Public concerns about the adverse environmental and health effects of different energy sources, and the sustainability, reliability and affordability of alternative systems have led to efforts in most industrial countries to reduce their dependence on fossil fuels and in some instances, nuclear power. This transition will require a greater dependence on renewable sources of energy and possibly, an expanded use of natural gas as an interim step. Nevertheless, the importance of electricity in providing energy services will increase in the future, particularly for transportation. The objective of this minitrack is to present research on how different market institutions and regulatory requirements affect the transition to a less-risky, low-carbon economy, and in particular, on how they interact with the different networks involved in the delivery of energy services. The objective is to identify promising directions for this transition that may imply greater decentralization and greater participation by new demand-side resources.

The papers include traditional problems in power systems, such as how to maintain system adequacy and how to optimize investment when environmental costs are considered, and more recent concerns of how to organize price response on the demand side of the market, such as managing the charging of electric vehicles.