

David Parra: Renewable energy systems: hope, challenges and transformation for reaching the sustainable development goals

Renewable energy technologies, together with energy efficiency, are needed to transform our planet and meet climate change targets. The progress of technologies such as solar and wind has been unprecedented in terms of cost reduction and capacity additions. However, new renewable energy technologies still supply a small fraction of the final energy demand, in particular for heating in households and industry as well as for transport. In order to ensure continued growth of renewable energy supply to sustain the transition to a low carbon economy it will be necessary to overcome key challenges associated with these technologies such as their intermittency and uncertain public and policy support.

This talk addresses key solutions enabling further expansion of renewable energy such as energy storage, more cross-sector integration in the energy system, further cost reduction and successful demonstration projects. These topics will be analysed at various levels including technology, energy systems, socio-economic factors and policy. We will examine complementary research methods and tools, e.g. experimental work, simulations, optimisation, system approaches and life-cycle assessment (LCA) from projects implemented at various scales, namely local, national and international. This analysis will serve as basis to highlight future research and teaching which aims to support the energy transition in Switzerland and beyond.