

Energy: A Real-World System in Transition
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Supply with various forms of energy is a vital pre-requisite for every society. Over the history mankind tapped into a variety of material energy carriers all based on biological solar energy conversion of CO₂. Nuclear and geothermal non-solar energy sources provide a small minority contribution to existing energy systems. The climate change induced by the rapid liberation of historically stored CO₂ requests now a transition of energy systems using a dual structure^{1, 2} of free electrons and molecular energy carriers applying recycle processes of carbon. Such architecture mimics the natural energy system providing life on earth.

The contribution will look into systemic architectures and discuss dimensions of human energy systems. A short excursion into molecular energy carriers³ of the future “green molecules” will illustrate that complexity is also prevalent on molecular dimensions in this sub-section of human energy systems.

1. R. Schlögl, Green Chem. **23** (4), 1584-1593 (2021).
2. R. Schlögl, Angew. Chem. Int. Ed. **58** (1), 343-348 (2019).
3. R. Schlögl, Angewandte Chemie-International Edition **61** (7) (2022).