Risk Communication - Information and Participation in Legal Decision-Making Regarding Nuclear or other High-Risk Technologies

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Table of Contents

1. Foreword
2. Risk and Risk Governance
3. When and how Risk Communication
4. The Legal Perspective
5. Conclusions
1. **Forward**

Risk communication is the sharing of factual information, hypotheses, interpretations, beliefs and preferences, both scientific and social, on issues of risk management.

Depending on the context it can serve as
- a component of public participation in the process of administrative risk management,
- part of a public discourse on a risk related legislative initiative or
- a tool for public warning or recommendation about how to deal with a specific hazardous event.

The following analysis focusses on the two aspects mentioned first: risk communication as an instrument of legal decision making, that is: administrative and legal risk governance.
2. Risk and Risk Governance

Risk communication today is regarded as a center piece of risk governance, as can be seen by the visual model created by the IRGC (International Risk Governance Council)
2. Risk and Risk Governance

Figure I: IRGC Risk Governance Framework

Management Sphere: Decision on & Implementation of Actions

Pre-Assessment
- Problem Framing
- Early Warning
- Screening
- Determination of Scientific Conventions

Assessment Sphere: Generation of Knowledge

Risk Management
- Implementation
- Decision Making

Communication

Risk Appraisal
- Risk Assessment
- Concern Assessment

Tolerability & Acceptability Judgement
- Risk Evaluation
- Risk Characterisation
In the following risk is understood in a broad sense, covering cases of risk, uncertainty and ignorance in the terminology of decision theory.

In case of regulations based on uncertainty we have to consider two types of risk:
- the uncertainty about harm caused by a specific technology or substance (1st order risk) and
- the uncertainty about harm caused by overregulating or misregulating it (2nd order risk).

Therefore

- Risk prevention is always risk substitution based on risk-risk trade-offs.
- Risk governance is about developing strategies about how to decide which risks and what kind of uncertainty we prefer to accept on the basis of present day knowledge.
- Risk governance is about conscious choices between risks.
2. Risk and Risk Governance

- The Limits of Science
  - Treating an effect as relevant and qualifying it as "adverse" presupposes a volitive decision.
  - To weigh and compare risks is predominantly a matter of social and political judgment.
  - Often even the scientific assessment of the probability of the risk is uncertain, as the contradicting results of scientific risk assessment show in the area of nuclear energy.

- The Rationale of Risk Governance
  - Administrative risk control must neither neglect issues of uncertainty and ignorance, nor prevent a gain of knowledge.
  - It needs explicitly to address the underlying assumptions of the scientific risk evaluation.
  - It needs to establish clarity about the necessity of political – and this means qualitative – risk evaluation and to resume its responsibility for it, instead of resorting to the alleged authority of "sound science".
  - A qualitative risk evaluation is influenced by common sense reasoning, personal experience, social communication and cultural traditions.
  - This value-related element of risk governance calls for the provision of a societal risk dialogue.
3. When and how Risk Communication

The Purpose of Risk Communication

- to make the risk situation and the risk decision transparent to the concerned public, possibly fostering tolerance for conflicting viewpoints and understanding for the need to find compromises (information)
- to enable the concerned public to voice their preferences in relation to a specific risk (participation)
- to enable the authorities to assess the social acceptability of the risk and consider the result in the decision-making process (representation) thus ensuring its quality and
- to enable the concerned public to prepare for and respond to the risk situation and the final risk-decision according to their own risk assessment (empowerment).

If done in an appropriate way, risk communication can, as the IRGC concludes, “have a major impact on how well society is prepared to cope with risk and react to crisis and disaster.”
The Challenges:

- Late and incomplete information,
- A lack of transparency,
- An over- or underestimation of the risks in question caused by distorted risk perception and poor communication skills,
- The divergent goals and motivations of the different stakeholders involved, like media, NGO’s, scientists, industry and public authorities,
- Miscommunication, manipulation and emotional entanglement.

→ The success of risk communication cannot be taken for granted.
3. When and how Risk Communication

Practical Keys

- Risk communication should begin as soon as new technologies or phenomena loom.

- Risk communicators should support adequate media coverage by providing information which is trustworthy, first-hand, brief, and concise, and by offering sufficient scientific background.

- A collaborative formulation of the aspects of the risk which need to be taken into account during the risk assessment is preferable.

- An inclusion of the full spectrum of parties interested in or affected by the decision is obligatory and the main conflicting opinions among the public and stakeholders should be introduced.

- Available scientific data must be delineated. The limits of any scientific statement as well as the dependence of such statements on framing assumptions must be clearly addressed.
Practical Keys

- The competent public authorities should explicitly name the values or conceptions that eventually become the basis of the decision.
- As risks are perceived inter alia according to their familiarity, controllability and voluntariness, efforts to discuss these aspects are as valuable as efforts to reduce the hazard itself.
- At any stage of the discourse, it must be apparent to everybody how far the respective decision is open to revision.
- The public must be made aware that remaining risks due to yet unknown hazards could only be avoided if society were to renounce any and all innovation. Even "unsuspicious" technologies may entail unexpected effects.
- All of the above can be achieved best in an institutionalized societal risk discourse, provided by a panel or commission where an exchange of information and perceptions can be initiated between representatives of all relevant groups over a span of time without pressure to immediately reach a result.
A closer look: linking science and deliberation

- Trust, understanding, and constructive criticism can emerge only when there is awareness of uncertainty and risk related assumptions.
- More often than not, due to different assumptions, the validating of facts or the estimation of risks differ even among scientists and/or across scientific disciplines. This must be made visible to the participants.
- An effective analytic-deliberative process needs to deal with both facts and values and the question whether and in which way they are agreed upon or contested.
- Participants in risk communication lack scientific background in order to properly understand and interpret complex scientific information. Especially in the area of qualitative risk assessment the perspectives of experts and laymen often differ. To bridge this gap it is best to include experts from NGO’s or independent academic institutions which enjoy the trust of the participants or consumers.

3. When and how Risk Communication
Risk communication as an element of public participation

According to several risk assessment studies in the US:

- Processes that were more participatory along the dimensions of breadth, timing, intensity and influence led to improved overall outcomes, in regard to the capacity building of the participants and the quality and legitimacy of the decision.
- People who believe that a decision resulted from a public participation process are more likely to accept the decision.
- The participatory process increased participant’s capacity through learning and helped them to develop greater consensus on some aspects of their preferences. Also the participants were more likely become politically more active afterwards.
## 3. When and how Risk Communication

IRGC: Risk Situations and the Appropriate Focus of Public Participation

<table>
<thead>
<tr>
<th>Knowledge Characterisation</th>
<th>Appropriate Instruments</th>
<th>Stakeholder Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 'Simple' risk problems</td>
<td>Applying 'traditional' decision-making</td>
<td>Instrumental discourse</td>
</tr>
</tbody>
</table>
| 2. Complexity-induced risk problems | Characterising the available evidence  
                           Improving buffer capacity of risk target through | Epistemological discourse |
| 3. Uncertainty-induced risk problems | Using hazard characteristics such as persistence, ubiquity etc. as proxies for risk estimates  
                           Improving capability to cope with surprises | Reflective discourse |
| 4. Ambiguity-induced risk problems | Application of conflict resolution methods for reaching consensus or tolerance for risk evaluation results and management option selection | Participative discourse |
4. The Legal Perspective

Risk communication as a constitutional requirement and a requirement of European Law

- Risk communication is an important element of democratic transparency.
- Risk communication is an equally important element of an adequate and efficient conduct of the specific (nuclear or other) licensing procedure.
- Risk communication is an instrument to fulfill the state’s duty to protect the life and health of its citizens and to empower them to exercise their human rights effectively.
- In the European legal order, the transparency of and participation in decision making processes in the area of environmental protection, which includes most cases of licensing of high-risk technologies, are guaranteed by the Aarhus Convention of 1998 (The United Nations Economic Commission for Europe (UNECE) Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters) and consecutive EU-directives.
4. The Legal Perspective

The Convention provides for:

- The right of everyone to receive environmental information that is held by public authorities.
- The right to participate in environmental decision-making.
- The right to review procedures in order to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general.
4. The Legal Perspective

Risk communication in licensing processes according to former German nuclear energy law

- Any person who constructs, operates or otherwise holds any installation for the production, treatment, processing or fission of nuclear fuel had to obtain a license in accordance with Section 7, paragraph 1 of the Atomic Energy Act.

- The Ordinance on the Procedure for Licensing of Installations under § 7 of the Atomic Energy Act (Nuclear Licensing Procedure Ordinance) constituted a formal procedure in which every person concerned could oblige the authority to deal with his/her objections.

  - According to the Ordinance, certain application documents had to be made available for public inspection during office hours for a period of two months at the offices of the licensing authority, with the request for raising any objections within this period.
The publicized documents need to include

- the application,
- a safety analysis report prepared by the applicant
- a brief, readily understandable description of the installation and its likely effects on the public and the neighborhood and
- a description of the residual radioactive materials accumulating as well as data concerning the measures intended to be taken for the prevention of any accumulation of residual radioactive materials;
- data relating to other environmental effects of the project which are relevant for approval decisions.
Within two months after the publication of the documents every individual was entitled to formulate objections and send them to the authority. Upon expiration of the public inspection period, further objections were not admitted.

After the end of this period, the objections were discussed during a hearing between the license authority, the applicant and the persons raising the objections. Thus, formally sufficient public information and participation in nuclear licensing procedures was provided.

This, however, did not solve the fundamental dispute over nuclear energy in Germany, which was partly expressed in violence.

To my understanding, this was so because of the lack of an institutionalized societal risk discourse with representatives of all relevant stakeholders and NGO´s. Such a discourse was successfully conducted in regard to nanotechnology by the German Federal Goverments´s NanoKommission between 2006 and 2010.
Risk communication is a tool to deepen the understanding of the scientific bases of risk governance and of the value-trade-offs at stake.

It allows decision-makers to make informed decisions with regards to scientific knowledge and public preferences, and allows the public to evaluate these decisions in the light of all available information.

If the acceptability of a certain technology is at stake, the German example calls for an institutionalized societal risk discourse.

Even if a society-wide consensus might not be achieved, risk communication will contribute to a common understanding of the necessity to constantly discuss, (re)define and politically decide upon societal risk preferences in the light of uncertainties and conflicting interests and perceptions.

Through this process the underlying cultural and political values and beliefs will become apparent, which at the end will decide whether the final legislative or administrative decision will be acceptable to the people.