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Plenary Session 102A „Energy and Environment“
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DFG-President Prof. Dr.-Ing. Matthias Kleiner



Ladies and Gentlemen,

As one of the chairs of the “Ethics Commission for a Safe Energy Supply” but also as a German citizen I have been asked many questions about the German nuclear phase-out and the governmental decision-making process as well as society’s point of view on this far-reaching decision – especially when travelling abroad.

In order to illustrate the way and the current state, I collected the most frequently posed questions and will use this catalogue as an outline for introducing you to “how Germany decided to give up nuclear energy”.

Let us start with the commission itself – why was it referred to as “German Ethics Commission for a Safe Energy Supply”?

In general, Ethics commissions serve as a genuine advisory body and are active on a counseling level.

This was the case as well when the German Ethics commission for a Safe Energy Supply was appointed by German Chancellor Angela Merkel at the end of March this year. The members – representing different fields of the German society and scientific disciplines – were asked to advise the German government about risks of nuclear power and societal estimation of the targeted nuclear power phase-out.

Also included were discussions of legal, moral und technical aspects and to inform the German public.

This was for example carried out by a live-broadcast of an open dialogue with invited experts from different institutions at the end of April 2011.

In this context, it is important to note that the Ethics Commission did not come to a single and homogenous viewpoint and does not want to proclaim “the one right way”.

The members of the Ethics Commission represent different positions on important issues regarding risk assessment and energy supply which have been exchanged and argued about with great openness and respect.

Without surrendering these fundamental positions, the members of the Ethics Commission have come to an agreement on the practical consequences which have been presented in the report. With this report, the Ethics Commission aims to contribute to an informed and reflective culture of discussion.¹

¹ Professor Ulrich Beck (risk researcher, Munich), Klaus von Dohnanyi (former Secretary of Education, Social Democratic Party), Ulrich Fischer (Protestant Regional Bishop of Baden), Alois Glück (Central Committee of German Catholics), Cardinal Reinhard Marx, Jürgen Hambrecht (BASF), Walter Hirche (Unesco-Commission, Free Democratic Party), Reinhard Hüttl (German Research Center for Geosciences Potsdam), Professor Weyma Lübbe (Professor for Philosophy Regensburg), Professor Miranda Schreurs¹ (Head Environmental Policy Research Centre Free University of Berlin and expert advisory board for environmental matters), Professor Lucia Reisch (Calw University, Member of the Sustainability Council), Michael Vassiliadis (Head of IG Bergbau, Chemie und Energie - Mining, Chemical and Energy Industrial Union)

It has also been a major matter of interest, why an incident as in Fukushima – which occurred under distinctly different conditions – prompted the German government to summon an expert commission and mandate it to counsel a political decision process?

Any decision about the use of nuclear power on the one hand and the substitution of nuclear power on the other hand is driven by the values a society approves of by the majority. Criteria such as sustainability, economic efficiency and social balance give general orientation and have led Germany to be convinced of renouncement in the case of nuclear power.

Indeed, the risk of nuclear power use in Germany has not changed through the Fukushima incident but the perception and consciousness of it has grown significantly among Germans under the impressions of the catastrophe.

The disaster in Fukushima has demonstrated clearly that concepts like safety, risk and danger must be reviewed and redefined in terms of what they mean.

The technical definition of risk – weighing the scale of an incident with the probability it might occur – is not suitable for the assessment of nuclear energy and systematically leads to unacceptable relativization of risk. The probabilities can only be calculated reasonably in terms of assumptions on the course of an incident and in the context of design limits.

I have also been asked quite often if Germany recommends a global nuclear power phase-out.

Germany does not recommend a global phase-out, but of course wants to promote its solution and stand as a model for a successful transformation of energy systems.

The commission states that the German turning point in energy usage may be of great importance for Germany's role in international cooperation and in different fields such as foreign aid and climate protection.

The commission does not **explicitly recommend** a **global** nuclear power phase-out. The authority ends at Germany's borders, but we do in fact hope that Germany might function as a model for other nations to follow the abdication of nuclear power.

The German phase-out holds technical, economic and societal chances for Germany's profile as exporting nation. Meanwhile, it seems reasonable to campaign for a binding implementation of shared goals of energy efficiency within the European Union.

Which criteria form the basis of the risk analysis?

The commission defined an integral path of thinking which considered implications of ecological and sanitary consequences as well as cultural, social, economic, individual and institutional implications – in addition to all technical aspects, that is.

It was distinctly **not** the goal to join or even reconcile categorical denial on the one side and weighing consideration on the other side.

The commission concentrated more on defining fields and criteria which are to be appreciated in the course of deciding about risks and chances.

Criteria:

- climate protection
- security of supply
- cost effectiveness
- questions of financing
- competitive capacity
- research and innovation
- avoiding dependence on import

Is Germany really capable of phasing-out nuclear power within the coming decade or will Germany have to cover its energy demand with compensatory nuclear power from abroad?

The commission stands firmly resolved that the nuclear phase-out can realistically be completed within one decade under the measures it developed and described in its recommendations.

This goal can be reached **if and only if** society as a whole undertakes the phase-out and all its consequences as a binding and “collective project for the future”, as it has been named. Provided a goal-oriented monitoring which includes analysis, accompanying assessment and further recommendations, the time-frame may be adhered to.

Nevertheless, the institutional responsibility for the monitoring and its integration on a political level remains open to this point as well as the administrative aspects which go along such a complex process.

Many people want to know which alternative to nuclear power the commission qualified and if there is an alternative to the nuclear power phase-out after all.

Firstly, the commission focuses not only on suggesting different and, more importantly, parallel energy sources – such as renewable energy sources, fossil-fuelled power plants, combined heat and power plants but on framework requirements.

It suggests the enabling of large-scale applications for “smart electricity usage”, the proliferation of building renovation to energy-efficient urban renovation and a new orientation in new buildings and its architecture and technical and electrical interior and facilities.

The commission visions clearly that infrastructure and electricity reserves will play an even greater role than before in the future process towards nuclear-free energy supply.

Secondly, we do not see any alternative for Germany in the long-run and to the German people it seems to be an ethic obligation to minimize risks for following generations and thus, to take measures which may appear inconvenient at the beginning.

Neither are the consequences of nuclear power and its failure in use fully assessable nor is the disposal of the nuclear waste finally solved. This is unaccountable in the long run.

Another frequent question: If Germany, the world's fourth-largest economy, falls back on coal-burning plants or natural gas, isn't it trading a potential risk for a real one (i.e. higher pollution)?

Germany can serve as a model to prove that nuclear power is not essential for the reason of climate and environmental protection. Climate neutral technologies have to be developed and research and innovation have to be fostered with a special emphasis.

The so-called "energy turnabout" will be an important impulse to drive forward development, cooperation and global negotiations on environmental protection. Also, if the measures are implemented with care and foresightedness, the commission shares the view that higher pollution will not be an issue.

To some inquirers, Germany's decision seemed hasty and driven by affect, so that I was confronted with the question, if the decision was taken too abruptly or only on emotional grounds in the wake of the Fukushima incident?

First of all, it is not the commission who actually took the decision of the nuclear phase-out. The commission can be seen as an independent advisory board to the government, representing different fields of society.

From abroad, the process which was initiated in Germany after the Fukushima incident might look all too hasty, but as a matter of fact, an intensive debate on energy supply and nuclear power had been going on in Germany for a much longer period of time than just this spring.

You may say that the damage in Fukushima moved the discussions to a point when decisions became inevitable.

It raised questions which made it necessary to define a responsible position on the basis of new and fundamental information.

Germany must and wants to arrange its energy supply reliably, ecologically friendly and competitively priced – so that energy also ensures future prosperity. Despite these preliminary conditions, the Ethics Commission indeed worked under considerable time pressure.

The pressure set upon all players through the time frame until 2022 can even be viewed as useful in its effect on industry and development.

Will the government have to offer incentives so that energy-intensive industries do not relocate their production to neighboring countries where energy costs are cheaper?

For the more operative aspects of the realization the Ethics Commission has formulated some basic principles:

The nuclear withdrawal process must start with a fundamental decision. It then requires continual further decisions over the following years, which depend on the state of the withdrawal that has been reached.

The withdrawal concerns economic and social development prospects as well as matters of fundamental principles regarding securing prosperity in a world where issues of resources are becoming more and more important.

This large-scale collective project also implies important developments for Germany as a business location.

The Ethics Commission has come to the conclusion that a safe energy supply can be achieved which provides more jobs in business and manual trade without compromising environmental protection, whilst also avoiding a power shortage and having to import nuclear power.

In the course of the energy transition, countless new businesses will be established and existing operations will extend their capacity and create new jobs.

The electricity grids and their expansion are an important criterion for the collective project.

It is vital that the consensus reached is structured in the long run so that long-term reliable basic conditions can develop for planning the investment of citizens and business. This will prove itself to be a major competitive advantage in the global markets.

The withdrawal will succeed to a greater extent if it becomes a departure and advancement and if the collective project on "Germany's Energy Future" is supported across all political parties.

Replacing the power generated from nuclear energy requires great expenditure in terms of financial resources and investment.

The energy transition will contribute to the increase in prices for energy and CO₂ emissions certificates. Although experts are in agreement with this statement, they do not agree on the extent of the price rises.

For this reason, the monitoring process should dedicate particular attention to price trends and their impact in terms of costs in order to prompt adjustments.

The withdrawal from nuclear energy can be a driver for growth, as the investment in energy supply and its infrastructure stimulate economic growth. These costs are accompanied with revenues.

In the same way, public funds – public provision and financing of market incentives – could have a huge productive impact on the markets, for jobs and for innovation.

Commercial investments, too, play a significant role. New financing mechanisms come into consideration in this regard. In particular, these could include new funding solutions and the provision of financial products for investment in sustainable business.

Was the handling of the abandoned nuclear power-plants an issue included in the discussions of the Ethics commission?

I have mentioned before that it was not the field of duty to address concrete tasks of the implementation of the nuclear phase-out.

Our mission was to illuminate the many aspects which come into consideration and are brought up by different groups and representatives of society. Nonetheless, there is one chapter in our recommendations dedicated to issues such as the final disposal of nuclear waste and safety of nuclear plants on an international scale.

Concerning the first point, we showed that the problem of final disposal for nuclear waste must be solved – and it must be solved sincerely and definitively. The prospect of having to secure highly radioactive waste for several millennia is a heavy burden for future generations to bear.

Problems such as proliferation due to criminal or terrorist access, and due to abuse, as well as unforeseen natural events pose additional risks.

For this reason, even the slightest possibility for reducing the potential risk for the present and the future must be pursued and these options are to be sustained for future generations.

Admittedly, it is currently not possible on an industrial scale to render highly radioactive waste harmless or to significantly reduce the time required for highly secure storage.

Therefore, large-scale optimism for reducing the quantity of nuclear waste using new technologies and shortening the time for secure final disposal has yet to be seen. **Further success in basic research is still required in this regard.**

The Ethics Commission therefore recommends storing the radioactive waste in a retrievable manner whilst adhering to the strictest safety requirements. This will extend the search area for final disposal sites for radioactive waste in Germany.

However, the disposal of nuclear waste that was produced in Germany must remain beyond dispute.

The commission agreed that the second subject, safety of nuclear power plants, is relevant in Germany as well as on a European and international level.

In order to keep its role as a high-tech country within European and international contexts, Germany does well to retain influence in the future international debate regarding the definition of safety standards and risk assessments of nuclear power plants.

The commission sees clearly the danger of detachment. Its recommendations are neither designed to isolate Germany from its international situation nor to allow or even invite external control. It is time that the national policies on nuclear safety are harmonized at a European and international level – even more so after the disaster in Fukushima.

Nonetheless, there are aspects which have remained open so far and problems yet to be solved, such as energy efficiency in private households, the institutional responsibility and integration on political level as well as a continual monitoring and the administration of the phase-out.

For now, I thank you for your attention and your interest and I am now looking forward to our debate and your questions and remarks.