Role of Nuclear Energy under free market & emission trading circumstances

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Abstract

The EU emission trading system of carbon dioxide is scheduled to start in 2005. With the system, a market-based cost is associated to carbon dioxide emissions, thus bringing competitive advantage to carbon-free energy production forms. It is expected that electricity prices will rise corresponding to the increase in marginal production costs, which in the Nordic electricity market is mostly coal condensing power. Therefore, benefits for all carbon-free or low-carbon electricity producers selling electricity to the stock market will increase. In Finland, nuclear energy produced by Teollisuuden Voima (TVO) is sold to its shareholders at cost price. Thus emission trading does not directly increase the profits of nuclear energy owners, but it brings competitive advantage to the share holders in the form of cheaper electricity.

Finland is in unique position, being one of the few countries constructing new nuclear capacity. The Parliament made the positive decision-in principle on use of nuclear energy in 2002. One of the cornerstones for the positive DiP was the previous approval of the spent fuel repository siting to Olkiluoto. Another key question was the role of nuclear energy in helping to reach Finland's Kyoto targets. Different energy scenarios were comprehensively discussed in book "Energy Visions 2030 for Finland", prepared by VTT in 2001.

In free electricity market, the investment costs of nuclear power are often considered high compared with other production forms. However, TVO is constructing the new reactor in Finland and selling electricity to its shareholders. The stable and competitive price of electricity is of crucial importance for the Finnish energy-intensive industry. The stability of the electricity price will become even more important in the future, if the prices in the stock market rise and become more volatile due to the possible phase-out of nuclear power e.g. in Sweden and Germany, and EU wide emission trading.

In this contribution, the role of nuclear energy as a means of reducing greenhouse gas emissions in the Finnish energy system is examined. The expected changes in the electricity market and in the investment decisions of market operators caused by emission trading are viewed, and the reflections on the role of nuclear energy in the energy system are discussed.