

THE PHYSICS OF CAPITALISM

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ABSTRACT

Human economies are complex biophysical systems that interact with the wider natural world, and none can be fully examined apart from their underlying material conditions. By exploring some fundamental concepts in physics, we can develop a better understanding of how all economic systems work, including the ways that the energy-intensive activities of capitalism are changing humanity and the planet. This article explains how the fundamental features of both our natural and economic existence depend on the principles of thermodynamics, which studies the relationships between quantities such as energy, work, and heat. In particular, I focus on the relationships between efficiency, technological innovation, and economic growth. A firm grasp of how capitalism works at a physical level can help us understand why our next economic system should be more ecological, prioritizing long-run stability and compatibility with the global ecosphere that sustains humanity.

Keywords: energy, capitalism, efficiency, economic growth