Energy policy strategies of the Baltic Sea Region for the post-Kyoto period

The recent challenges in reaching a common global climate agreement have increased the importance of regional energy and climate policy initiatives and the demand to develop strategies also at this level.

The Baltic Sea Region has a unique opportunity to become a frontrunner in developing energy strategies for 2020 and beyond. Studies have indicated that the Baltic Sea Region has a strong potential to develop a low-carbon energy economy. The region is endowed with vast natural resources in terms of biomass, wind and hydro power potential, and through its industrial and administrative capacities it holds the technology and knowledge base needed for a low-carbon transformation.

The Baltic Sea Region Energy Co-operation (BASREC) has commissioned the study "Energy policy strategies of the Baltic Sea Region for the post-Kyoto period". The strategies will focus on coherence of climate policy and energy security objectives. The study will include both supply and demand side policy options, including energy savings and energy efficiency, increased use of renewable energy, development of district heating and combined heat and power, as well as carbon capture and storage (CCS) technologies.

Approach

In order to develop the energy strategies of the future, three core policy scenarios are set up to show the economic consequences of different policy options and their implications for the energy systems, the environment and security of supply. The policy scenarios will be measured against a reference scenario.

The scenario analyses will lead to the formulation of specific policy recommendations focusing on the next 10-year period until 2020, as well as a series of perspectives on development up until the year 2050.

Engagement with the Copenhagen Accord. www.usclimatenetworks.org

All EU countries have submitted a target to the Copenhagen Accord of the UNFCCC, 20% reduction compared to 1990 and a conditional offer to increase the target to 30% reduction provided that other major emitters agree to undertake comparable reduction efforts. The Russian Federation has submitted a conditional target (15-25% reduction compared to 1990), which is subject to allowance for carbon sinks. Norway has submitted a target of 30-40% reduction compared to 1990.

Methodology and results

The three scenarios

The study sets up a reference scenario and two CO_2-neutral scenarios with the following CO_2 reduction targets compared to 1990 levels. The two CO_2-neutral scenarios differ by the degree of regional coordination.

CO2-reduction target	Reference development	CO_2-neutral scenario (national policies)	CO_2-neutral scenario (regional coordination)
2010	- 10%	-10%	-10%
2020	- 20 %	-30%	-30%
2035	-35%	-65%	-65%
2050	-50 %	-100 %	-100%

Table 1: Paths for reduction of CO_2-emissions from power and district heating generation in the three core scenarios

Using the BALMOREL model, the future energy systems in each of the three core scenarios will be simulated. The model calculates ”optimal” operation and investments in the energy sector given framework conditions such as fuel prices, CO_2 cost, technology costs etc. As a result the model finds the least cost solution for the electricity and district heating markets in each scenario taking into account factors such as grid constraints as well as technical and economic characteristics for each production unit.

Policy options

Based on the scenario analysis it will be possible to pinpoint which technical solutions are required in the short term as well as for a long term transformation of the energy systems.

For each technical measure identified, relevant policy options will be analysed and benefits of regional cooperation will be assessed.

The gross list of policy options may include measures such as:

- *Harmonisation of support schemes for renewable energy*
- *Regional planning and promotion of grid interconnectors and off-shore wind power*
- *Regional coordination in promoting energy savings and energy efficiency*
- *Common goals for the development of specific technologies (RD&D cooperation) and common demonstration activities*
- *Equipment of new coal power plants with CCS*
- *Establishing common carbon emissions trading schemes*

The policy options will be evaluated according to relevant criteria such as environmental effectiveness, economic efficiency and regional relevance.

Expected results

The scenario analysis and the evaluation of policy measures will enable the study to address questions such as:

- *Can the Baltic Sea Region become CO_2-neutral by 2050?*
- *What is the additional cost of achieving 30-40% CO_2 reduction in 2020?*
- *What are the benefits of harmonising renewable energy support schemes?*
- *What are the benefits of a coordinated planning and expansion of the electricity transmission grid in the region?*
- *What are the benefits of linking the EU Emission Trading System with Russian CO_2 regulation?*