

Three Fundamental Sustainability Factors

Fundamental factors underlie every sustainability challenge. Three will be discussed here; every sustainability issue should be considered with them in mind.

1. If left unchecked, population grows exponentially.

- Population growth is a balance between the birth rate and the death rate. Increase birth rate or decrease death rate and population grows. Decrease birth rate or increase death rate and population declines.
- If the population is growing at a certain rate, with each generation, the growth rate will apply to a larger population, creating exponential growth (aka a geometric progression).
- Exponential growth starts small but leads to huge and accelerating growth over generations (see “Exponential Growth” in the Population White Papers section of this website).
- World population is growing explosively. It is 6.6 billion (mid-2007). In 8 years, it will be 7.2 billion. That is an added 600 million, almost twice the population of the U.S. Think of what this means: in 8 years, the world will be needing to add 2 United States worth of everything. Imagine building 2 United States in 8 years.ⁱ
- Controlling population growth would relieve pressure on the environment, the technology is readily available, and it is an essential step in building a sustainable future.ⁱⁱ

2. As countries develop, their people want improved standards of living.

- Countries around the world are developing and modernizing their economies. Taiwan, Korea, Thailand, and Singapore are examples. However, the three most important developing countries are China, India, and Russia. Between them, China and India hold 37% of the world's population.ⁱ
- As economies modernize, living standards improve. As living standards improve, people want the goods and services that go with improved living standards. Think of how people want SUVs, even though they could drive compact cars.
- Producing the increasing goods and services that people want puts pressure on resources and on the environment.

3. Environmental degradation is an externality. That is, the cost of environmental destruction is not included in the price of the good or service it produces.

- For instance, the sulfur dioxide produced by a coal-burning electricity generating plant degrades the atmosphere and causes respiratory problems. Everybody pays for it via the effects it has on climate and health. But people don't pay for it when they buy the electricity. Thus, there is no price incentive to not emit sulfur dioxide. In effect, we partially pay for (subsidize) the electricity with our health and our climate.
- Economic models for internalizing environmental cost are being developed but are not in widespread use. The existing cap-and-trade program for sulfur dioxide in the U.S. is an example of one successful currently existing model.

Many economists feel that internalizing environmental degradation is an efficient mechanism for building a sustainable future. Governments need to move towards economic models that internalize the cost of climate change.ⁱⁱⁱ

ⁱ From the International Database of the U.S. Census Bureau: <http://www.census.gov/ipc/www/idb/>

ⁱⁱ For a general overview of the concept of population control, see the article *Overpopulation* on Wikipedia: <http://en.wikipedia.org/wiki/Overpopulation>.

ⁱⁱⁱ Taylor, Timothy. (2007). Negative externalities and the environment. *Economics, 3rd edition*. Chantilly, Virginia: Teaching Company.