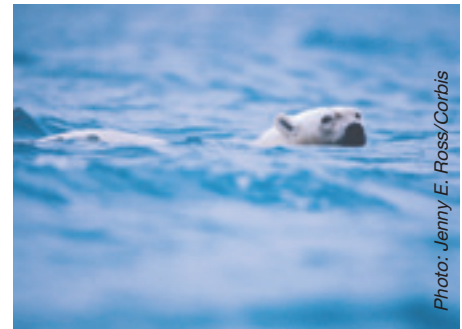


The German government never misses an opportunity to highlight the importance of climate protection in international fora. It has also set itself highly ambitious climate targets. But Germany today would not have been able to meet the Kyoto targets if it had not been for the German reunification. And it will not be able to realize its targets, unless it manages to create a coherent and integrated climate and energy policy.



Germany as Pioneer of Climate Protection

The dream and the reality

| Claudia Kemfert

Here is the pretty picture. Early in 2007, Europe, as the world's first international economic bloc, presented an ambitious preliminary proposal for climate protection and securing a sustainable energy supply. The European Commission announced a plan to reduce greenhouse gases by 20% compared to 1990 levels by the year 2020 and to increase the use of renewable energy

sources to 20% of total consumption. If other industrial nations are willing to join a binding agreement on climate protection, Europe will even go further and reduce emissions by 30%.

In this bright EU-picture, Germany is one of the shining stars of climate protection. It has already contributed substantially to emissions reduction since 1990 and has managed to significantly increase

its share of renewable energy sources. Unlike Spain, Portugal and Greece, whose emissions are disproportional and greatly in excess of the limits agreed under the Kyoto protocol, Germany has made a sizeable contribution to European burden-sharing.

Here is the reality. Europe has benefited enormously - from a climate protection

point of view - from the economic collapse in Eastern Europe. If these countries (which did not participate in the Kyoto protocol negotiations and were only counted later after EU enlargement) were not included, then Europe would be nowhere near achieving its planned Kyoto targets. Germany, too, would fail to fulfil its Kyoto targets if it were not for German reunification. For eastern Germany's power plants were completely overhauled to make room for more efficient plants, which substantially reduced greenhouse gas emissions of the country. Only 30% of the reduced emissions in Germany can be assigned to concrete emissions reductions measures - especially due to the increase of renewable energy. At this moment, in many European countries, greenhouse gas emissions are actually rising instead of falling.

One reason for the mismatch between theory and practice is that the energy policies of the EU and national governments must fulfill different, often conflicting requirements. Policies are based on three aims - security of supply, competitiveness and environmental protection - which are difficult to reconcile with each other. For example, a more competitive European energy market will do nothing to strengthen security of supply because there will be no incentives in a liberalized market to make the necessary investments into the grids - both on a national level and in interconnector capacity. This will also hurt the development of renewables, which require heavy investments in grid capacity. Other measures that look good in theory will also be difficult to realize.

For instance, the binding biofuel quota will lead to a rise in food prices, which will necessitate changes in agricultural policy that will be very hard to realize.

Another huge problem is that the most important climate policy measure that Brussels has taken, the European emissions trading scheme, has been completely ineffective. Because of an excessive allocation of emissions

energy and fed into the national grid, with the cost spread evenly amongst all electricity consumers. The fixed price is reduced over time as cost-minimising potentials - created by growth potentials - are taken into consideration.

This law has been very successful. The number of employees working in renewable energies rose to a total of 235,000 in 2007, and a further increase to up to 700,000 by 2030 is possible.

The European emissions trading scheme has been completely ineffective

allowances in almost all European countries, the price of allowances fell to almost zero in 2006. Initial high prices were caused by the fact that the scheme was introduced very hurriedly in the individual European countries and the information available on current and, especially, future emissions was incomplete, which led to an inaccurate assessment of the supply of allowances. Moreover, the scheme requires that governments give away the allowances for free (only 10% may be sold by auction), which makes the instrument a lot less effective.

In Germany, too, it will prove very difficult to fulfill the intended goals. Germany is of course an acknowledged leader in renewable energy. In 2000, the government introduced a law promoting the use of renewable energy by a feed-in tariff system. Under this legislation, a fixed price is paid for electricity generated on the basis of renewable

The renewable energy sector might thus catch up employment-wise with Germany's huge car industry.

Renewable energy now accounts for almost 12% of power generation. The use of biofuels has also been increased substantially thanks to a blending mandate of 5%. Germany now mainly produces biodiesel (which consists of 75% rapeseed oil), as well as ethanol (13%) and vegetable oil (11%). The share of renewable energy used in heating production has risen to almost 6%, based primarily on biogenic solid fuels, and solar thermal and geothermal energy.

The German government has recently introduced a new climate protection and sustainable energy plan that is supposed to build on this initial success. The aim is to reduce greenhouse gas emissions by 30% to 40% compared to 1990 levels. The share of renewable energies in power generation is to be increased to 25-30% by 2020; the share



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Photo: Ashley Cooper/Corbis

of combined heat and power plants is to increase, while energy management systems will be implemented to help save energy. Renewable energy will also be used to a greater extent for producing heat and as alternative fuels. The energy efficiency of buildings and vehicles is to be greatly improved. Europe's goal of limiting car emissions to 120 g of CO₂ per kilometer has not been entirely supported by Germany. The alternative

vehicle tax based on CO₂ emissions; these are combined with quota solutions (biofuel quota, quota for heating production using renewable energy sources) and standards such as intelligent measurement methods and energy management systems. But in spite all of these diverse instruments are used - or maybe because of them - many of the most important issues are not addressed.

coal-fired power generation will lead to an increase in emissions, while the expansion of gas-fired power production will increase dependency on imports and jeopardise security of supply.

At the same time, the substantial increase of wind energy for electricity production in Germany will be difficult to realize as the necessary grid extensions in Northern Germany are still lacking.

The withdrawal from nuclear power generation will cause the cost of emissions reductions to rise sharply

German proposal is to reduce emissions related to transportation by introducing a motor vehicle tax based on CO₂ emissions and by expanding the scope of the road toll on heavy goods vehicles in Germany.

German climate protection and energy policy is thus characterised by a variety of different tools: market economy instruments such as emissions trading, ecological taxes (on petrol, heating oil, electricity and gas), subsidies for renewable energy sources, the road toll on heavy goods vehicles and a motor

Renewables will still make only a limited contribution to the energy supply in 2020 or 2030. At the same time, Germany has decided to phase out its CO₂-free nuclear power by the year 2021. All nuclear power plants still in operation (currently 17) are to be shut down on conclusion of a lifespan of 32 years.

The withdrawal from nuclear power generation will cause the cost of emission reductions to rise sharply. It will also entail the construction of new coal-fired - especially lignite - and gas-fired power stations. The expansion of

What is missing, most of all, is a coherent strategy or policy that manages to weigh and harmonize the different goals of energy and climate policy: security of supply, competition and climate protection. Concretely, the following points should be addressed.

- Unbundling of production of electricity and networks will not solve the most pressing need: underinvestments in the networks and grid, which hamper the expansion of offshore wind power in Northern Germany.
- Improvement of the emissions trading system. The allocation of permits need to be improved, the macro cap needs to be stricter and dynamically adjusted. Emissions permits need to be auctioned.
- Increase of R&D expenditures. Carbon Capture and Storage (CCS) needs to be investigated further, especially efficiency losses and potentials of

storages. Further CO₂-free, save and innovative energy technologies need to be examined.

- The phase-out of nuclear power makes replacement investments of almost 40 GW necessary until 2020. An extension of the lifetime of nuclear power plants could bring the relevant time to make both CCS and renewable energy technologies cost-efficient.
- Coherency. Many different measures are chosen to either increase renewable energy, CHP, CO₂ standards or energy efficiency. These instruments should not be treated in isolation, because all measures influence each other. For example, the increase of renewable energy reduces emissions, which needs to be taken into account when caps are set for the emissions trading scheme.

If European and German energy and climate policy are to remain credible, the various targets must be reached as soon as possible. The recent energy and climate program of the German government and the EU targets are a first step in the right direction, but more steps are necessary for a long-term effective climate policy. A coherent energy and climate policy needs to take into account all dynamic and interdependent reactions. ■

All EU countries except Britain and Spain were given more emission credits than they needed for 2005-2007. As a result, the price of emission allowances collapsed in 2007.

Claudia Kemfert on unbundling

Europe wants to create an integrated internal market by strengthening competition in the electricity and gas markets and reducing dependency on imports. The EU's status report (Sector Inquiry - EU Commission 2007) showed that the EU member states have liberalised their electricity and gas markets to very different degrees and in some cases have not fully implemented the directives on liberalisation. In Germany, particularly, competition is hindered by the fact that over 85% of the market is controlled by four large power suppliers (Eon, RWE, Vattenfall and EnBW), which control both supply and transport.

From the European point of view, Germany has done too little to promote competition. Besides approving mega-mergers between energy suppliers, the former German government failed to establish a regulatory body to monitor grid charges. Electricity prices in Germany are currently quite high compared to the rest of Europe. This is partly due to the fact that the suppliers are overcharging for grid use, and partly to higher taxes. The current German government established the Federal Network Agency (now responsible for regulating Germany's energy market) in 2006 and introduced the Infrastructure Planning Acceleration Act to foster competition. It is also tightening legislation on monopolies.

What Brussels wants now is complete ownership unbundling to do away with market impact strategies. However, there is no certainty that competition can be improved by such a measure. The expansion of renewable energy in Germany requires an urgent upgrade of the distribution network, while the cross-border networks also require substantial upgrading. Few companies that operate on the free market will be interested to make such capital-intensive and low-profit investments. At any rate, non-discriminatory network access can only be guaranteed by an efficient regulatory body. Thus, it would make more sense if - instead of unbundling ownership - a European regulatory authority were established to monitor the quality of the networks and development of the infrastructure, as well as network access and grid charges.

