University of Cologne

Department of Economics – Chair in Economics and Energy Economics
PD Dr Dietmar Lindenberger

Outline of the course "Ecological Economics", Winter Term 2021/22 (update Sep, 13th 2021)

Module No. 14289.08 (VU) BA (Lecture and Integrated Exercise)

Workload: corresponding to 6 ECTS. Exam: Written Test (60 min)

Time: Fridays: 15.10. 10.00-11.30 (Introduction);
22.10., 05.11., 19.11., 03.12., 17.12., 21.01., each 10.00-11.30 and 12.00-13.30;
29.10., 12.11., 26.11., 10.12., 14.01., 28.01., 04.02., each 10.00-11.30.

Location: Hörsaal XXX (Gyrhofstr. 15 „Alte Botanik")

Content: This module covers selected issues in ecological economics, i.e. the economics of "space ship Earth". Ecological economics recognises the finiteness of the planet regarding physical (material and energy) resources and limits to absorptive capacities within ecosystems. The module tries to integrate natural sciences with economics by including physical foundations, especially the laws of thermodynamics, and their relevance for economics. Besides a summary of conventional resource and environmental economics, it covers selected complementary approaches of ecological economics comprising e.g. issues of sustainable scale, strong and weak sustainability, energy return on invest, measures of welfare and wellbeing, and the role of energy in wealth creation. Implications regarding environmental and social policies are also discussed.

- Natural Science Foundations: Laws of Thermodynamics and other Physical Mechanisms in Economy and Nature, Physics of Climate Change
- Environmental and Resource Economics: Hoteling Model, External Environmental Costs and their Internalization, Price and Quantity based Policy Instruments
- Complementary Approaches in Ecological Economics: Sustainable Scale, Strong and Weak Sustainability, Energy Return On Invest, Measures of Welfare and Wellbeing
- Energy as Factor of Production, Role of Energy in the Economy, Implications regarding Environmental and Social Policies

Selected Literature

-Constanza R, J Cumberland, H Daly, R Goodland, R Norgaard, An Introduction to Ecological Economics, International Society for Ecological Economics, CRC Press, Florida 1997
-Endress A, Environmental Economics: Theory and Policy, Cambridge Univ. Press, Cambridge, 2011
-Hall C A S and K Klitgaard, Energy and the Wealth of Nations. An Introduction to Biophysical Economics, Springer Nature, Switzerland, 2018
-Hall C A S, D Lindenberger, R Kümmel, T Kroeger, W Eichhorn, The Need to Reintegate the Natural Sciences with Economics, Bioscience 51 (2001), 663-673
-Kümmel R, The Second Law of Economics: Energy, Entropy, and the Origins of Wealth, The Frontiers Collection, Springer, New York, 2011
-Lindenberger D and R Kümmel, How energy conversion drives economic growth far from the equilibrium of neoclassical economics, New Journal of Physics 16 (2014) 125008