



Plenary Session Three

Transition to a Low-Carbon Economy: Realistic Goal or Science Fiction?

16 May 2014



Overview

Open questions remain about the implications for the global climate in a scenario where large-scale deployment of cleaner energies is delayed. For most observers, it will be very difficult to limit emissions to a level consistent with the 2°C increase in global temperature agreed upon in climate change negotiations. The window of opportunity to reach this goal, they emphasise, is closing. Decisive, coordinated action is therefore required to decrease energy intensity across regions while expanding renewable energy capacity.

Despite the perceived need for action, a number of factors still point to a slow and protracted transition to a low-carbon economy. Virtually all major energy forecasts, including the latest central outlooks published by the IEA and OPEC, indicate that fossil fuels are expected to continue dominating the long-term global energy mix. Energy demand remains robust in rapidly-growing emerging economies, which must weigh pragmatic needs for these high-energy density fuels against designs on greater renewables deployment. To power the rise of the middle class and meet the energy needs of the poor, all sources of energy will be needed. In addition, the recent global economic downturn has proved to be a reminder of the importance of cost in energy policy decisions, as in various cases cheaper fossil fuels trumped more expensive, lower carbon options.

The above-mentioned challenges notwithstanding, avenues for tangible progress do exist. The search for green growth models that embrace the twin objectives of economic growth and better living standards, among others, has become a powerful driver of what are perceived to be more realistic transition strategies. Some countries support green technologies and energy efficiency through direct funding to research and development efforts, targeted taxes and subsidies, and the overall system of regulations, with the aim of increasing their attractiveness.

Technologies that reduce energy consumption in industrial equipment, power generation, transportation and households have gained particular interest. On the one hand, they have helped to bring OECD energy demand to what is essentially a plateau where it is expected to remain for the foreseeable future. On the other, the rate at which these technologies are adopted in Asia Pacific, by all accounts the main force behind the global expansion of energy demand, will determine the required pace of investments and the energy mix.

The potential for the emergence of one or more high-impact “game changers” merits consideration. Advancements in solar and wind power, whose economics have improved significantly, as well as in biofuels, are giving greater hopes for the promise of large-scale deployment renewable fuels. Many countries are already incorporating these energy sources into their energy mix, and many others are planning to do the same. Potential enhancements to carbon capture and storage technology, gas flaring reduction or clean burning technologies may reduce concerns over emissions from fossil fuels. And new information technology or biotechnology applications may well accelerate the establishment of smart energy systems and transform what was once considered science fiction into realistic facilitators of the world’s next energy transition.

The promise of renewable energies and the progress made so far on energy efficiency is nonetheless facing the reality that the most significant reductions in emissions have come from greater use of natural gas and nuclear energy. This is why natural gas is seen as a possible “bridging fuel” towards a future where more clean energy technologies will be deployed. It remains unclear at this point whether or not the bridge will consist primarily of back-up capacity to support investments in renewables, or if it will actually compete with them and slow their widespread deployment. The answer will involve, as always, the relative costs of natural gas with respect to its alternatives, and will require addressing both the intermittency of renewable sources and electrical energy storage.

Then again, the public is asking: is a transition to a low-carbon economy within reach, or will it become a reality too late to make a significant difference? When will improvements to energy efficiency and green technologies take place at the scale required to reduce emissions and establish a sustainable global energy system?

Objective Session 3

Ministers, heads of international organisations, industry executives and thought-leaders are invited to exchange views on the policies and actions required to promote a transition to a lower CO₂-emitting economy, one that also meets the needs of the rising middle class and addresses energy poverty. They are encouraged to discuss “the art of the possible” in identifying and exchanging

views on practical approaches that balance the objectives of lower carbon emissions with the realities of contemporary market conditions and policy objectives.

Suggested Questions

- If climate challenge is real, and if the energy industry is adapting at different rates in different regions, how likely is a transition to a low-carbon economy?
- Is a low-carbon economy a possibility within reach in a relatively short time, or is it still within the realm of science fiction?
- How can transition policy be made more transparent and consistent so that technology choices are cohesive and cost effective, and do not create hurdles to innovation or hinder market functioning?
- To what extent do low-carbon policies pose risks to fossil fuels and potentially represent increased energy investment costs?
- What would be an appropriate policy and regulatory framework to promote large-scale deployment of cleaner energies?
- Does large-scale deployment of cleaner energies require a shared international policy framework or are independently designed national approaches sufficient?
- How does the role of nuclear compare with renewables and CCS in the transition to a low carbon economy?
- What are some of the more promising and innovative technologies on the near-term horizon, and how might Ministers encourage their development and proliferation?
- Can the eradication of energy poverty coexist with a transition to a low-carbon economy?
- How does a low-carbon economy affect the food-water-energy nexus?

The Reference Shelf: Recommended Reading

The Prince of Wales's corporate leaders group (2014) The Trillion Tonne Communiqué, University of Cambridge Institute for Sustainability Leadership, April

ExxonMobil (2014) ExxonMobil Reports to Shareholders on Managing Climate Change and Carbon Asset Risk, April

KAPSARC (2014) A Framework for Fuel and Technology Transitions in Energy: Evaluating Policy Effectiveness, March

World Economic Forum in partnership with IHS CERA (2013) Industry Vision Energy Vision 2013: Energy Transitions: Past and Future, January