

Scientific report

Executive summary

Introduction

The objective of the workshop was to explore the potentials of integrating participation and multi-criteria analysis in decision-aid for the resolution of environmental conflicts. Traditional methodologies, like cost-benefit analysis and spatial planning are considered deficient for the resolution of environmental conflicts due to the nature of such conflicts. They are public conflicts characterised by the interaction of ecological and societal complexity. This implies that the process leading to their resolution must be legitimate and able to cope with uncertainties. The combination of participation and multi-criteria decision aid promises potential to achieve this for the following reasons:

- Societal complexity calls for stakeholder participation. Decision structuring tools offer the possibility to make participatory decision processes more transparent.
- Ecological complexity recommends the use of decision tools able to take into account uncertainty and ignorance such as certain forms of multi-criteria decision aid.
- Multi-criteria decision aid puts a strong accent on the structuring of the decision. Structuring the decision facilitates the exchanges within the decision group as well as with the respective constituencies and the general public.

In the workshop, we concentrated on both aspects, societal and ecological complexity, and we examined strengths and weaknesses of different participatory and multi-criteria approaches. Both general strategies, i.e. participation, focussing on an intensive integration of stakeholders, and multi-criteria decision aid as a special case of multi-criteria analysis, focussing on uncertain data and values, play a prominent role in the resolution of environmental conflicts, but there have been few attempts to find a common methodological framework. This workshop is a first step in this sense.

Main Outcomes

The workshop was structured in four parts:

- (1) Definition of conflict, resolution, the problem of selecting appropriate instruments
- (2) Participatory approaches as strategies for resolving environmental conflicts
- (3) Five case studies combining multi-criteria decision aid and participatory elements as a strategy for solving environmental conflicts
- (4) conclusions and outlook.

(1) Definition of conflict, resolution, the problem of selecting appropriate instruments

Here, we were inspired by two presentations: “What is meant by a „good decision“?”, by A. Holland, and „How to select instruments for the resolution of environmental conflicts”, by B. Klauer and H. Wittmer.

It is not clear, what should count as a good decision. Decisions should not be thought of as events nor as the conclusions of a process of reasoning. They are essentially contextual, and essentially a function of shared interpretation and public recognition. We considered whether environmental conflicts can or should be thought of as ‘soluble’, and whether it is necessarily a good thing that they be solved. We considered how far the integrity of decision-making can

survive the processes of analysis and aggregation that are involved, and whether criteria relate to decisions in the way that this approach implies. Participation brings with it responsibility, but also complicity. We also asked what provision can or should be made for stakeholders who are unable to participate, namely non-humans and future humans. The next question, i.e. “How to select instruments for the resolution of environmental conflicts” (B. Klauer/ H. Wittmer) kept our attention throughout the event. The problem for the scientific adviser in a conflict consists in selecting the one most appropriate instrument for the respective conflict. We worked on this in the break-out groups (cp. scientific content).

(2) Participatory approaches as strategies for resolving environmental conflicts

In this part, four different participatory approaches were presented using case studies. *cooperative discourse* (O. Renn), the *consensus conference* (L. Zurita), and *mediation* (M. Striegnitz). The *group modelling* approach, presented by P. Antunes, enables stakeholders to model ecological and social processes and thereby synthesise individual information to a common understanding. The cooperative discourse model already includes elements of multi-criteria analysis, while mediated group modelling holds potential for their integration.

(3) Case studies combining Multi-criteria decision aid and participatory elements as a strategy for solving environmental conflicts

The case studies covered a range of environmental conflicts on different spatial levels, and applied multi-criteria methods in combination with participative instruments. F. Messner considered the effects of global change, especially of climate change, for the design of water management for the German river Elbe. He integrates scientific models into his mathematically elaborate decision aid for inter-ministerial committees. C. Spash presented a case study concerning the implementation of the EU-water framework directive on the regional level. He uses multi-criteria mapping with Scottish residents. The participatory use of ELECTRE III with the help of communication specialists in a waste-treatment-siting problem for an Italian district was presented by M.F. Norese. J. Clark focussed on the decision-making process rather than on the mathematical models and methods in her case study on environmental budget allocation with stakeholder involvement. Her case study is the ranking of municipal management measures in an English forest reserve. G. Munda resumed various case studies and philosophical reflections and argued for more attention to the social embedding of participatory multi-criteria decision aiding.

(4) Conclusions and outlook

A. Stirling analysed the workshop and identified many open questions around the main topics: nature of decisions, balancing structure and integrity and the role of decision aid in decision making: how to balance the different potential participants in the process? How to design empowering vs. constraining structures? In this light, he identified three main emerging themes: participation and analysis, constructing approaches and the relationship with power.

His analysis induced a lively debate about topics for future collaboration, as all participants agreed that the link between multi-criteria analysis and participatory methods for the resolution of environmental conflicts constitutes a promising field for research, as well as for the resolution of societal conflicts.

Further meetings are planned in order to elaborate research priorities and funding opportunities. For the moment, we will concentrate on the possibility of an ESF thematic network in order to prepare EU Integrated Projects or Networks of Excellence in a second stage.

Scientific content

How to select instruments for the resolution of environmental conflicts?

This question was central during the workshop. It was presented by B. Klauer and H. Wittmer in a top-down approach and as a meta-multi-criteria decision problem. This approach was challenged by some participants and refined by others. We used the criteria developed in the presentation to roughly assess strengths and weaknesses of the methods presented throughout the workshop. The break-out groups had the task to refine and to complement this approach. The following paragraphs are a synthesis of these three elements presentation, general discussion, and break-out groups.

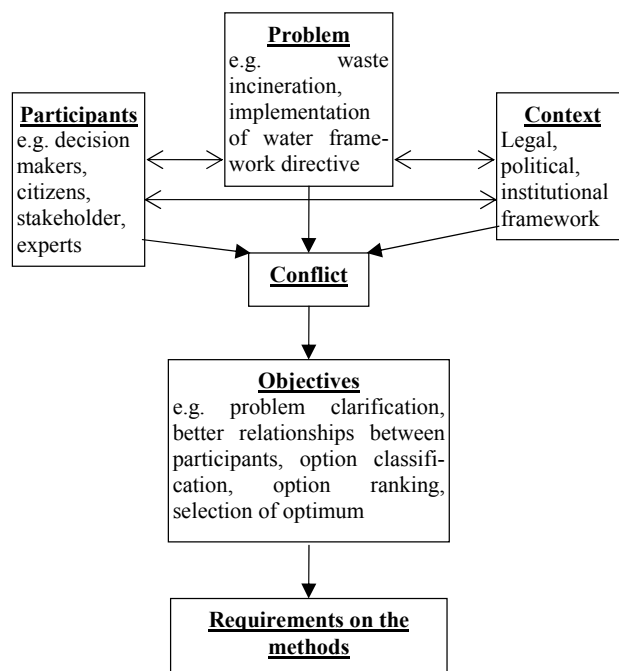


Figure 1: bottom-up approach

Conflicts are dependent on their contexts (see figure 1 left). The problem, the participants and the context have to be identified (they are mutually dependent) in order to determine the conflict. The participants need to agree on the objectives to be achieved by the decision process. Requirements on the method can then be formulated.

At this point, the bottom-up approach is matched with the top-down approach. Different decision-aiding methods are evaluated according to the criteria identified (see table 1). Ideally, the requirements are formulated according to the same criteria so that it is feasible to identify the appropriate methods. The criteria should be identified in an extended scientific discourse, using established strengths and deficiencies of existing approaches.

Additionally it is helpful to differentiate between different stages of conflict resolution: (1) Opening up, (2) structuring of information and complexity and (3) closing down or resolving.

In a second step, different idealised methods are evaluated verbally according to these criteria. Criteria are suggested to evaluate the *potential* of a method. How well is it suited to deal with a certain aspect. Of course an evaluation can not be absolute and a criterion that is decisive in one conflict might be negligible in the next.

E.g., it can not be said that mediation is a method that is always very good or bad in structuring and coping with information, as this depends on its concrete use. But it can be said that multi criteria methods are generally good in this aspect. The contrary is true with respect to the relationship of the participants and the criterion of closing down a debate to a final compromise. If the identified requirements on a method in a conflict thus correspond to a

need for structuring information, improving relationships and closing down the debate, the conflict moderator might consider combining mediation and multi-criteria methods.

Table 1: Criteria for evaluating decision aid methods

Information	Integrating different types of information
	Integrating procedural knowledge
	Coping with uncertainty
	Coping with complexity
Social dynamics	Changing behaviour, changing perspectives/ learning
	Agency/ empowerment
	Respect/ relationship
	Facilitate convergence or illustrate diversity
Legitimacy	Compliance
	Inclusion/ representation
	Transparency of rules and assumptions to insiders and outsiders
	Legal compatibility
	Accountability
	“Robustness” of methods: competency required by moderator and participants
Costs	Resources required

We identified four groups of criteria, corresponding to information, social dynamics, legitimacy, and costs. The criteria were refined and augmented during the workshop and consist of:

1. Information

- **Integrating different types of information:** scientific and technical with local and idiosyncratic knowledge.
- **Integrating procedural knowledge,** i.e. knowledge on how decisions are actually made.
- **Coping with uncertainty:** how good does a method deal with lack of information or with a set of different possible states of the world or outcomes, where probabilities are unknown.
- **Coping with complexity:** how is complexity treated in the process and how well can participants perceive and deal with it.

2. Social dynamics

- **Changing behaviour, changing perspectives/ learning:** Does the method permit the participants to learn more about the conflict, does it allow for the changing of perspectives and of behaviour?
- **Agency/ empowerment:** Is the method able to give participants agency or ideally empower them? This includes information on the issue and the consequences. Ideally responsibility is created or made aware through the process, without judging that it is under all circumstances desirable that participants feel responsible for all conflicts.
- **Respect/ relationship:** Is mutual respect, maybe even understanding of different positions created during the process? How does the approach affect the relationship of the actors and organisations involved?

- **Facilitate convergence or illustrate diversity:** According to the type of conflict it may be appropriate to focus on creating convergence or on examining and illustrating different assumptions, outcomes, values, or interpretations of possible outcomes.

3. Legitimacy

- **Compliance:** with the formal and informal procedures perceived as adequate in the respective context.
- **Legal compatibility:** Are the procedure and the proposed outcome compatible with existing legislation?
- **Inclusion/ representation:** we agreed that inclusion per se is by no means sufficient. The issue is whether all relevant interests and affected stakeholders are known, included and/or represented in a way to assure their equitable participation in the process.
- **Transparency:** of rules and assumptions to insiders and outsiders.
- **Accountability:** Is someone accountable for the decision and its outcome? Is it clear who?
- **Robustness of methods:** How much do they depend on “good” execution, does the method require excellent facilitators or can it be used by almost anyone. The same applies for the competency required from the participants in order to allow them to participate successfully.

4. Costs

- **resources required** in proportion to the scale and type of conflict at stake.

These criteria have intentionally been elaborated in an exploratory, interdisciplinary workshop and therefore do not reflect the state of the art of one of the participating disciplines. Further work has to be done to refine these criteria and their theoretical foundation and to assess their empirical utility for selecting appropriate instruments.

Assessment of results / contribution to the future direction of the field.

The exploratory process of assessing the complementarity of the different approaches confirmed the expectation that deficiencies of more traditional decision aid tools can be overcome by a combination of MCDA and participatory instruments.

We would like to highlight three aspects in the assessment of the workshop:

1. We identified with this exploratory workshop a field of research that has not yet been analysed systematically. All participants felt that there are many points which only have been touched upon without having gone into more detail. So, the exploratory function of this meeting has been fulfilled.
2. At the same time, researchers in different fields are looking forward to the results of this meeting. We are editing a special issue dedicated to the results of the workshop to be published in a peer-reviewed international journal addressing readers from different disciplinary backgrounds.
3. The case studies showed that first attempts of combining multi-criteria tools with participation are being used in practical environmental policy. So, we expect a large improvement in practical decision-aid from further theoretical exchange about intensifying the relationship between these two fields.

Four priority areas for further exploration and research were identified:

- a) the relationship with power, i.e. the real decision makers within the wider political discussion,
- b) the philosophical dimension of environmental conflict resolution, e.g. the inclusion of the interests of future generations or non-humans in the decision process, how to determine whether a decision is good,
- c) the participatory aspects of decision processes in more detail: who to involve, where and why, and
- d) procedural issues concerning deliberation and their relationship with structuring tools.

Further exchange and co-operation on the four issues identified above are necessary to develop a common understanding and to integrate further researchers from other areas. Therefore, we agreed on the application for an ESF Thematic Network as the next step and identified a core group for this task. The Network will constitute an excellent foundation for the application of an EU-Integrated Project or Network of Excellence.

NEW STRATEGIES FOR SOLVING ENVIRONMENTAL CONFLICTS:

POTENTIALS FOR COMBINING
PARTICIPATION AND
MULTICRITERIA
ANALYSIS



26TH – 28TH OF JUNE 2002
AT THE UFZ
CENTRE FOR ENVIRONMENTAL RESEARCH
IN LEIPZIG

ORGANISED BY
DR. F. RAUSCHMAYER,
DR. B. KLAUER, DR. F. MESSNER AND DR. H. WITTMER

supported by



Final Programme

Wednesday 26.6.02

Introduction	
14.30 – 14.40	Prof. Dr. Stottmeister (UFZ)
14:40 – 14:55	Prof. Dr. Gottweis (ESF)
14:55 – 15:10	Dr. F. Rauschmayer (Organising team)
Theme 1: Better Decisions by Participatory and Analytical Decision Aid?	
Chair: Felix Rauschmayer	
15:10 – 16:00	Paper 1 (25 min.) What is meant by a „good decision“? (A. Holland/F. Rauschmayer) Discussant (5 min.): S. van den Hove Discussion (20 min.)
16:00 – 16:50	Paper 2 (25 min.) How to select instruments for the resolution of environmental conflicts (B. Klauer/H. Wittmer) Discussant (5 min.): S. Stagl Discussion (20 min.)
16:50 – 17:20	Tea/Coffee
Theme 2: Participatory Approaches	
Chair: Heidi Wittmer	
17:20 – 18:00	Paper 3 (25 min.): Citizen participation for designing environmental policies (O. Renn) Discussant (5 min.): I. Omann Direct questions (10 min.)
18:00 – 18:40	Paper 4 (25 min.): Consensus conference method in environmental issues: relevance and strengths (L. Zurita) Discussant (5 min.): F. Rauschmayer Direct questions (10 min.)
18:40 – 19:10	Discussions of papers 3-4
19:10	Get together at UFZ

Thursday 27.6.02

Theme 2: Participatory Approaches	
	Chair: Heidi Wittmer
9:00 – 9:50	Paper 5 (25 min.): Conflicts over coastal protection in a national park: mediation and negotiated law making (M. Striegnitz) Discussant (5 min.): M. Drechsler Discussion (20 min.)
Theme 3: Coping with Participation in Multicriteria Analysis: Case Studies	
	Chair: Bernd Klauer
9:50 – 10:50	Paper 6 (25 min.): Participation in multicriteria decision support for a large-scale water allocation problem under conditions of global change in the Spree River Basin (Germany) (F. Messner) Discussant with extension (15 min.): P. Antunes Discussion (20 min.)
10:50 – 11:20	Tea/Coffee
11:20 – 11:50	Paper 7 (25 min.): Applying value-mapping and participatory techniques in the context of the Water Framework Directive (C. Spash) Discussant (5 min.): B. Günther
11:50 – 12:20	Paper 8 (25 min.): ELECTRE III as a support for waste incineration participatory decision making (M.-F. Norese) Discussant (5 min.): I. Bräuer
12:20 – 12:50	Discussion of papers 7-8 (30 min.)
12:50 – 14:00	Lunch

Thursday 27.6.02 (continued)

Group discussion	
	Chair: Heidi Wittmer
14:00 – 14:30	Spinning Off: Topics for discussion (30 min.)
14:30 – 16:00	Four Break-Out Groups (90 min.)
16.00 – 16:30	Reporting Back (30 min.)
16:30 – 17.00	Tea/Coffee
17:00 – 21:00	Jointly exploring Leipzig by boat, and having dinner
21:00	Exploring Leipzig by foot ?...

Friday 28.6.02

Theme 4: Coping with Participation in Multicriteria Analysis: Perspectives	
	Chair: Frank Messner
9:00 – 9:30	Paper 10 (25 min.): “Social Multi-Criteria Evaluation” (SMCE): Methodological foundations and operational consequences (G. Munda) Discussant (5 min.): H. Wittmer
9:30 – 10:00	Paper 11 (25 min.): Structuring deliberation in environmental decision making using a multi-criteria approach (J. Clark) Discussant (5 min.): M. Welp
10:00 – 10:30	Discussion of papers 10-11 (30 min.)
10:30 – 11:00	Tea/Coffee
11:00 – 12:30	Summary of Workshop: A. Stirling (15 min.) Conclusion and outlook (75 min.)
12:30	Lunch

List of Participants

Antunes, Paula, Prof. Dr.

ECOMAN – Ecological Economics and Management Centre, New University
of Lisboa

Quinta da Torre, 2829-516 Caparica, Portugal

☎: +35-11-2954464 ☎: +35-11-2948554 ✉: mpa@mail.fct.unl.pt

Bräuer, Ingo

Institute for Agronomics, University of Göttingen

Platz der Göttinger Sieben 5, 37073 Göttingen, Germany

☎: +49-551-394805 ☎: +49-551-394812 ✉: ibraeuer@uni-uaao.gwdg.de

Clark, Judy, Dr.

Department of Geography, University College London

26 Bedford Way, London WC1H 0AP, United Kingdom

☎: +44 20 7679 5548 ☎: +44 20 7679 7565 ✉: jclark@mail.geog.ucl.ac.uk

De Montis, Andrea, Dr.

Department of Engineering, University of Sassari

Via De Nicola, 07100 Sassari, Italy

☎: +39 079 22 9241 ☎: - ✉: ademonti@vaxca1.unica.it

Dombrowski, Ines

UFZ - Centre for Environmental Research

Postfach 500136, 04301 Leipzig, Germany

☎: +49-341-235-2342 ☎: +49-341-235-2825 ✉: dombro@alok.ufz.de

Drechsler, Martin, Dr.

UFZ - Centre for Environmental Research

Postfach 500136, 04301 Leipzig, Germany

☎: +49-341-235-2039 ☎: +49-341-235-2825 ✉: martind@oesa.ufz.de

Gottweis, Herbert, Prof. Dr.

University Vienna, Institute for Political sciences

Währingerstr. 28, 1090 Wien, Austria

☎: +43 1 4277 47723 ☎: +43 1 4277 9477 ✉: Herbert.gottweis@univie.ac.at

Günther, Beate

Office for Mediation

Kuno-Fischer-Str. 18, 14057 Berlin, Germany

☎: +49-30-32604523 ☎: +49-30-32604523 ✉: Beate.guenther@snafu.de

van den Hove, Sybille, Dr.

Institut de Ciència i Tecnologia Ambientals (ICTA), Universitat Autònoma de
Barcelona

Passeig Pintor Romero, 8, atico 1a, 08197 Vallldoreix, Spain

☎: +34 93 587 95 36 ☎: +34 93 587 95 36 ✉: s.vandenhove@terra.es

Klauer, Bernd, Dr.

UFZ - Centre for Environmental Research

Postfach 500136, 04301 Leipzig, Germany

☎: +49-341-235-2204 ☎: +49-341-235-2825 ✉: klauer@alok.ufz.de

Messner, Frank, Dr.
UFZ - Centre for Environmental Research
Postfach 500136, 04301 Leipzig, Germany
☎: +49-341-235-2204 📠: +49-341-235-2825 ✉: Messner@alok.ufz.de

Munda, Giuseppe, Prof. Dr.
Departament d'Economia i d'Història Econòmica
Campus de la UAB, 08193 Bellaterra (Cerdanyola del V.), Spain
☎: +34 93 581 1416 📠: +34 93 581 2012 ✉: Giuseppe.Munda@uab.es

Norese, Maria Franca, Prof. Dr.
Istituto politecnico di Torino
Corso Duca degli Abruzzi, 24, 10129 Turino, Italy
☎: +39 0115647279 📠: +39 0115647299 ✉: norese@athena.polito.it

Omann, Ines
Sustainable Europe Research Institute
Schwarzspanierstr. 4, 1090 Wien, Austria
☎: +43/316/776081 📠: +43-1/9690728 ✉: ines@seri.at

Ost, Nina, Dr.
UFZ - Centre for Environmental Research
Postfach 500136, 04301 Leipzig, Germany
☎: +49-341-235-3179 📠: +49-341-235-2825 ✉: ost@alok.ufz.de

Rauschmayer, Felix, Dr.
UFZ - Centre for Environmental Research
Postfach 500136, 04301 Leipzig, Germany
☎: +49-341-235-2074 📠: +49-341-235-2825 ✉: rauschma@alok.ufz.de

Renn, Ortwin, Prof. Dr.
Akademie für Technikfolgenabschätzung Stuttgart
Industriestraße 5, 70565 Stuttgart, Germany
☎: + 49 711 9063-160 📠: + 49 711-9063-299 ✉: ortwin.renn@ta-akademie.de

Ring, Irene, Dr.
UFZ - Centre for Environmental Research
Postfach 500136, 04301 Leipzig, Germany
☎: +49-341-235-2480 📠: +49-341-235-2825 ✉: ring@alok.ufz.de

Spash, Clive, Prof. Dr.
Socio-Economic Research Programme (SERP), Macaulay Institute
Craigiebuckler, Aberdeen AB15 8QH, United Kingdom
☎: +44 1224 498200 📠: +44 1224 498205 ✉: c.spash@macaulay.ac.uk

Stagl, Sigrid, Dr.
University of Leeds, The School of the Environment
Leeds LS2 9JT, United Kingdom
☎: + 44-113-2336521 📠: + 44-113-2336716 ✉: sts@env.leeds.ac.uk

Stirling, Andrew, Dr.
Science and Technology Policy Research, University of Sussex
Mantell Building, Falmer, Brighton, East Sussex BN1 9RF, United Kingdom
☎: +44 1273 686 758 📠: +44 1273 685 865 ✉: a.c.stirling@sussex.ac.uk

Stoll-Kleemann, Susanne, Dr.

Free University of Berlin, Dept of Political and Social Sciences
Malteserstr. 74-100, 12249 Berlin, Germany

☎: +49 30 838 70709 📠: +49 30 838 70718 ✉: stolls@mail.zedat.fu-berlin.de

Striegnitz, Meinfried

Niedersächsisches Landesamt für Ökologie
An der Scharlake 39, 31135 Hildesheim, Germany

☎: +49-5121-509-100 📠: +49-5121-509-196 ✉: Meinfried.Striegnitz@nloe.niedersachsen.de

Unnerstall, Herwig, Dr.

UFZ - Centre for Environmental Research
Postfach 500136, 04301 Leipzig, Germany

☎: +49-341-235-3174 📠: +49-341-235-2825 ✉: unnersta@alok.ufz.de

Welp, Martin, Dr.

Potsdam Institute for Climate Impact Research
Telegrafenberg A31, 14473 Potsdam, Germany

☎: +49-331-288-2500 📠: +49-331-288-2600 ✉: martin.welp@pik-potsdam.de

Wittmer, Heidi, Dr.

UFZ - Centre for Environmental Research
Postfach 500136, 04301 Leipzig, Germany

☎: +49-341-235-2074 📠: +49-341-235-2825 ✉: wittmer@alok.ufz.de

Zurita, Laura

The Danish Board of Technology
Antonigade 4, 1106 Kobenhavn, Denmark

☎: +45 33 32 53 57 📠: +45 33 91 05 09 ✉: lz@tekno.dk

Zwirner, Oliver

UFZ - Centre for Environmental Research
Postfach 500136, 04301 Leipzig, Germany

☎: +49-341-235-2542 📠: +49-341-235-2825 ✉: zwirner@alok.ufz.de

Statistical information on participants

Countries of origin

Germany	16
UK	4
Italy	2
Spain	2
Austria	1
Denmark	1
Portugal	1

Brackets of age

Age 30-40	19
Age 40-50	5
Age 50+	3

Gender

Male	14
Female	13