

**Ethical Bio-Technology Assessment Tools
for Agriculture and Food Production**
Final Report Ethical Bio-TA Tools
(QLG6-CT-2002-02594)

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PART A EXECUTIVE SUMMARY

The Development of Ethical Bio-Technology Assessment Tools for Agriculture and Food Production

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Abstract

Introduction

A plurality of concerns within the European Union triggers debates on innovations in agriculture and food production. The ethical assessment of new agricultural and food technologies has thus become important for governmental regulators, the general public and actors in all segments of the food chain.

Objectives

The overall objective of the *Ethical Bio-TA Tools* project has been to develop and improve tools for the ethical assessment of new technologies in agriculture and food production in general and modern biotechnologies in particular.

It is unlikely that a single tool will suffice for a full assessment of the whole range of divergent ethical issues involved in the introduction and application of new technologies. It has thus been necessary to develop a toolbox, in which particular tools are more applicable for certain purposes and/or in certain contexts, e.g. assessments performed by

governmental and non-governmental regulators; citizens/consumers and their organisations; and economic actors in the food chain.

All these actors need to address the ethics of introducing and applying (bio)technologies in agriculture and food production. However, their need for ethical advice differs according to their respective roles and responsibilities. All ethical (bio)technology assessment tools developed in this project aim to improve the transparency of communicative processes about ethical values.

Methodology

Three types of tools are deemed useful for addressing various needs identified above: 1) decision-making frameworks; 2) public consultation and involvement; and 3) food chain value communication. These tools thus find application in the domains of policy-makers, publics and market actors respectively. The following ethical bio-technology assessment tools have been described and evaluated (the tools selected for development and application are emphasised in bold).

Ethical Bio-Technology Assessment Tools		
Decision-making frameworks	Public consultation and involvement	Food chain value communication
Casualty COGEM framework Critical systems heuristics Delphi method Discourse ethics Ethical codes/guidelines Ethical matrix Multi-criteria mapping Precautionary principle Principle based ethics Risk analysis Stakeholder analysis Value-tree analysis	Citizens' forum Consensus conference Focus group Future workshop Public hearing PubliForum Referendum Scenario workshop Technology Delphi studies/technology foresight	Benchmarking Ethical accounting Ethical audits Ethical codes ISO 9000 Normative standards Stakeholder dialogue Stepwise dilemma-solving Total quality management Value clarification Weston's toolbox

Main scientific achievements

The first and primary result of the *Ethical Bio-TA Tools* project is that several ethical bio-technology assessment tools have been identified, described and evaluated. Building on this description and evaluation phase a number of the existing tools have been improved and new tools have also been introduced. A toolbox has thus been developed that is appropriate for use in the assessment of ethical issues raised by agri-food biotechnologies. In addition, these tools have a broader relevance for ethical deliberations in agriculture and food production.

In-depth reflection on the societal context of using the ethical tools has revealed that the developed toolbox is applicable in multicultural European societies. The possibility to develop such an ethical toolbox indicates that it is possible to have - and to facilitate - reasonable ethical deliberations in pluralist European societies and that in particular public consultation and involvement has added value to prevailing processes of regulatory decision-making. The use of the developed ethical bio-technology assessment tools might thus contribute to improved transparency in governance throughout the European Union. It should be clear that application of the developed ethical bio-technology assessment tools presumes expertise on the part of the users and thus calls for training. The European Commission is therefore encouraged to invest in training programmes for regulatory and corporate representatives.

Ethical bio-technology assessment toolbox			
Application domain ⇒	Public policy decision-making	Public opinion- formation	Corporate decision- making
Typical approach ⇒	Committee process	Consensus conference	Stakeholder dialogue
Stages ↓			
Preparing		Consensus conferences	Integrity check Stakeholder salience map
Mapping	Ethical matrix or Ethical Delphi		Concerns map Ethical matrix approach
Balancing			Value assessment
Acting			Responsibility assessment
Evaluating			

Project related publications and relevant dissemination activities

Publications

Two posters, three interim reports and a final report have been published during the course of the project:

- Beekman, V., M. Kaiser, P. Sandoe, F. Brom, K. Millar en B. Skorupinski, "The development of ethical bio-technology assessment tools for agriculture and food production", Poster presented at *EurSafe 2003*. INRA. Toulouse 2003.
- Millar, K., S. Tomkins, E. Thorstensen, M. Kaiser en B. Mepham, "The development of ethical bio-technology assessment tools for agriculture and food production: Characterising existing tools and frameworks", *Seminar 4: Ethical production and protection of sustainable farmland management of the ESRC transdisciplinary seminar series*. Royal Geographical Society, London 2005.
- Beekman, V. (ed.), *Description of ethical bio-technology assessment tools for agriculture and food production. Interim report Ethical Bio-TA Tools (QLG6-CT-2002-02594)*. LEI, The Hague 2004.
- Beekman, V. (ed.), *Evaluation of ethical bio-technology assessment tools for agriculture and food production. Interim report Ethical Bio-TA Tools (QLG6-CT-2002-02594)*. LEI, The Hague 2004.
- Beekman, V. (ed.), *Development of ethical bio-technology assessment tools for agriculture and food production. Interim report Ethical Bio-TA Tools (QLG6-CT-2002-02594)*. LEI, The Hague 2005.
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Next to the final report, the project will publish four manuals and a special issue of the *Journal of Agricultural and Environmental Ethics*.

Dissemination activities

The project has had a website at <http://www.ethicalbiotatools.wur.nl>. From January 1, 2006, onwards all results will be made available at the website <http://www.ethicaltools.info>.

Further information

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PART B THE ETHICAL TOOLBOX

1. Introduction

1.1 Background

This report responds to the plurality of recent concerns within the European Union that triggers debates on innovations in agriculture and food production. The ethical assessment of new agricultural and food technologies has thus become important for governmental regulators, the general public and actors in all segments of the food chain.

1.1.1 Concerns about (modern biotechnologies in) agriculture and food production

In recent years, the application of genetic modification and other modern biotechnologies in animal and plant breeding has been a prominent issue in public debates. This is because concerns over modern biotechnologies transcend regulators' traditional risk assessment strategies. Indeed, they call for the explicit inclusion of ethical considerations when formulating public policies. In turn, this suggests that there is a need to develop appropriate ethical assessment tools.

Studies of public opposition to genetically modified foods (e.g. Eurobarometer) reveal a diversity of concerns. At one level, these concerns refer to 'unknown unknowns'. Some of these unknown unknowns relate to practical research limitations (e.g. lack of resources to acquire factual information), whereas others relate to intrinsic limitations (i.e. factors that are unknowable 'in principle'). At another level, the concerns relate to the perception that short-term economic considerations might result in products that confer few longer-term societal and/or consumer benefits, or may possibly even produce disbenefits. At a third level, there are concerns in some countries over a perceived lack of transparency and/or the undemocratic nature of decision-making processes. Consequently, it would seem that public reservations over genetic modification and other technologies cannot be explained solely by lack of knowledge about the technologies. This implies that many types of concern are incapable of resolution simply by appeal to scientific (probabilistic) risk assessments. In

short, it is now increasingly assumed that ethical considerations underpin the arguments advanced by both proponents and opponents of agricultural and food biotechnologies.

1.1.2 The need for ethical bio-technology assessment tools

Increasingly, the European Union has placed emphasis on involving the general public in regulatory processes with respect to modern biotechnologies (*cf.* Aarhus convention). However, the tools needed to effectively take ethical concerns into consideration - and to satisfactorily involve the general public - are not fully developed or described. In the EU ethical considerations were strengthened through the new biotechnology directive 2001/18/EC (deliberate release into the environment), which came into force in October 2002. The new directive mentions the importance of ethical considerations, but does not include mandatory assessment of ethical issues. Despite the allusion to ethical considerations, the directive focuses on risk assessments related to human health, the environment and food safety, and assigns responsibility for ethics to national advisory bodies.

Hitherto the typical institutional response to people's concerns has been to establish various ethics committees and advisory boards. But this, while formally addressing ethics, can neglect the consideration of the critical questions. Are questions concerning values being adequately addressed and answered by these bodies? The answer to this question cannot depend on the convergence of the advice with one's own standpoint, since only those who agree with the conclusion would then endorse the ethical advice. What is needed is a comprehensive, transparent and democratic procedure that gives all ethical arguments fair and balanced consideration. One of the most challenging questions that this report explores is: "In what ways is the advice given justified in ethical and democratic terms, and what means are available for quality assurance of ethical assessments?"

This report argues that the first step in answering this question is to assess and compare the various existing methodological tools for ethical deliberation. Some instruments have been developed - independent of regulatory bodies and independent of each other - to include concerns based on ethical values. These instruments seek to improve public participation and the transparency of regulatory processes concerning the application of new technology in general and of biotechnology in particular. However, the need to utilise such instruments for good governance of the ethical aspects of new biotechnologies has not been matched by the attention given to methodological issues in practical ethics.

It should be clear that the ethical assessment (employing suitably developed tools) of the application of new (bio)technologies in agriculture and food production is complementary to rather than an alternative to scientific risk assessments and economic cost-benefit assessments. Taken together, these ethical, scientific and economic assessments should provide a sound basis for socio-political decision-making.

1.1.3 Key concepts and some pitfalls

Ethics is a philosophical enterprise with a rather problematic nature. On the one hand, it reveals a variety of possible outlooks on the world and on life; yet, on the other hand, it seems to identify a broad consensus on the ethical values that should govern daily life in any society.

This report faces the dilemma of, on the one hand, having to provide working definitions of its key concepts, and, on the other hand, taking account of existing conceptual and theoretical tensions. The report seeks to solve this dilemma by starting the discussion from the stepping-stones of existing discourses and expressed values. The justification for doing so is that it is at this level that policy issues become evident and decisions have to be made. If a policy is deemed to be ethical or ethically enlightened, then it will be in relation to existing discourses and expressed values of the society to which it applies. Important insights can be gained even if one focuses on this level.

Given this conception, ethics can be understood as the common platform for value debates in relation to a given issue in a democratic, free and open society. In relation to the subject matter of this report (agriculture and food production), this platform is seen as the communicative space between market actors (companies), policy-makers (government, regulatory bodies or other institutions with a societal mandate) and different publics (citizens, interest groups, media).

Since the definition of ethics rests on the notion of values, a working definition of values needs to be provided. Sidestepping the question of the 'real' nature of values, it is possible to ascertain that people express values in various contexts, that values are seen to refer to properties of states of affairs that therefore makes these states of affairs desirable and important, and that these properties are typically relational or imply relational attitudes. The report thus provisionally characterises values as (relational) properties of states of affairs to which people adhere expressively as desirable.

One important feature of ethical pluralism is that values differ in society, and in a democracy these value differences need to be respected. Furthermore, since there are good reasons to argue that no ethical theory can be such that its

practical consequences will be satisfactory in all contexts, ethics always needs to take account of and consider individuals' varying values and how they justify their ethical judgements. Pluralism can thus be characterised as the recognition that values differ in society, that these differing values need to be respected and to be accounted for in order to reach ethically acceptable conclusions.

Finally, this report asks practical but complex questions relating to policy in the food sector, and therefore instruments are needed to resolve these questions. While one cannot expect that the use of such an instrument will lead to a unique and completely satisfactory answer, one should expect that it simplifies and facilitates the decision-making process by capturing those considerations that are needed for an ethically well-considered judgement. These instruments/methods are called 'tools'. They require skilful use and should not be confused with calculating machines or algorithms. Thus, ethical tools refer to practical methods designed to improve ethical deliberation by capturing all ethically relevant aspects of an issue (Box 1.1 summarises the working definitions of the four key concepts in this report).

Ethics

This report understands ethics as the common platform for deliberation and discussion of values in societies.

Values

This reports understands values as relational properties of states of affairs to which people adhere expressively as desirable.

Pluralism

This report understands pluralism as the recognition that values differ in society, that these differing values need to be respected and taken into account in order to reach ethically acceptable resolutions of ethical issues.

Ethical tools

This report understands ethical tools as practical methods designed to improve ethical deliberations by broadening the values considered and/or stakeholder involvement.

Box 1.1 Four key concepts

This section should not end without a caveat about possible pitfalls. Developing ethical tools for policy has the ring of instrumentalisation. Given the availability of such ethical tools, there may be a temptation for decision-makers to outsource ethics to advisory bodies, let them run the exercises, ask for an ethical recommendation, and then adopt their proposals. There is thus a risk that the use of such tools may be uncritical and/or uninformed and may in some cases overstretch the scope of the tools. One should also be aware that some actors

might be tempted to use these ethical tools strategically in order to give the impression that real ethical considerations are made, while other interests have pre-empted the issue. In this case, the appeal to ethics would be mere window-dressing, and the use of ethical tools might hide this from the public gaze.

None of this would, of course, be in the interests of ethical opinion-formation and decision-making, and the authors of this report would deplore any such examples of misuse. However, in spite of the dangers of misuse and malpractice, this report aims to improve ethical judgements by providing practical tools for users. The benefits of the possible improvement seem to outweigh the dangers of misuse and having ethical tools available at least reduces the dangers of bias and tunnel-vision. Detailed manuals are designed to avoid these pitfalls.

1.2 Objective

The overall objective of this report is to develop and improve tools for the ethical assessment of new technologies in agriculture and food production in general and modern biotechnologies in particular.

It is unlikely that a single tool will suffice for a full assessment of the whole range of divergent ethical issues involved in the introduction and application of new technologies. It is thus necessary to develop a toolbox, which includes different tools that can be used for certain purposes and/or in certain contexts, e.g. assessments performed by governmental and non-governmental regulators; citizens/consumers and their organisations; and economic actors in the food chain.

All these actors need to address the ethics of introducing and applying (bio)technologies in agriculture and food production. However, their need for ethical advice differs according to their respective roles and responsibilities. This report addresses the various needs of the different actors by combining ethical (bio)technology assessment tools with the most pressing needs for ethical advice in agriculture and food production. It thus identifies three sub-objectives in the development of ethical (bio)technology assessment tools. The developed tools should facilitate 1) ethical decision-making by public policy-makers; 2) ethical deliberation and opinion-formation by the general public; and 3) ethical decision-making by economic actors in the food chain. These ethical (bio)technology assessment tools thus aim to improve the transparency of communicative processes about ethical values.

1.3 Methodology

This report presents three types of tools that are deemed useful for addressing the needs identified above. The tools described in this report, with regard to the three sub-objectives, are: 1) decision-making frameworks; 2) public consultation and involvement; and 3) food chain value communication (Box 1.2 provides an overview of ethical bio-technology assessment tools). The tools 'decision-making frameworks', 'public consultation and involvement' and 'food chain value communication' thus find application in the domains of policy-making, public engagement and agri-food markets respectively.

Decision-making frameworks	Public consultation and involvement	Food chain value communication
Casuistry COGEM framework Critical systems heuristics Delphi method Discourse ethics Ethical codes/guidelines Ethical matrix Multi-criteria mapping Precautionary principle Principle based ethics Risk analysis Stakeholder analysis Value-tree analysis	Citizens' forum Consensus conference Focus group Future workshop Public hearing PubliForum Referendum Scenario workshop Technology Delphi studies/technology foresight	Benchmarking Ethical accounting Ethical audits Ethical codes ISO 9000 Normative standards Stakeholder dialogue Stepwise dilemma-solving Total quality management Value clarification Weston's toolbox

Box 1.2 Described and evaluated ethical bio-technology assessment tools (tools selected for development and application are emphasised in bold; Annex 1 provides a concise description of all tools)

1.3.1 Decision-making frameworks

The use of, need for and expectations surrounding decision-making frameworks are diverse. There is no single framework that can be used to assess and manage ethical issues throughout the lifecycle of a biotechnology development or that would be adequate for all kinds of technologies. Thirteen decision-making frameworks have been identified. These thirteen decision-making frameworks have been reviewed on the basis of properties that are deemed essential in well-functioning decision-making frameworks. Moreover, it is acknowledged that different frameworks are needed at different stages in the research and technology development (RTD) process. Reviewing the various features of these

frameworks suggests that two may be best suited to act as tools for assisting policy-making. This is because they are structured frameworks that have: ample substantive ethical content; good opportunities to facilitate transparent decision-making processes; and that include a multiplicity of (stakeholder) viewpoints, ethically relevant information, ethical arguments and values at stake.

1.3.2 Public consultation and involvement

Arrangements for public consultation and involvement represent a mixed category of methods and activities that share the basic characteristic of, in one way or another, involving the general public in discussions of societal relevance and/or forging a link between the public and formal processes of decision-making in society. Moreover, they do so in ways that qualify/exceed the participation taking place by means of the voting processes of representative democracy. As such public consultation and involvement includes a variety of nine arrangements that differ in respect of how participation is facilitated, and whom the method invites to participate. Depending on the arrangement, these tools can lead to varying degrees of involvement: from voters exerting direct influence (referenda), to consultation of members of the public (public hearings or focus groups), to citizens engaging in a dialogue with experts and decision-makers (consensus conferences or citizens' forums). This report exclusively focuses on those tools that are demonstrably capable of putting ethical issues on the public agenda and explicitly designed to do a job for and through public discourse.

1.3.3 Food chain value communication

It is important to develop tools to facilitate food chain value communication within the broader context of the ongoing debate about corporate social responsibility (CSR). This debate has reached a consensus on the desirability of a three-stage process of corporate social responsibility, corporate social responsiveness and corporate social performance. It seems that focusing on value clarification in corporate social responsibility and stakeholder dialogue in corporate social responsiveness would be most valuable for the ongoing CSR-debate. Food chain value communication is thus developed as a process for clarifying and communicating the values of the company and its stakeholders. This understanding of food chain value communication informed the formulation of general evaluation criteria. Eleven tools to facilitate food chain value communication have been evaluated on these criteria. Evaluating these tools indicates that 'value clarification' and 'stakeholder dialogue' are best suited to act

as tools to facilitate food chain value communication. The more specific instruments of a stakeholder salience map, a concerns map, an ethical matrix approach, value assessment and responsibility assessment will be used to give these tools a more practical and ethical touch.

1.4 Structure of the report

Chapter 2 presents the tools 'decision-making frameworks' (section 2.1), 'public consultation and involvement' (section 2.2) and 'food chain value communication' (section 2.3). The report ends with conclusions, legal and policy implications and future research needs (chapter 3) and an overview of publications and dissemination activities (chapter 4). Manuals supplement this report with instructions on how to use the ethical bio-technology assessment tools. A special issue of the *Journal of Agricultural and Environmental Ethics* provides a more philosophical justification of the developed ethical bio-technology assessment tools. The website www.ethicaltools.info will also present all this material.

2. Results

2.1 Decision-making frameworks¹

Ethics encompasses fundamental and pervasive aspects of human values. This report is predicated on the argument that deliberation and decision-making on specific issues may be facilitated by the application of appropriate ethical tools. This section focuses on the needs of decision-makers engaged in policy issues. These include: Governments and Ministries, Parliaments, regulatory bodies, and coordinating national and international bodies that develop policies in the agri-food sector, such as the EC. The basis for such 'additional considerations' can be found in the EU Directive 2001/18/EC on marketing and deliberate releases of genetically modified organisms, as well as in the more general need of public policy to be responsive to public attitudes. Recent Eurobarometer surveys show a continuing public concern about ethical issues in biotechnology (Eurobarometer June 2005, 224 and 225). Although the frameworks discussed here are also important in a wider context, the primary focus of this section is on public policy decision-making. These bodies are under an obligation to the public to justify the use of the ethical advice they seek, and to ensure high and transparent standards in dealing with the issues at hand. Thus, the aim has been to develop frameworks that meet these criteria.

2.1.1 Introduction

The initial task was to identify existing approaches that fell into the category defined as a 'tool' for practical ethics. Several subsidiary questions emerged from this general problem. For example, the question of whether relevant decision-making bodies and/or bodies that regularly provide ethical advice were already using any ethical frameworks, if they were aware of the existence of such frameworks, or whether they saw a need for such tools. This exploratory phase, which consisted of a combination of literature searches and analysis, case studies and a survey, laid the basis for the subsequent, more focused work on selected frameworks. The results may be summarised briefly as follows: 1) Very few of

¹ This section is based on joint research activities by Oyvind Baune (NENT = National Committee for Research Ethics in Science and Technology, Oslo, Norway), Ellen-Marie Forsberg (NENT), Ben Mepham (CAB = Centre for Applied Bioethics, University of Nottingham, Nottingham, UK), Sandy Tomkins (CAB), Erik Thorstensen (NENT), Kate Millar (CAB) and Matthias Kaiser (NENT).

the intended users reported having an explicit policy on the use of ethical tools. Indeed, for many correspondents the question arose for the first time through the survey inquiry; 2) Closer enquiry revealed that for some correspondents ethical guidelines occupied an important role in their advice on ethics; and that consequently they would place such guidelines among the potential tools for their work; 3) Few correspondents reported any experience of public consultation and/or participatory processes with stakeholders; and 4) Most correspondents expressed a positive interest in the development of such tools for practical ethical assessments, and a willingness to look further into the matter.

On the basis of this rather limited experience with ethical frameworks, the question of whether such tools have been proposed in the relevant academic literature seemed even more important. Indeed, a literature review revealed the following: 1) In the literature on practical ethics and on ethics in public decision-making (within the agri-food sector and other sectors) there are reports of a number of emergent frameworks, which are sometimes described with initial trials focusing on selected issues. It has been possible to identify thirteen such frameworks and provide templates on their background, use, content and structure; 2) Different ethical tools may serve different purposes and socio-political settings; any further development of these tools needs to take account of varying initial conditions as they appear from the perspective of the decision-making body; and 3) An important distinction can be made between tools that are more 'procedural', i.e. prescribe a certain method of how to trigger ethical responses among public groups, and those tools that are more 'substantive', i.e. provide some ethical content as input for further analysis.

This exploratory phase called for a subsequent evaluative phase. The question was apparently a simple one: "Given that there already are available a number of potential ethical tools (or candidates for such), are they all equally suitable for the purposes discussed above?" Thus, the challenge was to evaluate whether the identified tools would all carry the same potential of high quality ethical assessment to the users.

Designing evaluation criteria for existing ethical tools necessitated work on the intersection between philosophical ethics, political science and sociology. It would not be sufficient to approve a tool merely because participants exposed to its use reported a satisfaction with the exercise. Evaluating a tool entails considering the following: 1) User utility - Is the outcome useful from the point of view of the decision-making body, and does it meet societal constraints of decision-making in a modern democracy; 2) Participant satisfaction - Does the tool adequately provide for the expression of ethical concerns, and does it promote a learning process through interaction; and 3) Ethical analysis - Does the tool capture those arguments, values and principles that various ethical

traditions and theories would bring to the fore when dealing with issues of that kind? These concerns were captured in the term 'ethical soundness'.

As a result of both the descriptive and evaluative phase of the research analysis, including the assessment of ethical soundness, two tools emerged as potentially helpful and versatile ethical frameworks. These were the ethical matrix and the ethical Delphi (see Box 2.1).

Ethical matrix

The ethical matrix applies a number of prima facie principles to a set of specified interest groups. The three principles used in the standard version are respect for well-being, autonomy and fairness, and together they form the columns of the ethical matrix. The rows consist of the 'interest groups' (i.e. affected parties) that are relevant to the issue in question. These might include different groups of people, such as consumers and food producers, but also non-humans, such as farm animals. The arrangement of principles and interest groups in a table, forming the ethical matrix, facilitates easy cross-referencing (specification of the principles for each interest group) in deliberation and subsequent reflection on an issue. As a first step, users can apply the ethical matrix to map ethical issues. When making a judgement or forming an opinion, the ethical matrix can then be used as a structured approach for reflecting on competing ethical impacts. The aim of the ethical matrix is to help users identify ethical issues raised by the use of novel technologies and to arrive at intellectually defensible decisions. However, the ethical matrix does not prescribe any particular decisions.

Ethical Delphi

The ethical Delphi is an iterative process for exchanging views and arguments between experts. The method is structured around the notion of a virtual committee where the exchange of ideas is conducted anonymously and remotely through a series of opinion exchanges (in the form of 'rounds'). The ethical Delphi is used to map the ethical considerations that experts believe are pertinent and significant. It indicates the extent of agreement as well as drawing out divergence in expert opinion on a given topic. The ethical Delphi is based on the original formulation of the Delphi method, as developed by the RAND corporation, but it does not look for consensus on future actions/developments as its target. The ethical Delphi is a developed method that can be used to characterise and map the ethical issues raised by the use of a novel technologies. One of the benefits of the ethical Delphi is the combination of 'scoring' and reasoned arguments where it is possible to see the 'importance' of an issue (using a Likert scale) and the relevant arguments.

Box 2.1 The ethical frameworks

What can you expect to achieve through the use of ethical tools?

It is important to be clear that ethical tools/frameworks are designed to facilitate ethical assessments and decision-making: they are not designed to replace ethical judgment. None of the frameworks presented calculates a recommended action

or scores a best ethical option. Judgment is needed, and this point needs to be constantly emphasised.

Furthermore, some initial understanding of the nature of the issue is needed on the part of the organisers. Decisions have to be made in advance to utilise the frameworks optimally and with the intended outcome. The tools will perform differently depending on different choices that can be made along the way. It will be useful to identify the types of question that initially confront potential users of the tools; and then to propose some answers to these questions (see Box 2.2).

Do we need a quick assessment of the ethical aspects of an issue, designed for internal uses, or for provisional presentation purposes only (e.g. a speech of the Minister)?

- If so, one may want to settle for a single-person use of the ethical matrix.
- The ethical Delphi is not designed for single-person use.

Do we need an assessment that is validated by a more or less broad consultation process from outside parties?

- If so, both the ethical matrix and the ethical Delphi can be used.
- A decision must be made on whether the consultation process needs to be expert-based, stakeholder-based, or lay-people-based (involving a group of citizens).
- Mixed processes or dual processes may sometimes also be a possibility.

Is the issue merely 'technical' (i.e. the goals and the constraints are given), or is the issue merely exploratory at this stage?

- Then perhaps we can settle with consulting the experts only.
- Both the ethical matrix and the ethical Delphi may be realistic tools for this purpose.

Is the issue mainly about finding a way to solve a known value conflict between conflicting interests in society related to a technology?

- If so, there may be a need to consult with relevant parties of stakeholders, or it may be possible to blend experts with stakeholders.
- Both the ethical matrix and the ethical Delphi may be realistic tools for this purpose.

Is the issue one of agreeing on a long-term strategy, formulating public policy or designing the principles of regulation?

- In such cases it might be thought appropriate to settle for a process with lay-people, or perhaps a wide consultation of possible stakeholders is sufficient, or perhaps a combination of both strategies is indicated.
- The ethical matrix serves this purpose well; while it is not advisable to use the ethical Delphi with a lay-panel. However, an expert ethical Delphi can be used to design/initially propose future policy on a specific topic.

Box 2.2 Questions for users of the tools

One should note that the use of the ethical matrix and the ethical Delphi always calls for the utilisation of some expert knowledge. If this knowledge is not adequately represented in the panel used in the consultation, means must be made available by which it can be readily accessed. This can either be through

the assistance of the secretariat (organisers) or the supply of relevant written background information.

It is clear from the above, that the possible uses of the ethical tools can vary according to the concrete needs and contexts of the decision-maker. Accordingly the results that can be expected may vary. The value of the results will also depend crucially on the selection of the panel that is engaged in the process. This will be considered in more detail below, but for present purposes it is assumed that an unbiased and broad selection of participants has been made. Box 2.3 lists some of the possible achievements of the ethical matrix and the ethical Delphi.

Both the ethical matrix and the ethical Delphi will result in an optimally comprehensive overview of the ethical issues and values that are at stake when deciding on a given technology

- In principle, the ethical matrix tends to be comprehensive with regard to those considerations that are traditionally considered to be the core elements of ethical deliberations.
- In principle, the ethical Delphi tends to be comprehensive with regard to those considerations that the involved parties and experts perceive as crucial for the ethical assessment.

Both the ethical matrix and the ethical Delphi can clarify the fundamental value aspects of disagreements among various parties

Both the ethical matrix and the ethical Delphi can to some extent provide insight into the weight that is ascribed to particular concerns in a given debate

- Thus both methods provide not only an insight into the qualitative ethical dimensions of a given issue, but they can under certain conditions assist one to rank these considerations mutually, and thus facilitate eventual decision-making.

Box 2.3 Possible achievements ethical matrix and ethical Delphi

The ethical matrix aims to:

- Raise awareness of a wide range of ethical issues
- Encourage ethical reflection
- Provide a rational basis for ethical decision-making
- Identify areas of agreement between individuals who might nevertheless differ in their overall judgements
- Clarify the basis of disagreements
- Make explicit the reasoning that underpins any ethical decisions.

The ethical Delphi aims to:

- Identify the diversity of expert value judgements on the use of technology
- Identify the range of divergence and convergence in expert opinion
- Encourage ethical reflection
- Provide a rational basis for ethical decision-making
- Clarify the basis of disagreements and highlight related values

Box 2.4 Expected outcomes ethical matrix and ethical Delphi

What are the required resources and time frame for utilising the ethical tools?

The ethical tools developed in this project are flexible and versatile. This is reflected in the range of resources required for the competent application of these tools. However, some general reflections can be made at this point. All ethical tools, and the ethical matrix and the ethical Delphi in particular, require the users and organisers to engage in a process of learning and training. To realise their effective use, several days, perhaps weeks, of learning per tool need to precede any envisaged application and practical use.

This project has developed manuals for the tools that are intended to be stand-alone sources. In principle no further training need to be envisaged, other than the careful reading of these manuals. However, it is strongly recommended that prior to their use, potential users go through the manuals as a group, to reach a common understanding of their aims and limitations. Single-person use of the ethical matrix requires no resources other than the time used by that person.

More resources are obviously needed as soon as one uses the tools as part of a larger consultation process. The scope and size of such a process is dependant on the perceived needs of the organisers and the nature of the topic to be analysed (see Box 2.5).

Using the ethical matrix and the ethical Delphi in a consultation process with a pre-selected panel entails three phases:

- The preparatory phase will usually occupy a period of several weeks.
- The performance (core) phase will usually occupy 1-2 days.
- The reporting phase will usually require work and feedback by participants lasting between three and several days.

Using the ethical matrix and the ethical Delphi in a consultation process with a pre-selected panel requires access to a secretariat and a facilitator:

- The secretariat needs to have at least some rudimentary insights into the topic.
- The facilitator needs to be experienced in eliciting and understanding opinions and viewpoints of various groups.
- The organisers need to have earned the trust of most sectors of the public so that no suspicions arise of a possible framing of the discussion at the outset.
- Depending on the customs in the country where the tool is applied, one may need to reimburse participants for direct and indirect costs of participation, and one may need to consider a fee for participation.

Box 2.5 Use of the tools and resources

2.1.2 Thinking through the objective

As described earlier, a good understanding of the topic and the intended use of the ethical assessment is a prerequisite for use of the ethical matrix and the ethical Delphi. Both tools perform best when the participants in the exercise

share this understanding of what the intended outcome and use of the process will be. Indeed, the recognition of the importance of the outcome contributes substantially to the willingness of the participants to seriously engage in the exercise.

It is perhaps necessary to emphasise that although the ethical matrix has been characterised as being a substantive tool, this does not in any way diminish its use in a participatory manner. The difference to a procedural tool is merely that the specific way in which it is used in a participatory process is to a certain degree open for the organisers to think through and plan, while a typical procedural tool merely specifies what to do and when.

Again a number of clarifications need to be made by the organisers, in particular in regard to the consultation processes with various possible panels. In the first place this is necessary in regard to whether one engages experts, stakeholders or lay-panels. In general there are no ready-made definitions available as to who counts as what. Moreover, within Europe the origin of these concepts seems to vary between countries. People regarded as experts in, say, Denmark, might well qualify as stakeholders or even lay-people in France or the UK. Therefore it is important that the organisers do not automatically employ their own traditional notions of these groups, but think through their respective potential with regard to the nature of the topic that they are to discuss. There is no ready-made recipe for what is the best concept of an expert as such, only various functional dependencies in relation to the target of the planned process. Organisers may need to adjust their own notion of the group accordingly.

As indicated earlier, the choice between an expert-panel versus a stakeholder-panel versus a lay-panel will depend on the nature of the topic under discussion and the context of the decision-making process to which it shall feed its outcome.

2.1.3 Reflecting on the context

A workshop in Vilnius provided some useful insights into the use of the ethical frameworks under various socio-political and cultural conditions. In Europe the context for leading ethical debates, the degree to which such debates can be conducted and directed by bodies with an ethical mandate, and the expected degree of active involvement of participants all vary with the cultural and political traditions of different countries. Thus, how one chooses to conduct a workshop using the ethical matrix or the ethical Delphi depends on expectations anchored in socio-political culture.

For instance, the ethical matrix can be applied in various forms and the content of the cells can be agreed as a result of negotiations with the participants.

In some cultural settings participants may expect the organisers to propose a ready-made scheme for their work (e.g. all ethical principles already in place) while in other settings participants need to work through various possibilities for such a scheme before discussing the issue at hand. This is in line with the tool philosophy: a tool never does a job in total isolation but only in the hands of a competent and skilful user. Ethical tools do not cut across all cultural and socio-political variation, but are flexible enough to be adapted to varying circumstances.

Reflection is also needed with regard to the outcome of these processes. Suppose one has performed such an exercise using one or other tool. Suppose further that the result of the consultation process shows a sufficient convergence towards certain positions and arguments. It is then tempting for the decision-maker, i.e. the policy body that is the end-user of the consultation, to simply refer to this conclusion as a ready-made justification for a decision that is in line with this consultation. And indeed, ideally the consultation could muster all the ethically weighty arguments that really count for the issue under discussion. Yet the decision-maker should also justify the reliance on this consultation process.

Part of this justification is drawn from the transparency and broad accessibility of the process, i.e. the features of the ethical tool. But another part of the justification must always be the transferability of this consultation process to the general society at large. The decision-maker needs to accept the results as in principle representative of what the rest of society might agree to. This might be especially challenging when the groups consulted are only special interest groups, such as experts or stakeholders. It does not follow that these groups are less reliable in such a consultation, but that decision-makers need to be explicit and state reasons why the consultation produces results that can be regarded as generally applicable in society.

When a decision-maker ends up disagreeing with the results of the consultation processes, this calls also for explicit argument. It does not follow that the decision-makers should always follow the results of processes utilising ethical tools. Ultimately, it is only the decision-maker who needs to be accountable for the actual decisions. Ethical tools are not decision-making machines for ethics. However, when such a situation occurs, the great advantage of ethical tools is that they force the decision-maker to actually enter the substantive debate and state why they prefer to end up with a different conclusion or weighing.

So, decision-makers cannot place ethical responsibility outside their own institutional bounds, but always need to embrace or reject any ethical advice with stated reasons. Utilising ethical tools and in particular ethical consultations of various groups combines the advantage of using a methodical approach to

capture ethical aspects with the democratic virtues of transparency and openness to criticism. Given this understanding of the appropriate context, the ethical frameworks described above can contribute in a significant way to better ethical understanding and better decision-making on issues that involve decisive ethical dimensions.

2.2 Public consultation and involvement²

2.2.1 Introduction

This section presents results concerning the comparative assessment and development of consensus conferences as an ethical tool for public consultation and involvement. The results presented relate to the sub-objective of facilitating ethical (bio)technology assessment by citizens and consumers.

The tools available for public consultation and involvement comprise of a long list of arrangements, each representing different levels of participation (see, e.g., Arnstein, 1969). At the one end of such a ladder of participation one-way activities like information campaigns are found. At the other end there are arrangements directly involving or delegating power to citizens. Consensus conferences are in the latter category, whereas public consultation instruments like hearings, focus groups and surveys have an intermediate position. The empirical part of the study has been narrowed down from tools for public consultation and involvement in general to include only consensus conferences. The consensus conference tool was chosen as the case study because it, on the one hand, in its ideal form, shares a number of the features of the model of deliberative democracy and thus represents an extreme case of participation. On the other hand, consensus conferences have been carried out in different social and economic contexts as well as in countries with different political traditions; some leaning towards deliberative models of democracy stressing the dialogue with and active involvement of citizens in decision-making processes, others leaning towards procedural models of democracy stressing equal representation in decision-making processes. Consensus conferences, rather than more traditional (and moderate) arrangements for public consultation and

² This section is based on joint research activities by Heike Baranzke (UBASLE = Unit for Ethics in the Biological Sciences, University of Basle, Basle, Switzerland), Hans-Werner Ingensiep (UBASLE), Jesper Lassen (CeBRA = Centre for Bioethics and Risk Assessment, Royal Veterinary and Agricultural University, Copenhagen, Denmark), Annika Porsborg Nielsen (CeBRA), Barbara Skorupinski (UBASLE) and Peter Sandoe (CeBRA).

involvement, such as hearings or public meetings, can be expected to expose possible national differences and, therefore, point to issues that should be addressed when applying tools of involvement or consultation in general. Hence, the project carried out a comparative study of consensus conferences in different national contexts and made suggestions for the innovation and development of this tool.

The consensus conference tool has found application in relation to a number of technological domains, where policy-makers and stakeholders have assessed a need for participatory and deliberative ways of supporting technological decision-making. In the wider debates about participatory Technology Assessment the consensus conference tool has attracted significant international attention as an exemplary manner in which participatory and deliberative ideals, with regard to the governance of controversial technologies, can be turned into practice. It can be seen as one way of institutionalising ideals from political philosophy that are less specific about how public consultation and involvement can actually function in real debates and decision-making processes (Skorupinski & Ott, 2000).

As such, the consensus conference tool represents one procedural format among a number of methods for public consultation and involvement. It is a model that is often mentioned positively in discussions on participatory Technology Assessment (pTA), often however in ways indicating an insufficient knowledge of the actual workings of consensus conferences as a specific procedural tool. Hence, it was seen as desirable to explicate the workings of such conferences in more details to improve the knowledge base for potentially interested users. At the same time, it can be argued that the consensus conference tool is exemplary for a number of issues relating to such pTA methods. Hence, the experiences explicated here will have relevance also for users working with different pTA methodologies.

2.2.2 Thinking through the objective

What is a consensus conference?

The participatory consensus conference was initially developed by the Danish Board of Technology and represents a further development from the original consensus conferences arranged by United States Office of Technology Assessment (OTA). The aim of the OTA conferences was to expose expert views and to reach consensus among experts regarding a given topic. Consensus is still (in most cases) an aim, but instead of striving for consensus among experts, consensus is sought among laypersons. The reason given for the importance of involving laypersons in such conferences is typically to give

citizens the opportunity to influence decisions having impact on their lives, to affect the public debate, or to overcome limitations in expert knowledge (see, e.g., Andersen & Jaeger, 1999).

When applied in other countries the 'Danish model', as the lay version of the consensus conference is often referred to, is sometimes adjusted and developed in an attempt to adapt it to the cultural or political context into which it is being introduced. The alterations of the consensus conference tool typically stress specific aspects or tone down others, and the adaptations are often reflected in the use of other names like Citizen Forum (Germany, 2001), PubliForum (Switzerland, 1999) or Citizens' Conference (France, 1998). One of the more important types of variations concerns the extent to which consensus is required, or whether dissent is allowed or even strived for in the final document.

Although the set-up of participatory consensus conferences may vary slightly from one conference to another, the majority of conferences do have shared organisational features.

One is that a panel of laypersons passes through a training or learning process in which they are informed about the issue at hand, and about the pros and cons of the matter. Typically this process includes lectures and the personal study of selected documents and articles. Secondly, using this information, the lay panel sets up a list of questions that they feel ought to be addressed, if they are to form an opinion on the issue at hand. Thirdly, a panel of selected experts is asked to consider these questions and present their answers to the lay panel at a public conference. Finally, the lay panel withdraws and considers the issue. It then presents its conclusions in a final document, which is presented to the public on the final day of the conference. Box 2.6 provides an overview of the organisational steps of a consensus conference.

- | |
|---|
| <ol style="list-style-type: none">1. Selection of topic2. Funding3. Organisational setting and venue4. Recruitment steering group, moderator and instructors for introductory weekends5. Preparing/selecting introductory material6. Selection of lay panel members and expert panel members7. Preparatory phase for lay panel members8. The public phase of the conference9. Deliberations of the lay panel (internal)10. Dissemination11. Debriefing12. Evaluation |
|---|

Box 2.6 Organisational steps of a consensus conference

What can be achieved by applying the tool?

In order to decide whether or not to initiate a consensus conference, the possible aims and objectives must be considered and weighed against what can actually be achieved by applying the tool. Several types of outcomes or results can be achieved by carrying out a consensus conference. What should be emphasised here is that: 1) The possibility of achieving the desired outcomes should be assessed in relation to the political context of the country in question; and 2) The planning and carrying out of a consensus conference can take different forms, depending on what you want to achieve.

Thus, there is no fixed answer to the question of what aims can be achieved by carrying out a consensus conference. Rather, multiple aims can be achieved depending on the political context and, again, depending on the various aims different strategies and procedures should be undertaken.

However, when consulting the Danish Board of Technology's (DBT) description of their conception of the method, some of its central aims are stated as follows: "To give citizens the opportunity to influence important decisions affecting their lives, both through the conference itself and through the impact of the conference process on public debate; to overcome the limitations of expert knowledge, by drawing on local knowledge and the civic responsibilities of citizens" (Andersen & Jaeger, 1999; 334).

The template for consensus conferences formulated here by the DBT emphasises the aim of creating a forum where lay people can set the agenda and where they can interact with experts and decision-makers. Ultimately, with all actors benefiting from the mutual exchange of experience, knowledge, and concerns, this type of process, it is assumed, will inform decisions that will attain a certain degree of accord with public views, and that, as a consequence, will be socially robust. Thus, the consensus conference tool, in the form described above, has the potential for making 'real' public influence on decision-making possible.

While these aims can also be said to underline the declared goals (as formulated in the introductions to the final documents) of the conferences included in the case study (and arguably of most other conferences that have been arranged), the study shows that ideals of deliberation and participation, echoed in the quote above, are being associated with differing meanings when used in different contexts. The case conferences included in the study show how aims other than that of facilitating direct public influence may serve as objectives for consensus conferences.

The aims and objectives associated with the use of consensus conferences, thus, may be modified and interpreted according to the context in which the method is being used. Alternative aims - which might be particularly relevant in

countries that are initiating consensus conferences for the first time - might be objectives that have to do with the procedural aspects (related to the method itself), such as showcasing the legitimacy and applicability of the method, and in some cases paving the way for an institutionalisation of the use of procedures for public consultation and involvement (see for an in-depth discussion of this and other results from the empirical study: Nielsen *et al.*, submitted).

Over the following pages, it will be discussed how aims and objectives of a consensus conference must be viewed in relation to the context in which it is carried out, and what this means for the actual planning of the procedure. But before this discussion is elaborated, some other indicators are outlined below that might be helpful in the process of deciding whether or not to employ the consensus conference tool.

What are the resources required?

The following represents a comprehensive list of costs that should be considered. Some of the points will not be relevant for all cases. Things that may determine the overall costs of organising a consensus conference include: 1) Venue of the conference; 2) Salaries for organisers during the preparation period; 3) Fees for the steering committee (where applicable); 4) Preparation of information material and instruction of the lay panel; 5) Selection-procedure for the lay people (especially if external consultants are used); 6) Travel and accommodation for lay people and expert panel; 7) Fees for expert panel (usually voluntary, non-paid participation); 8) Compensation for lay panel (usually voluntary, non-paid participation); 9) Fees for (external) moderation; and 10) Printing and dissemination of outcomes.

Reports on consensus conferences rarely contain budgetary information and it should be born in mind that there is no average budget; rather, detailed budgets need to be worked out for each conference (Eastlick & Einseidel, 2000). However, based on an assessment of costs of procedures, the Danish Board of Technology estimated in 1995 that the price of a consensus conference was 350,000 DKK, at the time equivalent of 49,000 Euro (Klüver, 1995; 47).

What is the necessary time frame?

Considering the whole process from the stage of determining a topic by the organising institution to the dissemination of the lay panel's final document, between 6 months and 1 year will be needed. The Danish Board of Technology assesses that it takes 6-12 months to organise a consensus conference (Klüver, 1995; 47). Other experiences indicate that less than a year's preparation time may be overly optimistic (Joss, 1995).

A very instructive idea for a timeline is given by Eastlick & Einsiedel (2000). Considering the time frame of the conference arrangement itself, it is necessary to provide enough time for the following steps, since the quality of the results will deteriorate as a result of time pressures: 1) Information phase for the lay panel (approximately 2-3 months); 2) Public conference; discussion between experts and lay panel (2 or 3 days); 3) Internal deliberation and formulation of lay panel's recommendations and suggestions; writing of final document (1 day); and 4) Presentation of final document (1 day).

2.2.3 Reflecting on the context

Innovative aspects of the development of consensus conferences

The central contribution in terms of innovations and improvements of the tool is a new focus on the national political context and its implications for the use of the consensus conference tool. The results of the case study form the basis for a discussion of how the objectives and the context of a consensus conference are interconnected.

One context in which the application of consensus conferences is situated is the public debate and the public controversy concerning (new) technological developments. The phase of development of a new technology presents yet another context, which emphasises the important role of the timing of an arrangement. Two aspects have to be considered: If the technology at stake is in a very early development stage, political intervention and shaping might be possible outcomes of the process but there may be a lack of public interest for participation. On the other hand, if the given technology has been developed to the extent that a public debate is ongoing and there is controversy and clashes of values and interests concerning the topic, it may be easier to find participants for the consensus conference. However, an advanced stage of development of a technology confines the scope of political shaping.

A new and emerging context for the use of consensus conferences is the European level. The method can be seen as an important element in the integrative democratisation process in Europe. Consensus conferences may be important (ethical) tools to strengthen the confidence in the European integration process by consulting European citizens as lay people within the participation procedure. In terms of applying the consensus conference tool at the European level, several questions have to be considered concerning for instance the level of confidence of lay participants in the procedures, the ability of participants to speak their mother tongue, and the bringing together of different national experiences drawing upon different traditions for public involvement as well as different political cultures. First steps are now being taken in the area of

European public consultation; the first *European citizens' deliberation on brain science "Meeting of minds"* (Brussels, 2005-2006) includes deliberations with lay people from nine European countries (For more information see: <http://www.meetingmindseurope.org>). A thorough study of this and similar arrangements at the EU-level may cast light on to what extent such tools are feasible at a cross-national level.

Further, the societal and political context of the country in which a consensus conference is being organised must be taken into consideration. Box 2.7 outlines and discusses some featured objectives of consensus conferences with reference to the national context. A consensus conference can have a range of different sets of objectives. The case study provides examples of how, in different countries, the aims and objectives of consensus conferences are formulated in different ways. The types of objectives outlined in Box 2.7 represent merely some examples among the types of outcome that can be aimed for by organisers of consensus conferences. The following section discusses the ways in which organisers of consensus conferences should consider the aims and objectives of the conference and whether these are attainable in the given societal and political context.

Broadening the debate on the topic in question. This is achieved both in terms of providing decision-makers with a plurality of views and concerns, and broadening the debate in society by reaching the attention of the wider population. For broadening the debate consensus conferences are only one instrument among many others.

Consulting lay people in order to take into consideration new types of perspectives and concerns and to produce a final document with possible effects on decision-making, legislation, and public opinion.

Providing expert knowledge to lay people. This is possible both in terms of educating lay people as preparation for the conference debates, and informing selected lay people in order to heighten the level of the wider public debate.

Box 2.7 Objectives consensus conferences

How are stated objectives attainable within different contexts?

In order to assess whether a given objective of a consensus conference is attainable organisers must ask themselves the following question: Is the stated objective acceptable in the host country in terms of 1) How the role of public participation and deliberation is perceived; 2) How power relations affect the conference; 3) How lay person's roles are being viewed; and 4) How the expert's role is being viewed?

These questions all relate to the political and societal context in which the conference is organised. When the objective of a consensus conference is being defined - and in order to assess the extent to which it is acceptable and attainable in the host country in question - the questions raised above need to be considered within the given societal and political context.

Below, some different scenarios for consensus conferences are set forth, emphasising different aims and objectives and outlining how the key questions above might have relevance for each of these scenarios.

Scenario 1 - Defining the objective as broadening the debate on the topic in question

When the objective is defined as broadening the debate on a given topic, one central aim is to allow for a diversity of voices and concerns to be introduced in the debate. Thus, there should be a focus on how the roles and contributions of both experts and lay people are perceived. It is important to consider what broadening the debate means in terms of how different knowledge forms are being valued. The case study reports several examples of how one objective can be interpreted in very different ways across different countries. In the French consensus conference included in the study, the inclusion of lay people was seen primarily as a way for them to achieve insight into expert discussions and for that process of enlightenment to spread out into public debate.

Meanwhile, in the Scandinavian conferences also comprised in the study, the dominant perception was that broadening the debate meant that lay people's views, knowledge and concerns should be voiced and be allowed to influence the debate, and also, as a result, to incite broader public debate on the topic as well as a wider and more accessible or popular media coverage of it. These very different approaches towards the value of different contributions and knowledge forms turned out to affect the ways in which issues were being discussed at the conferences, as well as the ways in which organisers approached the aspect of training or educating lay people as preparation for the conference.

Scenario 2 - Defining the objective as consulting lay people in order to include new types of perspectives

This type of objective prompts a stronger focus on the equal status of lay and expert knowledge, and opens up for the possibility of lay people's recommendations to be taken into account by decision-makers and possibly inform or influence decision-making or legislation on the topic in question. The political and societal context of the conference has great significance in terms of whether this objective is deemed acceptable in the host country. For consultation

of the public to be an acceptable - and thus attainable - objective, public participation has to be connected to some level of democratic legitimacy.

As the French case study has shown, public consultation at parliamentary level could detract from the democratic legitimacy of the procedures, whereas public consultation at the regional or local level could be deemed more acceptable. This touches upon the question of representativity. In a society such as the French, the ideal of representative democracy is pivotal, lending significance to the status of decision-makers as representatives of the people. On the other hand, in the Scandinavian case countries and in Switzerland the consultation of lay people by decision-makers is seen as the hallmark of 'real democracy' or an important element within a half-direct democracy, with a focus on the importance of a link to parliamentary politics. Thus, in different societal and political contexts, the objective of consulting lay people will have very different connotations and meanings - something that, again, is decisive of the extent to which it is deemed acceptable and attainable.

Scenario 3 - Defining the objective as that of providing expert knowledge to lay people

This scenario would be deemed as unacceptable in the public according to Scandinavian organisers and also to actors in Switzerland, whereas in the French case this objective was widely thought to be at least one among several legitimate objectives of a consensus conference. An obvious problem in relation to this type of objective is the emphasis on communication and consultation as primarily a one-way process, and also initiating a costly conference aiming at such rather narrow outcomes might not be deemed acceptable. In the French conference this was nevertheless seen to be an acceptable aim, and this should be understood with reference to the status of expert knowledge vis-à-vis that of lay people.

At the same time, in the French case there was a strong focus on the education of selected lay people as a means to heighten the level of debate in the wider public. This was not seen as an aim in the Scandinavian or Swiss case conferences. It is doubtful whether this aim is at all attainable, as the scope of the effect of a few involved lay people on the course of public debate is not all that clear.

2.3 Food chain value communication³

2.3.1 Introduction

During the last few decades economic enterprises in the food chain have increasingly been confronted with concerns of different stakeholders (e.g. consumers, governments, NGOs and others) related to modern biotechnologies and other technological innovations. As a consequence, a growing number of corporations have become involved in corporate social responsibility (CSR). The main objective of this part of the project has been to stimulate and facilitate food chain value communication within the broader context of CSR. For that purpose the *Corporate Moral Responsibility*-kit (CoMoRe-kit) has been developed. Food chain value communication is conceived of as a process of clarifying and deliberating corporate and stakeholder values and taking up actions and responsibilities. The intended users are first of all individual firms that already adopt CSR and are still searching for or interested in methods that can clarify the corporation's and its stakeholders' ethical values and improve stakeholder dialogue. The CoMoRe-kit can be helpful to understand the contradiction between corporate values and interests. This contradiction is also known in business ethics as the many hands dilemma and is addressed in the integrity check as part of the CoMoRe-kit.

Several existing ethical tools have been evaluated (see Box 1.2). The two existing tools that have been chosen for further elaboration are: 1) Value clarification; and 2) Stakeholder dialogue. The main criterion for choosing these tools was their potential for stimulating and structuring value communication in the context of free market competition. From a corporate perspective these instruments seem useful and attractive because they relate to corporate integrity, reputation management and customer loyalty. These issues are only partly - or at least to a lesser degree - addressed in the existing tools that were not selected for further elaboration. To make value clarification and stakeholder dialogue more appropriate and practical for corporate users, these instruments are fleshed out with more specific ethical methods: 1) Stakeholder salience map; 2) Concerns map; 3) Ethical matrix approach; 4) Value assessment; and 5) Responsibility assessment.

The domain of agricultural and food production covers a vast array of concerns and values. The question arises which major concerns can be identified.

³ This section is based on joint research activities by Erik de Bakker (LEI = Agricultural Economics Research Institute, The Hague, The Netherlands), Marian Deblonde (EI = Ethics Institute, Utrecht University, Utrecht, The Netherlands), Ronald de Graaff (LEI) and Frans Brom (EI).

These societal concerns about new technologies in the food chain can be brought back to nine concerns. Values are always related to discussions about (contested) facts, e.g. concerns about food safety are related to facts about risks and their assessment. These nine concerns are directive for the development and use of ethical tools with respect to new technologies in the food chain (see Box 2.8). Not all concerns have the same status. Transparency and traceability enable solutions for possible problems in the domains of the intrinsic concerns. Therefore, the last two concerns (transparency and traceability) can be seen as conditional (or process) concerns, while the other concerns are intrinsic and have substantive content as they are. The nine concerns (summarised in Box 2.8) cover most, if not all, societal concerns in the domain of agricultural and food production. They can serve to broaden the perspective of corporations on social and ethical issues.

Food security	To what extent is the total amount of food in the world sufficient and fairly distributed?
Food safety	To what extent can one trust that food is not dangerous for public health?
Food quality	To what extent is food authentic and nutritious and does it contribute to a healthier lifestyle?
Human welfare	To what extent are labour relations and a fair social distribution of resources threatened with (further) deterioration?
Animal welfare	To what extent are animals treated well and with respect?
Ecological sustainability	To what extent does one take care of the natural environment and does development not compromise the living conditions of future generations?
Sovereignty	To what extent do people (of local communities, regions, countries) have the right to produce their own food.
Transparency	To what extent are firms in the food chain transparent about their methods of production?
Traceability	To what extent is it possible to trace the different sources of food products in the (increasingly complex) food chain?

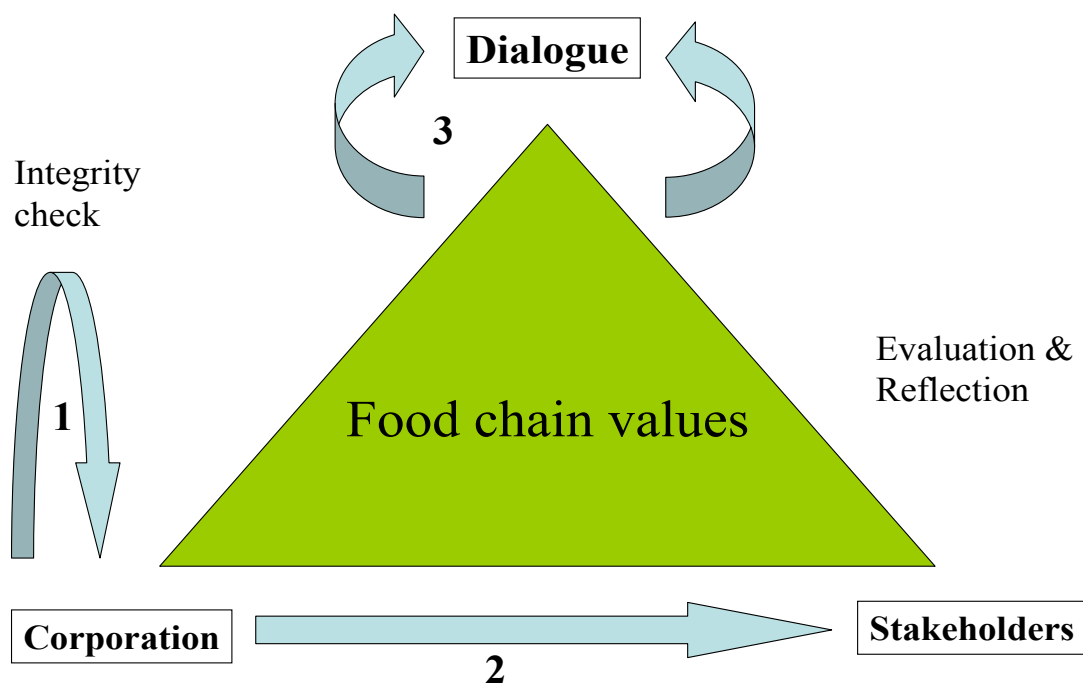
Box 2.8 An overview of the 9 directive concerns

A preliminary version of the CoMoRe-kit has been discussed with possible users in the food chain: a Danish consultant of PriceWaterhouseCoopers, representatives of one CSR-related Belgian organisation (Common Sense), a representative of a Belgian sector federation (Boerenbond), and representatives of different enterprises in Belgium (Ganda-Ham, Carrefour, Veeakker), Denmark (Novozymes) and Norway (Koop NKL). These last five economic enterprises are very different with respect to their size, economic activities and CSR-experience. These interviews were the basis for refining the CoMoRe-kit.

The current CoMoRe-kit needs to be thoroughly tested in order to become more specific and precise. Nevertheless, even in its present form, the CoMoRe-kit can be considered as a new contribution to food chain value communication.

2.3.2 Thinking through the objective

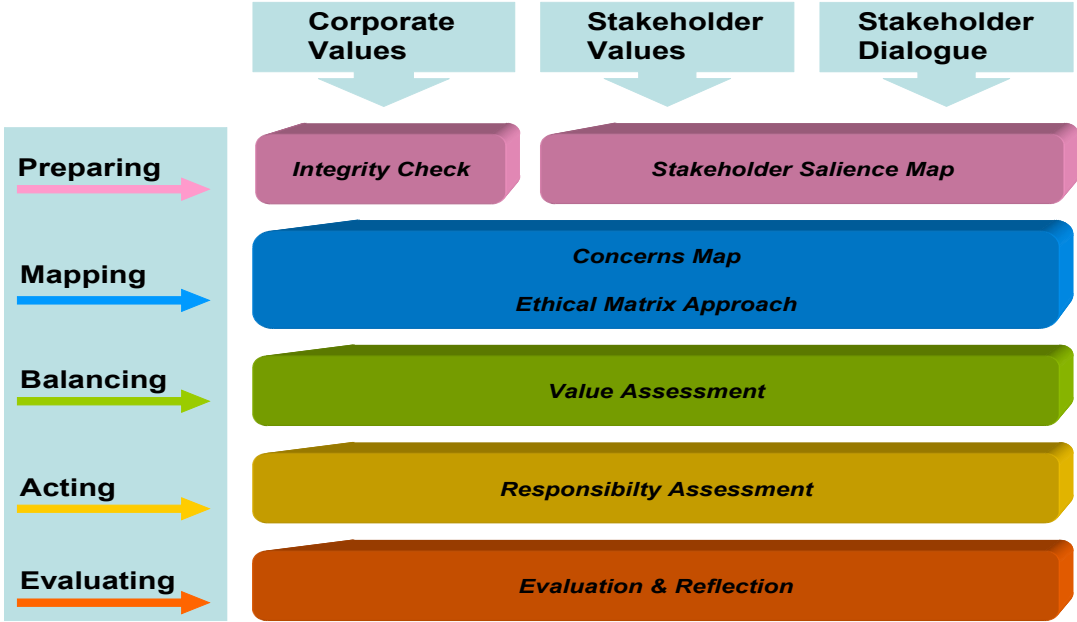
The CoMoRe-kit is built on the idea that food chain value communication consists of three different dimensions that are usually intertwined (see the diagram in Box 2.9). For these three dimensions seven tools have been developed, which can be used in five different phases of the communication (see the diagram in Box 2.10).



Box 2.9 The three dimensions of the CoMoRe-kit

The three dimensions of food chain value communication are: 1) Clarifying corporate values - what concerns and ethical values does the corporation itself have, and how can these values and concerns be discussed in a profound manner; 2) Clarifying stakeholder values - what concerns and ethical values does a corporation ascribe to its stakeholders; and 3) Stakeholder dialogue - how can the ethical values of the corporation and its stakeholders be communicated and debated, and how can actions and initiatives that comply with these values be

assigned and taken up. The CoMoRe-kit consists of seven different ethical tools (see Box 2.11).



Box 2.10 An overview of the CoMoRe-kit

The use of an integrity check in the preparatory phase of clarifying corporate values and the evaluation in the final phase ensure reflection with respect to the possibilities of open ethical debate, both within the firm and with respect to (external) stakeholders. This evaluation, reflection and integrity check builds strongly on the business ethics approach of integrity audits (Kaptein & Wempe, 2002).

The concerns map functions as a first acquaintance with the ethical reasons connected with certain concerns. The other mapping tool, the ethical matrix approach (Mephram, 2005), is based on the principles of wellbeing, autonomy and justice. These principles represent the most important traditions in ethical theory and can be useful to find out about different ways of ethical reasoning. An enterprise can, for instance, be worried about a new biotechnology 1) because of its (positive, neutral or negative) effects on human welfare; 2) because it does not fit a certain ethical obligation; or 3) on the basis of comparison with similar situations (in the past) and practical analysis of the social context. Justification differs in the various ethical traditions and related ways of ethical reasoning.

Value assessment and responsibility assessment originally stem from the ethical method of value-tree analysis. The CoMoRe-kit splits up value-tree analysis into two instruments for different phases. These tools serve to deepen

ethical deliberation in order to reach consensus on 1) the most important ethical values regarding problematic issues and concerns; and 2) the actions and initiatives needed to realise these values.

Integrity check (preparing clarification of corporate values)

A check on organisational qualities (clarity, supportability, visibility and discussibility) that determine the possibilities of open debate within the firm (Kaptein, 1998).

Stakeholder salience map (preparing clarification of stakeholder values and stakeholder dialogue)

A method to gain insight in relevant stakeholders (now and in the future) on the basis of three stakeholder attributes: power, legitimacy and urgency (Mitchell *et al.*, 1997).

Concerns map (mapping)

A method to gain an insight into the main concerns of corporations and/or other stakeholders and into the (discussion about the) facts that are related to these concerns (Beekman & Van der Weele, 2004).

Ethical matrix approach (mapping)

A method (based on the main ethical traditions) to translate the societal concerns into corporate and/or stakeholder values and illuminate the ethical principles behind these values (Mephram, 2005).

Value assessment (balancing)

A method to structure corporate and/or stakeholder values in a way that reflects the relationships between various values and their relative importance or weight.

Responsibility assessment (actions)

A method to define and assign responsibilities and actions to the appropriate persons or organisations.

Evaluation and reflection

A critical evaluation and reflection of all 'ethical activities' that have been done, especially with respect to the fair treatment of stakeholders.

Box 2.11 The ethical tools of the CoMoRe-kit

The users of the CoMoRe-kit have to decide which ethical tools are most valuable and useful for their specific situation. (See Box 2.12 for an overview of the output of the different tools.) Users should feel free to choose the tools they consider most appropriate for their current situation. A firm can, for instance, decide to skip value assessment for exploring the dimension of corporate values because there might already be corporate procedures that deal with the discussion and prioritisation of different values.

Phase	Tool	Output
Preparing	<i>Integrity check</i>	A clear view of potential corporate participants Insight into the organisational requirements regarding internal ethical deliberation
Preparing	<i>Stakeholder salience map</i>	Identification, characterisation and prioritisation of relevant stakeholders
Mapping	<i>Concerns map</i>	<i>Corporate values</i> A list of corporate concerns from the perspective of the corporation A list of the ethical reasons behind these concerns <i>Stakeholder values</i> A list of stakeholder concerns from the perspective of the corporation A list of the ethical reasons behind these concerns <i>Stakeholder dialogue</i> A list of relevant concerns from the perspective of both the corporation and its relevant and legitimate stakeholders A list of the (possible) ethical reasons behind these concerns
Mapping	<i>Ethical matrix Approach</i>	<i>Corporate values</i> An overview of important corporate values considered from the corporation's perspective <i>Stakeholder values</i> An overview of important stakeholder values considered from the corporation's perspective <i>Stakeholder dialogue</i> An overview of important values considered from the perspective of the corporation and its stakeholders
Balancing	<i>Value assessment</i>	<i>Corporate values</i> A hierarchical ordering of important corporate values considered from the corporation's perspective <i>Stakeholder values</i> A hierarchical ordering of important stakeholder values considered from the corporation's perspective <i>Stakeholder dialogue</i> A hierarchical ordering of important values considered from the perspective of the corporation and its stakeholders

Acting	<i>Responsibility assessment</i>	<p><i>Corporate values</i> An overview of responsibilities considered from the corporation's perspective An overview of actions and initiatives assigned to persons or organisations considered from the corporation's perspective</p> <p><i>Stakeholder values</i> A (reconsidered) overview of responsibilities considered from the corporation's perspective A (reconsidered) overview of actions and initiatives assigned to persons or organisations considered from the corporation's perspective</p> <p><i>Stakeholder dialogue</i> A (debated) overview of responsibilities considered from the perspective of the corporation and its stakeholders A (debated) overview of actions and initiatives assigned to persons or organisations considered from the perspective of the corporation and its stakeholders</p>
Evaluating	<i>Evaluation and reflection</i>	<p>Insight into the level of integrity of the corporation with respect to the different interests of its stakeholders Corporate awareness of political, economic and cultural constraints in the context of CSR</p>

Box 2.12 An overview of the output of the different tools

It is also possible that a corporation, which considers itself inexperienced in ethical deliberation and stakeholder dialogue, starts carefully with the CoMoRe-kit and restricts itself to debating concerns internally in the context of clarifying corporate values. Doing so, such a corporation could even decide to proceed immediately from the mapping phase to the actions phase, if there are good reasons to believe that finding internal consensus in the context of value assessment would be extremely hard. In that case the output of the concerns map and the ethical matrix approach serve as a rudimentary basis for defining and assigning responsibilities. Nevertheless, such a short-cut use of the CoMoRe-kit could mean a (first) major step forward in food chain value communication within the broader context of CSR. The CoMoRe-kit can be used as a starters-kit or as a kit for more advanced users.

What can you achieve?

The CoMoRe-kit can help a corporation, first, to become better aware of its own values and, hence, to elaborate upon them if necessary. Second, it helps the corporation to achieve a clear and well-founded view of its own responsibilities and the responsibilities of its stakeholders with respect to new technologies. On

the basis of this view, a corporation is better prepared to enter into debates with its employees, its customers and shareholders, local communities, governments, NGOs and the broader public. Third, corporations will be enabled to formulate specific steps and actions to tackle or reduce certain concerns that might be caused by the introduction of new technologies. Fourth, corporations may reach agreement on reciprocal obligations or common ideas with some of their stakeholders or with other corporations. Fifth, corporations may even come to see needs and possibilities for common projects.

Furthermore, since corporations in the food chain are increasingly involved in the global economy, awareness of the diversity of socio-cultural, legal and political contexts becomes ever more important. The CoMoRe-kit can help to clarify and communicate the ethical complications of different institutional and social contexts, e.g. double standards, with respect to new technologies. In this context the tools are also useful to gain a better understanding of different national or regional cultures of entrepreneurship and professionalism.

What are the resources required?

The application of the ethical tools requires a coordinator, who should ensure that the group sessions are efficacious and efficient. Another precondition is a qualified and experienced chairman, who can accommodate the various participants, clarify the aim of the exercises, explain the different exercises of the tools, and situate the tools in the overall context of the wider framework. Depending on the size and social and ethical experience of the corporation, external consultants might be necessary to supervise or support the use of the tools. For competent use of the CoMoRe-kit training of the facilitator is required.

A further basic requirement is a representative group of corporate members, who are responsible for or confronted with the pivotal aspects of a corporation's ethics and who will be able to perform the chosen tools (see the preparing tool for clarifying corporate values: Integrity check). The users of the tools can be line managers, heads of departments, representatives of trade unions, members of health/security/environment committees and others. In the context of stakeholder dialogue the users can also be representatives of external stakeholder groups.

An exact estimation of the necessary resources is not possible at this stage, since this project did not include a testing phase of the CoMoRe-kit. However, this would be an important next step after the development of this new ethical toolkit for the domain of agricultural and food production. Depending on the circumstances, such as the size of the company, the kind of problems it faces or the type of communication with stakeholders, the required resources will differ.

What is the necessary time frame?

Decisions on timetables of the various sessions depend on the organisers. They can either place the various sessions in one day, on a few consecutive days or spread them over a longer period of time with shorter or longer intervening periods. A more exact estimation of the time necessary would be possible only after testing the application of CoMoRe-kit.

2.3.3 Reflecting on the context

One should always bear in mind that well-founded ethical solutions for problematic social issues are part of a long-term process and that these solutions need maintenance. Furthermore, value communication, the establishment of certain ethical responsibilities and 'doing the right thing' should not be seen as a straightforward and linear process. There will and should always exist feedback loops between the various phases and dimensions of the process of value communication. The results of using particular tools for the exploration of particular dimensions must be seen as temporary outcome in an ongoing process.

Ethical communication in the context of free market competition is often questioned. A genuine discussion about ethics seems difficult, if not impossible, to realise in a market context. Economic interests, one could argue, contradict the ethical prerequisites of non-strategic communication, which is characterised by open ethical discussion and sincere involvement of the participants. Therefore, one could conclude that corporations are not in a position to freely deliberate on ethical issues. A cynic might add that ethical statements of corporations are merely window-dressing.

There are no guarantees that the CoMoRe-kit will solve this general dilemma but corporations that are willing to participate in ethical debates should be offered some means to help them define ethical responsibilities and action plans. The CoMoRe-kit is an improvement of the ethical instruments already available. Although no new ethical tools were invented, the CoMoRe-kit provides an arrangement of ethical tools that is better tailored to the needs and diversity of economic organisations within the food chain. By using the CoMoRe-kit a corporation can avoid unexpected confrontation with suddenly voiced ethical concerns. Therefore, it is helpful to use the CoMoRe-kit at an early stage of the research and technology development (RTD) process.

3. Conclusion

3.1 Legal and policy implications

Main results

The first and primary result of the project *Ethical Bio-TA Tools* is that several ethical bio-technology assessment tools have been identified, described and evaluated. Building on this description and evaluation phase a number of the existing tools have been improved and new tools have also been introduced. The project has thus developed a toolbox that is appropriate for use in the assessment of ethical issues raised by agri-food biotechnologies. In addition, these tools have broader relevance for deliberation about other ethical issues in agriculture and food production (Box 3.1 summarises the ethical bio-technology assessment toolbox).

<i>Application domain</i> ⇒	<i>Public policy decision-making</i>	<i>Public opinion-formation</i>	<i>Corporate decision-making</i>
<i>Typical approach</i> ⇒	Committee process	Consensus conference	Stakeholder dialogue
<i>Stages</i> ⇓			
<i>Preparing</i>		Consensus conference	Integrity check Stakeholder salience map
<i>Mapping</i>	Ethical matrix or Ethical Delphi		Concerns map and Ethical matrix approach
<i>Balancing</i>			Value assessment
<i>Acting</i>			Responsibility assessment
<i>Evaluating</i>			

Box 3.1 *Ethical bio-technology assessment toolbox*

The decision-making frameworks, 'Ethical matrix' and 'Ethical Delphi', will primarily find application in the work of statutory and non-statutory ethics

committees and technology assessment boards. This work complements activities of a number of national advisory bodies, for example the Dutch Commission on Genetic Modification (COGEM) has developed a framework that is applied to all stages of a committee process (see: <http://www.cogem.net>). The consensus conference would be an appropriate tool, if one aimed for consultation and engagement of the wider public. A consensus conference typically includes all stages as identified in Box 3.1 but it might be possible to use a more substantive tool like an ethical matrix approach in the mapping stage of a consensus conference. Finally, the CoMoRe-kit finds application in the stakeholder dialogues of food companies and includes specific tools to facilitate all stages as identified in Box 3.1.

There is no easy answer to the question of “*what ethical tools to use at what stage of the research and technology development (RTD) process*”. One always faces the dilemma that at an early stage of the assessment (factual) knowledge among participants might be limited, whereas at a late stage any (potential) impact of the ethical assessment might be pre-empted by other factors. This is, again, a reason why the use of ethical tools complements rather than acts as an alternative to considered judgement.

The project included in-depth reflection on the societal context of using ethical tools and the developed toolbox is therefore applicable in multicultural European societies. The ability to develop such an ethical toolbox indicates that it is possible to have - and to facilitate - reasonable ethical deliberations in pluralist European societies and that in particular public consultation and involvement has added value to prevailing processes of regulatory decision-making. The use of the developed ethical bio-technology assessment tools might thus contribute to improved transparency in governance throughout the European Union. It should, however, be clear that application of the developed ethical bio-technology assessment tools presumes expertise on part of the users and thus calls for training.

Policy recommendations

The main results from the project *Ethical Bio-TA Tools* imply that ethics should not be seen as something simply to be tagged on to more traditional risk assessment strategies in the field of agriculture and food production, but rather as an integral part of broad societal assessments of the application of new (bio)technologies. Ethics and ethical tools have the specific potential of identifying and differentiating relevant values and involving all relevant actors in these societal technology assessments.

The first recommendation is thus for European institutions (e.g. the European Commission) to invest in clarifying the potential of ethical tools to

broaden more traditional risk and technology assessment strategies. This might well be done by further developing existing platforms of national ethics committees. A major objective of these platforms should be to facilitate explicit methodological reflection on ethics among and between these national committees. Ultimately this could result in streamlined ethical (bio)technology assessment procedures on both national and European levels.

On a more substantive level, the message of *Ethical Bio-TA Tools* is that less emphasis should be placed on prescribing the inclusion of ethical assessments in governmental rules and regulations but rather on facilitating deliberative processes of value clarification and stakeholder involvement. This facilitation should also include creating institutional environments that stimulate a variety of stakeholders to take responsibility for the ethical aspects of agriculture and food production. To that effect, participatory approaches in both regulatory and corporate decision-making should be strongly supported.

The final recommendation highlights the opportunity to use the developed ethical tools to address ethical aspects of food quality and safety projects as funded by the Framework Programmes of the European Commission. A tailor-made version of the CoMoRe-kit could serve that purpose, since it presents a comprehensive ethical assessment procedure that ensures consideration of substantive ethical values through the application of a concerns map and an ethical matrix approach and makes the step from values to actions through the application of a responsibility assessment.

3.2 Future research needs

Although the *Ethical Bio-TA Tools* project has been able to describe, evaluate and develop tools for the ethical assessment of new (bio)technologies in agriculture and food production, it should be acknowledged that this project has been one of the first projects to systematically reflect on methodological issues in agricultural and food ethics and thus necessarily has been quite exploratory. The first and primary recommendation thus calls for a more in-depth exploration of these ethical tools. This further exploration should include reflection on the drawbacks of participatory approaches to ethics. It should also include attempts to combine the merits of different ethical tools and further testing of the developed tools in regulatory and corporate settings. Finally, it would be worthwhile to include a comparison between the methodological developments in agricultural and food ethics and similar but different developments in the field of medical ethics. The ultimate goal of this further exploration should be to develop a more comprehensive ethical technology assessment toolbox.

The final research recommendation would be to address the possibilities and pitfalls of applying the developed ethical tools in a number of EU Member States, particularly the new Member States, and possibly also in non-European contexts. This recommendation might well be combined with an initiative to invest in training programmes for regulatory and corporate representatives.

4. Publications and dissemination activities

4.1 Publications

Two posters and three interim reports have been published during the course of the project:

Beekman, V., M. Kaiser, P. Sandoe, F. Brom, K. Millar, B. Skorupinski, “The development of ethical bio-technology assessment tools for agriculture and food production”. Poster presented at *EurSafe 2003*. INRA, Toulouse 2003.

Millar, K., S. Tomkins, E. Thorstensen, M. Kaiser & B. Mepham, “The development of ethical bio-technology assessment tools for agriculture and food production: Characterising existing tools and frameworks”. Poster presented at *Seminar 4: Ethical production and protection for sustainable farmland management of the ESRC transdisciplinary seminar series*. Royal Geographical Society, London 2005.

Beekman, V. (ed.), *Description of ethical bio-technology assessment tools for agriculture and food production. Interim report Ethical Bio-TA Tools (QLG6-CT-2002-02594)*. LEI, The Hague 2004.

Beekman, V. (ed.), *Evaluation of ethical bio-technology assessment tools for agriculture and food production. Interim report Ethical Bio-TA Tools (QLG6-CT-2002-02594)*. LEI, The Hague 2004.

Beekman, V. (ed.), *Development of ethical bio-technology assessment tools for agriculture and food production. Interim report Ethical Bio-TA Tools (QLG6-CT-2002-02594)*. LEI, The Hague 2005.

Next to this final report, the project will publish its results in four manuals and a special issue of the *Journal of Agricultural and Environmental Ethics*.

4.2 Dissemination activities

The project previously disseminated information on the website: <http://www.ethicalbiotatools.wur.nl>. From January 1, 2006, onwards all results will be made available at the website <http://www.ethicaltools.info>.

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Annex 1 Overview tools

Decision-making frameworks

Casuistry

Casuistry is a problem solving method with connotations to the scholastics of the Middle Ages, but is now revived as an influential method in biomedical ethics. The force of casuistry lies in tradition, which secures that a given assessment of an ethical problem is in equilibrium with earlier solutions to related problems. It is particularly useful when confronted with problems that have a novel character and that leave us without clear intuitions or certain principles for solution.

COGEM framework

The COGEM (Dutch Commission on Genetic Modification) framework consists of five steps that constitute the ethical assessment in a larger decision-making framework. The first two steps consist of preparing the case and making sure it has not been subjected to prior assessment. The third step is to list the affected values, while the fourth is to list the aims of the research work. The last step consists of a balancing of values and aims.

Critical systems heuristics

Critical systems heuristics is closely related to so-called soft systems methodology or theory. Both approaches are variants of the larger school of systems thinking and practice. A list of 12 questions has been developed that can help to explore boundary judgements and possibly change them. The tool has been applied in the context of decision-making related to biotechnology.

Delphi method

The Delphi method, first developed by the RAND corporation in 1950s, was designed to combine the knowledge and abilities of a diverse group of experts to the task of quantifying variables that are either intangible or shrouded in uncertainty. The technique has been used for a variety of applications such as technology assessment and public health. The method is structured around the notion of a virtual committee where the exchange of ideas is conducted remotely through a series of opinion exchanges (in the form of 'rounds'). Anonymity of the participants is central to the process. This feature aims to eliminate external power relations and personal influences that may interfere in the debate of key issues.

Discourse ethics

In principle one should differentiate between simple committee processes as such and committee processes dedicated to discourse ethics. The former are obviously neither new in history, nor dedicated to a particular ethical theory. The latter, committee processes dedicated to discourse ethics, are carried out under specific normative ideals applying to the process of consensus formation, or at least it makes appeal to these ideals. Discourse ethics, as the source of committee processes, communicate normative ideals as developed independently by the philosophers Apel and Habermas.

Ethical codes/guidelines

Ethical codes or guidelines pertain to organisations, professional groups or professional roles. They are non-legal rules regulating conduct, often referring to ethical principles like beneficence, non-maleficence, honesty, justice, etc. They may include prescriptions and aspirations of the role. They often consist of general principles, as well as more specific rules or recommendations.

Ethical matrix

The ethical matrix is a principle-based methodology that aims to guide rational decision-making by appealing to principles based in both deontological and consequentialist ethical theories, which are perceived to be components of the 'common morality'. As a development of the 'four principles' approach introduced by medical ethicists Beauchamp & Childress, it assigns prima facie moral status not only to different human interest groups but also to certain non-human groups.

Multi-criteria mapping

The framework for using multi-criteria mapping in technology assessment was developed by Stirling (University of Sussex) as an alternative to consensus-oriented deliberative methods and economic models for environmental valuation and risk-cost-benefit assessments. It was further developed and tested in practice by Mayer (GeneWatch) and Stirling in a GM crops pilot study in the later 1990s.

Precautionary principle

The precautionary principle is said to stem from the 'Vorsorgeprinzip' in German environmental law from the early 1970s. In an international setting it was first used and referred to in the various versions of the North Sea Treaty (1984, 1987, 1990, 1995), and became prominent with its inclusion in principle 15 of the Rio Declaration. Since then it has been widely discussed in academia, politics and government. There is no universal definition of the principle; rather it functions

as a general norm or principle that needs to be interpreted and operationalised for each new application.

Principle based ethics

Since the 1980s principle based ethics has been the most prominent method for ethical assessment in biomedical ethics. *Principles of biomedical ethics* by Beauchamp & Childress is the classic work in this approach. Much of the discussion of this method is expressed in the *Journal of Medicine and Philosophy*.

Risk analysis

The technique of risk analysis revolves around the goal of minimising the probability of injury associated with a particular activity. The need to develop methods for measuring the relevant probabilities has led to the scientific field of risk analysis. In scientific terms risk is defined as the expected value interpretation of risk, as this is the function of the value of events and the probability (or expectation) that the events will occur. Historically the interpretation of risk was based on the theory of choice, that other options or alternative decisions are assessed in terms of outcomes and potential harm, and a decision-making framework is applied to select a course of action from among the alternatives. The underlying principle of this risk analysis is based on a number of trade-offs or cost benefit analyses.

Stakeholder analysis

The stakeholder approach was originally a tool in strategic management. This approach was built on corporate planning literature, systems theory and corporate social responsibility thinking. Ever since, the stakeholder approach has had a double function of being both a tool for successful strategies, as well as being an approach to business ethics and corporate social responsibility.

Value-tree analysis

Value-tree analysis is a multiple criteria decision analysis and problem-structuring tool used to create a better understanding of a problem. Value-tree analysis is a decision analysis tool under value theory. Its aim is to rank a set of values and alternatives.

Public consultation and involvement

Citizens' forum

A German development of the Danish consensus conference format. In the Citizen's forum approximately 25 lay people are conveyed information about the issue by selected experts. On this basis lay people discuss the issue in plenum as well as in smaller groups aiming at the attainment of an agreement. In case of disagreement, minority expressions are allowed in the assessment report.

Consensus conference

Consensus conferences in the shape of the so-called Danish model are a further development of ideas conceived in the US in the 1970s. The basic idea of a consensus conference is to give lay people a voice in the political processes by selecting a panel of lay people (12-15 persons) who is given the power to set the agenda in a pending (often techno-scientific) controversy; that is to formulate the questions that need to be answered before decisions are made. At the end of the conference the lay panel produces a document presenting their consensus on the issue at hand.

Focus group

A qualitative interview format where a small group (typically 5-12) are gathered and guided through a structured discussion. The interviews are analysed by social scientists.

Future workshop

A workshop form developed to facilitate (local) action. Participants are guided through a structured debate in three phases. In the first phase participants are allowed to criticise anything related to the issue, without being contradicted. In the second phase visions about the issue in question are formulated without paying respect to barriers and in the third phase strategies to realise the visions are discussed.

Public hearing

A widespread and common means of participation, where the public is invited to participate in the decision-making process, either at public meetings or through a call for (written) comments.

PubliForum

A Swiss development of the Danish consensus conference format. Compared to the Danish-style consensus conference, consensus as a specific aim is scaled down.

Referendum

A vote on a specific issue, involving all affected citizens in a region or nation. Particularly used in Switzerland.

Scenario workshop

Like the future workshop, a short (two-day) structured discussion, with three phases (critique, vision, realisation). Here, however, participants are presented with different scenarios for the issue at stake. Participants are recruited representing various actor groups (stakeholders) and discussions focus on a social issue/ problem.

Technology Delphi studies/technology foresight

Methods where a number of stakeholder representatives (>1-2000) are invited to, through a survey, give their opinion about the future. The data can be analysed by a panel. Representatives from user groups are appointed and meet at a number of workshops and finally all gather to draw conclusions and formulate recommendations.

Food chain value communication

Benchmarking

Benchmarking was established during the 1950s to measure business performance in terms of cost/sales and investment ratios. Benchmarking may be used to make continuous improvements, increase efficiency, create customer awareness and satisfaction, and to improve profitability. Benchmarking of ethical activities in organisations could be seen as a separate benchmarking process, but also as a part of a larger benchmarking process.

Ethical accounting

Ethical accounting is introduced as an extension of economic accounting, and serves the dual role of being a source of information for modelling the consequences of acts, and a basis for evaluating these acts.

Ethical audits

There is not yet such a thing as a standard ethical audit. Criteria and methods of audits vary considerably. Thus, the emphasis can be on environmental issues, on social issues, military contracts, working conditions, animal welfare, the nature of the products, and/or combinations of some or all of these. Audits may be organised from the outside (governments, independent teams, NGOs) as well as from within the firm.

Ethical codes

Many organisations have formalised their standards of conduct in an ethical code. In the literature there is no general, agreed theoretical basis. The often-voiced complaint is that in themselves they are lifeless documents. The existence of such monuments of good intention is not enough. What counts are active discussions, attitudes and decisions in working toward or with a code.

ISO 9000

ISO 9000 consists of about twenty general system demands, which are valid through all sectors. The aim of the certificate is to provide a justified trust that the activity is well organised. Organisations have to translate the twenty demands to their situation and to demonstrate that the business processes are delivering what they promise. A clear business structure and up-to-date business data are essential. By applying the norms in a uniform way the quality system between supplier and customer is established. ISO 9000 contains no ethical demands. However, ISO 9000 may be seen as an instrument to enhance trust between organisations and between organisations and consumers.

Normative standards

Deontological theory may be considered to be the theoretical background of normative standards. Basic principles are central in this approach but it is hard to delineate the relevant principles, let alone the most central ones, for business contexts. There are many normative standards developed by organisations.

Stakeholder dialogue

Interactions between organisations and their stakeholders can take many forms. Stakeholder workshops are popular. Stakeholder processes are important elements of interactive decision-making. However, the instrument is not always used with maximal efficacy, e.g. stakeholder processes are often poorly managed and the expectations are often ill defined and unrealistic.

Stepwise dilemma-solving

The method is grounded in the principle-based approach of Beauchamp & Childress, which was meant to end academic disputes between the large theoretical traditions in ethics (consequentialism, deontological ethics and virtue ethics), in order to develop a more practical approach to urgent ethical issues, making use of all the traditions. Thus, in dilemma-solving, when it comes to finding the underlying arguments, they are assumed to consist of heterogeneous values that can be ordered with the help of principles that can be traced back to the three main ethical traditions. The moral question is typically assumed to have the form of a dilemma.

Total quality management

The core of total quality management is the conviction that it is possible to achieve defect-free work most of the time. This is why prevention is crucial and not appraisal, but also teamwork and managers as role models are necessary.

Value clarification

Values are deeply embedded in experience. The method takes its starting point as life experiences that are of emotional importance but too broad to be called values. These starting points, termed *value indicators*, can be: 1) goals or purposes; 2) aspirations; 3) attitudes; 4) interests; 5) feelings; 6) beliefs and convictions; 7) activities; and 8) worries, problems and obstacles. On the basis of these value indicators, various kinds of procedures, such as classroom dialogue, prioritising methods, etc., are advocated, which are all meant to facilitate a process of further reflection and clarification.

Weston's toolbox

This toolbox does not consist of a single method. It is a heterogeneous set of tools. Values have a central place. The tools are ordered according to possible goals of moral deliberation. Weston distinguishes the following goals (with their respective tools): 1) Explore an issue (pay attention to values, as well as to factual issues and terms); 2) Get unstuck (multiply options, shift problems, pay attention to values to open up new possibilities of integration); 3) Make a case (make the key values explicit, defend/define key factual claims and terms, consider key objections); and 4) Decide for yourself (prioritise or integrate the key values, seek new and creative options, check facts and inferences).