Billions could be saved by using CO_2 certificates for cars

A key topic at the summit of the automotive industry being held at the Federal Chancellery on 3 May 2010 will be the reduction of CO_2 greenhouse gas emissions from cars. The questions uppermost in everyone's mind are: which technologies can meet the EU regulations on CO_2 reduction, and at what cost? However, the debate has lost sight of the possibility that the same level of climate protection provided by the current regulations may be achieved – at a much lower cost to the economy – by including the automotive industry in the EU's Emissions Trading System.

The CO_2 targets for passenger cars for 2020, as specified in the EU regulations, amount to a reduction in emissions of almost 40 per cent on 2007 levels. The expense of achieving this target will be very high: average additional manufacturing costs in 2020 are anticipated to be around €1,900 per car. The resulting financial burden on German car manufacturers alone is expected to be approximately €115bn in the period from 2007 to 2020, an amount which cannot simply be passed on to the consumer. Other sectors are offered the possibility of reducing CO_2 at much lower costs. Outside the automotive industry, abatement costs of €30 to €50 per ton of CO_2 are predicted for 2020. For cars, however, these costs range from €130 to €150 per ton of CO_2. This represents economic mismanagement of more than €25bn each year from 2020. How do these numbers come about? EU regulations specify that average emissions of newly registered cars – which were 159g CO_2/km in 2007 – have to be reduced to an average of 130g CO_2/km by 2012, and cut further to 95g CO_2/km by 2020. This is technologically feasible in two steps: modifications to the conventional power train (eg downsizing the engine using turbochargers, variable valve trains, and reducing engine friction) and to the entire vehicle (low-rolling resistance tires, weight reduction, improved aerodynamics etc) are able to reduce emissions by about 34 per cent. Achieving the outstanding portion of the EU target, however, requires manufacturers to go beyond conventional technologies and use, for example, electric drives – either in hybrids alongside a combustion engine, or in all-electric vehicles.

The costs of these improvements vary enormously. The first modest savings would be around €13 per g CO_2/km abated, with total savings costing up to €51 per g CO_2/km abated. At an average total mileage of 160,000km to 180,000km and average emissions of 159g CO_2/km, each car is responsible for a statistical average of 25 to 29 tons of CO_2. Actual fuel consumption is generally higher than the official figures, so in reality this is likely to be more in the region of 31 to 36 metric tons. In total, the EU's CO_2 targets for cars will therefore result in expenditure of €130 to €150 per ton of CO_2. This is a very high price if one considers that CO_2 emission certificates have been trading recently between €12 and €15. The logic behind the certificates is that the EU determines the maximum annual CO_2 emissions permitted per sector. Companies are then allocated a corresponding number of CO_2 certificates. If they manage to reduce their emissions cost-effectively, they can sell the certificates they do not require. If, because the costs of curbing emissions are high, they generate more CO_2 than permitted, companies must buy further certificates. This ensures that CO_2 emissions are capped at the defined maximum and that reductions are made where they come at the lowest cost.

Market observers largely agree that the price of a certificate will be between €30 and €50 per ton between 2013 and 2020. This means it is worthwhile for everyone involved in emissions trading to invest in any environmental initiatives that cost less than that figure per ton of CO_2 abated. If the costs are higher, it is worth purchasing certificates instead. Abatement costs are around €130 to €150 per ton in the automotive industry, as explained above. Allowing car manufacturers to participate in the trading of CO_2 emissions certificates instead of having their emissions specified by EU regulation would not impair climate protection in any way, but would reduce economic costs by the huge sum of €25bn.

How could the automotive industry be incorporated in the emissions trading system? From the point of view of the legislator, this could be easily achieved. The European Commission itself has already declared this a viable proposition, but decided against it because it was faster to implement the regulation of emission limits. This expensive decision could easily be corrected.

In practice, emissions trading could be applied to the automotive industry as follows: the actors involved would be car manufacturers rather than the consumers. To avoid excess complexity in administering the system, each new car would be assumed to have a total mileage in line with the statistical average. CO_2 certificates would be allocated to car manufacturers in accordance with the emission targets specified in the current EU regulation, ensuring exactly the same level of climate protection. Certificates allocated to other industries could be used to fulfil the car manufacturers' obligations – and vice versa. Car manufacturers would then have the incentive to fully capture any technical options for reducing emissions that make economic sense – and the option of buying certificates to compensate for the last few, very costly grams of abatement. This trade in certificates would then finance investments in CO_2 reduction in other industries.

It is apparent that such an approach would protect the climate as much as the currently implemented regulations, but at a much lower cost.

This text is a translation of an article by Wolf Friedrich Spieth and Andreas E. Zielke that was published in Frankfurter Allgemeine Zeitung on 29 April 2010. Wolf Friedrich Spieth is a partner and co-head of the Low Carbon Energy Group at law firm Freshfields Bruckhaus Deringer; Andreas E. Zielke is the global leader of the automotive sector at McKinsey & Company.