

СЕКЦІЯ АСПІРАНТІВ

SUSTAINABLE GROWTH: AN IMPOSSIBILITY THEOREM

B.L. Kovalyov, *postgraduate student*,
A.M. Dyadechko, *ELA*

Impossibility statements are the very foundation of science. It is impossible to: travel faster than the speed of light; create or destroy matter-energy; build a perpetual motion machine, etc. By respecting impossibility theorems we avoid wasting resources on projects that are bound to fail. Therefore economists should be very interested in impossibility theorems, especially the one to be demonstrated here, namely that it is impossible for the world economy to grow its way out of poverty and environmental degradation. In other words, sustainable growth is impossible.

In its physical dimensions the economy is an open subsystem of the earth ecosystem, which is finite, nongrowing, and materially closed.

As the economic subsystem grows it incorporates an ever greater proportion of the total ecosystem into itself and must reach a limit at 100 percent, if not before. Therefore its growth is not sustainable.

Economists will complain that growth in GNP is a mixture of quantitative and qualitative increase and therefore not strictly subject to physical laws. They have a point. Precisely because quantitative and qualitative changes are very different it is best to keep them separate and call them by the different names already provided in the dictionary. To grow means "to increase naturally in size by the addition of material through assimilation or accretion." To develop means "to expand or realize the potentialities of; to bring gradually to a fuller, greater, or better state." When something grows it gets bigger. When something develops it gets different.

The earth ecosystem develops (evolves), but does not grow. Its subsystem, the economy, must eventually stop growing, but can continue to develop.

The term "sustainable development" therefore makes sense for the economy, but only if it is understood as "development without growth" — i.e., qualitative improvement of a physical economic base that is maintained in a steady state by a throughput of matter-energy that is within the regenerative and assimilative capacities of the ecosystem.