

From: ziggy kleinau <email address removed>
Sent: February 28, 2013 11:26 AM
To: DGR Review / Examen DFGP [CEAA]
Cc: Tony Barton
Subject: IR to the Joint Review Panel

Dear Debra,
attaching a Discussion Paper on an aproach to developing a nuclear waste disposal site
obtained through cooperation with the office of <personal information removed>, The Greens Faction of
the European Parliament.
I thought it might be of interest to the JRP.
Thank you very much for bringing it to their attention,
sincerely,
Siegfried (Ziggy) Kleinau.

With the support of the Greens/EFA Group in the European Parliament



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im Europäischen Parlament

Discussion Paper

Requirements for a selection process for permanent disposal sites for heat-generating radioactive waste

Detlef Appel and Juergen Kreusch

28th August 2012

Disclaimer:

The following text corresponds to a discussion paper originally written in German, before being translated into English. For exact definitions and technical terms, please refer to the German original text.

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For a successful new beginning in the search for permanent disposal sites: getting negotiations back on track!

Foreword by <name removed>

Fukushima and the change of government in Stuttgart have brought new impetus to the dispute over energy policy in Germany. In line with the recommendations of the Toepfer Commission to re-assess the risks of nuclear energy about half of the nuclear power stations have been removed from the network. The rest should follow by 2023 at the latest. This decision was supported by an overwhelming majority of the representatives of the Bundestag [**German Parliament's Lower House**]. What a majority agreement on further action on nuclear waste storage can look like is unclear after over a year of negotiations between the Bundesrat [**German Parliament's Upper House**], the Environment Minister and also factions of the Bundestag. Publicly verifiable points of contention, which so far seem to speak against an agreement, are the handling of the Gorleben site and the distribution of decision-making and procedural powers in a process of searching for permanent disposal sites within the framework of politics and professional institutions.

It is no secret that I believe the Gorleben salt dome to be unsuitable as a permanent disposal site. Nevertheless, like other opponents of Gorleben, I am looking for a fresh start in the search for a suitable permanent disposal site. I have long supported a social and political agreement on further steps to permanent disposal and the development of a good process. However, I have serious doubts as to whether the negotiations so far for legislation covering the search for a permanent disposal site can lead to a good and practicable medium-term process. I have asked two geologists from Hanover, Detlef Appel and Juergen Kreuzsch, to explain once again in a way that is comprehensible how a promising selection process for a permanent disposal site for nuclear waste could and should proceed. The two experts have been working for decades on Gorleben but also on the deep disposal of nuclear waste and chemical waste. They were members of the permanent disposal site search working group and are held in high regard for their expertise and commitment far beyond Germany's borders by colleagues, politicians and non-governmental organisations.

With the publication of the discussion paper, we would like to explain why we believe that the political process for a fresh start in the search for permanent disposal sites must be put back on track. Despite all the challenges and also my criticism of the previous legislative wording I see progress in that the unresolved question of nuclear waste has resurfaced as an issue within German politics. So that

the renewed interest can evolve into a convincing new beginning, other priorities must be set and there must be more transparency and participation.

Care Before Haste

Measured by the scope of the task and the long-term nature of the search process, for which permanent foundations must now be laid, and which will last for decades, the negotiation process is under pressure of a false deadline. The proceedings have been dominated by an attempt to get the political actors to reach a compromise. The absolute necessity of getting the public on board for a fresh start is subordinated. Measured by the prospect that a permanent disposal will not and cannot go into operation before 2060 to 2080, the previous political romp seems a little unconvincing. The search for a suitable permanent disposal site takes more than three decades and will, after all, from what we can say today, last just as long.

Knowledge of the long-term nature must not lead to procrastination of the new beginning. However, improper haste and the postponement of answers to basic questions will again only ensure significant disputes later on in the process. Delays or even the breakdown of the process are inevitable if unity is superficial or merely political. Reliance on the process can only exist if the political compromises are not questioned again during the next (regional) election.

Getting Back on Track

The seriousness of a socio-political agreement on the framework conditions for the search for a permanent disposal site should start with the answer to the question of what was actually wrong with the decision to store nuclear waste in the Asse storage site or to develop Gorleben as a permanent disposal site without comparing it to other sites, since whoever deals either with the disaster in the Asse storage site or with the defects of the Gorleben salt dome puts in doubt any serious resolve to make a fresh start. Only a joint analysis of errors and weaknesses in the current approach and breakdown can lend credibility to the new beginning.

The issue of which technical concept of nuclear waste disposal is to be achieved in Germany should also be made understandable and comprehensible to the public. This includes the issue of deep geological storage as well as the issue of the retrievability of waste. If the search for suitable geology begins, then the potential search areas, which exist in regions with 'potentially suitable' deposits of granite, clay or salt, should come as no surprise to all those in Germany. The search regions should not be hidden in the appointment of a new beginning. Before the process for the search for a permanent disposal site begins, the approach and the regions and sites in which the search will occur

must be as far as possible free from dispute not only in political circles but also within society. It is an indication of the weaknesses inherent in the previous approach that always includes only Gorleben and not all the other sites which must be examined in the search, selection and comparison.

The discussion paper by Detlef Appel and Juergen Kreuzsch should breathe new life into the debate on the appropriate procedures not only in Germany. In several European countries public action groups and politicians discuss social responsibility in view of the unresolved issue of permanent disposal. After decades of dealing with the question of where to dispose of nuclear waste, I am convinced that good, responsible solutions can be found only in a process in which safety is paramount but in which democracy and co-determination are prerequisites.

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Essential Requirements for a Selection Process for Permanent Disposal Sites for Heat-Generating Radioactive Waste

Abstract

- Site selection for a permanent disposal site is an ongoing process over a long period (several parliamentary terms). Consequently, a need for a viable and sustainable **social agreement** on the selection process evolves to make it 'less prone to disputes'. The selection process must be institutionally secured over the long term, while simultaneously having the necessary flexibility. This understanding must be at the forefront of the selection process. Framework conditions must be created which ensure their existence for the entire duration of the proceedings.
- The **framework conditions** relate to the manner of dealing with the waste (e.g. permanent disposal with retrievability of waste), the embedding of the development and implementation of the selection process in a comprehensive political and social discussion focusing on objectives and design of the process and its political and legal establishment as well as maintenance of the social awareness of the problem to be solved.
- Important **requirements** for the selection process relate to the mandatory participation of the public, the allocation of the roles of the participants and objectives, structure and instruments of the process and its independent monitoring.
- The framework conditions and requirements are to be stipulated in a **social participation process**.
- The **selection process** for identification of the best possible site must adhere to the objectives of safety, participation and fairness. Safety-oriented action, extensive involvement with a balancing of interests and values, as well as the compensation for pollution for the regions concerned are therefore necessary at all stages of the process.
- The criteria-driven **scientific and technical part of the selection process** must correspond to the state of the art of science and technology throughout the entire duration of the proceedings. For the state of the art the relevant individual requirements are to a large extent available.
- **Care** must take precedence **over haste** in the social agreement of the framework conditions and in the definition and implementation of the selection process; since it is not about deciding on a permanent disposal site as quickly as possible, but about selecting the 'best' site therefore with care and by mutual agreement as far as possible.

Introductory Remark and Definition of Tasks

The content-related and structural design of a selection process for permanent disposal sites is independent of any kind of legislation. The mandatory procedural requirements arise rather from the social, scientific and technical conditions for such a process that are required today.

The legal framework of a selection process benefits, however, if it is based on as comprehensive as possible a social and political consensus on the objectives of the process, the requirements to be complied with and the approach and rules of procedure. The site selection, construction and operation of a permanent disposal site encompass a period that is longer than the lifetime so far of the Federal Republic of Germany. Such a long-term project should therefore be 'free from disputes' – as far as possible – over the course of parliamentary terms.

A legal stipulation on the conditions and the framework for a selection process can contribute to this. The content of a law on site selection, however, should be limited to the essential requirements of a process and its structure, as well as to aspects of the process and decision-making responsibilities. Technical safety and other specialist details should be laid down in non-legally binding regulatory guidance: since they may be subject to change due to ongoing knowledge increase on the basis of experience and advances in science and technology, they must be adaptable and regulated in a correspondingly flexible manner.

Against the background outlined, the following important boundary conditions, the basic objectives and requirements of a selection process that is 'good' in accordance with the state of the art of science and technology are identified and briefly explained. It will thus be defined what such a selection process should accomplish and, regardless of which of them, which regulations in detail should be set forth in a law on selection.

Framework Conditions

The development, definition and implementation of a selection process for permanent disposal sites is carried out within framework conditions from which delays or even hazards to the successful implementation of the process may arise. Appropriate measures must be set up to ensure that such developments are avoided. Three of these framework conditions are discussed below:

- **Development and implementation of a site selection process** forms a decision-making process which is **part of a longer chain of decisions**: the decisions that influence or can influence important safety-related and social aspects to be considered in the development and implementation of the selection process are to be made prior to the development of the selection process. In

particular, the decision as to which option (e.g. permanent disposal or long-term interim storage) or which version of the selected disposal strategy (e.g. permanent disposal with or without a waste retrievability phase) should be pursued is therefore to be made by mutual agreement as far as possible after balancing safety-related, political and social **discussion of the advantages and disadvantages of the various disposal options**. This discussion has not yet been held in Germany or has not been engaged in on a broad social basis. With regard to the general objectives and important procedural requirements the comments made on the site selection in the subsequent chapters apply figuratively to this discourse and step of the decision-making process. In the subsequent steps of the decision-making process it must be shown that the determinants for the initial concept decision continue to endure.

The experiences in Germany and in other countries prove that this prior discussion and decision-making process is necessary for the successful development and implementation of a site selection process. Accordingly, without detailed comparative examination and determination of the options mentioned, there is a danger that in the course of the process for procedurally tactical reasons the demand for implementation of another option different to those selected will arise.

- According to the proposal of the AkEnd¹⁾ [**permanent disposal site selection process working group**] the subsequent **development and implementation of the selection process** should also be accompanied by a **comprehensive political and social discussion**. It should therefore be ensured that not only does the actual search for appropriate sites expire according to **democratic principles in a participatory process**, but already the stipulation of the selection process, including its objectives (at the latest in this context the issue of retrievability would be clarified) as well as criteria. This discussion is a necessary condition for the **legitimacy of the selection process** and its social acceptability; because if one expects from the public a process defined without co-determination and the possibility of influence in a small circle, future conflicts are inevitable.

For this **development and implementation of the selection process** the following **three-stage approach** comes into question according to the AkEnd: (I) development of a draft process with the participation of the public, (II) social discussion of the proposal with the possibility of change and (III) implementation of the process. The political and legal establishment of the selection process would then be dealt with at the end of stage (II).

- Due to the long **duration of planning and implementation of disposal programmes** for radioactive waste (or individual steps thereof) and due to their potential for social conflict, they are sus-

¹ http://www.bfs.de/endlager/faq/langfassung_abschlussbericht_akend.pdf

ceptible to inherent uncertainties and influence from outside. This also applies to the selection process for permanent disposal sites, for which many parliamentary terms should be reckoned from the development of the process up to the decision regarding the site: even in the case of an optimistic estimate at least 30 years elapse before the commissioning of a permanent disposal site, with at least a further 50 years until the closure of the permanent disposal site – in total, much longer than the lifetime so far of the Federal Republic of Germany. It is a social and political challenge to ensure that the objectives and rules of procedure mutually agreed according to comprehensive social discourse are also understood, accepted and continue to be pursued in the following decades by other participants in the process and by society as a whole. In addition, the selection process must on the one hand exhibit straightforwardness, but on the other hand also allow technical safety and social experiences and developments to be taken into account.

A responsible institution (or a panel) is necessary, which upholds the **consciousness for the problems to be solved** and the process agreed for these and ensures that the social intentions and process objectives, to which it has agreed at the beginning, are pursued over the long term. It must also monitor the regular progress of the process and ensure that the ideals and interests of subsequent generations are considered generally in the way agreed upon initially.

Overarching Objectives of the Selection Process

The **overarching objective of a site selection process** is to identify the site within a search area from an initially unknown number of potential sites that proves to be the site that is **'best, relatively speaking' or the 'best possible'** after weighing up all aspects relevant to the selection. Site selection therefore entails a classic decision-making problem that must be administered in the decision-theoretical context of a rational and comprehensible solution.

The overarching objective – the site that is the 'best possible' or 'best, relatively speaking' includes the following three main objectives:

- **Safety**
- **Participation** in the sense of democratic participation in the decision-making process
- **Equitability** (Fairness/balancing of interests)

Under **safety** is understood essentially the safety of people and the environment from the effects of 'radioactivity' during the operational and long post-operational phase of the permanent disposal site. This objective, in particular the long-term safety, is of the utmost importance. Appropriate normative protection objectives and safety principles are formulated. In addition, the requirements for groundwater protection must be observed.

In recent years the demand for more extensive **participation** by the public in the selection process has gradually intensified (and this has also been observed in the current site selection process). All previous attempts (even in other countries) to push through a permanent disposal site for heat-generating or highly radioactive waste contrary to the will of the people have failed in their resistance. Positive results stand out only in places (e.g. Sweden, Finland) where the population is comprehensively involved and has an influence on the process and also its result in the case of a site search.

The objective of **equitability** means in the overarching sense that the selection of site regions or sites in a procedural step for the transfer to the next step must inevitably come under the aspect of safety. Furthermore, affected site regions, but especially the region in which the permanent disposal site is to be built, must receive compensation for helping solve a problem affecting all of society within their region and also for the existing or potentially associated disadvantages. These disadvantages are to be recognised and compensated (e.g. through regional support measures).

The **key terms responsibility, credibility and trust** are connected with all three objectives. Only if they are taken seriously by all those involved does the possibility exist of the lengthy scientific and social process of site selection leading to a positive result. This does not mean that no resistance is to be expected at sites. But the company may counter this resistance by exercising the three aforementioned objectives and key terms with high 'legitimacy' and push through decisions.

Necessary Requirements to Achieve the Objectives

The route to achieving the objectives mentioned in Chapter 3 includes fulfilment of the requirements described briefly hereafter, without compliance of which a selection process does not correspond to the current state of the art of science and technology. The following groups of requirements exist:

- **Safety-related requirements**
- **Social changes**
- **Procedural requirements**

The individual requirements belonging to the **safety-related requirements** are partly also methodological in nature. In essence, these requirements are aimed at the long-term safety of a planned permanent disposal site. This means that in addition to technical and scientific aspects mandatory social requirements also have to be considered (keywords, e.g. generational equity, retrievability). The following are the minimum required:

- **Safety-oriented actions:** in all decision-making steps of a selection process, notably in site selection and exploration, (long-term) safety plays the preeminent role. All aspects relevant to safety must be identified and inevitable uncertainties are to be evaluated in terms of their effects.
- **No decision without weighing-up:** the safety-related advantages and disadvantages of alternatives (permanent disposal systems in various host rock types or in different locations) are to be compared and weighed. The weighing-up process must optimise the issue.
- **Monitoring of safety-oriented decisions:** any decision related to safety must be implemented only if the underlying information and merits of the decision have been reviewed and accepted by an independent scientific panel. The prerogative of interpretation of individual institutions concerning scientific findings must be prevented.

It is a prerequisite of the fulfilment of the following **social requirements** that interested and relevant citizens are adequately involved in the decision-making which makes the process as equitable as possible or fair (and is also recognised in this sense):

- **Comprehensive participation process:** the people must be involved in the process, starting with determining the disposal option to be pursued. In addition, various **participation models** are available. Appropriate participation can be seen in the fact that evaluations or demands of the people can have an impact on the process and ultimately also on the selection result (maxim: whoever says 'Yes' to an unwanted plant must also be allowed to say 'No'). The permanent dis-

posal site selection process working group (AkEnd) has coined the term 'willingness to participate'. This means the willingness of a community and its citizens to agree to the exploration of a site. Prerequisites for adequate participation are comprehensive information on all operations or exploratory findings, transparency of the process (understanding of key decisions and processes) as well as the right to submit complaints with regard to decisions that then need to be addressed. The citizens require expert advice for the confrontation with decision proposals and the formulation of complaints, for which sufficient resources must be provided. Adequate participation also assumes that the pending decisions are actually still open. Participation processes which do not take into consideration these requirements must be viewed as 'simulated participation' and serve only for the gaining of acceptance.

- **Fair balancing of interests and values:** participation procedures disclose inevitable conflicts of interest or values that are to be solved as far as possible by balancing the different interests and values.
- **Compensation of pollution:** selected site regions, especially affected communities or individuals, are entitled to recognition of the associated pollution and compensation for their disadvantage (e.g. in the form of special regional funding) in return for the establishment of a permanent disposal site.
- **Equal treatment:** there must be no preliminary determinations (related to geography, host rock, etc.). Exceptions to this requirement are allowed only on the condition that all participants are in agreement.

Those requirements that are directly related to the selection process or its methodology are understood to fall under the **procedural requirements**. Procedural requirements also have a partial effect on the safety-related and social requirement areas. Since in individual cases a precise separation of requirements is difficult or impossible, (e.g. methodological requirements), they are treated together here. Important procedural requirements are:

- **The selection process must correspond to the state of the art in science and technology:** the scientific process for the selection of sites up until the final site (selection process in the strict sense) must feature the following characteristics:
 - **The objectives of the process are to be determined exactly in advance:** this is necessary so that the overall objective (site that is 'best, relatively speaking' or 'best possible') and other associated objectives in the course of the process are not seen differently or even 'reinterpreted' by various participants.

- **The procedural rules and criteria are stipulated before the start of the implementation of the selection process:** the rules and criteria stipulated as far as possible by mutual agreement should only be changed in exceptional cases and with agreement.
- **No prior determination in terms of host rock and geography:** all eligible host rocks are to be taken into consideration, and are to come from a 'white map of Germany'.
- **The process must be divided into individual steps:** the necessary limitation of a white map of Germany over areas of site regions to sites must proceed in steps. As a result, the process shall become more 'manageable' and comprehensible. Important 'milestones' for fundamental decisions must be defined in advance.
- **Return to the process must be possible:** if the process reaches a 'dead end', a return to a previous step must be possible. Only in this way can a failure of the process be prevented. This requirement increases the required flexibility of the process.
- **Stipulation of objective-related criteria:** an objective and agreeable diagnostic evaluation is not possible without objective-related and appropriately defined criteria. The criteria are to be divided in terms of function and theme. **Functional** criteria are to be distinguished in terms of exclusion criteria and balancing criteria. **Exclusion criteria** serve the exclusion of unsuitable areas or regions and are to be observed throughout the entire process ('exclusion criteria in the narrow sense', 'minimum requirements') or in certain procedural steps (site-specific test criteria). **Balancing criteria** serve to fulfil the balancing request, i.e. balancing assessment of the advantages and disadvantages of the alternatives under consideration, the early reconciliation of interests, the required fairness and the minimisation of conflict. **Thematic criteria** are to be distinguished by geoscientific, scientific planning, socio-economic and sociological criteria.
- **Information need:** the implementation of the process and evaluation steps assumes the backing of a specific information need. The need for qualitative and quantitative information respectively is therefore to be specified no later than before implementation of a selection step and also to back it in the case of implementation. It is to ensure that information of equal validity is available to answer the pending questions concerning all sites in the process.
- **Dealing with investigation findings:** inspection findings that lead to a controversial technical interpretation are basically to be clarified through objective-oriented additional investigations. Information gaps should be filled.

- **Dealing with uncertainties:** the uncertainties occurring during a process step have an impact on the decision-making process and must be taken into consideration. Uncertainties are to be identified at the end of each process step and dealing with them is to be stipulated.
- **Error caveat:** the level of information continues to grow in the course of the selection process. This can result in a decision in an early step of the process subsequently being proved wrong. In this case the decision is to be reconsidered and, if necessary, revised.
- **Care before haste:** selection, construction and operation of a permanent disposal site takes decades. All previous timeframes in Germany and other countries have proved to be a waste of time. It is not about deciding on a permanent disposal site as quickly as possible, but about identifying the best possible site especially with regard to safety and by means of a democratic, participatory and equitable process and based on the state of the art of science and technology. Such an approach takes time.
- **Roles and responsibility:** a prerequisite for the objective-oriented, reliable and continuous implementation of a selection process is the clear definition of the tasks and responsibilities of the competent and involved state and non-governmental institutions. This arrangement must be known to all participants.
- **Independent monitoring:** due to the significance and duration of the selection process, its continuous monitoring is essential. For this purpose a supervisory panel is to be established which monitors the objective-oriented and regular flow of the process with financial and institutional independence. If serious conflicts arise between participants, the supervisory panel may assume a mediating role.