

Relationship between principles of thermodynamics and principles of ecological ec...

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RELATIONSHIP BETWEEN PRINCIPLES OF THERMODYNAMICS AND PRINCIPLES OF ECOLOGICAL ECONOMICS

Thermodynamics is a physical knowledge that deals with the work and energy of a system. This was started in the 19th century where scientists discovered how to construct and operate the engines which used steam (Kaufmann, 2002, p. 4). Thermodynamics is often associated with the major response of a system which can be seen and measured in experiments. On the other hand, ecological economics is a view which is policy-oriented that addresses the co evolution and interdependence of economies of human and their usual ecosystems (Daly & Farly, 2010, p. 6). Both ecological economics and thermodynamics have principles which are related.

The relationship between principles of thermodynamics and ecological economics is that, they both have the concept of joint production. Studies have shown that ecological economics produce goods that are advantageous to the humans yet still can be disadvantageous to the ecosystem. For instance the production of gasoline, kerosene from crude oil is useful in the human life since they provide heating and lighting (Schiller, Proops, Faber, Dyckhoff & Stefan, 2003, p. 1). However, they can be harmful to the humans and the environment since they emit carbon dioxide and sulphurous emissions which are very dangerous to human life.

Thermodynamics show that every process of production results from joint production. It further states that the production processes which generate low entropy goods which are useful, also produce goods of high entropy

which result to waste materials. For instance, the use of iron ore which has low entropy is used to produce iron which has higher entropy. This is achieved from using coal which is of low entropy and provides energy essential for this process (Schiller et al, 2003, p. 2). From the thermodynamic approach, one may therefore regard production as a changing from raw materials of high entropy to the waste products.

In conclusion, one can illustrate transformation of a number of inputs to a number of outputs which is characterized by its mass and its entropy. This is found in both principles of thermodynamic and principles of ecological economics.

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