Role of energy production in an ambitious climate policy in Germany

Christoph Erdmenger
Federal Environment Agency (Umweltbundesamt), Germany

The Kyoto Protocol targets for 2012 are within reach for Germany and the EU, but they are only a first step. Energy-related CO_2 emissions account for over 80% of German GHG emissions, of which nearly 50% are emitted by the energy production sector. Technical development has led to strong cost reductions in the area of renewable energies, and this will continue in the future. Thus, these technologies can be used intensively for electricity generation at moderate additional costs. On the other hand, German Environment Agency assumes that new technologies, i.e. ones not yet available on the market, will not be applied broadly before 2020. This holds in particular for CO_2 capture and storage (CCS) from power plants.

By modernising and replacing coal-fired power plants, energy efficiency of the plants can be increased significantly. Furthermore the expansion of electricity generation based on natural gas is needed, as this is more efficient and only half as CO_2-intensive. Last but not least, an increase in renewable energy from 70 to 140 TWh/year can be reached primarily by Multi-Mega-Watt wind turbines, both onshore and offshore, and electricity generation from biomass. Expansion of combined heat and power production (CHP) and an optimal heat distribution across heating networks present a particular opportunity. With regard to buildings, this means that heat production in decentralised oil- and gas-fired heating systems will be replaced by district heating systems.