

Session Summaries

Heat – pushing the hot buttons!

Final energy use for heat accounts for nearly half of the total worldwide but the benefits and challenges of an integrated supply and consumption of low carbon heat remain largely unexplored. This is mostly due to specific characteristics of heat, such as limited transportability and the consequent local character of heat, the variety of stakeholders or its heterogeneity. In addition, storing heat remains more promising than for electricity, allowing heat to contribute to flexible electricity systems. Or will heat be produced from electricity in future? This breakout session will discuss specific challenges in addressing the heat sector and the contributions that the heat sector can offer to the overall energy system.

Flexible electricity systems

Electricity system flexibility is continuing to be a key area of discussion and better understanding is needed to address a number of concerns such as ageing infrastructure, peak demand, EV deployment and deployment of variable renewables. Flexibility resources can be found throughout the electricity system – both from the perspective of existing and new technology. Despite these opportunities, there seems to be concern and resistance to some solutions. Is it due to a lack of technology, information or appropriate regulations? This breakout session will focus on discussing the requirements and opportunities for flexibility and the need for holistic system thinking – both within the electricity system and in other areas such as heat and transport.

On our way to a Hydrogen future?

Hydrogen is a flexible energy carrier and whether generated from fossil and renewable energies, can be used in transport, buildings and industry sectors. In the context of an integrated energy system it can be used in electricity and heat applications (including combined heat and power) and provide a storage option for intermittent renewable energies. But there are still fairly high barriers to overcome: The most relevant are the rollout of the needed transport and distribution infrastructure as well as the improvement of the overall efficiency of the energy transformation pathway. Will hydrogen become a relevant part of our energy system in the future? When will this happen? Opportunities and challenges on the way to a large scale application of hydrogen will be discussed in this session.

Energy systems in emerging economies and developing countries

The development of energy systems in emerging economies and developing countries may likely converge to the same end point as developed countries, but will likely follow a different path based on differing socio-economic levels, current levels of development, available technology at the start of system deployment and the rates of growth expected over the next 40 years. The private sector is already focusing on these regions for infrastructure deployment opportunities but is it clear what the best path for development is? Can holistic systems-based thinking enable these regions to leap-frog to more efficient infrastructure deployments? Following our previous discussions, this session will focus on the needs and opportunities for technology deployment in emerging economies and developing countries.

Interactions across the energy system

The overall energy system is typically broken down into individual sub-systems based on end-use sectors (buildings, industry, and transportation) or by energy carriers (electricity, heat or other). This is at times necessary in order to address specific problems, but often overlooks the interfaces between the energy systems that could be leveraged in order to increase efficiency and reduce losses. Will electric vehicles bring support to the operation of the electricity system, or make it more difficult to operate? Can the heat sector support flexibility in the electricity sector? Will hydrogen only be used in transport or will it be used in all end-use sectors? This plenary session will identify key linkages between energy systems and suggest ways to encourage further development of these linkages.