

# AN ETHICAL DIMENSION TO SUSTAINABLE RESTORATION AND LONG-TERM MANAGEMENT OF CONTAMINATED AREAS

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## INTRODUCTION

Experience from the Chernobyl accident has shown that restoration strategies need to consider a wide range of different issues to ensure the long-term sustainability of large and varied contaminated areas. Thus, the criteria by which we evaluate countermeasures needs to be extended from simple cost benefit effectiveness and radiological protection standards to a more integrated, holistic approach, including social and ethical aspects. Within the STRATEGY project, the applicability of many countermeasures is being critically assessed using a wide range of criteria. Attention is being given to issues such as practicability, feasibility, capacity and environmental side-effects. Furthermore, social factors such as ethical aspects, public perceptions of risk, communication of information and the need for dialogue and consultation with affected communities are being considered. Although such social factors are now the subject of a substantial field of research, there has been little attempt to integrate them in a practical context for decision makers. Within this paper, we specifically consider ethical issues regarding restoration strategies and suggest practical means by which these can be taken into account in the decision making process. Two critical ethical areas are communication strategies and countermeasure selection, and in this paper we will deal briefly with both.

### **Ethical concerns in communication of risk**

Proper communication and access to relevant information is central to any restoration strategy. Although one may argue that the norms of openness and honesty are sufficient ethical grounds to justify and evaluate the information provided by authorities, there are other ethical considerations that are important for communication strategies. Since both exposure to radiation and remediation actions to reduce that exposure can impose a risk of harm on certain groups, it can be argued that the free informed consent of affected persons is also relevant. Medical ethics has identified four conditions which are necessary to satisfy the requirements for free informed consent: *disclosure*, *understanding*, *voluntariness* and *competence*, and these conditions can be adapted to evaluation of communication strategies in radiological protection. Affected persons need clear, relevant information about possible risks and benefits together with available alternatives (i.e. *disclosure* and *understanding*), and authorities should pay due attention to the skills and knowledge of persons affected by, and involved in, countermeasure implementation (*competence*). Notably, the criterion of *voluntariness* highlights the particular significance of communication strategies that enhance personal choice and control over the situation. Likewise, the promotion of self-help strategies is important in countermeasure evaluation. Finally, it is important that communication is seen as a two way process, involving exchange of information between parties and not a simple one way expert-to-public flow of information (Bay and Oughton, 2002)

The need for informed consent, as well as political human rights and the principles of autonomy, equality and democracy, are substantial ethical arguments for ensuring that persons should understand and agree to the imposition of countermeasures. But these principles also stress the need to include affected parties in decision-making. Stakeholder participation also recognises an important public dimension in societal policy-making and can enhance public acceptability of decisions. Public involvement in decisions is also valuable as different interest groups may contribute with local knowledge in addition to technical, expert based knowledge. Wynne (1989) has argued that one of the reasons why the authorities failed in their dealing with the radioactive fallout in Cumbria after the Chernobyl accident was that inadequate attention was paid to local competence. As a process for involving stakeholders in practical decision-making and for ensuring transparent and systematic consideration of ethical issues, we suggest the use of an ethical matrix.

### **Making ethical decisions on countermeasure strategies**

Good practical ethical decision-making is built upon three conditions: high quality information, ethical argument and moral judgement. (Baune, 1990). In pluralistic societies, views on both facts and values typically differ, which makes it difficult to ascertain that all relevant information has been collected and that there is no bias towards particular ethical approaches. An ethical matrix (see below) is a tool for ensuring the systematic consideration of all affected *values* and for indicating what *facts* are needed for making the decision.

The ethical matrix, derives from principle based ethics. It starts not with ethical theory, but with a selection of principles that are generally acknowledged in society and that can find a broad degree of support from different ethical theories or cultural beliefs. Inspired by medical ethics (Beauchamps & Childress 1994), Mepham (1996) was the first to address policy related problems by developing a matrix for application on topical issues. In medical ethics, the following principles are central:

1. respect for autonomy (a norm of respecting the decision making capacities of autonomous persons)
2. nonmaleficence (a norm of avoiding the causation of harm)
3. beneficence (a group of norms for providing net-benefits)
4. justice (a group of norms for distributing benefits, risks, and costs fairly)

In STRATEGY, these have been modified into the principles of *well-being*, *dignity* and *justice*. Well-being refers to what is good for a person, for example health, economic welfare, security, etc. Dignity refers to the right to be treated with respect. Justice is the principle of treating everyone fairly, ensuring an equitable distribution of burdens and benefits. These principles were adopted as the framework of principles in STRATEGY.

Application of these principles at a practical level can be achieved by specifying the principles related to the issue under consideration. A specified matrix of this kind gives a foundation for gathering the relevant facts for the issue to be discussed (Table 1). When the relevant specified norms and the appropriate facts have been gathered, it is possible to see whether the different consequences amount to a violation of certain specified norms or whether they seem to be in accordance with the values. This will give an overall picture of the ethical status of the issue at stake. However, as mentioned above, moral *judgement* must be exercised and matrix evaluation is performed in a participatory process with stakeholders.

Use of an ethical matrix works relatively well for the purpose of structuring a discussion. There are, however, certain practical problems connected to specifying the principles and

weighting the specifications, agreeing on the facts and undertaking the final evaluation. Also, an ethical matrix requires rather extensive learning by the participants. However, experience suggests that the advantages in some cases of complex decision-making may outweigh the practical problems related to the process (Forsberg and Kaiser, 2000; Kaiser and Forsberg 2001). Nevertheless, some of these problems may not appear to the same extent in the STRATEGY context, as there is likely to be a high degree of consensus of the overall objective, i.e. reduction of dose, and a sense of urgency and importance that may stimulate the co-operative spirit of the participants.

There is, however, no deduction of the correct ethical answer from the evaluation matrix. It is an aid to ensure that all relevant concerns are being taken into consideration, and a tool to clarify the ethical basis upon which eventual decisions are made. The ethical matrix is not a substitute for ethical judgement, it is a way of doing it. Similarly, the matrix cannot defend its own categories and principles, it does not guarantee that the right values are included and that they are given the right weight. As an isolated tool it is not of much help - a tool must necessarily have someone who handles it. But when an ethical matrix is combined with a stakeholder process the real value of both the matrix and the participatory approach appears.

To conclude, a central recommendation of the STRATEGY project is for authorities to show a genuine commitment to including stakeholders in decision-making processes. The participants should include representatives for every stakeholder category defined in the ethical matrix, and these stakeholders should be involved in the decision-making process from the very beginning. The process and the results should be made public to ensure transparency and acceptability of the decisions made. Using such a decision making procedure will be a way of making justified restoration strategies and will contribute to maintaining public trust.

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Stakeholder	Examples	Well-being	Dignity	Justice/ distribution
		Example: Health and economic welfare	Example: Choice/consent /(legal) rights	Is any sub-group of stakeholders worse-off?
<b>Owners/ employers</b>	Government Farmer House dweller Land owner Hotel owner Shop owner Business proprietor Factory owner Local authority	Loss/gain in income Loss of property Damage to, or reduction in value of, property Loss of taxes Compensation	Self-help Consent Property rights Being allowed to pay their duties Contract fulfilment No disruption No insecurity Liberty	Possibility for conflict between different industries or projects
<b>Workers/ employees</b>	Tenant farmer Farm workers Factory workers Contractors Count.meas workers Immigrant workers Other employees	Fear of job loss Gain/loss of income Insecurity Family relationships Compensation	Traditional skills and practices Trust and loyalty to local farmers Consent Training	Possibility for disputes and social inequity
<b>Users/ community</b>	Neighbours Recreational Tourists Public amenity (library, town hall, playground, park) Local community	Access Aesthetic value Empathy Isolation Community values Tourism Compensation	Respect for public heritage and footpaths Community sense Personal control Self-help Liberty	Potential conflict of age/sex/ cultural minorities Availability of alternative amenities
<b>Consumers</b>	Consumers Secondary food producers Other secondary producers (e.g. timber)	More expensive goods Loss of jobs Insecurity	Information Choice Self-help Intervention limits	Potential conflict between different income groups concerning diet and possibility of self gathering
<b>Future gen.</b>	Future food production Future clean air and water Future users of recreational areas, etc	Loss of opportunities to use areas, resources, common goods, etc	Respect for the right to keep living according to basic human values	No one future group be sacrificed for the presumed good of other future groups
<b>Environment</b>	Farm animals Wild animals Pets Other biota Ecosystems	Harm to animals Dose to biota Other toxic/health effects Compensation	Endangered species Loss of habitat Right to life consistent with their nature	Potential conflict between farm and wild animals, between ecosystems
<b>Waste location stakeholders (if different from accident location)</b>	Including all the above stakeholders connected to the waste site.	Uncertainty/risk-estimates: Possibilities for monitoring, retrieval and treatment must be known Compensation	Consent Self-help Information etc	Potential conflict between stakeholders close to disposal site

Table 1. A tentative ethical matrix developed for use in a radiation accident situation.