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# Targets and markets are not enough

Europe has set the most ambitious CO<sub>2</sub>-emission reduction targets in the world. But they will not be met if the EU continues to rely on market mechanisms.

| by *Luc Werring*

There was a mood of optimism and excitement among climate policy makers after the UN conference in Bali last year, even though all that had been achieved was an agenda agreement for the meeting next year in Copenhagen, which represents the last chance for a post-Kyoto accord. But after Bali, reality kicked in. Politicians everywhere have shown that they are still afraid to take the unpopular measures that are necessary to combat climate change.

The European Union has taken the lead in climate policy by setting binding targets for greenhouse gases. European politicians are working hard to convince other countries to do the same. But the EU's own policies and measures should not escape scrutiny. An analysis of these proposals shows that there is still much to be desired.

The new package relies heavily on the market forces of the emission trading system (ETS). This system will create new

opportunities in the stock exchange for trading contracts and derivatives, but the question is will it lead to substantial CO<sub>2</sub> reduction? Until now the only carbon reducing effect within the EU that could be attributed to this system is the fuel switch in power generation from coal to gas. This is unlikely to last though, since the fuel switch is starting to go in the opposite direction.

The other CO<sub>2</sub> reducing actions that should

be triggered by the market mechanism may in practice occur too late or not at all. It looks rather risky therefore to rely so much on the ETS and neglect other measures that would have more certain results. If in 2015 we come to the conclusion that it all did not work as we expected, we will have lost essential time for action. What's more, ETS is too often used as an excuse to halt or delay other measures that actually are more straightforward solutions. The use of regulations could be much more forceful but politicians consider "command and control" policies old-fashioned and unpopular.

### The package |

The climate and energy package that the Commission proposed on January 23 2008 has become famous for its 20/20/20 slogan, which had already been agreed upon at the spring council of 2007. The targets are: 20% reduction of greenhouse gas emissions compared to 1990 (binding), 20% renewable energy in the energy consumption of the EU (binding) and 20% lower energy consumption as a result of energy efficiency measures (indicative).

The first target, which is solely aimed at reducing climate change, is the most important one in international terms. The other two targets will help to fulfil the first one but are also justified by reasons of security of supply and a desire to make the EU less dependent on external energy sources.

The two most important proposals in the package are the ones to limit greenhouse gas emissions in the ETS sector and in the non-ETS sector. This means that, in theory, all greenhouse gases will be covered by binding reduction targets starting in 2013. The ETS applies to around 10,000 installations of large power producers and industry and will in future include the airline industry. Other activities, such as road transport, sea transport, agriculture and the heating of buildings, are not included in the ETS.

The most important difference between the two proposals is that the target for the ETS sector (about 40% of total emissions)

is a community target while in the non-ETS sector all 27 member states have their own national targets. Under the Kyoto agreement, which applies until the end of 2012, the EU had accepted a general target that was then converted into national targets. Each country is therefore responsible for all emissions in its territory, including the ETS sector.

In the new package, however, the EU will be responsible for the ETS sector at the community level. The member states must report and monitor their own emissions, but the policy tools and accountability have been transferred to the community. This is an important change, which is the result of requests by industry for a level playing field, but it does have notable side effects. It will reduce the autonomy for member states to find an optimal mix

2011 to take into account the extension of the scope of the new ETS directive for greenhouse gases other than CO<sub>2</sub>, but for CO<sub>2</sub> it means a reduction of 460 mt compared to 2005. However, according to the baseline scenario of the Commission, economic growth would add another 140 mt of CO<sub>2</sub> emissions to the ETS sector by 2020. Therefore, the proposed 1,720 mt of CO<sub>2</sub> amounts to a reduction in 2020 of 600 mt of CO<sub>2</sub> in the ETS sector.

For the non-ETS sector the totality of the separate 2020 targets that have been proposed for the 27 member states is 2,618 mt of CO<sub>2</sub>, which means around 260 mt below the level of 2005. A large proportion of emissions in this sector are non-CO<sub>2</sub> greenhouse gases, which count for around 1,100 mt of CO<sub>2</sub> equivalents in 2005. Taking into account the expected

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between reduction in the ETS and non-ETS sectors and buying credits outside the EU. It could also lead to member states being less concerned with undesirable shifts from the non-ETS sector to the "big pool" of ETS-emissions for which they are no longer individually accountable. They could, for instance, encourage heating and cooking by means of electricity (which comes under ETS) instead of by natural gas (which comes under non-ETS), whereas in fact gas is more efficient. Or, by encouraging air transport, which will soon fall under ETS, at the expense of public transport by road, which is more efficient but falls under non-ETS.

It appears that for energy related CO<sub>2</sub> emissions, the ETS sector has been given much steeper targets than the non-ETS sector. The 2020 target for the ETS sector, covering 10,000 installations, has provisionally been fixed at 1,720 megatons (1,720 million tons) of CO<sub>2</sub>. It is interesting to calculate what this figure means in reality. The amount will be adjusted in

emission reduction in these non-CO<sub>2</sub> gases and the baseline scenario development, the total reduction for the energy related greenhouse gases is approximately 220 mt of CO<sub>2</sub> by 2020. This is less ambitious than the target for the ETS sector.

### ETS-sector |

The question is can the ETS-sector deliver the goods? The baseline scenario assumes a carbon price of around €20 per ton while the impact study that was prepared for the directive assumes a price of around €39 per ton. Apparently, this price difference should in theory do the job of 600 mt of CO<sub>2</sub> extra reductions in the ETS sector.

There are various options available to installations in the power sector for achieving reductions. First, they could pay for reductions outside the EU through the clean development mechanism and joint implementation process. This would probably be the most attractive and realistic option, but this possibility is limited in the proposal. Companies are

allowed to carry over such credits from the period 2008-2012 to a maximum of 100 mt of CO<sub>2</sub> per year until 2020. But they cannot obtain new credits after 2012 unless other blocs in the world sign up for greenhouse gas reductions, in which case the 20% EU reduction target will be increased to 30%.

Second, they could use less electricity and heat. A carbon price increase from €20 to €39 translates into an approximately one cent per kWh price increase on average. For energy-intensive industries, this is indeed a significant amount. The problem is that one may expect that most energy savings already have taken place in this sector. Increased use of combined heat and power (CHP) is still an option but it is not really promoted by the ETS system. For consumers, on the other hand, the price increase is not enough to stimulate changes in behaviour, so they will not be inspired to use less power.

Third, they could switch to low-carbon or zero-carbon energy sources. Fuel switching is certainly a method to reduce carbon and probably the most important

Fourth, they could opt for more efficient production and distribution of electricity. The reduction potential of more efficient generation and distribution of electricity has previously been estimated at about 150 mt of CO<sub>2</sub> by the Commission. Average efficiency in electricity generation is currently around 40%. This can be improved in new installations from 45 to 60%, depending on the fuel. Still, the inefficient installations have not yet been substituted. Paying higher variable fuel costs is still cheaper for power producers than investing in new installations. It would take a much higher carbon price to trigger drastic modernisation of power stations.

Finally, there is carbon capture and storage (CCS). But this requires massive investments and is not expected to come on stream before 2015. The ETS directive simply states that allowances do not need to be paid for an installation if the carbon is captured and properly stored. This looks good on paper but won't encourage investment in CCS. It would also have made more sense to let installations pay for the carbon that they produce and to generate

industry. It is difficult to predict at what price level consumers would start drastically changing their behaviour. Certainly it would be a level at which the manufacturing industry would not be able to survive. It is safe to say national governments will not let this happen. They will want to protect their industry. If the manufacturing industry is compensated and private consumption is not really reduced, then the power industry will have to do the job. They will have to provide the same amount of electricity with a much lower CO<sub>2</sub> production. To make such a transition takes a lot of time, however. It will be many years before the carbon price will be high enough (and for the market to have enough confidence in the system) for producers to close down their inefficient coal power plants and start investing massively in CCS and renewables. Given the long lead time of investments, this might not happen before 2020. It seems very risky to rely so much on the ETS-system.

Nevertheless, discussions to set standards or impose regulations are often killed by the argument that the choice was made for a market-based system and that it is not logical or compatible to come up with additional regulations. But the ETS sector is already affected by regulations. Regulatory measures such as the eco-design directive, which sets efficiency standards for energy-consuming devices, are probably the only effective means of reducing private demand for electricity in the EU in short term. The impact of such measures is not at all influenced by the carbon price and could be around 70 mt of CO<sub>2</sub> in 2020. The renewable directives, including the new one with the target of 20% renewables, are another example. If these directives really are adopted and come into effect, they could save up to 200 mt of CO<sub>2</sub> in the ETS sector. It seems contradictory, therefore, that we do not impose the closing down of inefficient coal power stations if this is the ultimate aim of the market based approach anyway. Or, for instance, that we do not impose CCS on any new coal power station. Such measures would have an immediate effect without the complicated

## *Why do we take this risk with one of the greatest dangers of our time?*

development in the ETS sector until now. However, fuel switching could also come into conflict with security of supply requirements. It is an inconvenient truth that security of supply is much closer to the hearts of most politicians than climate change. If the lights go out, almost nobody will care about emissions anymore. Everybody knows that there is a currently a revival of coal-fired power production, which would not be the case if fear of high CO<sub>2</sub> levels was the main consideration in the decision making process. A nuclear revival is definitely coming but it will take too long to have a significant effect by 2020. Renewables are the best option but experience shows that we need a much higher and stable support than a one cent price increase.

free allowances at the place where CO<sub>2</sub> is actually put under the ground. That would make CO<sub>2</sub> a commodity with a value, which would make the control of the whole process easier and invite new players to participate.

The conclusion is that there is good reason to doubt whether the 600 mt CO<sub>2</sub> target will be achieved given a carbon price of €39. So in order to overcome non-economical barriers, to make CCS and renewables attractive and to strengthen the weak incentives for energy savings by private consumers, the carbon price should go up even more. What would happen then?

The power industry would pass the costs on to private consumers and



Activist at the UN Climate Change Conference, Bali 2007. Photo: Jewel Samad/AFP

and unpredictable market mechanisms that could first drive our industry out of the EU, and garner massive windfall profits for some energy companies.

ETS sometimes becomes the perfect excuse to do nothing at all. A recent example is the aviation sector loudly protesting about the effects of ETS on their prices, with the result that they will get most allowances for free, while nobody talks about the greenhouse effects of non CO<sub>2</sub>-emissions from aviation or about taxing kerosene. And no efficiency standards are imposed.

### Non-ETS |

As explained above, the target for the non-ETS sector looks rather low. It should be easily realised with a number of policies: saving energy outside the EU; taxes and subsidies (if compatible with state aid rules) to encourage energy savings and promote low carbon energy sources; regulation; and implementing and enforcing existing EU directives.

The first option is politically attractive as it combines the feeling of doing good somewhere else with the possibility of maintaining our own lifestyle. The

Commission proposes to allow the annual use by member states of “foreign” credits for up to 3% of the emissions in this sector, which equals around one third of the required effort (75 mt of CO<sub>2</sub> for the EU). Financial incentives constitute a very direct instrument and probably the best one in the transport sector. There is still a large reduction potential in this field estimated to be at least 150 mt of CO<sub>2</sub>.

The regulation option is the one with the most potential. In the present context, one should expect great enthusiasm in the member states to apply all EU directives that promote efficiency and renewables as much as possible. Unfortunately that is not the case. An example is the appalling situation as regards the implementation of the building directive, which was adopted with strong support in the Council and the Parliament at the end of 2001. The savings potential of the building sector was estimated at the time to be around 140 mt of CO<sub>2</sub> by 2020, enough to fulfil two-thirds of the target for the non-ETS sector in a cost effective way. But most governments get cold feet as soon as they have to impose something that might influence the lifestyle of their citizens and that

might upset voters. It is now 2008 and the Commission has started 17 infringement procedures for violations of this directive. In addition, successful lobbying by organisations of building owners have delayed and watered down the directive's main articles in several countries, such as the compulsory energy certification of houses that are sold or rented.

The implementation of the recently adopted directive on energy efficiency and energy services has also been far from encouraging, even though a number of regulatory tools have been provided to reach efficiency targets. If member states and the Commission would allocate the same amount of resources and energy to these kinds of measures as they do for the ETS, then there would be more reason for optimism. Unfortunately, these measures are simply not taken as seriously as they should be.

A final thought. The acid rain problem was tackled by standards, not by market forces. For other important health and safety issues we do not rely on the market either. So why do we take this risk with one of the greatest dangers of our time? ■