

SKEP ERA-net : Scientific Knowledge for Environmental Protection
Work Package 6 – Investigate emerging issues for future research planning
Paris, June 12th and 13th

**How to identify emerging long term strategic issues
*for environmental research and policies ?***

Location: La Balle au Bord, Paris

Attendees:

Aad Sedee (VROM)
Bob Huggins (EA)
Bozene Sucharda (IEP)
Bruce Beck (University of Georgia)
Claudio Rapicetta (MATT)
Celine Philips (ADEME)
Daniel Clement (ADEME)
Elie Faroult (DG-RTD, Foresight Unit)
Eric Vindimian (MEDD)
Erik Fellenius (SwEPA)
Ilse Dries (AMINAL)
Jean-Marc Merillot (ADEME)
John Seager (EA)
Karine Herzberg (RCN)
Kerstin Astrand (SwEPA)
Kirsi Haavisto (DG-RTD)
Laurance Colinet (MEDD)
Lorraine Hutt (EA)
Manuela Kienegger (BMLFUW)
Martine Vanderstraeten (BELSPO)
Mikael Hilden (SYKE)
Pascal Bain (ForSociety ERA-NET)
Pasky Pascual (USEPA)
Pekka Harju-Autti (FiMoE)
Philippe Vanhaver (AMINAL)
Sandro Mondonca (COST)
Sebastien Treyer (MEDD)
Sandrine Paillard (INRA)
Sendrine Picard (INRA)
Shane Colgan (IEPA)
Simon Gardner (SKEP project manager)
Stephane Isouard (EEA)
Vera Rabelt (UBA)

Workshop Minutes

Monday, 12th June 2006 (Day 1)

I. Procedures to plan in advance research on emerging strategic themes

Example of procedures to plan in advance research on emerging strategic themes - Erik Fellenius (SwEPA)

- Environmental quality goals for Sweden, based on horizon-scanning activities of 6-7 years ago. One generation timescale set as the objective. High level objectives – ‘clean air’, etc.
- Shift from reactive to pro-active with the advent of the concept of sustainable development
- Economic, socio-cultural-environmental interface
- Ecological sustainability is a dynamic concept
- Graph: high/low consensus on values; high/low knowledge of the problem
 - Negotiation solutions
 - Technology solutions
 - Research solutions
 - No solutions
- Examples of foresight studies (to 2020):
 - **#1.** Series of indicators for different environmental problems
 - Ex. ground-level ozone, acidification, greenhouse effect
 - Identification of sectors with responsibility for the problem – should pay for their research, with the support of the SwEPA – ‘sector integration’
 - **#2.** ‘Env. objectives to 2021’
 - Future scenarios + consequence analysis + target scenario + ‘how to get there?’
 - Assessment of international scenarios and impact on Swedish efforts
 - **Funding base:**
 - Councils for basic research
 - Sectoral research bodies, etc
- Latest Foresight Studies – global resource situation (in context)
- Five different background studies:
 - Flow of global resources
 - Global clean tech market
 - Clean tech and venture cap, etc.

Present situation: foresight studies complement other activities; focus on smaller-scale projects and lower time-scales; focus on cleaner technology.

Questions and answers:

Vera Rabelt: Looking for synthesis research, and integrating different perspectives?

Erik Fellenius: You should make use of quality-assured news – making use of present knowledge.

Stephane Isouard: All aspects of society can reach a solution – needs to be more emphasis on solutions.

Bruce Beck: 'back-casting' – what does this entail?

Erik Fellenius: Seven different sectors were used. We stated 'where do we want to be?', then worked backwards with reference to predicted structural changes and effects of one sector on another sector. Pathfinding (local micro-scale – ex. a farmer) vs. Task-finding (globalisation, macro-scale – agricultural sector).

Mikael Hilden: How do you prioritise goals? Conflicts between the goals?

Erik Fellenius: Also have 15-20 'sub-goals' within different sectors. Annual reports to monitor progress.

Example of procedures to plan in advance research on emerging strategic themes – Bob Huggins (Environment Agency for England and Wales)

- More passive, less structured approach
- Feeds off of peer-reviewed science papers
 - Scanning – identification of new science
 - Assessment – judge its relevancy
 - Evidence building – database
 - Communication – alert and inform
- Difficult to engage policy-makers, who are focused on shorter timescales
- Look at development stage – 'driving forces' – ex. movements of venture capital and patent applications
- Concepts:
 - 'Far out' – conceptually possible, non-existent
 - 'New to world' – proven in potential, not in practice
 - 'New to Agency'
- 'Far out' – molecular manufacturing (2015-2020) - FabLabs
- 'New to world' – space tourism (2008-2010)
- 'New to Agency' – nanomaterials –env. impact – Regulation?
- Scanning outputs – weekly, monthly, ad-hoc
- Scanning the big four; 'GRIN' technologies – Genomics, Robotics, Informatics, Nanotechnology
 - Regulatory realities:
 - Bioremediation of groundwater pollution
 - EnviroPig – pig P usage
 - Transgenic drought-resistant wheat
 - Robotics – hydra project – wobots (wet robots)
 - REMUS – Remote Env. Monitoring Units
 - Informatics – DAISY – 'Digital Automated Classification System'
 - Virichip – test for different viruses
 - Nanotech to clean up groundwaters – playing policy-catch-up
 - Forward osmosis for desalination

Present situation: Moving towards 'pre-emptive' planning and policy development
PEFIs + PEFOS ('Plausible Evidence-Based Future Issues/Opportunities)
Developing narratives to engage policy-makers

Questions and answers:

Sandro Mendonca (COST): The Agency's activities are quite optimistic about future science and technologies – what about the risks?

Bob Huggins: The EA look at the full spectrum of data, rate it for robustness; look at it through the eyes of a regulator.

Erik Fellenius: Aggregating risk; promotion of solutions.

Bob Huggins: His job is just to make people aware. Raising awareness is part of the promotion of solutions.

Mikael Hilden: Is there an emphasis on social science?

Bob Huggins: Current funding allows air/land/water science only.

Bob Huggins (in response to Shane Colgan): Horizon-scanning is a very young science which is still developing. The defence agencies are a long way ahead of us.

Laurence Colinet (MEDD): Who are the stakeholders and participants, and who writes the PEFIs?

Bob Huggins: The PEFIs are written by the horizon-scanners. The stakeholders are the EA.

- **Tea/Coffee break**

Example of Agora 2020 in France – Jacques Theys, CPVS (French Ministry of Public Works); ForSociety ERA-NET

- This horizon-scanning study concerns 'Life and mobility in France in 2020'
- A foresight exercise on the research demand on transport, construction, housing, urbanisation, land-planning, knowledge of the Earth and risks
- Four-step process:
 - Three citizen panels [identification of expectations]
 - Six sectoral workshops [ranking of challenges and research questions]
 - Strategic workshop [translation into research strategies]
 - Dissemination of results
- Public expectations: Problems; Needs; Expectations
- Needs expressed by the actors (Business; State; Local Government; NGOs): Main concerns; Possible solutions; etc...
- Graphical representation of 'ruptures' – sudden changes for 2025-2030 (impact – versus – probability)
- Example: accelerated climate change; (hi;hi)
- Example: Re-ruralisation of France and urban decline (hi;lo)
- Very social scanning emphasis, with the exception of climate change (decline of Europe; de-urbanisation; demographic changes; ageing in society; risks of a split society)
- Translation of clusters into potential research programmes
- Participation: there is a trade-off between openness and loss of focus

- ForSociety ERA-NET are producing a paper on how to engage citizens in horizon-scanning processes

Questions and answers:

- **Vera Rabelt (UBA):** 'Where does your research go?'
- **Jacques Theys (CPVS):** The research provides input into French Ministry policy groups. Four research programmes are managed and funded.
- **Bruce Beck (University of Georgia):** Socially robust science – changing nature of the contract between science and society.
- **Laurence Colinet (MEDD):** Are there any 'unsolvable needs'?
- **Jacques Theys (CPVS):** There are examples in the literature.

General Discussion :

First attempt to draw a panorama of existing practices concerning research for environmental policies (common features and specificities)

- *What kind of consultation and what objectives do we want ?*
- *What techniques should we mobilise ?*
- *What participation of the public : a first conclusion*
- Three very different approaches towards horizon-scanning were presented
- **SwEPA:** have set out generational, national objectives, with structured planning. They are building a dialogue between stakeholders and sectors
- **EA:** are concerned with scanning and dissemination. They are taking a global, wide-angle approach and are developing engagement tools,
- **AGORA:** A French Ministry-based example concernign the creation of research programmes and the use of citizen panels
- What should be the breadth of the theme selected for in-depth study? Should we focus on sustainable development or environmental risks? Should we focus on policy effectiveness?
- Whose concerns do we want to address? Those of Government Ministries and regulatory authorities.
- Bob Huggings (EA): The EA have developed methods to bring time-lines together to make information accessible. In support of developing an integration tool. However, would this be too close to other horizon-scanning ERA-NETs?
- Stephane Isouard (EEA): Do we look at DPSI or R?. Essentially, do we look at I or R?
- Horizon scanning toolkits are being developed at the moment (IPDS) which focus upon:
 - Topics
 - Techniques
 - Strategic analysis
 - Consultation procedures

One potential WP6 topic area could concern nanotech and a linked assessment of impacts on policy effectiveness.

- Need an **emerging issue**. Use risk assessment of environmental impacts of nanotech, or growing biofuels, as a hub for horizon-scanning activities, and use it

to work towards a case-study, or model, for the integration of time-lines, ways of working, and synthesising tools and techniques. **Environmental impacts of GRIN' technologies – Genomics, Robotics, Informatics, Nanotechnology**

SKEP should consider looking at existing foresight/scenario work through a science-policy lens.

Examples:

- 'Distance to target assessments' (Outlooks and projections)
 - Impacts for environmental policy makers (Scenario analysis)
 - Formulation of PEFIs
 - Combining stakeholder groups - 'Story and simulation' approaches – with neutral facilitation
 - Spatial studies and regional assessments
- Use of down-scaled scenarios for policy-makers and stakeholders

LUNCH

The approach to plan in advance research on emerging strategic themes at SYKE – Mikael Hilden (Programme Director, Research Department)

- SYKE is a hybrid organisation which needs to cover 40% of its income from external sources
- It has close links to two Government Ministries – Agriculture and Forestry, and also Environment
- SYKE finds itself in an “event jungle” – as opposed to an orderly “event tree”.
- Creating maps to inform 4-year research Programmes
- Objectives : Indicators : Learning
- Numerous sector-specific plans in Finland, but these are now in the process of being overviewed
- The resources for “strategic projects” to test out new ideas are lacking, but desired.
- There are a number of Foresight benefits/limitations
- Implementation will be dependent on co-opting stakeholder groups and changing behaviour, but will need new skills (to drive behavioural change)

The approach to plan in advance research on emerging strategic themes at RCN – Karine Herzerg [Forward this data to SYKE]*

- New white paper on research
- Foresight processes – areas of high uncertainty
- Political signals – changes of government
- International development
- Foresight studies on: Energy; Aquaculture; Biotech; Nanotech; Comms
- Looked at business and industry structure, etc (not just environmental)
- New insight gained into trans-disciplinary questions
- Process for the establishment of new research programmes
- Diagram – Programme lifecycle (5-10 yrs)

- Formulation of research strategies
- Example: 'The Northern Areas Strategy'. Trans-disciplinary study assessing models of co-existence between fisheries and petroleum

Questions and answers:

Sandro Mendonca (COST): Is there any interaction with other nordic countries, For example, involvement with the nordic foresight network?

Karine Herzberg (RCN): Informal co-operation takes place

Scenarios and outlooks for European environmental policies – Stephane Isoard (EEA)

- **I. Outlooks and scenarios**
 - a. Outlooks and projections – 'distance to target evaluations'; mostly quantitative; modelling-based
 - b. Scenario analysis – designed for a policy agenda setting; qualitative; longer-term issues
 - How to address uncertainty – uncertainty—vs-causality
 - Context of the 'policy cycle': problem signaled; recognised; measures taken; problem controlled.
- **II. Overview of the European Environmental Outlook (SoE)**
 - Undertaken every 5 years
 - EEA report No.4/2005
 - To develop key messages/early warnings for policy-makers
 - Integrated assessment models
 - Exploration of the sustainability of baseline projections
 - Analytical framework: DPSIR; common set of assumptions for driving forces, etc.
 - Quality assurance and consultation processes
 - High-level feed to EU environmental policy-makers
- **III. The PRELUDE project**
 - 'Prospective environmental analysis of land-use development in Europe'
 - Different groups brought together for up to 3 days at a time
 - Policy level
 - Research level
 - Public
 - Stakeholders
 - Neutral facilitation; EEA does not drive the process
 - 'Story and simulation' the output – spider diagrams/radar chart [ex. 'great escape', 'evolved society', etc]
 - Enhanced communication of results (award-winning) – more immediate impact than lengthy technical reports
- **Analytical gaps*:**
 - Spatial and land-use outlook (PRELUDE)
 - Comprehensive ex-ante uncertainty exercise, etc

Open questions:

- Spatial analysis and regional case studies needed
- A focus on impacts is needed (know a lot about driving forces and pressures)

- Uncertainty analysis (ex, extreme weather)
- Communicating results to non-scientific communities, policy makers and media audiences
- Selective attention – too much detail, you miss the big picture! [**Implications for breadth of the SKEP theme**]

Questions and answers:

Stephane Isoard (EEA) (in response to Erik Fellenius): Outlook is a function of political targets – how are we measuring up to targets which have been set? Land-use is very cross-cutting.

Mikael Hilden (SYKE): The greatest uncertainties are related to impacts, they are not the consequences of responses

Stephane Isoard (EEA): We know very little about impacts data and links. There can be a lot of uncertainties in the driving forces.

Ilse Dries (AMINAL): What are we going to do with these scenarios – aside from being a discussion tool? How do we translate these into policies?

Stephane Isoard (EEA): We are in the phase of looking at 'strategy to action'.

Pekka Harju-Autti: People must think the unthinkable – in a very heterogeneous group of people. Is this possible?

Stephane Isoard (EEA): This is very challenging. You need selection filters.

Pasky Pascual (USEPA): Causality vs uncertainty? Assumptions?

Stephane Isoard (EEA): None. Intended to be representative.

John Seager: Penetration of policymakers? 5 yr planning cycle. How do we move the agenda on and free-up space? Old Directives.

Stephane Isoard (EEA): Can we use scenarios for priority setting? Very difficult. They may not be robust enough on their own.

Aad Seedee (VROM): To what extent are scenarios applicable to all Member States?

Stephane Isoard (EEA): The EEA have case studies for three areas, which include Estonia and Northern Italy. The challenge is in down-scaling the scenarios so that the lessons are of practical use, and to resonate with people.

Bob Huggins (EA): How do you make this work timely? SI: Example of a jt. Env-Ag council meeting. Held the report back. Plan 3-4 yrs ahead for delivery of results. Lot of lobbying involved.

Sandro Mendonca (COST): Activities in Sevilla – is there an overlap, or a disconnect?

Stephane Isoard (EEA): Capacity building and workshops in different Member States (recently, Slovenia and Turkey).

BREAK

Research on emerging strategic themes by the US EPA – Pasky Pascual (Office of research and development - ORD-USEPA)

- Need a concrete idea about where you are going
- 3 key elements:
 - funding of new research
 - developing new policies
 - develop tools and data to enhance foresight
- Scanning weak signals
 - Domains
 - Leads
 - Criteria (novelty, scope, severity, etc)
- Scoping strong signals
 - Woodrow Wilson, Foresight and governance project – interconnected with the USEPA building
 - Question: ‘How might genomics affect environmental protection?’
 - Key questions – how are we going to implement the law, how can we react to these scenarios, what is the potential legal exposure?
 - ORD Exploratory research grants (\$6m) – ex. ‘benign’ nanotech applications
 - Pennsylvania State – foresight activities to look at future vulnerabilities
 - Two ORD white papers on nanotech.
 - Convergence in info/nano/bio technologies

Bruce Beck (University of Georgia)

- TAUC was devised 3-4 yrs ago in the wake of ‘Late lessons from early warnings’
- EU, US, Japanese delegates
- It is a 2-18 month project with a series of objectives
- Differences in approaches towards science-policy issues – ‘post-normal science and cultural theory’
- Flexible approach to the projects goals:
 - **I. Foresight**
 - **II. Policy negotiation/policy formulation in the face of uncertainty**
- White paper – grant funding
- Network of Best Practice – 2007+
- Topic areas:
 - Water
 - Air (particulates)
 - Pharmaceuticals

Questions and answers:

Mikael Hilden (SYKE): Weak signals/strong signal – where do you see the balance?

Pasky Pascual (USEPA): Toxicology risk assessments – DNA chips. Effects on regulatory behaviour. Chemical interactions now possible.

John Seager (EA): Structuring of the dialogue between the research community and regulatory organisations – important lessons we can learn from the USEPA.

Pasky Pascual (USEPA): Structure of the EPA is very media-specific (air; hazmat; water, etc). 50% problem-oriented research; 50% basic research.

Monday, 13th June 2006 (Day 2)

An overall presentation of Foresight methodologies – Sandro Mendonca (COST) – University of Lisbon, ISCTE Portugal; SPRU

- Innovation economics
- COST A22 network
- 1968 there were already in excess of 100 tools for Foresight research
- COST was originally a non-EU structure which emerged in the 1970s – Eastern and Western researchers; bottom-up initiatives
- 34 COST countries
- <http://cost.cordis.lu>
- Quite a free and unpredictable research network
- www.costa22.org
- Objective: to develop certain kinds of foresight technology
- Intellectual creative destruction
- Wiring up the stakeholder community
- Sources of self-inflicted holocaust (Easter Islands, Mayans, Norsk) – ‘Collapse’, Jared Diamond (2004)
 - “weak signals” as advanced indicators of future change
 - “weak signals” as strategic early warnings
 - “wild cards” as unconventional change phenomena
 - “weak signals” as ‘uninvited guests’ into the policy landscape
- Meta-foresight exercises – ‘foresight on foresight’
- Virtual policy prototyping
- New forecasting tools – “regime change” models, Bayesian learning models, non-linear time-series analysis, etc.

Questions and answers:

Stephane Isoard (EEA): ‘Do we need new scenarios? We really have them already the trick is to down-scale them and make them practical in order that they can be used in the policy-arena’.

European Commission long-term research needs and FP7 activities - Kirsii Haavisto (DG-RTD; Environment Theme)

- SKEP role in SMP appreciated at the Programme-level
- Policy dimension not immediately seen as a priority – but seen to be very valuable
- FP7 funding to remain comparable with FP6 in the first few years, but will then increase
- Ag, food, nanotech, comms technologies etc.. will be considered under FP7)
- International Agreements to guide the direction of research
- Impact assessment and risk assessment tools – has been incorporated into the environment theme in recent years
- **Environment: 4 high-level themes in FP7:**

- Climate change, pollution and risks (incl. Environment and health)
- Sustainable management of resources
- Environmental technologies
- Earth observation and assessment tools
- There will be a call every year. The Programme will be re-written each year in order to provide sufficient flexibility for emerging issues.
- If we can produce a trans-national consensus on emerging issues and policy needs with SKEP, it can be a very important input to the research programme.
- Integration of the research activities within the themes themselves and an emphasis on Policy-support research
- Mis-matching timescales
- Dissemination is an issue strongly emphasised at project and Work Package level
- The environment is looked at horizontally
- Co-ordinated calls can also be undertaken with the United States on relevant issues
- First draft – 19th July
- First research calls in December for FP7

The importance of Foresights for research planning in the ERA – Elie Faroult (DG-RTD; Directorate K:Foresight)

- Some restructuring of the Directorate General may be occurring later this year
- Jacques Delors personally created a strategic foresight unit – though not a key issue for Edith Cresson
- First task – to set up and organise a foresight research community (issues with respect to Sevilla)
- 4 main topics: (EFMN website)
 - the future of universities, how it can be shaped –whilst respecting different diversity and models; also, challenges facing universities
 - regional foresight – regional strengths and weaknesses; development of guidelines for foresight research at a regional level;
 - converging technology – nano/info/etc. ('GRIN') – focused on environmental/social/health viewpoints
 - 'key technology expert group' – one expert on each topic; synthesis report clustering these technologies – lessons learnt and future priorities.
- Foresight activities under FP7 still unclear, although the budget (currently Eur 5m) will be increased
- Interdisciplinarity essential for any foresight exercise – for example, environment and health, etc.

II. Selection of a procedure and a theme to work on

Open discussion on existing practices and the themes for further investigational work

- Discussion on the method to be followed
- Selection of a consultation type, of a framework for the review and a technique for the next workshop

Four possible types of work (MEDD):

- I. New, emerging risks
- II. Pathways towards a long-term sustainable society
- III. Evolution of research needs; offers concerning monitoring technologies
- IV. Implementation and evaluation of environmental policies + role of research

Criteria:

- innovative theme
- significant added value of dealing with it at the European scale
- relevance for enough partners to get involved
- no overlap with other ERA-NETs

MEDD horizon-scanning questionnaire summary:

- Research for effective implementation of environmental policy goals (13 pts)
- Nanotech and health impacts of nano-bio-info technologies (7pts)
- Innovative monitoring technologies (6pts)
- Fossil free Europe (6 pts)
- Societal eco-efficiency (4 pts)
- Hazardous chemicals and their trans-boundary transport (4 pts)
- Low-input ag. systems, demographic changes, climate change impacts, converging technologies (3 pts)

Aims:

- A. Choose the preferred Theme
- B. Choose the work structure within the theme

Mikael Hilden (SYKE): Should look at societal issues, not just technical issues. Willing to be flexible.

John Seager (EA): We should think about our ways of working – we should continue a dynamic networking approach; we also need to look at joint calls. The lead choice in the questionnaire is more over an over-arching theme for the project itself.

Erik Fellenius (SwEPA): Agree. Need to have a strategic reflection on how the 'market' is evolving to reflect environmental challenges. (ST re-phrasing)

Erik Vindimian (MEDD): Policy effectiveness topic is more of an SMP-based issue. Plug for SMP website.

Martine Vanderstraeten (BELSPO): We should support theme I. with theme II. Look at scientific tools for decision-making. Means of communication between scientists and policy-makers. Horizon-scanning for tools which can span several environmental issues. **Centering on a wide compromise package with tool and technique development.**

Shane Colgan (IEPA): WP5 has to deliver two joint calls – we need to be tight and focused.

Mikael Hilden (SYKE): Go for II. Or IV.

Stephane Isouard (EEA): Think in terms of DPSIR – Option I. in some aspects is too narrow, it would limit the outputs and is perhaps too theoretical.

Aad Sedee (VROM): We need to be careful of overlap with other projects. We perhaps should focus on governance. Pro I.

Karine Herzberg (RCN): Avoiding overlap with other ERA-NETs is important. Pro I. Could be linked to 'Environmental policies and innovation effects'.

Pasky Pascual (USEPA): Topic I, Centre for European Policy studies (Andrea Rende) – different MS' are at different stages in undertaking and formulating integrated impact assessments. (ex. EU-US differences in Hg impact assessment). EU quite qualitative, US very quantitative – middle-ground possible?

Mikael Hilden (SYKE): Focus could be governance of new environmental issues – ex. nanotech. How do we introduce more of a long-term perspective.

Erik Vindimian (MEDD): Strong willingness to look at a governance problem/issue. We also need to anchor the work on something sufficiently focused to allow the process to work. So, I. + which? II. or III. or IV.

John Seager (EA): SKEP should be cross-cutting and practical – mobilising knowledge for environmental protection. Supports Stephane – how can we translate existing foresight studies to make them of use to decision-makers. Could we look at comparative risk assessments? Drive this towards risk-based decision-making. We can add value here as a project. Could mobilise risk-assessment, foresight, and policy communities

Lorraine Hutt (EA): Remind everyone of the acronym SKEP. We need to pick an issues and then look at how it underpins policy.

Selecting the right topical anchor...

Eric Vindimian (MEDD): Energy policy and implications for society. One potential anchor.

Elie Faroult (DG-RTD – Foresight Unit; EFNW Network): To make an inventory of foresight experiences produced in a certain sector, to look at what has been produced, and what is missing – to produce a shortlist of new research needs for environmental policy makers. We are mixing two very different and complicated things. We need to simplify a little bit. Whatever topic we pick will be fine.

Stephane Isoard (EEA): Option II. is very appealing. But the energy sector is very crowded. Stay away from energy issues. Two proposals:

#1. Diffuse sources of pollution – ag. + transport. How can society change to address this;

#2. Dealing with demographic changes. How will they impact the environment – aging society + different consumption of goods and services and change in behaviour;

Ingvar Andersson (EEA): Emerging risk topics: the risk assessment of mixtures of environmentally hazardous substances. Could SKEP pick up these ideas and highlight them.

Emerging risks (and opportunities):

Environmental and health impacts of nanotech-biotech-informatic technologies

Ingvar Andersson (EEA): The EEA green technology foresight conference looked at risks and opportunities. However, it missed an opportunity to establish a network.

Elie Faroult (DG-RTD-Foresight): There are three important upcoming events:

- 18-19 Oct COST seminar on technology convergence (nano focus)
- 09-10 Nov joint Conference with the Gates Foundation on future health issues
- Joint Conference, Stanford University – d'Avignon – risks of nanotech/biotech

Bob Huggins (EA): We need a balance. Too much work on risk and not enough on opportunities.

John Seager (EA): Supportive of emerging risks – regulatory/policy applications.

Eric Vindimian (MEDD): REACH does not consider nanotechnologies. The science is ahead of the policy. Need to look at costs and benefits, but in an unconventional way.

PROVISIONAL DECISION: Emerging technologies (with particular reference to a science-policy exploration of governance issues and policy implementation). Scope and the products to be refined via email. A series of transverse methodological issues:

- use of existing foresight studies – on both sides of the Atlantic
- being mindful of the value of down-scaling
- convergence of timelines
- involvement of stakeholders and the employment of a participatory approach

III. Who should we involve from now on?

Sub-tasks:

- to make an inventory of previous studies and gaps
- to use existing resources, tools and techniques (for example, Bob Huggins' horizon-scanning database)
- list of key stakeholders (for example, Richard Owen; DEFRA, NERC links)
- who can we mobilise? (for example, Parliamentary scientific committees, Japan, DEFRA [for Foresight + Nanotech appraisals], Financial insurance and governance sectors, health sector, NERC)

John Seager (EA): we should also engage businesses and industries

Erik Fellenius (SwEPA): we should be more active on the opportunity side – plus

how it is sold to the public

Mikael Hilden (SYKE): we should look at sub-samples of health and trade&industry impacts

CONCLUSION OF WORKSHOP