Studies show that it takes just over 8 months for the current global economy to chew through a year's worth of natural resources and ecological services (e.g., water purification), and this point comes sooner each year because the global rate of energy use is still rising (www.footprintnetwork.org).

When our activities demand more resources and services than Earth can provide, the global economy goes into 'overshoot' – a technical way of saying we are living beyond our means. Periods of overshoot were rare or had little impact when world population was lower, cheap oil was abundant, and the atmosphere could absorb carbon without affecting the climate. Now, all of these conditions have changed and the effects of overshoot are showing up more frequently, including depleted resource stocks and signs of global climate change.

These facts about energy use highlight an important economic aspect of sustainability: natural capital – goods and services derived from the environment – should not be "spent" faster than it can be regenerated or replaced with something comparable.

Measuring Progress

Economic indicators are also important, since they affect how we organize our economy and our lives. Traditional measures like the Gross Domestic Product (GDP) provide an accurate way to keep track, when money changes hands. But they say nothing about why these transactions occur or the problems and disparities they might create. Oil spills, epidemics, crime waves – none of these things enhance our well-being, but since they move money, they add to the GDP!

Alternative measures like the Genuine Progress Indicator (GPI) are better for assessing sustainability because they capture the benefits of economic activity, but they also account for resource depletion and the value of unpaid work. The difference between GPI and GDP trends can be striking, with the former reaching a plateau while the latter continues to rise (see GPI accounts at www.pembina.org).

Now that we've looked at how we measure economies, we can ask a question that often comes up in sustainability work: do economies need to grow to be healthy? The answer partly depends on what we mean by growth. Some economies may need to expand or to process things faster (increasing their throughput) to overcome poverty and other types of disparity, but this type of growth is not always warranted. At the global level, humanity's ecological footprint is already bigger than available supplies of productive land and freshwater, so further expansion or faster processing at this scale might cause more problems than it solves.

Herman Daly, once a senior economist with the World Bank, defines growth as a "quantitative increase in size or throughput" (e.g., building factories) and development as a "qualitative improvement in economic welfare from increased quality of goods and services, as defined by their ability to increase human well-being" (e.g., making products that last longer)[1]. Much like the difference between GPI and GDP, Daly's distinction implies that development is a valuable goal while the tendency to pursue "growth at all costs" needs to be questioned. At the very least, we need to be clear about what we are trying to grow and what that growth will involve. Advances in technology and increases in efficiency can be helpful, but there may be limits on these fronts as well, since everything we do requires energy and materials. From a sustainability perspective, we need to make decisions about economic development based on how it is likely to affect our personal and collective well-being.

[1] For details about growth vs development, see www.citizenrenaissance.com