



## Thermodynamics of Sustainability

Guest Editor:

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### Message from the Guest Editor

Dear Colleagues,

Sustainability must be global, or it will not be. Our planet is a thermodynamic system, as are ecosystems, the atmosphere, the hydrosphere and the crust. Natural resources are at risk of depletion, meanwhile, the waste is overwhelming. Minerals, fresh waters, fertile soils, biota and waste are also thermodynamic systems to be characterized. A Second Law vision of natural systems is largely lacking in many research fields relating to sustainability issues. In fact, entropy is used as a metaphor in ecological economics rather than as a quantitative tool. Exergy-related analyses are almost restricted to energy engineering designs and slowly rising in macroeconomic studies.

Topics such as Second Law assessment of all natural resources and waste—including fertile soils and biotic systems, exergy modelling of resource use trends, the intricacies and deficiencies of materials circularity, exergy-based indicators of planet degradation and the loss of natural capital, natural cycles and planet boundaries, thermodynamics of biodiversity and resilience, and so on, are welcomed.

Prof. Dr. Antonio Valero

*Guest Editor*





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## Editor-in-Chief

### **Prof. Dr. Kevin H. Knuth**

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## Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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