

Set the target

International Energy Agency chief economist **Fatih Birol** tells Nigel Ash how reaching a consensus on carbon credit prices, capture and storage and the efficiency of national oil companies is a key requirement for a unified approach to tackling CO₂.



Even before the debacle of last year's Copenhagen Climate Change summit, the International Energy Agency (IEA) was warning that the price of carbon credits in industrialised countries needed to more than double, to reach \$50 a tonne of carbon dioxide (CO₂) by 2020, and then double again to \$110 by 2030. Given that the US Senate has been seeking to cap the 2020 figure at \$48 a tonne and is looking to a maximum of around \$90 a decade later, there is currently a clear gap in ambitions.

According to IEA's Fatih Birol, internationally accepted market mechanisms for carbon trading will be meaningless unless OECD governments agree legally binding targets to curb their carbon emissions at the next climate summit, slated for this November in Mexico.

That being the case, how was the current carbon trading market in Europe

managing to function and were there significant risks to market makers if the rules were to be changed at some point?

"The market in carbon credits is up and running at the moment," says Birol, "Only in the context of Europe, with occasional deals being done outside. And I think the price level is a reflection of how the price mechanism is actually functioning, which I am afraid is not that well."

For Birol, current European prices are no reflection of the real figure that is necessary to transform the energy industry.

"Prices are low and volatile and the outlook is not very bright," he says. "One reason for this is that a trade makes sense if the cost of mitigation differs significantly between the trading parties. Looking at trade between Europe and India, or Europe and China, the respective economies and industries are very different from each other, so there would be a significant difference in price and the trade would make sense. But since industries and economic development in Europe are similar, the margins are low, as is the volume of trading. I do not believe that the results of the present European carbon trading market are in any way sufficient to bring about a major change in the energy industry."

Without a strong price reflected in a robust pricing mechanism, Birol fears the funding to stop further climatic degeneration will simply not be there.

The IEA has pointed out that investment

needed to bring about such climate change mitigation is substantial. Birol maintains that for carbon trading, a price is not a price unless it set by the market.

"I think the best thing is to leave the price to the market," he says. "As with any other commodity trading, we have to rely mainly on the dynamics of markets."

Birol hopes that US congressional attempts to cap the cost will give way to this recognition and expects that in the wake of a final international agreement on binding emission targets among OECD countries, the carbon trading market will expand from Europe to North America and Asia.

"Europe has a lot of experience in terms of carbon and the US has a lot of experience in terms of other trading, as does Hong Kong, which is an obvious centre for Asian trading, though there are other candidates," he says. "In the context of China, the Chinese could make a substantial amount of money by using clean development mechanisms

Going underground

Fatih Birol says that no one has yet made detailed estimates about the inventory of underground storage space that is available for the injection of captured carbon. "Although a crucial technology for a sustainable energy future, we have three major problems with CCS," he says. "The first is cost. There is a range of CCS projects, many of them pilots but some much larger. In many cases we are seeing that the initial cost estimates are changing rapidly, in some cases they seem to be doubling."

The second issue embraces regulation and international law. He cites the

question of responsibility for carbon stored in depleted undersea reservoirs that may cross international boundaries.

"Then there is the problem of storage capacity: is there simply enough existing identified storage for the carbon that will be captured?" he asks. "If CCS sees the light of day, and if it has wide underground application, then the current storage inventory may not be enough. No one has yet done the detailed calculations. There are just some rough thoughts, because there are still many other problems to be resolved before we come to that issue."

and getting a carbon price for the projects that they are going to be undertaking, dealing with renewable energy and energy efficiency."

The prerequisite, however, will be a proper market for carbon credits, with each regional centre being linked internationally, with immediate price

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discovery thanks to clear market rules and transparent trading. In time, Birol sees a role for speculative trading, which would add liquidity to the market.

He does not accept the counter argument that speculators would only promote price volatility and undermine the ability of energy companies to make long-term financial projections.

To reduce or not

As consultants McKinsey recently pointed out, the oil and gas industry is directly responsible for only 6% of global CO₂ emissions. However, when added to the emissions of end users of its products – transport, power and heat generation – the petroleum and gas sector accounts for almost half.

Consequently, there is considerable pressure on the industry to cut upstream and downstream emissions, and to make investments to reduce the carbon produced by the users of its products.

While international oil companies (IOCs) are under commercial and regulatory pressure to reduce their carbon footprint, not all of the national oil companies (NOCs) are taking up the challenge. “Of course there are some NOCs that, for political and other reasons, are not up to date in terms of technology and reserve management,”

says Birol.

“By not being

so productive they are also paying the cost of lagging in their market share. There are, however, some very good NOCs, which at least rival the performance of the best IOCs. They are technologically and operationally advanced and do not have laws forbidding foreign companies from working in upstream.”

In the Middle East, Birol notes, Saudi Aramco benefits from the presence of major international oil field services companies. “It is a very innovative company that is also strong in petrochemicals and is itself working on carbon capture storage (CCS),” he says.

Saudi Aramco has not invested outside Saudi Arabia, however, because it has plenty of domestic opportunities. Birol highlights how Brazil’s Petrobras and Malaysia’s Petronas have made significant overseas investments, although Petrobras is now cutting back its international portfolio to concentrate its technical and financial resources on exploiting its recent domestic discoveries.

“Petrobras has turned Brazil from being a net oil importer to a net exporter,” says Birol. “It is the only country of a significant size that has done that. It has been achieved through good management, investment in a timely manner and making the most of its technology. The government has also lowered Brazil’s domestic demand by introducing biofuels.”

Money: it’s a gas

Fatih Birol has warned that “a revolution” is needed in energy policies to head off the serious dangers inherent in climate change. The IEA has calculated that simply to maintain the current economic status quo will require investments of \$1,200 billion in a range of mitigation efforts, including renewable energy and carbon capture and storage. Given the still rising cost of CCS, this immense figure may be even greater.

On top of this is the need for the world to invest another \$500 billion a year in order to keep global warming inside the 2°C target notionally agreed at Copenhagen, even though some scientists insist that this target is not tight enough and wish to aim for 1°C.

Positive outlook

In the face of fears that a rapid economic recovery could lead to another energy supply crunch, sparking a return to recession and making it harder for governments and business to fund CO₂ mitigation, Birol remains cautiously optimistic. Despite the failure at Copenhagen, he hopes that if the US passes the necessary legislation on carbon trading, a deal on binding commitments for OECD countries and key reduction targets for important non-OECD countries can be within reach in Mexico.

Such agreement should keep atmospheric concentrations of greenhouse gases at 450 parts per million, the point at which scientists believe there is a 50:50 chance of keeping a global temperature rise within safe limits. ■



Dr Fatih Birol

Dr Fatih Birol is chief economist of the Paris-based IEA. He is organiser and director of the *World Energy Outlook* series, the IEA's flagship publication. Birol worked for six years in the secretariat of the Organization of Petroleum Exporting Countries in Vienna, before joining the IEA in 1995. He received the Chevalier dans l'ordre des Palmes Academiques from the French Government and the Golden Honour medal from the Austrian Republic in recognition of his work on global energy issues.