

KURT-DIETER GRILL

REPORT

ROUND TABLE OF THE

**FOUNDATION ENERGY & CLIMATE PROTECTION  
BADEN-WÜRTTEMBERG**

TOPIC:

**”NUCLEAR WASTE STORAGE / ACCEPTANCE”**

April 20<sup>th</sup>, 2011 in Brussels

Representation of the Federal State BADEN-WÜRTTEMBERG

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Parliament**

## **PREFACE:**

On April 20<sup>th</sup>, 2011 the Foundation Energy & Climate Protection Baden-Württemberg organized a round table in Brussels on the topic of "Nuclear Waste Storage/ Acceptance." Representatives from member states of the European Union where nuclear power plants are currently operating or planned took part in the discussion, as well as members of advisory bodies for governments, but also representatives of organizations, agencies, committees and companies that deal with the disposal of radioactive waste. Therefore, the participants were recognized experts on the subject of permanent disposal sites for radioactive waste from a total of 13 states. The goal of the meeting was to create a platform in order to be able to exchange opinions and experiences from different countries.

The round table took on a topic in Europe of which no publicly available outline exists yet. The discussions in many European civil societies on the use of nuclear energy and its permanent waste disposal take place on a national level. An entirely European debate does not exist.

On November 3<sup>rd</sup>, 2010 the Commission presented a draft for a guideline on the disposal of spent fuel and radioactive waste. This guideline demands national plans until 2015. Having this in mind, the round table made it possible to exchange experiences on how the member states manage the disposal of radioactive waste from civil nuclear energy.

The round table could be a starting point or impulse to get a European debate going. The dialog gives key leaders in politics, science, administration and of companies the opportunity to exchange experiences, which is especially important for a much-needed strategy on how to deal with and best implement the disposal of radioactive waste.

The technical and scientific requirements alone do not decide on the feasibility. Between embracing the plan which only a fraction of those affected are able to grasp on a technical level and its mere tolerance lays the acceptance of the plan. This acceptance is just as important as its technical basis in order for the plan to be successful. Acceptance means to gain and eventually win the confidence of the people with patience, knowledge and sensibility.

## **Introduction**

The question of acceptance is the most important factor to contemplate. Acceptance is based on a voluntary nature, on the subjective understanding or even on the now in France sought "appropriation", more precisely the "self-appropriation", of an existing problem. At the same time, in some European civil societies the attitude persists to prevent emerging risks or the implementation of new and large infrastructure projects through civil blockades. This attitude not only affects the search for permanent disposal sites for radioactive waste. However, the case in Germany at the Gorleben disposal site is the most prominent example of this attitude.

## **Ideas of the European Commission on how to deal with radioactive waste**

The EU-Directive has the objective to demand national disposal plans from the member states, which demonstrate how waste is dealt with – starting from its origin up to its disposal at a high level of safety. This includes not only the safe disposal of radioactive waste from nuclear power plants, but also the disposal of radioactive materials from research and medical use.

Each country must find its own solution for the disposal; nevertheless, a cooperation between member states is also possible. However, the majority of the member states view this option with skepticism. Even in countries where people have a positive or neutral opinion on the establishment of permanent disposal sites, the view that these sites should only be for that country's "own" waste, meaning waste generated in that country, predominates. According to most experts, the inclusion of "foreign" waste will lead to a significant deterioration of the acceptance in the respective European civil societies. A search and planning for "the one and best" location in Europe will therefore not take place as such.

## **Representation of the individual States**

### **Sweden**

Through a referendum in 1980, it was decided in Sweden to abandon nuclear energy. This resolution was however taken back in 2009. At the moment, ten out of twelve nuclear power plants are operating. The incidents of Fukushima have no influence on the acceptance of disposal facilities or nuclear energy in general.

The company Swedish Nuclear Fuel and Waste Management Company (SKB) is responsible for the management, planning and implementation. Low- and intermediate-level radioactive waste is stored at a plant in Forsmark, spent fuel in an interim storage in Oskarshamn. The construction of a conditioning plant and final disposal site at a depth of 500 m in granite is planned.

After a long selection process SKB decided on the location Forsmark. Construction is expected to start in 2015, and the disposal site should be running by 2025.

For Sweden, the following aspects on the course of planning, the participation of the citizens in the process and their acceptance should be underlined:

1. From the beginning, no individual sites were discussed, but rather the suitability of several sites was examined in parallel.
2. One site of two possible candidates was selected. The disposal sites are also locations of nuclear power plants, where already a level of acceptance exists, a side effect from the benefits from the operating power plants (e.g. jobs, tax revenue).
3. Initially, a feasibility study was planned in two years, the actual result coming in after eight years.
4. Target group orientated communication: In order to be able to respond to the information needs and questions of the local population, typical profiles of possibly affected people (e.g. young mothers, older residents without any technical knowledge) were identified. This allowed the issue of the disposal site to be discussed objectively, without splitting the society into just supporters and opponents. Although this was very time-consuming, it was absolutely necessary in order to achieve the acceptance.

## **Finland**

Much as in Sweden, nuclear energy is accepted by the population in Finland. Currently there are four units operating, one is under construction and plans for further two new units are intended by Parliament. The disposal issue of treating waste abroad has been replaced by the mutual agreement of finding a national solution. The company Posiva Oy is responsible for the construction and operating of disposal sites. This consensus still continues even after Fukushima. Furthermore, the construction of two more nuclear power plants is in planning, for which a site selection process has also taken place.

A disposal in granite is being sought for the definitive waste disposal, which should be available by 2020. With granite, Finland has the natural geological conditions for waste disposal sites. In the communication it is emphasized that the present generation has the responsibility for the final and permanent disposal. The region, which enjoys the advantages of operating power plants (tax inflow, infrastructure, jobs), also has to take responsibility for the waste.

## **Switzerland**

In Switzerland, the policy did not fundamentally change after the events in Fukushima. The operators of the five nuclear power plants together with the Swiss Confederation have established the National Cooperative for the Disposal of Radioactive Waste (NAGRA). This cooperative is responsible for submitting proposals for locations for the disposal sites, examining these sites and preparing the construction and the operation of the facilities. For years, an intensive search for a location for the disposal site has been going on. Through experiments in the rock laboratories Grimsel and Mont Terri, the properties of granite and opalinus clay are being investigated. One criterion for the selection of the disposal site is, among others aspects, the retrievability of waste. So far, six locations are on the shortlist.

The approach on how to search for a suitable location for the disposal site is managed through the so-called sectorized plan procedure. In this procedure, the steps to be followed are set out in a transparent way. Characteristically for the procedure in Switzerland is a legitimacy based on democracy, meaning that each step is carried out with the participation of the Federal Council (government), the Parliament and the people (referendum). In order for a location not to be only chosen because of where the population offers the least resistance, the fact-based security issue is particularly important. This is why - in addition to research and exploration - an intensive communication takes place with the population of Switzerland and its neighboring countries. This is how a full acceptance, and not just a mere tolerance, can be achieved in the population. A decisive factor is also that Switzerland only disposes of national waste.

## **France**

In France it is not about mere tolerance or compliance, but about the new concept of "appropriation", meaning making an idea mentally your own. Nuclear energy is not questioned, but people are rather asked to take responsibility. Reasons for this are certainly the benefits from the strong use of nuclear energy (low energy prices, independency of imports, CO<sub>2</sub> free power generation). The 59 operating nuclear reactors supply 80% of the electricity in France. The EPR, a new reactor type, is being built in France.

Disposal: With the reprocessing, France has a unique feature in the EU next to England. In addition to the reprocessing plant at La Hague, more intermediate storage facilities are available. For the deposit site, the public organization ANDRA (Agence nationale pour la gestion des déchets radioactifs) is searching for a location in clay soil near the border where following three countries meet: France, Switzerland and Germany. In a survey of 39 municipalities, 30 spoke in favor of basically accepting a disposal site. However, there is consensus only to accept "French waste". However, the population has lost trust in the authorities in this matter. The

residents demand a disclosure of the criteria and test results to understand the selection of the host city.

## **Netherlands**

Currently, there is a nuclear power plant operating in Borssele. After Fukushima, no significant mood change can be noticed in the population, and the construction of a second block on the same site is being pursued. Nevertheless, in this case politics has to increase the acceptance as well.

As the disposal technology (safety-technological and geological conditions) is only understandable for few people, affected residents ask for countervailing measures. In addition, time is being invested and innovative strategies are being analyzed in order to gain the trust of the population. The central organization for radioactive waste COVRA was able to show their storage site in Habog in a positive light by organizing a paint art competition on its own walls. Meanwhile, several deposits are shared as a storage room for art works. As a result, the population identifies itself with the storage facilities.

## **Czech Republic**

In the Czech Republic, there are six nuclear power plants operating at the moment. An extension for another two blocks is planned in Temelin. 65% of the population voted for the civilian use of nuclear energy. The high acceptance in the population is supported by the fact that no other energy source covers the energy supply as securely as nuclear energy, since the government estimates that the brown coal will be used up as the current primary source of energy within 20 years. The transport networks are also being utilized up to their capacity.

The public RAWRA/ SURAO (Radioactive Waste Repository Authority) has identified six potential locations for a deposit site. In the selection of locations, communities are granted a financial support by the state and the operators. Deadline for the establishment of the deposit site is the year 2065.

## **Lithuania**

Lithuania's Ignalina nuclear power plant was taken from the net in the wake of its EU membership. Currently, a new building for Visaginas is being planned in cooperation with neighboring countries. In Lithuania, nuclear energy is still seen positively in order to secure the energy supply.

For the disposal site, a location near the border with Belarus is planned. At the same time, Belarus and Russia are both planning to build new nuclear power plants close to the border with Lithuania.

## **Hungary**

In Hungary, four nuclear reactors are operating. Nuclear energy has always formed a part of the national identity because of Hungarian nuclear physicist Edward Teller. In the politically strongly divided country, consensus exists on the use of nuclear energy (72% in favor), i.e. the population relies on nuclear technology rather than on political leadership.

Research has to be made on a potential deposit site. The site should be functioning by the year 2064.

## **Spain**

Overall, the population stands in opposition to coal rather than nuclear energy. It is however expected that the incidents in Fukushima will initiate a change in strategy. Currently, eight nuclear power plants are operating.

With the disposal of radioactive waste generated in Spain, the state company ENRESA is in charge. But the current government is handling the problem in a dilatory way. Radioactive waste will be stored above ground until a decision on the disposal site is made - the search for a central interim storage facility is underway.

## **Italy**

Since the referendum in 1987, Italy has been importing a 70% of its electricity, mainly from France. Since 2009, the government has therefore been planning its return to nuclear energy. In 2013, the first European pressurized water reactor was to be connected to the net. In response to the events of Fukushima, however, the plans for the construction of two power plants were currently stopped by the government. The planned referendum on June 12 on this matter will not take place.

Original intentions to build a disposal site in Sicily have been abandoned, further concrete plans are not apparent.

## **Germany**

Of the 17 German nuclear power plants, eight of them are not operating at the moment, following the moratorium of the government. After Fukushima, Germany is now seeking the quickest way out of nuclear energy.

Since the late 60's, the plans for interim and final storage sites have been going on. As of 1979, exploring the Gorleben salt dome as a central interim storage facility for spent nuclear fuel started. Despite of a policy of dialogue, the decision for this location was accompanied from the beginning by violent political conflicts and was decisive for the founding of the Green Party. For non heat-generating waste disposal, the shaft "Konrad" (Salzgitter) is in construction.

The search for possible sites for the disposal of radioactive waste is to be extended to a national level. The German Society for Construction and Operation of Waste Disposal Sites (Deutsche Gesellschaft zum Bau und Betrieb von Endlagern für Abfallstoffe mbH, DBE) is in charge for the planning and construction of federal facilities for the disposal. Responsible, however, is the Federal Office for Radiation Protection (Bundesamt für Strahlenschutz, BfS).

The question of whether spent fuel elements are actually waste or can be considered as raw material, is not an issue currently discussed in Germany. Priority is the fact level, on which the conditions for a final disposal site must be made and standardized. By 2050, the power supply should be changed to 100% renewable energy. So far, the issue of a final disposal site has been exploited against the operating of nuclear power plants. Therefore, a dialogue for a national solution is urgently required in Germany.

## **Bulgaria**

In Bulgaria, two nuclear power plants are operating.

The population has a positive opinion on the use of nuclear energy. Until now, the reprocessing of spent fuel is done in Russia. The fuel elements are not considered as waste but as raw material. The sites for interim storage receive financial support.



## **SUMMARY:**

The event clearly showed the need for a European debate and an international exchange of experiences.

The very different views of the role of nuclear energy after the events in Fukushima are impressive. They range from the ongoing construction (Finland, Netherlands, etc.) to a total withdrawal from nuclear energy (Germany). Significant discussions on the cross-border impact on European neighbors will take place; especially problems related to networks and storage are still to be solved. Due to the different stages in planning, significant delays in implementing the EU Directive can be expected.

The different geological conditions result in solutions for some member states which are rejected in other countries, giving priority to the technical conditions. Under the condition of the suitability in terms of safety, the site selection has led to two approaches: disposal sites are being installed where benefits from already operating nuclear power plants incur. Other locations receive financial or non materialistic support either from the power plant operator and/or the State.

In the planning process, a participation of neighboring countries should be self-evident, taking the Baltic Sea Cooperation Agreement as an example, in particular at locations near international borders. The processes must be transparent and responsive to the concerns of the population. This is much more the case as the necessary technical expertise cannot be assumed. The objective must be to build trust and acceptance and not just a mere tolerance of the unavoidable.

A rational debate on the issue of final nuclear waste disposal and with it on nuclear energy cannot be successful if it is separated from the feelings and concerns of the people. The contributions of the participants demonstrated insistently how the mentalities in the member states shape the style of the discussion. Without any doubt, different economic and social starting positions play a role in this discussion as well. But there was also a different "profile of fear" observed in the population of the countries. An analysis in this area would be very interesting. Continuing the exchange of experiences between the member states can only be to the benefit for all participating countries.