Shaping the Energy System of the Future

Abstract:
The secure, sustainable and affordable supply of energy in the face of a growing population and increasing standard of living is one of the grand challenges of our global society. Rising concerns about air pollution and manmade climate change with not exactly predictable consequences demand innovative new technologies in the way we produce electrical power; heat or cool our buildings, and organize mobility and transport. This has to include all aspects of generation (conversion) transport, storage and efficient utilization of energy. I will outline a general scenario of our future energy system for the transformation. Developing new concepts and materials for electric power storage in conjunction with renewable energy sources, coupled with efficient distribution systems, are one important aspect to meet this challenge. New technology for transport systems and the generation of chemical fuels without increasing the CO2 content in the atmosphere is another key ingredient.