'Limits to Growth' Study Remains Vital

By Ric hard W. Franke

This is the latest installment in our Signs of Sustainability series, organized by Sustainable Tompkins. Visit them online at www.sustainabletompkins.org.

Ten years after Rachel Carson's "Silent Spring," and two years after the first Earth Day, "The Limits to Growth: A Report to the Club of Rome's Project on the Predicament of Mankind" (LtG) was published in 1972. This slim book argued that if then-present trends in population, industrial and consumption growth continued, it was likely that "a rather sudden and uncontrollable decline in both population and industrial capacity" would occur "sometime within the next one hundred years." In other words, we were headed for a collapse of civilization.

A group of Massachusetts Institute of Technology computer geeks (among the earliest of the genre) including Donella Meadows, Dennis Meadows and Jorgen Randers were the principle authors. Their work was supported by the Volkswagen Foundation and a group called the Club of Rome, founded by Italian industrialist Aurelio Peccei.

The authors employed a computer program called World3 to explore past and future relationships among five economic sectors: population, capital, agriculture, nonrenewable resources and pollution. One hundred variables and 80 fixed parameters allowed the program to be set or reset to test an array of interactions among the variables.

The program was set to begin in the year 1900 and to generate trend lines up to the year 2100, showing increases or decreases among the sectors depending on various assumptions chosen by the researchers. Ten data runs or scenarios were presented, which were thought to represent the major logically possible or empirically likely possibilities.

In the "infinity-in, infinity-out" run—also known as IFI-IFO—the earth's resources are assumed to be inexhaustible, capital for investment is always available in the amounts needed and pollution is easily brought under control. This run produced the following outcomes for the year 2100: Population rises to 9 billion and then starts a gradual decline; the economy produces 30 times the level of consumer goods in the year 2000 while using the same annual amount of nonrenewable resources and producing only one-eighth as much pollution per year. Average life expectancy stabilizes near 80 years worldwide; six times as much food is produced as in the year 2000. Human welfare increases enormously while resource use decreases. In short, we have a high-quality human lifestyle in

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a sustainable world.

Is IFI-IFO realistic? Are the earth's mineral resources inexhaustible? It is not known at present how increasingly scarce minerals would be extracted, or whether the technological and energy requirements could ever be met. Even if they could, unleashing vast amounts of energy to get trace minerals could result in significant overheating of the earth's atmosphere, or "thermal pollution." Finding substitutes would mean diverting capital from some other sector. Thus, it seems that at some point we would hit a limit—or several limits.

What if there are limits and yet we continue with business as usual? The authors called this "scenario one," or the "standard run." We could also call it "business as usual." The outcome:

Population and production increase until growth is halted by increasingly inaccessible nonrenewable resources. Ever more investment is required to maintain resource flows. Finally, lack of investment funds in the other sectors of the economy leads to declining output of both industrial goods and services. As they fall, food and health services are reduced, decreasing life expectancy and raising average death rates.

How can a collapse be avoided? The LtG authors ran 10 scenarios. They doubled the availability of nonrenewable resources, eased pollution control, made agricultural land more productive, protected land from erosion, improved technological efficiency, implemented "perfect birth control" starting in 2002 and assumed that the world would accept stable industrial output per person from 2002 on. Avoiding collapse and creating a sustainable future required the addition of nine major policy changes carried out effectively throughout the world over several decades to achieve sustainability by about the year 2100.

LtG sold millions of copies and was translated into 30 languages. It was widely used in college courses. Some regard it as one of the most influential books of the 20th century. The book unleashed a storm of criticism from establishment economists who rejected outright its general approach and assumptions, or considered it full of technical errors.

"False prophets," "depletion myth," and "Dr. Doom" were some of the insults hurled by critics. In recent years, however, academic articles have begun to appear, arguing that the projections of LtG are consistent with the evidence and that the policies advocated in the book need to be reconsidered. In 1992 the authors published an update called "Beyond the Limits," and in 2004 they came out with "Limits to Growth: The 30-Year Update."

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