

## Synthesis of recommendations of Group # 4

### Propositions regarding an inclusive/integrated expert system (Topic 2)

(Sufficient) knowledge is a prerequisite to an informed judgement which itself is the basis for a decision. Goal-oriented knowledge (information) reduces decisional uncertainty. Because disposal of radioactive waste is a complex socio-technical problem embedded in a highly politicised debate on energy options, several aspects of knowledge or expertise are pivotal: the type and quality of knowledge, its origin (the sender) and the access to it.

Since expertise by external experts is necessary, the public has to gain trust in the scientific-technical community. The public's judgement base, therefore, does not solely rest on expertise but is also—if not primarily—process-based. Consequently, not only is confidence in technical performance assessments needed but also trust in the persons and institutions in charge and participating in the procedure chosen. In complex technical domains, trust (in experts and their work) is a key notion in the transfer of knowledge. Particularly when dealing with radioactive waste, one cannot rely on known techniques (state of the art and heuristics) but has to compensate ignorance (*i. e.*, the absence of knowledge) by trust in the specialised institutions (regulators, safety authorities, applicants, “independent” scientists). Their relevance is increased in authoritarian procedures (Decide–Announce–Defend, DAD, strategies) where little active public participation exists and the public increasingly seeks trust in diverse information holders (authorities, applicants, experts, “counter experts”, NGOs, *etc.*). The following aspects were judged to be decisive:

Type and quality of expertise: Complex multidisciplinary topics require broad-based approaches to the solving of controversial problems, with interactions on various levels (ethical, societal, technical, *etc.*). The various target groups have to be supplied with appropriate information. Because knowledge does not just exist “objectively” but is interest-bound, expertise independent of the applicant has to be built up in order to attain a pluralistic perspective.

Origin/sender of expertise: Differences in perspective or focus is due to the distinct nature of the various stakeholders. On the one hand the particular knowledge and competence of experts has to be recognised, on the other hand the local and regional population are the most knowledgeable about their local affairs (as if to say “lay people are the experts of everyday life”). Certain national and international NGOs are oriented towards a “global view” and federal stakeholders think “nationally”; however, the citizens in the vicinity of a potential site would normally maintain a local perspective. The “hidden agendas” of some NGOs and experts have to be brought into the open; and in this respect it should be realised that the “(in)-dependence” of experts might be compromised.

General framework: access to knowledge, resources: Decision-makers depend on knowledge from diverse sources to reach an inclusive judgement considering all relevant aspects. Sufficient resources can be crucial. Good practice is found in Sweden where potential siting municipalities may build up expertise or consult experts on their own. Financing is secured through a state-administered fund and following unified rules. How the money is used is left up to the local communities. According to the polluter-pays-principle the fund is accumulated by the waste producers (*i. e.*, the NPP operators). In Belgium the local committees (MONA at Mol and STOLA at Dessel), assisted by a secretariat as well as a technical and a social scientist, are directly reimbursed by the applicant (ONDRAF-NIRAS). In Switzerland the Government of a potential host canton (Nidwalden) appointed a special expert group, KFW, who was solely answerable to the Cantonal Government. The issue of a critical mass of “local expertise” was only touched upon, *i. a.*, in the context of the creation of an “independent” international expert pool.

In response to the issues raised in the Framing Paper the following is postulated:

- An integrated expert system<sup>1</sup> will ensure that sufficient expertise can be accumulated in order to help the local decision-making process.
- Local/regional stakeholders consult, where necessary, experts of their own choice who are paid through an independent fund provisioned according to the polluter-pays-principle. The local stakeholders are also paid for their efforts.
- The system is established and kept functioning by way of a transparent, comprehensible scientific (and societal) discourse and debate, (mutual) minimal trust in the stakeholders, confidence in the pre-defined but consensually modifiable procedure, as well as a common understanding with regard to the political conception (“common ground”: sustainability of waste disposal, passive safety combined with control and retrievability, *etc.*).
- A stepwise and recursive procedure should help ensure the quality of expertise and decisions.
- The fundamental aim in the acquisition of knowledge in this context must be the enhancement and improvement of long-term safety of the disposal system and the reduction of related uncertainties. Everything and every type of knowledge have to be considered against this background and yardstick.

### **Propositions regarding the site selection process (Topic 3)**

- A site-selection process may be based neither on purely technical criteria nor “voluntarism” alone.
- For “voluntarism” to work, a procedure needs to be fair and seen to be fair. It also requires intensive public involvement at the local level. Linear decision-making strategies such as “Decide–Announce–Defend” are unlikely to succeed. The defined criteria and guidelines must allow for flexibility within a procedure. Existing environmental legislation (*e. g.* environmental impact assessment - EIA) provides a framework for assessing all impacts on health and the environment of a particular project as well as the modalities of public involvement and participation.
- A high level of passive safety (both now and in the future) is the overriding requirement of any disposal system. Crucial in fulfilling this requirement are transparency, accountability and traceability of arguments, scientific discourse (see Topic 2), early involvement of the concerned stakeholders, iterative procedure, confidence and trust in the stakeholders. In addition, it is important to define clear criteria beforehand and to stick to them (with regard to definition of safety, ethical basis, *etc.*).
- All relevant interim steps should be made visible and reinforced by decisions taken on the basis of the available knowledge at the time (see Topic 2). Only then is it possible to set up relatively realistic timetables and to stick to them. Even then disposal projects are still uncertain, long-term pilot undertakings.
- Changes of criteria and—more importantly—of the concept have to be substantiated and carried out through consensus (among the main stakeholders). Since failure of the proposal is a possible outcome of the procedure and decisions need a choice of options, alternatives have to be considered as contingencies.
- When assessing site selections made in the past there should be a distinction made between the site-selection methodology, the implementation and result of the process. What is important, after all, is whether long-term safety can be demonstrated at an actual site.
- Site-selection criteria can be formulated in the framework of an integrated expert system mentioned in Topic 2, which is accompanied by a national instead of a local debate. Only then will the actual site selection procedure be appropriately instituted.
- Conventional financial compensation is to be avoided. Factual compensation or regional development planning, however, should be considered.

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<sup>1</sup> Here an “expert system” refers to persons and not technical infrastructure (computers, *etc.*).