

Introduction to Panel 7

New economic instruments

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IN THE LAST FEW YEARS THE USE of market-based instruments (MBIs) to achieve sustainable energy policy goals has constantly increased.

The EU emission trading system, started in January 2005, is the more ambitious emission trading system ever implemented and one of the cornerstones of the European climate change programme. The Kyoto Protocol, entered into force in February 2005, introduces new tools which widen the role of market in climate policy: International Emissions Trading (IET), Clean Development Mechanism (CDM) and Joint Implementation (JI). The use of so-called green certificates to promote the penetration of renewable energy sources in power generation has gradually expanded in many European Union member states in conjunction with or in substitution for more traditional policy tools. More recently certificates trading has been introduced to foster end-use energy efficiency improvements (so-called white or energy efficiency certificates).

Textbook economics suggests the use of such trading mechanisms in order to avoid cost inefficiencies. In the real world various shortcomings and tradeoffs in the design of these mechanisms cast some doubts on their cost-effectiveness and their ability to deliver. If not properly designed, transaction and administrative costs may reduce the potential gains from flexibility that are theoretically attainable through the implementation of these instruments. Furthermore, different certificate trading mechanisms interact with one another and with more traditional policy tools.

Serious reliability problems in the electricity sector of a number of European and non-European countries have re-awakened the attention of policy makers, regulators as well as the research community on effective ways to use economic instruments in order to attain load management and energy

efficiency goals, and on the inter-relationships between these two policy aims.

The papers in this panel address these issues both theoretically and via the analysis of practical experiences, and propose innovative ways of implementing market-based policy schemes.

We can group the papers in the following subject areas.

EU EMISSIONS TRADING SYSTEM AND KYOTO MECHANISMS

Schleich and Betz analyse the rules provided in the National Allocation Plans of the EU Member States for the first period (2005-2007) of the EU emission trading system with respect to their impact on energy efficiency and innovation and on technology variety. They conclude that existing allocation rules provide only modest incentives for innovation.

Starzer and Dworak perform a benchmarking process of the Austrian paper industry and present the pros and cons of working with IPPC documents and BAT values for allocating tradable allowances. They present recommendations on how to improve the allocation exercise for the next emission trading period from 2008 to 2012.

Sterk *et al* stress that the EU Emissions Trading System is probably going to have a significant impact on the JI potential. They analyse this impact first in theory and then country by country for six Central and East European countries that recently acceded the EU or are candidates for accession. As a result, they give an overview of the potential and the limitations of JI as an instrument for achieving emission reductions in the selected Accession Countries.

Novikova and Ürge-Vorsatz examine the effect that flexible mechanisms under the Kyoto Protocol may have on energy efficiency, fuel switch and the development of

renewable energy sources in the new member states. They conclude that the flexibility mechanisms may play a positive but rather limited role in the sustainable energy development of the region, and that due to the barriers to JI the emphasis may shift towards emission trading.

Schneider shows that under the Clean Development Mechanism, energy efficiency projects face particular difficulties. He presents lessons learned from a feasibility study for a CDM project that aims at enhancing energy efficiency in industrial boilers in Peru and provides recommendations to overcome the above-mentioned difficulties without jeopardising the environmental integrity of the CDM.

OTHER MARKET MECHANISMS FOR CO₂ EMISSION REDUCTIONS

Johansson recalls that although economic policy instruments have the potential for providing efficient emission reduction, they are often adapted in such a way that some of their potential advantages are eliminated. He evaluates theoretically the possibilities for different policy instruments to contribute to CO₂ emission reductions while preserving the competitiveness for industry.

Fawcett sets out the case for equal personal carbon rations for household energy use and personal transport. New case study data on UK individuals' carbon emissions from household energy and personal transport is presented. This shows a very wide range of personal carbon emissions, varying by more than a factor of ten. The implications of this variation for a scheme of equal personal carbon rations are debated. Finally, other key questions about the practical implementation of personal rations are identified, and progress towards answering them is outlined.

COMPARISON OF MARKET-BASED POLICY TOOLS AND THEIR INTERACTIONS

Bertoldi, Rezessy, Langniss and Voogt examine the major design issues and options of certificates trading schemes in the energy sector and describe the main characteristics of existing schemes. Possible ways to integrate or link different schemes are investigated in order to achieve the maximum in terms of energy efficiency and environmental goals.

Quirion develops a partial equilibrium model to compare white certificates to alternative policy tools to promote energy efficiency such as taxes and standards. On the one hand, he finds that compared to taxes and standards white certificates allow to limit distributional effects, generate less rebound effect than standards and are more effective than taxes in mobilising part of the no regret potential. On the other hand, both the level of targets and their structure (i.e. absolute versus relative to market share) are key to determine the effectiveness of white certificates in delivering energy savings over and above the business-as-usual scenario.

DEMAND RESPONSE AND ENERGY EFFICIENCY

Barbose *et al* present the key findings of a review of voluntary real time pricing (RTP) programs in the US by focusing on program outlook, utilities' incentive structure and goals for implementing such programs, trends in RTP tariff design, participation rate and overall price response. The conclusions as far as the effectiveness of the instrument in delivering significant load reductions are mixed. The au-

thors conclude that RTP may be best seen as a long-term strategy, and that efforts in the near term may be most effective if oriented towards building customer familiarity with and capabilities to react to dynamic pricing.

Abaravicius *et al* present a study carried out in Sweden to test and analyse the conditions and potential of direct load management from the customer as well as the utility viewpoint. The assessment include technical, economic as well as social considerations.

OTHER ECONOMIC INSTRUMENTS

Métreau and Lopez present two innovative financial mechanisms being introduced by the Regional Government of Nord Pas de Calais aiming at promoting investments in energy efficiency and renewable energy. Both mechanisms are based on public-private partnership. The institutional, market, cultural, technical and economic context that is needed in order to guarantee the effectiveness of such instruments are discussed.

Waterson sets the point for an holistic fiscal approach to the promotion of energy efficiency investment in UK buildings (i.e. insulation) as opposed to more traditional fiscal measures designed to tackle barriers to the purchase of defined products. A number of new fiscal measures are presented and discussed. The author concludes that an incentive linked to a stamp duty is possibly the most promising of the measures identified but it would take a significant amount of time to work its way through the whole sector. On the other hand a council tax could help to work through the owner occupied sector more quickly. A combination of the two instruments could be attractive if the risk of double payment can be dealt with.

Chabot presents the "Profitability Index Method" designed as an alternative approach to more traditional and well known analysis tools for the economic assessment of clean or energy efficiency investments.