

Participatory Approaches in Science and Technology
Conference
Edinburgh, 4th - 7th June 2006

Conference programme and book of abstracts

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Welcome and conference objectives

Welcome to Edinburgh and the PATH conference. For the next few days we will focus on participatory approaches in science and technology. We are delighted to welcome policymakers, practitioners, academics and students from all over the world to exchange knowledge and develop future in this area. The conference is part of the PATH project, a Science and Society Coordination Action funded under European Commission 6th Framework Programme for Research (SAS6-CT-2004-510636).

The PATH conference aims to explore how best to involve stakeholders and the public in policy development and decision-making on science and technology issues. Using a combination of keynote speakers; papers addressing state of the art theory and practical examples; and interactive sessions, participants will share experiences and innovative ideas, and be encouraged to map out ways forward.

Specifically the conference will:

- Encourage participants to critically examine public participation and propose appropriate and practical ways forward;
- Engage participants in exploring how different values and interests can be identified and represented in participatory processes, and in policy formulation more generally;
- Encourage participants to critically examine the strengths, weaknesses and opportunities of using participatory methods at different scales and levels;
- Provide a dynamic and fun environment for sharing, learning and thinking creatively about participation.

We hope you will fully participate in all sessions of the conference as well as the social programme. We look forward to a stimulating, productive and enjoyable few days.

Organisers

The conference is organised by the Macaulay Institute as part of the PATH (Participatory Approaches in Science and Technology) project.

Local Organising Committee

- Carol Hunsberger, Macaulay Institute
- Wendy Kenyon, Macaulay Institute
- Jane Lund, Macaulay Institute
- Jamie Watt, Macaulay Institute

International Steering Group

- Kirsty Blackstock, Macaulay Institute
- Claudia Carter, Macaulay Institute
- Wendy Kenyon, Macaulay Institute
- Ortwin Renn, University of Stuttgart
- Sybille van den Hove, Autonomous University of Barcelona,
- Laura Zurita, Danish Board of Technology

Scientific Reviewers

Ida Andersen, Kirsty Blackstock, Mirillia Bonnes, Claudia Carter, Guiseppe Carrus, Ben Davies, Anke Fischer, Clare Hall, Sybille van den Hove, Carol Hunsberger, Wendy Kenyon, Thomas Koetz, Valborg Kvakkestad, Nele Lienhoop, Wendy Proctor, Felix Rauschmayer, Dale Rothman, Ortwin Renn, Heidi Wittner.

Conference funding and sponsors

This conference is funded as part of the EC PATH project. Dr Kenyon's time on the project is funded as part of a Scottish Executive Environment and Rural Affairs Department (SEERAD) Research Fellowship. We are also grateful to SEERAD, the Macaulay Development Trust, the VISULANDS project, and Scottish Environment Protection Agency (SEPA) who are all sponsoring elements of the conference.

For further information please contact Wendy Kenyon

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Or see website <http://www.macaulay.ac.uk/pathconference/>

Thanks

Special thanks to Vikki Hilton of Hilton Associates for advice on the participatory aspects of the conference. vikki@hiltonassociates.com

Summary programme

MONDAY 5 TH JUNE	TUESDAY 6 TH JUNE	WEDNESDAY 7 TH JUNE
8.30 – 9.00: REGISTRATION	9.00 – 9.45: Plenary Session 2 (PR) Keynote speaker LARS KLIVER (Danish Board of Technology) <i>New trends in public participation</i>	9.30 – 10.30: Parallel Session 7 7.1 Trust (DR) 7.2 Nanotechnology (HR) 7.3 Critical reflections of methods (PR)
9.00 – 11.00: Opening Plenary (PR) Welcome and introductions: W Kenyon (Macaulay) Keynote speakers PHILIPPE GALIAY, European Commission <i>European Gover'Science and Framework Programme 7</i> JOHN DRYZEK: Australia National University <i>Deliberative innovation to different effect: Cross-national comparisons</i> CAROLYN LUKENSMEYER: America Speaks <i>Scale and impact: Citizen voices in participatory decision-making</i>	9.45 – 10.45: Parallel Session 3 Thought provokers! 3.1 Social learning (DR) 3.2 Science meets participation (HR) 3.3 Evaluating participation (PR)	10.30 – 12.00: Plenary Session 3 (PR) Keynote speaker ORTWIN RENN: Stuttgart University <i>Participation in risk governance: The case of nanotechnology</i> PATH papers CLAUDIA CARTER et al, Macaulay Institute <i>GMO's: Scale and representation issues</i> THOMAS KOETZ et al, UAB <i>Biodiversity governance</i>
11.00 -11.30 COFFEE BREAK	10.45 -11.15 COFFEE BREAK and POSTERS	12.00 -12.30 COFFEE BREAK
11.30 – 13.00: Parallel Session 1 1.1 Scottish case studies (DR) 1.2 Representation (PR) 1.3 Innovative methods (HR)	11.15 – 12.15: Parallel Session 4 4.1 Critical Perspectives (HR) 4.2 Gender and representation (DR) 4.3 Governance and participation (PR) 12.15 – 14.00 Poster session	12.30 – 13.30: Closing Plenary Workshop (PR) Action planning Participatory evaluation Thanks and close: WENDY KENYON (Macaulay Institute)
13.00 – 14.00 LUNCH	13.00 – 14.00 LUNCH and POSTERS	13.30 LUNCH
14.00 – 16.00 Plenary PATH workshop (PR)	14.00 – 15.30: Parallel Session 5 5.1 Citizens juries/ consensus conferences (HR) 5.2 Practical papers (DR) 5.3 Transatlantic comparisons (PR)	
16.00 – 16.30 TEA BREAK	15.30 – 16.00 TEA BREAK	
16.30 – 18.00: Parallel Session 2 2.1 Public participation in WFD (HR) 2.2 Conflict and legitimacy in conservation of biodiversity (DR) 2.3 Critical perspectives (PR)	16.00 – 17.30: Parallel Session 6 6.1 Participation and GMOs/biotechnology (HR) 6.2 Scenario methods (DR) 6.3 Multi-scale participation (PR)	PR = Prestonfield room DR = Duddingston room HR = Holyrood room

Detailed Programme

	Sunday 4th June
17.00-19.00	Welcome Reception and Registration in St Leonard's Hall
	Monday 5th June
8.30-9.00	Registration in John McIntyre Centre
9.00-11.00	<p>Opening Plenary: Prestonfield room WENDY KENYON, Macaulay Institute Welcome and introductions</p> <p>PHILIPPE GALIAY, European Commission <i>European Gover' Science and Framework Programme 7</i></p> <p>Keynote speakers</p> <p>PROFESSOR JOHN DRYZEK: Australia National University <i>Deliberative innovation to different effect: Cross-national comparisons</i></p> <p>DR CAROLYN LUKENSMEYER: America Speaks <i>Scale and impact: Citizen voices in participatory decision-making</i></p>
11.00	COFFEE BREAK
11.30-13.00	<p>Parallel session 1</p> <p>Session 1.1: Duddingston room Scottish Case Studies (Chair: Dick Birnie, Macaulay Institute) <i>Participation and regulation: where two worlds collide?</i> Richards, C. and Blackstock, K. *SEPA, Scotland (*organisation and country of first author)</p> <p><i>Identifying farmer attitudes towards genetically modified crops in Scotland</i> Hall, C. SAC, Scotland</p> <p><i>"Now who decided that?": Experts and the public in biodiversity conservation</i> Garritt, J. Open University/Open Eye Research, Scotland</p> <p>Session 1.2: Prestonfield room Representation (Chair: Laura Zurita, DBT) <i>Protecting future generations through submajority rule.</i> Ekeli, K.S. Norwegian University of Science and Technology, Norway</p> <p><i>Choosing participants for a constructive technology assessment exercise: dilemmas and consequences.</i> Marris, C., Joly, P. and Bertrand, A. INRA, France</p>

	<p><i>Representing GM nation</i> Reynolds, L. and Szerszynski, B. CSEC, Lancaster University, England</p> <p>Session 1.3: Holyrood room Innovative methods (Chair: Giuseppe Carrus, University of Rome) <i>Remote sensing technology and peasant knowledge: A participatory spatial approach to conservation planning in Puerto Galera, Philippines</i> Cantos, J.A. and Daproza, M.G. WWF, Philippines</p> <p><i>Sustainability foresight as a means for participatory transformation management</i> Truffer, B., Voss J.P. and Konrad, K. Cirius / Eawag, Switzerland</p> <p><i>Incorporating local knowledge into urban environmental research: the photo-survey method</i> Moore, G., Croxford, B., Adams, M., Refaee, M., Cox, T. and Sharples, S. University College London, England</p>
13.00	LUNCH
14.00-16.00	Plenary PATH workshop: Prestonfield room <i>With all conference participants</i>
16.00-16.30	TEA BREAK
16.30-18.00	<p>Parallel sessions 2 Session 2.1: Holyrood room Public participation in WFD (Chair: Caspian Richards, SEPA) <i>Participation as a key factor for the successful implementation of the WFD</i> Kastens, B. and Newig, J. Institute of Environmental Systems Research, University of Osnabrück, Germany</p> <p><i>Reflections on building active involvement into the role of competent authority for the Water Framework Directive – the experience of the Environment Agency in England and Wales</i> Colvin, J., Bailey, P. and Orr, P. Environment Agency, England</p> <p><i>Mapping public participation in the Water Framework Directive: a case study of the Pinios river basin, Greece.</i> Mouratiadou, I. and Moran, D. Scottish Agricultural College, Scotland</p>

	<p>Session 2.2: Duddingston room Conflict and legitimacy in conservation of biodiversity (Chair: Doug Wilson, The Institute for Fisheries Management) <i>From conflict to co-operation – to the ecosystems approach – a case study in stakeholder participation for a European marine site in Kent</i> Pound, D. Dialogue matters, England</p> <p><i>Wintering geese in the Netherlands...legitimate policy?!</i> Leistra, G.R. Wageningen University, The Netherlands</p> <p><i>Assessing the threat of exotic plant pests</i> Cook, D. and Proctor, W. CSIRO, Australia</p> <p>Session 2.3: Prestonfield room Critical Perspectives on participation (Chair: Sigrid Stagl, University of Sussex) <i>Forms and functions of participatory technology assessment – or: why should we be more sceptical about public participation?</i> Abels, G. Institute for Science and Technology Studies, Germany</p> <p><i>Improving environmental quality through participation? A critical perspective on the effectiveness of public participation</i> Fritsch, O. and Newig, J. Institute of Environmental Systems Research, University of Osnabrueck, Germany</p> <p><i>Public participation or public management?</i> Heinrichs, H. and Grunenberg, H. Universität Lüneburg, Germany</p>
	<p>FREE EVENING</p>
	<p>Tuesday 6th June</p>
<p>9.00-9.45</p>	<p>Plenary session 2: Prestonfield room Chair: ORTWIN RENN (University of Stuttgart)</p> <p>Keynote speaker DR LARS KLUVER: Danish Board of Technology <i>New trends in public participation</i></p> <p>CRAIG CORMICK, Biotechnology Australia <i>Introduction to the poster session</i></p>

9.45-
10.45

Parallel session 3: Thought provokers!

3.1 Social Learning: Duddingston room

(Chair: Claudia Carter, Macaulay Institute)

Social learning in public participation for sustainability: Measuring the quality of participatory approaches

Garmendia, E. and Stagl, S.
University of Sussex, England

Dare we jump off Arnstein's ladder? Participation and social learning as a new policy paradigm

Collins, K. and Ison, R.
Open University, England

Social learning – a useful concept for participatory decision-making processes?

Muro, M. and Jeffrey, P.
Cranfield University, England

3.2 Science meets participation: Holyrood room

(Chair: Sybille van den Hove, University Autònoma Barcelona)

Third task science

Moll, P.
Germany

The response of scientists to deliberative public engagement: a UK perspective

Burchell, K.
London School of Economics, England

Environmental empowerment through co-operation between civil society, universities and science shops

Brodersen, S., Jørgensen, M.S. and Hansen, A.
The Technical University of Denmark, Denmark

3.3 Evaluating participation: Prestonfield room

(Chair: Felix Rauschmeyer, UFZ)

A mixed methods approach to evaluation of large scale participatory processes

Bulling, D. and DeKraai, M.
University of Nebraska Public Policy Center, United States

Evaluating the quality of methods to facilitate participatory assessments

Cuppen, E., Hisschemöller, M., Dunn, B., Midden, C., and van de Kerkhof, M
Institute for Environmental Studies, Vrije Universiteit, The Netherlands

	<p><i>Measuring the intensity of participation along six dimensions</i> Rasche, K. and Hare, M. Seecon Deutschland, Germany</p>
10.45-11.15	COFFEE BREAK and POSTERS
11.15-12.15	<p>Parallel sessions 4</p> <p>Session 4.1: Holyrood room Critical Perspectives (Chair: Ida Anderson, DBT) <i>Epistemological and ethical dilemmas of public participation</i> Aledo Tur, A., Andreu, H.G. and Noguera, G.O. University of Alicante, Spain</p> <p><i>Three burdens of public participation in science and technology</i> Raman, S. University of Nottingham, England</p> <p>Session 4.2: Duddingston room Gender and representation (Chair: Kirsty Blackstock, Macaulay Institute) <i>Learning from women's grassroots activism: gender reflections on environmental policy science and participatory processes</i> Agüera-Cabo, M.A. European Commission (Joint Research Center), Italy</p> <p><i>What difference does being represented make?</i> Singh, J. PEALS, Newcastle University, England</p> <p>Session 4.3: Prestonfield room Governance and participation (Chair: Matthias Kaiser, NENT) <i>Public participation as risk governance: enhancing democratic accountability?</i> Levidow, L. Open University, England</p> <p><i>Some institutional aspects of science in support of the Common Fisheries Policy</i> Wilson, D. and T.J. Hegland Institute for Fisheries Management and Coastal Community Development, Denmark</p>
12.15-13.00	Poster session
13.00-14.00	LUNCH and POSTERS
14.00-	Parallel sessions 5

15.30	<p>Session 5.1: Holyrood room Citizens juries/ consensus conferences (Chair: Wendy Kenyon, Macaulay Institute) <i>Deciding on complex knowledge; biomonitoring data and policy interpretation in Belgium</i> Keune, H., Koppen, G., Casteleyn, L. and Goorden, L. University of Antwerp, Belgium</p> <p><i>Public deliberation in science and technology policymaking</i> Hamlett, P.W. North Carolina State University, USA</p> <p><i>Public participation on its own barricades: citizens' jury on water management from experiment to instrument?</i> Bos, L., Huitema, D. and Kerkhof, M.v.d. VU-IVM, The Netherlands</p> <p>Session 5.2: Duddingston room Practical papers (Chair: Wendy Proctor, CSIRO) <i>Engaging community groups in discussions on science issues: the CoRWM discussion guide.</i> Sanders, A., Hyam, P., Acland, A. and Alder, S. (30 mins) Dialogue by Design, England</p> <p><i>Repertory grid: a tool to elicit the true range of relevant concepts in a certain topic area</i> Van.de Kerkhof, M., Cuppen, E. and Hisschemoller, M. (60 mins) Institute for Environmental Studies, Vrije Universiteit, The Netherlands</p> <p>Session 5.3: Prestonfield room Transatlantic lessons (Chair: Carolyn Lukensmeyer, America Speaks) <i>The Vaccine Policy Analysis Collaborative (VPACE): a new model for citizen and stakeholder engagement in science policy making</i> Bernier, R. and the PEPPI Steering Committee. Centers for Disease Control and Prevention, USA</p> <p><i>Consulting Europeans: experiences from the project reprogenetics</i> Kaiser, M., Almaas, V. and Ellefsen, T. National Committee for Research Ethics NENT, Norway</p> <p><i>Complex science and participatory decisions: Two water quality case studies from North Carolina, USA</i> Maguire, L.A. Duke University, USA</p>
15.30-16.00	COFFEE BREAK

16.00-
17.30

Parallel sessions 6

Session 6.1: Holyrood room

Participation and GMOs/biotechnology (Chair: Les Levidow, Open University)

Labeling genetically modified foods: a community discussion

Tomkins, A.J., Christensen, I., Loontjer, K., Fulwider, J., Abdel-Monem, T. and Cohn, D.

University of Nebraska Public Policy Center, USA

On being technically, ethically and politically reasonable: scientists, citizens and GM crops

Harvey, M.

ESRC Genomics Policy and Research Forum, Scotland

An interactive research method for the exploration of value frameworks in the moral deliberation on animal biotechnology

Kupper, J.F.H. and Buning T.D.C.

VU Amsterdam, the Netherlands VU-IVM, The Netherlands

Session 6.2: Duddingston room

Scenario methods (Chair: Gabriele Abels, Institute for Science and Technology Studies)

Developing integrated sustainability assessment tools and methods for water management. The case of the EU Matisse project in the Ebro river basin

Tàbara, J.D., Roca, E., Madrid, C. and Cazorla, X.

ICTA/ University Autònoma Barcelona, Spain

Tailoring constructive technology assessment for emerging technologies

van Merkerk, R.O. and Smits, R.E.H.M.

Utrecht University, The Netherlands

Exploring the future of genomics

Roelofsen, A., Broerse, J.E.W. and Bunders, J.F.G.

Department of Biology and Society, Faculty of Earth and Life Sciences, Vrije Universiteit Amsterdam, The Netherlands

Session 6.3: Prestonfield room

Multi scale participation (Chair: Thomas Koetz, University Autònoma Barcelona)

A multi-scale scenario approach to biological invasions. Two cases in the Ebro river

Rodríguez-Labajos, B.

Department of Economics and Economic History, Spain

Public deliberation at European level: the European citizens deliberation on the brain

	<p>Andersen, I.E., Rauws, G. and Steyaert, S. Danish Board of Technology, Denmark</p> <p><i>Participation in cross-scale interactions – a difficult issue exemplified by the Millennium Ecosystem Assessment</i></p> <p>Rauschmayer, F. and Görg, C. UFZ – Centre for Environmental Research, Germany</p>
19.00	Pre-dinner drinks in the rainforest at Our Dynamic Earth
20.15	Conference Dinner at Our Dynamic Earth
22.00	Ceilidh (Scottish Dancing) until midnight
	Wednesday 7th June
9.30-10.30	<p>Parallel session 7</p> <p>Session 7.1: Duddingston room Trust (Chair: Diana Pound, Dialogue Matters)</p> <p><i>Social psychological process and inclusive policymaking in the environmental domain: the role of local identity upon the acceptance of biodiversity and water resource conservation policies</i></p> <p>Bonnes, M., Carrus, G., Bonaiuto, M. and Passafaro, P. University of Rome La Sapienza, Italy</p> <p><i>Development and functions of different forms of trust in Swiss participatory landscape planning</i></p> <p>Höppner, C., Frick, J. and Buchecker, M. WSL Swiss Federal Research Institute, Switzerland</p> <p>Session 7.2: Holyrood room Nanotechnology (Chair: Bron Szerszynski, University of Lancaster)</p> <p><i>Representation as a matter of agency: a reflection on nanotechnological innovations</i></p> <p>de Cózar-Escalante, J.M. Universidad de La Laguna, Spain</p> <p><i>Social perspectives on nanotechnology research and development: a view from Australia</i></p> <p>Katz, E., Lovel, R., Mee, W. and Solomon, F. CSIRO, Australia</p> <p>Session 7.3: Prestonfield room Critical reflections on participatory methods (Chair: Mark B DeKraai, University of Nebraska)</p> <p><i>Means to an end. Participatory methods in technology assessment</i></p> <p>Decker, M.K. Institute for Technology Assessment and Systems Analysis/Forschungszentrum Karlsruhe, Germany</p>

	<p><i>A critical analysis of the influence of weights on the multi-criteria appraisal of energy scenarios</i></p> <p>Omann, I., Bohunovsky, L., Kowalski, K., Madlener, R. and Stagl, S. SERI, Austria</p>
10.30-12.00	<p>Plenary Session 3: Prestonfield room</p> <p>Chair: ARILD VATN, Norwegian University of Life Sciences</p> <p>Keynote speaker: PROFESSOR ORTWIN RENN: University of Stuttgart <i>Participation in risk governance: The case of nanotechnology</i></p> <p>PATH papers</p> <p><i>The role of scale and representation in public participation: insights from recent participatory processes on genetically modified organisms</i> Carter, C., Soma, K., Kvakkestad, V. and Vatn, A. The Macaulay Institute, Scotland</p> <p><i>Aspects of multi-level governance relevant for the design of participatory science-based consultations in EU biodiversity governance</i> Koetz, T., van den Hove, S., Rauschmayer, F. and Young, J. University Autònoma Barcelona, Spain</p>
12.00	COFFEE BREAK
12.30-13.30	<p>Closing Plenary Workshop: Prestonfield room</p> <p>Chair: Wendy Kenyon (Macaulay Institute)</p> <ul style="list-style-type: none"> - Action planning - Participatory evaluation of conference - Thanks and close
13.30	LUNCH AND HOME

Abstracts by session

**Monday 5th June, 9:00-11:00. Opening Plenary
Prestonfield room**

WENDY KENYON, Conference Co-ordinator, Macaulay Institute
Welcome and introductions

PHILIPPE GALIAY, European Commission
European Gover' Science and Framework Programme 7

Keynote speakers

JOHN DRYZEK: Australia National University

John is Professor in the Social and Political Theory Program in the Research School of Social Sciences at the Australian National University. John was born in the UK and educated there and in the USA, receiving his PhD in Government and Politics from the University of Maryland. Before joining the Programme he taught at Ohio State University, the University of Oregon, and the University of Melbourne. He was Head of the Political Science Departments at both Oregon and Melbourne. He is a former editor of the Australian Journal of Political Science and Fellow of the Academy of the Social Sciences in Australia. He is currently the Head of the Social and Political Theory Program. Recent articles include: "Social Choice Theory and Deliberative Democracy: A Reconciliation" (with C. List), *British Journal of Political Science* (2003); "Environmental Transformation of the State: The United States, Norway, Germany, and the United Kingdom" (with C. Hunold and D. Schlosberg), *Political Studies* (2002); "Legitimacy and Economy in Deliberative Democracy", *Political Theory* (2001).

PRESENTATION: Deliberative innovation to different effect: Cross-national comparisons

Democratic theorists are attracted by the potential contribution to deliberative democratization of designed forums composed of lay citizens. Using a comparative study of consensus conferences on the issue of genetically modified food in Denmark, France, and the United States, we show that the democratic potential of such 'mini-publics' is radically different in different sorts of political system. In actively inclusive Denmark, mini-publics are deployed in integrative fashion; in exclusive France, in managerial fashion; in the passively inclusive United States, in advocacy fashion. If mini-publics are to contribute to deliberative democratization they need supportive structures and processes in government and the broader public sphere. The kinds of structures and processes required will again vary by political system type.

CAROLYN LUKENSMEYER: America Speaks

Carolyn's work in public participation developed out of concerns about the deep partisan divide in Washington and the growing disconnection between citizens and government across the USA. It led her to launch America Speaks in 1995. Her goal was to develop new democratic practices that would strengthen citizen voice in public decision-making. She and America Speaks have won a number of awards, including two from the International Association for Public Participation

(2001 and 2003). Prior to founding America Speaks, Carolyn served as Consultant to the White House Chief of Staff from November 1993 to June 1994. She also served as the Deputy Project Director for Management of the National Performance Review (NPR), Vice President Al Gore's reinventing government task force. From 1986 to 1991, Carolyn served as Chief of Staff to Governor Richard F. Celeste of Ohio. She was both the first woman to serve in this capacity and, at the time of her appointment, the only Chief of Staff recruited from the professional management field. Carolyn also led her own successful organizational development and management consulting firm for 14 years. She worked with public and private sector organizations on four continents.

PRESENTATION: Scale and impact: Citizen voices in participatory decision-making

**Monday 5th June, 11.30- 13.00. Parallel Session 1.1
Duddingston Room**

Scottish Case Studies (Chair: Dick Birnie, Macaulay Institute)

Participation and regulation: where two worlds collide?

Richards, C. and Blackstock, K.
SEPA, Scotland

Regulatory regimes to ensure environmental protection have been constructed through a combination of political and scientific or technical deliberation, the end-point of which is generally a set of criteria for decision-making aimed at controlling specific substances with known or suspected impacts on the environment or human health. Such an approach has led to the development of technical and/or scientific expertise in the assessment of these criteria, providing increasingly efficient and accurate assessments within the scope afforded by the legislation. While this legacy has certain advantages, it sits uneasily with the growing emphasis in more recent environmental legislation and policy on ensuring the active involvement of stakeholders and the wider public in decisions. Where consultative or participatory approaches have been used as part of regulatory decision-making, those involved have tended to express a much broader range of concerns than is included within the compass of any given regulatory regime; inevitably, participants are rarely experts in the assessment of the criteria explicitly set out in the regime in question.

Identifying farmer attitudes towards genetically modified crops in
Scotland

Hall, C.
SAC, Scotland

Consumer attitudes towards genetically modified (GM) food are well documented. There has been much less focus on farmer attitudes to GM crops in the landscape. This paper reports findings from a postal survey and early analysis of a Q methodology study investigating farmers' attitudes to GM crops in Scotland. Results suggest that the majority of Scottish farmers are unsure at this stage whether they would choose to adopt GM technology or not, opting instead for a 'wait and see' position. The intention (or not) to adopt appears to be related to a number of variables such as size of farm, age of farmer and number of years in farming. Early results from the Q methodology study reveal two discourses, one to a certain extent pro-GM and demonstrating an expectation of benefits, the other representing a more uncertain position, wary of the potential risks of the technology.

“Now who decided that?": Experts and the public in biodiversity conservation

Garritt, J.

Open University/Open Eye Research, Scotland

After the 1992 UN Biodiversity Convention, many of the strategies that emerged from the local, national and supranational levels attempted a harmonized response by advocating a holistic and integrative approach to biodiversity conservation. This paper will build on over 10 years of critically engaging with the role of science in such documents by using insights from science studies and in particular the Sociology of Scientific Knowledge (SSK). SSK is a means by which to explain the wider context behind the utilization of scientific method and knowledge; to see *why* certain scientific interpretations of the world are made, and to appreciate the ramifications of supporting them above others.

**Monday 5th June, 11.30- 13.00. Parallel Session 1.2
Prestonfield Room**

Representation (Chair: Laura Zurita, DBT)

Protecting future generations through submajority rule

Ekeli, K.S.

NTNU – Norwegian University of Science and Technology, Norway

The purpose of this paper is to present and consider two new constitutional devices the aims of which are to give minorities of legislators a political tool to represent and protect the interests of future generations. The common denominator of the proposed reforms is that they represent examples of submajority rules that grant defined minorities of legislators certain procedural rights. The first device empowers a minority of at least 1/4 or 1/3 of the representatives in the legislative assembly to demand that the final enactment of a law proposal should be delayed until a new election has been held, if they believe that the law in question can inflict serious harm upon posterity. The second implies that a minority of at least 1/3 of the legislators can require a referendum on a law proposal that can have a serious adverse impact on the living conditions of future people. I will argue that these constitutional devices can give minorities of legislators a political tool that can encourage more future-oriented public deliberations and decisions. Despite the fact that these constitutional mechanisms face some important problems, it is argued that such devices can be defended on the basis of central ideals in recent theory of deliberative democracy.

Choosing participants for a constructive technology assessment
exercise: dilemmas and consequences

Marris, C., Joly, P. and Bertrand, A.

INRA, France

Interactive technology assessment (iTA) is a form of participative Technology Assessment (pTA) which differs from traditional Technology Assessment in that it does not seek to predict and accommodate the impacts of a given technology in post hoc decision-making, but rather to exert leverage on its development. This departure is rooted in the recognition that technology is shaped out of the interplay of actors, and impacts are viewed as being co-produced during the development of technology. iTA seeks to enable interactions to occur between technology developers, promoters, users and other impacted communities, as early as possible in the developmental process. iTA also distinguishes itself from other pTA procedures (e.g. consensus conferences) by focusing on the involvement of new actors, rather than members of an undifferentiated general public, broadly representative of the population. In this paper, we discuss the practical implications of the iTA approach on the selection of participants, based on our experience of organising an iTA project for the French National Institute for Agricultural Research (INRA), about whether or not they should proceed with field trials of potentially virus-resistant genetically modified (GM) vineyards. We examine the methodological choices we made, and present our analysis of their consequences on the interactions which occurred within the working group, the contents of the report that it produced, and the way in which this was received by the decision makers who had commissioned the event (INRA Directorate) and by actors in the GM debate who had been excluded from the exercise.

Representing GM nation

Reynolds, L. and Szerszynski, B.
CSEC Lancaster University, England

In 2003, GM Nation, an official nationwide public dialogue on the commercial cultivation of GM crops, took place in the UK, and itself became the subject of some controversy. The main controversy concerned whether a representative general public had in fact participated, or whether those already critical towards GM crops had in some sense 'captured' the process. In this paper we suggest that the latter argument depend upon a 'neo-Hobbesian' conception of a 'general public', defined by its atomised relationship to the nation-state and also by its disengagement and distance from the GM issue. By contrast, we argue that GM Nation revealed the existence of important multiple and specialised 'publics of GM', which, unlike this atomised 'general public', are constituted as such precisely by their relation to the GM issue. These multiple publics are engaged around a particular issue rather than exclusively defined as the population of a nation state; are concrete and specific rather than abstract and general; are articulated rather than atomised; and are intertwined within socio-material networks rather than reified into a purely social realm. Rather than simply measure GM Nation against either an idealised model of deliberative participatory processes, or against the abstract and static general public of the quantitative survey, the 2003 UK debates can be understood in an historical mode, as revealing how the living body politic, with its various mediating organs of civil society, social movements and class fractions, actually received GM crops.

**Monday 5th June, 11.30- 13.00. Parallel Session 1.3
Holyrood Room**

Innovative methods (Chair: Giuseppe Carrus, University of Rome)

Remote sensing technology and peasant knowledge: A participatory
spatial approach to conservation planning in Puerto Galera,
Philippines

Cantos, J.A. and Daproza, M.G.
WWF, Philippines

Planning for biodiversity conservation is usually faced with scarcity of data on which to base for management decisions. In an effort to address this gap, analytical tools and decision support systems are increasingly used. These tools integrate and process large volumes of data and help address complicated but key planning principles in a systematic way. Furthermore, they assist stakeholders understand how key data are utilized, and enable rapid evaluation of outputs against planning principles. Based on available biophysical information, decision makers are provided compelling suggestions for effective and sound decision-making. This process is focused on complementing field-based observations with data generated through remote sensing applications. The challenge then is to prove that units identified on remote sensing data represent unique composition.

Sustainability foresight as a means for participatory transformation
management

Truffer, B., Voss J.P. and Konrad, K.
Cirrus / Eawag, Switzerland

Utility sectors are currently characterized by a sharply increasing amount of uncertainty regarding their long term perspectives. Substantial transformation pressures are currently building up with regard to market regulation, basic technologies, customer expectations and environmental conditions. Given that infrastructure bound technological systems depend on long term stability of societal consensus and other border conditions, this increased uncertainty calls for new approaches of planning, evaluation of alternative trajectories and strategy formulation. Sustainability Foresight has been developed as a participatory method for developing sustainability strategies of entire industry sectors. It encompasses three analytical steps (i) the reconstruction of visions about future sector structures, (ii) sustainability implications that are entailed by these visions, (iii) conjoint strategy development for actor groups participating in the endeavour.

Sustainability Foresight has been developed over the past three years in the context of an interdisciplinary research project on sustainability options for German utility sectors for electricity, gas, water and telecommunication. About 150 stakeholders from utilities, industry, research, government offices, consumer and environmental organizations were participating in different steps of the procedure. The paper will elaborate the sustainability foresight methodology, position it in the literature on transition management, participatory technology assessment and foresight and will illustrate its potential virtues but also methodological difficulties that have arisen in the specific application context. In the outlook, we will present potential future application domains for this kind of approach.

Incorporating local knowledge into urban environmental research: the photo-survey method

Moore, G., Croxford, B., Adams, M., Refaee, M., Cox, T. and Sharples, S.
University College London, England

As multi-disciplinary work thrives, innovative methods of data collection, measurement and evaluation are slowly emerging within many disciplines. Dynamic, creative and engaging qualitative methodological styles are being developed and used; Latham (2003), Kindon (2003) and Crang (2003) provide excellent examples of how methodologies can be pushed, moulded and experimented with. Innovative methods can enable the incorporation of multiple perspectives and the acquisition of different types of knowledge in the research process. This paper describes a multi-disciplinary research project in which we have developed a participatory research method to capture and analyse local knowledge on urban environmental issues. We successfully combined the visual technique of self-directed photography with traditional qualitative methods (log-sheets and interviews) to form a 'photo-survey'. The photo-survey was one aspect of a multi-method approach incorporating qualitative and quantitative techniques to assess the quality of an urban environment. The photo-survey method was specifically used to provide an insight into the way city centre residents perceive, understand, use and interpret their local environment. Twenty-eight residents in an area of London (Clerkenwell, north east London) were each given a disposable camera and asked to take photographs of their local area, noting the time, date, location and a short description of the photograph (on a log-sheet provided). We did not want to be too prescriptive in telling participants what to photograph, so the instructions simply stated: 'we would like you to take photos that record both the positive and negative aspects of your local area'. Once the photographs were developed a semi-structured interview lasting approximately two hours, was conducted with each participant. The interview was based upon the participants' photographs and a number of general questions about the urban environment, made specific to the resident's locality. Participants were asked to refer to their photos at any stage during the interview. By involving the participants in this way we aimed to diffuse any existing power dynamics in the research process – the participant was given the freedom to take photographs of whatever they wanted at times and locations convenient to them, raising issues that were important to them. In total six hundred and eighty photographs were taken by the participants (an average of twenty-four per participant).

**Monday 5th June, 14.00-16.00. Plenary PATH workshop
Prestonfield Room**

Plenary PATH workshop

**Wendy Kenyon and Carol Hunsberger, Macaulay Institute,
Scotland**

The aim of this workshop is to introduce the H-form or rugby post approach to exploring themes and apply it to 3 questions of interest to the PATH project.

1. how well we are doing at involving the public in policy development?
2. how good we are at representing different values and interests in participatory processes?
3. how good we are at using participatory methods at multiple scales and levels?

This approach has been used to help groups and individuals express their views and ideas in a structured, focus and progressive manner. In the first part of the session participants will be asked to work in groups and guided through a series of steps to develop the first H-form on involving the public in policy development. In the second part, groups will be asked to work through the H-form in their own time, developing ideas on either representation or scale in participation. This structured workshop process will explore and prioritise ways in which the public might better be involved in policy development in future; ways in which different values and interests can be better represented in participatory processes; and ways in which participatory processes might be developed for use at different scales and levels. The outputs from the workshop will be used in the final plenary session to develop a provisional action plan to progressing public participation in these three areas.

We invite all conference delegates to participate.

**Monday 5th June, 16.30-18.00. Parallel Session 2.1
Holyrood Room**

Public participation in WFD (Chair: Caspian Richards, SEPA)

Participation as a key factor for the successful implementation of
the WFD

Britta Kastens, Jens Newig
University of Osnabrück, Germany

The WFD calls for various modes of public participation and involvement, which are judged as key factors to support the successful implementation of the Directive in terms of good water status.

This paper aims to explore the role of “active involvement” of regional stakeholders for effective implementation of the WFD regarding the specific problem of reducing agricultural nitrate intake into groundwater. Our case of reference is the Hase River catchment in Northwest Germany as a paradigmatic example of an intensive livestock farming region with high nitrate levels in groundwater. Special emphasis is put on the various forms of public participation that have recently been or will soon be established in the larger region on different spatial and administrative scales. These include public information via the internet, a state council, regional fora and local area co-operations. We argue that although the WFD refers to whole river basins, it is particularly the regional scale that will strongly influence the implementation process, because other geographical scales will be too large for decision making processes in favour of the Directives’ demands.

We work out multiple scenarios, demonstrating both the uncertainties at stake and the range of possible effects by different outcomes of participatory processes, which, in turn, are closely linked to the interests, perceptions and strengths of different actors. Identifying critical paths and decision points then allows mapping out corridors regarding the anticipated success or failure of such regional institutions for public participation in reducing diffuse agricultural pollution in groundwater bodies.

Reflections on building active involvement into the role of
competent authority for the Water Framework Directive – the
experience of the Environment Agency in England and Wales

Peter Bailey, John Colvin, Paula Orr
Environment Agency, England

The Environment Agency has been designated as the sole ‘competent authority’ for implementing the Water Framework Directive (WFD) in England and Wales. The Agency is responsible for reporting on progress to the EC. However, successful implementation will require the collaboration of partners and co-deliverers and the support of a broad range of stakeholders. Since 2003 the Agency has been investigating and testing a range of new approaches to involve others in river basin management: improving stakeholder representation and engagement in a pilot river basin; designing a decision-making framework spanning a number of spatial scales; introducing innovation in planning and design; and using a learning process to drive adaptive management. While the results of this investigation have influenced the Agency’s Framework for River

Basin Planning, translating learning into practice has been coloured by the practical realities of a working in a large public institution with competing priorities.

This presentation will review how the Environment Agency is going about encouraging active involvement of interested parties in the WFD. We will look at developments in the representation of stakeholders, establishing a decision-making framework at different scales and innovation in the design and planning of engagement processes. We will draw on our experience of using social learning to support the development of new ways of working and reflect on what it means for an institution like the Environment Agency to become a “learning organisation”.

Mapping public participation in the Water Framework Directive: a case study of the Pinios river basin in Greece

Ioanna Mouratiadou, Dominic Moran
University of Edinburgh, UK

The EU Water Framework Directive requires the involvement and participation of stakeholders and the public for enhancing the sustainability of water resource management. The Directive is non prescriptive as to how public participation in water management should be operationalised in practice, and this creates a wider role for research that can inform this process. This study explores the issue of public participation, in the context of the Pinios River Basin in Greece, using Fuzzy Cognitive Mapping, a form of qualitative modelling directly related to stakeholders’ perceptions. Fuzzy Cognitive Mapping has been used to elicit stakeholder and public perceptions on the current state and pressures on water resources, the acceptability of achieving full cost recovery for water services, and to explore the potential effects of different water management policy options on water resources of the area. The study offers a perspective on the potential contribution of Fuzzy Cognitive Mapping in involving stakeholders and the public in water resource management. The main advantages of the method include the ease in capturing both local and expert knowledge, the ability to elicit and compare the perceptions of different stakeholder groups, and the ability to unify the respondents’ viewpoints and understanding of a system without demanding their direct interaction.

**Monday 5th June, 16.30-18.00. Parallel Session 2.2
Duddingston Room**

Conflict and legitimacy in conservation of biodiversity (Chair: Doug Wilson, The Institute for Fisheries Management)

From conflict to co-operation – to the ecosystems approach – a case study in stakeholder participation for a European marine site in Kent

Diana Pound

Dialogue Matters, Kent, UK

In 1998/99 The Thanet Coast Natura 2000 site was an early example of where stakeholders participated in a deliberately designed and facilitated consensus building process. The process was used to help stakeholders explore issues and agree the content of a management scheme. The process transformed a situation of tension to active co-operation and a new partnership project, which helped to pioneer further innovative approaches to coastal management. Six years on and the management scheme is up for review. The process to do this, and agree the contents of the next scheme, will again lead the way. This time stakeholder dialogue will be used to take a new and integrated approach to management called the Ecosystems Approach. This presentation will describe the case from first hand experience.

Wintering geese in the Netherlands... legitimate policy?!!

Gilbert R. Leistra

Wageningen University (Applied Philosophy Group), The Netherlands

Scientific and ecological expertise was the starting point of many of the biodiversity conservation policies in the E.U. These policies often conflicted with the interests of local stakeholders and generated much resistance. In response, governmental authorities gradually abandoned their centralist, top-down approach and increasingly switched toward methods of participatory and interactive policy-making. This process of transformation can also be observed in Dutch biodiversity conservation policy where substantive sources of legitimacy, in particular scientific expertise, are replaced by more procedural forms of legitimacy production through public participation processes. This implies that legitimacy can no longer be assumed at the output-side of the decision making cycle, but requires production through active participation at the input-side and throughput-side of this cycle. The case-study of wintering geese in the Netherlands beautifully illustrates this shift from substantive to procedural legitimacy production. Concurrently it highlights the dilemma's that can be encountered when making trade-offs between the legitimacy requirements in the different phases of the policy process. This case-study therefore provides an excellent opportunity to gain insight in the problems and possibilities of legitimacy production, in what has clearly become a highly controversial arena of policy making and policy implementation.

Assessing the threat of exotic plant pests
David Cook and Wendy Proctor
CISRO, Australia

This case study highlights a participatory technique to prioritise the environmental, social and other impacts associated with the introduction of exotic plant pests (EPPs) in Australia. Some EPPs have a significant effect on agricultural production. In some cases entire industries can be closed down due to the introduction of a new EPP, so the cost of introduction becomes the value that industry would have contributed to the economy had it not been lost. When an EPP destroys an area of native bushland the same principle applies. The only problem is that there is no market price for native bushland or the species within it which we can use to establish the cost of the EPP. Biosecurity research has to date directed little attention to assessing the potential environmental impacts associated with the introduction of an EPP such as the complete eradication of a native species or the wider socio-economic effects that may be caused for instance through wiping out an entire farming town's major source of income. As well, the threat of introduction of various invasive species may be clouded by political concerns or overemphasised by strong lobby groups. In this research we used Deliberative Multi-criteria Evaluation with a group of stakeholders to determine funding priorities for the prevention of introducing EPPs. The resulting priorities were contrary to the current funding priorities placed on EPPs and showed that incorporation of wider considerations reflecting sustainable development and greater availability of information was essential in dealing with these potential problems.

**Monday 5th June, 16.30-18.00. Parallel Session 2.3
Prestonfield Room**

**Critical perspectives on participation (Chair: Sigrid Stagl,
University of Sussex)**

Forms and functions of participatory technology assessment – or:
why should we be more sceptical about public participation?

Gabriele Abels

Institute for Science and Technology Studies (IWT), Bielefeld University, Germany

Participation of a variety of new actors in social spaces of science and technology policy-making has become an important issue in STS as well as in politics. The field of technology assessment is an excellent example. In the respective literature, procedures creating such multi-actor spaces are usually called “participatory technology assessment” (PTA) procedures. They are considered to be a possible and promising way for direct interaction between members of the general public, interest groups, professional experts and policy makers in multi-actor spaces with the general aim of democratising S&T governance. In the last ten years PTA has been employed in many European countries, but also elsewhere in the world, especially in the field of biotechnology/genetically modified organisms. Recently, also the European level shows some support for more participatory science and technology policy-making.

The political as well as part of the academic debate over PTA is influenced by an almost romanticising picture about the social functions of participation. PTA is believed to increase the motivation of those involved, enhance the knowledge and values basis of policy-making, initiate a process of social learning, open up opportunities for conflict resolution and achieving the common good, and improve the level of acceptance and legitimacy of political decisions. I argue that our overall knowledge is limited and there are empirical and theoretical reasons to be more sceptical about PTA. I propose a typology of PTA that outlines the linkages between actual forms and assumed functions and discuss the underlying model of democracy.

**Improving Environmental Quality Through Participation?
A Critical Perspective on the Effectiveness of Public Participation**

Oliver Fritsch, Jens Newig

Institute of Environmental Systems Research, University of Osnabrück Germany

Current international and EU environmental policies increasingly promote the participation of non-state actors in environmental governance as a means to improved implementation and compliance. This contribution aims to provide an analytical framework for assessing the effectiveness of public participation requirements with respect to implementation and compliance.

The underlying rationale of public involvements is that information and dialogue with policy addressees enhance the acceptance of and identification with policy decisions reducing the potential for implementation conflicts and improving compliance. The paper discusses several accounts of how to understand success of public participation processes and argues that the effectiveness of the outcome determines success and failure of public participation. To this end, a specific

notion of effectiveness with regards to the achievement of environmental policy goals will be introduced.

The main assumption of this contribution is that opportunities and limitations of improved compliance by public participation depend to a very large extent on the governance context and of the design of the decision-making process. Several context variables (such as actor interests and power positions, problem-solving resources, issue complexity, social capital and public attention) as well as process variables (e.g. the degree of participation, participation media and techniques, representativeness and fairness) will be examined. To illustrate our line of argument, we will present first findings from a systematic secondary analysis of existing European Union and North American empirical case studies in the fields of participation research.

Public participation or public management?

Harald Heinrichs and Heiko Grunenberg
University Lüneburg, Germany

In this paper we will characterize the different context conditions in Bremen and Hamburg and then discuss based on our representative survey from Hamburg and Bremen the views of citizens regarding participatory risk management. How do they assess the respective roles of state actors, civil society and private households regarding risk management? What do they think about the distribution of responsibility? To what extent are they familiar with participatory approaches? Are their differences in the assessment of participatory approaches based on socio-demographic factors, such as age, gender, education, income?

**Tuesday 6 June, 09.00–09.45. Plenary session 2
Prestonfield room**

Chair: Ortwin Renn (University of Stuttgart)

KEYNOTE SPEAKER: DR LARS KLUVER

Lars is currently director at Teknologirådet – The [Danish Board of Technology](#) (DBT) which is the parliamentary technology assessment institution of Denmark . By education, Lars is an environment/ecology biologist, and before his engagement in technology assessment, he was partner of a communication consultancy firm. Lars has been with the DBT since 1986, when he was employed as project manager of a consensus conference on “Gene Technology in Industry and Agriculture”. This was the first consensus conference to include a lay jury in the process. Since then, Lars has been project manager on numerous innovative participatory technology assessment activities. The DBT has a worldwide reputation as a front-runner in policy analysis that involves participation, and the toolbox of the DBT includes methods such as Scenario Workshops, Future Labs, Future Search Conferences, Voting Conferences, Citizen Summits and Perspective Workshops, - methods which have been developed or adapted to assess scientific and technological advances by the Board. Lars has been active in participation research for many years, for example as coordinator of the EUROPTA project and member of the TAMI project, and he has represented the participatory approach to technology assessment in EU expert groups, as an advisor and in conferences/workshops all over the world.

PRESENTATION: New trends in public participation

What would mainstreaming of public participation look like – and can we already see the contour of it?

Public participation can be seen as a form of knowledge creation, clarification and action, which builds upon democratic and fair communication processes. An image of novelty has always been connected to public participation, maybe because it is an alternative path or a reaction to the more closed discourse and decision-making culture that are mostly seen in our societies? As a result we have had quite a long period of introducing public participation as something new. The end of that era begins when mainstreaming of public participation takes off. When the flavour of novelty vaporizes and participation becomes embedded into the established systems.

The first ideological vehicle for participation was democratisation. In a democracy people should be allowed to get influence on issues of importance to society and everyday life. It still works, but now it goes hand-in-hand with liberalism as a second ideological vehicle: Politics is seen as a market of opinions, and the citizens should be invited into the open market. Contrary to what many would have expected, the result has been more participation. Also, the result is a less alternative image – maybe we can even see the contour of a new image as a practical governance tool.

Is that contradictory to the praxis of public participation as we know it? Is it in conflict? That depends very much on the prepositions taken – those who will insist on participation as a tool to confront the system will probably be disappointed in the long run. Those who see citizen involvement as an adjustment

or a supplement to the existing discourses and governance systems will be a little happier.

The signs of the beginning of such mainstreaming can be seen. In the policy analysis domain, public participation is getting a status of being one analytical means among others, which you can pick for certain problem situations. Research projects now and then have citizen participation as an integrated part of the research project design. Public policy-making increasingly integrates participation procedures in the process. The big public participation events on the one hand becomes bigger and more visible, but on the other hand, they are also confronted with the fact that they are expensive and hard to get established – and strategies of smaller distributed events are being made.

It may be too soon to declare the next phase of the public participation development to have begun. It may be too optimistic or pessimistic – depending on the prepositions. But it is not too soon to begin a discussion of how to accommodate praxis to mainstreaming.

CRAIG CORMICK, Biotechnology Australia

Introduction to the Poster session

**Tuesday 6th June, 09.45–10.45. Parallel Session 3.1
Duddingston Room**

Social Learning (Chair: Claudia Carter, Macaulay Institute)

Social learning in public participation for sustainability:
measuring the quality of participatory approaches

Garmendia, E. and Stagl, S.
University of Sussex, England

Technocratic approaches and the accumulation of knowledge within past frameworks has been insufficient to tackle with contemporary issues of sustainability. As a consequence, the role of experts and “objective” scientific information to inform policy about uncertain and complex environments has been questioned in relation to issues such as nuclear power and genetically modified crops. Instead novel approaches that consider the inclusion of various and conflicting points of view in a deliberative context are increasingly used in the science policy domain. Nevertheless, to date the contribution of such approaches are rather ambiguous and criteria for assessing the quality of these processes are required.

In the first part this paper argues that Social Learning (SL) should be considered central for participatory approaches for sustainability and it is also suggested as a quality criterion for the assessment of such processes. In the second part of the paper, after analyzing the role of SL within different participatory approaches a possible framework for its measurement is described. Finally, in the last part of the paper, this framework is applied to a real case study in Austria, within the ARTEMIS¹ project, which discusses possible energy futures for Austria.

Dare we jump off Arnstein’s ladder? Social learning as a new policy
paradigm

Kevin Collins and Ray Ison,
Open University, UK

Participation is now a central consideration of policy discourses at EU; national and local levels, particularly in relation to environmental resources. As it becomes a social expectation so the form, meaning and purpose of participation has diversified. While Arnstein’s ladder of citizen participation (Arnstein, 1969) revealed that much ‘participation’ does little to broker a reassignment of power, this paper argues that it is perhaps time to jump off the ladder. In doing so, we suggest that an emphasis on social learning constitutes a paradigm shift in the thinking and practices of policy-making.

Our rationale is based on findings from several research projects on social learning for water resource management in the EU and UK. These suggest conventional policy responses to environmental problems (regulation; fiscal instruments; information) are only effective where there is pre-existing agreement on the nature of the problem and its resolution. In practice, many

¹ ARTEMIS; Assessment of Renewable Energy Technologies on Multiple Scales: a participatory multi-criteria approach. Funded by the Austrian Science Council (FWF)

resource management issues are best described as 'messes' (Ackoff, 1974), with high degrees of interdependency; complexity; uncertainty; and multiple stakeholding.

These characteristics challenge notions of participation because no single group can pinpoint with confidence the nature of the problem and its solution. We explore how the term social learning rather than participation more accurately embodies the new kinds of roles, relationships and sense of purpose which will be required to progress complex, messy issues. The discussion leads to the conclusion that social learning can be understood as an emerging governance mechanism to promote concerted action, thereby enabling transformation of complex natural resource management situations.

Social learning – a useful concept for participatory decision-making processes?

Melanie Muro, Paul Jeffrey
School of Water Sciences, Cranfield University, UK

Public participation plays an increasingly central role in natural resource management despite little knowledge about what constitutes a good process or outcome. The mixed success of participatory processes prompts researchers and practitioners alike to constantly search for and develop new approaches, methods and conceptual models for public involvement. Recently, learning processes are increasingly referred to in the participation discourse, and social learning is especially cited as an essential component of (participatory) natural resource management. Social learning as it is discussed in the context of public involvement features a process of collective and communicative learning which is thought to lead to a shared understanding of the situation and agreement. Theories of social learning are considered useful models to inform the design of involvement processes. However, we must acknowledge that so far there is only limited evidence about the role of social learning in participatory processes and therefore it is difficult to judge its usefulness as a conceptual model. Moreover, we argue that the social learning model has a number of conceptual and practical weaknesses.

Against this background we posit that research needs to focus on the underlying assumptions and claims made in connection with social learning, before proposing frameworks and methodologies to foster social learning in participatory processes. Furthermore, we argue that the debate needs to refocus on the question of what role social learning can reasonably play in participatory processes.

**Tuesday 6th June 09.45-10.45. Parallel Session 3.2
Holyrood Room**

**Science meets participation (Chair: Sybille van den Hove,
University Autonoma Barcelona)**

Third task science
Peter Moll
Science Development, Germany

The presentation will focus on recent developments for “third tasks” within science. Participation and interaction with the public as well as stakeholder involvement are some of the key issues. One should however be careful not to overlook traditions of “relevating” (H. Nowotny) and integrating social problems within the academic worlds and “make them fit” into what science makes of them and considers to be scientifically useful and rewarding social problems. This has led to highly complex modes of interaction between science and society which developed over centuries.

With more recent demands on science e. g. for creating new forms of “sustainability science” with clear emphases on implementation and subsequent action, negotiation, adaptation and interpretation processes between science and society are highly topical again.

The talk will summarize some aspects of the debate on the science – society interface and will highlight the experience from two cases:

- a move towards stronger support and acceptance of “third task” activities within science in Sweden and the mixed experiences from the “Science in Dialogue” Programme in Germany.

From these experiences – particularly the failures and structural limitations these attempts have met – as well as from the theoretical critique of the science – society interface some conclusions may be derived for conceptualizing “sober participation policies” at EU or European national levels.

The response of scientists to deliberative public engagement: a UK
perspective
Kevin Burchell
London School of Economics, UK

The purpose of this paper is to explore an important issue that appears to be somewhat neglected in work on deliberative public engagement (DPE): the response of scientists to DPE. Information in this area is clearly important to the future success of DPE, in terms of identifying the barriers and opportunities that are presented by scientists. More broadly, information about the responses of scientific experts to DPE is important in terms of the impact that increasingly prevalent DPE might have on the wider scientific community. As might be expected in an area that is somewhat neglected, the empirical evidence can be described as inconclusive because it is limited, partial and contradictory. Some

evidence is not particularly encouraging while other evidence is more positive. In the paper, I will explore this evidence and comment on the implications that it might have for successful DPE. Future research strategies for filling this empirical gap will also be explored.

Environmental empowerment through co-operation between civil society, universities and science shops

Søsner Brodersen, Michael Søgaard Jørgensen and Annegrethe Hansen
Department of Manufacturing Engineering and Management, Technical University of Denmark (DTU)

The paper suggests that university-based Science Shops, despite increasing professionalisation of the environmental debate, still play an important role as mediators between universities and civil society and civil society organisations, and in empowering and engaging these organisations. For support of this argument, the paper analyses three different science shop projects with regard to civil society organisations' motives for approaching the science shops

- the cooperation form in the projects
- the use of the result by the civil society environmental organisation
- the mechanisms that have shaped the influence on the political agenda.

The cases represent three different types of environmental organisations: a local branch of the national nature conservation organisations, a national bicyclist organisation and a community day care centre-based initiative.

In the cases two overall knowledge needs for the approaching organisations are shown: 1) Scientific documentation of problems experienced by citizens and 2) a need for development of solutions to problems.

The cooperation forms in the projects differ markedly with regard to involvement and dialogue, from 'consultancy' kind relations, to common development of knowledge and solutions, with extensive use of the organisations' networks.

In all cases the knowledge needs of the organisations 'are met' by the Science Shop, but the cases had very different impact on the political agenda or actual policy. It is indicated that NGO influence depended on the organisations' ability to use existing network relations or to set up actor-constellations around the issue, as well as the organisation's active involvement in the project.

**Tuesday 6th June 09.45-10.45. Parallel Session 3.3
Prestonfield Room**

Evaluating participation (Chair: Felix Rauschmeyer, UFZ)

**A mixed methods approach to evaluation of large scale participatory
processes**

Denise Bulling and Mark DeKraai
University of Nebraska Public Policy Centre, United States

Evaluation is critical to understanding how participatory processes work and how they can be structured to maximize the benefits of stakeholder and decision maker collaboration. This presentation provides a framework for evaluating stakeholder involvement in decision making in science and technology. Specifically, the following topics are covered: 1) the importance of incorporating program evaluation in processes that involve participation in decision making; 2) a review of models for evaluating participatory processes; 3) a new model for evaluating stakeholder involvement that incorporates a mixed method design; and 4) the advantages of a mixed model evaluation approach to inform the field about the types of participatory processes that work best for particular stakeholders, issues, and desired outcomes. The mixed methods model was used to evaluate the Public Engagement Pilot Project for Pandemic Influenza, an effort to involve citizens and stakeholders in policy decisions regarding vaccine distribution in the United States. Using this example, the authors describe how the mixed methods framework was used to jointly identify the evaluation questions with stakeholders and partners, select qualitative and quantitative measures, determine appropriate analyses, and effectively communicate results to decision makers and stakeholders. The implications for evaluating other public and stakeholder engagement processes are discussed.

**Evaluating the quality of methods to facilitate participatory
assessments**

E. Cuppen, M. Hisschemöller, C. Midden, W. Dunn, M. Van de Kerkhof
Institute for Environmental Studies, Vrije Universiteit Amsterdam, The
Netherlands,

This paper is part of the PROFILES project, which aims at developing a method to facilitate a stakeholder dialogue. Participation is framed as a means towards knowledge production. The PROFILES method should enable the articulation of conflicting lines of argumentation.

To do this, first a methodological evaluation of existing participatory methods will be conducted. From this evaluation, we can learn about relevant method-characteristics, which can serve as building blocks for the PROFILES method.

From the stance of participation as knowledge production, a methodological evaluation should be focused on variables that obstruct or enable knowledge production. We introduce a simple, easy-to-understand framework based on insights from cognitive/social psychology. The framework consists of three types of biases that may occur in a dialogue setting: the bias of source, the bias of phrasing and the bias of valence. The bias of source relates to the fact that the evaluation of an argument may be influenced by the fact that a specific person is making the argument. The bias of phrasing relates to the fact that the evaluation of an argument may be influenced by the way the argument is being phrased. Thirdly, the bias of valence means that the evaluation of an argument can change

because it pleads in the same, or opposite direction as the evaluator's attitude does. We will discuss several participatory methods in the light of this framework to see how these methods intend to address these biases. The framework can be considered work-in-progress.

Measuring the intensity of participation along six dimensions

Karina Rasche, Matt Hare
Seecon Deutschland GmbH, Germany

Existing concepts for describing and categorizing participatory processes do not capture clearly enough the differences between "more" or "less" participation. There is a diversity of ways of how to consult or actively involve stakeholders. How do we specify whether participation is done early or late in the process, with few representatives or the general public, with weak or strong influence on decision-making? Only if concrete terms can be found for describing the characteristics of a participatory process, we can effectively start discussing about what kind of participation should be encouraged under certain conditions.

Therefore, a new concept to measure the intensity of a participatory process is developed by using a set of six dimensions: "activity", "equality", "transparency", "power sharing", "flexibility" and "reach".

In each of these dimensions, a participatory process can reach a pre-defined high, medium or low level. The result is visualised as a cobweb diagram (figure 1), a so-called "intensity diagram", giving a clear overview over main characteristics of the whole participatory process.

This concept has been applied to five water management case studies situated in Belgium, the Netherlands and Great Britain in order to support the planning, comparison and evaluation of the participatory processes.

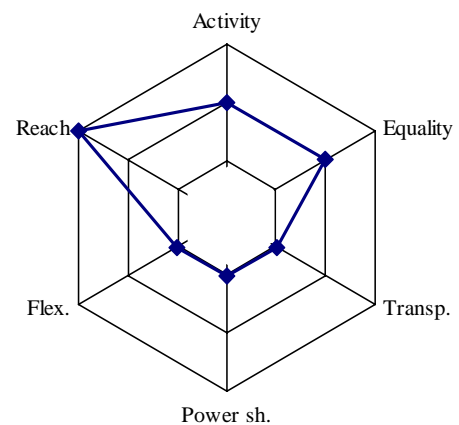


Figure 1: Intensity diagram of one of the case studies assessed

**Tuesday 6th June 11.15 – 12.15. Parallel Session 4.1
Holyrood Room**

Critical Perspectives (Chair: Ida Anderson, DBT)

Epistemological and ethical dilemmas of public participation

Antonio Aledo Tur, Hugo García Andreu, Guadalupe Ortiz Noguera

University of Alicante, Spain

There exists a wide consensus among governance theorists about the need of broadening the level of active engagement of the public in the processes of local planning and related decision making. However, the praxis of public participation still raises many doubts and uncertainties that have not been solved by academia yet. This paper examines the problems and difficulties faced during the design and implementation of a public participation process on the alternatives and future of several local development projects of residential tourism in two municipalities in the South-East of Spain. The objective of this paper is to show the epistemological and ethical dilemmas that this research team faced during this project: a) how legitimate this process was as it had been fostered from the academic sphere and it was not a public initiative; b) how representative the selected stakeholders were and to which extent this selection was not only methodologically but also politically legitimate; and c) how to transform the knowledge achieved through deliberation into useful knowledge for the different social groups, so that it is not a mere academic benefit. This paper also explains some of the answers given by this research team to the questions formerly suggested as well as the methodology and main results obtained from this participatory project.

Three burdens of public participation in science and technology

Sujatha Raman

University of Nottingham, UK

This paper elaborates and develops responses to three major sets of criticisms relating to the validity, legitimacy and reflexivity of the participatory turn in science and technology. I seek to examine why such an obviously laudable objective as promoting the capacity of people to have a say in developments that affect their lives, might be cause for concern even for democrats. In response to Collins and Evans' concern about preserving the special role of expert validity in light of the concrete dangers of populism, I suggest that standards for judging individual, institutional and oppositional claims must necessarily differ. In response to concerns about the legitimacy of state-led participatory initiatives and NGO attempts to promote participation, I highlight the need to consider unintended consequences of both democratic and anti-democratic kinds. In response to concerns about the ambiguous effects of reflexive structures and actions, I detail the significance of different forms of participation. In sum, I aim to pose questions and ideas for further discussion on the nature and justification of participatory agendas.

**Tuesday 6th June 11.15-12.15. Parallel Session 4.2
Duddingston Room**

**Gender and representation (Chair: Kirsty Blackstock, Macaulay
Institute)**

Learning from women's grassroots activism: gender reflections on
environmental policy science and participatory processes

Ms. Mercè Agüera-Cabo

European Commission-Joint Research Centre, Italy

Males predominate as politicians and governmental officers, experts, stakeholders and citizens in most environment-related participatory processes. Yet, not much attention has gone to gender in environmental governance. The presentation aims at reflecting on some of the qualitative consequences of this situation.

Three case studies of citizens' committees that emerged around a number of environmental conflicts in the North of Catalonia (Spain) will illustrate the discussion. They indicate that gender may be significant for interpreting male and female interests and values in relation to the environment. In particular, they describe how the environmental concerns of many female activists focus on health and quality of life issues. In addition, a number of women show a specific feminine experience of the environment when they refer to their concern for the conservation of the landscape.

The possibility that gender plays a part in building our values and interests on the environment lead to relevant considerations to improve the "openness", "participation", "effectiveness" and "coherence" of environmental governance practices (EC 2001). In particular, they enable us to assess the gender neutrality of participatory processes and of policy science: is there a gender bias in the political and/or scientific framing of the problem? Are different gender interests and values on the environment represented in an equal basis? Which arguments are addressed by the research activity (i.e. which values and interests are receiving scientific support)? Which disciplines are carrying the study? Do they deal with gender insights and gender-sensitive data?

EC, 2001. European Governance. A White Paper. Brussels, 25.7.2001. COM(2001) 428 final

What difference does being represented make?

Jasber Singh

PEALS, Newcastle University.

Participatory processes on genetically modified organisms, biomedicine, nanotechnology and other scientific issues are widespread. Representation is seen as good practice in participation in order to ensure that participants reflect the multicultural-nature of society. A recent Citizens' Jury on nanotechnology, Nanojury, and other engagement initiatives on scientific issues, embraced this ethos (www.nanojury.org).

Representation frames participatory initiatives to 'recognise' difference. The way in which difference is viewed will shape the design of the participatory processes.

With participatory processes being designed to be capable of recognising difference, I want to explore how this difference is conceptualised.

But what impact do such efforts at representation have, if any? I will argue that recognising difference is narrowly framed in the design of many participatory processes. This lack of critical reflection on difference or in the words of Iris Young, being 'blind to the politics of difference' can lead to a) minority views not being heard or b) the views of minorities being assimilated into the view of the majority. Therefore, some participatory processes 'unwittingly' silence the views of minorities.

Greater critical reflection on recognising difference/representation could lead to improved practice. This paper will use concepts of difference formulated by Avtar Brah to widen views on recognising difference. Furthermore, ways to legitimate the voice of minority people – what Gail Lewis has called 'situated voices', will also be discussed.

Participatory processes that have attempted to deal with difference, such as the Nanojury and other initiatives (Verran, 2002; Visvanathan, 2005), will also be explored.

**Tuesday 6th June 11.15-12.15. Parallel Session 4.3
Prestonfield Room**

Governance and participation (Chair: Matthais Kaiser, NENT)

Public participation as risk governance: enhancing democratic
accountability?

Les Levidow

Centre for Technology Strategy, Open University, Milton Keynes

Public participation in technoscientific issues has recently gained support in Europe, partly in response to legitimacy problems of innovation and regulation. Government policy had promoted specific technological choices as if they were objective imperatives, though these met strong public protest. Various crises of food safety in the 1990s were used to attack intensive agricultural technologies as well as official expertise. To address these difficult challenges, EU institutions have held strategic debates on 'Science and Governance'; they note the greater governmental dependence upon an advisory expertise which itself becomes more vulnerable to public criticism. Reform proposals emphasise its cognitive and political limits, as grounds to pluralise or even democratise advisory expertise.

More specifically, proposals for 'risk governance' recognise many governmental dilemmas in devising 'risk-based regulation'. Its legitimacy depends upon deliberation of the extra-scientific issues involved. In that vein, strategies for public participation aim to accommodate conflicting goals and stakes, as a means to build common values.

Such aims and strategies have informed many European participatory experiments. Some have been criticised as naïve or even worse – for displacing societal futures from democratic accountability. In practice, public participation involves a pervasive tension between resolving a problem, on the one hand, and containing conflicts around the problem-definition, on the other. Do these enhance democratic accountability? Wider participation can play contradictory roles – displacing, protecting and/or highlighting the social-framing assumptions of technological trajectories.

Some institutional aspects of science in support of the Common
Fisheries Policy

Wilson, D. and T.J. Hegland

Institute for Fisheries Management and Coastal Community Development,
Denmark

This paper reports on the attitudes and experiences of fisheries scientists involved in fisheries management in Europe. The research consisted of the detailed observation of 7 scientific meetings, 29 formal and numerous informal interviews with fisheries scientists and a survey with 465 valid responses. Many fisheries scientists, particularly those responsible for assessing the state of fish stocks, are experiencing deep frustration in respect to their role. They experience the management system as misusing their knowledge, while presenting them with difficult working conditions and even demands to sacrifice career goals. They are under pressure to produce objectivity out of what they know to be deep uncertainty. The survey shows that the experience of being asked to "pretend they know how many fish are in the sea" has an independent, negative impact on

job satisfaction. The underlying problem arises from an understanding of scientists as the 'givers of objectivity' a mainstream but still naïve understanding of the role of science in political processes. An alternative, made particularly possible by the extensive experienced-based knowledge of fishers, is to think of management as a participatory, interactive process. From this perspective the central goal is no longer objective knowledge. The question shifts to transparent knowledge, because an effective management process requires that participants account to one another about how they know what they say they know. Hence, scientists, who are familiar with what such accounting entails, must still take the lead but must shift their style and approach to creating and using fishery knowledge.

**Tuesday 6th June 14.00-15.30. Parallel Session 5.1
Holyrood Room**

**Citizens Juries/ consensus conferences (chair: Wendy Kenyon,
Macaulay Institute)**

Deciding on complex knowledge; biomonitoring data and policy
interpretation in Belgium

Keune H., Koppen G. , Casteleyn L. , Goorden L
University of Antwerp

In Flanders (Belgium) the Centre for Health and Environment started a biomonitoring campaign end 2001. The main purpose of this project, funded by the Flemish government, is to investigate the relation between environmental pollution and human health by measuring pollutants and health effects in (more than 4000) Flemish inhabitants. The big question is: what should be done with this vast amount of information? Together with medical and environmental scientific experts and policymakers, social scientists worked on the preparation of an action-plan for interpretation and policy measures. At first this was thought of as a merely scientific quest: with the right group of experts the interpretation with regard to policy priorities will follow automatically. While trying to build bridges towards policy interpretation, the limitations of an exclusively scientific endeavour clearly showed: no scientist or group of scientists dared claim to possess the necessary and overarching knowledge for answering difficult questions, questions e.g. on policy priorities when factors other than (medical and environmental) scientific factors had to be taken into account (economics, social preferences, feasibility of policy measures). The social scientists therefore introduced the formation of a jury that will judge relevant data and knowledge in order to give advice to the government. The jury will be made up of experts, stakeholders and (other) citizens. For the jury we developed a multi criteria analysis. The action-plan was accorded by both the Centre for health and Environment and policy representatives, and was adopted by the government.

Public deliberation in science and technology policy making

Patrick W. Hamlett
North Carolina State University, USA

This paper will examine an effort by a research team at North Carolina State University to adapt the Danish Consensus Conference public deliberation model to the U.S. context. It will describe ten Citizens' Technology Forums run by the research team, including the first-ever consensus conferences that include Internet components and the first ever Internet-only consensus conferences. The CTFs have examined genetically modified foods, climate change, and nanotechnology.

Public participation on its own barricades: citizens' jury on water management from experiment to instrument?

Bos, L., Huitema, D, van de Kerkhof, M.
Vrije Universiteit Amsterdam

Research on the development of legislation for public participation in the Netherlands demonstrates that the government did not embrace active public participation in policymaking when the European Water Framework Directive (WFD) came into practice. The existing legal obligations for public participation can be seen as a limit for active participation of citizens. It will not be until the application of a new Water Law in 2006 that the obligations for active participation of the WFD are fully incorporated in the Dutch legal system; six years after the WFD was implemented on the European level. Since the usefulness of public participation is still doubted by decision makers, public participation has to stand up for itself.

A citizens' jury on water management organized with this attempt in 2004, was evaluated on three criteria: the content, the process and the usefulness for policymakers. On the first two the method scores well. The third criterion is difficult to establish. Most criticism by local politicians was directed at the quality and usefulness of the products. Financial implications, practical feasibility of the recommendations, consideration of relevant interests and factual argumentation are the most challenging, but also the most vulnerable aspects of the products. The citizens' jury has potential for active participation in water management but to let it prove its surplus value, the usefulness of the products in policymaking still needs concern of the process designers. The process shouldn't be rushed, shouldn't be directed towards strict consensus and should be supplied with information from reliable sources.

**Tuesday 6th June 14.00-15.30. Parallel Session 5.2
Duddingston Room**

Practical papers (Chair: Wendy Proctor, CSIRO)

Engaging community groups in discussions on science issues: The
CoRWM discussion guide

Amy Sanders, Pippa Hyam, Andrew Acland, Sarah Alder
Dialogue by Design, Surrey, UK

Dialogue by Design is a company established by a group of leading practitioners in the fields of stakeholder dialogue, public participation and consultation, conflict resolution and software design. Some of our most innovative work is in the integration of web, face-to-face and paper-based consultation and engagement processes.

In this session we will be demonstrating an innovative method for engaging community groups in discussions about science policy on a national scale.

Dialogue by Design was commissioned by CoRWM, the Committee on Radioactive Waste Management, to design a paper-based Discussion Guide and accompanying website to enable groups of people from all over the UK to talk about their priorities and concerns about the way the UK manages its radioactive waste. The results will inform the Committee's recommendations to the UK Government due to be made in July 2006.

The Discussion Guide was simple to use and required no special knowledge of nuclear issues. Relevant background information was presented in an accessible way and discussions focused on questions of values, ethics and equity. The guide enabled a wide variety of groups, such as parish councils, families, schools and University of the Third Age groups to have discussions on a complex issue without the need for external facilitators.

Results from hundreds of self-managed group discussions nationwide have been analysed rapidly and displayed in full on a website for anyone to view. Such openness and transparency adds credibility to the process.

Repertory grid: A tool to elicit the true range of relevant concepts in
a certain topic area

Marleen van de Kerkhof, Eefje Cuppen, Matthijs Hisschemöller
Vrije Universiteit, Amsterdam

Repertory grid technique (RGT) finds its origins in constructs psychology and has gradually gained ground in environmental research and policy analysis too. The basic idea of the tool is that the minds of people are 'construct systems' which reflect their constant efforts to make sense of the world. RGT articulates the individual construct systems of people, which helps to better understand what meaning people give to the world around them.

The researchers who organize this interactive session have used RGT in a stakeholder dialogue setting, in order to elicit stakeholders' perceptions and preferences with regard to options for climate change policy (COOL project) and

to elicit stakeholders' perceptions and preferences with regard to hydrogen futures (H₂ Dialog project).

On the basis of their experience, the researchers claim that RGT is able to efficiently elicit the true range of relevant concepts and themes in a certain topic area in a particular context. A computerized version of RGT is demonstrated and the participants are able to gain experience with the tool to see whether they agree with the claims that the researchers make or not.

**Tuesday 6th June 14.00-15.30 Parallel Session 5.3
Prestonfield Room**

Transatlantic lessons (Chair:Carolyn Lukensmeyer, America Speaks)

**The Vaccine Policy Analysis Collaborative (VPACE): a new model for
citizen and stakeholder engagement in science policymaking**

Roger Bernier

PEPPPI Steering Committee, Center for Disease Control and Prevention, USA

Background: To demonstrate the potential value of public engagement, we conducted a pilot project between June and October 2005 using a pending government decision about who first to vaccinate with limited supplies of influenza vaccine during a pandemic.

Methods: Approximately 100 citizens-at-large in Atlanta and 35 to 40 stakeholders with diverse backgrounds met separately between July and October 2005 to learn the basic facts about pandemic influenza, engage in give and take discussions, weigh the tradeoffs between competing goals, and select the highest priority goals. The deliberations were presented to approximately 150 citizens-at-large in Massachusetts, Nebraska, and Oregon for their review and feedback.

Results: Both citizens-at-large and stakeholders decided with a very high level of agreement that "assuring the functioning of society" should be the first goal and "reducing individual deaths and hospitalizations due to influenza" should be the second. There was little support to vaccinate young people first, to use a lottery system or to use a first-come first-served approach.

Conclusions: The project provided "proof of principle" needed in the vaccine community that a large and diverse group of citizens and stakeholders could be recruited successfully to deliberate thoughtfully, interact respectfully, and reach a productive agreement on a technical topic with a values component. The principal conclusions reached in the Pilot Project received serious consideration at the national level and were reflected in the national Pandemic Influenza Plan released in November 2005.

Consulting Europeans: experiences from the project Reprogenetics

Matthias Kaiser, Vibeke Almaas, Torunn Ellefsen

The National Committee for Research Ethics in Science and Technology (NENT),
Oslo, Norway

The EU funded project Reprogenetics is designed to critically discuss ethical aspects of modern medical reproductive and genetic technology, in particular reproductive cloning and germ line genetic therapy. Part of the project has been dedicated to the consultation of ordinary European citizens on these issues. Since it was deemed too costly and also beset with many practical obstacles, the holding of a European consensus conference was ruled out. Instead a scheme was worked out that would coordinate a series of focus groups in five European countries. The authors were in charge of this task. Besides the interest of such an endeavour for supplementary viewpoints on reproductive genetics, this public consultation was also deemed to function as a pilot project on practically achievable and relatively inexpensive European public participation and

consultation schemes, with considerable interest in itself. Some representatives of the focus groups presented their work in a joint session during a conference in Budapest, November 2005.

The paper will report on the original idea of how to conduct such a process with parallel focus groups, as well as on the results of this process. It will highlight the significant difficulties that were experienced along the way, as well as the encouraging feedback obtained from the participants. Cultural and political differences proved a major obstacle for coordination, and the different professional backgrounds of the local organizers added further difficulties. In spite of these sobering experiences, the authors feel strengthened in their belief that a revised scheme of such a consultation process will meet with considerable interest by European publics.

Complex science and participatory decisions:
two water quality case studies from North Carolina, USA

Lynn A. Maguire

Nicholas School of the Environment and Earth Sciences, Duke University USA

North Carolina has embraced stakeholder participation in water quality management, convening public involvement processes to help design regulations for reducing nutrient loads in watersheds impaired by storm water run-off, wastewater disposal and confined animal feeding operations, among other sources. The Tar-Pamlico and Neuse watersheds each terminate in broad, shallow estuaries susceptible to fish kills. Deciding which watershed users should do how much to reduce nutrient inputs has been contentious, prompting the state to convene stakeholder working groups to help design water quality regulations. The Tar-Pamlico process suffered from a rushed time schedule, which limited participation by non-government stakeholders and made it difficult for them to digest complex data needed to inform regulations. Most of the analysis was supplied by the convening government agency. In contrast, the Neuse process took place over several years, incorporated stakeholder input in designing water quality modelling and monitoring to support the decision process, and used a subset of technically capable stakeholders as liaison to the research effort.

The Neuse process clearly followed more of the practices recommended for integrating technical analysis and public participation in environmental decisions than the Tar-Pamlico did. Less clear are the extent to which the results of the Neuse process are "better" than those of the Tar-Pamlico and what measures, both procedural and substantive, should be used to assess success. The purpose of comparing these contrasting cases is to propose measures for evaluating successful integration of science and public participation and look for evidence of successes and failures in these cases.

**Tuesday 6th June 16.00-17.30. Parallel Session 6.1
Holyrood Room**

Participation and GMOs/ biotechnology (Chair: Les Levidow, Open University)

Labeling genetically modified foods: a community discussion
Alan J. Tomkins, Ian Christensen, Kim Loontjer, John Fulwider, Tarik
Abdel-Monem, Dana Cohn
University of Nebraska Public Policy Center, USA

Residents of a Midwestern city in the United States participated in a Deliberation Discussion on Genetically Modified Food. The purpose of the discussion was to gauge informed public opinion on genetically modified food products and whether they should be labelled. Key results include: After participating in the community discussion, 73% of the 48 participants had positive attitudes towards genetically modified food, compared with 31% prior to the deliberation. Nearly two-thirds (65%) of participants perceived the benefits of producing or consuming genetically modified food outweighed the risks after the discussion, compared with 27% beforehand. Slightly over half (52%) of the participants wanted labels identifying genetically modified food, which is significantly lower than results from other studies and lower than the pre-discussion percentage of 88% for the participants. In the presentation, these and other results from the deliberation will be presented, along with a discussion of how deliberations can assist the dialogue on GMFs as well as other controversial science/technology and policy matters.

On being technically, ethically and politically reasonable: scientists,
citizens and GM crops
Matthew Harvey
ESRC Genomics Policy and Research Forum, Scotland

This paper discusses data collected at eleven public debates on the commercialisation of genetically modified (GM) crops. Eight of these were part of the 'GM Nation' public debate held across the UK in 2003 and it is this particular event that sets the context for discussion. The paper takes issue with a particular conception of public participation operationalised in GM Nation. The position critiqued is that which focuses on a democratically ideal process whilst shifting attention away from the specificities of any particular decision situation and the quality of decisions taken.

The paper proceeds in two parts. In the first, I consider some key *conditions of possibility* for GM Nation, setting the debate within the social, political, and particularly social scientific developments that created a conceptual space within which an event like GM Nation, and the very idea of public participation in technology decision-making, can be embedded and justified. These elements are combined to describe 'where we are now' in terms of participation. In the second part of the paper, this position is then critiqued through an analysis of a series of seemingly impassable 'articulation gaps' between scientists and ordinary folk, gaps which led to bitter and heated exchanges. From here, I develop a more critical and limited approach to public participation in 'real world' decision-making, arguing that technically reasonable and politically and ethically reasonable are not the same thing, and that these domains need to be

disentangled and treated separately according to the decision in hand before an executive decision is reached.

An interactive research method for the exploration of value frameworks in the moral deliberation on animal biotechnology

J.F.H. Kupper, L. Krijgsman, H. Bout, Tj. De Cock Buning
Vrije Universiteit Amsterdam, The Netherlands

Over the past decades, the development of animal biotechnology in the Netherlands has been accompanied by extensive public debate. However, this debate has been largely framed as a legal discussion, omitting the cultural values that drive the various social actors. Consequently, these actors find themselves repeatedly trapped in a “ritual dance” against licensing procedures, instead of effective moral deliberation. In order to respond more adequately, the Ministry of Agriculture, Nature conservation and Food safety (LNV) aimed to better understand the various ways Dutch citizens attach moral value to animals. Therefore, an interactive focus group method was developed to obtain in-depth, qualitative knowledge of the existing frames of reference and value orientations in the reflection on animals, which affect public attitudes towards animal biotechnology. The use of homogeneous profession or lifestyle-oriented groups enabled participants to deliberate freely in a secure setting. The participants worked along a structured 3 hour program on the identification and exploration of their ideas, using their own language, associations and categorisations. The fact that the participants themselves explored the value concepts that constituted their specific moral frameworks was a central aspect of this interactive approach. As a result of 13 focus groups, four different value frameworks were delineated that each convey a typical way in which animals are positioned and valued. Knowledge of the differences between these value frameworks and the legal framing of the biotechnology debate provides constructive options to reopen dialogue (and to avoid frustrating dead ends) in the moral deliberation on animal biotechnology.

**Tuesday 6th June 16.00-17.30. Parallel Session 6.2
Duddingston Room**

Scenario methods (Chair: Gabriel Abels, Institute for Science and Technology Studies)

Developing integrated sustainability assessment tools
and methods for water management.

The case of the EU Matisse project in the Ebro River Basin

J. David Tàbara, Elisabet Roca and Cristina Madrid

*Institute for Environmental Sciences and Technology, Autonomous University of
Barcelona, Spain*

Persistent unsustainable problems are not problems occurring 'out there', independently from our individual and collective behaviours in our daily interactions with the environment. Most current tools and methods for the assessment and management of unsustainability tend to focus on one area of reality, show unsustainability as "others' problems" or deal only with one type of knowledge, hence showing a great deal of reductionism. The EU MATISSE project aims at developing new tools and methods capable to support the creation of new relational and systemic narratives on persistent unsustainability problems. *Integrated Sustainability Assessment (ISA)* can be defined as a *cyclical, participatory process of scoping, envisioning, experimenting, and learning through which a shared interpretation of sustainability for a specific context is developed and applied in an integrated manner in order to explore solutions to persistent problems of unsustainable development*

Our paper provides a first description and application of the notion of ISA of water management in the Ebro river basin. First results show that an emerging vision of sustainability entails a great deal of collaboration between agents working at different levels, as opposed to a fragmented world in which actors pursue their interests and benefits in an un-coordinated, exploitative and short-sighted manner. In this vision, stakeholders' underline how multi-scale, multi-domain and multi-time problems such as the relationships between upstream/downstream, global/local, and short term/long term socio-economic processes need to be incorporated into the assessment and policy processes aimed at enhancing the *socioecological resilience* and sustainability of complex water systems such as the Ebro river basin.

Tailoring constructive technology assessment for emerging
technologies

Rutger O. van Merkerk, Ruud E.H.M. Smits

Utrecht University, The Netherlands

Technology Assessment (TA) has developed into a method that puts a strong emphasis on facilitating interfaces between the supply and demand side of science and technology. Recently, we also see that TA becomes an integral part of 'big' science programs, for instance in nanotechnology. The basic characteristics of the latter is to articulate the needs, wishes and constraints from users and other involved actors already in the emerging stage of technological development. TA methods come in many different forms, although they are merely different versions adapted to specific conditions with the overall aim to improve societal embedding and to tackle the Collingridge dilemma. The thrust of

this paper lies on the development and results of a tailored variant of CTA for emerging technologies.

When dealing with emerging technologies we believe much attention has to be paid on information symmetry between the participants before they meet in a specific forum. For the facilitation of the interfaces we want to know how to organise meetings with heterogeneous actors in an effective and efficient way, and how the exercise gains insights for further development to the participants. In addition, for emerging technologies, it is unknown in technology assessment literature which actor compositions (e.g. only insiders or a mix of insiders and outsiders) can yield which results in participatory approaches. To address these aforementioned issues, we propose a 4-step Constructive Technology Assessment (CTA) approach. By applying the approach in a recently executed CTA study on a nanotechnology related topic, Lab-on-a-chip technology, we work towards new methodological insights and prove valuable for the technological field.

Exploring the future of genomics

Roelofsen, J.E.W. Broerse, J.F.G. Bunders

Athena Institute for Research on Innovation and Communication in Health and Life Sciences, Vrije Universiteit Amsterdam, The Netherlands

The application of genomics techniques in the field of (soil) ecology is now emerging. The challenge for this new scientific field is to realize its opportunities in a generally accepted way – i.e. seizing opportunities by means of active reflection upon societal aspects. Engaging lay people in discussions about science and technology has been recognized as an important strategy to meet this challenge, but how to go about it? Interactive approaches to technology development offer good possibilities for the development of technologies which clearly connect with societal practices and address the positive and negative effects as perceived by relevant actors. With respect to the best timing of when to start an interactive process, it appears that in the early phase of technology development many options are still open for exploration and there are good possibilities for steering. Early involvement of societal stakeholders is, however, challenged by the absence of applications on which they can develop their own visions from the perspective of their own needs, interests, norms and values. To overcome this dilemma, we are experimenting with an interactive approach in the field of ecogenomics in which the methodology of vision assessment is integrated. As a first step, experts in the field of ecogenomics articulated their future visions. Subsequently, users (e.g. farmers) reflect on these visions from their own perspective. In this paper we present and discuss these first steps in the process of interactive vision assessment with respect to other approaches applied in participatory exercises on deliberations on science and technology.

**Tuesday 6th June 16.00-17.30. Parallel Session 6.3
Prestonfield Room**

**Multi scale participation (Chair: Thomas Koetz, University
Autonoma Barcelona)**

A multi-scale scenario approach to biological invasions
- Two cases in the Ebro River

Beatriz Rodriguez-Labajos

Departament d'Economia i Història Econòmica, Universitat Autònoma de
Barcelona

Biological invasions are human-mediated processes contributing to global change. Governance of the responses to invasion processes must handle dynamic social understanding and agency. Mainstream policy guidelines embracing the precautionary approach advise the implementation of a hierarchical scheme starting from preventive strategies. This faces uncertainties inherent to such a socially and biologically complex phenomenon.

Taking this in mind, scenario development is proposed as a methodological approach for assessing biological invasions at different spatial scales. This way, the reflexive nature of biological invasions is explored in a non-reductionist fashion.

This study examines two scales. At the local scale, the cases of two aquatic species invading the low Ebro River (zebra mussel and Wels catfish) are employed as empirical support for developing local scenarios. At the larger scale, the European Union is taken as governance unit for developing analytic narratives of alternative policy scenarios with implications in biological invasions.

Scenarios obtained at both scales were integrated in order to evaluate consistency and plausible events from the overlapped contexts. Large scale scenarios may be employed as boundary conditions for local scenarios. But some elements point out to top-down and bottom-up influences, reflecting the ability of local contexts to react favourably or resist toward the large scale pressures.

Finally the usefulness of scenario development as assessment and management tool for governance of responses to biological invasions is examined.

Public deliberation at European level: the European citizens
deliberation on the brain

Andersen, I.E., Rauws, G. and Steyaert, S.

Danish Board of Technology, Denmark

Meeting of Minds, the European Citizens Deliberation (ECD) on the Brain, is a trans-european project designed to inform the public about current and future research in brain science, and for them to assess this progress and associated ethical, social and legal implications. In the centre of the project, is the ECD panel, composed of 126 randomly selected citizens (14 from each country).

The project operates both at national and European levels. It is managed by a consortium of TA-institutes, science centres, universities and public foundations

from 9 countries and is supported by the European Commission (Science and Society Action plan of the 6th framework program). The project is evaluated by one of the consortium partners (internal evaluation) and by an independent external evaluator.

The innovative ECD-method promotes interaction between citizens (and experts) with different cultural and linguistic background and produces an open and productive discussion. Although new, the method is based on best practice in science and technology assessment in several countries. However, the multilingual context imposes adjustments to all existing public deliberation methods.

ECD marks a breakthrough in participatory governance at EU level that holds promises for other policy areas and at various levels of government.

Participation in cross-scale interactions – a difficult issue exemplified by the millennium ecosystem assessment

Felix Rauschmayer, Christoph Görg
UFZ , Centre for Environmental Research, Germany

How to deal with participation in situations where the delimitation of the issue is not clear? In these cases, it is not evident how to identify the people concerned who should participate in the process. Controversial placing of the issue on a scale (e.g. temporal, spatial, political), and the consideration of cross-scale interactions are presented in this paper as a new challenge to participation. Until now, this challenge has not been characterised as such, but parts of it have been addressed in discussions e.g. on the representation of unborn, or otherwise unspoken entities, or some cases of transborder participation.

With this paper, we systematise the discussion and exemplify it with the Millennium Ecosystem Assessment (MA), a large international scientific project oriented towards policy makers. We will first show that the physical dimensions of scale clearly dominate the debate in the MA without any clear indications on how to deal with cross-scale interactions and the appropriate placing of the issue on the scale. Secondly, using a study analysing the implications of the MA for German policies, we focus on the need of decisions integrating several levels and scales. Finally, not being able to recommend a specific set of participatory approaches for such multi-level and multi-scale decision processes, we identify more clearly the challenges linked to such endeavour.

**Wednesday 7th June 09.30-10.30. Parallel Session 7.1
Duddingston Room**

Trust (Chair: Diana Pound, Dialogue Matters)

**Social psychological process and inclusive policymaking in the
environmental domain: the role of local identity upon the
acceptance of biodiversity and water resource conservation policies**

**Mirilia Bonnes , Giuseppe Carrus, Marino Bonaiuto, Paola Passafaro
University of Rome "La Sapienza" – Department of Social and Developmental
Psychology**

Assumptions from the fields of social and environmental psychology are used to discuss the role of participatory approaches in promoting the endorsement of public environmental policies, in the domains of biodiversity and fresh-water resource conservation.

The results of various Italian case-studies, investigating how public compliance to environmental policies can vary according to the more or less inclusive approaches followed by public authorities, are presented. The main focus is on the role of local identity in shaping public acceptance of conservation policies.

In the case of biodiversity conservation, field studies and laboratory experiments were conducted to assess the role of local identity in driving local support for (or opposition to) the institution of different natural protected areas. Results showed show how a strong local identity can be a major social psychological driver of local people's support for biodiversity conservation policies, when these are implemented through participatory and inclusive approaches. Conversely, a strong local identity can represent a major social psychological barrier to the endorsement of public biodiversity conservation policies, when inclusive methods are not sufficiently implemented.

In the case of fresh-water resource conservation, a field study was conducted to assess the role of local identity, value orientations, and trust in public authorities' upon domestic fresh-water conservation behaviours. Results showed how local identity, pro-social value orientation, and trust in public authorities predict water conservation behaviours.

The implications for the enhancement of public commitment to biodiversity and fresh-water conservation policies are discussed.

**Development and functions of different forms of trust in Swiss
participatory landscape planning**

**Corina Höppner, Jacqueline Frick, Matthias Buchecker
Swiss Federal Research Institute WSL, Switzerland**

Ever since scientists have focussed their attention on the investigation of participatory approaches, they have been facing questions about prerequisites, promoters and social impacts of participatory processes on involved individuals and groups. Some scholars argue that the building of trust is sometimes regarded as the genuine benefit of participatory processes because it has a positive influence on social relations and systems even beyond the current process. However, knowledge about the influence of participatory processes on trust is still limited. Studies measuring the development of trust during and in the wake of a participatory process are an exception. Furthermore, the functions of different forms of trust in social relations and different settings within a participatory process are still to be explored. In our paper we address the above stated gaps in

knowledge and empirical research in the context of environmental and more specifically landscape planning. We chose a new instrument for participatory landscape planning on communal level in Switzerland, the Landscape Development Concept (LDC). In a LDC, different participatory techniques like workshops, "round tables" and field inspections are applied to involve stakeholders, authorities and planners. In order to investigate trust building in LDCs, we conducted two studies. First, a survey among LDC experts (n=17) provided a general evaluation of this potential. Second, a questionnaire assessing participants' trust in other participants and local authorities as well as the participants' confidence in the process was administered to participants (n=50) before and after the participatory planning phase. Furthermore, the function of trust in different participatory settings were explored in semi-structured interviews with these participants.

The paper clarifies forms and functions of trust in participatory settings in spatial planning. However, our findings in the field of spatial planning may thus contribute to a better understanding of participatory approaches in general.

**Wednesday 7th June 09.30-10.30. Parallel Session 7.2
Holyrood Room**

Nanotechnology (Chair: Bron Szerszynski, University of Lancaster)

Representation as a matter of agency:
a reflection on nanotechnological innovations

José Manuel de Cózar-Escalante
University of La Laguna, Spain

One of the problems that surfaces when we try to involve society in the deliberation of science-based policy issues –the main goal of PATH--, is figuring out the best way to represent a diverse and diffuse public in this deliberation. Although this is primarily a matter of political representation, we cannot ignore the epistemological aspect of representation. By analysing the connections between political and epistemological representation, using the field of nanotechnological innovations as a basis, we can gain a better understanding of the problem of representation and improve the channels of public participation in science and technology. In order to carry out this analysis we propose using agency as the central concept because this approach (1) utilizes the fundamental trait that both types of representation have in common: epistemological and political representation can be analysed in terms of “nodes” where different kinds of agency come together and at the same time they are themselves both products of agency that unleash successive chains of actions; (2) it also allows us to understand the mechanism of self-vindication used by representational scientific and technological networks; (3) it minimises the anthropocentric bias in discourse about representation since it acknowledges non-human agency; and (4) it clears the way for the creation of public participation mechanisms in the deliberation of scientific and technological material.

Social perspectives on nanotechnology research and development:
a view from Australia

Katz, E., Lovel, R., Mee, W. and Solomon, F.
CSIRO, Australia

There are growing calls for the evaluation, regulation and improved governance of nanotechnologies to anticipate and address their likely social impacts. The national science research organisation in Australia, the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is carrying out scientific research at the nanoscale in a range of areas. At the same time as the technical work, a team of social scientists has concentrated on the social implications and public perceptions of nanotechnologies in a local Australian context.

In this paper we introduce some of the findings of our experiences in public engagement approaches and our attempts to integrate these into research governance within CSIRO. We describe some of the key concerns about nanotechnologies as raised by participants in our research and locate these in contemporary discourses of technology. We then reflect on some of the tensions and challenges for social scientists working as practitioner-researchers within scientific institutions.

**Wednesday 7th June 09.30-10.30. Parallel Session 7.3
Prestonfield Room**

**Critical reflections on participatory methods (Chair: Mark B
DeKraai, University of Nebraska)**

Means to an end.
Participatory methods in technology assessment
Michael Decker
Institute for Technology Assessment and Systems (ITAS)

This contribution refers to results from the EU-Project TAMI (Technology Assessment in Europe: Between Method and Impact). The general question to be answered in TAMI was "How can TA-institutions optimise the impact of their projects?". TAMI tackled that question from two perspectives. The first was straight forward: we must optimise our TA-projects in order to increase our impact. The second took a more indirect approach by categorising potential impacts of TA in order to identify concrete goals for TA-projects.

TAMI developed a structure "from method to impact" which starts with an appraisal of the current social, political or ecological situation or problem and the definition of the concrete impact the TA-practitioner wants to aim for. According to both the current situation and the general goal, the TA-project will be designed as that combination of TA-methods, which can be justified as the most promising one to reach this goal. Moreover general criteria of good practice of TA must be taken into account.

In this structure the means to an end aspect of TA-methods is obvious. To consider a certain method in the TA-project design can be justified referring to three aspects: 1. to the current situation, 2. to the impact to be reached, and/or 3. to general quality criteria of good practice in TA. This is true for participatory methods as well. Referring to the typology of impacts developed in TAMI the relevance of public participation will be reflected referring to the PATH-conference topic "nanotechnology".

**A critical analysis of the influence of weights on the multi-criteria
appraisal of energy scenarios**

Ines Omann, Lisa Bohunovsky, Katharina Kowalski, Reinhard Madlener,
Sigrid Stagl
Sustainable Europe Research Institute, Vienna, Austria

The aim of this paper is to critically reflect on the process of eliciting social preferences in participatory multi-criteria appraisal approaches. The analysis build on data from on deliberative stakeholder processes in which renewable energy scenario on two scales (national and local) were appraised. In the both cases, the revealed social preferences were transformed into criteria weights. The weights represent multiple goals for a sustainable energy system. For procedural reasons, the process of determining the weights differed between the two cases. The different approaches clearly revealed critical aspects of weighting in a deliberative process. For example, the following factors influenced the aggregation process – dominating workshop participants, some stakeholders' inability or refusal to express preferences through criteria rankings and slightly different perceptions of

criteria. Although these differences in the process and also in the criteria weights, had little impact on the results of the study, conceptually the process of weighting remains important.

**Wednesday 7th June, 10.30 – 12.00. Plenary session 3
Prestonfield Room**

Chair Arild Vatn, Norwegian University of Life Sciences

PROFESSOR ORTWIN RENN, University of Stuttgart

Ortwin is Director of the non-profit company DIALOGIK, a research institute for the investigation of communication and participation processes in environmental policy making and full Professor and Chair of Environmental Sociology of the State University in Stuttgart (Germany). *Education:* Diploma in sociology, economics, and journalism, Ph.D. in social psychology. *Awards and honors:* „Fellow“: American Association for the Advancement of Science (AAAS); “Fellow“: Society for Risk Analysis (SRA); Member of the panel on “citizen participation” of the U.S.-National Academy of Sciences in Washington, D.C.; ordinary member of the Berlin-Brandenburg Academy of Sciences and of the European Academy of Science and Arts; Outstanding Publication Award from the Environment and Technology Section of the American Sociological Association. *Chair:* German Federal Committee on the Harmonization of Risk Standards, the Scientific Advisory Board of the Foundation “Precautionary Risk Management”, and the State’s Scientific Committee for Environmental Research. Member of many national and international advisory councils, such as the State’s Commission for Sustainable Development, the State Board for Higher Education and the Environmental Committee of the National Catholic as well as Protestant Church ; *Publications:* More than 30 book publications and 250 articles in journals and edited volumes.

PRESENTATION: Nanotechnology and the need for risk governance

After identifying the main characteristics and prospects of nanotechnology as an emerging technology, the paper presents the general risks associated with nanotechnology applications and the deficits of the risk governance process today, concluding with recommendations to governments, industry and other stakeholders. The International Risk Governance Council (IRGC) has identified a governance gap between the requirements pertaining to the nano- rather than the micro-/macro- technologies. The novel attributes of nanotechnology demand different routes for risk-benefit assessment and risk management, and at present, nanotechnology innovation proceeds ahead of the policy and regulatory environment. In the shorter term, the governance gap is significant for those passive nanostructures that are currently in production and have high exposure rates; and is especially significant for the several ‘active’ nanoscale structures and nanosystems that we can expect to be on the market in the near future. Active nanoscale structures and nanosystems have the potential to affect not only human health and the environment but also aspects of social lifestyle, human identity and cultural values. The main recommendations of the report deal with selected higher risk nanotechnology applications, short and long-term issues, and global models for nanotechnology governance.

PATH PAPERS

The role of scale and representation in public participation:
Insights from recent participatory processes on
genetically modified organisms
Claudia Carter, Katrine Soma, Valborg Kvakkestad and Arild Vatn
The Macaulay Institute, Aberdeen

Decision-making on new technologies often requires making choices under radical uncertainty considering long-term perspectives. There is extensive literature and emerging political will that this can no longer be the exclusive realm of decision-makers and experts, but needs to involve the wider public – at least by consultation and ideally through active participation. This paper is based on a comparative study of several recent deliberative events across Europe on the commercialisation of GMOs. We focus on how issues of representation and scale may influence the quality of the process and the characteristics of the results. Specifically, we are interested in the following dimensions of scale: (i) the geographical scale of the participatory process; (ii) the scale of the problem; and (iii) the time scale. A fundamental issue regarding representation is whether a small group of participants is able to represent the wider community. This issue seems to be exacerbated when decisions no longer just affect local communities but a whole nation or supra-national regions; thus we will consider whether and how outcomes may vary with different size events. In terms of representation of knowledge, we try to assess how the level and type of expert knowledge may impact on public participatory events and their outcomes. Finally, we will look at how interests of future generations have been represented. We conclude by putting these findings into the wider context of environmental governance and institutional change.

Aspects of multi-level governance relevant for the design of
participatory science-based policy processes in EU biodiversity
governance

Thomas Koetz, Sybille van den Hove, Felix Rauschmayer, Juliette Young
Universitat Autònoma de Barcelona,
Institute for Environmental Science and Technology

In this paper we analyse and evaluate how different forms of participatory science-based policy processes have been theorised and practiced in the context of the EU biodiversity governance and reflect on ways in which the state-of-the-art in participatory approaches in biodiversity policy development can be advanced.

Policy processes relevant to EU biodiversity governance have been very different in nature and influence. However, over time, there has been a trend towards more participatory approaches. Theoretical consideration put forward for greater participation in science-based policy processes and a growing literature on the effectiveness of scientific assessments in environmental decision-making highlight the legitimacy, credibility and saliency of participatory processes.

However, especially in the context of European multi-level governance, the question is: what makes a participatory process legitimate, credible and salient. Based on the analysis of EU biodiversity governance and theoretical considerations, we argue that the answer to this depends on (1) the level of

governance that is addressed, (2) on the level of governance at which such a process is operationalised, and (3) on the phase of the policy (definition of the problem, formulation of the legislation, implementation).

With regards to the design of advanced participatory consultative approaches in democratic policy-making, we conclude that characteristics related to (a) the different policy phases and (b) particular levels of governance and relations in between them play in many respects a constitutive role with regard to other dimensions by which participatory approaches can be described and should therefore be considered accordingly.

**Wednesday 7th June, 12.30-13.30. Closing plenary
Prestonfield Room**

Chair: Wendy Kenyon

In the final session of the conference we will build on the outputs from the PATH plenary workshop held on Wednesday and draft three action plans which will aim to suggest ways forward to:

1. improve the participation of the public in developing policy
2. improve representation of different values and interests in participatory processes
3. expand the use of participatory methods at multiple scales and levels

Participants will be asked to consider the actions offered in the Monday workshop and suggest: why the action is important? Who should be responsible for making it happen? How they can do it or encourage it to happen? What resources will be needed? When it should be done? And how we will know it is done? Action plans will be displayed in the conference hall.

An evaluation of the conference will be conducted. The conference will be assessed against organizers aims and objectives and against participants expectations.

The conference will be closed.

POSTERS

Analysing deliberative interaction of stakeholders in anticipation of new concepts of mental illness

Ingrid Baart
VUMC

Genomics shapes utopian images of dealing with mental illness, thereby already influencing new practices of knowledge production, treatment, public and professional perception and management of mental illness – although the future of psychiatry up to this moment is primarily foreshadowed in psychiatric research. Stakeholders are implicated in, and transformed by this process. We identify stakeholders in four domains: [1] science and technology; [2] professional care and treatment; [3] (potential) patients and family organisations; [4] the public domain.

In our research we will set up debates (heterogeneous group discussions) among them. These trajectories of interaction between stakeholders will be analysed, in co-operation with the stakeholders. With our project we aim to contribute to facilitating public engagement of stakeholders in the development of psychiatry.

The stakeholders in psychiatry are at this moment not implicated in decision making processes about policies or technologies; they are implicated in what might be called an utopian development, that influences scientific research, professional care and the way mental illness is experienced.

We will discuss two questions:

1. What differences, similarities, and divergences regarding mental illness do genomics-related knowledge and practices produce among the four domains?
2. What methods are suitable for analysing this interaction between stakeholders?

The theoretical and methodological work of Boltanski and Thevenot is interesting because it provides tools to analyse the discursive struggles as conflicts between different convictions of what is right or justified, based on different models of justification and defensible practices.

Shifting governance: participatory management of common pool

Tatiana Kluvánková-Oravská, Veronika Chobotová
Slovak Academy of Sciences, Bratislava

This paper explores the role of social capital and governance in rural development within Slovensky Raj National Park. Based on the theory of Common Pool Resources and Network Governance, the case study explores the external and internal influences on cooperation. Current decision making in the Park is still affected by post socialist relations. In particular inefficient institutional design and non-robust governance of the resources have resulted in over-exploitation of natural resources and treating common property as open-access. On one hand, evidence emerged on domination of interpersonal trust and failure of institutional design. These were found as barriers for the National Park to be viewed by various actors as an asset. On the other hand, municipal and tourism networks show that cooperation is gradually moving from being externally to internally driven, while displaying characteristics of bottom-up and participatory

development. A hierarchical governance structure is thus slowly opening up, shifting towards networks and thus collective learning is initiated.

Understanding drivers of community concerns about emerging technologies

Craig Cormick
Biotechnology Australia

To best engage in community dialogue about emerging technologies that are often causes of social concern, the drivers of concern need to be best understood before models of dialogue can be established. Better understanding of social concerns enables for better two-way dialogue in that it not only best defines the information or education models to use, but provides a mechanism for feedback to developers of new technologies, revealing what the community is willing to accept and why.

Biotechnology Australia has undertaken extensive community research into social attitudes and drivers of these attitudes, to develop a model for analyzing social acceptance of new technologies. These findings underpin models for science-community dialogue and for public awareness activities that are now being used as the basis for community engagement on nanotechnology in Australia. One of the key findings is that there are five key factors of influence for acceptance of new technologies: Information; Regulation; Consultation; Consumer Choice and Consumer Benefit.

Public Awareness Programs that have developed by Biotechnology Australia include:

- An online upper secondary schools resource on biotechnology, developed in consultation with science teachers (www.biotechnologyonline.gov.au);
- a program of rural forums looking at the impact of biotechnology in 2020;
- A free-call Gene Technology Information Service;
- Public forums and hypotheticals in metropolitan areas;
- An information program for general practitioners.

Knowledge and acknowledgement: the difficulties of endorsing evidence based approaches to policy making in familiar territories

John Forrester, Carolyn Snell
Stockholm Environment Institute

Recent research indicates that much upland ecology experimentation carried out by academic researchers has little effect on policy. Further research indicates that there are particular problems in getting evidence-based data into policy in the area of urban transport. There is an urgent need for high quality, reliable and socially-robust data, yet generation of policy options is still largely an ad hoc affair. This poster reports on recent attempts to revisit the relationship between science and the public, and science and policy in order to bring the spheres together to form a science/public/policy relationship to ensure policy relevance and scientific excellence.

Processes and outcomes are compared from recently completed projects in upland ecology and land use, and from ongoing projects on diffuse pollutants and

urban transport. Although the settings are different, the importance of an evidence-based approach is comparable. The poster examines the location and role of expert and stakeholder participation in policymaking and management strategies in areas where science has not – and has – a traditionally perceived key role and comments upon recent successes in moving towards socially inclusive, scientifically rigorous policy making.

Risks and achievements of face-to-face-interactions in participatory science & technology governance

Alexander Görsdorf

Institute of Science & Technology Studies, University of Bielefeld, Germany

Most participatory and deliberative endeavours in the governance of science and technology heavily rely on face-to-face-interactions. This is—in spite of a mass of literature on rationales and techniques for participation—a theoretically and empirically understudied phenomenon. My contribution seeks to start filling that void: Do face-to-face-interactions have the capacity to (and, indeed, do) perform the tasks they are used for? I elaborate and answer that question drawing on work in the wake of Goffman and Boltanski.

Such a view problematizes the relationship between relatively autonomous face-to-face-interactions and other social structures, and above all the notion that the relation is one of representation: Objectives, cultural assumptions, and expectations concerning participatory endeavours as well as their institutional linkages may or may not gain relevance during participatory events. I suggest that this process, face-to-face-interactions' situational logic, their interfaces to social and cultural contexts, and their achievements can fruitfully be analyzed drawing on the concepts of "orders of worth" and "regimes of evaluation". Such an analysis can account for why participatory endeavours so often make use of face-to-face-interactions in spite of their situational limitations and risks.

Participatory approaches in knowledge production: the development of a guideline for the Netherlands Environmental Assessment

Agency

Maria Hage

Radboud University Nijmegen, The Netherlands

This contribution deals with participatory approaches in practice. The aim of the project 'participation in knowledge production under conditions of uncertainty' is to develop a guideline on stakeholder participation for the Netherlands Environmental Assessment Agency (MNP). The primary task of the MNP is to advise the Dutch government on a wide variety of environmental issues based on scientific knowledge and expertise.

Thus, the guideline (to be published in September 2006) has to suit different contexts, products and modes of assessments of the MNP. Therefore it cannot be a recipe book, but it rather triggers reflection on the following guiding questions in a systematic way:

- Why do I want stakeholder participation?
- Up to which degree do I want stakeholder participation?
- What must the content be?
- Which stakeholders do I need for that?

- What kind of methods are suited for the chosen goals and chosen stakeholders?

The guideline on stakeholder participation tries to help identify the main goals, motives and contexts of participation in environmental assessments. While keeping in mind the existent resources it gives advice for designing participatory knowledge production meeting realistic expectations. One has to recognize that there is even a certain trade-off between goals of quality of knowledge and goals of democratic design of participatory approaches. There is no participatory design that could possibly serve all purposes. The guideline tries to assist with the choices that have to be made.

Action research on sustainable development indicators: A comparison of top down versus bottom-up approaches to indicator selection

Kearney, P., O' Regan, B., Moles, R., Doody, D.
Centre for Environmental Research, University of Limerick, Ireland

Sustainable development is a complex subject encompassing environmental, economic and social factors. As such it is necessary to simplify sustainable development in order to utilise a quantifiable measurable metric that will allow for measure of whether we are becoming more or less sustainable. For this indicators are recognised as been a useful tool. One of the main critiques of the use of indicators is their lack of relevance to the public. Sustainable development measured with indicators are criticised for being overly scientific and failing to resonate with the public. Most of the major sustainable development issues are directly influenced by public opinion and the publics lifestyle choices. As such unless the issue of sustainable development and the reasons for sustainable developments importance are recognised by the public these changes will not come about. Hence there is a need to develop indicators that are relevant to the public and scientifically relevant. To do this effectively the public needs to be represented in the process from the beginning of the indicator selection process. Two methods are under study, firstly using a 'top-down' approach; with Limerick City Development Board indicators have been developed. Secondly a 'bottom-up' approach using focus groups and the Q method for discourse analysis. Q method is a statistical technique for discourse analysis that allows for statistically significant results using a relatively small sample size. Indicators are developed from the key statements expressed in the Q Sorts. The resulting sets of indicators will be compared to ascertain similarities, differences and opportunities for integration of indicators from the differing sources.

Chips for everyone – an innovative approach to development of public engagement events

Jane Magill, Dr Scott Roy
University of Glasgow

Chips for everyone is a very successful project funded by the Engineering and Physical Science Research Council, (EPSRC) under their Partnerships for Public Engagement (PPE) funding stream. Workshop and drop-in events have been developed to diverse audiences ranging from school classes to shopping centre customers.

The focus of the project is semiconductor technology; a technology which impacts on the daily lives of everyone and yet is largely unseen. The activities seek to engage, engender interest and promote informed discussion about this technology and engineering in general.

Important aspects of the project include;

- Development of the activities that is innovative, using the complimentary skills of research academics and students in initial teacher education (ITE) for technology teaching working collaboratively. This proved to be a fresh and very effective approach
- Development of interactive and flexible formats for Semiconductor technology workshops
- Workshops that are well matched to target audiences. Delivery of workshops to about 7,000 schools pupils and public audiences across south and central Scotland in three years
- Very positive feedback from workshop participants and presenters
- New and continuing partnerships with stakeholders (eg Industrial partners, Careers Scotland Regions, Setpoints, Science and Engineering Ambassadors)

Citizen Science for Sustainability (SuScit): Promoting transdisciplinary dialogue and research for environmental and social justice

Maria Adebowale, Dr. Malcolm Eames, Dr. Karen Lucas, Kate McGeevor,
Julia Tomei
Capacity Global, UK

SuScit is a new three year project, funded by the EPSRC's Towards a Sustainable Urban Environment (SUE) Initiative. It seeks to provide local communities with a greater say in how priorities for environmental and sustainability research are defined, so as to ensure that future research more effectively addresses their needs. The project comprises a structured programme of action research and networking activities designed to promote engagement, dialogue and collaboration. It aims to build links between researchers, sustainability practitioners, and most importantly local citizens, particularly those from marginalized and excluded groups (i.e. older people, young people, people with disabilities and from Black, Asian and ethnic communities). Promoting such engagement presents considerable challenges. There are currently few opportunities for scientists, engineers and social scientists to work directly with local communities to address their environmental and sustainability needs. People from these different groups often talk about environmental problems in very different ways and bring very different sets of experiences and expectations to the table. SuScit is therefore developing and testing a range of tools and techniques for facilitating citizens' engagement and dialogue on science,

environment and sustainability issues through an extensive series of workshops in three local communities.

Water management and conflict resolution: a case study in Uganda

Joy Mukyala

Makerere University Faculty Of Social Sciences, Uganda

This abstract is based on the study, which was funded by PAES/EU Project and implemented by myself and a team of other Researchers on behalf of Makerere University Institute of Environment and Natural Resources, was carried out in eight Districts in Uganda. It was found out that water shortage in Katakwi district results in conflicts over the struggle for the few water sources (MUIENR and PACE, 2002). Furthermore, the occasional conflicts between the people of Karamoja (Karamajongs) and Katakwi (Itesos) in northeastern Uganda normally escalate during the dry season when the water sources have dried up in Karamoja. When Karamajongs attack Itesos, they follow the water flow, first capture, and take control of the water sources, before they are involved in other raids like cattle rustling (MUIENR and PACE, 2002). Likewise, the Competition for water and the resultant conflicts between pastoralists and cultivators in the Sango Bay area of Southern Uganda is of great concern. The few water sources in the area are shared between livestock and people (MUIENR and PACE, 2002), which creates conflicts between pastoralists and cultivators.

The avoidance or peaceful settling of conflicts induced by water degradation and rehabilitation programs like water management strategies would be some of the measures to attain sustainable peace.

Alternative future scenarios for the Shannon estuary region: stakeholder participation in sustainable development

O'Keeffe, S., O'Regan, B., Moles, R.

Centre for Environmental Research, University of Limerick, Ireland

This PhD aims to apply scenario planning to the Shannon Estuary region, in the west of Ireland, to identify and encourage policy making, which will promote the more sustainable management of the Shannon estuary ecosystem. Scenario planning is considered a powerful decision tool, encouraging input from all relevant stakeholders and promoting the concepts of sustainable development by facilitating the examination of alternative futures and their likely impacts.

The scenarios applied will be based on those futures proposed by the United Nations (UN), as a result of The Millennium Ecosystem Assessment (MA). These scenarios were developed using a list of plausible variables, which summarise the overall global findings of the assessment and highlight the most common and important issues facing ecosystem management. They link people's attitudes and priorities to their perusal of "Human well being", which the UN Assessment defines as, *The material needed for a good life (e.g. food, fuel.), Health, Security, Good Social Relations and Freedom of Choice*, all which create demands on Ecosystem services, ultimately resulting in the instigation of changes within them.

Before any scenarios can be predicted, the present baseline trends affecting the Shannon's ecosystem, must be assessed. The generation of qualitative data through community focus groups and other key stakeholders in the region,

reinforced through the assimilation of quantitative data, retrieved from sources such as government agencies and local authorities, will aid in the determination of stakeholder's preferences, when it comes to achieving human well-being and thus the underlining issues facing the sustainable use of the Shannon estuary ecosystem.

Handy nature: mobile telecommunication as a tool for biodiversity preservation

Dan Podjed
Faculty of Arts, Ljubljana

The poster presents theoretical and practical aspects of a mobile application for monitoring biodiversity and surveillance of species and habitats, and shows the possible social effect of such an approach and its influence on the preservation of nature.

The application enables mobile telephone users to track changes in nature and educates them via a mobile encyclopaedia of animal species, vegetation and habitats. For the successful implementation of such application data should not flow only in one direction, i.e. from the centre to users, but as well in the other direction, from the users to the centre. Mobile telephone users would therefore be able to participate and send observation data from the field to the central office. This kind of mediation and collection of data would enable a faster and more widespread type of volunteer biodiversity monitoring and provide a platform for the exchange of relevant data in a self-organized network. The data sampled by network members could be eventually combined with research efforts of more formalized governmental and non-governmental organizations, and could complement existing policy of biodiversity protection.

The poster therefore shows that technology is not necessarily an obstacle between humans and nature. On the contrary, it may become a means of motivating volunteers and raising public awareness of the importance of a preserved environment, and, finally, if used beyond existing monitoring networks, can serve as a powerful tool for halting biodiversity loss in the European Union.

A participatory approach to water management in the face of climate change

Wendy Proctor, Ejaz Qureshi, Glyn Wittwer and Mike Young
CSIRO, Australia

Australia is likely to encounter very difficult water management decisions in the future as a result of increasing populations and decreased water availability due to climate change. The Enormous Regional Model (TERM), a Computable General Equilibrium Model has been developed to assess the impacts of different scenarios for various rural and urban industries and regions. Under all scenarios, a population in Australia of 25 million by 2032 as well as a 15 per cent decline in the amount of water available to industries and households in Australia, is assumed. The management scenarios that are considered include water trading between adjacent rural and urban regions, the availability of water from desalination plants, recycled water availability and wage induced inter-regional migration of employees as well as various combinations of these. However the model by itself cannot take into account the various preferences, abilities, infrastructure availability and institutions that are relevant to the industry and household stakeholders that are affected by potential future water management decisions. In this research, we use the various scenarios developed by the model and resulting impacts of these in a Deliberative Multi-criteria Evaluation

framework with industry and household stakeholders to come up with a preferred scenario for future water management in different regions of Australia. In doing so, the process highlights some of the potential pitfalls and opportunities within a regional context that will become increasingly important to managing our dwindling water resources in the face of significant climate change effects.

Critical reflections on recent philosophical views about public participation in science

Stéphanie Ruphy
University of Provence

Science is now widely seen by philosophers of science as providing accurate but partial representations that respond to the particular needs and interests, both practical and epistemic, of a society at a given time. An immediate consequence of this context-dependent view of the ends of science is that the definition of scientific research programs can no longer be left to the scientists only. The issue of public participation in the formulation of science and technology policies has been recently addressed by Philip Kitcher who, in his influential book *Science, Truth and Democracy* (Oxford University Press, 2001) proposes the normative concept of “well-ordered science” to capture what a democratic organization of scientific research should look like.

My main aim is to offer a critical analysis of the ideal of “well-ordered science”. My contribution partakes thus of a theoretical approach, from a philosophical point of view, of the issue of public participation in science. I will first set out the main lines of the concept of “well-ordered science” and then voice two distinct critiques, one about the ability of Kitcher’s scheme to cope with the existence of scientific uncertainties, and the other about its ability to respond to feminist concerns about gender-biased science. I conclude by a brief discussion of concrete implications of the ideal of “well-ordered science” for policy and practice.

Community development and environmental policy in Scotland: a case study of a national nature reserve, the Isle of Rum

Andrew Samuel
University of Abertay

In Scotland statutory and voluntary nature conservation agencies can be seen as vying for the right to manage ‘nature’. Usually, this leads specifically to the protection of its wilderness qualities using land management regimes that are ostensibly based on ‘impartial’ and ‘value-free’ science. However, the demands that this science-based conservation practice places on the land often conflicts with the more culturally based management practices of rural communities who live and work in this ‘wild land’.

Since Devolution, high priority has been given to reconciling conservationists’ values and locals’ concerns. This has led to the gradual development of facilitative management ‘technologies’, such as new legislation on public involvement in nature conservation policy. Yet, it remains to be seen whether or not these so-called ‘inclusive’ and ‘co-operative’ technologies can work in practice.

The aim of this paper is to stimulate debate on the development of these new managerial mechanisms that are ostensibly orientated towards the practical reconciliation of nature conservation and community interests, by analysing the

latent tensions between the two. The Isle of Rum will be used as an analytical case study since it is one of the UK's more prestigious large-scale 'nature conservation' areas that also has a community development plan in preparation.

Introducing CAVES: Complexity, Agents, Volatility, Evidence and Scale

Lee-Ann Small, Nick Gotts and Gary Polhil
Macaulay Institute, Aberdeen

CAVES is an EU funded research project, designed to bring together agricultural land users' experiences with advances in computer modelling and complexity theory, in order to better inform policy makers about land use change. The project is part of a larger programme to encourage new methods of studying complex issues, through interdisciplinary research. CAVES focuses on land use change, or lack thereof, in response to external shocks (such as climate or policy change) and internal pressures (such as social constraints). The CAVES project has three case study sites: one in Grampian, Scotland; one in Odra region, Poland; and one in the Vhembe district of Limpopo province, South Africa. The purpose of the CAVES Grampian study is to provide policymakers with scenario analyses for land use change in the region over the medium term, based on computer-generated models of land use change processes. These models will be based on findings from interviews with agricultural land users, such as farmers and estate managers, as well as other agricultural industry members. The models associated with these case studies and their use by the relevant stakeholders will test how well agent-based models of real, complex social networks enhance our understanding of both social processes, and, more generally, processes in complex networks.

Regional Infrastructure Foresight as a participatory tool for sustainable development of the sanitation sector

Eckhard Störmer, Annette Ruef, Bernhard Truffer
Eawag – Swiss Federal Institute of Aquatic Sciences, Switzerland

Successful operation of the sanitation sector is one important factor to guarantee the water quality which is a demand of the water framework directive. This sector is characterized by very long lasting investments in infrastructure (up to 80 years and longer) and public management organisation on a mostly fragmented level of communities. Within this system, long-time planning and the assessment of future developments are essential, but quite challenging because of the orientation of the key players at the technological paradigm and the political motivations and consequences of decisions.

To meet this challenge, "Regional Infrastructure Foresight" (RIF) is developed as a methodology to support strategic decision making for sustainable infrastructure planning. The foresight approach shall empower local and regional authorities, technology developers and sanitation professionals to decide on mid- to long-term strategies for infrastructure development and to manage potentially sustainable innovations in a strategic way. RIF is therefore being seen as a proposal of a new method for regional governance, strategic planning and technology assessment.

Based on an anticipatory problem analysis (with the identification of key problems and drivers for change) and innovation system analysis (analysis of socio-technical, organisational and institutional innovations and their evaluation by sustainability criteria) the methodology is a participatory foresight process with

key actors and stakeholders of the communal sanitation system. It will be applied at three Swiss communities with typical problem profiles of the sanitation sector.

Urban renovation and the challenges for public participation
Frans van der Woerd, Marleen van de Kerkhof, Matthijs Hisschemöller and
Tjeerd Stam
Institute for Environmental Studies (IVM)

Urban renovation projects provide a good opportunity to be combined with the implementation of options to save energy and/or reduce the emissions of carbon dioxide. This is also the case in the Amsterdam New West area, an area that was built in the 1950s and that houses 128.000 citizens in 60.000 dwellings. In 2002, local politics pronounced a 50% CO₂ reduction target in the period up to 2015. An important contribution to reaching this target will come from district heating based on residual heat of an existing waste incinerator. Contracts have been signed to install heat infrastructure in the year 2008.

As a part of the EU Ecostiler project, a Participatory Integrated Assessment (PIA) has been initiated to explore what are possible options for sustainable energy in Amsterdam New West. Major stakeholder groups to be involved are citizen's organizations, housing corporations and urban district councils. In the preparation phase of the project, an interview round has been conducted with the major stakeholder groups. These interviews have revealed that the stakeholders have different positions on how to achieve 50% CO₂ reduction. The authorities have a strong drive towards district heating, citizen groups see several disadvantages of this option and consider a new heat monopolist with distrust, and the housing corporations are divided. All parties agree that, up to now, local citizens have hardly been involved in decision processes.

On the basis of the outcomes of the interviews, this paper will discuss a number of challenges with regard to the design and implementation of the dialogue process in the Amsterdam area. These challenges concern: the openness of the dialogue process, the lack of information on energy options, lack of trust among the public, competence of residents to participate meaningfully in the assessment, and the management of expectations.

Social programme

Sunday 4th June

The opening reception where drinks and canapés will be served, will take place on Sunday evening in St Leonard 's Hall on the Pollock Halls site. Registration will take place at the same time and place. This will be an informal event for conference delegates to get to know each other. There will be some activities for delegates to participate in, but no speeches.

Monday 5th June

Free evening

Tuesday 6th June

The conference dinner and ceilidh (dance) will be held on Tuesday evening. Conference organisers are happy to accompany participants on the 10 minute walk to Our Dynamic Earth. Please meet at 6.50pm in the John McIntyre reception centre. Otherwise, you may make your own way there.

Pre-dinner drinks will be served in the rainforest at Our Dynamic Earth from 7.00pm. Dinner will be served at Our Dynamic Earth at around 8.15pm and will be followed by a traditional Scottish Ceilidh, where conference participants will be invited to join in the dancing. Put on your dancing shoes!

This is an informal dinner-dance. There will be no seating plan or speeches.

Instructions for authors for conference proceeding

PATH 2006 – Summary Paper Standards

Author 1^{1*}, Author 2², Author 3³

¹ Organisation, Country; ² Organisation, Country; ³ Organisation, Country

*Address and email of corresponding author

Abstract

Abstracts for all papers, posters and participatory sessions have been printed in the conference pack. The general instructions below relate to the summary or full papers and posters required after the conference. These will be compiled into a CD of conference proceedings and sent out to participants.

1. General instructions

Following the conference, summary papers (or fuller papers if authors are preparing papers for submission to a journal) from contributing participants will be put onto a CD of conference proceedings and sent to all participants. Please submit your paper according to the instructions presented in Table 1. The submission deadline is **strictly 14th July 2006**.

Table 1 – Instructions for abstract and summary paper submissions

	Contents	Format
Top line	Title	12 points, bold, centred
2 nd line	Blank	
3 rd line	Name of author(s)	11 points, regular, centred
4 th line	1 st Author Affiliation, Country; 2 nd Author Affiliation, Country, etc	10 points, italic, centred
5 th , 6 th , 7 th lines	Blank	
Abstract	abstract	10 points, justified, single space (250 words)
Summary	Summary paper	10 points, justified, single space (upto 6,000 words)
End of text	Reference list	Follow the <i>Ecological Economics</i> journal rules (See below)
Page setup	All margins (Top, Bottom, Left, Right) with 3 cm; Header and Footer (1,25 cm)	
1 st level section title		11 points, bold, left
2 nd level section title		11 points, bold italic, left
3 rd level section title		10 points, regular, left
Tables	Table contents should be 9 points, regular Table title should be placed above the table	
Figures	Figure title should be placed below the figure	

Please note that this file was written according to the instructions above. It may be used as a template for writing abstracts or summary papers.

2. How to Submit

All papers must be written in English and submitted electronically in MS Word (.doc) format, using Verdana font, to the Conftool facility on the Conference Website <http://www.macauley.ac.uk/pathconference/>.

2.1. Posters

For poster contributions, authors should also submit an **extended abstract** (max. 1000 words, due **14th July 2006**) which will be included in the conference proceeding CD.

2.2. Participatory Sessions

The outcome of the plenary workshops will be written up and published in the conference proceedings.

References

References should be presented in the following format.

For periodicals:

Ayres, R.U., 1993. Cowboys, cornucopians and long-run sustainability. *Ecol. Econ.*, 8:189-207.

For edited symposia, special issues, etc., published in a periodical:

Reiche, E.-W., 1993. Modelling water and nitrogen dynamics on catchment scale. In: B. Breckling and F. Müller (Editors), *State-of-the-Art in Ecological Modelling*. *Ecol. Model.*, 75/76; 371-384.

For books:

Ahmad, Y., El Serafy, S. and Lutz, E. (Editors), 1989. *Environmental Accounting for Sustainable Development*. The World Bank, Washington, DC, 100 pp.

For multi-author books:

Daly, H.E., 1991. Ecological economics and sustainable development. In: C. Rossi and E. Tiezzi (Editors), *Ecological Physical Chemistry*. Elsevier, Amsterdam, pp. 185-201.

For unpublished reports, departmental notes, etc.:

Goodland, R., Daly, H.E. and El Serafy, S., 1991. *Environmentally Sustainable Economic Development: Building on Brundtland*. Environment Working Paper No. 46, World Bank, Washington, DC.

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