



Profiles

Market mechanisms for greenhouse gas emissions reduction

'Taxes and subsidies least flexible and can distort the market'

'ET the most flexible mechanism and expected to develop rapidly'

'VAs offer opportunities for coal companies'

The 1997 Kyoto protocol marked a political decision to take steps to mitigate climate change. The process of agreeing the rules and details of the protocol has been slow and it could take time before the protocol is actually ratified and becomes legally binding. However, the issue is not going away and action on a domestic level is already evident in many countries.

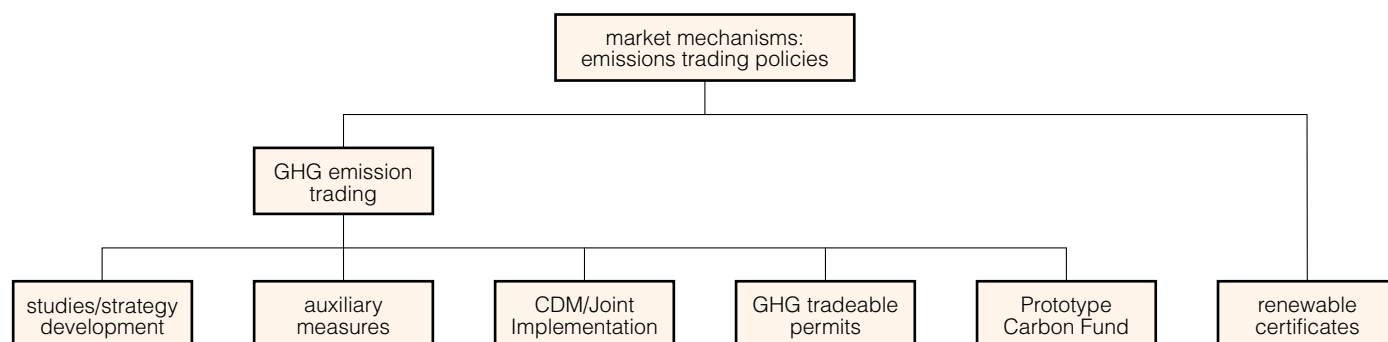
Given that energy related carbon dioxide (CO₂) represents about 85% of global greenhouse gas (GHG) emissions, the energy sector is in the focus of many countries' policies and measures to limit these emissions. Coal production and utilisation is one of the sources that contribute to GHG emissions. Coal is the most carbon intensive of all fossil fuels.

There is a range of market mechanisms which vary in flexibility

and the degree of government intervention. Their main advantage is that they are more cost effective and flexible than command-and-control measures and they are compatible with market-based energy markets. This report reviews carbon/energy taxes, subsidies, voluntary agreements (VAs), and emission trading (ET). Current mechanisms have concentrated on CO₂ emissions. Coal as the most carbon intensive of all fossil fuels is affected most if CO₂ emissions only are controlled. Ideally all GHGs should be included and mechanisms should deal with emissions over the complete fuel cycle from extraction to combustion. The Kyoto protocol covers six GHGs including CH₄ and these are likely to be incorporated into mechanisms established in the future.

Taxes and subsidies

Taxes and subsidies are the least flexible mechanisms and it is argued that they can actually distort energy markets. In theory, once the government has set the tax rates, emissions-intensive goods would have higher market prices and lower profits. However, depending on how the tax is designed certain sectors or fuels can be affected more than others. At an international level taxes can have a negative effect on trade and the competitiveness of companies. For this reason most of the current schemes exempt energy intensive industries. It is difficult to design a tax that does not penalise any fuel or sector in particular. A carbon tax (based on carbon content) is expected to penalise coal over other fossil fuels. It also fails to address other



Emissions trading policies diagram

GHGs such as CH₄. Taxes cannot guarantee specific reductions and therefore may have to be adjusted to meet targets, which will create additional uncertainty into the energy market.

Subsidies are in effect negative taxes. Subsidies to reduce GHG emissions have been mainly targeted at renewable energy technologies and energy efficiency improvements. At an R&D level coalbed methane recovery projects and CO₂ sequestration have received some attention. On the other hand, subsidies which in the past have supported the coal mining industry are increasingly seen as inappropriate and conflicting with the policies to reduce GHG and with liberalised electricity markets. Perhaps this is the biggest impact on coal in some countries, the decrease of existing energy subsidies.

Voluntary Agreements

VAs have been favoured by the industry as a way of contributing to the governmental efforts to reduce GHG emissions. This is because they avoid command-and-control policies and taxation. VAs help generate a sense of partnership and co-operation between governments, regulators and industries. They can also play a role in a transition phase from traditional command-and-control to a market-based regime of ET and project-based emission credits. VAs provide an opportunity for coal companies to become involved with the issues and to improve their performance and image.

Emissions Trading

ET involves the creation of a market for transferable rights to emit GHGs, also called tradable permits. It also includes a number of policies and schemes besides the actual permits. The Kyoto protocol Emissions Trading mechanism is actually an international tradable permits scheme, which together with Joint Implementation (JI) and the Clean Development Mechanism (CDM) could form a full ET system.

ET is regarded as the most flexible of all mechanisms and therefore it provides opportunities for coal. It makes sure that the overall emissions are reduced without allocating a specific burden to each fuel, and then allows the market for permits to develop. So far experience on ET is limited and mainly based on pilot schemes. Once an international

agreement and emission reduction commitments are in place ET is expected to develop rapidly. A market for emission reduction certificates and potential trade is already emerging. Several countries have started developing their own domestic tradable permit schemes. The possibilities for project-based emission credits are also being investigated and projects have been funded as part of pilot schemes.

The design of ET involves complicated issues. The main issues in relation to coal are: the wide sectoral and regional coverage of the scheme; the inclusion of sinks (activities that absorb GHG from the atmosphere); permit allocation; full access to the project-based mechanisms (JI and CDM).

At least in the short term coal consumption is expected to decline in countries where policies to reduce emissions will be adopted. The need to reduce CO₂ emissions may result in shifts away from coal to natural gas which has a lower carbon content, and to renewable energy sources and technologies and efficiency improvements in the demand sectors. However, the role of coal as an energy source will remain important. The way coal is utilised is changing towards more efficient, cleaner technologies.

Until the Kyoto protocol is ratified and the mechanisms are finalised the coal industry is facing uncertainty. It is quite certain, however that the issue is not going away and that although it is taking longer than originally thought, an international agreement is expected to take place. The coal industry needs to follow developments and be involved in the process of shaping the climate change policies to ensure that coal has a role to play.

Each issue of *Profiles* is based on a detailed study undertaken by IEA Coal Research, the full report of which is available separately. This particular issue of *Profiles* is based on the report:

Market mechanisms for greenhouse gas emissions reduction

Katerina Rousaki
CCC/50, ISBN 92-9029-363-2, 48 pp,
August 2001, £255*/£85†/£42.50‡

- * non-member countries
- † member countries
- ‡ educational establishments within member countries



IEA Coal Research is a collaborative project of member countries of the International Energy Agency (IEA) to provide information about and analysis of coal technology, supply and use. The service is governed by representatives of ten countries (Austria, Canada, Denmark, Italy, Japan, the Netherlands, Poland, Sweden, the United Kingdom and the USA) and the European Commission.

IEA Coal Research
Gemini House
10-18 Putney Hill
London SW15 6AA
United Kingdom

Tel: +44(0)20-8780 2111
Fax: +44(0)20-8780 1746
e-mail: mail@iea-coal.org.uk
<http://www.iea-coal.org.uk>

IEA COAL RESEARCH
THE CLEAN COAL CENTRE