



## Energy Roadmap 2050

January 2012

### Issue

The European Commission adopted on **15 December 2011** an [Energy Roadmap 2050](#). This roadmap follows on the [Roadmap for moving to a low-carbon economy in 2050](#) adopted on 8 March 2011 by the Commission and which introduced possible actions to reach a target of reducing **greenhouse gas emissions to 80-95% by 2050**. The Energy Roadmap does not make policy proposals, but introduces different possible pathways for the specific sector of energy.

### Challenges

#### → Reaching a target of reducing greenhouse gas emissions to 80-95% below 1990 levels by 2050

The roadmap responds to the request from the European Council's conclusions of October 2009 to reduce greenhouse gas emissions to 80-95% below 1990 levels by 2050. It is designed to fill in the loopholes in the current regulatory framework, which would achieve only half of the decarbonisation goal in 2050.

#### → Giving investors certainties through developing a post-2020 strategy

The Roadmap goes beyond 2020 to design long term policy orientations and structural changes which will strengthen investors' confidence and define the basis for a European technology-neutral framework.

#### → Exploring several scenarios to allow the transition to a low-carbon energy system

The Roadmap analyses a number of scenarios examining the impact, challenges and opportunities of several ways of modernizing the energy system. These projections combine, by giving them more or

less importance, the four main drivers of decarbonisation: energy efficiency, renewable energy sources, nuclear energy and Carbon Capture and Storage (CCS). These scenarios are of illustrative nature: none of them will be realized in its pure form and political and economic assumptions on which they rely could significantly evolve over the next years.

## Five routes towards decarbonisation

### → A high-energy efficiency scenario

Energy efficiency is supported by strong policy measures leading to a decrease in energy demand of 41% by 2050 compared to 2005 levels (more stringent minimum requirements for appliances and new buildings, high renovation rates of existing buildings, establishment of energy savings obligations on energy utilities).

### → A diversified supply technologies scenario

No technology is preferred; all energy sources can compete on the market and none of them benefit from specific support measures. Decarbonisation of the energy system is driven by carbon pricing and public acceptance of CCS and nuclear.

### → A high renewable energy sources (RES) scenario

Strong support measures for RES leading to a 75% share of RES in gross final energy consumption and 97% in electricity consumption.

### → A delayed CCS scenario

Similar scenario to the second, but assuming delays in the deployment of CCS technology leading to a higher share for nuclear energy.

### → A low nuclear scenario

Similar scenario to the second, but assuming a higher deployment of CCS linked to the fact that no new nuclear plant is being built over the period concerned.

## First conclusions and long term trends

The analysis of the five projections conducted by the European Commission shows a number of long term trends that will underlie the European decarbonisation strategy by 2050.

### → Decarbonisation is possible and will be less costly than current policies in the long term

Whatever the scenario, they all have a positive impact, could lead to significant reductions of emissions, and are all viable from an economic point of view. Postponement of investments or delays in policy decisions could however be very costly.

→ **Energy efficiency is a priority:** Energy savings are possible through high energy efficiency standards and norms for buildings, products and appliances, but also through behavioural change.

→ **RES, the first energy supply technologies in 2050:** RES will be deployed at a large scale, their cost will decrease, their performance and integration will improve and storage technologies will be enhanced.

→ **Electricity will play an increasing role** and will largely contribute to the decarbonisation of transport and heating/cooling. Gas will play a crucial role for the transformation of the energy system, while nuclear energy will remain a key source of electricity generation and will contribute to lower system costs and electricity prices.

→ **Consumers and social partners should be involved in this transition**, considering its impact on employment and jobs, energy prices, energy infrastructures and behaviours.

## Next steps

The Energy Roadmap 2050 will serve as a **basis for discussions** between the European Commission and EU institutions, Member States and stakeholders on the transition towards a low-carbon energy system. The Roadmap will be **regularly updated** to take into account the progress made and changes.

The objective of the European Commission is to define a **binding framework by 2013-2014 at the latest** to ensure investors planning security and reach EU objectives in time.

## Useful Links

**Website of Directorate-General for Energy (European Commission)**

[http://ec.europa.eu/energy/energy2020/roadmap/index\\_en.htm](http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm)

**You will find all the International Review about Regulations in Electrical Efficiency on the web site:**

<http://www.electrical-efficiency.com/category/regulation/rexel-international-review/>