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German Energy Policy

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When I was a student in the 1960s, nuclear physics and reactor technology was one of my favourite subjects. Public opinion was very much in favour of the peaceful use of atomic energy. We even discussed the possibility of trains equipped with small nuclear reactors.

These days the same message of confidence in nuclear energy would sound very strange to the ears of a German student. The mood has changed. Public opinion is against rather than in favour of nuclear energy, although proposals to phase it out were not a major issue in the recent elections. Jobs and social security are the decisive factors when selecting a party, not energy policy, even though energy remains a controversial issue.

In a democracy, energy policy depends, like other policies, on public opinion. One may agree or disagree with the people. All the same, every politician must remember the warning of Hugh Trevor-Roper, the great British historian: "Every age has its own social context, its own climate, and takes it for granted ... To neglect it — to use terms like 'rational', 'superstitious', 'progressive', 'reactionary', as if only that was rational which obeyed our rules of reason, only that progressive which pointed to us — is worse than wrong: it is vulgar."¹

But public opinion is not a constant in history. It has changed in the past and it will change in the future. When Europe started its ambitious nuclear programme in the 1970s, it did so under the shock of the first oil crisis. Oil prices soared and for the first time in history the industrialised countries in the West came to know what it meant to be blackmailed by the all-powerful cartel of oil producers. The same happened again in 1979 in the wake of the Iranian revolution. These were the days when Germany intended to build a nuclear power station every year. Three big companies competed to supply nuclear reactors.

It then turned out that the increase in efficiency triggered by new technology and high energy prices was such that it was sometimes cheaper to save energy than to provide it. The pace of construction slowed down, and the anti-nuclear mood increased, particularly after Three Mile Island. But nuclear energy was still on the national agenda, and the government, as well as industry, was committed to mastering every facet of nuclear technology: water cooled reactors, the high temperature reactor (HTR), and last but not least the fast breeder reactor (FBR). They were practically completed when the Chernobyl accident happened.

Since Chernobyl the tide has turned. Whereas the Green Party was already anti-nuclear, the Social Democrats joined them after a very emotive debate. On the other side of the political spectrum, leaders of the Christian Democrats and the Free Democrats were rather cautious, but their rank and file also had misgivings about the future of nuclear energy. Since then we have gone through a phase of running down existing nuclear activities. Both the HTR and the FBR were shut down. Reprocessing was abandoned. A fully completed MOX fuel fabrication facility at Hanau failed to get permission to start operations. The most modern nuclear power station at Mülheim Kärlich is still waiting for a licence which it will probably never get.

After the reunification of the two Germanies, the nuclear reactors in the East had to be shut down for safety reasons. Electricity was subsequently produced by modern thermal power stations. In consequence, uranium is being replaced by lignite and increasingly by gas.

At present 19 nuclear power stations provide roughly one third of Germany's electricity needs. There is no shortage of electricity, and competition keeps prices low. New technologies increase efficiency, although the pace of modernisation has slowed down since the oil price fell to a historically low level. Whether the recent increase in the oil price is having any impact on our energy discussions is not yet clear, although I think that experience has shown that energy policy is at least as much influenced by price as by public opinion.

A great deal will depend on the development of gas prices, because it is gas which is replacing oil, coal and nuclear. Gas seems to be a commodity whose price remains stable. Thus, even those in the energy sector who are still in favour of nuclear technology seem to prefer gas powered turbines to new nuclear power stations, because of their profitability. Whether this calculation will stand up over the next ten or twenty years remains as unclear as our future. Nevertheless, this is the general mood in many companies.

Irreversible phasing out of nuclear energy has become a cornerstone of the new Social Democratic-Green coalition in Bonn: "Withdrawal from the use of nuclear power will be comprehensively and irreversibly regulated by law within this legislative period". To this end the government is following a step-by-step procedure.

It is perhaps useful to cite the original text of the coalition agreement because it hints at the measures to follow.

"In the first stage an initial amendment to the Nuclear Energy Act will be tabled as part of the 100-day programme. It will contain the following:

- Removal of the explicit aim of promoting nuclear power.
- Introduction of an obligation to conduct a safety review to be submitted within one year.
- Clarification of the regulation governing the burden of proof in the event of reasonable suspicion of danger.
- Limitation of nuclear waste disposal to direct final storage.

- Repeal of the 1998 amendment to the Nuclear Energy Act (with the exception of the implementation of EU law).
- Increase in provision for liability cover.

“In the second stage, the new federal government will invite the energy utilities for talks to agree a new energy policy, steps to phase out nuclear power and to resolve waste disposal issues by consensus as far as possible. The new federal government has set itself a deadline of one year from its coming to office.

“As a third stage, the coalition will table a law after this deadline has expired to regulate the phasing out of nuclear power without compensation; a time limit will be imposed on operating licences for this purpose. Proof of waste disposal will be adjusted accordingly.

“On the question of waste disposal, the coalition partners have agreed the following:

- The existing concept for nuclear waste disposal has failed and is no longer relevant. A national waste disposal plan will be drawn up to deal with the legacy of radioactive waste.
- A single final storage site in deep rock formations will be sufficient for the final storage of all types of radioactive waste.
- The target date for the final storage of all types of radioactive waste will be the date for the disposal of highly radioactive waste, in about 2030.
- There are doubts about the suitability of the salt repository at Gorleben. Exploratory work will therefore be suspended and further sites in different host rocks examined for their suitability. The prospective site will be selected on the basis of a subsequent comparison of sites.
- The storage of radioactive waste in Morsleben will be ended. The formal public planning procedure will be limited to shut-down.
- Each nuclear power plant operator must create interim storage capacities on the site of the nuclear power plant or in its vicinity. Spent nuclear fuel may only be transported if there are no licensed interim storage capacities at the respective nuclear power plant and the operator is not responsible for this state of affairs. The interim storage facilities will not be used for final storage.”

So much for the text of the coalition agreement. Now, what has happened in the meantime?

The first problem not foreseen in the document was a clash with British Nuclear Fuels (BNFL) and Cogema. The German Minister for the Environment tried to revoke the agreements on reprocessing, but both companies insisted on the honouring of international agreements and private contracts. The German government had to recognise that reprocessing at La Hague and Sellafield will continue as foreseen in the contracts. But the way the dispute was settled called the government’s diplomatic skill into question. In particular, the environment minister’s awkwardness made things even worse. Chancellor Schröder therefore put responsibility for negotiations with

the utilities mainly in the hands of the Minister for Economic Affairs, Mr Müller.

Reprocessing is a particularly delicate issue for the Greens and their friends because it requires regular transport of spent fuel, which has become a major issue for the anti-nuclear movement. The blockading of trains transporting spent fuel containers has become a real battleground between the protesters and the police. The financial costs of providing security — which have to be paid by the respective states — are extremely high and the utilities' image is being badly damaged by pictures of demonstrators being beaten by policemen. These battle-like blockades confirm the picture of nuclear energy forced onto peaceful people by police action — a picture so often described in horror scenarios of the past as if nuclear energy and democracy were incompatible.

The next clashes are already planned. Goaded on by a militant minority which always shows up at any sort of protest against the democratic state, thousands and thousands of anti-nuclear protesters will follow in good faith. But this time the government responsible is of their own colour.

The government's strategy so far is correct. The transport of spent fuel will be allowed if the requirements are fulfilled. Incidentally, the government has no other legal option. But the government has a certain margin of manoeuvre to make life as difficult as possible for the utilities.

I presume that the next time spent nuclear fuel is transported, when allowed by the government, there will be a major clash between the Green Minister for the Environment, Mr Trittin, and his electorate. This conflict will probably exceed the intensity of the debates about Kosovo — where, incidentally, the leadership of the Green Party stood impressively firm. The anti-nuclear attitude is a kind of irrevocable moral principle, and its implementation is deciding the future of the Green Party.

The transport issue is so important because it is easy to judge. You are either for it or against it. It enables many people to express their convictions through action, and it demonstrates clearly who is on the right side. However, it will bring things to breaking-point within the Green movement. On one hand you have the law-abiding Greens, who follow the laws of a democratic society; on the other hand you have people who think that all kinds of resistance are legitimate because of their high moral cause.

This is one possible scenario. But there is an alternative one. This follows the principle of making nuclear energy as expensive as possible. In a market economy — and energy policy is now driven by market forces — expensive nuclear electricity would easily be driven out of the market. So far this has not been the case; nuclear energy is still competitive. But it is possible to make nuclear electricity more expensive.

Nuclear fuel, untaxed so far, could be taxed in the future. Liability in case of accidents could be raised from DM500 million (US\$280 million) to DM5 billion. Interim storage capacity could be obligatory and thereby increase costs. Obligatory reserves for final storage could be put into a fund and thus no longer be made available for companies' investment strategies. Whether these proposals conflict with the constitution or not is far from clear. But they are under discussion, at least in those circles for whom nuclear energy is the "evil one", the "foul fiend".

The government is more modest and more practical. The Minister for Economic Affairs is relying on an agreement with the nuclear industry. Remember that the agreement between the two coalition partners states that the phasing out should be carried out without compensation. According to the coalition agreement, industry has to understand that the use of nuclear energy has to come to an end because a majority in the country wants it, and that the government will no longer support the building of new power stations. The sooner companies close their existing reactor facilities the better.

But the government will not force the utilities to phase out nuclear energy. They are relying on a consensus. The most advantageous route for the industry would be to carry on their nuclear business until it becomes economically obsolete. Nuclear energy would come to a natural end, and then a new page would be turned. The Greens want to turn the page after a reactor-lifetime of 25 years. The Minister for Economic Affairs thinks about 35 years. Whatever the outcome is, the government would certainly welcome the closure of one or another nuclear power station within the next three years.

When nuclear energy will become economically obsolete is an open question. There are those who do not exclude a return to nuclear energy in the foreseeable future. Others pursue the above mentioned position, which proposes to accelerate the phasing out by making nuclear energy more expensive. Some believe that a symbolic sacrifice of one or two older nuclear power stations within the current legislative period would have a calming effect. In German we call this a "Bauernopfer", sacrificing a pawn, which means ritually giving up the weakest element in a conflict. We know that the government is negotiating this type of anticipated phasing out of an older plant in order to demonstrate its commitment to its anti-nuclear policy. Whether this scheme works or not depends very much on the utilities and their shareholders.

Germany's policy has already had visible consequences. Industry, particularly Siemens, the remaining big nuclear company, is gradually disengaging from nuclear energy. The big question is whether it will retain a core nuclear business or eventually sell its nuclear facilities. For young academics nuclear energy is no longer a safe career. Although there are still students studying reactor technology, it is obvious that nuclear technology is losing momentum. Germany is voluntarily rejecting part of its technological heritage.

All in all, this policy would not be a catastrophe if it were final. But it is not. We are not replacing nuclear with renewable energy sources, but by gas. Once again we are increasing our dependence on energy imports. We still subsidise coal for reasons which have nothing to do with energy policy, but with respect to regional interests. Germany is far from achieving its own commitment to reduce CO₂ emissions by 25% in 2005 as compared with 1990. Our measurable energy savings are mainly due to the complete collapse of the industrial system in East Germany following reunification and the subsequent replacement of outdated power stations with modern ones. In West Germany, where we have considerable economic growth, CO₂ emissions are rising again. We have not reached a turning point in energy policy.

Instead of discussing a new era in the energy sector, and a policy for real reductions in energy consumption by increasing energy efficiency, we are still mesmerised by our conflicts about nuclear energy. This is because the nuclear issue has replaced former ideological conflicts. Nuclear versus solar, this is the question. Solar is the future, nuclear the past. The sun is soft, nuclear is hard. My own party, the SPD, has not hesitated to declare the next century the solar one, as if the character of a new century can be foreseen. And as if the character of a future century could be decided by a party congress.

I prefer to think of the future as open and to be prepared for the unexpected. Nobody knows what will happen in the next ten or twenty years, never mind the next hundred years. We can only say that the world will consume much more energy than today and that the availability of energy will determine people's well-being. We also know that new technologies will allow us to reduce energy consumption. In Germany we have reduced our water consumption considerably, simply by increasing prices. I do not know of a single person who has died of thirst. But new technology needs to be financed. The key to a new energy policy is not technology alone, but access to cheap money.

We also know that within the next few generations we will run out of oil. Gas too is a limited commodity, although its reserves will last longer. Coal will be available in sufficient quantity for a few hundred years, but its reserves are also limited. But all these fossil fuels produce more or less CO₂. If humanity wants to outlive the fossil age there are only three other options: renewables, fission and fusion. Whether we like it or not, these are the laws of physics, whatever German public opinion thinks. To reduce energy policy to renewables is short-sighted and reduces the margin of manoeuvre for future generations.

Our forecasts are mostly based on our past experiences. What do we know about the future energy needs of Asia? Can we exclude the possibility that energy will become a major cause of international conflicts? So far America has intervened in cases of energy conflicts. Will the Europeans have to intervene by themselves in the next century, either because the Americans are sick of intervening or because our dependence on energy imports has become overwhelming? Or will we once again appreciate the value of reduced dependence on energy imports? In this case it would be nuclear energy, renewables and energy saving!

A globalised economy does not necessarily mean that poverty will disappear in a new era of global wealth. On the contrary, we are experiencing a rising gap between rich and poor. Global conflicts might increase, not decrease, and energy could again become the weapon of the poor, who knows? I presume that the unpredictable future will shed new light on the energy question. It would not be the first time that we have thrown an ideology overboard. And the anti-nuclear attitude is nothing but an ideology — and therefore its lifespan is limited by the spirit of the age, the “Zeitgeist”, as we say in German.

But it would be short-sighted and misleading if my comments about German energy policy were to end with the nuclear chapter. There are at least three further aspects which deserve comment.

First of all I should mention the continuing liberalisation of the electricity and gas markets as a result of European directives. Electricity prices are falling, companies are trying hard to reduce their costs, some of them are anxious to survive as independent utilities. In short, the energy sector, particularly the electricity sector, is undergoing a profound transformation. In the past these companies were driven by an engineer's mentality, whereas today it is the salesman who dictates the company's philosophy. The current government — like its predecessor — is in favour of liberalisation.

In contrast to the previous government, the red-green coalition intends to strengthen the role of renewable energy sources through a proactive policy. An eco-tax will gradually increase the price of energy in order to encourage energy saving measures. Income from the eco-tax will be used to reduce the cost of labour. Dearer energy, cheaper labour, this is the government's motto. In the case of water this policy is already bearing fruit. Water is more expensive and consumption is falling, a policy which — incidentally — was introduced by the previous government.

Whether eco-taxes have an influence on the people's behaviour remains to be proved. But there are visible signs of a growing environmental consciousness. Energy saving and renewable energy sources are a major topic in local and national politics. We are observing a myriad of grass root initiatives supported by local and regional governments. They are having a major impact on research and technological development. Germany has good prospects for making energy efficiency and renewable energies a major export industry.

Apart from the eco-tax, the federal government has considerably increased its spending on renewables. A 100 000-roof programme has been launched, mainly to promote photovoltaics. Wind turbines are supported by a very generous regulation which allows wind-generated current to be fed into the grid at a competitive price. In the end the consumer pays for renewable energy, but this feed-in law has been approved by a large majority in the German parliament. The consumer seems to agree with this approach, and there is consensus among the parties to support the promotion of renewables.

It should not be forgotten that Germany still subsidises its own coal mines by nearly DM 10 billion (US\$5.5 billion) per year. Although this sum will be reduced in the forthcoming years to DM 5 billion, it is still much more than the DM 2 billion we spend on renewables.

We could certainly reduce the consumption of energy by new technology without reducing our well-being. Here, agriculture is a good example. Two hundred years ago nearly every citizen in Europe tilled the ground and could barely feed himself. Today 3% of the population produces more than we can eat and drink. Productivity has increased enormously. Why should it be impossible to increase energy efficiency in the same way?

We think we can do it. But it needs time, innovation and imagination. At the moment we do not have enough of these three things. Therefore we will not fulfil our Kyoto commitments. Climate policy, although very high on the government's agenda, is neglected. Saying is one thing and doing another. Our CO₂ emissions have gone down, certainly, but the main reason is the collapse of East German industry, the replacement of coal and oil by gas, and low economic growth. In the coming years we expect higher growth and, in consequence, higher energy consumption. If we shut down one nuclear power station we will move even further from the ambitious objective of reducing CO₂ emissions by 25% from 1990 figures in 2005.

If we put everything together, I would say that German energy policy is not logical but highly emotional. It is driven by visions not by mathematics. Others would say it is driven by policy not by the market. Let us put it in a more friendly way with an English saying: you never know what you can do until you try. The German government is willing to try and see.

REFERENCE

1. Trevor-Roper H R, *The Past and the Present — History and Sociology*, London, 1969.