

Global climate – German technology

**Contribution to German-British Forum Workshop on
“Energy and environmental technology in China, India and Europe”
November 14, 2004**

The environmental market of China and India offers huge potential for European and in particular German companies. China alone is already the world's second CO₂ emitter. In the wake of the major climate change conference in Nairobi, the priority must be to highlight the environmental benefits which European energy technology can bring across the world. Avoidance of CO₂ emissions is much more expensive in Europe than in China and India. The aim must therefore be to make European energy efficiency technologies accessible to the whole world. This will not only benefit European companies, but the whole environment.

The Stern Review on the economic consequences of climate change has made clear how the economic costs of climate protection depend crucially on how it is implemented. Only if greenhouse gases can be avoided where this is cheapest can serious damage to world economic prosperity be prevented. As atmospheric gases move freely across national borders, it makes no difference whether a ton of carbon dioxide is emitted in China, India or Germany. For the climate it therefore does not matter where greenhouse gases are emitted – but it matters in terms of cost.

It is clear that CO₂ emissions can be reduced more easily, i.e. more cheaply, where industrial equipment is old and inefficient. An average German coal power plant has an efficiency rate of 38%, i.e. 38% of the primary energy used is converted into electricity, and the rest is blown out unused as heat in the turbines. The average Chinese coal power plant converts only 23% of primary energy. If both plants are equipped to the latest technical standards of about 43% efficiency, this will save the atmosphere almost seven times more CO₂ emissions from the Chinese plant than from the German one. If we assume for the purposes of this rough estimate that the upgrading would cost about the same in both countries, then it becomes clear how much cheaper it is to avoid a ton of carbon dioxide in developing countries than in Germany and Europe. As an economist would say, there are lower marginal avoidance costs.

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This should certainly not mean that further national efforts to protect climate in Europe are useless. On the contrary, promoting renewable energies and providing incentives for the efficient use of energy are vital – not only because it is only decent to sweep outside your own front door first, but also because this is the best way of accelerating the development of market-tested innovative technology in this field. But environmentally the vital point is that successful avoidance options should be made available across the world.

Researchers at the German Institute of Economic Research have calculated the importance for cost efficiency of achieving economical avoidance solutions in developing countries. If the industrialised countries (including the US) were to reduce their greenhouse gas emissions between 2012 and 2050 by 3% a year compared with current projections, this would cost about 1000 billion dollars. But if the developing countries were brought on board, the same emission reductions would only cost half this. Europe alone could save 200 billion dollars in climate protection. And the developing countries would even profit from this emissions trade.

The Kyoto Protocol has already provided the necessary instruments for the cost-efficient implementation of climate protection. The industrialised countries party to the Treaty have undertaken specific emission reduction commitments, but can set off against these targets any reductions in emissions achieved by them abroad. These so-called flexible mechanisms ensure two things: firstly, emissions are avoided where this can be achieved most cheaply; and secondly, the necessary investment for this is provided by the countries which are by this means meeting their Kyoto commitments, i.e. the industrialised countries.

Those countries party to the Protocol which have undertaken emission reduction targets can trade reductions with each other within the framework of the international emissions trade. It is therefore attractive for a country with high avoidance costs to buy avoided emissions from a country with lower costs. In contrast to the international emissions trade, which so far only applies to the industrialised countries, the Clean Development Mechanism (CDM) enables industrialised countries to carry out emission reduction projects in developing countries and set off the reductions achieved against their Kyoto commitments. In this way, not only are the costs of climate protection reduced, but sources of finance are also opened up for the modernisation of industrial structures in these countries.

Both in its G8 and EU presidencies, Germany will intensify efforts to involve the US, China and India in a binding active climate policy. However, even Chancellor Angela Merkel, with her great commitment to combating global warming, will not be able to achieve this overnight. It is therefore all the more important at the same time to promote climate protection through technology transfer. If state-of-the-art energy technology can quickly be made available where its application has the greatest effect in protecting the climate, this could make a vital contribution to global climate protection.

As Germany is a world leader in many climate protection technologies, improving technology transfer offers great opportunities for climate protection. Germany is a leader in wind power technology (Enercon alone holds 40% of patents worldwide in this field), German and Japanese technologies lead in solar energy, and German companies are also ahead in the biomass field, in particular in the use of special gases such as waste and sewer gas. A similar situation applies to energy efficiency technologies: German companies are leaders in high-efficiency power plant technologies, and currently also in low-emission and emission-free coal power generation (Clean Coal) and high-efficiency gas, steam and water power turbines, as well as the development of reinforced substances, which play a key part in increasing efficiency.